

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

**MEETING DATE:** May 9, 2016

**AGENDA TITLE:** Staff briefing and TAB input regarding the Transportation Master Plan Progress Update – Focus on Complete Streets

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**I. EXECUTIVE SUMMARY**

The Transportation Master Plan (TMP) is the city’s policy document establishing the goals, objectives and investment priorities for transportation. Since 1989, the TMP has reflected a consistent policy direction of accommodating increased person travel, managing the impacts of automobile travel, and developing a multimodal transportation system with the pedestrian as the primary mode. The TMP aligns with the community’s broader goals expressed in the Boulder Valley Comprehensive Plan (BVCP) and the city’s Sustainability Framework. The 2014 TMP includes an extensive analysis of transportation’s role and needed contributions for Boulder’s Climate Commitment. The measurable objectives of the 2014 TMP support accommodating the increase in person trips while reflecting the reductions needed to reduce the impacts of automobile traffic in support of the community’s sustainability and resiliency goals. The 2014 TMP also included a detailed Action Plan to guide work efforts in implementing the plan.

This update to the Transportation Advisory Board (TAB) on May 9 and upcoming City Council Study Session on May 31 provides an opportunity to check in with TAB and council regarding the progress to-date on the TMP since council acceptance of the plan in August 2014. This is the third study session on implementation, including the activities occurring since the last study session on the TMP on [Aug. 25, 2015](#).

Transportation Division staff is sharing updates regarding pedestrian-related projects, plans and programs, as well as status report on core services in the areas of operations, maintenance, capital projects.

Staff is seeking input and guidance from TAB and City Council on several key areas of the TMP Complete Streets work program for 2016-17, including updates on the Canyon Corridor study and the Living Lab Phase II Folsom Street pilot project, as well as a check-in on next steps for the city's Renewed Vision for Transit.

Additional highlights are provided as information items regarding the other TMP focus areas of Regional Travel, Transportation Demand Management (TDM), Funding, and Integration with Sustainability Initiatives.

Future transportation study sessions in 2016 will focus on progress reports on transportation funding (June), Renewed Vision for Transit (September), the multi-departmental Access Management and Parking Strategy (October), and TMP progress on Complete Streets, Transportation Demand Management (TDM), and Funding (December). Prior to each of these council study sessions, TAB will have an opportunity to review and share feedback with staff and council.

## **II. QUESTIONS FOR TAB**

1. Does TAB have questions and feedback regarding the overall TMP implementation to-date? As well as suggestions for next steps?
2. Does TAB have questions and feedback regarding the Canyon Corridor study goals, objectives, evaluation measures, and conceptual design options?
3. Does TAB have questions and feedback regarding the Living Lab Phase II Folsom Street pilot project update?
  - i. Does TAB have questions and feedback on the national cities research and input to guide preparations for the proposed practitioners' panel planned for fall 2016?
4. Does TAB have input to guide next steps on the elements of the city's Renewed Vision for Transit 2016 work program items?

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### III. BACKGROUND

#### *Transportation Master Plan (TMP)*

The TMP is the city's policy document establishing the goals, objectives and investment priorities based on the Boulder community's vision for a multimodal transportation system. The first TMP was developed in 1989 by a citizen taskforce and reflected the community's concern with the increasing growth and impacts of automobile traffic. Over the years, the following TMP updates have reflected the consistent policy direction of accommodating increased person travel, managing the impacts of automobile travel, and developing a complete multimodal transportation system in support of the community's overall sustainability goals, as reflected in the Boulder Valley Comprehensive Plan and the recent Climate Commitment.

Boulder's 2014 TMP builds upon this strong multimodal policy foundation and spirit of continuous improvement. The TMP is organized in five inter-related focus areas: Complete Streets, Regional Travel, Transportation Demand Management (TDM), Funding and Integration with Sustainability Initiatives.

The 2014 TMP also includes a detailed Action Plan reflecting an integrated, inter-disciplinary approach linking land use and transportation planning, and guiding the implementation work on the plan. This TMP Action Plan helps to guide the annual work program for the Transportation Division in concert with the City Council's annual work program and budget priorities.

The measurable objectives of the 2014 TMP form the basis of the city's transportation metrics program and support the increase in person trips while reflecting the reductions needed to reduce the impacts of automobile traffic and achieve the transportation sector reductions in greenhouse gas emissions to support Boulder's Climate Commitment goals.

Based on the findings from the [2016 Transportation Report on Progress](#), the Boulder community is making good strides in some areas such as increase travel by walking, biking, and transit by Boulder residents. However, more work is needed to accelerate the pace of mode shift, and to continue to address regional travel, particularly opportunities to enhance options for non-resident employees.

As part of the 2014 TMP acceptance, Transportation staff committed to periodic check-ins with council to ensure implementation work continues to reflect the city's priorities. This study session is the third such check-in since the Aug. 2014 acceptance of the 2014 TMP with the previous check-in study sessions occurring on Feb. 24 and Aug. 25, 2015.

Future transportation related study sessions in 2016 will focus on Development Related Impacts Fees and Excise Taxes on June 14, 2016, the Renewed Vision for Transit scheduled for September 27, 2016, and the Access Management and Parking Strategy (AMPS) on October 10, 2016. The next full TMP progress update is scheduled for December 13, 2016 and will include highlights from all of the TMP focus areas, with an emphasis on Complete Streets, TDM, and Funding.

## IV. ANALYSIS AND ISSUES

### *TMP Focus Area Progress*

#### *Complete Streets*

The TMP Complete Streets Focus Area is one of the five, inter-related TMP focus areas, and includes the city's policies to accommodate people using all modes of transportation by including pedestrians, bicyclists, transit riders, and vehicle drivers as facilities are planned, designed, constructed, operated and maintained. This focus area recognizes the pedestrian as the primary mode and aims to develop the complete modal systems and programs needed to accommodate increased travel while moving a greater percentage of that travel away from single occupant vehicles (SOVs).

#### **Putting People First: Pedestrian Projects, Plans, and Programs:**

Walking is the fundamental way to travel and connects travel by all other modes. The 2014 TMP continues Boulder's long-standing policy to recognize the pedestrian as the primary mode of travel, and takes a "people first" approach to transportation, which is fundamental to achieving complete streets. Traditional transportation activities focus on the design and construction of facilities—yet travel behavior and mode choice are determined by a broader set of factors. The city enhances the safety and of transportation options by embracing a comprehensive approach utilizing the Five E's of Engineering, Encouragement, Education, Enforcement and Evaluation. The following sections highlight current pedestrian related initiatives in each of these areas.

#### *Engineering for Pedestrians*

##### *Capital Enhancements*

Providing places for people to walk and access transit through engineering treatments is key and the city prioritizes and supports pedestrian travel throughout the community and ensures adequate connections to public transit. An illustrative capital project underway includes the Diagonal Highway Reconstruction project, which is adding a new multi-use path for pedestrians, improved access and amenities to transit stops along the corridor, and medians offering refuge for people crossing the roadway. Public art, landscaping and rain gardens to catch and filter rainwater are being installed and will contribute to a memorable and enjoyable sense of place for people walking along the corridor. Currently scheduled to be completed in fall 2016, this \$9.97 million project is also reconstructing the deteriorated pavement and providing new off-street bicycle lanes, called cycle tracks. Virtually all of the city's capital projects improve pedestrian infrastructure. More information is listed on the [Transportation Projects](#) web page.

The capital program dedicated to improving walking is [Sidewalk Missing Links](#). This program identifies, prioritizes, and constructs missing sidewalk segments to provide a continuous pedestrian network and ensure a safe walking environment. Projects are identified by community members and then added to prioritized lists of "small" or "large" missing sidewalk links. Small projects cost less than \$75,000 are completed using funds from the city's Pedestrian Facilities budget. Larger missing sidewalk link projects are prioritized and assessed for inclusion in the annual budget process. Projects are prioritized based on several factors, including existing utility and roadway conditions and are listed on the city [Sidewalk Links](#). Recently completed missing

sidewalk projects funded by the recent bond program include the 2600 block of Mapleton Avenue, 2400 28<sup>th</sup> Street, Gillaspie Drive from Greenbriar to Juilliard and several sections along Spine Road.

The city's Sidewalk Repair programs address broken or damaged sidewalks as they are an eyesore, inconvenience, and safety hazard. The city offers two programs to help keep Boulder walkable. Each year, the *Annual Sidewalk Repair Program* targets a specific area in Boulder to repair sidewalks and install pedestrian access ramps. The city shares the cost of the sidewalk repairs with the adjacent property owners with a single-family residential property not being assessed more than \$450 per property per year, no matter the total cost of the sidewalk repair. Property owners are responsible for additional costs associated with flagstone sidewalk repairs. The *Miscellaneous Sidewalk Repair Program* also shares in sidewalk repairs anywhere in the city. Property owners pay for half of the repair costs for sidewalks adjacent to their property. There is no out of pocket maximum for residential property owners. Work in the 2016 Sidewalk Repair Program area will begin in late May in the area bounded by Baseline Road, Broadway, University Avenue, 10<sup>th</sup> Street and Aurora Avenue.

While the sidewalk repair programs address spot improvement, the 19th Street Multimodal Connectivity Project is a more comprehensive effort to improve connections. Funded in part by a Colorado Safe Route to School (SRTS) grant, this project addresses incomplete and substandard facilities along 19<sup>th</sup> Street. The project responds to citizen requests to improve bicycling and walking facilities along 19<sup>th</sup> Street from Norwood to Yarmouth avenues with a focus on student travel. Total cost is estimated as \$785,000, funded in part by a grant from the Transportation Alternatives Program administered by the Colorado Department of Transportation and an additional grant from the Safe Routes to School Program for \$350,000. Staff plans to initiate project design and the public involvement processes in late 2016. Construction of the project is anticipated to begin in 2017/2018.

### **Operations & Maintenance for Pedestrians**

A primary consideration for all roadway operational and maintenance is to provide safety and efficiency for people walking along and across our street system. The city identifies and prioritizes enhanced pedestrian crossing treatments and signal operations in favor of pedestrian crossing time improve access for people walking. A brief overview and update on each program is included below.

Enhanced Pedestrian Crossing Treatments are signed and marked crosswalks, crosswalks with centerline bollards, crosswalks with rectangular rapid flash beacons (RRFBs), traffic signals and underpasses. The City installs these treatments using a set of criteria outlined in the City's [Pedestrian Crossing Treatment Installation Guidelines](#). These determine which treatment is appropriate to install based on crossing activity, motor vehicle traffic volume and speed, and the number of lanes being crossed. The number of children, elderly, or people with disabilities crossing the roadway at a location are also used to determine the demand for a treatment. Locations identified for a crossing treatment are prioritized for construction based on the number of people crossing, the conflicting traffic and the cost of the crossing treatment. The City installs pedestrian crossing treatments each year with the most recent being crosswalks at 9th and North

and Table Mesa and Yale. Crossing treatments planned for construction in 2016 include Pearl and 21st, Colorado and Monroe, and Broadway and Poplar.

