



**CITY OF BOULDER  
CITY COUNCIL AGENDA ITEM**

**MEETING DATE: Sept. 29, 2015**

**AGENDA TITLE:** Update and staff recommendation on Folsom Street pilot project

**PRESENTERS:** Jane S. Brautigam, City Manager  
Maureen Rait, Executive Director of Public Works  
Michael Gardner-Sweeney, Acting Director of Public Works for Transportation  
Kathleen Bracke, GO Boulder Manager  
Dave (DK) Kemp, Senior Transportation Planner  
Marni Ratzel, Senior Transportation Planner  
Bill Cowern, Transportation Operations Engineer  
Shannon Young, Transportation Engineer

**INTRODUCTION**

As part of the implementation of Boulder's 2014 Transportation Master Plan (TMP), the Folsom Street Living Lab pilot project was installed in July 2015 to test and evaluate whether a new street configuration and design treatments would enhance multimodal access and travel safety. Throughout the planning, installation and ongoing evaluation of the pilot project, the City of Boulder has received extensive and valuable community feedback about how the pilot is affecting people's ability to get around Boulder. The city has also conducted significant technical analysis of the multimodal evaluation criteria to gauge initial results of the initiative.

The purpose of this update to City Council is to provide a summary of the Folsom Street qualitative and quantitative analysis since the Aug. 25 City Council Study Session and provide a staff recommendation regarding next steps for council consideration.

At the Aug. 25 study session, staff presented potential options for council feedback that ranged from continuing the Folsom Street pilot project as planned, implementing various levels of refinements/modifications along the corridor, or removing some or all of the corridor treatments. Council feedback from the study session supported Option 2, which

was to refine/modify the Folsom Street corridor and/or intersections, particularly along the segment between Pearl Street and Canyon Boulevard, and continue to evaluate the corridor on a weekly basis, with frequent updates to the Transportation Advisory Board (TAB) and council.

Since the Aug. 25 study session, the Transportation Division has continued to evaluate the corridor and provide weekly updates to City Council. Several [refinements along the Folsom Street corridor](#) were completed the week of Sept. 8 to improve the operation of the Folsom Street pilot project in response to community concerns.

In response to continuing community sentiment and emerging information regarding upcoming, interrelated conditions, the Transportation Division has developed a staff recommendation to make more substantial modifications to the corridor, including the Pearl and Canyon intersections. This approach is more in alignment with Option 3 presented at the Aug. 25 study session and is intended to proactively address changes occurring along the corridor related to construction impacts of new development as well as recent predictions for a more severe winter weather season. This staff recommendation is presented for council consideration and direction.

### **STAFF RECOMMENDATION**

Restore a four-lane street configuration along Folsom Street between Spruce Street and Canyon Boulevard to improve the operational capacity of the Pearl and Canyon intersections and the overall vehicle operations in this stretch of the corridor. This may include additional restriping to provide adequate transitions between the two-lane and four-lane sections north and south of the intersections. The city would maintain green pavement markings at the intersections and continue evaluating the effectiveness of these treatments. This recommendation maintains the protected bike lanes along the northern segment to Valmont Road and the buffered bike lanes south of Arapahoe Avenue to Colorado Boulevard.

### **BACKGROUND**

To understand the recommendation, it may be helpful to remember the origins and objectives of Folsom Street pilot. The vision of the city's [Transportation Master Plan](#) (TMP) is to create and maintain a safe and efficient transportation system that meets the sustainability goals of the community. The TMP's Complete Streets focus area specifically strives to accommodate people walking, biking, riding buses and driving as city transportation facilities are planned, designed, constructed and maintained. This approach emphasizes the value of a balanced and complete multimodal transportation system to enhance safety and increase access while shifting trips away from single-occupant vehicles. An emphasis is to increase walk and bike trips made by women, older adults and families.

One action item of the TMP implementation plan is to install Complete Street projects through the Living Lab program. Introduced during the TMP update process, the Living Lab program approach installs pilot projects to test new roadway designs, allow experimentation, and gather community feedback on the user experience.

The Folsom Street pilot project reallocated a through travel lane in each direction from Valmont Road to Canyon Boulevard and enhanced bicycle facility treatments along the corridor from Valmont Road to Colorado Boulevard. The pilot project treatments installed along Folsom are primarily comprised of signing, striping and markings, and they do not include major capital improvements. The temporary nature makes them relatively simple to modify or remove.

Primary objectives of the pilot project have been to collect empirical data and evaluate the effectiveness of enhancing existing street space to more safely and comfortably accommodate people walking, bicycling and driving. The city envisioned that the pilot project treatments would reduce motor vehicle speeds and the frequency and severity of motor vehicle collisions while minimizing impacts to vehicular travel time and flow.

The pilot project evaluation has included a before/after analysis of technical data, observational surveys conducted by staff, and the collection of user experience feedback from community members. It is envisioned that the results will inform the development of a network of low-stress bicycle routes, enhance transit access and create a more pedestrian friendly community.

It may also be helpful to understand the options council has considered to date. Based upon the early data and community comments, staff developed options for how to proceed with the Folsom Street pilot project, including staying the course, making different levels of corridor refinement/modifications, and removing the project. These are detailed below and were presented for council feedback at the Aug. 25 study session.

1. Continue the Living Lab Phase II project as planned with monthly check-ins with TAB and council with in-depth evaluation at one-, three-, six-, and 12-month milestones.
2. Based on initial feedback and evaluation, refine/modify the Folsom corridor and/or intersections, particularly in the segment between Pearl Street and Canyon Boulevard. Continue evaluation weekly, with more frequent updates to TAB and council. Revisit Folsom in fall 2015.
3. Make more substantial modifications to corridor/intersections, including the potential removal of individual segments.
4. Remove the Folsom corridor Living Lab project.

Council on Aug. 25 supported “Option 2,” which included refinements to the corridor and/or intersections, particularly in the segment between Pearl Street and Canyon Boulevard, and continuing with weekly evaluations and updates to TAB and City Council. Additionally, council received a staff briefing at the Sept. 8 meeting.

Since the installation of the Folsom Street project, staff has been collecting and reporting data on a weekly basis. Links to these are provided below and posted on the project website.

- [Sept. 18 Email to City Council - Folsom Street Living Lab Update](#) 
- [Sept. 12 Email to City Council - Folsom Street Living Lab Update](#) 
- [Sept. 4 Heads Up for City Council - Folsom Street Pilot Project Update](#)

## **BOARD FEEDBACK SINCE AUG. 25:**

### ***Transportation Advisory Board (TAB)***

On Sept. 14, the Transportation Division briefed the TAB on the council direction received at the Aug 25 study session, the status of the Folsom Street evaluation, corridor refinements completed to date, ongoing community feedback, and upcoming community engagement events.

The proposed staff recommendation on additional suggested refinements that is now before council for consideration was not presented to the board. This was due to the recent timing of the information on the impacts anticipated to the Folsom corridor from the adjacent construction activity, as well as the news regarding severe winter weather predictions.

TAB discussion on Sept. 14 focused on suggestions to improve key messages related to data metrics, to reduce jargon and to explain evaluation methodology. TAB members also recommended clarification that the travel time impacts are not uniform across the day and requested that staff continue to identify options to address the evening rush hour impacts. **Attachment A** provides the draft Sept. 14 TAB meeting minutes.

