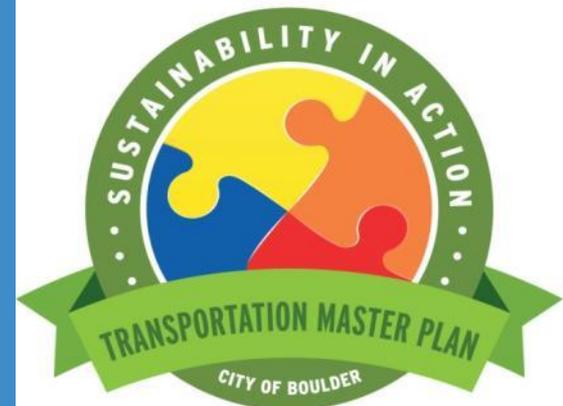




Transportation Master Plan: Progress and Implementation Update

TAB Study Session
Aug. 10, 2015



Presentation topics

- Share progress and highlights
- Seek TAB input:
 - Complete Streets: Living Lab
 - Transportation maintenance
 - Capital projects
- Updates across Focus Areas
- Next Steps





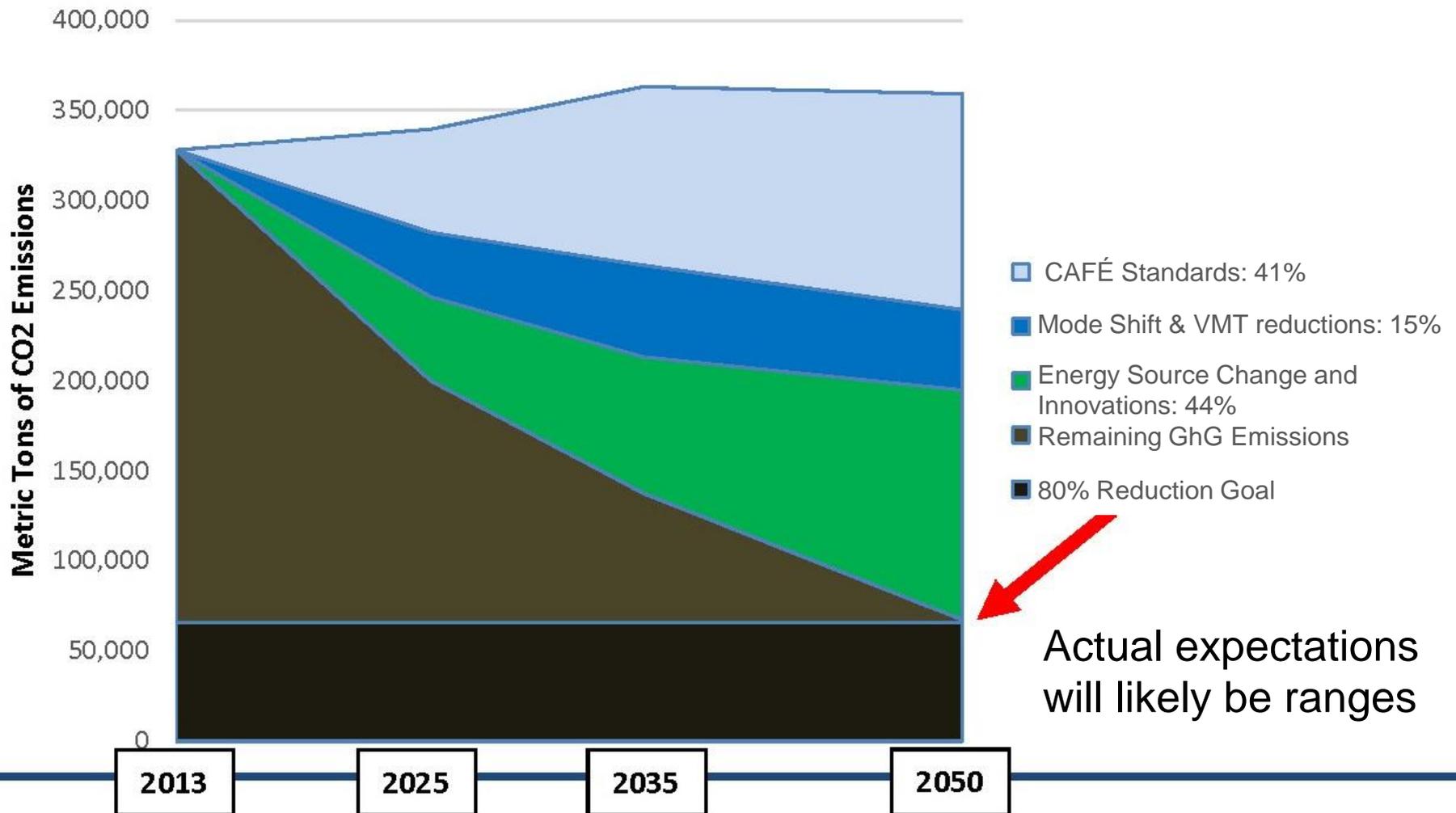
2014 TMP Highlights

- BVCP & Sustainability Framework
- Work in 5 Focus Areas:
 - Complete Streets, Regional, TDM, Funding, and Integration with City-wide Planning Initiatives
 - Comprehensive GhG Inventory
 - Updated measurable objectives
 - TMP Action Plan

Climate Commitment Analysis

Projected GHG Reductions by Action Area

From Southwest Energy Efficiency Project 2014 Analysis



Measurable Objectives

No Growth in Long
Term Vehicle
Traffic

Max of 20%
roadways at LOS F

Safety

Reduce SOV to
25% of Trips

Expand Fiscally
Viable Alternatives
for Residents &
Employees

Neighborhood
Accessibility

Reduce Mobile
Source Emissions

Increase
Alternatives with
rate of Employee
Growth

VMT per Capita

Measurable Objectives

No Growth in Long Term Vehicle Traffic

Reduce SOV to 25% of Trips

Reduce Mobile Source Emissions

Max of 20% roadways set aside

Expand Financially Viable Alternatives for Residents & Employees

Increase Alternatives with rate of Employee Growth

Reduce by 20 percent as contribution to ambitious GhG reduction goal

Safety

Neighborhood Accessibility

VMT per Capita

TAB Feedback Requested:

- Implementation and evaluation of the Complete Streets Living Lab Phase II corridor projects/Folsom Street