Signal operations in favor of pedestrian crossing time are considered throughout the city's network of traffic signals. Separate pedestrian indications are provided at every traffic signal to provide specific information and control beyond the standard vehicular green/yellow/red indications. In addition, modifications to signal phasing and timing to enhance pedestrian safety and efficiency are used strategically in the system. For example, where high volumes of pedestrian crossings are in conflict with vehicular movements, pedestrians are provided with an exclusive pedestrian movement. This allows pedestrians to cross the intersection in any direction while all vehicular movements receive a red light. Some of the intersections where this phasing is used include Broadway and Iris, Colorado and Folsom, Pearl and 11th, Walnut and 11th, and Walnut & 15th. Where an identified pattern of conflict between pedestrians beginning their crossing and drivers turning without yielding to the entering pedestrians is identified, pedestrians are provided with a brief "advance ped" interval to enter the crosswalk prior to vehicular movements receiving a green light. This timing is provided at the Iris and 19<sup>th</sup> and Baseline and 20<sup>th</sup> intersections, and is scheduled to be installed in 2016 at the Broadway and Spruce intersection. The city also considers modifications to its laws to better facilitate efficient pedestrian movement. In 2014, the Boulder Revised Code was modified to allow pedestrians to enter signalized crosswalks equipped with countdown displays after the display has changed from the white walk "start crossing" display to the orange flashing hand "don't start" display if they can safely complete their crossing during the remaining pedestrian clearance time.

Sidewalk debris and snow removal maintenance activities are the responsibility of the adjacent property owner, including keeping sidewalks clear of snow; preventing vegetation from obstructing sidewalks; and keeping tree limbs at least eight feet above sidewalks. The city is working to increase property owner awareness of these requirements. Community members may report sidewalk maintenance concerns by calling please call 303-441-3266 or make a service request online using [Inquire Boulder](#). In cases when the city is the adjacent property owner or access to transit is a priority, the city assumes responsibility of routine maintenance. A contract for maintenance services is in place to ensure that these locations are prioritized and in compliance with city code.

### ***Encouragement Programs for Pedestrians***

#### ***Boulder Walks***

As a designated Gold-Level Walk Friendly Community, Boulder is a place where walking is both desirable and enjoyable. The city's Boulder Walks program began as an action item from the 2014 TMP and aims to celebrate and encourage walking as a travel choice for residents and employees.

In partnership with the Colorado-based Walk2Connect (W2C), Boulder Walks launched a new walking program in 2015 to celebrate the health and social benefits of walking and strengthen partnerships to improve walkability in Boulder. In 2016, the program is building on work completed in 2015 with the aim to create new opportunities for walk-friendly events and programming. A specific objective is to build a coalition of individuals and community organizations that will work together in support of walk-friendly community design. In 2016,

this will be achieved by implementing programming along two tracks guided by staff and coordinated by W2C.

### *Community Program Track*

A series of events will be hosted beginning in May and continuing through the fall to increase walking opportunities for community members. Walks will be led by trained W2C Walking Movement Leaders and will follow monthly themes that emphasize one of the “Five Es” (Engineering, Encouragement, Education, Enforcement, Evaluation) identified in the TMP as a way to support walking as an active, fun travel option. Objectives of these walks are to:

- connect community members to each other and to the city’s planning process;
- cultivate partnerships with the Boulder Valley School District, Growing Up Boulder and other partners;
- increase public engagement in walking and pedestrian-environment issues;
- support the development of complete streets; and,
- foster Boulder’s leadership as a gold-level walk-friendly community.

W2C and GO Boulder will be leading neighborhood walkabouts in partnership with community leaders and experiential walk audits as part of planned corridor projects along East Arapahoe, Canyon Boulevard and 30th Street & Colorado Avenue.

### *Coalition-Building Track*

In fall 2016, a walk-mode specific task force will be established to ensure that pedestrian issues remain balanced with other modes. The Task Force will help identify and prioritize initiatives to increase mobility for all, including people with disabilities. GO Boulder is working with W2C and Walk Denver to gather input from community partner organizations this spring through an online survey. The focus is to learn about opinions on walkability in Boulder today, what community organizations are currently working on related to walkability, and what walking-related issues are most important to them. This assessment will inform the early work items for the task force and additional coalition-building activities.

### ***Education and Enforcement campaigns for Pedestrians***

The city continues to inform community members about traffic user rights and responsibilities through outreach campaigns in support of the “Toward Vision Zero” objective of the TMP. Safe Streets Boulder program highlights include:

#### *Heads Up Boulder - mind the crosswalk*

Data analyzed by the Transportation Division shows that nearly half of all collisions within the city occur at intersections, with crosswalks being the most common locations for collisions between motor vehicles and bicyclists or pedestrians. The city launched the Heads Up crosswalk safety campaign to address this trend and inform community members about their rights and responsibilities as users of the transportation system, particularly at crosswalks. The campaign has grown to include Crosswalk Safety Weeks in an effort to raise public awareness of high collision locations and increase enforcement at these select intersections. For the second year, police from the City of Boulder and the University of Colorado-Boulder are partnering to step up enforcement of traffic laws at the top locations these types of collisions. Education and outreach

activities began in March 2016 to raise awareness of crosswalk related ordinances. These efforts supported heightened enforcement activities during the week of April 11 through April 15 at top accident locations in an effort to reduce traffic related injuries and fatalities. Another Crosswalk Safety Week is planned for early Sept. This program is funded by a federal grant and will be expanded in the fall to include restorative justice and ticket diversion activities, and introduce new messages in support of bicyclists knowing and complying with 8 mile per hour speed limit in crosswalks.

#### *The Way of the Path campaign*

Designed to improve the safety and experience of people using the city's multi-use paths, the Way of the Path campaign is in its second year. Throughout the summer, path users are asked to pledge to follow path rules and etiquette in order to ensure a safe and courteous atmosphere for everyone. This will be followed by an eight-week campaign in the fall with a focus on eight key messages, including appropriate ways to pass fellow path users, awareness of the 15 mile per hour (mph) speed limit on the paths and the need to pick up after dogs. This year, participants will continue receiving weekly blog posts with tips on the rules of the path, a survey and are entered in a random prize drawing. The campaign will also be expanded to include social media, advertisements and Karma cards.

#### *Lighten Up Boulder*

The Lighten Up Boulder program reminds bicyclists that riding at night without a light is illegal and unsafe. Each fall, the city teams up with CU-Boulder to encourage bike light use for nighttime riding by providing bike light accessories and lights to pedestrians walking at night. The program has expanded to include a partnership with Boulder Valley School District to provide lights to students biking and walking to and from school.

### ***Evaluation and Planning for Pedestrians***

#### *Pedestrian Mode Plan and American's With Disabilities (ADA) Transition Plan*

The city's original Pedestrian Mode and ADA Transition Plan were written in the mid and early 1990s. While many of the sections have not been formally updated since that time, the city has continued make progress on many pedestrian related initiatives. A plan update will assist in compliance with ADA requirements by 2018 for programs, activities and services and address broader pedestrian related topics to further support walking as the primary mode of travel for the Boulder community. In fall 2016, the Transportation Division is scheduled to begin an assessment of existing policies in preparation for updating the Pedestrian Mode Plan. This includes an inventory of policies, programs, planning, and maintenance practices to ensure the city is improving our public rights of way to provide physical access for people with disabilities. In early 2017, a self-evaluation of existing practices and procedures and the need to provide a compliant system will begin. This includes looking at facilities such as pedestrian signals, sidewalks, pedestrian curb access ramps, as well as public process and accessibility to provide input in a public process.

#### *Safe Routes to School Planning*

The Colorado Safe Routes to School Program (SRTS) was established in 2005 through federal legislation, which provided a dedicated federal funding stream in support of the SRTS program.

Colorado was the first state in the nation to implement the program with federal dollars and is still considered a SRTS leader. Successful SRTS programs are designed around the 5 Es - engineering, education, encouragement, enforcement, and evaluation - to achieve the greatest gains. While recent federal legislation eliminated the dedicated funding for SRTS, the Colorado Department of Transportation (CDOT) Transportation Commission approved the continuation of the SRTS program in 2015 by committing \$2 million for capital projects and \$0.5 million for non-capital projects annually to fund the program, beginning in FY 2016. Funds are awarded through a statewide competitive process and it is anticipated that FY17 funding will be announced in October 2016. The city and BVSD have received more than \$1.6 million in SRTS funds and will continue our partnership to identify and prioritize potential projects and programs to apply for future funds.

### Evaluation

As part of the 2014 TMP update process, the city developed a new mapping tool to identify “15 minute neighborhoods”. This neighborhood access tool helps the city assess which Boulder neighborhoods have access to basic services (schools, parks, shopping, transit, etc.) within a 15 minute walk. The mapping tool identifies areas with relatively high accessibility and those that do not based on either missing transportation facilities or missing land use destination. This new tool is helpful for integrating transportation and land use planning processes and is currently being used by an inter-departmental staff team working on the Boulder Valley Comprehensive Plan update to enhance walking opportunities for Boulder residents. The city’s goal is to increase the number of walkable neighborhoods from the current level of approximately 26% to 80% as one of the TMP objectives.

## **General Operations & Maintenance Updates**

The city's Transportation Division is responsible for the core services of operating and maintaining Boulder's transportation system to ensure safe and efficient travel year-round for people walking, biking, riding transit, and driving as well as the movement of goods and services. The following sections provide highlights regarding current maintenance initiatives, including the city's Snow and Ice Control Program, as well as System Preservation, including the city's Pavement Management Program and Bridge Asset Program:

### ***Transportation Maintenance for 2016***

Early this season, Transportation Maintenance staff reflected on 2015 and strategized a plan to align with our commitment to the community. This year our Street maintenance work group will operate the following three crews:

- Paving crew
- Pothole crew
- Alley crew

The intent of this structure is to enhance our level service to our customers and set budgetary goals that align with our available funding. Areas with active work can be viewed on the [Cone Zones](#) Web page.

### ***Bikeways Maintenance***

In support of the city's recent policy to allow people to ride e-bikes on multi-use paths, Open Space and Mountain Parks (OSMP) and Transportation staff have worked closely to identify concrete path locations that should be maintained by Public Works. Twenty locations have been identified and those concrete paths will soon become a part of the Bikeways maintenance program. Regarding the new US36 corridor bikeway, the City of Boulder is working jointly with Boulder County on a shared maintenance agreement for Boulder portions of the US 36 bikeway corridor that will go into effect on June 1, 2016.

### ***Snow and Ice Control Program***

The Snow and Ice Control Program goals, as related to the Transportation Master Plan, are to:

- Keep primary and secondary streets, on-street bike lanes and the off-street path system open.
- Respond with enhanced service levels when significant snowfall impedes public mobility on and around residential roads, sidewalks and bus shelters.
- Use materials and equipment efficiently and effectively to help reduce the dangers of traveling in inclement weather.
- Assist with enforcing the sidewalk snow removal regulations (Section 8-2-13, B.R.C. 1981), which require all private property owners and residents to clear ice and snow hazards from public sidewalks or walkways abutting their property no later than 24 hours after a snowfall stops.
- Communicate any delayed opening or early release decisions in advance of city functions before impending severe weather impacts the ability of residents or employees to safely arrive at their destination within the city.

Snow and Ice Control Program information is made available each year through news releases, printed materials, Channel 8 videos, social media, and online at [Snow and Ice](#) Webpage.

