

**CITY OF BOULDER
TRANSPORTATION ADVISORY BOARD
AGENDA ITEM**

MEETING DATE: August 10, 2015

AGENDA TITLE: Staff briefing and TAB input regarding the Aug. 25, 2015 City Council Six-month TMP Implementation Study Session, including Living Lab, Transportation Maintenance, and Capital Projects updates

PRESENTERS: Michael Gardner-Sweeney, Interim Director of Public Works for Transportation
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I. EXECUTIVE SUMMARY

The City of Boulder has a multimodal transportation system that serves as a model for sustainable travel in the U.S. The Transportation Master Plan (TMP) outlines the vision for transportation and provides the policy and investment direction for achieving the community's access and mobility goals.

The 2014 TMP builds upon a strong multimodal policy foundation and continuing refinements to the existing system. It includes a focus on "Complete Streets," with work programs centered on a variety of Bicycle and Pedestrian Innovations, as well as the community's Renewed Vision for Transit. In August 2014, the updated TMP document was accepted by City Council and work in 2015 and beyond is centered on implementing the TMP based on the [TMP Action Plan](#), which includes a list of "immediate" action items for 2014 to 2016.

The TMP implementation continues to focus on an integrated approach, with partnerships across city departments and with local and regional community partners. The TMP implementation is being coordinated and integrated with the city's priority-based budgeting approach and capital investment strategies.

The 2014 TMP update was developed through an extensive community engagement process and this spirit of ongoing community participation continues in all areas of TMP implementation.

Examples of TMP implementation include the Living Laboratory approach for advancing the “Complete Streets” goals of the TMP and ongoing work with the community and agency partners in the transit area. Please see www.BoulderTMP.net for more details.

This is the second study session reviewing the implementation of the 2014 TMP in the 12-month period since the plan was accepted by council. These six-month check-ins ensure that the TMP implementation remains consistent with the council’s priorities and the city’s efforts to promote long-term sustainability and resiliency.

Highlights of the second six months of implementation include:

- Implementation of the Living Lab Phase II Corridor Projects, including a one-month check-in on the Folsom Street implementation;
- Progress on Maintenance Initiatives, reflecting additional funding in this area;
- Advancement of Capital Projects Implementation under the three-year bond funding approved by the voters in November 2011 and the sales tax reallocation in 2013.

The “Analysis” section contains more information about these and other implementation actions, organized into areas seeking more in-depth input from council and those providing updates to past materials or ongoing efforts.

II. QUESTIONS FOR COUNCIL

1. Does council have feedback on the ongoing implementation and evaluation of the Complete Streets Living Lab Phase II corridor projects, including the installed Folsom Street project?
2. Does council have comments on the recent changes in maintenance activities or the ongoing evaluation and transformation efforts?
3. Does council have questions or comments about the ongoing Transportation capital improvements program or its individual projects?

III. BACKGROUND

Transportation Master Plan (TMP)

The Transportation Master Plan (TMP) is set within the broader context of the Boulder Valley Comprehensive Plan and supports the sustainability and quality-of-life goals set by the community. Boulder’s TMP establishes the goals, policy guidance, and measurable objectives for operating and investing in the city’s multimodal transportation system. In collaboration with local and regional partners and the Boulder community, the TMP focuses on creating a complete transportation system providing multiple travel options for increased person trips, managing traffic congestion, and reducing air pollution and noise. Boulder has achieved the prior TMP objective to maintain Vehicle Miles Traveled (VMT) at 1994 levels. However, part of the 2014 TMP contribution to the City’s Climate Commitment goals is a 20 percent reduction in VMT by 2035, which is an ambitious target given expected growth in population and employment.

The 2014 TMP includes an extensive [Action Plan](#) identifying priority work items and periodic check-ins on implementation with council. The first check-in was held at a [Feb. 25, 2015 study session](#).

This City Council Study Session reviews the implementation of the 2014 TMP in the year since the plan was accepted by council in August 2014, with a focus on the second six-month period. These sessions ensure that TMP implementation remains consistent with the council's priorities, are integrated with other city planning efforts, and support the city's efforts to promote long-term sustainability and resiliency.

IV. ANALYSIS AND ISSUES

This section is organized into two sets of topics:

1. Items where staff is seeking comment and discussion from council; and
2. Updates on ongoing activities.

Implementation work continues in all TMP focus areas and on the vast majority of the near-term items identified in the [TMP Action Plan](#). A brief summary of the work and progress to-date is provided in the two sections below for each of the five focus areas.

TMP Focus Area Progress: For Discussion

Complete Streets

The Complete Streets Focus Area strives to accommodate all modes of travel by planning, designing, and building facilities for people walking, biking, riding transit, and driving. This focus area aims to develop the complete street systems needed to accommodate increased travel by enhancing options for biking, walking, and transit while reducing single-occupant vehicle (SOV) use.

Complete Streets "Living Laboratory" Projects

The Living Lab program tests new roadway designs through experimentation and collection of community feedback on users' experience with these experiments. The Living Lab approach aims to achieve the community goals of enhancing safety for people using all travel options. By fine-tuning the system through user experience, community members should feel more safe, comfortable and confident in their travel choice, whether walking, biking, riding the bus or driving.

The Living Lab has been deployed in two phases of pilot projects, with qualitative and quantitative analysis, including extensive community feedback used to evaluate the potential for long-term application in Boulder. Evaluation of the Phase I projects is ongoing and will be completed this summer. In September 2015, staff will present a draft Phase I evaluation report for consideration by the Transportation Advisory Board. This report will provide recommendations for the next steps for the installed Phase I experiments. Experience from the Phase I projects continues to inform implementation of the Phase II projects.

Phase II of the Living Lab pilot projects is intended to test and evaluate whether repurposing vehicle lanes on some streets will enhance travel safety. In June, the Boulder City Council supported the installation of three pilot projects that include the temporary repurposing of vehicle lanes along three roadway segments:

- Folsom Street from Valmont Road to Canyon Boulevard;
- Iris Avenue from Folsom Street to Broadway; and
- 63rd Street from Lookout Road to Gunbarrel Road/Nautilus Drive.

City Council also considered a fourth proposal to repurpose vehicle lanes along 55th Street between Pearl Parkway and Arapahoe Road and decided to put that project on hold. The city will be conducting additional research and community outreach and staff will return to City Council in the spring of 2016 with proposed next steps for 55th Street corridor.

Public Process

The Phase II pilot projects have generated considerable community interest and differences in opinion regarding project benefits, needs, and impacts. User experience is a vital component of the Living Lab evaluation process. The city encourages input from residents, bicyclists, pedestrians and motorists on the impacts – positive, neutral or negative – that these projects have on their ability to get around Boulder. Community input, along with the technical transportation analyses, will be used to determine whether these types of street treatments are an effective way to help the community achieve its goals for safer streets and a more sustainable transportation system.

A variety of strategies are being used to collect community feedback on the Living Lab projects. The public can share their perspective by participating in a walk, bike or drive audit of the projects; calling the project managers; emailing City Council; attending a public meeting; sharing input on the Inspire Boulder digital town hall; uploading a comment and/or photo on Commonplace; or using the #BldrLivingLab hashtag on social media.

Since May 7, 2015, the city has received more than 1,000 comments from email, Inspire Boulder, Inquire Boulder, social media, and phone calls. Staff is also keeping track of the Daily Camera Articles, guest opinions, and letters to the editor.

On July 30, the project team attended a meeting hosted by the North Gunbarrel Homeowners Association to discuss the pilot project planned for installation along 63rd Street. Most of the approximately 50 attendees expressed concerns with doing the 63rd street corridor project, while a few people spoke in favor. The project team also is working with the City's Economic Vitality program and the Chamber of Commerce to host a public meeting with Gunbarrel businesses in August 2015.

Staff has compiled frequently asked questions (FAQs) about the Phase II of Living Lab program, which are posted at www.BoulderLivingLab.net along with other project materials, including a schedule of related events and additional opportunities to provide input. The Transportation Division will continue to update the list of questions and responses based on community feedback throughout Phase II. City staff is following up on specific concerns that have been observed (such as lines of cars backed up at left-turn lanes that block through traffic during peak travel times) to determine whether improvements are needed to address these issues.

Initial Results

Installation of the Folsom Street Living Lab involved the removal of most pavement markings along the project corridor and their replacement with new pavement markings. It also involved the striping of numerous specialty markings, including bike symbols, green conflict zone marking, crosshatching and an experimental green bike box, as well as the installation of hundreds of flexible posts to form the protected bike lane. The installation took longer than anticipated, in part due to the many specialty components. Originally scheduled to take two weeks, the installation actually took more than three weeks to complete.

City staff is also observing conditions and gathering travel data from along Folsom and adjacent streets, and is comparing this information with baseline data from the previous street conditions. Since the installation, transportation staff has been observing the operation of the corridor at different times of the day, but specifically during the morning and afternoon rush hours. Staff has not observed any significant congestion issues in the project area during off-peak hours, nor any congestion associated with the morning rush hour. During the afternoon rush hour (5 to 6 p.m.), staff has observed more significant congestion issues. These issues include periods of time when traffic lines are long; side street traffic has difficulty entering Folsom from streets like Walnut and Spruce; and through lanes are being blocked by traffic lining up from left-turn lanes at intersections. Staff is evaluating the frequency of these conditions and the impacts that these conditions have upon the travel times along Folsom Street during this afternoon rush hour. Staff also continues to solicit input from emergency responders. Staff is reconciling the post-installation travel delay times with the travel delay times that were predicted during the pre-installation analysis and will present the findings at the Aug. 10 TAB meeting. The Living Lab Evaluation Matrix is included in **Attachment A**. In addition to corridor travel time data, staff will also provide data regarding collision history, bicycle and vehicle traffic volumes, and a summary of public feedback.

Next Steps

City staff is performing an evaluation/assessment for four weeks along the Folsom Street corridor. The early results will be shared at the Aug. 10 TAB meeting and included in the Aug. 25, 2015 City Council study session materials. City Council will review the community feedback, field observations, and travel data to evaluate whether the Folsom Street Living Lab is an effective way to help achieve the community's transportation goals. At that time, staff will also seek City Council's guidance for the scope and schedule of the remaining Living Labs on Iris Avenue and 63rd Street.

Maintenance Initiatives

Since the 1996 TMP, providing a safe and well maintained multimodal transportation system has been the first investment priority of the TMP. Reflecting this priority and the analysis conducted as part of the transportation funding work, additional funding has been directed toward transportation maintenance activities. In November, 2013, the Boulder voters passed a transportation tax to help fund deferred transportation maintenance and some key multi-modal improvements which are reflected in the current and proposed Capital Improvements Program (CIP). In November, 2013, Boulder voters' passed two ballot measures which dedicated additional sales tax revenues for transportation maintenance and operations through 2029. This

additional sales tax included approximately \$1.6 million annually for street pavement maintenance, and \$800,000 per year for major capital construction and maintenance (which address operational and/or functional deficiencies with existing multimodal facilities).

Public Works Transportation staff is coordinating to address maintenance operations for Living Lab projects. Prior experience with the protected bike lanes on University Avenue, as part of Phase I of the Living Lab program, created new insights on how to remove snow, ice, and debris from the roadway, including the protected bike lanes. Staff is also exploring new strategies, technology, and equipment for maintaining the new facilities based upon research from peer communities regionally and nationally. Transportation Maintenance has recently visited other cities who share similar experiences with maintenance of protected bike facilities.

Pavement Management progress report

The Transportation Division has established a Pavement Management Program (PMP) for Boulder's 300-mile street system, which includes inspecting and rating all streets on a three-year interval to maintain awareness of existing conditions and guide where pavement repairs will be made in future years. The goal of a PMP is to identify the optimal level of funding, timing, and renewal strategies that will keep the roadway network at or above a "Good" Overall Condition Index (OCI) rating. The additional transportation funding provided by the 2011 Bond and 2013 sales tax ballot initiatives have supported progress towards meeting the City's PMP objective. However, it is still early in the implementation of the PMP and much work remains to be completed. Updated results of the PMP will be included in the [Transportation Report on Progress](#) that will be released early this winter.

Asset Management System Expansion efforts

The Transportation Division will also be expanding its Asset Management Program to include condition assessments on smaller structures and features such as underpasses, retaining walls, and wing walls. This inventory will help prioritize spending for the Major Capital Reconstruction budget which was created in 2015 due to the 2013 Transportation Revenues ballot items passage. This conditions assessment will begin in late 2015 and continue through 2016.

Snow and Ice Control Study progress report

Recent year snow season accumulations have placed a strain on existing staffing resources, vehicles, and equipment in order to maintain current levels of service and have exposed some vulnerabilities in staffing and equipment resources. Public Works is currently conducting a comprehensive review of its Snow and Ice Control Program. The project will include a third party review by experts who will focus on identifying operational efficiencies including snow/ice control program management, fleet and equipment expertise, snow/ice control field operations, vehicle routing analysis and other supporting technologies. The study will review/evaluate, make recommendations, and provide alternative investment strategies that meet the city's short and long term goals of improving and potentially expanding the City of Boulder Snow/Ice Control Program.

Early implementation of study results will enable the city to immediately make adjustments and changes to its current operations. The goal of the implementation phase is to expand snow/ice removal to include additional residential streets, school zones/routes and known problematic

areas through recommendations that are identified and provided in the study. Although they understand the challenges of existing staffing levels, the community has expressed continuous concern about residential street service and access issues, particularly streets on steep slopes or prone to high snow/ice as well as school bus routes and school zones.

Capital Projects Implementation

The annual transportation capital improvements program (CIP) is approved by council and supported from a number of funding sources. As illustrated in the CIP projects described below, the CIP supports improvements for all modes of travel. More details on these projects are available on the [Transportation Projects Web](#) page.

Recently Completed or CIP Projects

Foothills/Valmont Operational Improvements Project – This safety improvement and congestion reduction project was completed in early July and extended the third southbound lane from the Diagonal Hwy on-ramp to the Pearl Street off-ramp. The [Foothills Parkway Operational Improvements](#) also included re-construction of the northwest and southwest corners including new signal poles and pedestrian crossings, and addition of transit stop amenities to the westbound Valmont bus stop. The estimated vehicular delay reduction is calculated at 100 hours for each weekday. Project funding totaled \$900k which included Transportation Improvements Program (TIP) funds from the Denver Regional Council of Governments (DRCOG), leveraging city and state funds with federal transportation funds.

Diagonal Highway (28th/Independence Road) Transportation Improvements Project – Construction of this project began in August and includes pavement reconstruction, provision of continuous bicycle and pedestrian facilities, transit stop enhancements, storm drainage, water quality features, over 300 new trees and other new landscaping and irrigation systems, and public art. Completion is anticipated for fall 2016. The \$9Million project leverages city transportation funds with federal and state funds including TIP and Responsible Acceleration of Maintenance and Partnerships (RAMP) grants.