- Changes to maintenance activities or the evaluation/transformation efforts
- Ongoing Transportation capital improvements program/projects



Complete Streets: Living Lab Phase II Corridor Projects

Living Lab – Phase I projects

Installed summer 2013

Cycle Track

Baseline Road

Buffered Bike Lanes

University Avenue

Spruce Street

Back-in-angle Parking

University Avenue

Electric Assist Bike Pilot

Off-street multi-use paths, not including paths on Open Space and Mountain Park lands

Evaluation Measures

- Field observations
- Speed & volume
- Crash experience
- Community input

Evaluation Results

- Adjust implementation
- Maintenance
- Informing Phase II

Living Lab Phase II Projects

Options for repurposing or multi-lane arterial roadways

Selection criteria

- Technical evaluation criteria
- Local street vs. state highway
- Cross section/number of lanes
- Speed
- LOS for all modes
- Traffic volumes
- Resurfacing schedule
- Displaced traffic



- Iris Avenue
- Folsom Street
- 55th Street
- 63rd Street

Living Lab – Phase II projects

Candidate Corridors

- **Folsom Street (current project)**
- Iris Avenue
- 63rd Street
- ~~55th Street~~ (tabled)

Design considerations

- safety of all users
- Pedestrian/cyclist stress level
- Access to transit
- vehicle delay/travel time

Planning & design



Installation



Evaluation

Living Lab – Phase II

Community Input

- 1300 comments received to-date (Spring through week of August 3rd)
- All corridors
- Comments polarized
- Email, social media, Inspire Boulder, phone, website, meetings