### *Snow Removal Analysis and Status*

This section describes operational adjustments and changes from previous snow seasons that are part of an ongoing effort to improve the city's overall snow removal operations. The Public Works Department hired the consulting firm of CH2M to perform an analysis of the City of Boulder snowplowing and routing system. The results of the evaluation resulted in the following key findings:

- The Primary Snow Routes are in excellent condition, both from mileage and elapsed time evaluations.
- The Secondary Snow Routes demonstrated opportunities for improvement over the current state as there was an imbalance between mileage and elapsed time evaluations.
- Recommends continuing the recent Residential program changes.
- Maintain a proactive approach to staffing for snow events.

### *2015/2016 Snow season at a glance:*

Summary results from the 2015/2016 snow season as of early April are:

- Snowfall recorded in Boulder as of April 26, 2016 by CU – 105.9” (Last year was 115”)
- Street miles plowed – 65,000 (16 trips around the world)
- Ice slicer used on streets – 20% reduction in material usage from 2014/2015 season.
- Magnesium Chloride used on streets – 7% reduction in material usage from 2014/2015 season.

### ***System Preservation***

#### *Pavement Management Program*

In 2011, the Transportation Division 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 the 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, an average OCI rating of 75 to 80 for all streets in Boulder. The additional transportation funding provided by the 2011 Bond and 2013 sales tax ballot initiatives have supported progress toward meeting the city's PMP objective. The city's goal of a 75 to 80 OCI is consistent with other communities in the Denver metro area. The average OCI rating for City of Boulder roadways is currently 76.5. As highlighted at the [Aug. 25, 2015](#) TMP study session, it is still early in the implementation of the PMP and it takes time for the program to mature and develop. As data collection improved and city staff gains better tools and best practices with pavement management, staff will be able to operate with a high level of informed decision making about how to maximize pavement condition quality for the least cost.

### Bridge Asset Management Program

As a part of preserving the system, the Transportation Division has initiated efforts to develop and maintain a bridge asset management program that is on a level comparable to the PMP. The key elements of the bridge asset management program should include the following:

- Inventory/Inspection
  - Locating bridges that are part of inventory
  - Assessing bridges through inspection
- Maintenance
  - Perform necessary repairs to keep bridges in service
  - Extend the life of bridge as long as possible for least cost
  - Maintenance dollars should not be spent on bridges that are about to be replaced
- Capital
  - Complete replacement of bridges
  - Large rehabilitation projects to upgrade existing structures
  - Capital dollars are used to replace bridges that are beyond maintenance

It is vital to have an understanding of bridge conditions within the city as they are among the most expensive and complex assets being managed. In early 2016, staff completed the most extensive bridge inventory and inspection effort conducted in the city's history.

Some definitions are useful surrounding the terminology use in bridge asset management. The definition typically used by municipalities in Colorado for a bridge includes the following:

- A structure within the right-of-way that carries a roadway, pathway, railroad or waterway over a waterway, roadway or other feature
- The minimum opening on a structure is 48" (this can be a rectangular shape or a circular shape)
- The structure cannot be a confined space (must have openings on both ends nearby)

Two terms often reported by the media, but not meant to imply that a bridge is unsafe to remain in service, are Structurally Deficient and Functionally Obsolete.

- Structurally Deficient – there may be a load carrying capacity issue, usually caused by deterioration or construction in outdated standards
- Functionally Obsolete – may be a geometric or alignment issue, bridge does not meet current standards for roadway width or vertical clearance over another roadway

Both of these items are tracked by the Federal Highway Administration, but only major bridges are federally tracked or reported. More than 20 bridges on the Boulder inventory are structurally deficient or functionally obsolete.

It is a federal requirement to inspect the Major Bridges (span greater than 20') every two years, and this inspection of the major structures is conducted by CDOT. The City of Boulder has chosen to inspect the Minor Bridges (span between 4' and 20') every four years as this is the typical national inspection frequency.

As of April 2016 the City of Boulder bridge inventory consists of the following:

- 41 Major Bridge Structures
- 270 Minor Bridge Structures (178 carry vehicular traffic, 92 are pedestrian bridges)
- 412 outstanding maintenance items identified during recent bridge inspections
- Estimated replacement value of entire inventory \$250,000,000 (2016 dollars)

A conservative estimate for average bridge service life is 65 years (average of service life for all structure types), and with 311 total bridges, replacing 4.8 bridges per year is a sustainable rate. The average cost of replacing a bridge on the Boulder Inventory is approximately \$650,000, which at 4.8 bridges per year that is \$3.12 million per year in 2016 dollars.

Estimated Bridge Needs for the next 25 years are then:

- Bridge Maintenance funding - \$25-\$35 million dollars
- Capital (replacement/rehabilitation) – \$75-\$100 million

### **General Capital Project Updates**

The Transportation Division is responsible for the multimodal capital projects as outline in the city's Capital Improvement Program. These projects are identified through the TMP planning process and prioritized in the three TMP investment program levels (current, action, and vision plans) based on a variety of criteria aligned with the TMP objectives and city's overall sustainability goals. As funding is identified for these projects, they move forward into the planning, design, and construction phases managed by Transportation's Capital Projects team.

There was an increased number of transportation improvements made from 2012-2015 due to the Capital Improvements Bond passed by voters in the November 2011 election and all of these projects were finished within the bond deadline. The majority of the bond funded transportation projects focused on infrastructure maintenance including the pavement reconstruction of Arapahoe Avenue from 15<sup>th</sup> to Folsom, increased resurfacing of collector and local streets, replacement of substandard signs and the irrigation system for the medians and landscape areas adjacent to Foothills Parkway. Funding was also spent to replace traffic signal incandescent lamps with LED lamps which used 80% less energy and went towards system enhancements additional pedestrian crossings, intersection improvements, new multi-use paths and sidewalks and improvements to the downtown Boulder transit station.

Following is a brief listing and status summary of current capital improvement projects for Transportation. A map showing the location of these projects is included in **Attachment A**.

#### **28th Street**

28th Street between Iris and Yarmouth avenues

Duration: Anticipated to be completed in spring, 2016

Description: Builds multi-use path, multi-use path bridge, bike lane and widens vehicular bridge

#### **Diagonal Highway reconstruction**

Diagonal Highway between 28th Street and Independence Road

Duration: Anticipated to be completed in fall, 2016

Description: Reconstructs vehicle traffic lanes, adds cycle track and multi-use paths

### **Andrus to Airport multi-use path**

Between Andrus Road and Airport Road

Duration: Anticipated to begin construction in fall/winter, 2016

Description: Extends 63rd Street multi-use path to Airport Road and fills a gap between Gunbarrel and urban Boulder

### **Frontier Avenue bridge replacement**

Frontier Avenue between Pearl Parkway and Pearl Street

Duration: Anticipated to be completed in spring 2106

Description: Replaces a deteriorated bridge with a new bridge and adds sidewalks.

### **Boulder Creek at Arapahoe Avenue pedestrian bridge replacement**

Boulder Creek at Arapahoe Avenue

Duration: Anticipated to begin construction in summer, 2016

Description: Replaces a deteriorated pedestrian and bicycle bridge with a new bridge.

### **Baseline Underpass**

Baseline Road between Broadway and 27th Way

Duration: Anticipated to begin construction spring 2016

Description: Builds an underpass to replace the current street-level pedestrian and bike crossing to improve safety.

### **Hanover Avenue multi-use path**

Hanover Avenue between Broadway and 46th Street

Duration: Anticipated to begin construction June 2, 2016

Description: Builds a multi-use path and adds curb extensions and marked crosswalks.

## **Complete Streets Planning Activities**

The TMP implementation work continues in the areas of corridor studies, including the Living Lab program.

### ***Corridor Plans***

The TMP identifies several types of corridor plans to enhance and refine Boulder's system of complete streets. The corridor planning process provides the opportunity for the city to work with the community and agency partners to identify the vision and future multimodal improvements (short-term and long-range) needed for each corridor. Improvements typically include opportunities to enhance facilities and safety for people using all modes of travel, as well as urban design and place making features.

The corridor plans vary by the context and complexity of the street, with the East Arapahoe Transportation Plan being an example of a large-scale, long-term corridor plan from downtown Boulder to 75<sup>th</sup> Street and tying into the regional SH7 corridor study to Brighton; while the Canyon Complete Streets Study is relatively smaller-scale corridor plan from 9<sup>th</sup> to 17<sup>th</sup> streets. The Living Lab pilot project along the Folsom Corridor from Valmont to Colorado is an example of a smaller scale, local project, primarily involving signing and striping rather than substantial capital construction.

The following sections provide updates on corridor plans currently underway and staff is seeking particular feedback from TAB and City Council regarding the Canyon Complete Streets Study as well as the Living Lab pilot project along the Folsom Street corridor.

### *East Arapahoe Transportation Plan*

The East Arapahoe transportation planning process is currently in the visioning phase, asking the community what they would like East Arapahoe to be in the future and what types of transportation improvements could make this vision a reality. Since the last briefing to Council at the [December 8, 2015](#) study session, staff has conducted a series of broad community outreach activities. Staff has gathered input from the community seeking:

- 1) Input and ideas about opportunities for transportation enhancements in the corridor;
- 2) Help identifying the appropriate range of transportation improvement alternatives to be considered; and,
- 3) Suggestions on the evaluation criteria by which they should be evaluated moving forward.

Over the past seven months, opportunities for public input have included an online questionnaire, public workshop, individual meetings with over 20 stakeholders along the corridor, and several small group outreach activities including pop-up events, presentations, open houses, and a focus group.

The following themes have been shared through the recent community outreach:

- *Conceptual Design Alternatives:* There is both concern and interest in the tradeoff between maintaining or expanding the number of vehicle travel lanes versus dedicating more street space to exclusive transit lanes, on-street bicycle facilities and landscaping. For example, of the 126 questionnaire respondents, 46 questionnaire respondents indicated the need for more general purpose lanes and 36 respondents indicated the need for improved bicycle infrastructure. At the public workshop held on November 2015, there was strong support expressed for completing and/or adding bike infrastructure along East Arapahoe. Conceptual design alternatives that included exclusive BRT lanes and on-street bicycle infrastructure were seen as strong in the way that they enhance both bus service and the pedestrian and bicycle environment. However, there was concern that repurposing vehicle travel lanes for other uses could create more congestion and the investment may not be worth the bus ridership that would result.
- *Additional Concepts:* Community members have requested that additional transportation improvement options be considered. Examples include carpool lanes, additional automobile lanes, light rail or streetcar, reversible general purpose lanes, exclusive BRT lanes only during peak travel hours, traffic circles and streetscape beautification.
- *Evaluation Criteria:* Evaluation criteria repeatedly cited through the public input process as important in comparing future transportation improvements options include: safety for people using all modes of travel, perceived ease or comfort for walking and bicycling along/across the corridor, and transit travel time and reliability.
- *Regional Commuting:* In conversations with businesses along the corridor, it is apparent that the majority of employees do not live in Boulder, and drive in single-occupant vehicles from as far away as south Denver and Fort Collins. To attract and retain

employees, businesses desire that commutes should be easy and inexpensive. Eliminating a general purpose lane would be extremely concerning to many businesses.