28th Street (Iris-Yarmouth) Bicycle and Pedestrian Improvements Project – Construction of this \$2.3Million project began in August and will be substantially complete by the end of 2015 with final landscaping to occur in Spring 2016. The project will construct a multi-use path on the west side of 28th St/US 36 from Iris to Fourmile Canyon Creek, new pedestrian/bicycle bridge over Fourmile Canyon Creek, provision of a continuous on-street bicycle facility from Iris to Yarmouth and trees, landscaping and public art. This project improves connectivity between north and central Boulder and to the Wonderland Creek trail. Construction coordination between this project and the upcoming Wonderland Creek Greenways Project from 28th St to Foothills Parkway will be coordinating throughout the construction periods.

Baseline Road Underpass Project – Construction of this \$5.4Million is anticipated to begin in the fall of 2015 and take one year to complete pending negotiations with the Colorado Department of Transportation. This safety and bike/pedestrian connectivity project includes replacement of the existing pedestrian signal with a grade separated underpass at a highly utilized bicycle and pedestrian crossing location. The project also includes connections to existing bicycle and pedestrian facilities, a multi-use path on the east side of Broadway south of Baseline Road,

median reconstruction, new landscaping, and street overlay. This project is also funded with state, federal and transportation funds._

Transit Stop Improvements – This project is supported by city and Funding Advancements for Surface Transportation and Economic Recovery Act (FASTER) funds. Construction of this project will begin in September 2015 and will be completed in early 2016. The project includes various levels of improvements to over 25 bus stops in Boulder ranging from bus stop pads to benches, bike racks and other amenities. This project supports ease of access to transit which is part of the Renewed Vision for Transit of the 2014 TMP_

Projects in planning – Canyon Complete Street, 30th Street, , Colorado Avenue and East Arapahoe

To advance the TMP goals for Complete Streets, three corridor studies have been identified and funded in the city’s Capital Improvements Program (CIP). These corridor studies will develop a vision, identify a set of prioritized projects and address issues to provide complete streets along the Canyon, East Arapahoe and 30th St/Colorado corridors. The Canyon Complete Streets Study will begin in September 2015 and take one year to complete and will be in coordination with the Civic Area master planning work, East Arapahoe Transportation Study findings and other nearby projects.

The 30th and Colorado Corridors Study will begin in late 2015/early 2016 and will be conducted in coordination with the design of the 2016-2021 TIP funded 30th and Colorado Underpass Project. The East Arapahoe Transportation Plan and the closely related SH 7 Study are described in the Regional Focus Area below.

TMP Focus Area Progress: Updates

The following material provides updates on the ongoing TMP implementation activities in each of the focus areas. Many of these areas were covered in more detail in the [Feb. 25, 2015 study session packet](#).

Complete Streets Focus Area

Bicycle and Pedestrian Innovations

This element of the Complete Streets focus area seeks to broaden the safety and appeal of bicycling and walking in Boulder. An emphasis is placed on fine-tuning the existing system through targeted enhancements to support a broad range of cyclists and pedestrians of all ages and abilities. Engineering improvements coupled with strategies to encourage, educate, enforce and evaluate bicycling and walking are the “Five E’s” that comprise a comprehensive approach to increasing walk and bike mode share.

Cycling and Walking Programs

Enhancing programmatic efforts to create a culture of cycling and walking as realistic options for getting around town by all types of people is a priority for meeting our transportation, sustainability, and Climate Commitment goals. The City has made progress on introducing and expanding programs to educate and enforce the rules of the road and path, as well as encouraging

and increasing the safety and appeal of walking and bicycling for daily travel. These efforts aim to foster a bike culture in Boulder going beyond sport cycling and to build a coalition of community-based organizations supporting walk-friendly community design. Program highlights include:

Boulder Walks Program

As a designated [Gold-Level Walk Friendly Community](#), Boulder is a place where walking is generally both desirable and enjoyable. The Boulder Walks program aims to celebrate and encourage walking as a travel choice for residents and employees. In partnership with the Colorado-based [Walk2Connect](#), Boulder Walks launched a free walking program in 2015 providing opportunities for neighbors to connect with one another and with their neighborhood. A Boulder Walks Meet Up group launched this spring has over 150 members. A total of 48 community members participated in one of 13 community walks hosted in May. Visit [BoulderWalks.org](#) for more information and a schedule of upcoming walk events.

In March, 2015 the Youth Opportunities Advisory Board (YOAB), GO Boulder, and the Downtown and University Hill Management Division/Parking Services (DUHMD/PS) conducted a Walk Audit of the University Hill commercial district. The Audit was a valuable experience and helped identify areas of interest to youth on the Hill as well as places for improving connectivity, accessibility, and quality of the pedestrian environment.

Walk & Bike Month

This is the primary celebration of Boulder's unique and nationally recognized bicycling and pedestrian culture. Walk & Bike Month includes a diverse list of more than 75 free events for adults and children alike, including mountain bike rides, running races, scavenger hunts, historical bike tours, hikes and much more. Bike to Work Day 2015, held on June 25 encouraged an estimated 8,100 participants to ride all or part of the way to work. The event was also widely covered in print and social media, with 15 newspaper articles and more than 32,000 e-newsletter views.

Heads Up Mind the Crosswalk

The 2015 campaign is funded by a federal grant and is a partnership among the City Transportation and Police Departments, CU-Boulder Transportation and Police Departments and the cycling community. Education and outreach activities began in May 2015 to raise awareness of crosswalk related ordinances. These efforts support heightened enforcement activities during the weeks of July 20 through July 25 and Sept. 7 through Sept. 12, 2015 at top accident locations in an effort to reduce traffic related injuries and fatalities. The city has been awarded a FY16 OTS grant program that will expand the program to include restorative justice and ticket diversion activities.

Love to Ride Boulder

A fun and free competition to encourage more people to ride bikes, Love to Ride will introduce the Boulder Bike Challenge in Sept. 2015. Organizations and individuals from across the region are invited to sign up to at www.lovetoride.net/boulder, ride for 10 minutes or more, log their rides, and encourage friends and colleagues to participate as well. The organization that gets the

highest percentage of their team involved will win prizes and there are also incentives and spot prizes along the way for individuals to encourage individual participation.

The Way of the Path!

Introduced in fall 2014, this campaign is designed to improve the safety and experience of the people using Boulder's multi-use paths. Throughout the summer and fall, path users are asked to pledge to follow path rules and etiquette in order to ensure a safe and courteous atmosphere for everyone. Participants will receive weekly blog posts with tips on the rules of the path, a survey and entered in a random prize drawing. Over 330 people have participated and many voiced appreciation for the campaign. This fall, the campaign will be repeated and expanded to include social media, advertisements and Karma cards along with incentives.

Paint the Pavement

To encourage community building and public art as a means to transform roadway public space into neighborhood assets, Paint the Pavement is a city program that allows mural painting on public streets. Neighborhoods interested in pursuing a paint the pavement project submit an application to obtain city approval and authorize the mural so that it is deemed art rather than graffiti. The mural is installed as part of a Block Party event. The neighborhood applicant is responsible for maintenance of the mural.

To date, paint the pavement projects have been installed in three neighborhoods. The city is reviewing designs submitted by the North Boulder Arts District to install murals on sidewalks along North Broadway. The Arts Commission will consider the designs in August program. Should the City and the Commission approve the proposal, the designs will be installed in September, 2015.

A survey of existing neighborhoods will be conducted this fall to gather community feedback on the existing murals. This will help to guide future programs and initiatives.

Bicycle and Pedestrian Planning

ADA Transition Plan

The City of Boulder created its first ADA Transition Plan in the early 1990s following the passage of the Americans with Disabilities Act in 1990. The city's plan has not been updated since then, although the Transportation Division adjusts its practices to current ADA standards and focuses funding and program efforts on improving access to transportation facilities through all its programs. The city will be updating the plan, including evaluation of current practices, policies, projects and programs to identify areas needing improvement. These findings will be used to develop a three year implementation plan to remove priority areas that are barriers to accessibility. This effort is expected to begin in 2016 when funding becomes available to support the effort.

2.0 Bike Network

An expanded analysis is underway to evaluate the level of stress of the city's existing bicycle network to identify low-stress connectivity. Staff is developing a programmatic approach to fine tune the network to identify and prioritize improved bicycle facilities supporting a more

complete low-stress bicycle network. It is envisioned that the results of the Living Lab pilot projects will help the city develop Bicycle Facility Installation Guidelines to create a “2.0 bicycle network” of a complete and connected low-stress network.

Bike Parking

GO Boulder staff have performed a bike parking demand analysis for the downtown commercial area. Staff has been collecting bike parking data since 2007 and has identified specific areas of the downtown area with deficient bike parking. The area of W. Pearl Street was identified as the top location with deficient bike parking and Public Works staff has installed additional bike racks to meet the bike parking demand in this area. Staff has also reviewed the existing on-street bike parking stall on W. Pearl Street and plans to replacing the existing rack with a new bike parking configuration that will improve parking efficiency and design aesthetics.

Platinum to Diamond BFC

Boulder is currently designated as platinum level Bicycle Friendly Community by the League of American Bicyclists and is one of four cities within the U.S. who share this top honor. In 2013, the League of American Bicyclists announced a new designation – diamond. The diamond level designation represents a community that has advanced bicycling similar to that of many European cities such as, Utecht, NL or Freiberg, Germany. The diamond level designation identifies specific objectives to achieve with respect to crash rates, bicycle mode share, quality and quantity of bicycle facilities, and the public’s level of satisfaction with respect to bicycling. GO Boulder is developing a progress report card that will enable the city to track this baseline data while pursuing goals that are in concert with the 2014 Transportation Master Plan to attain the diamond level designation in the coming years.

Renewed Vision for Transit

The 2014 TMP Renewed Vision for Transit is based on a comprehensive set of improvements in service, capital, policies and programs. Planning for the start of US 36 Flatiron Flyer bus rapid transit (BRT) service in Jan. 2016 has been a major focus of work in this effort. Progress in each of Renewed Vision for Transit areas is discussed in this section.

Service Element

East side circulator/Funding (TIGER grant)

As one of the TMP action items, the City of Boulder and University of Colorado (CU) have been working jointly to define elements of the Central-East Circulator project. This City-CU partnership is intended to leverage the regional US36 BRT investment and advance the goals of the University and the City’s Renewed Vision for Transit. This project will connect the CU main and east campuses, Williams Village, and Boulder Junction to the US36 Bus Rapid Transit (BRT). The project is intended to create the needed station infrastructure at Williams Village and along the new circulator route, make complete streets improvements along these corridors and to incorporate innovative electric vehicle transit technology. The continuing technical work includes scoping and cost estimates for the Central-East Circulator Project and preparation for pursuing potential funding sources

Broadway & 28th Lane Repurposing Analysis

With US36 BRT service starting in early-2016, staff has been working with consultants to consider options for enhancing BRT operations along Broadway and 28th Street. Specifically, this study is evaluating the concept of converting outside through/right-turn lanes to transit and right turn only lanes along Broadway between Table Mesa Drive and Regent Drive, and along 28th Street between Arapahoe Avenue and Pearl Street. These lane conversions would allow BRT and local buses to operate with higher reliability and speed through these corridors versus traveling in the general purpose lanes.

The Fox Tuttle Hernandez (FTH) Group completed an initial Level of Service (LOS) assessment on the feasibility of lane conversion on these two corridors. Both of these roadway segments have three through lanes in the northbound and southbound direction, with the third through lane also serving right-turning traffic at most driveways and intersections. The initial LOS screening shows that the Broadway corridor segment could maintain acceptable (LOS D or better) Levels of Service with conversion of the third through lane to BRT/right turn only. On 28th Street, the conversion would degrade the LOS at Arapahoe Avenue northbound and southbound to LOS E and/or LOS F, likely resulting in increased queuing and delay. More detailed analysis is needed for 28th Street and FTH is using the VISSIM microsimulation model to evaluate traffic conditions in more detail. The analysis and simulations will describe impacts to travel times, queue lengths, and potential spill back into adjacent intersections. More detailed analysis, coordination with CDOT, and public input will take place in 2015-16 prior to making any decisions about whether or not to advance this concept.

Capital Element

Boulder Junction

The vision of Boulder Junction as a pedestrian oriented development is coming to fruition with a series of public and private projects. These include the completed bike lanes on 30th Street, the 30th Street underpass at the Boulder Slough, the connection from 30th Street to the Goose Creek multimodal path, and the south side of the multi-way boulevard on Pearl Parkway in 2012. Construction on the north side multimodal path and Multiway Boulevard began in 2013 with extensive waterline, sanitary sewer and major drainage way improvements and continued in coordination with the Depot Square development at 3151 Pearl Parkway. This section of Pearl Parkway will be substantially completed by August 2015 in coordination with the adjacent private development. The Junction Place Bridge at Goose Creek began construction in late 2013, was completed in June 2015 and opened on July 24th. Final landscaping is scheduled for completion in summer 2015. Additional public improvements in the area include the public park along Goose Creek and the bike connection through the park to the Goose Creek multiuse path which were completed in June 2015.

The new transit station “Boulder Junction at Depot Square” is scheduled for a soft opening in August 2015. RTD and the City of Boulder are co-hosting a celebration on August 13, 2015 from 4:30-6:30 p.m. The event celebrates the completion of the City investments as well as the opening of RTD’s new bus station.

In August 2015, the existing HX, S, and 206 routes will begin serving Boulder Junction. Route 206 will serve the station on-street. In January 2016, the new Flatiron Flyer service will begin service to Boulder Junction as well as the downtown transit station. The new Flatiron Flyer service will replace the existing routes HX and S. Other existing routes, such as 205, 206, Flex, HOP, and Bolt will also service Boulder Junction on-street

The Boulder Junction Transportation Demand Management (TDM) Access District program and services are operating with residents of 3100 Pearl and employees of the Hyatt Place Hotel receiving Eco Passes, discounted bikeshare memberships and free carshare registration. The TDM programs for residents and employees will continue to expand as new developments open.

Transportation and Planning staffs continue to work with the Depot Square developers and the Parks Department to establish a location for a long-term bicycle parking structure to be managed by Boulder County through their Bus-then-Bike program. The current location under consideration is in the park area west of Junction Place and adjacent to the spur connecting to the Goose Creek Path. This location would be in direct line of sight to the bus depot entrance, provide direct access to the multi-use path system, and could potentially reduce bicycle and pedestrian conflicts in Depot Square's plaza area.

North Boulder Mobility Hub

Conceptual planning for the North Boulder mobility hub continues to advance. A future mobility hub would provide a combined set of transportation services on one site; including a transit station, bus turnaround, Boulder B-cycle bike share, a Bus-then-Bike shelter, and car share services. The site under consideration for the North Boulder mobility hub is located at the southeast quadrant of the US 36/Broadway intersection and is currently owned and used by CDOT for material storage. Staff is continues to work with CDOT to relocate their use of sand/material storage to another site.