Living Lab – Phase II projects

Folsom Corridor

- Approx. 600 since mid-June
- 240 comments (pre installation)
- 360 comments (during & post installation)
- Polarized
- Variation among types of communications (email, media, social media)

During/Post-Implementation Folsom Corridor

Comment	Negative	Neutral	Positive	Total
Auto congestion	180	9	2	191
Safety	44	5	121	170
Improvement for cyclists	0	1	59	60
Environmental impacts	18	0	24	42
Communication	15	0	0	15
Cost	7	1	0	8
Access to businesses	6	0	0	6



Living Lab Phase II Folsom Street Preliminary Evaluation

Folsom Street Preliminary Evaluation

- Evaluation Criteria for Weeks 1-2
 - **Volume**
 - Speed
 - **Travel Time**
 - **Safety**
 - Emergency Response
 - **Diverted Traffic**
- **Infographic**

Non-typical Traffic Patterns Week 1

- Pre-Ironman Boulder visitors
- Final installation is on-going
- August 1st student “move in”
- Horizon West lot repaving





Folsom Street Volume and Speed Data

Folsom Volume & Speed (Week 2)

	Folsom	Mo/Yr	Avg Daily Traffic weekday (vpd)	Avg Speed (mph)	85th Percentile Speed (mph)	Speed Limit
Before	North of Bluff St	April 2015*	15,780	35	39	30
After	North of Bluff St	Aug 2015	13,790	33	37	30
Before	North of Canyon	June 2015	18,970	29	34	30
After	North of Canyon	Aug 2015	15,790	25	30	30

* BVSD and CU was in session



Folsom Street: Preliminary Travel Time Data and Observations

Travel Time Runs

- 65 total runs
 - AM peak times
 - PM peak times
 - Weekday off-peak times
 - Weekend times
- Six data collection days
 - Tuesday, July 28th
 - Wednesday, July 29th
 - Friday, July 31st
 - Saturday, August 1st
 - Monday, August 3rd
 - Tuesday, August 4th