- *Transit Enhancements:* Much of the community input related to transit includes the need for higher frequency transit, extended transit service hours, enhanced bus stops and more direct and efficient bus connections.
- *Bicycle and Pedestrian Enhancements:* A common theme heard about the existing multiuse path is that it works for families but not for bicycle commuters. Many community members stated that it feels dangerous at driveways because drivers are not looking for pedestrians and cyclists and signage is lacking. Enhancement ideas suggested include an off-street bicycle path, improving bicycle and pedestrian travel along Arapahoe Avenue, as well as making direct connections to businesses and neighborhoods located off Arapahoe.
- *Land Use Planning:* Several community members stressed the need to plan future transportation improvements in coordination with land use planning.

**Attachment B** provides a summary of more detailed public input.

Many of the conversations staff had during these outreach activities pointed to the need and desire by community members for establishing an East Arapahoe Transportation Plan Community Working Group. The working group has been established with 22 participants representing diverse interests from along the corridor as well as from the community at-large. The working group will provide input and feedback from different interests and perspectives during the East Arapahoe planning process. The working group's input is helping staff explore future transportation improvement options serving the diverse interests in the community the best way possible. City staff will use the working group's feedback when developing recommendations and materials for consideration by boards and council.

In addition, Transportation staff is collaborating with the city's Comprehensive Planning staff to integrate transportation and land use planning for the East Arapahoe/SH 7 as part of the Boulder Valley Comprehensive Plan update.

#### *Canyon Complete Street Study*

The City initiated the Canyon Boulevard Complete Street Study to improve travel and the travel experience for pedestrians, bicyclists, transit users and drivers along and across Canyon Boulevard from 9th to 17th streets. This roadway is part of the SH119/CDOT State Highway System and is a principal arterial in the city with approximately 26,000 daily vehicles.

The Boulder Civic Area Plan, approved by City Council in 2013, envisioned improvements along and across the roadway to create greater connection and access to and through the area as well as better connections between the downtown, Civic Area and University Hill areas. The 2014 Transportation Master Plan also identified a corridor study for Canyon Boulevard to improve travel for all modes and integrate with adjacent planning efforts. The resulting improvements are intended to transform Canyon to a place people want to come to with urban design, placemaking and physical transportation facility improvements.

The Canyon Complete Street Study first phase is developing a vision and conceptual design options and evaluate the options to select a preferred conceptual design option.

The project staff team is composed of representatives from the city's transportation division and the community planning and sustainability, parks and recreation departments as well as CDOT and RTD staff representatives. Project staff team meetings began in late 2015 with a walk audit of the area and meetings to discuss and listen to the strengths, weaknesses, opportunities and constraints as identified by the project team members. From these meetings the team developed a Vision for the Canyon Boulevard Complete Street Study which is:

**Vision:**

Canyon Boulevard will become a more accessible, safe, and inviting travel experience for pedestrians, bicyclists, transit and cars traveling across and along the corridor.

Canyon Boulevard serves as a vital connection, a linkage between the natural landscape of Boulder Canyon and Civic Area and the urban activities of the City. It will continue to serve as a transportation nexus for Boulder, moving people to and through the area, serving as both an important destination and a connector. Canyon Boulevard will combine the location's history and natural elements with the contemporary need for equity and mobility, providing increasing transportation options into the future.

This vision developed into a set of Goals and Objectives to achieve to reach the above vision. The goals and objectives are reflected in the proposed measures to be used to evaluate the conceptual design options so that the recommended option best reaches the vision for Canyon Boulevard.

All of the conceptual design options are within the 130' Complete Streets planning width which reflects the space available on Canyon Boulevard form zoning setback requirements outlined in Ordinance 7813 which amended the Land Use Code. The 130' Complete Streets planning width also allows for all modal facilities and the urban design feature of a double row of trees amenity zone along the south side of Canyon Boulevard. Features of a Complete Street include:

- ❖ ***Gathering spaces*** – Parks, plazas, and courtyard creating destinations along the street and opportunities for organized events, space to celebrate nature and culture and places for rest from the surrounding urban environment.
- ❖ ***Accommodations for bicyclists*** – Appropriate bicycle facilities along Canyon Boulevard will accommodate a wide range of bicycling ages and abilities and could include multi-use paths, on-street protected bike lanes, conventional bike lanes and shared-lane bike routes.
- ❖ ***Efficient roadway*** – Proactive roadway operation and design allow people to predict traffic flow and understand how to safely and efficiently move by bus or car through the area.
- ❖ ***Enhanced intersections*** – Enhanced intersections create high visibility for all users and predictable actions for people crossing paths either in a vehicle, on a bicycle or on foot. Crosswalk design should provide safe and comfortable experience for non-motorized

travelers to establish convenient walking and bicycling routes across and along Canyon Boulevard.

- ❖ ***Integrated transit*** – Transit offers a high capacity option for moving people to and along a street. A complete street considers every passenger’s trip from start to finish. Transit stops enhance the public realm and activate the streetscape by providing passenger waiting areas that can include, bus shelters, way finding, lighting and public art.
- ❖ ***Active sidewalk*** – Sidewalks are central to pedestrian life. A complete street provides high quality spaces for people that feel safe, have natural features and have appropriate transitions to the streets, transit stops, and building entrances, making them easy places to walk, use a wheelchair or stop and observe street life and activity.

A brief description of the seven conceptual design options is included below and the images of these conceptual design options and their features are included in Attachment B.

- Option 1 includes a planted center median, multi-use path on the south side, sidewalks, and tree rows
- Option 2 includes multi-use path on both sides of the street, amenity zone, tree rows and intermitted planted median
- Option 3 includes a 2-way protected bike lane on the north side, sidewalks on both sides of street, tree rows and intermittent center median
- Option 4 includes a 2-way protected bike lane on the south side, sidewalks on both sides of street, tree rows and intermittent center median
- Option 5 includes conventional on-street bicycle lanes and sidewalks on both sides of street, tree rows, amenity zone and a continuous planted median.
- Option 6 includes a single direction protected bike lane on both sides of street with planted separation, north and south amenity zone, sidewalks, tree rows and a planted center median.
- Option 7 includes a buffered bike lane, sidewalk and amenity zone on both sides of street, tree rows, and planted center median.

Elements of each option may be “mixed and matched” depending on factors such as space or right-of-way availability, traffic conditions, and the land use character of sections along Canyon Boulevard. And, other variations on these alternatives are possible by block section too. It is possible that the design options will continue to evolve through the conceptual design phase of the planning process, based on community feedback and the evaluation measures assessment results

Staff is currently seeking TAB, council, and community feedback on the Canyon Boulevard Complete Street Study conceptual design options and proposed evaluation measures. Phase 1 includes the development of conceptual design options, evaluation of the design options and selection of a recommended option to complete further engineering design and cost estimation. The second phase will complete additional engineering design, cost estimation for the Canyon between 9th and 17th Streets corridor and consider funding and phasing strategies to implement the design concept. Phase 1 began in late 2015 and is anticipated to be completed in late 2016. Phase II is anticipated to begin in late 2016 and continue into 2017.

See **Attachment C** for more details.

### 30<sup>th</sup> & Colorado corridor studies

The 30<sup>th</sup> Street and Colorado Avenue corridors provide travel options between key activity centers in Boulder including University of Colorado (CU), student housing at Williams Village, CU East Campus, Boulder Junction, and CU Main Campus. Today 30<sup>th</sup> Street from Baseline Road to Arapahoe Avenue has incomplete multimodal facilities and has experienced numerous vehicular, bicycle and pedestrian collisions including a fatality. Colorado Avenue is a major connection to campus, and will become an even more key transportation facility for students, faculty, and employees traveling between the main and east campuses as CU continues to implement its East Campus Master Plan.

30<sup>th</sup> Street from Baseline Road to Pearl Street and Colorado Avenue from Foothills Parkway to 18<sup>th</sup> Street were identified for a corridor study based on community feedback during the Transportation Master Plan Update process. These will each be studied together as a joint multi-year corridor planning process beginning in spring 2016 and starting with a review of existing conditions and future plans. The process will then develop and evaluate conceptual design options for improved bicycling, walking, transit and driving facilities. The study is not beginning from an approach of a particular or specific roadway cross-section design. The recommended multimodal improvements will come about through the planning process with extensive opportunities for community engagement throughout the process.

In addition, the City of Boulder applied for, and received, a federal Transportation Improvements Program (TIP) grant to design and construct the 30<sup>th</sup> Street and Colorado Avenue Bicycle and Pedestrian Underpass Project, including underpass lighting, multi-use path connections, signage/wayfinding and 20 bicycle parking spaces. This project will be planned in conjunction with the corridors study beginning in spring 2016 and in accordance with the federal funding requirements.

### ***Living Lab Program***

The Living Lab program is one of the TMP Complete Streets action items to test new street designs and community engagement processes. These pilot projects are intended to be experimental and allow city staff to gather technical, observational and community feedback as part of an ongoing evaluation process that assesses whether a pilot project is or is not a good fit for Boulder. The results and experiences from the Living Lab program are informing the larger scale corridor plans currently underway as well as future planning for city-wide network of low-stress bikeways, enhancing walk access to/from key transit corridors, and creating a more safe and pedestrian-friendly community.

### *Status of Remaining Living Lab Phase I Projects*

Based on direction received at the [January 19, 2016](#) City Council meeting, staff is modifying two of the Phase I projects:

1. University Avenue – west of Broadway, the parking protected bike lanes were converted back to the buffered bike lane treatment, with the addition of green pavement markings to enhance visibility and safety.

2. Baseline Road – the concrete blocks are being removed and the protected bike lanes will be extended east from 37<sup>th</sup> Street to Mohawk Drive. In February 2016, staff installed automated bicycle counters on Baseline Road in both the east and west direction near Inca Parkway which is not currently a protected bike lane facility. The bicycle volume data will be used to understand volume in the before and after condition along Baseline Road. Staff anticipates extending the protected bike lane facility from 37<sup>th</sup> Streets to Mohawk Drive in June 2016.

The remaining Living Lab phase I pilot projects include: Dashed Bike Lanes on Harvard Lane, a Bike Box facility on Folsom Street at Arapahoe Avenue, and two projects at Boulder Junction, the Multi-way Boulevard and Shared Street facilities. The following section describes the primary evaluation criteria, key findings, and proposed next steps for the remaining Phase I projects currently under evaluation. Staff will provide TAB and City Council a final evaluation update for the Bike Box, Multi-way Boulevard, Shared Street facility, and Back-In Angle Parking project in December 2016 to conclude the Living Lab program.

#### *Dashed Bike Lanes on Harvard Lane*

Dashed Bike Lanes provide designated space for bicyclists when conventional bike lanes will not fit due to constrained roadway width. They allow two-way vehicle movement and are intended to slow motor-vehicle speeds. As part of a federal research process, the city tested the Dashed Bike Lane on Harvard Lane between Dartmouth Avenue and the Bear Creek multi-use path at Table Mesa Drive, as this street is a well-used bicycle corridor with low traffic volume. Evaluation of the Dashed Bike Lanes occurred over the last year based on the approved performance measures from Federal Highway Administration (FHWA). This included community feedback, field observations, and “before” and “after” comparison of the performance objectives.