Staff presented preliminary design concepts for the North Boulder mobility hub to City Council at their TMP [February 2015 study session](#). In response to Council comments that the concepts looked too suburban and needed a more urban design and attractive gateway features, staff has been working with consultants to refine the design concepts, incorporating the following design principles:

- Compact, urban form incorporating vertical elements, such as iconic roof structures. It should not include on-site bus turnarounds and parking that create expanses of concrete.
- Vertical elements, such as the bus shelter(s), lighting, and signage, that have enough “mass” to feel substantial, and to have a presence in the open north Boulder landscape.
- Streetscape elements, landscaping and paving materials that frame and define spaces designed for specific purposes, such as boarding areas, paths, kiss-n-ride areas, etc.
- A large sculptural gateway element located on the north corner of the site that announces the entrance into North Boulder and adds to the “presence” of the mobility hub.

Staff is also assessing the feasibility of additional uses on the site. While the size and configuration of the parcel is a limiting factor, mixed use development is being considered as a longer-term buildout scenario for the mobility hub. The potential for public/private partnerships

to provide shared “edge” parking on properties adjacent to the site is being explored along with enhanced pedestrian crossings on Broadway.

HOP Vehicle Replacement

An important priority in the TMP is to replace older HOP vehicles and obtain funding to help pay for the vehicle replacement. The City partnered in 2014 with the Via and RTD to apply to replace three HOP diesel buses with hybrid electric vehicles but Via was not selected. For future FTA grant applications, Via will likely need a more aggressive plan to replace more vehicles requiring significantly more local match. Via also was awarded statewide FASTER funding (FY 2016) to fund 75 percent of three clean diesel buses well as funding to rehab two additional buses. This is significant transitional step toward the city of Boulder’s TMP and sustainability goal of pursuing green vehicle technology for the transit fleet to reduce transit GhG emissions.

Program Element

Real Time information

Implementing real-time passenger information is one of the top priorities in the Renewed Vision for Transit. There are two components to the real-time information programs that will serve Boulder residents.

- In early 2015, CU contracted with ETA Transit and implemented real-time passenger information for the HOP and Buff Bus. At this time, ETA Transit offers a traditional website for customers to obtain real-time route information. The website, www.boulderbustracker.com, is being advertised through on bus advertisements and the City’s website. Additionally, ETA Transit has released a smart phone application for Android operating systems and continue to develop the Apple version.
- RTD plans to implement real-time passenger information on all RTD buses, BRT, and light/commuter rail vehicles in two phases. Phase one includes a real-time website and information displays that are expected to be launched in first quarter 2016. The second project phase will open-source the data to 3rd party developers for creating mobile apps in late 2015 or early 2016. The RTD effort does not include the HOP buses due to hardware issues. However, ETA Transit data is open source and there is the potential for coordination with RTD so that the HOP real-time information can be incorporated in the RTD’s system. Staff continues to work with agency partners to pursue real time information for passengers using all transit routes serving the Boulder community.

Wayfinding standards

The TMPs Renewed Vision for Transit calls for developing BRT and transit wayfinding design standards and specifications in partnership with RTD. In 2014, the City of Boulder was part of the DRCOG SCI Northwest Corridor Bicycle and Pedestrian Accessibility Study that recommended the implementation of a uniquely-branded wayfinding and signage system for Northwest Corridor transit stations and along the US 36 Bikeway.

In July 2015, 36 Commuting Solutions, in partnership with local jurisdictions, applied for a DCROG Urban Center/STAMP grant to fund final design and construction drawings for unified corridor-wide signage at US 36 BRT stations, including the downtown Boulder, Boulder

Junction and Table Mesa transit centers, and along the US 36 Bikeway. Branded wayfinding signage will help users locate multimodal access points and direct travelers to and from destinations within the first and final mile of station areas and to the US 36 Bikeway. The City of Boulder has committed to providing \$12,500 of the local match to help fund the \$225,000 project. Other funding partners include Boulder County, Town of Superior, City of Louisville, City and County of Broomfield and the City of Westminster. Notification of grant awards is expected in August, 2015.

Regional Travel

US 36 Flatiron Flyer BRT implementation

The TMP identifies high quality bus rapid transit (BRT) service on US 36 as a high priority and pivotal opportunity for improving regional transit service to Boulder. In November 2014, RTD released the first draft of a proposed service plan for US 36 BRT and the associated local service plan modifications scheduled for January 2016. City of Boulder staff coordinated review of the proposed service plans with RTD staff and staff from Boulder County, CU and the US 36 corridor communities. In response to agency comments, RTD released a revised proposed service plan for US 36 BRT in January 2015 and subsequent drafts in March and June 2015. City staff and our agency partners submitted comments on each iteration of the service plan. The June 2015 final proposal reflects minor modifications in response to these comments and was approved by the RTD's board of directors on July 28, 2015. Remaining primary areas of concern with the final proposal include:

- the lack of midday express service on Broadway;
- the lack of midday and weekend service to Boulder Junction; and,
- elimination of the proposed increase in frequency to route AB Skyride service.

RTD's investment in the US36 BRT service is approximately \$991,000 per year funded through the FasTracks program. This represents an approximate 5% return on investment from the northwest corridor communities. RTD Board Chair Sisk committed to continue working with the corridor communities to improve US36 BRT service over time.

US 36 2015-16 grand opening events

Opening celebrations for the first phase of the US 36 project were held in the spring 2015. The celebration of the first phase high occupancy toll (HOT) lanes was held at the Broomfield Park and Ride on June 22, 2015. A separate celebration on June 24, 2015 recognized the completion of the adjacent 11-mile portion bikeway from Westminster to Louisville/Superior. As requested by RTD, US 36 BRT station parties are planned to precede the launch of the US 36 "Flatiron Flyer" BRT service in Jan. 2016.

FLEX

City of Boulder staff is working with Boulder County, Longmont, RTD, CU, CSU, Loveland, and Fort Collins/Transfort to extend one seat ride interregional transit service to Boulder on the FLEX route along US287 and SH119. Funding for this service was approved by DRCOG and service is planned to begin in January 2016. Over the last 6 months, staff has worked on identifying stop locations within the City supporting FLEX service to Boulder Junction and the

Downtown Boulder Station. The layover location will be on the CU Boulder campus. City staff is working with TransFort to coordinate signage and striping at the layover location.

East Arapahoe Transportation Plan

The [East Arapahoe Transportation Plan](#) grew out of the former [Envision East Arapahoe Study](#) that was put on hold in late-2014. This long-range plan is considering a number of potential transportation improvements within the East Arapahoe corridor, including biking and walking enhancements, Bus Rapid Transit (BRT) and local bus service and automobile travel.

Council was briefed on the interactive public workshop for community members as part of the Feb. 24, 2015 [study session](#) on the East Arapahoe Corridor. Since then, the project team has been working to more fully define the ideas proposed by workshop participants. Transportation improvement alternatives have been refined and evaluated to test their performance and to understand the trade-offs associated with different types of transportation infrastructure.

Conceptual alternatives will include each of the following elements:

- BRT: Alternatives illustrate BRT running in the center lanes of east Arapahoe Avenue (Center Running) or in the outside lanes (Side Running) with right turning traffic. Potential BRT station locations and alternative routing to and from the Boulder Transit Center in downtown Boulder will also be shown.
- Bicycle facilities: Alternatives illustrate both on-street and off-street (or multi-use path) facilities for bicyclists along east Arapahoe Avenue. On-street facilities can include a buffer-protected bikeway that is separated from traffic by striping and/or a (barrier-protected bikeway) that is separated from traffic by a simple curb, bollards, landscaping, or any other form of physical protection.
- Pedestrian facilities: Alternatives illustrate multi-use paths, like the existing 12-foot path located along much of east Arapahoe Avenue today, along the extent of the corridor. Potential mid-block and/or new pedestrian crossings at BRT stations along east Arapahoe Avenue will also be shown.
- Landscaping: Alternatives illustrate plantings along east Arapahoe Avenue located on-street in planting strips or medians and off-street along bicycle and pedestrian paths.

Staff is conducting a preliminary evaluation of all transportation improvement alternatives and will compare each to future conditions without improvements. The evaluation considers factors such as:

- Percent of trips expected to be made via walking, biking, transit and auto;
- Pedestrian and bicycle comfort and accessibility;
- Transit and vehicle operations and travel time;
- Safety; and,
- Ability to meet the city's sustainability goals.

Staff will present these draft concepts and a preliminary evaluation of the concepts at the Nov. 9, 2015 TAB meeting and to City Council as a briefing at their Dec. 8, 2015 study session meeting.

SH7 BRT

In April 2015, DRCOG TIP funding was awarded for the State Highway (SH) 7 BRT Study as the next step in advancing arterial BRT between Boulder and Brighton. The \$250,000 study is being led by Boulder County with the support and involvement of all jurisdictions along SH 7 including the City of Boulder. The Study will:

- build on the 2014 SH 7 Planning and Environmental Linkages (PEL) Study by extending the PEL further west to 75th Street, and
- study the feasibility, operations and cost of BRT on SH 7 between Brighton and downtown Boulder incorporating findings from the East Arapahoe Transportation Plan.

A Policy Advisory Committee (PAC) composed of leaders and decision-makers from corridor municipalities, county governments, CDOT, RTD, and DRCOG has been formed. The PAC will be supported by a Technical Advisory Committee (TAC) made up of planning staff from the involved agencies. Both committees held kick-off meetings in April 2015 and will meet quarterly through the duration of the study. The scope of work is currently in development and the study is expected to begin in December 2015/January 2016.

SH119 BRT

In April 2015, DRCOG TIP funding was also awarded for the State Highway (SH) 119 BRT Study between Boulder and Longmont. The \$1.25M study will be led by RTD with the support and involvement of all jurisdictions along the corridor, including the City of Boulder. RTD will be issuing an RFP for the Hwy 119 BRT Study in early 2016. The purpose of the study is to:

- Conduct preliminary engineering work for the project;
- Receive National Environmental Policy Act (NEPA) clearance; and
- Conduct a Phase I tolling feasibility study.

RTD is showing a demonstrated funding commitment for this project by including it as a 2021 construction project (pending matching funds) in its draft Strategic Business Plan that will be adopted by the RTD Board in August 2015.

Transportation Demand Management (TDM)

TDM strategies offer programs and options designed to influence travel behavior and make more efficient use of existing transportation facilities. The city has been involved with TDM programs since the early 1990s with the Eco Pass proving to be a valuable tool in promoting mode shift.

Existing Eco-Pass Program

In 2015, the Neighborhood Eco Pass Program experience significant growth. Although one neighborhood was unable to raise the necessary funds, two neighborhoods that had previously dropped out of the program were revived and 6 new neighborhoods were added. Overall the

number of eligible households increased from 6,239 to 6,638. The total 2015 RTD contract was \$687,000 and the city provided \$230,000 in subsidies.

The Business Eco Pass Program in CAGID/BID also experienced expansion in 2015. Since 2013, the number of employees eligible to receive CAGID/BID Eco Passes has increased from 6,392 to 6,854 with 1,186 employers now present in the district.

The Business Program outside of CAGID also grew in 2015. In partnership with GO Boulder, Boulder Transportation Connections signed up 15 new businesses with a total of 450 new employees eligible to receive Eco Passes. With an additional nine businesses in the second year of rebates, approximately \$32,000 in rebates has been provided to these newly participating businesses.

Community Wide Eco-Pass

Under direction from the Policy Advisory and Technical Advisory Committees, city and county staffs are working with a consultant to establish transit level of service estimates for areas throughout the county. This analysis aims to understand how pass pricing may vary due to the quality of transit service and also how much each municipality within Boulder County would pay based on population and pass pricing. City and County staff will be issuing an RFP for a consultant to use the transit level of service analysis to establish pricing zones and assess the most viable funding strategies or mechanism for each scenario option considered: resident-only, employee-only, or all residents, employees, and students; and for which geographic context. It is estimated the both analyses will be completed in the first quarter of 2016. The PAC and TAC will then develop a proposal for the RTD staff and Board on a feasible community-wide Eco Pass program.

On July 14, 2015, members of the Boulder City Council discussed potential uses of revenue raised by a possible Occupational Privilege Tax (OPT) or “head tax”. In this discussion, there was support for using the funds for transportation, and specifically for the Community-wide Eco Pass program by some council members. The rationale for this concept is that Boulder is an employment center and approximately half of individuals that work in Boulder live outside of the city and that this situation results in additional demand for local and regional transportation infrastructure, programs and services.

The Community-wide Eco Pass Policy Advisory and Technical Advisory Committees have discussed the use of a head tax to fund the employee portion of a city or county-wide Eco Pass program. For the City of Boulder, it was estimated that an employee-only pass program would cost about \$5.86m per year. This cost includes both the Eco Passes and the mid-range estimate for additional transit service needed to meet the new demand and provide higher transit level of service. It was estimated that the cost to replace the fare box for an employee-only program is \$5.38m and the additional transit service needs could range from approximately \$340,000 to \$940,000, with a mid-point of \$476,000.

City Council on Aug. 4 decided to not pursue the “head tax” at this time.

Currently, the Advisory Committees in partnership with RTD are working with consultants to further analyze transit level of service throughout the County, pass pricing, and possible finance mechanisms. It is anticipated that this work will be concluded in early 2016. After completion of the analyses, the Advisory Committees will engage in public outreach and stakeholder process to communicate the results and investigate the feasibility of implementation with the RTD Board and staff.

If OPT revenues are not used to fund an employee-only program or a portion of a larger program that includes employees, residents and university students, there are a variety of other transportation uses. For example, revenue from a head tax could be used to improve regional and local transit service or provide new or expanded transportation demand management or first and final mile programs.

Van/carpool program

In 2014, GO Boulder initiated a new subsidy program to encourage vanpooling. Under the Vanpool Recruitment and Retention Program, anyone using a vanpool to commute into or out of Boulder is eligible to receive a \$20 per month subsidy. Currently 150 individuals qualify for the subsidy from both the Denver-based “Way to GO” program and the North Front Range MPO’s VanGo program. In the fall of 2015, GO Boulder and Boulder Transportation Connections will be conducting a new outreach and marketing campaign to increase awareness of the subsidy program. This campaign will target specific large employers in the Flatirons Park and Gunbarrel areas that have lower transit levels of service.

TDM Plans for new development

Under the Access Management and Park Strategies (AMPS) work program, city staff continues to work on refining a TDM Plan ordinance for new developments. Based on feedback from Boards and Council, staff is working on two options for how an ordinance could be implemented. The first option is to examine a city-wide ordinance for new developments. The second option is based on using the Boulder Junction TDM Access District model in existing districts and then creating a separate ordinance for new developments proposed outside of those districts.

At this time, the TDM Group staff of the AMPS program is teamed up with the Parking Code Group to conduct stakeholder and public process in tandem. Based on feedback from the development and business communities, it became clear that the TDM Plan ordinance process needed to coincide with proposed changes in parking codes, as the supply of parking is directly connected to the level of TDM service necessary for a new development to function and to minimize the impact on the transportation system. The stakeholder process is scheduled to begin in August 2015. At the November 2015 AMPS study session, staff will return with a summary of the stakeholder process and recommendations on both the TDM Plan ordinance and parking code recommendations.