The TAB has received the weekly Living Lab update summaries provided to council regarding the Folsom Street pilot project. Staff also has provided this memo to TAB and is following up with TAB members to address any of their questions.

## **DATA EVALUATION**

The evaluation of the Folsom corridor pilot project has been ongoing since installation in July. The results have been shared with the council, TAB and the community weekly. The most recent data available is from Week 8 (the week of Sept. 14). This data reflects the installation of the corridor refinements made during Week 7, which were based on the council feedback at the Aug. 25 study session.

Staff continues to evaluate the corridor on a weekly basis using five primary evaluation criteria: weekday vehicle volume and speed, weekday bicycle volume, vehicle travel times during the evening peak period (4:45 to 6 p.m.), and collisions. An [infographic](#) of the primary evaluation criteria provides a snapshot, and more detailed data points for Weeks 1 through 8

are available in the Living Lab Phase II [data summary](#). Both of these documents are available for review at the Living Lab program website, [www.boulderlivinglab.net](http://www.boulderlivinglab.net).

*Vehicle Volume (measured north of Canyon Boulevard)*

Since installation, vehicle volume has fluctuated +/- 500 vehicles per day each week, from a high of 16,590 to a low of 15,790. In comparison, there were approximately 18,970 vehicles per day recorded along the corridor before the pilot project was installed. Weekday vehicle volume decreased from approximately 16,590 vehicles per day during Week 7 to 16,200 vehicles per day during Week 8.

*Vehicle Speed (measured at Bluff Street)*

The 85<sup>th</sup> percentile speed in the section of Folsom north of Pine remained constant at 36 mph from Weeks 5 to 8. Since installation, the 85<sup>th</sup> percentile weekday speed in this section has been reduced by 3 mph compared to the before data. The posted speed is 30 mph.

*Bicycle Volume*

Bicycle volume north of Pine Street slightly decreased compared to Week 7 data. Week 8 data represents a 58 percent increase from the before data. This increase is consistent with the increase that the city typically experiences when school is back in session.

*Vehicle Travel Times*

During Week 8, the average travel time for northbound vehicles during the evening peak hour was 1 minute, 42 seconds faster than the modeled average travel time. This is 27 seconds faster than the before condition. The average travel time for southbound vehicles during evening peak hour was six seconds slower than the modeled average travel time. Compared to before installation travel times, the average southbound travel time during the evening peak hour is 1 minute, 16 seconds slower.

*Collisions*

During Week 8, two collisions occurred along the Folsom Street corridor within the pilot project segment. One involved a vehicle colliding with another vehicle. The second involved a vehicle colliding with a bicyclist that resulted in a serious injury. Since installation, this is the first crash that has involved serious injury. Since installation, eight collisions have occurred: five involving vehicles colliding with vehicles and three involving vehicles colliding with bicycles. Since the experiment began, collisions are averaging one collision per week, compared with 1.6 per week between 2012 and 2014.

Staff currently is collecting secondary evaluation criteria data and will evaluate it in September and October. Staff anticipates reporting secondary evaluation criteria results in mid-October. The secondary evaluation criteria include traffic diversion; intersection analysis; analysis of turning movements on/off of the corridor including delays; pedestrian data; bicycle demographics; emergency response; and maintenance, including snow/ice removal.

Ongoing data collection is planned to continue through the duration of the pilot project based on council guidance.

## **PUBLIC OUTREACH AND FEEDBACK**

Community feedback received through this week [is posted](#) on the website and features the most recent feedback at the top of the document. The Transportation Division is offering a variety of public engagement opportunities to share information about the Folsom Street pilot project and gather community feedback.

The [www.BoulderLivingLab.net](http://www.BoulderLivingLab.net) webpage provides project information and an online comment form. Stakeholders interested in receiving emails may sign up for the Boulder Living Lab email newsletter, which includes upcoming engagement opportunities and updates.

Outreach efforts include use of digital platforms such as social media, videos and data visualization tools, as well innovative events including Walk, Bike and Drive audits, Pop-Up events at retail storefront locations, Lunchtime Listening Sessions for businesses in partnership with the Boulder Chamber of Commerce, targeted meetings with specific stakeholders, and an online survey. These engagement tools have enhanced the city's ability to reach a broad audience, including businesses, employers/employees, the University of Colorado Boulder, Naropa University, and youth and families through coordination with Growing Up Boulder.

In response to community input received to date, the city developed a [Folsom Street User Guide](#) to raise awareness of the bicycle lane treatments being testing along Folsom. This guide demonstrates the intended operations and use by motor vehicle drivers and cyclists. These informational materials are posted on the project webpage and are being presented and distributed at public engagement events. In addition to a poster format, staff is creating videos to assist bicyclists and motorists with how to use the new corridor treatments. This educational work would likely continue regardless of whether council adopts the staff recommendation.

## **ANALYSIS**

Folsom Street is a north-south arterial roadway that serves a variety of land uses along the corridor including single- and multi-family residential uses in the north section of the corridor, businesses in the center section of the corridor, and connections to Naropa University and CU Boulder in the southern section of the corridor. The changes implemented as part of the Folsom Street pilot project have sparked considerable community interest.

As City Council prepares for a discussion on how best to proceed, it is valuable to consider a variety of factors. These should include the recent refinements and some of the immediate results of these, as described above, as well as the limited data (about a week and a half's worth of information) since the changes were made. At the same time, meaningful assessments typically take the form of both quantitative and qualitative measures. It is with this broader perspective in mind that staff recommends adjusting the scope of this pilot at this time.

The City of Boulder continues to receive a high volume of valuable community feedback

about how the Folsom Street Living Lab is affecting people's ability to get around Boulder. The magnitude of feedback has been far greater than originally anticipated and mostly expresses points of view that are polarized, ranging from those who love it to those who hate it.

The staff recommendation attempts to strike a balance. The proposal is to reinstall a four-lane configuration between Spruce Street and Canyon Boulevard. This will restore operational capacity to the Folsom and Canyon and Folsom and Pearl intersections. In support of this objective, staff would complete additional restriping as necessary to provide an adequate transition between the two-lane and four-lane cross-section. Staff also supports maintaining the protected bike lane treatments north of Pine Street to Valmont Road; the buffered bike lanes south of Arapahoe Avenue to Colorado Boulevard; the green pavement markings and intersection treatments; and to continue evaluating the effectiveness of these treatments.

As noted in a recent study session and subsequent [Information Packet \(Sept. 15\)](#), meteorologists are expecting a strong El Niño that could lead to a harsh winter. In addition, the same geometrics and physical constraints along the Folsom Street corridor that currently restrict vehicles attempting to queue for left turns could impact snow plow maneuvering. In light of these factors, staff thinks a more modest and measured test of the snow response along a more limited portion of Folsom is prudent.