Dashboard video documentation

Preliminary “After” Travel Time Summary

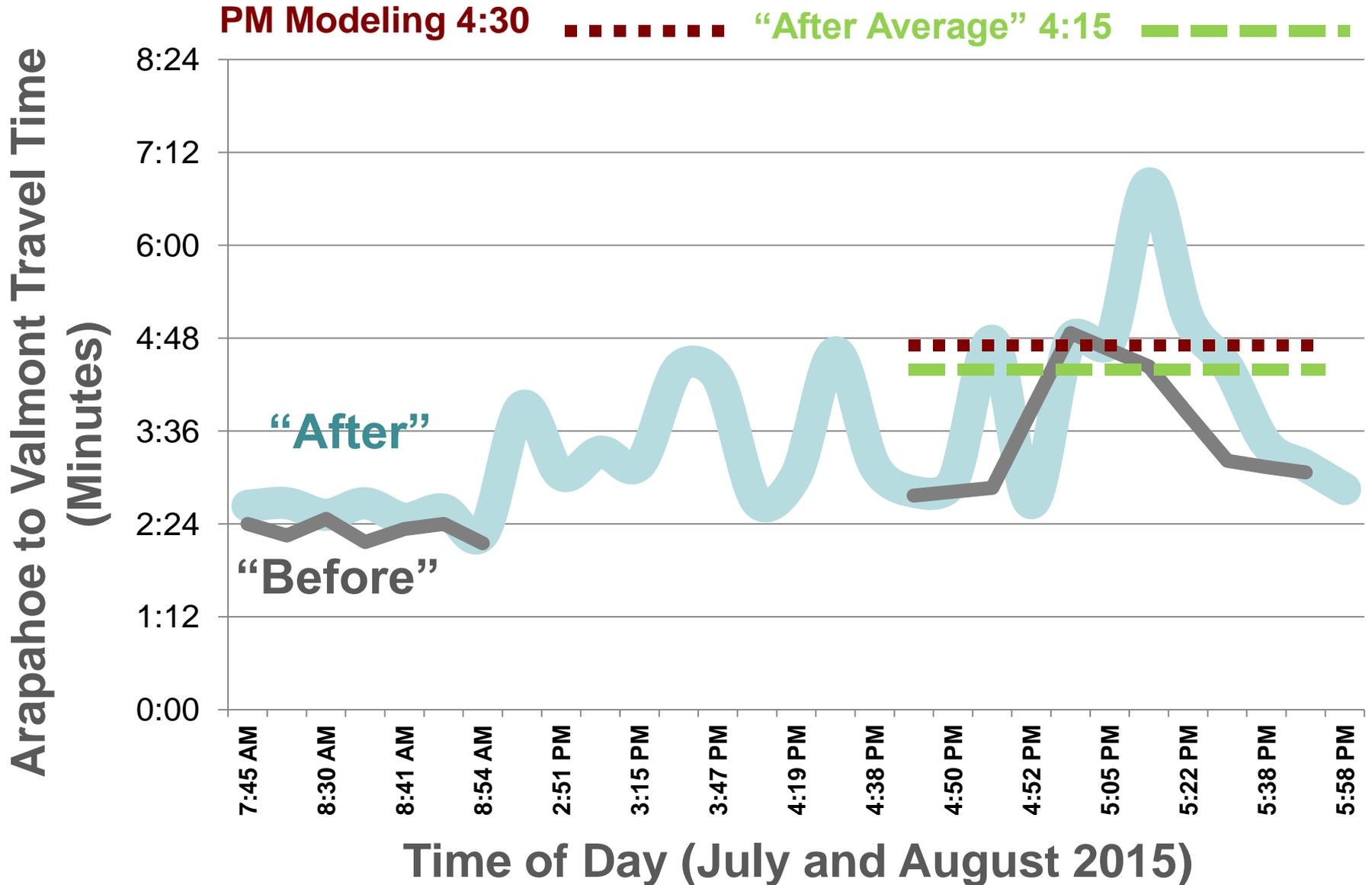
- Travel data during and shortly after installation
 - Week 1-2
- Northbound & Southbound variations
- Variations by time of day
 - PM peak has the most variation
- SB trips have more delay/travel time variation than NB
- Intersection congestion
 - Pearl, Walnut & Canyon



Preliminary “After” Travel Time

Northbound	AM Peak	Afternoon	PM Peak	Before PM
Low	2:16	2:41	2:40	2:46
High	2:40	4:25	6:48	4:52
Variation	0:24	1:44	4:08	
After Avg	2:32	3:29	4:15	
Before (11/14)	2:18	n/a	3:32	
Modeled	n/a	n/a	4:30	
Before to After Avg	0:14	n/a	0:43	
Model to After Avg	n/a	n/a	0:15	