Funding

Impact Fee Study progress report

City staff is in the process of hiring consultants to examine impact fees, including a possible multi-modal impact fee. City staff will continue to update Council once consultant work has begun.

Integration with other Sustainability Initiatives

Under the Sustainability Framework, the city has established the expectation that all planning efforts will be coordinated across the city organization and contribute to the city's goals of long term sustainability and GhG reduction. The TMP established an organizational structure that includes a biweekly interdepartmental staff team and monthly executive team meetings to coordinate sustainability planning efforts. The bi-weekly staff meeting has been changed to have an alternating focus on the BVCP and the other planning projects, reflecting the upcoming focus on the BVCP update. Transportation staff is leading the East Arapahoe Transportation Project and is actively involved with the Civic Center effort, Housing Boulder, AMPS, Climate Commitment and the Boulder Valley Comprehensive Plan update. The 2014 TMP and the GhG inventory work conducted through the TMP continue to inform each of these planning efforts.

Measurement and Monitoring

The TMP places a high priority on measurable objectives and tracking performance toward accomplishing the community's transportation goals. These are reported every other year in the [Transportation Report on Progress](#) while a variety of materials are on the [Transportation Metrics Web](#) page. Brief summaries of the different metrics areas are presented below while graphs and a more detailed discussion are contained in **Attachment B**.

TMP Measurable Objectives:

Performance of the city's multimodal street system is evaluated using numerous different measures including traffic volumes, peak hour intersection level of service, travel time data collected on arterial roadways as well as measures regarding bicycle, pedestrian, and transit. Bike counts are collected at 25 on- and off-street locations and an annual bike parking survey is done for the Downtown area. The Boulder Valley Employee Survey is one of two primary surveys of travel behavior conducted since 1990 while the Downtown Employee Survey has been conducted periodically since 1995.

Vehicle Counts

Traffic volume data is collected by three yearly count programs: the Arterial Count Program, Boulder Valley Count Program, and Turning Movement Count Program. The results of the roadway system evaluation indicate that traffic conditions and operational performance have remained relatively stable over the past 10 years. Traffic volumes on the City's arterial roadways have generally decreased over time despite the growth in population and employment. 10-year traffic count volumes from the Arterial Count Program shows that, on average, traffic volumes on the City's arterial roadways have been decreasing by approximately 1.1% annually. The LOS evaluation and travel time studies show similar patterns, as vehicle delay and travel times have not increased in recent years. The percentage of intersections at overall LOS E or F has remained

around 19-21% during the last several LOS updates but dropped to 11% in the 2015 report. Travel times on the six arterial corridors measured have remained relatively steady over the past 10 years.

Bike Counts

Since 2007 bicycle parking data has been collected and analyzed for downtown Boulder. During the period of the Downtown bike parking counts, bike parking has gone up significantly and this increase has largely been accommodated through almost an 80 percent increase in bike parking racks.

Since 1996, the city began installing a set of automated bike count stations. Including several stations operated by the Colorado Department of Transportation, there are currently 25 bike count locations in the Boulder Valley, include three on-street stations and 22 counters on bike path locations. The city's automated bike count data has been the subject of several academic research projects, including an effort to predict annual bike ridership from limited data and a study of weather factors affecting bike ridership. Over the period of automated bike counts, there has not been a significant increase in bike counts. This is not consistent with the increase in resident bike mode share shown in the Boulder Valley Employee Survey, where bike mode share has increased from 13 percent in 2001 to 18 percent in 2014. This might reflect the location of the count stations, which might be counting older parts of the bike system while recent improvements have made other routes or corridors more attractive.

Surveys

With the 1989 TMP's call for a better understanding of travel in the Boulder Valley, two primary surveys were created to measure travel: the travel diary survey producing the *Mode Shift Report* to measure how Boulder residents travel and the *Boulder Valley Employee Survey* (BVES) to measure travel by both resident and non-resident employees in the Boulder Valley. As more than half of Boulder employees commute in from outside the Boulder Valley, trips by non-residents are a large share of the travel puzzle. The 2014 BVES shows continued progress in reducing the single-occupancy vehicle (SOV) mode share of the work commute. From 1991 to 2014, SOV mode share for Boulder Valley employees commute trips declined from 73 percent to 67.8 percent. The Executive Summary of the 2014 BVES is included in **Attachment C**. For the Downtown Employee Transportation Survey, SOV mode share for the day of the survey was 43 percent in 2014, unchanged from 2011. Comparable surveys were conducted for University of Colorado (CU) faculty and staff, Boulder Valley School District faculty and staff, and City of Boulder employees. Results for all five groups are included in the comparison report available on the city's [Transportation Use Measurements](#) webpage.

The travel diary survey is schedule for the fall of 2015 and preparations are underway by staff and consultants. The 2015 survey will be conducted using paper travel logs as in the past but will also pilot a smart phone version of the survey. The city held an RFP process and has contracted with DV mobile of Denver to develop the first iteration of a smart phone app for the travel diary survey. The app is being developed to allow for enhancement and data collection in a number of upcoming events, including Winter Bike to Work day and Bike to Work month.

TMP Measurable Objectives

The 2014 TMP modified the plan's existing measurable objectives by expanding the number from six to nine and continues the Transportation Metrics program of reporting the results of our efforts to the community. Relative to the TMP measurable objectives, the recent LOS report shows a significant improvement and that the system is well under the "no more than 20 percent congested" TMP objective. Continued reduction in the resident SOV mode share for the work commute will contribute to meeting the TMP objective of a "20 percent SOV mode share" for all trips and a "20 percent reduction in resident per-capita VMT. The lack of SOV mode share reduction for non resident employees confirms the identified challenge of effecting mode shift in these trips. As part of this program, both the *Safe Streets Boulder* and *Transportation Report on Progress* are scheduled to be updated in 2015 and will provide a comprehensive report to the community of progress in these areas.

The three new objectives relate to increasing safety, increasing the share of residents living in complete "15 minute" walkable neighborhoods, and reducing resident and non-resident per capita VMT.

Safety

While the first *Safe Streets Boulder* report was produced in 2012, safety was not a TMP objective until the 2014 TMP. The Vision Zero strategy adopted as a TMP objective has been adopted by a number of cities across the world and was recently promoted by the US Department of Transportation in the Mayors' Challenge for Safer People, Safer Streets. The city is participating in this challenge and staff has begun the process of updating and expanding our accident analysis to include accidents for all modes. The proposed metrics for the TMP safety objective are:

- Total crashes, fatalities, and serious injuries
- Total bike crashes, fatalities, and serious injuries
- Total pedestrian crashes, fatalities, and serious injuries

In order to work towards achieving our TMP safety goal, the *Safe Streets Boulder Report* will review and analyze bike, pedestrian, and motor vehicle crashes. The report will provide a more detailed look into crash trends and how they can be mitigated and will evaluate:

- Injury severities
- Crashes vs. mode share and/or miles traveled
- Locations of crashes (intersection, driveway access, parking lot, crosswalk, etc.)
- Citations and driver actions
- Demographics of persons involved in crashes
- Crashes by time of day, day of week, and month of year
- Crash types
- High crash locations

15 Minute Neighborhoods

The 15 minute neighborhood access tool developed as part of the TMP process is being developed into a Web based tool that will be useful to a broader set of city staff and potentially the public. Staff and consultants have been working with the city's Information Technology (IT)

department to address security and compatibility concerns. A scope of work has been defined and approved by IT and development work should be completed by the end of August.

Per Capita Vehicle Miles of Traffic

Developing an objective for VMT per capita provides residents and employees with a goal that resonates on a more personal level and allows a connection between their day-to-day travel choices and overall community goals. To achieve a 20 percent reduction in VMT from current levels, daily VMT needs to be reduced to 7.3 miles for residents for all trips and to 11.4 miles (one-way work trip) for non resident employees.

According to the 2012 Modal Shift Report the average VMT per capita for Boulder residents is 11.2 miles. According to the 2011 Boulder Valley Employee Survey, the average VMT per capita for work trips (one-way) by non-resident employees is 15.3 miles, an increase from the 14.4 miles reported as part of the TMP.

V. PUBLIC PROCESS

As was discussed earlier in this memo, TMP implementation efforts continue to involve our agency partners and the community in a variety of expanding ways. These include the upcoming public meetings, walk/bike audits, transit planning coordination with agency partners, and the active use of Inspire Boulder and other social media to publicize various TMP implementation efforts. More detailed information is available at: www.bouldertmp.net and www.goboulder.net.

VI. NEXT STEPS

The TMP remains a dynamic, living document with implementation guided by the [TMP Action Plan](#). Transportation staff continues to integrate the TMP with city-wide planning initiatives. Staff will continue work in all of the TMP focus areas and will incorporate feedback from TAB into the council study session materials for Aug. 24 2015.

Staff will continue with the on-going community engagement and provide future check-ins with Boards and Council at key milestones. Upcoming items include the public hearing for the Living Lab Phase II projects in September, AMPS City Council study session briefing in Dec. and the next TMP 6-month progress update in Feb. 2016.

For more information and updates regarding the 2014 Transportation Master Plan, please visit: www.bouldertmp.net

ATTACHMENTS

- A. Living Lab Evaluation Matrix
- B. Transportation Metrics Review
- C. 2014 Boulder Valley Employee Survey Executive Summary

**Living Lab - Phase II Corridor Evaluation
"Before" Data Summary
July 2015**





Living Lab – Phase II Corridor Evaluation

Evaluation Criteria	Data Collection	Data Collection Method	Data Analyzed	Before Data	After Data 1 month	After Data 3 months	After Data 6 months	After Data 12 months
SAFETY								
Crash History	Intersections and segments along Iris, Folsom, 63rd	Review City of Boulder Accident Reports	<ul style="list-style-type: none"> Fatal & serious injury crashes Crashes involving bicyclist or pedestrian Crash types (rear end, approach turn, right angle, etc.) 	Yes	✓	✓	✓	✓
Right Turn Treatments & Turning Movement Conflicts	Iris & Broadway Folsom & Canyon Folsom & Pearl 63 rd & Spine	Video Observation (AM & PM Peak Hour)	<ul style="list-style-type: none"> Bicycle, pedestrian, and vehicle interactions in right turn treatments Turning motorist failure to yield to pedestrian or bicycle Compliance with signage and striping treatment 	No		✓		✓
VEHICLES								
Volume	Iris e/o 19 th Folsom w/o Canyon Folsom & Pearl Folsom n/o Bluff 63 rd s/o Longbow	Jamar, Miovision, Wavetronix	<ul style="list-style-type: none"> Counts of traffic volume: 24 hour, AM, Noon or PM peak hour 	Yes		✓		✓
Speed	Iris e/o 19 th Folsom n/o Bluff 63 rd s/o Longbow	Jamar, Miovision, Wavetronix	<ul style="list-style-type: none"> Average daily speed of vehicles 85th Percentile speed Speed limit 	Yes		✓		✓

Evaluation Criteria	Data Collection	Data Collection Method	Data Analyzed	Before Data	After Data 1 month	After Data 3 months	After Data 6 months	After Data 12 months
VEHICLES – cont’d								
Traffic Neighborhood Diversion	Iris Corridor: Broadway, 14 th , 15 th , 16 th , Iris Ct., 17 th , 19 th , Hermosa/22 nd , 25 th , Folsom <i>To be collected:</i> Glenwood, Grape, Hawthorne, Kalmia, Linden, Twin Lakes	Jamar, Miovision, Wavetronix	<ul style="list-style-type: none"> Counts of traffic volume: 24 hour, AM, Noon or PM peak hour 	Yes		✓		✓
Left Turn from Side Streets	Iris & 16 th Iris & 22 nd	Video Observation and Turning Movement Counts	<ul style="list-style-type: none"> Measure of delay in executing left turn movements from side streets along Iris corridor 	Yes		✓		✓
Corridor Travel Time	Iris Corridor Folsom Corridor 63 rd Corridor	Field Data Collection or Acyclica Data	<ul style="list-style-type: none"> Average AM & PM peak driving time by segment for each corridor 	Yes	✓	✓	✓	✓
Level of Service (LOS) Analysis	Iris Corridor Folsom Corridor 63 rd Corridor	Turning Count Movement Data (AM & PM Peak Hour)	<ul style="list-style-type: none"> Synchro capacity analysis for each intersection turning movement using data collected during City turning movement counts 	Yes				✓
Left Turn Queue Length	Iris & Broadway Folsom & Canyon Folsom & Pearl	Video Observation (PM Peak Hour)	<ul style="list-style-type: none"> Average & maximum queue Number of times left-turn queue blocks through lane 	Yes		✓		✓
BICYCLES								
Volume	Iris & Broadway 1400 Block Iris* Iris & 19 th Iris & Folsom Kalmia & 16 th * Folsom s/o Arapahoe* Folsom & Arapahoe Folsom s/o South* Folsom & Canyon Folsom & Pearl Folsom & Pine Folsom s/o Canyon* Folsom & Valmont 63 rd s/o Spine*	<p>Before: Miovision counters (AM, Noon, PM Peak and Daylight* Hours) Video Observation (AM & PM Peak Hour)</p> <p>After: 24 Hour Counters* Video Observation (AM & PM Peak Hour)</p>	<ul style="list-style-type: none"> Bicycle volume by direction and time of day 	Yes	✓	✓	✓	✓

Evaluation Criteria	Data Collection	Data Collection Method	Data Analyzed	Before Data	After Data 1 month	After Data 3 months	After Data 6 months	After Data 12 months
BICYCLES – cont'd								
Demographics	Folsom & Pearl Iris & Broadway 63 rd & Spine	Video Observation (AM & PM Peak Hour)	• Ratio of male, female, and children cycling on the road	Yes		✓		✓
PEDESTRIANS								
Crossing Volume	Folsom & Arapahoe Folsom & Canyon Folsom & Pearl Folsom & Pine Folsom & Valmont Iris & Broadway Iris & 19 th Iris & Folsom 63 rd & Spine	Miovision counters (AM, Noon, PM Peak Hour) Video Observation (AM & PM Peak Hour)	• Number of crossing pedestrians by direction and time of day	Yes		✓		✓
TRANSIT								
Ridership	Transit Stops on Iris and 63 rd Corridors	RTD data	• Number of passengers boarding and alighting at stops along rightsized corridors	Yes				✓
Bus Transition From Buffer to Travel Lane	Iris & 22 nd /Hermosa RTD stop	Observation (PM peak)	• Maximum and average length of time buses wait to merge	No		✓		✓
Transit and Bicycle Interactions	Iris & 22 nd /Hermosa RTD stop	Observation (PM Peak)	• Interactions and yielding behaviors of cyclists, transit vehicles in buffer, and motorists in travel lane	No		✓		✓
FACILITY DESIGN								
Overall Maintenance	Iris Corridor Folsom Corridor 63 rd Corridor	Public Works Department	• Snow, ice, and debris removal along corridors	No		✓	✓	✓
Emergency Response Times	Iris Corridor Folsom Corridor 63 rd Corridor	Input from Boulder Fire-Rescue Department	• Response time of emergency vehicles along corridors • Ability of emergency vehicles to maneuver within corridors	No	✓	✓	✓	✓
PUBLIC FEEDBACK								
Public Feedback	All Corridors	Open Houses, Online Feedback, Popup Demonstrations	• Online and community feedback	Yes	✓	✓	✓	✓