Beyond the challenges posed by upcoming weather forecasts, private development and associated construction traffic in the vicinity of this corridor are having considerable impacts. The Residence Inn, to be located on the south side of Canyon Boulevard and immediately west of 26<sup>th</sup> Street, has received both site review and technical document approval, and the building permit application is currently under review. Construction is expected to begin later this year. This will impact approximately 172 parking spaces at the nearby Village Shopping Center, potentially causing more congestion in the area as shoppers search for parking options. The city is working with shopping center representatives on parking management strategies, including employee EcoPasses. However, the city needs to anticipate increased demand from local shoppers as we approach winter and the holiday season and strive to minimize further disruption along this corridor.

The larger community context also remains a backdrop. Staff should have recognized the importance of considering the proposed pilot in the context of all that has occurred in the community during the last few years. Thanks in part to the improving economy, there has been an increase in major private and public construction projects, including transportation projects. Combined, these have made traveling through Boulder temporarily more challenging, and staff should have been more sensitive to the potential for frustration related to traffic disruptions.

Restriping the four-lane section along Folsom between Canyon and Pearl would restore the operational capacity to the most congested intersections in the corridor and mitigate the evening rush hour congestion issues associated with this pilot project. These

additional refinements would allow the pilot project to continue in the corridor with a reduced level of rush hour congestion.

This recommendation should not be viewed as a rejection of trying new ideas. Innovation remains a strong value and expectation within our community and city organization. The city has always viewed the Folsom Street effort (and other Living Lab treatments) as a trial to test how we implement different elements of complete streets – and with pilot programs, it is not unusual to discover unintended consequences or factors that should have been given greater consideration.

The Folsom Street pilot project has resulted in many important lessons that apply both to this particular project as well as to potential future projects. The need for a more effective public engagement process and a more comprehensive evaluation of potential issues and impacts are top among these. Staff is committed to doing better in these areas in future projects.

Other lessons the city can apply to future projects include:

- Better ways to design protected bike lanes that offer greater safety to cyclists while also allowing drivers to access driveways
- Clearer ways to mark the transitions near intersections for bicyclists and motorists
- Improved ways to reduce visual clutter to make streets with protected bicycle lanes easier for drivers to navigate and more attractive.

Sometimes the most meaningful lessons are around what not to do and understanding the contexts in which innovation might not work well. These might include:

- Ways to avoid trouble spots, such as where concrete medians narrow the roadway available for drivers and cyclists
- Understanding the impacts of mid-block pedestrian crossings on operational changes in a corridor
- More proactive community engagement earlier in the process and offering more ongoing opportunities for information exchange with the community and those most impacted depending on the location of the pilot.

In the future, these lessons will result in more and faster progress and better transportation projects than what would have occurred otherwise.

The staff recommendation addresses the community's concerns regarding operational capacity at the intersections of Folsom and Pearl and Folsom and Canyon. At the same time, Boulder remains committed to facilitating all modes of transportation and other goals associated with being a sustainable community. Very important motivations, including quality-of-life factors related to both climate change and traffic congestion, propel the city to seek and consider bold approaches. Based on best practices, the city will continue to evaluate innovative ideas for infrastructure improvements that benefit

pedestrians, cyclists, transit users and motorists. All future projects will benefit from and be informed by the Living Lab process and lessons learned.

The results of the ongoing Folsom Street pilot project and other Living Labs projects will inform the development of bikeway design installation guidelines and refine multimodal access policy, as identified in the update of the 2014 Transportation Master Plan.

## **NEXT STEPS**

Depending on City Council direction, staff is prepared to schedule and complete these additional project refinements. The city would coordinate the related roadwork with existing special events and travel needs in order to mitigate any potential conflicts.

The remainder of the Folsom corridor project would continue as part of the city's Living Lab program, and include ongoing community outreach along with continual evaluation to encourage public participation and input throughout the remainder of the pilot project. The evaluation would determine if the remaining corridor improvements should be kept in place more permanently, be modified or be removed.

Staff is planning to return to council sometime in the second quarter of 2016 with conclusions about the data and analysis conducted in the first eight weeks of the entire corridor's operations, as well as subsequent weeks and months with the refined corridor being in place. No steps will be taken to implement similar treatments in other locations until that assessment is complete. The goal is to allow the community and council some time and the benefit of more information before deciding whether to proceed with additional Phase II initiatives.

Staff will continue to track the data and to update the website on a weekly basis until the update to City Council in the second quarter of 2016. Staff proposes to provide City Council with a progress report by email on a monthly basis. Data reporting needs for the duration of 2016 will be discussed with council as part of the second quarter update.

Please visit [www.BoulderLivingLab.net](http://www.BoulderLivingLab.net) for more information.

## **ATTACHMENTS:**

Attachment A – Draft Sept. 14 TAB meeting minutes

Attachment B – Folsom Corridor Infographic (Weeks 1-8)

Attachment C – Living Lab Phase II evaluation summary (Weeks 1-8)

**CITY OF BOULDER  
BOULDER, COLORADO  
BOARDS AND COMMISSIONS MEETING  
MINUTES**

<b>Name of Board/ Commission:</b> Transportation Advisory Board	
<b>Date of Meeting:</b> 14 September, 2015	
<b>Contact Information Preparing Summary:</b> Kaaren Davis 303.441.3233	
<b>Board Members Present:</b> Zane Selvans, Andria Bilich, Dom Nozzi, Daniel Stellar, <b>Board Members Absent:</b> Bill Rigler	
<b>Staff Present:</b> Michael Gardner-Sweeney, Interim Director of Public Works for Transportation Molly Winter, director, Downtown and University Hill Management Division and Parking Services (DUHMD/PS) Kurt Matthews, parking Manager, DUHMD/PS Kathleen Bracke, GO Boulder Manager Jean Sanson, Senior Transportation Planner Chris Hagelin, Senior Transportation Planner David "DK" Kemp, Sr. Transportation Planner Randall Rutsch, Senior Transportation Planner Natalie Stiffler, Transportation Planner II Kaaren Davis, Board Secretary	
<b>Consultants Present:</b> none	
<b>Type of Meeting:</b> Advisory/ Regular	
<b>Agenda Item 1: Call to Order</b>	<b>[6:03 p.m.]</b>
The meeting was called to order at 6:03 p.m.	
<b>Agenda Item 2: Approval of minutes from 10 August 2015</b>	<b>[6:03 p.m.]</b>
<b>Move to approve August 10, 2015 minutes as presented.</b>	
<b>Motion: Nozzi Second: Bilich</b>	
<b>4:0:0 Motion Passes</b>	
<b>Agenda Item 3: Public Participation</b>	<b>[6:04 p.m.]</b>
<ul style="list-style-type: none"> <li>• <b>Sara Mitton: LL Phase I</b> - Cycle track (Living Labs Phase I – University). Has been riding bikes in Boulder for 41 years. Rode on the first bike paths. Not averse to bikes and is very concerned about safety for all users of all modes of transportation. Respecting this and educating the public will reduce conflict on our roads. Safe, clean lanes everywhere is also key. Board should represent all modes of transportation, not just the board member's personal preferences. There is already good access to the path on the Hill. Enforcement for all modes is lacking. Connector traffic lanes need to flow as designed. This project has obstructed that.</li> <li>• <b>Celeste Landry:</b> Lives on the part of University unaffected by the Living Lab Phase I experiment, but commutes through the Phase I section. Has contacted the Board before regarding ice accumulation in the road and bike lanes. Currently there is glass in the road and in the lanes. This makes a not great environment for bikers. Folsom right-sizing... not sure that the survey of bike counts and users was adequately done. Recommend to put it back the way it was, preferably before winter. A good alternative would be something like the bike/pedestrian separated path by CU on Broadway.</li> <li>• <b>Peter Richards:</b> Have lived on university for 25 years. Has lived west of 6<sup>th</sup> street for all of the 42 years he has lived in Boulder. The Cycle track sucks and needs to be ripped out right now. Several neighbors who are either elderly or somewhat handicapped and cannot ride a bike really dislike this project. Fraternity and sorority nearby and CISCO delivers all the time. The treatment may be in the way for these. Need comments from other agencies in the City such as Police and Fire.</li> </ul>	
<b>Agenda Item 4: Public hearing and consideration of a recommendation to the City manager regarding expansion of the Mapleton, Whittier and West Pearl Neighborhood Parking Permit (NPP) zones and the creation of a new NPP zone: Aurora</b>	
<b>[6:20 p.m.]</b>	
Molly Winter and Kurt Matthews gave the presentation to the board.	
<b>Executive Summary from Packet Materials:</b>	