The FHWA experiment has concluded and the Dashed Bike Lanes did not impact traffic flow due to the low volume of vehicles, nor did it change total crashes or changes in vehicle speeds, or bicyclist demographics. The experiment did result in fewer people riding bicycles in the center of the road and vehicle drivers did continue to yield to vehicles and bicyclists. Community input regarding the dashed bike lane facility is mixed. Some people favor the facility and others did not see any value added.

Staff recommends keeping the dashed bike lanes in place as we consider other options for the Harvard Lane corridor in the future, and will potentially consider the Dashed Bike Lane treatment for other locations if applicable.

#### *Bike Box on Folsom Street*

A bike box is a designated area at the front of a traffic lane at a signalized intersection that provides bicyclists with a safe and visible way to get ahead of queuing traffic during the red signal phase. The facility also provides increased storage area for bicycles at an intersection, and is intended to help bicyclists avoid being hit by right turning vehicles. The bike box facility includes an advanced stop line, green colored pavement surface with a bicycle symbol, intersection striping, signal detection for bikes, and regulatory signage prohibiting motor vehicles from turning right during the red signal phase.

In the spring of 2015, the City of Boulder received permission from FHWA to experiment with a bike box on Folsom Street at the southbound approach to the Arapahoe Avenue intersection to enhance southbound bicycle travel along Folsom Street. Although the bike box is considered a Phase I project, it was installed during the overall Phase II Folsom Street project in July 2015.

Evaluation of the bike box is on-going based on the approved performance measures from FHWA. This included community feedback, field observations, and “before” and “after” comparison of the performance measures. The performance measures include observing bicycle use, the interaction between bicyclists and motorists, and motor vehicle positioning, right turn maneuvers, and yielding behavior. Preliminary observations are that a majority of motorists utilize the bike box appropriately, although most bicyclists do not use the full extent of the box and tend to utilize only the bike lane portion of the facility.

Staff will continue to evaluate the bike box facility through the end of 2016 in accordance with the federal requirements and will provide a recommendation for next steps as part of the next TMP progress update to City Council, currently scheduled for December 2016.

#### *Status of Living Lab Phase II - Folsom Street Project*

In July 2015, the Folsom Street pilot project was installed from Valmont to Taft, with a future extension planned to connect to Colorado Avenue when CU completes construction adjacent to this segment of Folsom Street. The purpose of the Folsom Street pilot project is to demonstrate a corridor approach to testing new street designs with the intent to increase safety and access for people using all modes of transportation. The Folsom Street pilot project included converting portions of the corridor from Valmont to Canyon from four vehicle travel lanes to three, adding center left turn lanes, and protected bike lanes. South of Canyon, the Folsom Street project included intersection restriping and other treatments, including buffered bike lanes to connect with the CU campus at Colorado. Feedback from the Boulder community is an important part of the Living Lab program and to address traffic congestion impacts experienced by the community after installing the pilot project, the center segment of the Folsom Street pilot project was modified in the fall 2015. These modifications included restoring the four vehicle travel lanes and removing a segment of protected bike lanes from Spruce Street to Canyon Boulevard in order to improve the flow of traffic.

Staff has been collecting data along the corridor before and after the initial project installment in July 2015. The evaluation criteria consist of both primary and secondary performance measures in order to understand the operational characteristics of the corridor. The primary performance measure data was collected on a weekly basis from July through October 2015 and then switched to a monthly data collection schedule in November 2015 through March 2016. The primary data consists of the following criteria:

- weekday vehicle volume
- weekday bicycle volume
- vehicle travel time during the PM peak hour
- weekday vehicle speed
- traffic collisions

- number of male, female, and families (children and adults with children) riding bicycles during the AM, noon, and PM peak hours

In addition, more detailed technical transportation operations analysis was conducted along Folsom Street corridor, and at key intersections, and on side streets, as well as review of maintenance experience along the corridor during winter conditions.

The Summary Report, including the technical evaluation and community feedback, for the Folsom Street pilot project is provided as **Attachment D**. The following section describes the key findings from the report:

- The initial conversion from four vehicle lanes to two lanes plus center turn lanes from Valmont Road to Canyon Boulevard resulted in considerable peak hour travel time delays and travel time variability along Folsom Street during the initial weeks of implementation, particularly in the section from Spruce Street to Canyon Boulevard. Average travel times during the evening peak hour measured between Valmont Road and Arapahoe Road were approximately 3.5 minutes before the project. During the first several months of the project the northbound average travel times increased to between 4 and 5 minutes and the southbound average travel times peaked at over 5 minutes. Since the four vehicle lanes were reinstalled between Spruce Street and Canyon Boulevard in the fall 2015, the travel times between Valmont and Arapahoe Road have returned to pre-project levels.
- Travel time data collected and public input all suggest that vehicular traffic operations on Folsom Street, particularly between Spruce Street and Canyon Boulevard, were impacted with the full implementation of the project as measured with travel times, queue lengths, signalized intersection Levels of Service, and side street delays. These impacts have been mitigated with the return to original lane geometry between Spruce Street and Canyon Boulevard.
- Traffic counts along Folsom Street throughout the project indicated that volumes were reduced by up to 15% during the implementation of the full project, indicating that is likely that traffic diverted off Folsom Street. The traffic volume decrease on Folsom has been reduced to approximately 4% after the segment of Folsom between Spruce Street and Canyon Boulevard was returned to the four lane condition.
- The project included two different treatments on intersection approaches along Folsom Street for vehicular right-turn interaction with bike lanes during the full implementation of the protected bike lanes. Field observations of the “transition” treatments at Pearl Street and Canyon Boulevard in September 2015 indicated that most right-turning motor vehicles complied with yielding requirements to bicyclists in the protected bike lane. Based on evaluations of the “Skip Green Dash” treatment at Pine Street in September 2015 and March 2016, most vehicles observed turning right across bicycle lanes at these locations are not complying with the City ordinance requiring vehicles to move as close to the curb as possible (into the bicycle space) before turning right.
- Evaluation of motor vehicle travel speeds (as measured with the 85<sup>th</sup>-percentile speed at Bluff Street) have decreased by roughly 2-3 miles per hour (mph) during the course of the project, but these speeds are still approximately seven miles per hour above the posted speed limit of 30 mph.

- Analysis of side-street and parallel corridor traffic volumes, intersection peak hour turning movement volumes, intersection peak hour Levels of Service, and delay indicate that the reduction of traffic volumes on Folsom Street did not result in an identifiable pattern of diversion to any particular corridor. The analysis suggests that any diverted traffic that did occur was redistributed across the city roadway grid without identifiable impacts to any one corridor.
- Field observations in September 2015 indicate that there was a reduction in traffic saturation flow rate (which is an indicator of how much traffic a travel lane can accommodate during peak conditions) in the section between Spruce Street and Canyon Boulevard. Possible factors that influenced the saturation rate in September 2015 are increased friction (from vertical bollards), visual elements (markings, signs, additional bicyclists), and the close proximity of signalized mid-block crossings (Spruce and Walnut Street). Field observations in March 2016 indicate that the saturation flow rate has increased by approximately 10% compared with September 2015, and are now consistent with estimated pre-project levels.
- Staff observed that the pedestrian crossings on Folsom Street at Spruce Street and Walnut Street caused congestion, delay, and increased travel time when this section of the project was reduced to a single through lane in each direction.
- Counts of bicycle volumes along Folsom Street showed an increase during the first three months (July through October) after initial installation, and have since decreased below initial levels. Based on cycling data from other sites, this is typical seasonal variation in bicycle travel. More data over a longer period of time is needed to determine if any changes in volume of bicycles is statistically significant.
- The frequency of collisions in the corridor each month after installation is following a similar monthly pattern to a three-year collision history (2012 – 2014) from before the project was implemented. The monthly number of collisions is at or below this historic pattern.
- There were no pedestrians involved in collisions during the first eight months of the project; however, on April 21, 2016, a pedestrian died from injuries sustained in a collision at the intersection of Folsom Street and Canyon Boulevard. The pedestrian was crossing Canyon Boulevard in the east crosswalk and was struck by a truck turning left from southbound Folsom Street onto eastbound Canyon Boulevard.

### Community Feedback

An important component of the ongoing evaluation of Living Lab pilot projects is community and user feedback. Since installation, the city has hosted a number of opportunities for community input including bike audits (guided community bike rides), online surveys, in-person feedback at public events, and social media and Inspire Boulder posts.

In April 2016, staff hosted a public open house to present key findings of the ongoing evaluation and to gather additional community input. The Folsom Street Corridor was organized into four segments in order to best articulate specific facilities and modifications that have occurred since the installation of the project in July 2015. Community members were asked to provide comments under three topic headings: keep it, refine it, or remove it. Additionally, the city is offering an on-line survey to seek additional public input on the Folsom Street project. A complete summary of public feedback from the public open house and results from the survey

can be found in the Complete Streets Open House Summary: **Attachment E**. (Results from the survey will be presented to the TAB May 9 meeting). Below is a brief summary of the public input from the April 2016 public open house event:

Most of the community feedback received at the Complete Streets Open House focused on the comments regarding the bicycle facility treatments along the corridor. Several people shared their desire for improved, physically separated north-south bicycle corridors. Overall, the current bicycle treatments along the corridor were well received. There was support for keeping the protected bike lane treatment between Valmont and Spruce Street citing improved safety, comfort, directness and separation between users. However, some bicyclists have expressed difficulty with executing left turns from the protected bike lanes. Some people requested the segment between Valmont Road and Spruce Street be returned back to the four-travel lane condition citing concerns with delay when turning left from side streets and aesthetic concerns regarding the bollards. Several comments expressed concern for the narrow width of the striped bike lanes between Spruce and Arapahoe. There was support for keeping the buffered bike lane treatment between Arapahoe and Colorado, though some comments expressed support making these protected bike lanes, including adding planters to improve separation from the adjacent travel lanes.

#### *Preliminary Recommendations*

Based on the technical key findings and community feedback to date, staff recommends continuing the Folsom Street pilot project in its current condition from Valmont Road to Colorado Avenue. Analysis of the corridor has been organized into four segments in order to best articulate specific facilities and modifications that have occurred since the installation of the project in July 2015.

#### *Valmont Road to Spruce Street*

This segment of the corridor currently consists of two travel lanes (one in each direction), a center left turn lane, and protected bike lanes using bollards. Other than thinning the number of bollards in the fall 2015, this segment has stayed intact since the initial project installation in July 2015. The protected bike lanes provide more perceived safety and comfort for bicyclists of different levels of confidence, particularly in this section of Folsom that includes a hill and curves in the roadway, which can cause some drivers to swerve into the bike lane without the bollards.

The technical evaluation indicates a minor drop in the 85<sup>th</sup> % of vehicle speed from 39 (mph) to 37 (mph). No significant operational impacts have been observed during the evaluation process concerning travel times, side-street delay, or visibility. The center left turn lane provides an opportunity for left turning vehicles to more safely execute left turns along the corridor without blocking through traffic. As with the other segments of the corridor, bicycle volume, demographics, and collision data will need to be analyzed over a longer period of time to gauge any significant trends.