Evaluation Criteria: Crash History

Folsom Street Crash Summary

Intersection/Segment	Total Crashes				Correctable Crashes	Ped	Bike	Fatal	Serious Injury	
	2012	2013	2014	Total						
Folsom St and Valmont Rd	6	5	6	17	2	12%	0	2	0	0
Folsom St and Bluff St	1	0	3	4	0	0%	0	0	0	0
Folsom St and Mapleton Ave	0	0	1	1	0	0%	0	1	0	0
Folsom St and Pine St	9	8	4	21	2	10%	0	2	0	1
Folsom St and Spruce St	5	5	0	10	0	0%	0	1	0	0
Folsom St and Pearl St	11	7	8	26	3	12%	0	4	0	0
Folsom St and Walnut St	1	3	1	5	0	0%	1	0	0	0
Subtotal	33	28	23	84	7	8%	1	10	0	1
Folsom St and South St	1	2	0	3	1	33%	0	2	0	0
Folsom St: South St to Canyon	3	1	0	4	1	25%	0	2	0	0
Subtotal	37	31	23	91	9	10%	1	14	0	1
Folsom St and Canyon Blvd	16	28	25	69	0	0%	3	6	0	2
Folsom St: Canyon Blvd to Goss St	1	2	0	3	1	33%	0	1	0	0
Folsom St and Goss St	5	0	0	5	1	20%	0	0	0	0
Folsom St and Grove St	2	2	2	6	0	0%	0	2	0	0
Folsom St and Arapahoe Ave	24	21	23	68	5	7%	1	6	0	0
Total	85	84	73	242	16	7%	5	29	0	3
Folsom St: Arapahoe to Colorado	7	3	1	11	0	0%	2	5	0	1
Total	92	87	74	253	16	6%	7	34	0	4

Evaluation Criteria: Crash History

Iris Avenue Crash Summary

Intersection/Segment	Total Crashes				Correctable Crashes	Ped	Bike	Fatal	Serious Injury	
	2012	2013	2014	Total						
Iris Ave and 13th St	3	0	1	4	2	50%	0	0	0	
Iris Ave and 14th St	1	1	0	2	0	0%	0	0	0	
Iris Ave and 15th St	1	1	1	3	1	33%	1	0	0	
Iris Ave and 16th St	2	5	4	11	4	36%	0	0	0	
Iris Ave and Iris Ct	0	1	1	2	0	0%	0	0	0	
Iris Ave and 17th St	1	0	0	1	1	100%	0	0	0	
Iris Ave and 19th St	4	2	1	7	0	0%	0	2	0	
Iris Ave and 22nd St	1	0	0	1	0	0%	0	0	0	
Iris Ave and Hermosa Dr	0	0	2	2	1	50%	0	0	0	
Iris Ave and 25th St	1	0	1	2	0	0%	0	1	0	
Iris Ave and Folsom St	4	12	8	24	3	13%	0	6	0	
Total	18	22	19	59	12	20%	1	9	0	1

3/yr

63rd Street Crash Summary

Intersection/Segment	Total Crashes				Correctable Crashes	Ped	Bike	Fatal	Serious Injury
	2012	2013	2014	Total					
63rd St and Lookout Rd	11	4	8	23	0	0%	1	0	0
63rd St and Spine Rd	6	7	5	18	0	0%	0	1	0
63rd St and Longbow Dr	2	0	1	3	0	0%	0	0	0
63rd and Gunbarrel/Nautilus	2	0	1	3	3	100%	0	0	0
Total	21	11	15	47	3	6%	1	1	0

Additional data:

Safety Analysis for Phase II Projects (5-19-15)

Evaluation Criteria: Vehicle Volume and Speed

Corridor Volumes and Speed

Count Location			Month-Year	ADT Weekday (vpd)	Average Speed (mph)	85th Percentile Speed (mph)	Speed Limit (mph)	AM Peak (vph)	Noon (vph)	PM (vph)
Iris Avenue	e/o	19th Street	Mar-15	22,900	35	39	35			
Iris Avenue	w/o	16th Street	Jul-15	17,410	35	39	35			
Folsom Street	n/o	Bluff Street	Apr-15	15,780	35	39	30			
Folsom Street	s/o	Pearl Street	Apr-15					1,218	1,298	1,601
Folsom Street	n/o	Canyon Blvd	Jun-15	18,970	29	34	30			
63rd Street	s/o	Longbow Drive	May-15	11,090	41	45	40			

ADT = average daily traffic

vpd = vehicles per day

mph = miles per hour

vph = vehicles per hour

Evaluation Criteria: Traffic Neighborhood Diversion

Iris - Nearby Street Volumes and Speed

Count Location			Month-Year	ADT-Weekday (vpd)	Average Speed (mph)	85th Percentile Speed (mph)	Speed Limit (mph)	
Broadway	n/o	Iris Ave	May-15	22,600	33	37	35	
Broadway	s/o	Iris Ave	Mar-15	24,260	33	38	30	
16th Street	n/o	Iris Ave	May-15	1,240	20	24	25	
19th Street	n/o	Iris Ave	May-15	6,830	27	32	30	
19th Street	s/o	Iris Ave	May-15	4,900	26	29	30	
Folsom Street	s/o	Iris Ave	May-15	10,680	29	31	30	
Glenwood	w/o	Folsom St	<i>To be collected prior to Iris installation</i>					
Grape	w/o	Folsom St	<i>To be collected prior to Iris installation</i>					
Hawthorne	w/o	Folsom St	<i>To be collected prior to Iris installation</i>					
Kalmia	w/o	16th St	<i>To be collected prior to Iris installation</i>					
Kalmia	w/o	Catalpa Wy	<i>To be collected prior to Iris installation</i>					
Linden	w/o	26th St	<i>To be collected prior to Iris installation</i>					
Twin Lakes Rd.	n/o	Idylwild Ct.	<i>To be collected prior to Iris installation</i>					

Count Location			Month-Year	AM Peak (vph)	Noon (vph)	PM (vph)
13th Street	s/o	Iris Avenue	Jan-15	14	--	22
14th Street	s/o	Iris Avenue	Jan-15	7	--	17
15th Street	s/o	Iris Avenue	Jan-15	17	--	23
16th Street	n/o	Iris Avenue	Jan-15	106	--	101
16th Street	s/o	Iris Avenue	Jan-15	25	--	27
Iris Ct.	n/o	Iris Avenue	Jan-15	11	--	12
17th Street	n/o	Iris Avenue	Jan-15	6	--	11
22nd Street	n/o	Iris Avenue	Jan-15	27	--	41
Hermosa Street	s/o	Iris Avenue	Jan-15	10	--	13
25th Street	s/o	Iris Avenue	Jan-15	12	--	13

Evaluation Criteria: Left Turn from Side Streets

See "Iris Side Street Analysis Summary 6-1-15"

Evaluation Criteria: Corridor Travel Time

Travel Time by Corridor

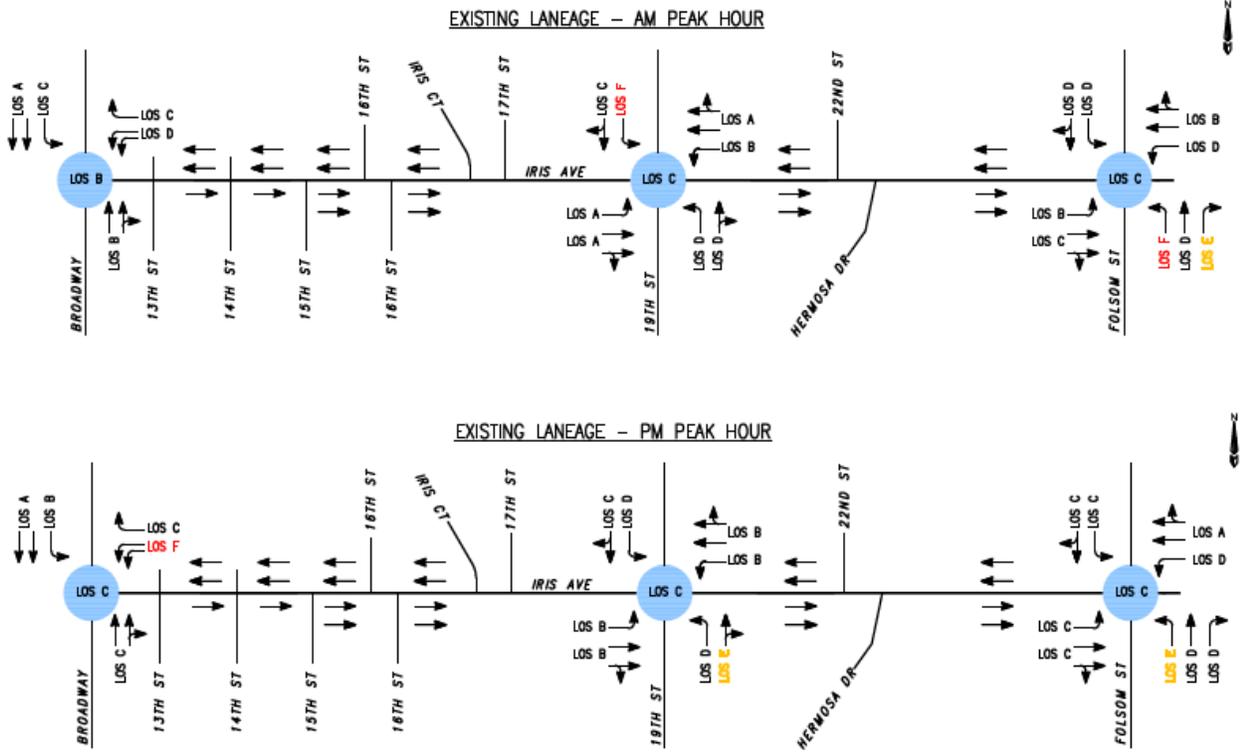
Corridor	Month-Year	Direction	Average Travel Time (min)	
			AM	PM
Iris (Broadway - Folsom)	Nov-15	eastbound	2:33	2:26
	Nov-15	westbound	2:42	2:54
Folsom (Arapahoe - Valmont)	Nov-15	northbound	2:25	3:31
	Nov-15	southbound	2:56	3:12
63rd (Lookout to Gunbarrel)	Jul-15	northbound	1:11	1:17
	Jul-15	southbound	1:03	1:14

Additional data:

Technical Analysis Memo 4-29-15

Evaluation Criteria: Level of Service (LOS)

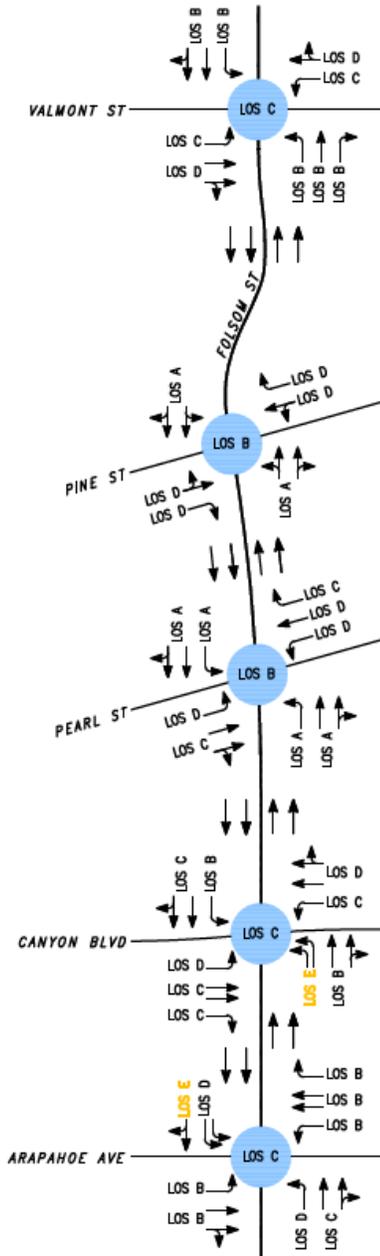
Iris Ave - Broadway to Folsom



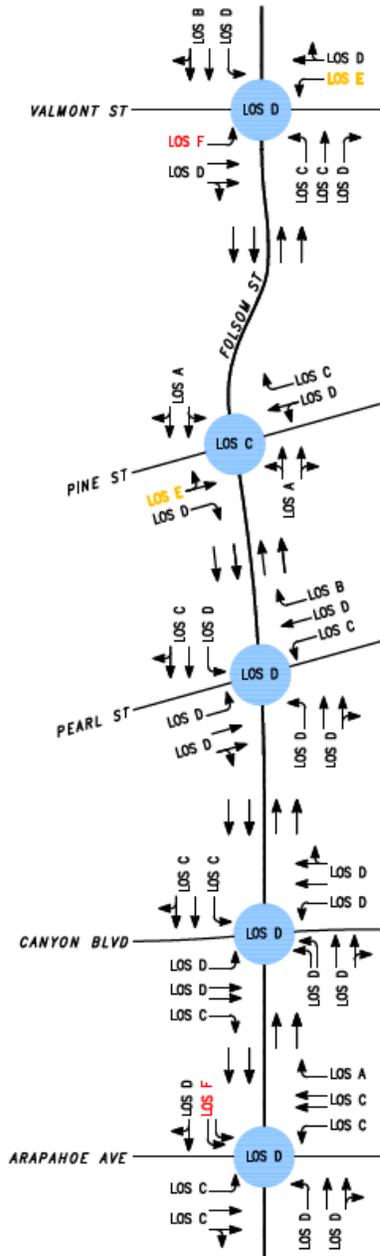
Evaluation Criteria: Level of Service (LOS)

Folsom St - Arapahoe Ave to Valmont St

EXISTING LANEAGE – AM PEAK HOUR



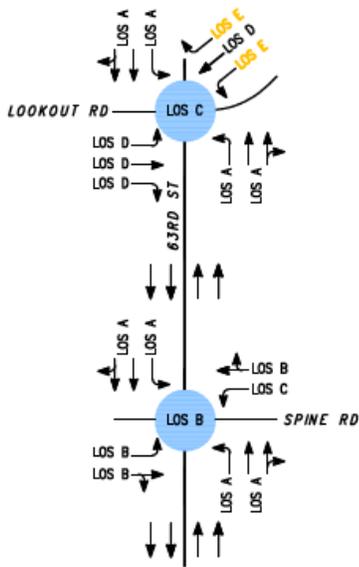
EXISTING LANEAGE – PM PEAK HOUR



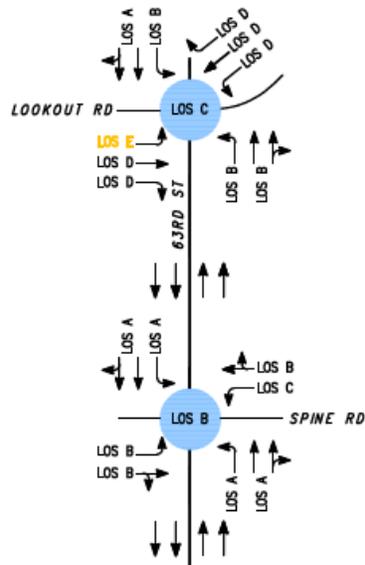
Evaluation Criteria: Level of Service (LOS)

63rd St - Lookout Rd to Spine Rd

EXISTING LANEAGE – AM PEAK HOUR



EXISTING LANEAGE – PM PEAK HOUR



Evaluation Criteria: Left Turn Queue Length

PM Peak Hour Left Turn Queue Length

Intersection	Direction	Date	Number Left Turn Lanes	# of Vehicles in Left Turn Queue		% Through Lane Blocked by LT Lane	% of PM Peak Hour Left Turn Lane Did Not Clear During Cycle
				Average	Maximum		
Folsom St and Canyon Blvd	NB	Apr-15	2	4.5	11	0%	0%
Folsom St and Canyon Blvd	SB	Apr-15	1	3.7	9	16%	20%
Folsom St and Pearl St	NB	Apr-15	1	2.3	8	32%	0%
Iris Ave and Broadway Ave	WB	May-15	2	18.5	26	0%	89%

NB = northbound

SB = southbound

WB = westbound

Evaluation Criteria: Bicyclist Volume and Demographics

Bicyclists Riding on Roadways During "Daylight" Hours (6am -9pm)

Iris Avenue

Location	Date	Time	Eastbound Bicycles	Westbound Bicycles	Total Bicycles
1400 Block Iris	7/1/2015	6:00 AM - 9:00 PM	89	72	161

Folsom Street

Location	Date	Time	Northbound Bicycles	Southbound Bicycles	Total Bicycles
Folsom north of Pine	6/30/2015	6:00 AM - 9:00 PM	394	422	816
Folsom south of South	6/30/2015	6:00 AM - 9:00 PM	366	368	734

Note: Bicycle volumes to be collected on Kalmia and 63rd prior to Iris and 63rd installations.