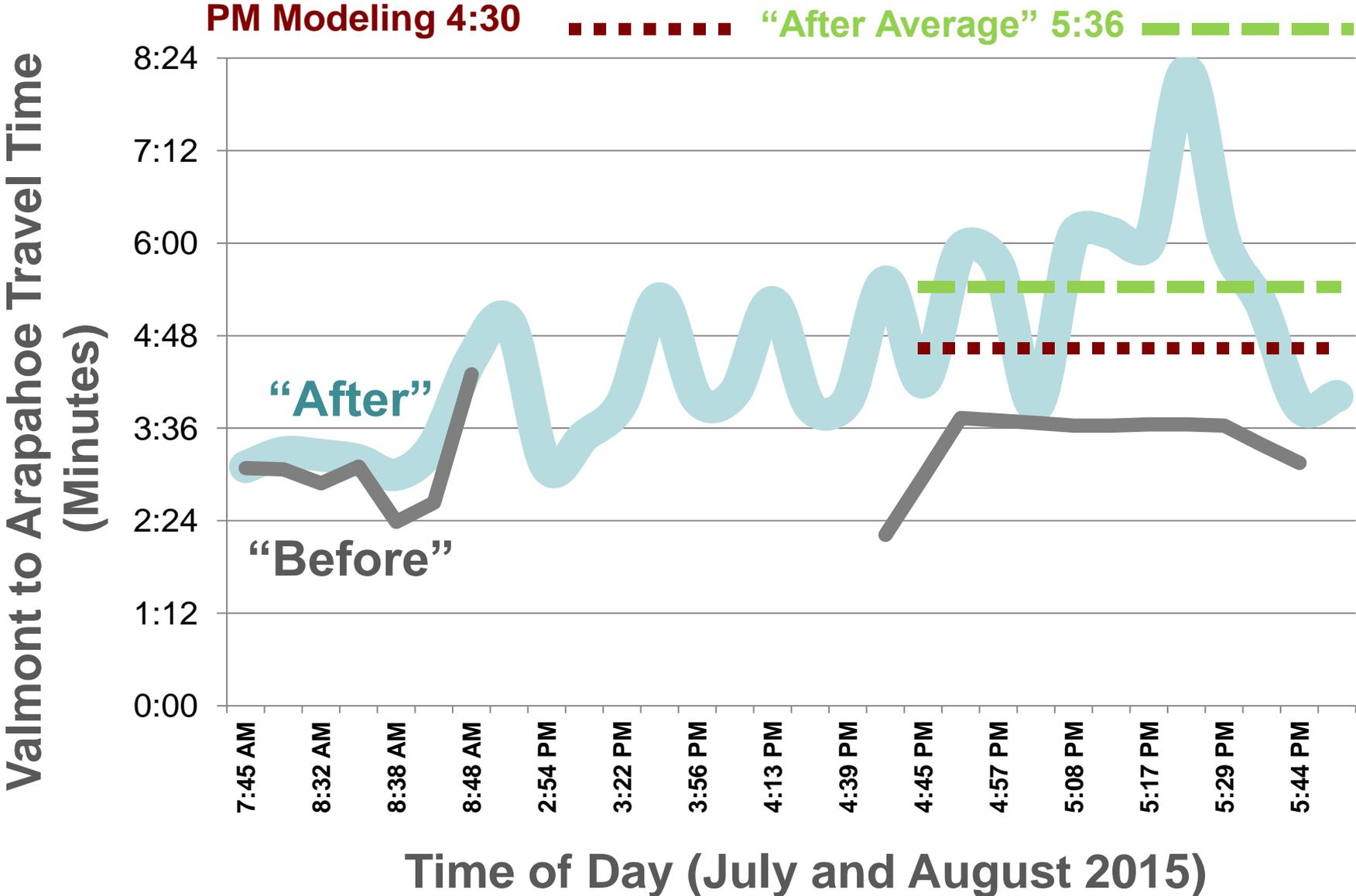
Northbound "Before vs. After"