#### *Spruce Street to Canyon Boulevard*

Today, this segment of the corridor consists of four travel lanes and conventional bike lanes. During the initial project installation, two of the four travel lanes were repurposed to provide two

travel lanes, center left turn lanes, and protected bike lanes. Due to community feedback, and impacts to traffic congestion and other operational issues, this segment was reverted back to the original condition, the same condition that exists today. Staff recommendation is to continue the existing configuration, without any further changes. Corridor travel times have returned to the before condition, side-street delay has subsided, long left turn lane queues have shortened, and traffic impacts at signalized intersections at Pearl Street and Canyon Boulevard no longer exist.

#### *Canyon Boulevard to Arapahoe Avenue*

No vehicle travel lane repurposing modifications were performed along this segment of the corridor during the initial project installation. Today, the corridor consists of four travel lanes and conventional, striped bike lanes. Staff recommends continuing the current striping configuration along this segment of the corridor.

#### *Arapahoe Avenue to Colorado Avenue*

This segment of the Folsom corridor consists of two travel lanes and buffered bike lanes from Arapahoe Avenue to Taft Drive. During the initial project installation, the conventional bike lanes were converted to buffered bike lanes by utilizing excess space from adjacent travel lanes. This striping configuration was recently continued to Colorado Avenue following the completion of the CU stadium project.

#### *Living Lab Program – next steps*

Staff recommends keeping the Folsom Street pilot project in the current configuration with on-going monitoring through fall 2016, along with the remaining Phase I projects. Staff will return to City Council in December 2016 with overall next steps for the Living Lab program. Staff does not intend to add additional projects to the Living Lab program. Since 2012, the program has helped the City of Boulder better understand and improve planning and public outreach processes, project implementation practices, and effective evaluation processes. Staff has adopted new street design techniques and has a better understanding of how innovative types of facilities operate in the real world context. With this information, staff is able to apply this knowledge toward existing and future corridor planning efforts while maintaining the spirit of innovation in order to create safe and comfortable travel conditions for all road users.

#### *National Best Practices Interviews*

As part of the discussions regarding the Living Lab program, City Council has expressed an interest in understanding how other cities are experiencing and managing complete streets projects, including pilot projects such as Boulder's Folsom Street corridor. A community's experience with implementing complete streets projects can vary based on diverse community perspectives and the length of time that the community has been developing and implementing their multimodal transportation policies. Staff contacted a variety of cities to better understand the practitioner's perspective, that is, the city staff experience when planning, implementing, and evaluating their Complete Streets projects.

Utilizing the City of Boulder's current list of peer cities, platinum and gold-level Bicycle Friendly Communities, and member cities of the National Association of City Transportation Officials, staff selected and interviewed practitioners from thirteen cities to better understand different approaches and experiences. Each interview was divided into three parts: 1) public

engagement & outreach processes, 2) evaluation criteria and decision making processes, and 3) overall lessons learned from implementing and evaluating complete streets pilot projects. Below is a list of the cities that were selected to participate in this interview process, and highlights and themes from the interviews.

Ann Arbor, MI  
Bloomington, IN  
Cambridge, MA  
Davis, CA  
Denver, CO  
Eugene, OR  
Fort Collins, CO

Greeley, CO  
Madison, WI  
Portland, OR  
Pueblo, CO  
Salt Lake City, UT  
Tempe, AZ

*Public engagement & outreach processes:*

Through our interviews, staff learned that public outreach varies among the cities based on the complexity of the project and community norms. Typically, cities use traditional means of outreach including public meetings, board and commission reports and presentations, websites, and responses to individual inquiries. Some cities have developed innovative ways to garner public input such as deploying street teams to canvas affected stakeholders along a project corridor, including exciting marketing appeal to “pop-up” events, and in some cases, have provided large floor maps of the project area in public plazas to encourage community members to interact by identifying local landmarks while they gain an understanding of the project area and current/planned conditions from an aerial perspective. Others choose “tactical urbanism” projects that demonstrate facets of a project by temporarily displaying features of a project, such as, a pop up bike lane, traffic circle, or the use of colored pavement markings to highlight specific facilities for a short duration of time (day/weekend). In most cities, the intensity and frequency of the public outreach depends upon the controversial nature of the project. Some cities are just starting out on their journey to implement complete streets, and some of their projects involved low or few tradeoffs, so the public engagement process was more limited/traditional. The more tradeoffs that are involved, leads to more controversial projects, and then need longer and more intense public engagement processes. Transportation staff identified additional important takeaways from the interviews:

- Developing a citizen’s advisory committee was helpful for more complex projects.
- Focusing on stakeholders and spending ample time with them goes a long way to clear misconceptions, build on-going and/or early relationships with stakeholders so people can candidly express concerns and public become more knowledgeable about project and help shape the project from the beginning.
- Developing focus groups in advance to provide diverse input at the start of the public process helps to identify project strengths, weakness, opportunities, and threats/risks
- Provide creative, interactive opportunities for people to talk about the project location near, or on-site.

- Some cities have had to modify and/or scale back their pilot projects due to community feedback either before and/or after the installation. Community concern has typically been expressed regarding the pilot projects removing on-street parking in business districts, rather than concern with reducing the number of travel lanes.

*Evaluation criteria and decision making processes:*

Based on the interviews, the evaluation process varies from city to city and depends upon the magnitude and complexity of a project. Practitioners shared that developing project goals and objectives in advance helps to shape what defines success and helps to create a shared vision of the project. The technical evaluation criteria used in other cities are similar to the City of Boulder’s criteria, and in some cases, less extensive. Salt Lake City also includes tracking sales tax revenue along their pilot project street corridors before and after the installation of the project though it is difficult to attribute the increase solely to the new street design, it could be due to a variety of factors. Interviewees shared that an important component of the evaluation process is the need to interpret the data in an organized and easy to understand format both for internal staff as well as for policy makers and the public. Additionally, some noted the importance of clarifying the methodology of a project’s evaluation process and providing a schedule for the public to understand when information will be updated at key milestones is helpful.

*Lessons Learned:*

Lessons learned are numerous. The list below provides a snapshot of what other cities have learned from their experiences implementing complete streets projects and these mirror the lessons learned by the City of Boulder’s Transportation Division:

- Be strategic, context and timing is important, and consider other major private and public projects in the project area
- Plan for a robust public engagement process, particularly if the project will have tradeoffs, need to scale the process based on the level of complexity of the project and potential for community concern.
- Tread carefully and systematically, do not be overly ambitious with project scope
- Develop a shared project vision (goals, objectives, and evaluation criteria)
- Do not underestimate public dissatisfaction, most of the cities have experienced significant community reaction to their projects, unless the project did not involve significant tradeoffs.
- Be prepared for evolving and changing sentiment within the community
- Consider options of implementing “pilot” or “permanent” projects
- Don’t underestimated time needed for installation
- Provide preliminary data early on and perform frequent information updates
- Quickly respond to community concerns
- Be prepared for adaptive management measures following installation, including off-ramps to change or end project earlier than anticipated if needed
- Gather robust before data if the project involves tradeoffs
- Prepare solid FAQs in advance of project

- Use both traditional and social media during the entire length of the project, work proactively with the media
- Spend the time needed to meet with people in-person and it is good to have strong community relations in advance of the project.
- Vocabulary – word choice matters, though some cities continue to use project names such as “road diets” and have not experienced negative reaction. Again, it depends on community context and level of tradeoffs/risks associated with the project.

This interview process has been very helpful to better understand that many cities are advancing new street designs and processes similar to Boulder’s Living Lab program and they are experiencing similar challenges and learning opportunities. Each of the cities contacted expressed appreciation for City of Boulder staff reaching out to them, and they are all interested in continuing an open dialogue to learn from our shared experiences as we all strive to create more walkable and bike-able streets within our communities.

The Transportation Division staff is planning to host a Complete Streets “national practitioners’ panel” in the fall 2016 and will feature a subset of community representatives from the national complete streets interview research conducted by staff this spring. Staff will use the information from the event to help shape recommendations for future Complete Streets innovations; including options for enhancing city’s corridor planning processes, 2.0 network planning,, and other potential pedestrian, bicycle, and transit related projects and programs. In addition, staff will establish a methodology to assess multi-modal “level of service” in an approach that emphasizes people moving capacity, low stress, quality of experience, along with safety and efficiency for people using all modes of travel. This will guide next steps for a city-wide 2.0 network planning work item, proposed to begin in 2017.

### **Renewed Vision for Transit**

The 2014 TMP created a Renewed Vision for Transit and includes a comprehensive set of strategies identified in the TMP Action Plan to enhance local and regional transit service, capital improvements, policies and programs. Major accomplishments include the opening of US 36 Flatiron Flyer Bus Rapid Transit (BRT) as well as the new inter-regional FLEX service from Fort Collins to Boulder in January 2016. Progress in each of Renewed Vision for Transit areas is discussed in the following section and staff is seeking input from TAB and City Council in May to help guide the transit work program in 2016-17. Staff will be presenting a council study session focusing on a more in-depth check-in on the Renewed Vision for Transit on September 27, 2016.

### **Planning Studies**

#### ***HOP Transit Study***

Boulder is celebrating 21 years of the city’s flagship Community Transit Network (CTN) route, the HOP. City staff kicked off the first phase of the HOP Transit Study in October 2015 with a week-long HOP 21st birthday campaign. The week-long campaign provided an opportunity to engage with current riders and agency partners to celebrate the accomplishments of the HOP

over the last two decades. It also provided information that the HOP Transit Study would begin in 2016 to explore opportunities to improve the HOP for the future.

The purpose of the second phase of the HOP Transit Study is to build upon the success of the HOP by enhancing the customer experience and addressing changes in land use and transportation options over the last two decades. Based on the operational analysis and public engagement, the HOP study planning process may lead to a route and service redesign, enhanced wayfinding and branding, and other potential refinements. The HOP Transit Study will build on the tradition of a community driven process that the city's relied upon over the years to design the CTN. The study is an opportunity to revisit the goals and objectives of the service, ensure the alignment of these goals with community objectives, and the ability to accommodate important activity centers over the next few years as well as for the longer term future. This will help maintain and enhance the HOP as a cornerstone of the CTN in service for the Boulder community.

The HOP Transit Study will be based on robust transportation planning process, including extensive public outreach and stakeholder engagement as well as collaboration with agency partners, including Via Mobility Services, Regional Transportation District (RTD), University of Colorado Boulder (CU), and Boulder County. City staff is organizing a group of stakeholders that will include representatives from the University Hill Business District, Downtown Development Authority/Downtown Business Inc., Downtown Management Commission/Downtown Business Association, Boulder Chamber, Boulder Junction Access District, 29th St. Mall, Google, CU Student Government, Chautauqua Neighborhood, Boulder Housing Partners, and Boulder County's Local Coordinating Council. Three stakeholder workshops are anticipated in the planning process, as well as public meetings at key milestones. Staff is also participating as part of the Chautauqua Access Management Plan (CAMP) to help identify potential transit service opportunities to serve this area and mitigate traffic and parking impacts to the adjacent neighborhoods.

### ***Mobility Hubs***

Mobility hubs are a new concept that came about through the 2014 TMP update process and are envisioned to enhance first and final mile connections with major transit stations throughout the community. Mobility hubs combined transit stations with bike share, car share, rideshare, and park and rides/satellite parking sites and are intended to be integrated with the surrounding land use to provide a more convenient and welcoming experience for people accessing transit. Staff from multiple city departments and agency partners has begun exploring mobility hubs concepts in North Boulder, as well as looking for opportunities to enhance the Table Mesa park and ride.