24 Hour Automated Eco-Counter Roadway Bicyclist Volume by Year

Folsom at Boulder Creek (south of Arapahoe)

Month	2012	2013	2014	2015
January	10,618	13,855	9,395	<i>no data</i>
February	11,184	14,018	10,052	10,242
March	20,183	9,139	15,990	16,832
April	26,224	<i>no data</i>	22,341	21,119
May	24,175	2,385	20,505	15,924
June	23,186	23,479	24,545	23,180
July	23,333	20,572	21,437	
August	29,501	22,694	14,076	
September	37,102	12,491	<i>no data</i>	
October	30,547	30,481	25,908	
November	22,573	19,140	11,629	
December	13,545	8,718	7,779	

Evaluation Criteria: Bicyclist Volume and Demographics

Summary: Bicyclists Riding on Roadways by Intersection

Intersection	Date	Cyclists on the Road		
		Total AM	Total PM	Total Noon
Iris @ Folsom	6/11/2014	14	13	8
Iris @ 19th	5/29/2014	16	10	8
Iris @ Broadway	5/26/2015	13	4	--
Folsom @ Valmont	7/9/2013	75	82	34
Folsom @ Pine	6/10/2014	88	94	48
Folsom @ Pearl	4/28/2015	61	102	34
Folsom @ Canyon	8/7/2014	55	107	39
Folsom @ Arapahoe	10/21/2014	85	148	63
63rd @ Spine	6/26/2015	16	6	--

Evaluation Criteria: Bicyclist Volume and Demographics

Iris Avenue

Intersection	Date	Hour	Bicycles on Road		Total
			Eastbound	Westbound	
Iris @ Folsom	6/11/2014	AM	9	5	14
		Noon	2	6	8
		PM	8	5	13
		Total	19	16	35
Iris @ 19th	5/29/2014	AM	9	7	16
		Noon	6	2	8
		PM	8	2	10
		Total	23	11	34
Iris @ Broadway	5/26/2015	AM	10	3	13
		PM	2	2	4
		Total	12	5	17

Folsom Street

Intersection	Date	Hour	Bicycles on Road		Total
			Northbound	Southbound	
Folsom @ Valmont	7/9/2013	AM	14	61	75
		Noon	17	17	34
		PM	55	27	82
		Total	86	105	191
Folsom @ Pine	6/10/2014	AM	23	65	88
		Noon	26	22	48
		PM	62	32	94
		Total	111	119	230
Folsom @ Pearl	4/28/2015	AM	10	51	61
		Noon	18	16	34
		PM	76	26	102
		Total	104	93	197
Folsom @ Canyon	8/7/2014	AM	18	37	55
		Noon	19	20	39
		PM	62	45	107
		Total	99	102	201
Folsom @ Arapahoe	10/21/2014	AM	17	68	85
		Noon	36	27	63
		PM	113	35	148
		Total	166	130	296

Evaluation Criteria: Bicyclist Volume and Demographics

63rd Street

Intersection	Date	Hour	Bicycles on Road		
			Northbound	Southbound	Total
63rd @ Spine	6/26/2015	AM	11	5	16
		PM	3	3	6
		Total	14	8	22

Demographics

Corridor	Male	Female	Family
Iris (e/o 19th)	76%	24%	0%
Folsom (n/o Pine)	72%	28%	4%
63rd (s/o Spine)	73%	27%	0%

Evaluation Criteria: Pedestrian Crossing Volume

Crossing Pedestrians by Intersection - Summary

Intersection	Date	Total AM	Total PM	Total Noon
Iris @ Folsom	6/11/2014	14	7	13
Iris @ 19th	5/29/2014	15	14	5
Iris @ Broadway	5/26/2015	69	33	--
Folsom @ Valmont	7/9/2013	14	18	10
Folsom @ Pine	6/10/2014	7	15	4
Folsom @ Pearl	4/28/2015	21	38	13
Folsom @ Canyon	8/7/2014	14	57	23
Folsom @ Arapahoe	10/21/2014	35	91	59
63rd @ Spine	6/25/2015	31	6	--

Evaluation Criteria: Pedestrian Crossing Volume

Iris Avenue

Intersection	Date	Hour	Pedestrians				Total
			Southbound	Westbound	Northbound	Eastbound	
Iris @ Folsom	6/11/2014	AM	5	2	5	2	14
		Noon	3	3	7	0	13
		PM	2	1	1	3	7
		Total	10	6	13	5	34
Iris @ 19th	5/29/2014	AM	4	5	4	2	15
		Noon	2	2	0	1	5
		PM	4	4	1	5	14
		Total	10	11	5	8	34
Iris @ Broadway	5/26/2015	AM	24	18	12	15	69
		PM	8	8	12	5	33
		Total	32	26	24	20	102

Evaluation Criteria: Pedestrian Crossing Volume

Folsom Street

Intersection	Date	Hour	Pedestrians				Total
			Southbound	Westbound	Northbound	Eastbound	
Folsom @ Valmont	7/9/2013	AM	8	6	7	6	14
		Noon	2	8	5	3	10
		PM	12	6	13	6	18
		Total	22	20	25	15	42
Folsom @ Pine	6/10/2014	AM	4	3	2	4	7
		Noon	1	3	2	5	4
		PM	8	7	2	3	15
		Total	13	13	6	12	26
Folsom @ Pearl	4/28/2015	AM	10	11	10	11	21
		Noon	8	5	6	20	13
		PM	24	14	15	43	38
		Total	42	30	31	74	72
Folsom @ Canyon	8/7/2014	AM	9	5	12	10	14
		Noon	7	16	19	12	23
		PM	22	35	17	40	57
		Total	38	56	48	62	94
Folsom @ Arapahoe	10/21/2014	AM	16	19	7	38	35
		Noon	23	36	37	55	59
		PM	39	52	38	81	91
		Total	78	107	82	174	185

Evaluation Criteria: Pedestrian Crossing Volume

63rd Street

Intersection	Date	Hour	Pedestrians				Total
			Southbound	Westbound	Northbound	Eastbound	
63rd @ Spine	6/25/2015	AM	14	2	3	12	31
		PM	1	3	1	1	6
		Total	15	5	4	13	37

Evaluation Criteria: Transit Ridership

Average Daily Transit Boardings and Alightings, January 1, 2015 - May 15, 2015

Iris Corridor

Stop Location	Stop ID	Route(s)	Average Daily		AM Peak		PM Peak	
			Boardings	Alightings	Boardings	Alightings	Boardings	Alightings
Iris & 13th	14595	208	30.31	7.83	5.19	2.02	9.44	2
Iris & Broadway	14596	208	4.61	3.68	0.77	0.07	1.14	2.64
Iris & 16th	14597	208	3.87	3.56	2.5	0.14	0	1.18
Iris & Iris Ct	14598	208	4.95	1.43	1.38	0.07	0.89	0.77
Iris & 19th	14599	208	0.96	5.32	0.37	0.54	0.2	2.39
Iris & 19th	14600	208	0.96	0.96	1.28	0.07	0.13	0.76
Iris & 22nd	14601	208	12.22	0.73	5.71	0.13	1.98	0.27
Iris & Folsom	14611	208	1.38	7.79	1.01	0.52	0.25	4.42
Iris & Folsom	14612	208	0.33	1.04	0.13	0	0	0.47
Iris & Hermosa	14613	0	0	0	0	0	0	0

63rd Corridor

Stop Location	Stop ID	Route(s)	Average Daily		AM Peak		PM Peak	
			Boardings	Alightings	Boardings	Alightings	Boardings	Alightings
63rd & Longbow	19689	205	48.85	9.25	10.74	2.22	13.61	1.65
63rd & Gunbarrel	19690	205	3.72	48.41	0.66	15.53	0.27	9.89
63rd & Nautilus	19809	205	0.06	4.63	0.02	3	0	0.09
63rd & Longbow	19810	205	0	1.42	0	0.24	0	0.14
63rd & Lookout	25942	0	0	0	0	0	0	0

Folsom Corridor

Transit ridership data is not available for the Folsom corridor stops as the HOP ridership is collected at the route-level.

Boulder Valley Employee Survey

Executive Summary

The Boulder Valley Employee Survey has been conducted for the Transportation Division nine times previous to the 2014 implementation; every two or three years between 1991 and 2011. Employees were targeted for inclusion in the study through a two-stage selection process; first a group of employers was randomly chosen, and then employees from within the selected organization were invited to participate in the survey. All companies in Boulder Valley, considered to be the zip codes of 80301 through 80310, were eligible for the study. A total of 1,150 employers were selected for the study, 350 from the downtown area, and 800 from the rest of Boulder Valley. These selected organizations were mailed a letter explaining the importance of the study, and were contacted over the next few weeks to invite participation. Most employers emailed an online survey invitation to their employees. For some organizations like restaurants, retail stores and hotels, research staff worked with a contact person at the organization to drop off hard copy surveys which the employer would distribute and collect, to be later picked up by research staff. A total of 2,060 surveys were collected from employees in 374 organizations. The company response rate was 24% in the downtown area and 44% in the rest of Boulder Valley. The employee response rate was 34% in the downtown area and 31% in the rest of Boulder Valley. The data were weighted to account for the differential response rates of organizations and employees to more accurately represented employees of the Boulder Valley. With a sample size of over 1,000, the margin of error around the results is approximately $\pm 2\%$ per year.

Survey Highlights

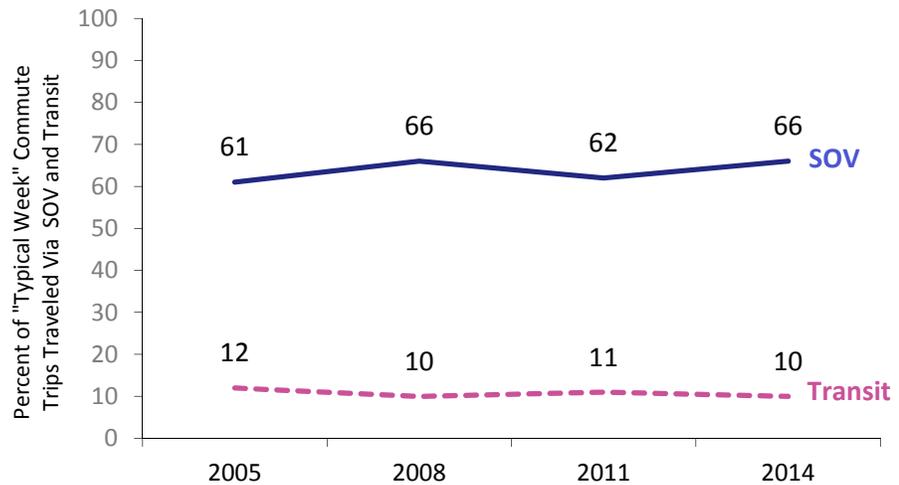
About two-thirds of work commute trips made during a “typical” week are made by driving alone.

One of the main purposes of the Employee Transportation Survey is to determine the “modal share” of trips made to and from the place of employment by those who work in Boulder Valley; that is, the proportion of work commute trips made via each method of transportation. Several questions on the survey relate to the work commute modal share.

One question asked how many days various modes of transportation were used for the commute to work during a typical week. Driving alone was the most common form of transportation used during a typical week, used for 66% of trips. Driving with another person was used for 6% of trips. Riding the bus and biking were each used for 7% of trips. Multi-mode travel (e.g., car then bus, bike then bus, etc.) was used for 3% of trips in a typical week. Walking to work accounted for 5% of trips. Working from home replaced about 4% of trips, while a compressed work week replaced another 2% of trips. Less than 1% of trips were by other modes.

Little change has been observed in the modal share of work commute trips in a typical week since the question was first asked in 2005.

Modal shift examines how the use of various modes changes over time. There has been little change in the reported modal share of work commute trips in a typical week since the question was first asked in 2005, with the proportion of single-occupancy vehicle (SOV) trips ranging from 61% to 66%.