The purpose of this memorandum is to seek a recommendation from the Transportation Advisory Board regarding expansion of the Mapleton, Whittier and West Pearl Neighborhood Parking Permit program (NPP) Zones and the creation of a new zone: Aurora. The recommended zone additions and new zone qualify under the program guidelines including petition and parking occupancy requirements and have neighborhood support.

The expansions include:

Mapleton Hill NPP (Attachment A)

East & West sides of the 2300 block of 9th St.  
East & West sides of the 2400 block of 8th St.  
East & West sides of the 2400 block of 7th St.  
East & West sides of the 2200 block of 6th St.  
North & South sides of the 500 block of Pine St.  
North & South sides of the 500 block of Highland Ave.

West Pearl NPP (Attachment B)

East side of the 1900 block of 6th St.  
North and South sides of the 300 block of Pearl St.

Whittier NPP (Attachment C)

North & South sides of the 2000 block of Mapleton Ave.

New Zone – Aurora (Attachment D)

North & South sides of the 3500 and 3600 blocks of Madison Ave.  
East & West sides of the 1000 and 900 blocks of 35th St.  
East & West sides of the 1000 and 900 blocks of 36th St.

**SUMMARY OF STAFF PROPOSAL:** Staff recommends the expansion of the following NPP zones as presented in the following attachments:

- Mapleton Hill, (See Attachment A)
- West Pearl (See Attachment B)
- Whittier (See Attachment C)
- Aurora (See Attachment D)

**Requested Action from TAB:**

Staff requests Transportation Advisory Board consideration of this matter and action in the form of the following motion: Motion to recommend to the city manager the expansions of the Mapleton, Whittier and West Pearl NPP's and the creation of a new NPP, Aurora.

**Public Comment:**

- **Judy McKeever:** Has lived in her house for 38 years. Her neighborhood is neither pleasant nor safe currently. Commuter students are parking in the neighborhood and busing to campus. Drivers she sees are so focused on finding a place to park that they are not looking for children, dogs, cars pulling out, etc. They are typically speeding. The stop sign at the corner of 35<sup>th</sup> and Madison gets run frequently. Erratic U-turns to catch a space on the other side of the street are common. Parking is bumper to bumper. Parking frequently encroaches on intersections which interferes with the sight lines. Saw a fire truck call which could not make the turn into the church. Police officer could not get through with two way traffic. Car cut us off.
- **Rod McKeever:** Until a few years ago the neighborhood was a good mix of owner occupied and student housing. Mostly students now with some owner occupied with children. Has seen issues with emergency vehicles not being able to get through. Sometimes people get parked into their driveways. Upswing largely due to Carruthers Biotech Building. The lot there is expensive. Many employees choose to park off site. SEEC building is near completion and will be similarly large. If its parking operates similarly to Carruthers then the congestion will get worse. Free College Parking.com website lists their neighborhood as the only free one in the area. The number of cars has increased by at least an order of magnitude. Adults and children are exposed to increased hazard. Neighbors have commented and object to the current situation.

- **Paul Barchilon:** Born in Boulder, lived here all his life. He is a ceramic artist and sometimes comes home with 400 pounds of clay and has to park a block away and carry it in. The biotech building is definitely a major cause of the current issue. Cars will park so close to driveways that even if you have one, you cannot get in and out. Has stopped people to ask where they are coming from or going to. Many are coming to and from the biotech building. Many are CU. Their neighborhood is being used as an RTD Park-n-Ride. Many times, he has customers coming to visit and has to tell them to park in the church lot a couple of blocks away as it is the only sure parking. We would just like our space back.
- **Kristin Jahn:** Has lived on Mapleton for 13 years. They are the first block in the Whittier neighborhood on the east side of 20<sup>th</sup> that does not have permitted parking. Many are driving to their neighborhood and then bike or bus commuting in. Half the families on the block have children of elementary age or younger. Trying to get them and their gear to and from the cars is difficult as the residents cannot park near their homes. Only needed 5 signatures but got 20. Their block is very very interested in getting this program implemented on their block.
- **Ernest Porps:** Touched by the compassion it takes to be on the Board and listen to all the states of mind that come in. Here in support of the Mapleton expansion. Has been there for 44 years. A retired CU professor. Wants to support the children and families with children. Has observed and can identify with the struggle to get to and from a vehicle that must be parked far away from one's home. Has had double hip replacements and has had difficulties getting to and from his vehicle. The secret to youthfulness is openness. Teaches a course in problem solving. First stage is openness. Salute to the board for their openness.

**Board discussion and comments included:**

**[6:42 p.m.]**

- Concerns about spillover into non NPP zones expressed. Questions regarding whether tools exist to mitigate this issue.
- Opinion that this program should be universal throughout the city.
- Questions regarding the cost of the permits and how the revenues relate to the cost of the program.
- Suggestions for more code enforcement and traffic calming to aid the issues being experienced by the residents.
- Expressions of broad support for the program.
- Questions regarding the timing of mailing and community meeting.
- Questions regarding how the community input affects the program.
- Concerns around the policy mechanism that will be addressed in the AMPS item later this year.
- Questions as to how enforcement relates to revenue and the recommendations in the item (6<sup>th</sup> Street).
- Clarifications that the program is about enforcement and not about balancing the revenue to the enforcement costs. The community benefit is the driving force.
- Questions as to the results of discussions with CU regarding the impact of the research park on the neighborhoods and program.
- Questions regarding whether the proposed new Aurora district is as extensive as it should be. Whether all parts of the area met the criteria for formation of a new district.
- Questions about turnaround time for expansion if new block faces want to be added in after the implementation of a new district.

**Motion: Motion to recommend to the city manager the expansions of the Mapleton, Whittier and West Pearl NPP's and the creation of a new NPP, Aurora as per the staff recommendation.**

**Motion: Bilich Seconded: Nozzi**

**Vote: 4-0 Motion Passes**

**Agenda Item 5: Staff briefing and TAB input regarding Phase I living Laboratory evaluation update and next steps.**

**[7:11 p.m.]**

Mike Sweeney, Bill Cowern, Kathleen Bracke, Marni Ratzel and DK Kemp gave the presentation to the board.