#### ***North Boulder Mobility Hub***

Conceptual planning for the North Boulder mobility hub continues. This 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 Bike-n-Ride 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 continues to work with CDOT to relocate the use of sand/material storage to another site.

Staff presented preliminary design concepts for the North Boulder mobility hub to City Council at its TMP February 25, 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 and RTD to refine the design concepts, incorporating design principles such as iconic roof structures, streetscape elements, landscaping and paving materials that frame and define spaces and a large sculptural gateway element. The potential for public/private partnerships to provide shared “edge” parking on properties adjacent to the site is also being explored.

### *Table Mesa*

Table Mesa Station (pnR) is an important connection to regional and local transit in the city and is identified as a mobility hub in the Renewed Vision for Transit. In early 2016, staff submitted an application for CDOT FASTER funds to make multi-use path improvements to enhance bike and pedestrian access to the Table Mesa Station (PnR) and staff is coordinating with Boulder County and RTD to identify funding for a Bike and Ride facility at Table Mesa for 2017 implementation. Staff continues to identify funding for other mobility hub improvements such as electric vehicle charging stations, car-sharing locations, and a B-Cycle station.

### ***Joint Maintenance Facility Planning***

In February 2016, the City of Boulder convened a group of agencies, including CU, RTD, Via, BVSD, Boulder County and CDOT to understand respective transit and vehicle maintenance facility needs and to discuss potential opportunities for partnering on a joint maintenance facility. At a time when several agencies are outgrowing current facilities or embarking on plans to build new transit and vehicle maintenance facilities, it is an opportune time to start this discussion. At the kick-off meeting, it was determined that a number of mutual needs exist and potential opportunities to co-locate facilities should be further explored. To date, the agencies are drafting their lists of needs and ideas and the group will reconvene in late 2<sup>nd</sup> quarter.

### ***First and Final Mile –US36 wayfinding study***

In November 2015, 36 Commuting Solutions, in partnership with local jurisdictions, was awarded a DCROG Urban Center/STAMP grant to fund final design and construction drawings for unified corridor-wide signage along the US 36 Bikeway and at US 36 BRT stations, including the downtown Boulder, Boulder Junction and Table Mesa transit centers. 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 Northwest Corridor Bicycle and Pedestrian Wayfinding Plans and Site Design project is expected to kick off in late-spring/early-summer 2016.

### ***Real time information update/status***

Implementing real-time passenger information is one of the top priorities in the Renewed Vision for Transit. In 2015, CU implemented real-time information for the HOP and Buff Bus that can be accessed via [www.boulderbustracker.com](http://www.boulderbustracker.com) and via the CU Bus Tracker smartphone application. In 2016, RTD implemented a beta real-time information system for local buses that can be accessed via the Transit App smartphone application. RTD is continuing to test and improve their real-time information data. Next steps for RTD include implementing real-time

tracking for regional buses and light rail by the end of 2016. The City in partnership with CU is working with RTD to integrate HOP data into the district-wide real-time information system. This is expected to be implemented by fall 2016.

### ***What's Next for 2016 - 2017***

#### *Transit Service Delivery Model Analysis*

The TMP identifies the need to explore models for delivering local and regional transit service consistent with implementing the Renewed Vision for Transit. City staff is working with local and regional partners to scope a study that will explore the most effective and efficient transit service delivery and governance options for implementing the Renewed Vision for Transit.

A detailed analysis is required to fully explore service delivery options, such as evaluating costs, benefits, opportunities, and challenges associated with potential service delivery options. With the future of BRT service implementation and other Community Transit Network (CTN) enhancements, there is significant opportunity to explore different types of service delivery models with agency partners including Via Mobility Services, RTD, and others. The potential service delivery models range from maintaining the status quo, to developing new partnerships for future transit service delivery. Funding and legislative issues associated with service delivery options would be significant and will require extensive study. A draft scope for the study will be presented to council at the September 27, 2016 study session focused on the TMP's Renewed Vision for Transit.

#### *Eastside Circulator study*

As one of the TMP action items, the City of Boulder and University of Colorado (CU) have been working jointly to define elements of an Eastside Circulator project. This City-CU partnership is intended to leverage the regional US 36 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 US 36 Bus Rapid Transit (BRT). Technical work for this project will resume in late-2016 and will be informed by the recommendations that come out of the HOP Transit Study.

#### *Strategic planning with Via Mobility Services*

A successful process will examine and make informed projections about trends and opportunities that will likely continue to shape and evolve Via's services and create possibilities to strengthen the city's partnership and goals regarding the HOP and future transit services. The goal of the process will be to articulate specific goals for an ongoing partnership and describe the action steps and resources needed to accomplish them over the next 5-10 years.

Through the combined short-term and long-range initiatives of the TMP's Renewed Vision for Transit, the city is continuing to work collaboratively with our agency partners to strengthen local and regional transit connections for the Boulder community.

### **Regional Travel**

Regional Travel is another of the inter-related TMP Focus Areas and provides policies to guide collaboration with local and regional partners to enhance multimodal transportation options for people traveling to/from Boulder and the surrounding region. Of particular importance is developing and implementing transportation options for Boulder's non-resident employees to support the community's Economic Vitality goals as part of the overall Sustainability Framework. The following highlights showcase progress to-date in the TMP area of Regional Travel:

#### ***US 36 Flatiron Flyer***

RTD's new US 36 Flatiron Flyer service began on January 3, 2016. The service provides all-station and express service between Denver and Boulder. US 36 Flatiron Flyer service originates from Boulder Junction at Depot Square Station during morning and evening rush hour and Downtown Boulder Station all day on weekdays and weekends. Over the first three months of service, RTD has seen a 45% increase in ridership over what previously existed on the US 36 corridor bus routes in August 2015. The majority of passenger trips still occur during rush hour. Overall, the Flatiron Flyer's operation is performing 90% as scheduled, with the remaining service being over 5 min late. It is noteworthy that ridership in all time periods, including midday for January 2016 compared to January 2012 has increased significantly.

#### ***FLEX***

The new FLEX service to Boulder began on January 18, 2016. City of Boulder staff worked with Boulder County, Longmont, RTD, CU, Colorado State University (CSU), Loveland, and Fort Collins/Transfort to extend interregional transit service to/from Boulder on the FLEX route along US 287 and SH 119. The service is made possible by a DRCOG grant award of \$1.15 million. This service provides five trips each weekday, two in the morning and three in the afternoon/early evening. A one-way trip takes approximately 1 hour 30 minutes. After the first month of service, with 5 trips per day, Transfort is seeing about 170 daily riders on the FLEX to Boulder. More information about the service can be found by visiting the [FLEX Website](#).

#### ***Regional Corridor Studies***

In 2014, RTD completed the Northwest Area Mobility Study (NAMS) which identifies a system of regional BRT corridors along state highways, including SH119, SH7, US287, South Boulder Road, and SH42. While each of these corridors are important individually, together they form a system of mobility to serve the current and future travel needs of people living and working in RTD's northwest region. Staff from the city, Boulder County, RTD, CDOT, and other regional communities are continuing to work together to advance the NAMS BRT corridors. The following provides highlights from the first two corridor studies underway:

#### ***East Arapahoe (SH 7)***

The State Highway (SH) 7 BRT Study is the next step in advancing arterial BRT between Boulder and Brighton and is being led by Boulder County with the support and involvement of all jurisdictions along SH 7 including the City of Boulder. The 12-month study, which is expected to begin in spring 2016, 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 elected leaders from the US36 Mayors and Commissioners Coalition and representatives from CDOT, RTD, and Denver Regional Council of Governments (DRCOG) has been formed. The PAC is supported by a Technical Advisory Committee (TAC) made up of planning staff from the involved agencies and both committees are meeting quarterly.

### ***Diagonal (SH 119)***

In April 2015, DRCOG funding was also awarded for the State Highway (SH) 119 BRT Study between Boulder and Longmont. The \$3.5 million study will be led by RTD with the support and involvement of all jurisdictions along the corridor, including the City of Boulder, and is scheduled to begin in summer/fall 2016. The purpose of the study is to conduct preliminary engineering and environmental work for the project and receive National Environmental Policy Act (NEPA) clearance. RTD is showing a demonstrated funding commitment for this project by including it as a 2021 construction project (pending matching funds) in its adopted Strategic Business Plan.

### **Transportation Demand Management (TDM)**

The Transportation Demand Management (TDM) Focus Area of the TMP includes a variety of projects and programs designed to increase the efficiency of our current transportation system. Two projects currently underway as part of the 2014-2016 Action Plan include the Community-Wide Eco Pass and TDM Plan Ordinance for New Developments.

### **Community-Wide Eco Pass Study**

To advance the city's TMP goals for enhancing transit options for residents and non-resident employees, the city is continuing to partner with Boulder County to explore a community wide Eco Pass. In the first quarter of 2016, Boulder County conducted a poll of residents on the use of property taxes to fund a community-wide Eco Pass program. While the idea was supported in Boulder, the rest of the county showed a low level of support. Following the results of the polling, the Policy Advisory Committee (PAC) decided that the focus of a community-wide Eco Pass program should shift to the city with either a program for all residents and employees or an employee-only program. The PAC wrote a letter to RTD asking for estimated costs of those two program options. At the time of memo submission, a response has not yet been received.

Following the 2015 fare increases, RTD has initiated a Pass Program Working Group that will examine all pass programs including the Eco Pass and the Community Pass concept that will begin work in the fall. The city and county hope to have staff appointed to serve on that committee. In the meantime, the Technical Advisory Committee (TAC) will continue to work with RTD on pricing methodologies and estimates of induced transit service demand. Staff will continue to keep council updated when RTD responds to the PAC letter and as they initiate the Pass Program Working Group.

### **TDM Plan Ordinance for New Developments**

In 2016, as part of the Access Management and Parking Strategy (AMPS) work program, staff from Transportation and Community Planning, Housing + Sustainability continues to work on the design of a potential TDM Plan ordinance for new developments in conjunction with proposed changes to the parking code. Work on the TDM Plan ordinance will also be included in the second part of the transportation component of the Impact Fee Study as staff shifts to the evaluation of funding options for on-going Operations and Maintenance (O&M), which includes funding for TDM programs for existing and new developments.

During the second quarter, the project team is collecting data and evaluating the effectiveness of current TDM Plans of 14 developments, seven residential and seven commercial. The evaluations will include a parking supply and demand analysis, an interview with the employer or property manager, and a travel behavior survey of residents or employees. The analysis of the TDM Plans will be used by the project team to further refine vehicle trip/single-occupant vehicle targets and other components of the TDM Plan ordinance for new developments.

Staff will continue to update council on progress towards designing a TDM Plan ordinance for new developments as the evaluation is completed and staff refines the policies and strategies with TAB and Planning Board.

### **Funding**

The use of transportation funds is guided by the investment priorities outlined in the TMP. The highest priority is funding system operations, maintenance and safety. Next is improving the operational efficiency of our multimodal system and improving quality of life. The lowest priority is adding additional auto capacity. In 2016, an interdepartmental team is conducting an Impact Fee Study which includes a transportation component. The transportation element of the fee study addresses how to fund capital improvements related to new growth as well as on-going funding for operations and maintenance.