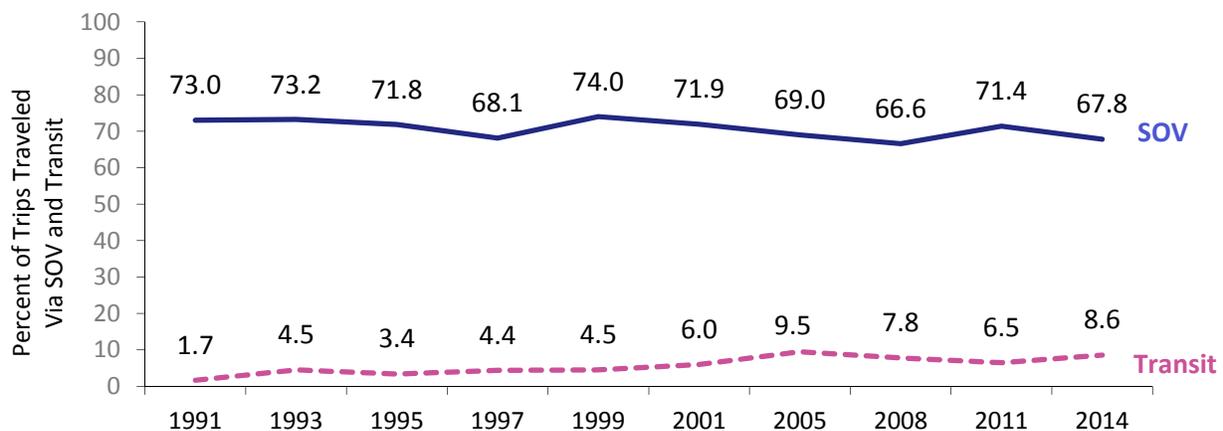


When asked how they traveled to work on the day they completed the survey, about two-thirds of respondents had commuted by driving alone.

In 2014, 68% of work commute trips on the day the survey was completed were made by driving alone. Using transit and bicycling were the next most common forms of commuting to work, representing 9% and 8% of trips, respectively. About 5% of respondents had shared a ride with at least one other person, and 4% walked to work. Approximately 3% telecommuted on the day they completed the questionnaire and 2% used multiple modes.

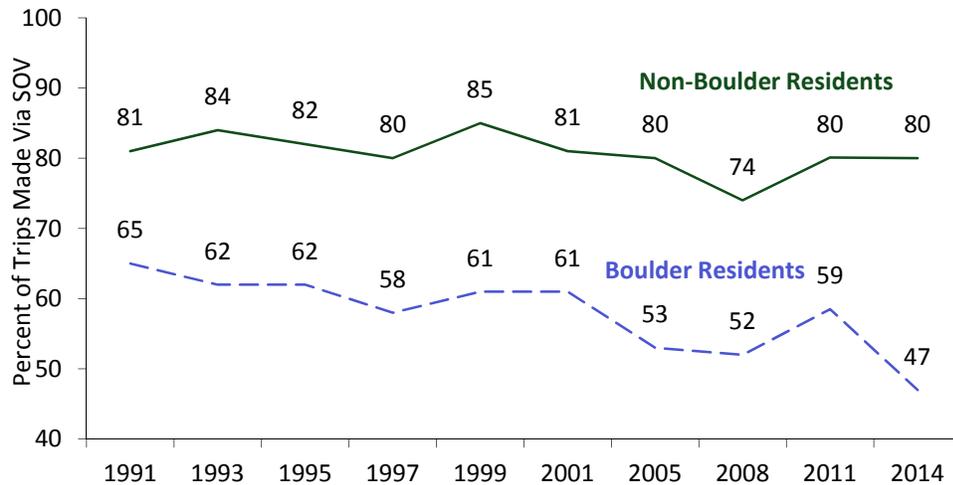
Since the survey was first conducted in 1991, the proportion of those who work in Boulder Valley and commute to work using a single-occupancy vehicle (SOV) has remained fairly constant, ranging from a low of 67% in 2008 to a high of 74% in 1999.

Transit use reached a peak of nearly 10% in 2005 from a low of 1.7% the first time the survey was administered in 1991. In 2014, transit was nearly as high as the peak with 9% of respondents reporting the rode a bus to work on the day the completed the survey.



Those who live outside Boulder were more likely drive alone for the work commute than were those who live in Boulder.

About 38% of respondents reported the live in the city of Boulder, and the remaining 62% lived outside of Boulder. When the modal shift over time is examined by place of residence, a trend of decreasing use of the single occupancy vehicle (SOV) was seen over time among those who lived in Boulder between 1999 and 2008. In 2011, however, rates increased and were similar to those of years prior to 2005. Then, in 2014 a large decrease was seen, to 47%, a level five percentage points below that observed in 2008, continuing the overall downward trend. For those



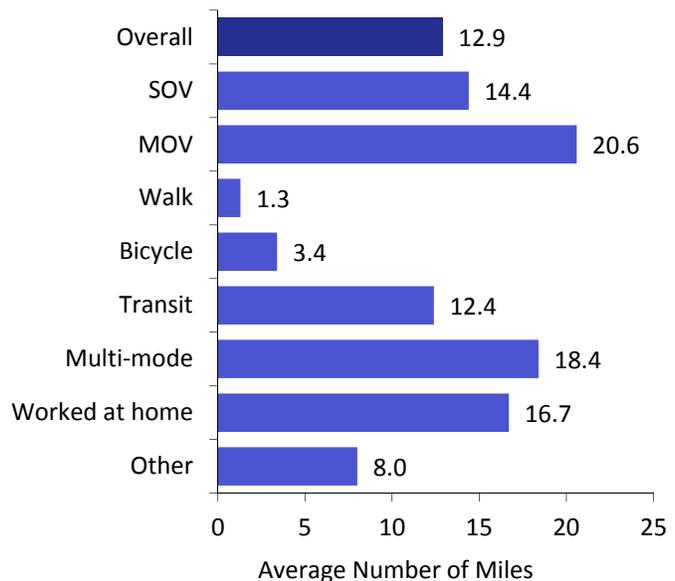
who lived outside of Boulder, where the prevalence of driving alone for the work commute was greater, SOV share decreased between 1999 and 2008. As with Boulder residents, SOV share increased in 2011, but then leveled off in 2014, to remain at 80%.

Those who walked or bicycled for their work commute lived much closer to work, on average, than did those who used vehicles, either private or transit, for their work commute.

The average distance of an employee’s work commute was 12.9 miles in 2014, while the average duration was 27.7 minutes.

The average walk commute distance was 1.3 miles, while the average bicycle commute was 3.4 miles.

The distance of the work commute increased gradually from 1991 to 2001, and then has remained relative stable. Average duration of the work commute has been generally increasing over time, with a larger jump from 23.2 minutes in 2011 to 27.7 minutes in 2014.

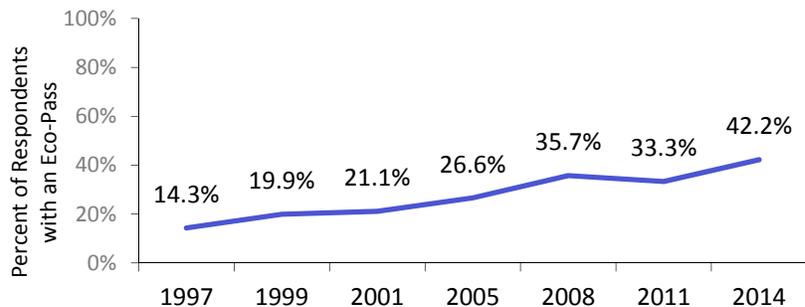


About 6% of the private motor vehicles used for the work commute were hybrid gas/electric vehicles.

About 8 in 10 respondents reported a motor vehicle was available to them for their work commute. For the first time in 2014, these respondents were asked about the characteristics of the type of vehicle available for the work commute. Of those with a vehicle available for the work commute, 6% were hybrid (gas/electric) vehicles. Nine percent of these vehicles were a partial zero emissions vehicle. Very few (0.2%) were electric vehicles, and only a couple of respondents (0.1%) used a Level 2 EV charger at work.

Eco-Pass holdership continued to climb.

In 2014, four in 10 respondents reported they had an Eco-Pass. Eco-Pass possession increased steadily from 1997 to 2008, leveled off from 2008 to 2011, and then increased again in 2014.



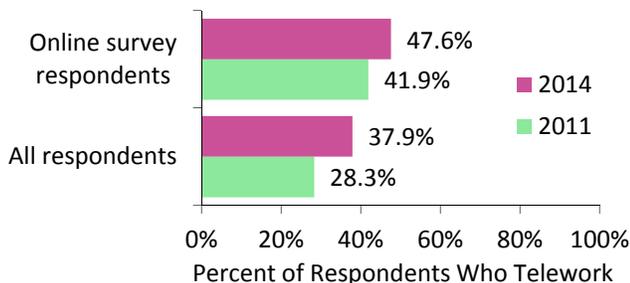
When asked if they ever ride a bus to work, about a third of those completing the employee transportation survey said they did so.

This was similar to results from previous years. About one in five respondents reported riding a bus for **non-commute trips** during a typical week. This represents a slight decrease from 2011, but is similar to what had been observed in 2008 and 2005. The average number of trips per respondent made during a typical week for non-commute trips on the bus was 0.6 trips per week. Among those who typically made at least one trip, the average number of non-commute bus trips per week was 3.0.

As observed in previous years, Eco-Pass possession was associated with use of transit for work and non-work trips. Almost 1 in 5 of employees with an Eco-Pass rode a bus for the work commute on the survey day compared to just 4% of those without an Eco-Pass. This was similar to levels reported since 2008, although the proportion of those riding with an Eco-Pass was slightly lower, and the proportion riding without an Eco-Pass was slightly higher.

The proportion of employees who ever telework for their job continued to increase.

The percentage of respondents who telework at least some of the time increased from 2005 to 2008 and remained stable between 2008 and 2011, with another increase in 2014. As this



question was only asked of those who completed the web version of the survey in 2014, the increase compared to 2011 was examined by mode in which the respondent completed the survey. Even when comparing only those who completed the online version of the survey in 2011 and 2014, an 8% increase was seen in the proportion those ever able to telework.

Transportation Metrics Review

Vehicle Counts

Traffic volume data is collected by three yearly count programs: the Arterial Count Program, Boulder Valley Count Program, and Turning Movement Count Program. The Arterial Count Program has been used since 1982 to capture average daily traffic (ADT) volumes on a selection of arterial roadway sections throughout the City. The Boulder Valley Count Program has been in place since 1993 and captures all traffic entering and exiting the City. The results of the roadway system evaluation indicate that traffic conditions and operational performance have remained relatively stable over the past 10 years. Traffic volumes on the City’s arterial roadways have generally decreased over time despite the growth in population and employment. The LOS evaluation and travel time studies show similar patterns, as vehicle delay and travel times have not increased in recent years.

Traffic Volumes

An analysis of 10-year traffic count volumes from the Arterial Count Program shows that, on average, traffic volumes on the City’s arterial roadways have been decreasing by approximately 1.1% annually. During this time, the City’s population has grown by approximately 0.3% annually and employment has increased by approximately 0.4% each year. Additional population and jobs result in additional trip making potential. However, these added trips have not resulted in increased traffic volume on our arterial roadways. These trends are illustrated in **Figure 1**. More detailed information on the City’s Count Programs can be found on the City’s website at the following address: http://gisweb.ci.boulder.co.us/agswebsites/pds/pds_traffic/.

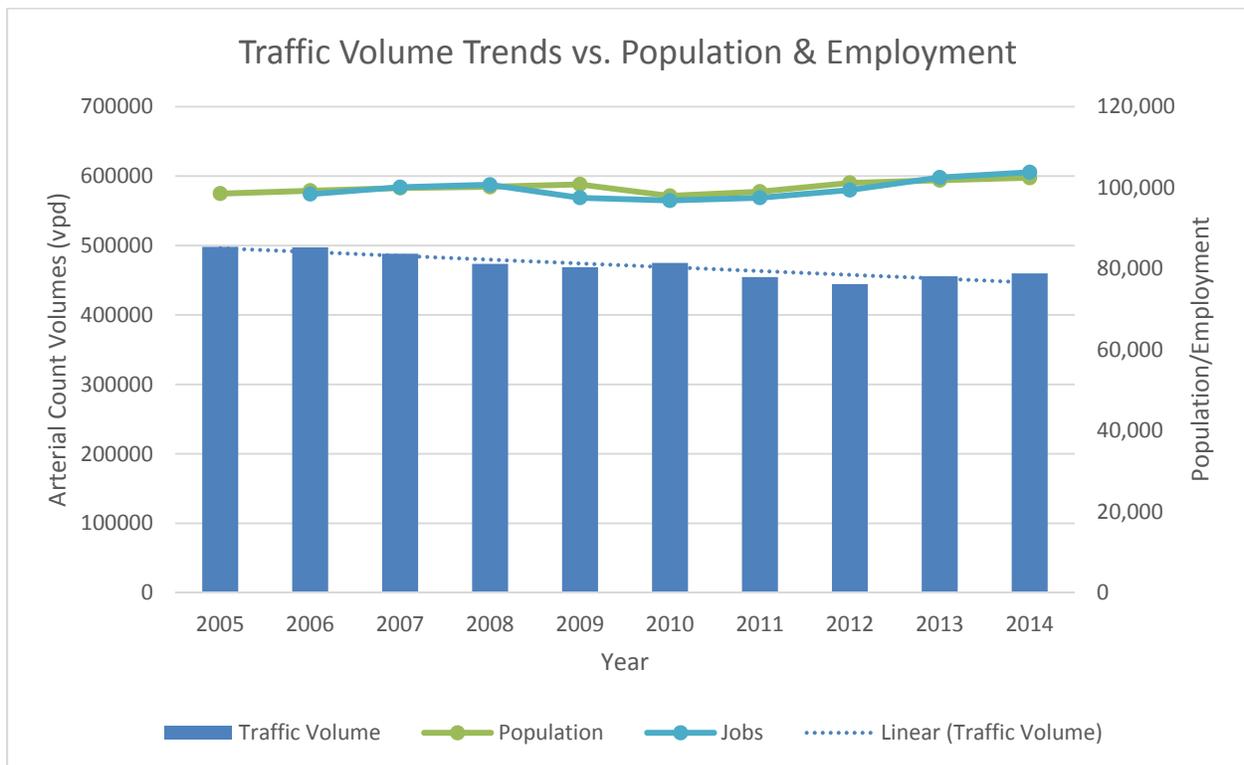


Figure 1. Trends in Boulder Traffic Volumes, Population, and Employment

Level of Service

Level of service is an operational analysis method that assigns a qualitative measure (level of service A through F) based on quantitative results such as average vehicle delay. Since the capacity and performance of arterial roadways are controlled by the signalized intersections, an operational analysis of these intersections is used to evaluate the City’s transportation system. An update of vehicle LOS at all signalized intersections based on intersection traffic volumes from 2012-2014 was completed in 2015. The vehicle LOS at signalized intersections has not degraded, even as the City grows in population and employment. The number of intersections with an overall vehicle LOS of E or F during any peak hour is tracked and the percentage of intersections at overall LOS E or F has remained around 19-21% during the last several LOS updates but dropped to 11% in the 2015 report. The results of the recent LOS analyses are summarized in **Table 1**. This reflects the decrease in traffic volumes during the three previous years. In response to concerns raised during the TMP update, the 2015 LOS update also began tracking the percentage of traffic in each peak period that experiences a movement of LOS E or F. This new metric is shown in **Table 2** and is a baseline metric that staff will be tracking with all future LOS updates.