**Executive summary from packet materials:**

This memo provides a status report, check-in and opportunity for the Transportation Advisory Board (TAB) to provide input on the Bicycle Living Laboratory (Living Lab) Phase I evaluation and next steps.

The first phase of Living Lab projects is providing a forum for testing new, innovative facilities and contemporary treatments to improve Boulder's existing bicycle infrastructure. Phase I projects began in 2013 as part of the community

engagement process for the Transportation Master Plan (TMP) update and have been opportunistic and primarily bicycle-related. User feedback is an integral element of the evaluation process coupled with technical transportation data and field “before and after” behavior observations. Living Lab Phase I experiences have informed Phase II.

The Sept. 14 TAB meeting will include an update on the Living Lab Phase I pilot projects underway and additional community engagement proposed in fall 2015 to gather user feedback on the treatments as well as next steps for the location specific pilot projects.

Staff is seeking feedback from TAB on the Living Lab projects from Phase I technical data as well as TAB input to help shape the proposed public engagement process this fall.

**TAB action requested:**

Provide feedback on the Living Laboratory Phase I projects and input on the proposed community outreach process and next steps.

**Board discussion included:**

- Questions about crash statistics before and after the treatments.
- Questions regarding whether the two year after data will provide statistically useful numbers.
- Request for before and after safety and car speed data for all treatments.
- Questions regarding whether there are ways to make stop bars more effective?
- Support for community engagement that is as extensive and diverse and “in your face” as possible. Just mailings are not enough.
- Questions about whether the comments for University have been quantified according to a “negative” versus “positive” evaluation.
- Feedback that the packet was a bit cumbersome and a recommendation to be clearer about what the important takeaways are going forward. Avoid unnecessary data (such as what the position of the bikes in the bike lane are).
- Questions regarding whether feedback from emergency responders had been collected and what was its content.
- Questions regarding ways to visually narrow buffered bike lanes and what options had been considered.
- Concern regarding restricted left turn movements for bicycles in protected/buffered bike lanes.
- Support for the “shared street” treatments.
- Questions regarding snow maintenance and how it affected preferences for using the bike lanes and whether it has been adequately planned for with the Folsom corridor.
- Questions regarding how a similar level of protection as in the long stretches of bike lanes can be provided for intersections.
- Questions regarding the appearance of the treatments in a permanent form.
- Recommendations for outreach to those using it and those who live along it.
- Recommendations to do thorough outreach but not necessarily with much more effort than has already been expended. The board recognizes the time staff has put into this already.

**Agenda Item 6: Staff briefing and TAB input regarding Phase II living Laboratory evaluation update, Corridor refinements and upcoming community engagement events. [7: 57 p.m.]**

Mike Sweeney, Bill Cowern, Kathleen Bracke, Marni Ratzel and DK Kemp gave the presentation to the board.

**Executive summary from packet materials:**

This memo provides an update on the Living Lab Phase II evaluation, corridor refinements, and upcoming community engagement events for the Folsom Street corridor project.

During the August 25<sup>th</sup> City Council Study Session, council provided feedback to staff to proceed with the option of refining the Folsom Street corridor and/or intersections, particularly in segment between Pearl and Canyon and continuing to evaluate the corridor on a weekly basis, with frequent updates to TAB and Council.

Since the study session, staff has implemented several operational refinements to address community concerns and continues to monitor and evaluate the Folsom Street project on a daily and weekly basis.

Additionally, staff has scheduled several community outreach and listening events in the coming weeks to continue

gathering public feedback regarding how the corridor is functioning from a multimodal user perspective.

**TAB action requested:**

Please review and provide feedback regarding the Living Lab Phase II Folsom corridor evaluation results from weeks 1-5 and planned community outreach activities.

**Board discussion included:**

- Recommendations to clarify that increased travel times are during p.m. peak and not uniform across the day.
- Recommendation for more data to get to statistically significant data. It is too early in the collection to have data that is meaningful. The increased bike statistics should reference the fact that the “before” data was collected before the students had returned for fall semester.
- Recommendation to better delineate what the “adjustment factor” is and how it works.
- Questions about how the partnership with BTC and the Chamber is going.
- Request for clarification of certain technical terms in the packet materials.
- Concerns that too many of the bollards were pulled out last week and that speeds will begin to rise again.
- Commendations for tightening the metrics between visits to the board.
- Request for some simplification of some terminology to align with terms that are more familiar to the public.
- Request for more information regarding how public outreach is going in the future.
- Find a way to make business outreach more productive.
- Recommendation to make communications less reactive and wait for more data.
- Find a way to address the peak.

**Agenda Item 7: Matters**

**[9:00 p.m.]**

**A.) Matters from the Board Included:**

Board member Selvans brought up the below matter(s)

- **Resolution:** TAB resolves to support staffs request to the RTD board regarding the need for more time, more public process, a working group and a limitation of 13.3% maximum for an increase to ECO Pass costs.  
**Motion:** Stellar: **Second:** Nozzi  
**Vote: 4-0 Resolution Passes**

**B.) Matters from staff/Non Agenda:**

**[8:43 p.m.]**

- **Chautauqua Pedestrian Improvements:**
- Outline of Chautauqua pedestrian improvements including path improvements, connections to Open Space paths, addition of transit stops, ADA ramp installations. Public process has begun. Boards which are involved will be visited first and then public open houses before refinement and return for public hearings.
- **Regional studies update:** Update on the proposed RTD fare increases and minimal public process being conducted. Staff will go to next RTD meeting to provide input and suggestions on a better way to proceed. More time, more public process, a working group and a limit to the increase to 13% which is the prior agreed upon max.

**Agenda Item 8: Future Schedule Discussion:**

**[9:11 p.m.]**

Combined with Matters from Staff

**Agenda Item 9: Adjournment**

**[9:11 p.m.]**

There being no further business to come before the board at this time, by motion regularly adopted, the meeting was adjourned at 9:11 p.m.

**Motion:** moved to adjourn; Selvans, seconded by: Bilich

**Motion passes 4:0**

**Date, Time, and Location of Next Meeting:**

The next meeting will be a regular meeting on Monday, 12 October, 2015 in the Council Chambers, 2<sup>nd</sup> floor of the Municipal Building, at 6 p.m.; unless otherwise decided by staff and the Board.

APPROVED BY:

ATTESTED:

\_\_\_\_\_  
Board Chair

\_\_\_\_\_  
Board Secretary

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

An audio recording of the full meeting for which these minutes are a summary is available on the Transportation Advisory Board web page.