### **Transportation Funding Analysis**

On April 12, city council held a study session with council on the impact fee study including the transportation component. Staff received feedback from council on the plan-based approach that will be used to assess new growth's fair share of capital improvement costs. As staff prepares for the June study session with council and recommended fee or tax rates for the capital side, the project team and the working group will shift focus to transportation funding options of on-going operations and maintenance. Due to the complexity and wide ranging impacts of this phase of the impact fee study, staff anticipates that this work will continue into 2017. As part of the evaluation of funding options, staff will include the potential uses of a head tax to fund on-going transportation operations and TDM programs.

### **Integration with other Sustainability Initiatives**

The 2014 TMP added a fifth Focus Area of 'Integration with Sustainability Initiatives' to identify policies and opportunities for integrated, inter-departmental efforts. These activities continue on an on-going basis in a number of work areas to ensure collaboration with transportation and land use planning, all in service of the broader community goals for sustainability and resiliency. 2016-17 initiatives include the following:

### Boulder Valley Comprehensive Plan Update (BVCP)

Transportation staff members are part of the core team for the BVCP update and participated in developing the trends reports and the first phase public outreach effort. Staff and transportation consultants will be closely involved in the next phase of scenario development and evaluation. Staff has also continued developing the 15 minute Neighborhood Access Tool created during the TMP process and this tool will be used in the scenario process.

### Climate Commitment

Transportation staff is participating in the on-going development of the Climate Commitment, including the interdepartmental implementation group and the Whole Systems Energy Change workshop at Chautauqua in Feb. 2016.

### AMPS – Coordination with Civic Area and Chautauqua Plans

The multi-departmental initiative to create an Access Management and Parking Strategy is continuing in 2016, with a focus on collaboration with key work program items such as the Civic Area and Chautauqua Access Management Plan.

To reduce city employee parking demand in the Civic Area lots, staff initiated two new transportation demand management (TDM) programs and revised an existing one. The two new programs include Satellite Parking and a Parking Cash Out program (PCO). The city's Employee Transportation Coordinator (ETC) also rebranded individual outreach and assistance into a Concierge Program for transportation options. The new programs were piloted in November and December 2015 and based on those results the city implemented a formal PCO program for Civic Area employees and satellite parking at the former Boulder Community Hospital site on Broadway. In the first quarter, the single-occupant vehicle (SOV) mode share for downtown city employees is down to 46 percent from 51 percent in 2014 and approximately half of downtown city employees are qualifying for the parking cash out benefit for 3 out of the 5 days in a work week. Program evaluations will continue to be conducted quarterly throughout 2016 and results used in the site planning and phasing process for the Civic Area improvements.

The lease between the City of Boulder and the Colorado Chautauqua Association (CCA) was renegotiated in 2015 and requires the development of a Chautauqua Access Management Plan (CAMP). The CAMP is intended to be a tailored access management strategy to balance the access of the variety of users and modes while also maintaining the natural, built, and historic environments. Issues that need to be addressed include auto use, parking and circulation; noise and fumes from existing bus service and pedestrian crossing and safety issues. After discussions with the City Council at the February 9, 2016 Study session, city staff identified the following actions to incorporate into the 2016 work plan for development of the CAMP:

- Develop a data collection/evaluation plan and a public process plan for Council's review prior to this summer
- Gather data including parking utilization and duration and an updated user intercept survey this summer
- Work with OSMP to coordinate data collection and outreach and to understand data and system-wide options
- Explore transit options and other ideas for Baseline as part of CAMP development.

The CAMP process has kicked off with a community open house on Apr, 28, 2016 with results expected in 2017.

### **Bee friendly Median Maintenance**

The city is on a campaign to use less neonicotinoid pesticides and is researching ways to improve habitats for pollinators. Transportation staff is working with local experts to create biodiverse habitats that create safe and healthy lives for local pollinators along our right of way areas and medians. One area under review for habitat improvements are the parkway strip and medians located along 28th Street. Discussions on this concept began in April and a plan will be developed later this year.

### **Metrics Program**

The Transportation Metrics Program is a comprehensive data collection and evaluation effort to monitor the performance of the transportation system and assess progress toward the measurable objectives of the TMP. This program was discussed in detail as part the [Aug. 25, 2015](#) TMP study session. The results of this program were used to establish the work areas of the 2014 TMP planning process and inform the work of the Transportation Division.

### ***Transportation Report on Progress***

The 2016 [Transportation Report on Progress](#) (RoP) was released to the community in March, 2016. It is the third RoP prepared by Transportation and is intended to present all the activities of Transportation to the community in an attractive and accessible way. The major 2016 RoP findings are consistent with the 2014 TMP in that the community needs to accelerate the rate of mode shift for Boulder residents and we need to accomplish mode shift for the increasing number of non-resident employees coming into Boulder.

### ***Safe Streets Boulder Report***

The City of Boulder seeks to provide a safe and efficient transportation system for people using all modes of travel. Transportation safety has always been a priority for the city. The 2014 Transportation Master Plan (TMP) affirmed the city's commitment to safety by establishing a new objective: "Toward Vision Zero" to eliminate fatalities and serious injuries from future traffic collisions. This objective reflects a national and worldwide movement to innovate and use a data-driven, interdisciplinary approach to improving safety across the city's transportation systems. It is now one of the TMP's nine measurable objectives.

The Safe Streets Boulder report is an important step in meeting that objective. The 2016 Safe Streets Boulder report includes an evaluation of traffic collisions and establishes a baseline for tracking progress and a plan for future action to achieve traffic collision reduction goals. It builds upon a previous report, published in 2012, that provided an analysis of motor vehicle collisions involving a bicyclist or pedestrian and identified safety improvements to address these causal factors of these collisions.

A primary purpose of the evaluation efforts for the Safe Streets Boulder initiative is to identify overall trends and guide strategies for mitigating future collisions, particularly those that result in serious injuries and fatalities. The data presented in the 2016 Safe Streets Boulder report shows

that the city's fatal collision rate is well below the national average and the lowest among Colorado cities with comparable populations. However, during the six years between 2009 and 2014, an average of three people lost their lives and more than 60 people sustained serious injuries each year as a result of traffic collisions. Key findings from the data analysis include:

- Between 2009 and 2014, an average of 3,275 collisions were reported to the Boulder Police Department each year.
- The percentage of collisions that resulted in a serious injury or fatality has been relatively flat at 2 percent of all collisions during this six-year span.
- A disproportionate number of bicyclists and pedestrians are involved in collisions that result in serious injuries or fatalities. While only 8 percent of all traffic collisions in the City of Boulder involve a bicyclist or pedestrian, these collisions account for approximately 60 percent of serious injuries and fatalities.
- A disproportionate number of impaired person traffic collisions, especially those involving bicyclists or pedestrians, result in serious injuries or fatalities. While approximately 3 percent of total collisions involve an impaired person, 12 percent of serious injuries and 38 percent of fatalities involve an impaired person.

### ***2015 Travel Diary Survey***

The Travel Diary survey has been conducted since 1990 to collect travel information from Boulder residents and is a one data source used for understanding travel behavior and for evaluating progress toward the city's TMP objectives. The Travel Diary survey is currently conducted every three years with the aim of recording all travel for a 24 hour period for approximately 1,000 Boulder households. The 2015 Travel Diary provided three ways for residents to respond; the traditional paper travel log, a web-based travel log, and for the first time a smart phone app. Results from the travel diary surveys since 1990 are compiled and discussed in the [\*Mode Shift Report\*](#) prepared by the National Research Center (NRC), a professional survey research firm.

Staff is currently reviewing the draft Mode Shift Report from NRC and will provide more details on the results at the TAB meeting and as part of the City Council Study Session materials. Results from the 2015 Travel Diary survey generally show continued progress by Boulder residents in reducing the SOV mode share of all trips.

The Transportation Metrics Program is an on-going effort, with traffic counts, bicycle counts and signalized intersection analysis occurring every year. The Boulder Valley Employee Survey and Downtown Employee Survey are scheduled for the fall of 2017. Staff and consultants have continued development of the smartphone survey app that was piloted with the 2015 Travel Diary and anticipate using the app extensively in upcoming survey efforts.

## **V. PUBLIC PROCESS**

On April 21, the Transportation Division hosted a Complete Streets Open House at the Boulder Chamber of Commerce to share information on how the city is improving the transportation system to meet the safety and sustainability goals of the community and for the community to

provide feedback on current projects. Approximately 75 community members attended. The open house provided information on the following projects:

- Canyon Corridor Complete Streets Study
- 30<sup>th</sup> and Colorado Boulevard Complete Streets Study
- East Arapahoe Transportation Plan
- Living Lab Phase I Pilot Projects and Phase II Folsom Street Pilot Project
- Boulder Walks program
- HOP Transit Study
- North Boulder (NOBO) Mobility Hub
- Baseline Underpass

The open house featured key findings from the Living Lab Folsom Street Pilot Project over the last year and serve as an opportunity to gather community feedback about the project's next steps. Community feedback will help guide next steps on whether to continue, refine or remove the street design treatments currently being tested.

The open house was also an opportunity for the East Arapahoe Transportation Plan project staff to share community feedback collected over the last several months related to conceptual design alternatives under consideration, the criteria by which alternatives are evaluated and next steps in the planning process. Comments on the East Arapahoe Transportation Plan showed most people were new to the project and requested an overview of the planning process and conceptual design alternatives. Additional ideas suggested varied from creating directional lanes that change direction in the a.m. and p.m. hours, to narrowing the traffic lanes on Arapahoe and painting a green bike lane, to adding more auto lanes.

The HOP Transit Study project information and schedule were displayed to give the community an opportunity to learn about a new transit project that is beginning this spring. Individuals were interested in the project and offered comments on ways to improve route productivity, efficiency, and driver customer service.

In addition, city staff presented information regarding RTD's proposed service changes for January 2017. Overall, individuals did not have comments about the specific changes, but offered comments regarding timing of transfers at the Downtown Boulder Station, requests for other Boulder bus routes and for special event service for CU athletic events.

### ***Comments from TAB***

Comments from the May 9 TAB meeting regarding the TMP progress update will be shared with City Council as part of the May 31 Study Session.

## **VI. NEXT STEPS**

The TMP implementation continues to be guided by the [\*TMP Action Plan\*](#) in alignment with the annual City Council work program and city budgeting process, and guided by input from TAB and council provided through these periodic study sessions. Staff continues work in all of the

TMP focus areas with a 2016 emphasis on the pedestrian following council’s direction from its annual retreat. The fundamental policy direction and strategies of the TMP are being integrated with other city-wide planning initiatives, including coordination with the development impact fee analysis, BVCP update, AMPS, CAMP, and the Climate Commitment. Staff continues with the ongoing community engagement and will be returning to discuss key milestones on major project with the boards and council.

For more information and updates regarding the 2014 Transportation Master Plan, please visit: [www.bouldertmp.net](http://www.bouldertmp.net)

## **ATTACHMENTS**

- A. 2016 Transportation CIP Projects Map**
- B. East Arapahoe Transportation Plan Summary**
- C. Canyon Complete Streets Study Summary**
- D. Living Lab Program Summary Report**
- E. Complete Streets Open House Summary**