Year	Total # Signalized Intersections	# at LOS E or F in Any Peak Hour	% of Total
2007	132	25	19%
2009	133	25	19%
2011	133	28	21%
2015	138	15	11%

Table 1. Summary of Level of Service Results

Peak Hour	Total Entering Volume	# of Entering Vehicles Experiencing LOS E or F	% of Entering Vehicles Experiencing LOS E or F
AM	275,116.00	18,128.00	7%
Noon	275,391.00	9,783.00	4%
PM	351,425.00	33,520.00	10%

Table 2. Vehicles Experiencing LOS E or F

Travel Times

In addition to traffic volumes and level of service, travel times are also considered when evaluating the City’s transportation system. Travel time studies are conducted every three years for six major east-west corridors and north-south corridors. These corridors are Arapahoe Avenue, Broadway, Balsam/Edgewood/Valmont Road, 28th Street, Peal Street, and Foothills Parkway. Travel time studies were completed for Broadway, 28th Street, and Foothills Parkway

in 2012 and for Arapahoe Avenue, Valmont Road, and Broadway in 2014. Changes in corridor travel times can be caused by a variety of factors including intersection improvements, modifications to traffic signal timing, construction projects, and fluctuations in traffic volumes. Thus, increased traffic congestion would likely adversely affect travel times. The latest travel time studies provided results consistent with past studies, revealing no significant changes to the time it takes to traverse these corridors.

The results of the travel time runs can be compared to the theoretical minimum travel time based on the speed limit of each corridor. As shown in **Figure 2**, travel times have remained relatively steady over the past 10 years. The sharp decrease in travel times on 28th Street between 2006 and 2008 was most likely a result of improvements at the Iris Avenue intersection.

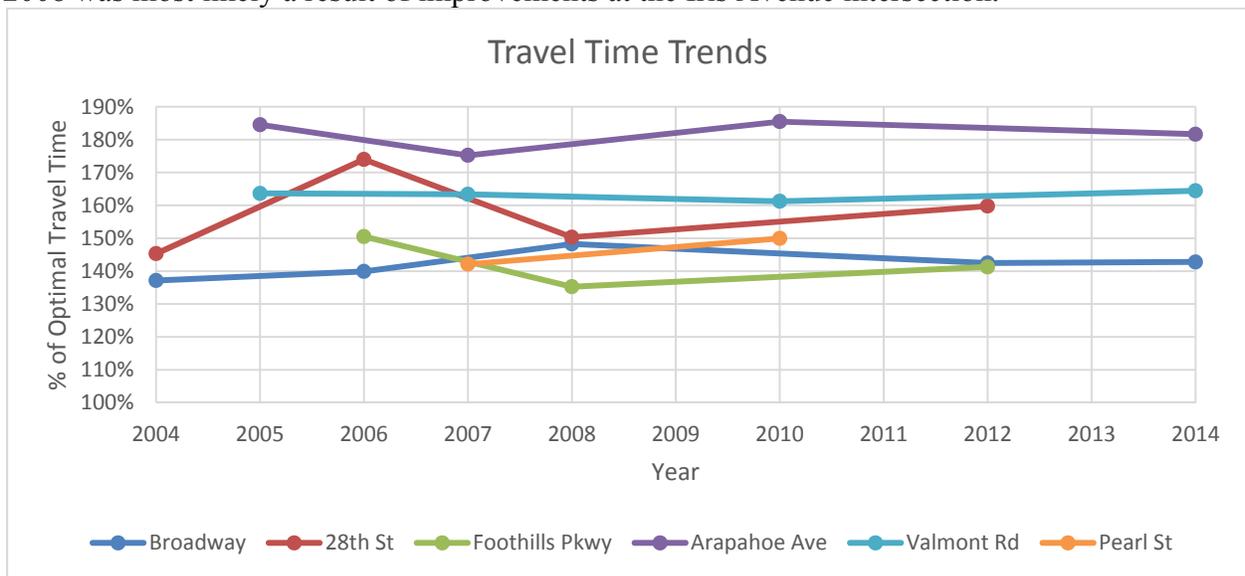


Figure 2. Travel Time Trends on Major Corridors

Bike Counts

Downtown Bike Parking

Since 2007 bicycle parking data has been collected and analyzed for downtown Boulder. Data is collected by a team of volunteers and staff on four different times on four different days intended to reflect times of high bike demand. All bikes on the 41 blocks of the downtown are counted, including those in alleys and accessible garages, as well as the type of parking involved. During the period of the Downtown bike parking counts, bike parking has gone up significantly between 2007 and 2014. This increase has largely been accommodated through almost an 80 percent increase in bike parking racks. However, the increase in bikes downtown has flattened since 2009, potentially reflecting a lack of available racks or poor placement of the existing racks. The Downtown bike parking analysis has identified blocks where exiting racks to not meet demand and blocks where rack placement seems to limit use of those racks.

Automated Bike Counts

Following the 1996 TMP, the city began installing a set of automated bike count stations. Including several stations operated by the Colorado Department of Transportation, there are

currently 25 bike count locations in the Boulder Valley, include three on-street stations and 22 counters on bike path locations. The most recent addition to the count program was the installation of the EcoCounter real time display on the 13th Street bike lane. This station both provides highly sensitive bike detection and a running daily total of bike activity on 13th Street as part of the Broadway bike route. While these count stations do not capture all bike activity, researchers have stated that this is the most comprehensive set of bike data in the country. The city's automated bike count data has been the subject of several academic research projects, including an effort to predict annual bike ridership from limited data and a study of weather factors affecting bike ridership. This research has shown that bike ridership is strongly affected by weather, particularly temperature and precipitation. Bike ridership follows a consistent pattern of peaking during the warm summer months and reaching minimums in mid-winter. Precipitation will then significantly reduce bike usage at any time of the year.



Over the period of automated bike counts, there has not been a significant increase in bike counts. This is not consistent with the increase in resident bike mode share shown in the Boulder Valley Employee Survey, where bike mode share has increased from 13 percent in 2001 to 18 percent in 2014. This might reflect the location of the count stations, which might be counting older parts of the bike system while recent improvements have made other routes or corridors more attractive. A notable example would be the completion of the 30th Street corridor which does not have any count stations.

Surveys

With the 1989 TMP's call for a better understanding of travel in the Boulder Valley, two primary surveys were created to measure travel: the travel diary survey to measure how Boulder residents travel and the *Boulder Valley Employee Survey* (BVES) to measure travel by both resident and non-resident employees in the Boulder Valley. As more than half of Boulder employees commute in from outside the Boulder Valley, trips by non-residents are a large share of the travel puzzle. For 2014, comparable surveys were conducted for University of Colorado (CU) faculty and staff, Boulder Valley School District faculty and staff, and City of Boulder employees. Results for all five groups are included in the comparison report available on the city's [Transportation Use Measurements](#) webpage.

Figure 3. Eco Counter on 13th Street

Boulder Valley Employee Survey

The 2015 BVES show continued progress in reducing the single-occupancy vehicle (SOV) mode share of the work commute. As shown in **Figure 3** below, from 1991 to 2014, SOV mode share for Boulder Valley employees commute trips declined from 73 percent to 67.8 percent.

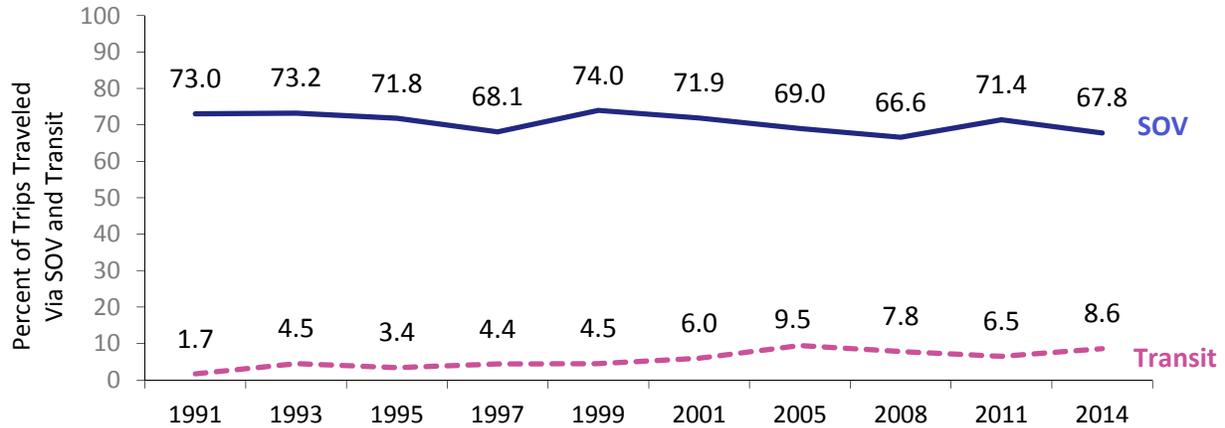


Figure 3. Work Trip Mode share of Boulder Valley Employees

While the SOV work trip mode share of non-resident employees has remained relatively constant, the SOV commute mode share for Boulder residents has shown a significant reduction from 65 percent to 47 percent. This reduction is shown in **Figure 4**, and a comparison of the two figures show that the mode change in Boulder Valley employees is almost entirely driven by

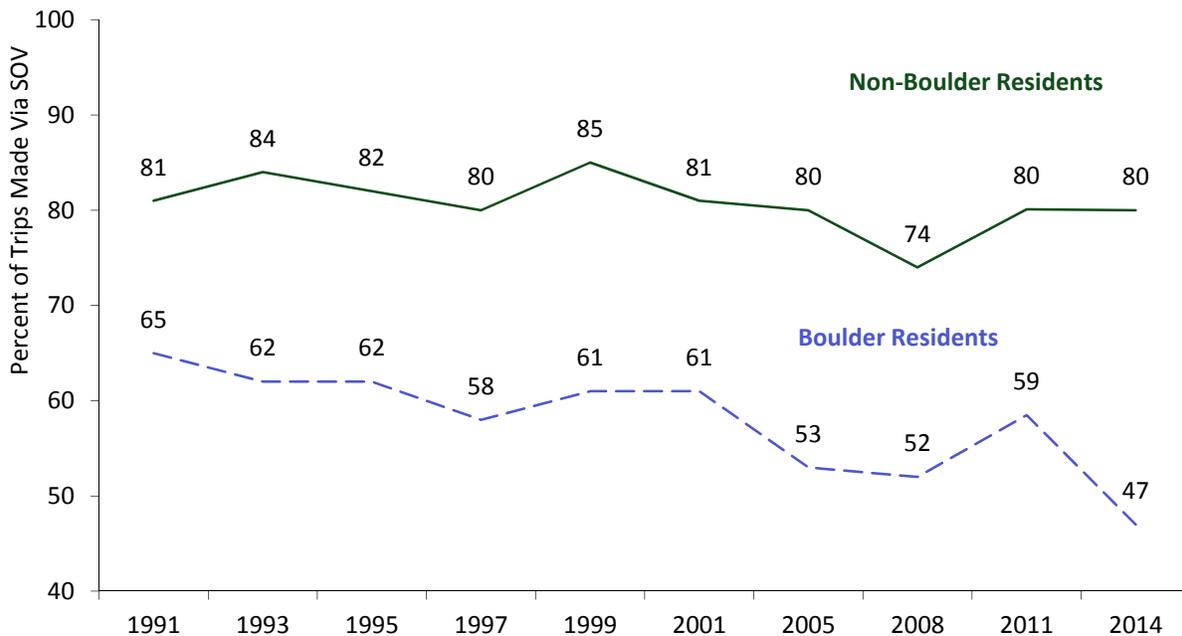


Figure 4. Work Trip Mode share of Resident and Non-Resident Boulder Valley Employees

Boulder resident mode change. The 2014 BVES also shows that Eco Pass procession continues to increase for Boulder Valley employees, with 42 percent of all employees having an Eco Pass for an increase of 6 percent from 2011. Car sharing has continued to drop and is less than half of its previous high, reflecting national trends. And the distance of the work commute continues to increase, with 20.2 percent of employees traveling more than 20 miles to work, up from 12.4 percent in 1991. The proportion of the employees who ever telework has increased significantly, rising from about 28 percent in 2011 to 38 percent in 2014 for all respondents and from about 42 percent to 48 percent for online respondents for the same year.

Downtown Boulder Employee Transportation Survey

For the Downtown, the low point for the drive-alone mode share was 34 percent in 2008, reflecting high gasoline prices. SOV mode share for the day of the survey was 43 percent in 2014, unchanged from 2011. These changes in SOV commuting are reflected in an overall change in transit commute mode share as shown in **Figure 5**, which peaked in 2008 at 34 percent and was 23 percent in 2014. Mode shares for a “typical” week were very similar to those for the day of the survey.

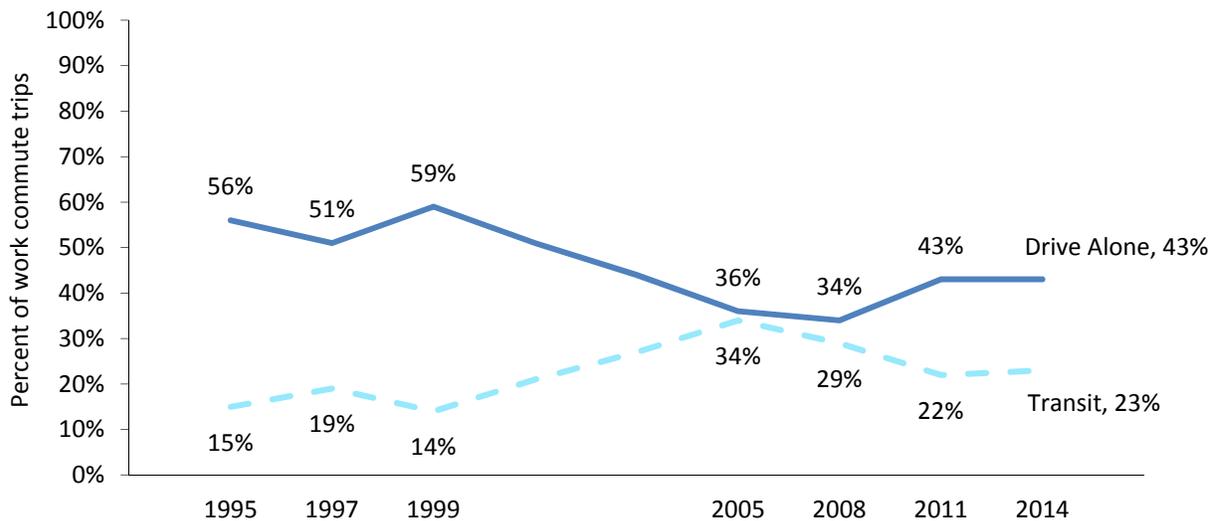


Figure 5. Work Trip SOV and Transit Mode Share of Downtown Employees

Eco Pass procession reached a new high, with 84 percent of Downtown employees having an Eco Pass. Telecommuting also increased significantly, with about 16% of all online respondents in 2014 reported telecommuting once a week or more, nearly double the 8% who reported doing so in 2011. Both Boulder B-Cycle and eGo CarShare memberships increased, with eGo CarShare memberships doubling from 2 percent to 4 percent.