DRAFT



# Living Lab - Phase II Corridor Evaluation

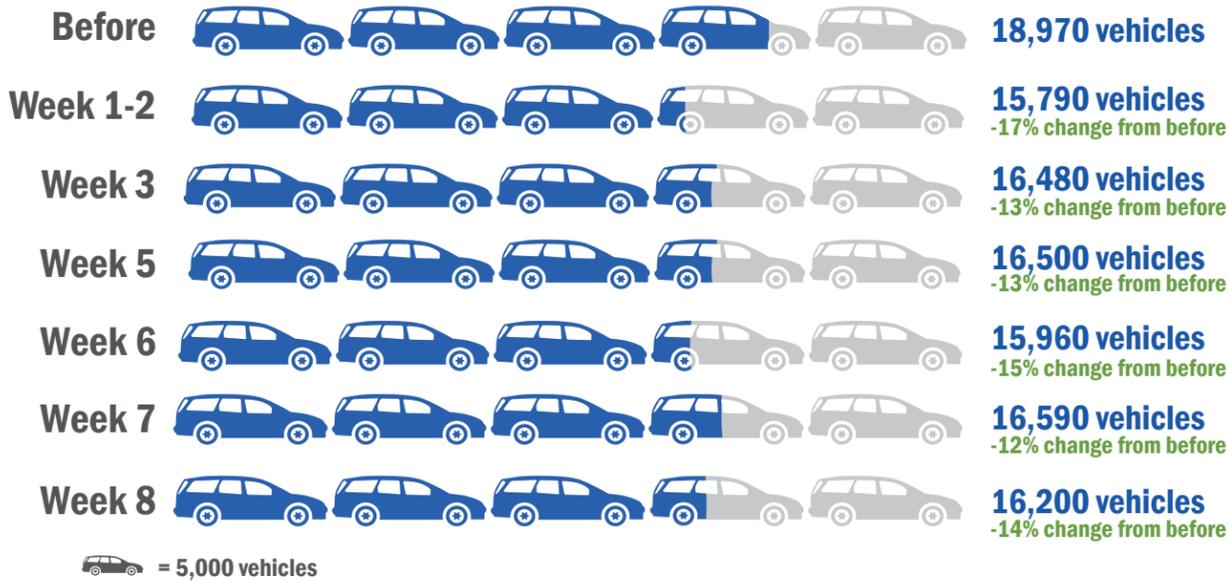
## FOLSOM STREET



Updated: 9/23/2015

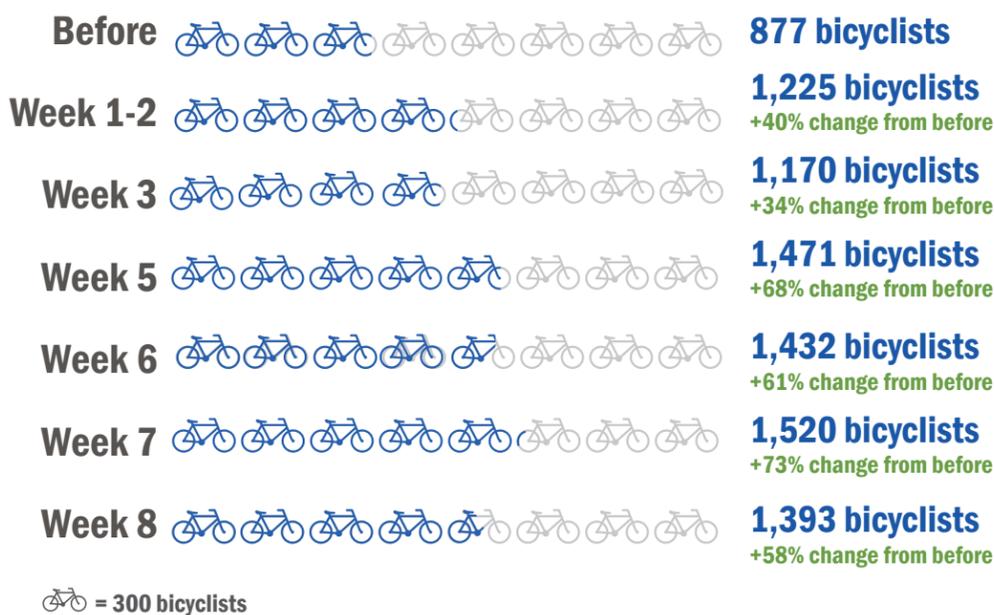
### P.M. Vehicle Travel Time

#### Weekday Vehicle Volume

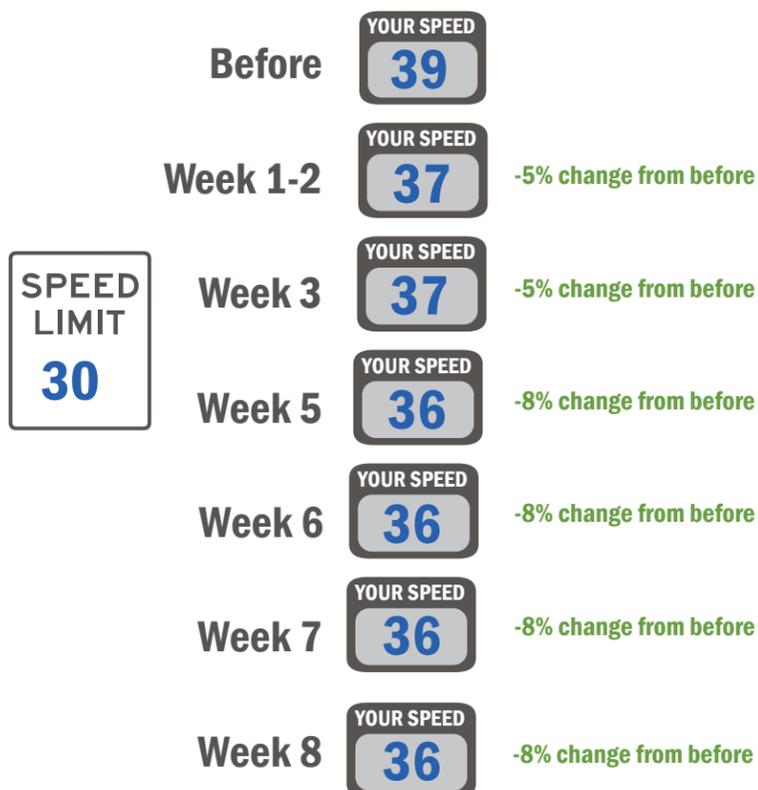


	Northbound	Southbound
Before	High: 4m 52s	3m 44s
	Avg: 3m 32s	3m 20s
	Low: 2m 46s	2m 13s
Modeled	Avg: 4m 47s	4m 30s
	High: 6m 48s	8m 14s
Week 1-2	Avg: 4m 15s	5m 36s
	Low: 2m 40s	3m 53s
	High: 5m 15s	5m 58s
Week 3	Avg: 4m 02s	4m 41s
	Low: 2m 49s	3m 35s
	High: 6m 33s	6m 15s
Week 5	Avg: 4m 37s	4m 52s
	Low: 2m 57s	3m 53s
	High: 6m 47s	7m 50s
Week 6	Avg: 4m 13s	5m 19s
	Low: 2m 38s	3m 52s
	High: 5m 25s	7m 31s
Week 7	Avg: 4m 13s	4m 52s
	Low: 3m 03s	3m 43s
	High: 5m 01s	7m 28s
Week 8	Avg: 3m 05s	4m 36s
	Low: 2m 40s	3m 33s