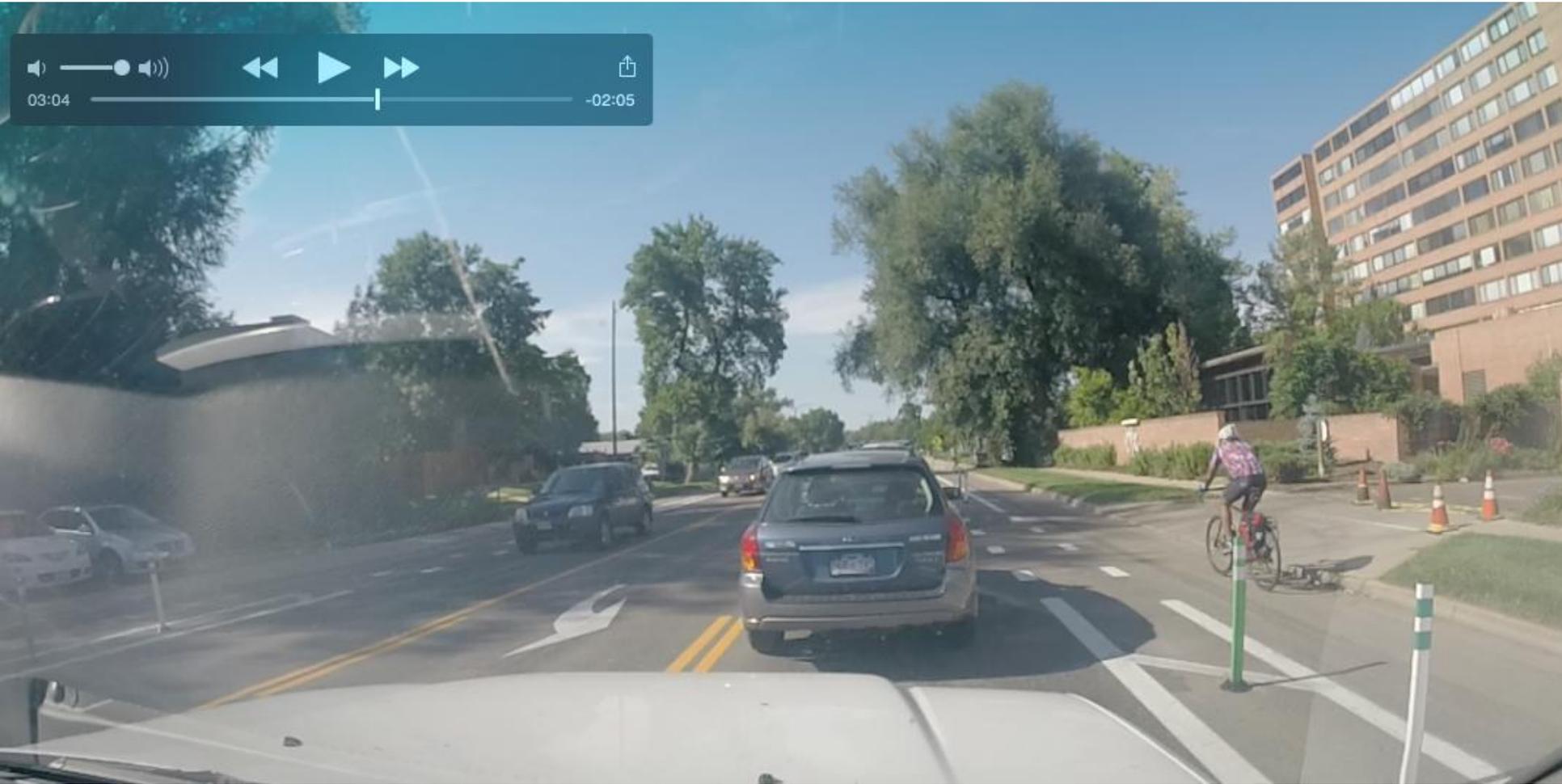
Preliminary “After” Travel Time

Southbound	AM Peak	Afternoon	PM Peak	Before PM
Low	3:00	3:06	3:53	2:13
High	4:30	5:17	8:14	3:44
Variation	1:30	2:11	4:21	
After Avg	3:23	4:13	5:36	
Before (11/14)	3:03	n/a	3:20	
Modeled	n/a	n/a	4:30	
Before to After Avg	0:20	n/a	2:16	
Model to After Avg	n/a	n/a	1:06	

Southbound “Before vs. After”