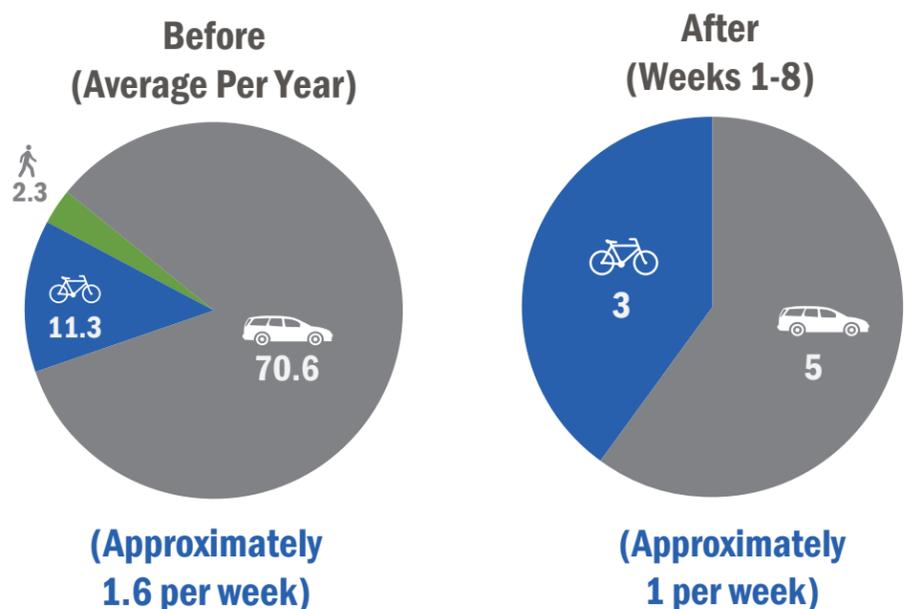
#### Weekday Bicycle Volume



#### Weekday Vehicle Speed



#### Collisions





# Living Lab - Phase II Corridor Evaluation

## FOLSOM STREET



Updated: 9/23/2015

## NOTES

- Week four data: vehicle volume, vehicle speed, and travel time data were not collected during the University of Colorado Boulder (CU) move-in, as traffic patterns during that week do not represent normal conditions.
- “After” data collection timeframes:
  - Week 1-2 is July 27 to August 9.
  - Week 3 is August 10 to August 16.
  - Week 4 is August 17 to August 23.
  - Week 5 is August 24 to August 30.
  - Week 6 is August 31 to September 6.
  - Week 7 is September 7 to September 13.
  - Week 8 is September 14 to September 20.
- Weekday vehicle volume is measured at Folsom north of Canyon.
- Weekday bicycle volume is measured at Folsom north of Pine.
  - The bicycle volume increase along the corridor is consistent with the increase the city typically sees when school is back in session.
- Weekday vehicle speed is the 85th percentile at Bluff.
- “Before” collisions are the average frequency per year from 2012 to 2014.
- Weekday P.M. vehicle travel time is measured between Arapahoe and Valmont.
- Additional data on the secondary evaluation criteria, including demographics, pedestrians, vehicle traffic diversions and transit will be added as more data is available to report.



Date: September 24, 2015

# Folsom Street Living Lab

## Weeks 1-8 – Primary Evaluation Criteria



As part of the Living Laboratory Phase II Folsom Street project, data on vehicle and bicycle volumes, vehicle speed, vehicle travel time, collisions, and bicyclist demographics was collected before the installation of protected bicycle lanes, during weeks 1-8 after the installation, and will continue to be collected as part of the ongoing evaluation process. While the after data from these early weeks is valuable, it is important to note that it is still considered preliminary; ongoing data collection and analysis in the coming weeks will continue to inform the evaluation of the project.

Secondary evaluation data is also being collected as part of the evaluation process. This summary includes preliminary bicycle demographic data. Additional details about the secondary evaluation criteria and the collection time periods for each can be found at [www.BoulderLivingLab.net](http://www.BoulderLivingLab.net).

Before data collection time periods vary by criteria and are noted in the individual tables below. After data collection time frames are:

- **Weeks 1-2:** July 27 to August 9, 2015
- **Week 3:** August 10 to August 16, 2015
- **Week 4:** August 17 to August 23, 2015
- **Week 5:** August 24 to August 30, 2015
- **Week 6:** August 31 to September 6, 2015
- **Week 7:** September 7 to September 13, 2015
- **Week 8:** September 14 to September 20, 2015

## Vehicle Volume and Speed

The city has been collecting average weekday traffic volume and speed at two locations along Folsom Street, north of Bluff and north of Canyon. The data is collected using Miovision technology and is recorded for a three-day period, and reported as the average of the three days, or average daily traffic (ADT). Note that Boulder Valley School District (BVSD), University of Colorado –Boulder (CU) and Naropa schools have been in session during some, but not all, of the before and after data collection periods (noted in the tables below).

### **Folsom Street north of Bluff Street – Posted Speed Limit = 30 mph**

<b>Evaluation Period</b>	<b>Date Collected</b>	<b>ADT-Weekday (vpd)</b>	<b>Average Speed (mph)</b>	<b>85th Percentile Speed (mph)</b>	<b>School In Session</b>
<b>Before</b>	4/27-5/1/15	15,780	35	39	Yes
<b>After-Week 2</b>	8/5-8/7/15	13,790	33	37	No
<b>After-Week 3</b>	8/12-8/14/15	13,930	33	37	No
<b>After-Week 5</b>	8/26-8/28/15	14,310	32	36	Yes
<b>After-Week 6</b>	9/2/15-9/4/15	14,100	32	36	Yes
<b>After-Week 7</b>	9/8/15-9/11/15	14,210	32	36	Yes
<b>After-Week 8</b>	9/15/15-9/17/15	13,570	33	36	Yes

### **Folsom Street north of Canyon Blvd. – Posted Speed Limit = 30 mph**

<b>Evaluation Period</b>	<b>Date Collected</b>	<b>ADT-Weekday (vpd)</b>	<b>Average Speed (mph)</b>	<b>85th Percentile Speed (mph)</b>	<b>School in Session</b>
<b>Before</b>	6/30-7/2/15	18,970	29	34	No
<b>After-Week 2</b>	8/3-8/5/15	15,790	25	30	No
<b>After-Week 3</b>	8/10-8/12/15	16,480	24	29	No
<b>After-Week 5</b>	8/25-8/26/15	16,500	24	29	Yes
<b>After-Week 6</b>	9/2/15-9/4/15	15,960	24	29	Yes
<b>After-Week 7</b>	9/9/15-9/11/15	16,590	26	30	Yes
<b>After Week 8</b>	9/16/15-9/17/15	16,200	26	30	Yes

- **ADT** = Average Daily Traffic
- **VPD** = Vehicles per Day
- **MPH** = Miles per Hour

## **Corridor Travel Time**

The travel time it takes to drive the Folsom corridor end-to-end from Valmont to Arapahoe in the northbound and southbound directions was measured by driving the corridor before and after the installation of the protected bike lanes. The project team used the before travel time measurements to help calibrate the VISSIM modeling software, and then to forecast the expected travel time after the installation.

### **Average PM Peak Hour Travel Times (in minutes: seconds)**

<b>Evaluation Period</b>	<b>PM Northbound</b>	<b>PM Southbound</b>
Before (Nov. 2014)	3:32	3:20
Modeled	4:47 <sup>1</sup>	4:30
Week 1-2	4:15	5:36
Week 3	4:02	4:41
Week 5	4:37	4:52
Week 6	4:13	5:19
Week 7	4:13	4:52
Week 8	3:05	4:36

### **Northbound PM Peak Hour Travel Time Variability (in minutes:seconds)**

<b>Evaluation Period</b>	<b>Average</b>	<b>High</b>	<b>Low</b>	<b>Variability</b>
Before	3:32	4:52	2:46	2:06
Week 1-2	4:15	6:48	2:40	4:08
Week 3	4:02	5:15	2:49	2:26
Week 5	4:37	6:33	2:57	3:36
Week 6	4:13	6:47	2:38	4:07
Week 7	4:13	5:25	3:03	2:22
Week 8	3:05	5:01	2:40	2:39

### **Southbound PM Peak Hour Travel Time Variability (in minutes:seconds)**

<b>Evaluation Period</b>	<b>Average</b>	<b>High</b>	<b>Low</b>	<b>Variability</b>
Before	3:20	3:44	2:13	1:31
Week 1-2	5:36	8:14	3:53	4:21
Week 3	4:41	5:58	3:35	2:23
Week 5	4:52	6:15	3:53	2:22
Week 6	5:19	7:50	3:52	3:58
Week 7	4:52	7:31	3:43	4:12
Week 8	4:36	7:28	3:33	3:55

## **Collisions**

Collision data for the Folsom corridor from Valmont to Colorado is being compiled from police reports. The totals include all crashes at the intersections and in segments along the corridor. The following summarizes the average collision frequency (1.6 per week) from 2012 to 2014 for vehicle-vehicle, vehicle-bicycle, and vehicle-pedestrian collisions. The collisions reported for Weeks 1-8 are also summarized below by mode.

### **Summary of Before Collisions Along Folsom Street from Valmont to Colorado from 2012-2014**

<b>Before Time Period</b>	<b>Vehicle-Vehicle</b>	<b>Vehicle-Bike</b>	<b>Vehicle - Pedestrian</b>	<b>Total</b>
2012-2014	212	34	7	253
Average per Year	70.6	11.3	2.3	84.3

### **After Collisions Along Folsom Street from Valmont to Colorado**

<b>After Evaluation Period</b>	<b>Vehicle-Vehicle</b>	<b>Vehicle-Bike</b>	<b>Vehicle-Pedestrian</b>	<b>Total</b>
Week 1-2	1	1	0	2
Week 3	1	0	0	1
Week 4	1	1	0	2
Week 5	0	0	0	0
Week 6	0	0	0	0
Week 7	1	0	0	1
Week 8	1	1	0	2
<b>Total</b>	<b>5</b>	<b>3</b>	<b>0</b>	<b>8</b>

## **Bicycle Volume**

Daily bicycle volumes are being collected at three locations along Folsom using permanent 24-hour counters: Boulder Creek, South Street, and Pine Street. BVSD, CU and Naropa were not in session during the before data collection period. Before and after volumes at Boulder Creek were collected by a permanent 24-hour counter. The before volumes at South and Pine streets were collected from 6 a.m. to 9 p.m. on June 30, 2015, and after volumes are being collected by permanent 24-hour counters installed in late July 2015. The after data includes bicycle volumes while BVSD, CU and Naropa were both in and out of session. Note that the validation of the counters is currently in progress, and volumes may later be adjusted to account for potential variances.

Bicycle volumes at all three locations increased during Weeks 4 and 5 from before conditions and Week 3 volumes. As noted previously, BVSD classes started during Week 4 and CU and Naropa classes started during Week 5, likely influencing the bicycle volumes.

### **Daily Weekday Average Bicycle Volumes Along Folsom Street at Pine Street**

<b>Evaluation Period</b>	<b>Northbound</b>	<b>Southbound</b>	<b>Total</b>	<b>School in Session</b>
Before	437	440	877	No
Week 1	620	655	1,275	No
Week 2	551	625	1,176	No
Week 3	554	616	1,170	No
Week 4	603	651	1,254	No
Week 5	705	766	1,471	Yes
Week 6	684	748	1,432	Yes
Week 7	754	766	1,520	Yes
Week 8	681	713	1,393	Yes

### **Daily Weekday Average Bicycle Volumes Along Folsom Street at South Street**

<b>Evaluation Period</b>	<b>Northbound</b>	<b>Southbound</b>	<b>Total</b>	<b>School in Session</b>
Before	388	389	777	No
Week 1	497	578	1,075	No
Week 2	512	556	1,068	No
Week 3	406	500	906	No
Week 4	570	600	1,169	No
Week 5	706	791	1,497	Yes
Week 6	725	799	1,524	Yes
Week 7	730	813	1,543	Yes
Week 8	692	769	1,461	Yes

**Daily Weekday Average Bicycle Volumes Along Folsom Street at Boulder Creek**

<b>Evaluation Period</b>	<b>Northbound - Adjusted</b>	<b>Southbound – Adjusted</b>	<b>Total - Adjusted</b>	<b>School in Session</b>
Before	592	483	1,076	No
Week 1	683	521	1,204	No
Week 2	607	497	1,104	No
Week 3	603	478	1,081	No
Week 4	782	602	1,384	No
Week 5	1,060	880	1,940	Yes
Week 6	1,226	855	2,081	Yes
Week 7	1,212	945	2,157	Yes
Week 8	1,248	926	2,174	Yes

**Notes:**

- “Before” volumes at Pine and South were collected from 6 a.m. – to 9 p.m. on June 30, 2015, and converted to daily volumes using the average hourly distribution from the permanent counter data.
- “Before” volumes at Boulder Creek are an average of weekday volumes from the last week of July and first two weeks of August from 2012 to 2014.
- “After” volumes are an average of daily volumes on Tuesday, Wednesday, and Thursday during the corresponding week.
- Volumes from Folsom at Boulder Creek have been adjusted using previously determined adjustment factors. Volumes from Pine and South have not yet been adjusted.
- The increase in bike volume from Week 4 to Week 5 is attributed to school in session. The increases in this volume along this corridor so far are consistent with the increases the city typically sees when school is back in session.

## **Bicycle Demographics**

Bicycle demographic data has been observed and recorded along the Folsom corridor before and after the installation of pilot project. The before data was collected on April 28, 2015, for two hours. After data was collected on July 29, August 3, August 12-13, August 25-27, Sept. 1-3, Sept. 8-10, and Sept. 15-17 for a total of 18 hours. Observations have been taken during weekday AM, noon, and PM rush hours. Observers record the total number of male and female bicycle riders on the roadways. In addition, the number of children and adults riding with children is recorded and comprises the “family” category (see table below).

**Bicycle Weekday Demographic Along Folsom Street**

<b>Evaluation Period</b>	<b>Male</b>	<b>Female</b>	<b>Family</b>
Before	72%	28%	4%
Week 1-2	78%	22%	6%
Week 3	67%	33%	5%
Week 5	66%	34%	4%
Week 6	66%	34%	4%
Week 7	67%	33%	2%
Week 8	70%	30%	1%