Summary Videos Available – click link below

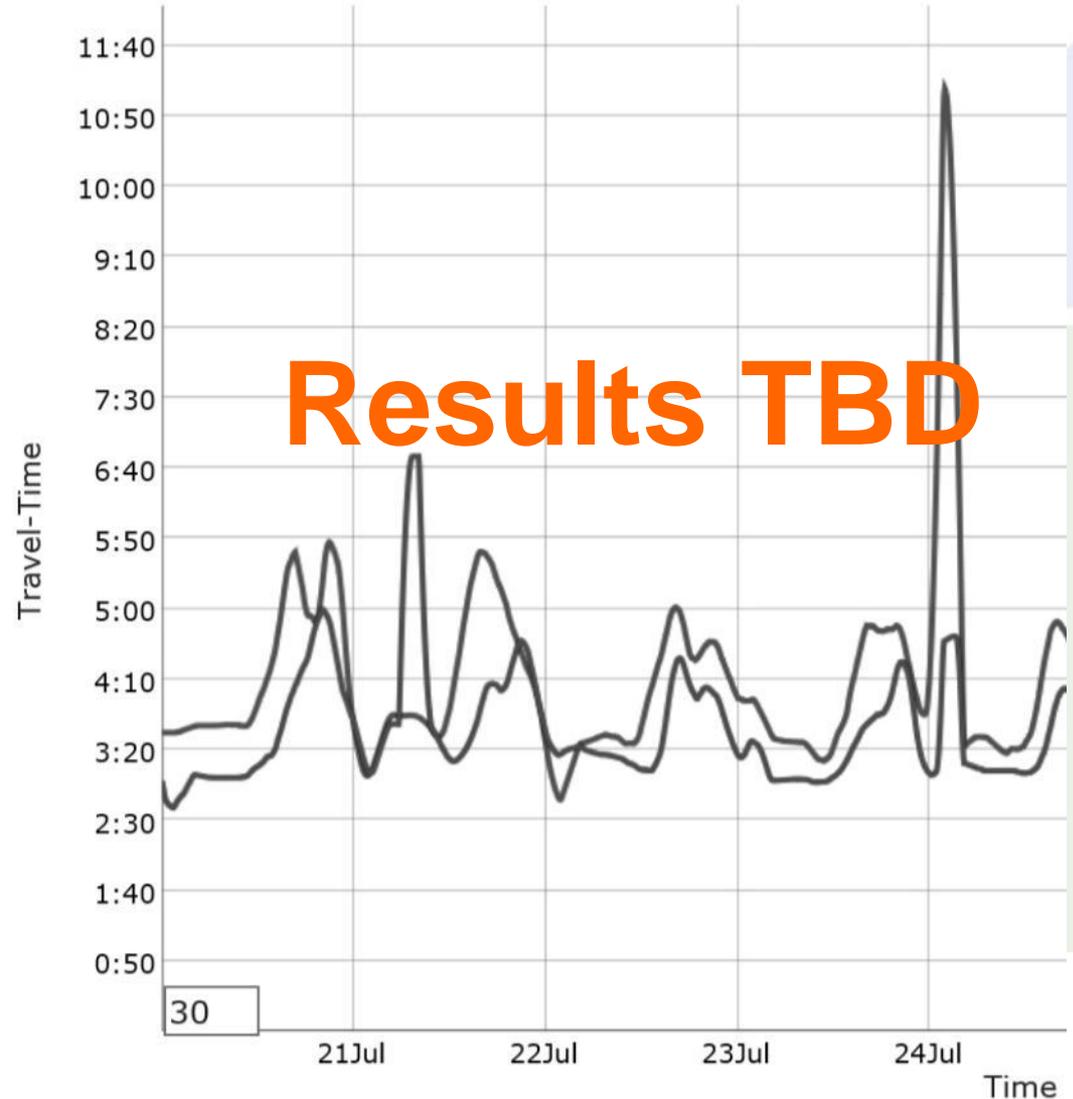


www.boulderlivinglab.net

Future: Add'l Data Collection

Acyclica Data (Oct 2015)

- Bluetooth/Wifi based travel time data
- Collects 24 hour data
- Track data over longer time
- More to report in future/on-going updates





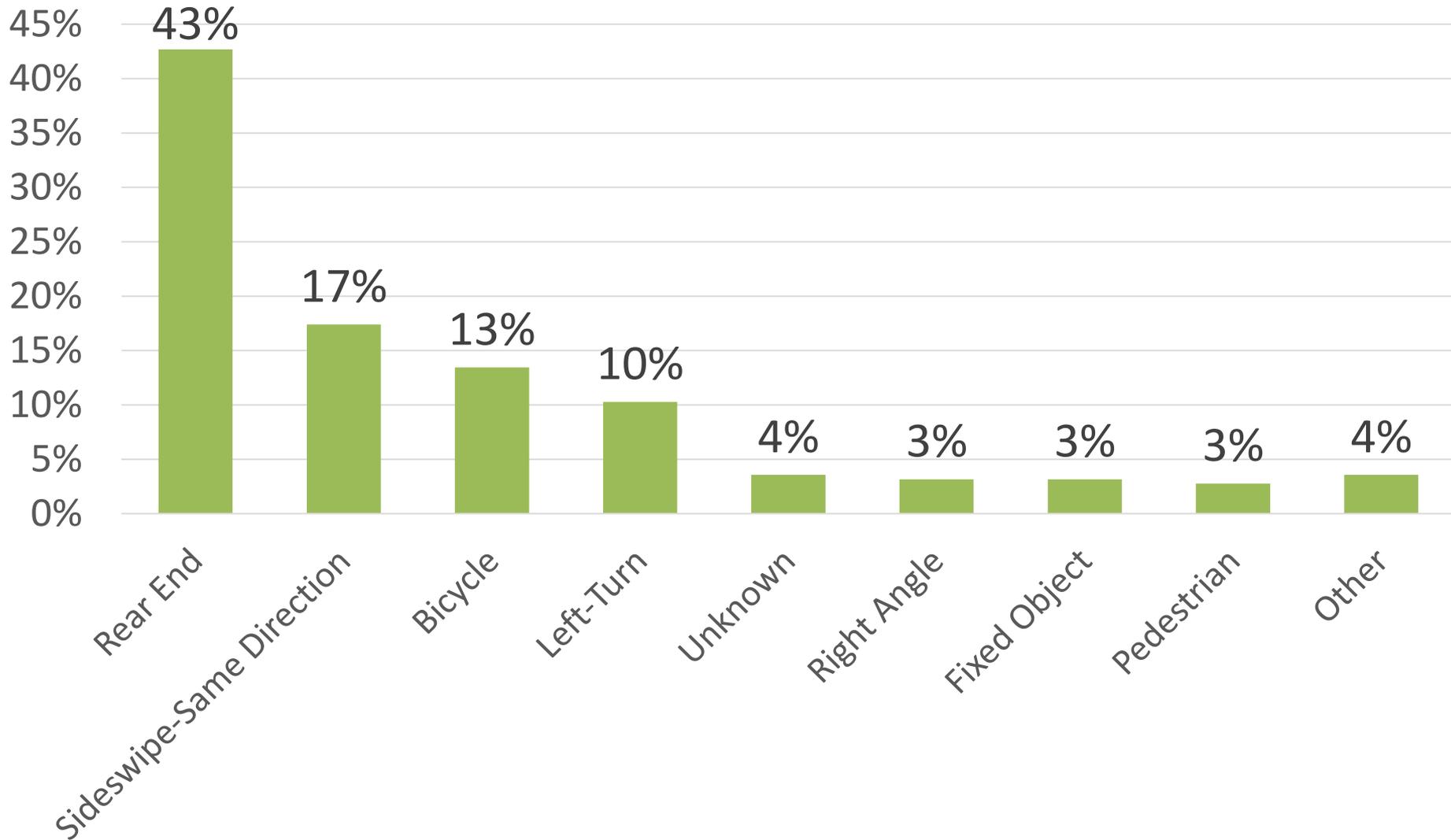
Folsom Street: Safety Data

“Before” Safety Data 2012-2014

- Average crash frequency: 84.3 crashes per year
 - 11.3 crashes/year involving bicycle
 - 2.3 crashes/year involving pedestrian
- 1.3 serious injury crashes per year
- No fatalities in last 3 years

“Before” Crash Types

2012-2014



“After” Safety Data

July 25th to Aug 1st

One week range is from installation start date to Saturday August 1st

- 1 vehicle to vehicle rear-end crash at Folsom & Valmont
- No bicycle or pedestrian crashes
- No serious injuries or fatalities





Folsom Street: Emergency Responders Feedback

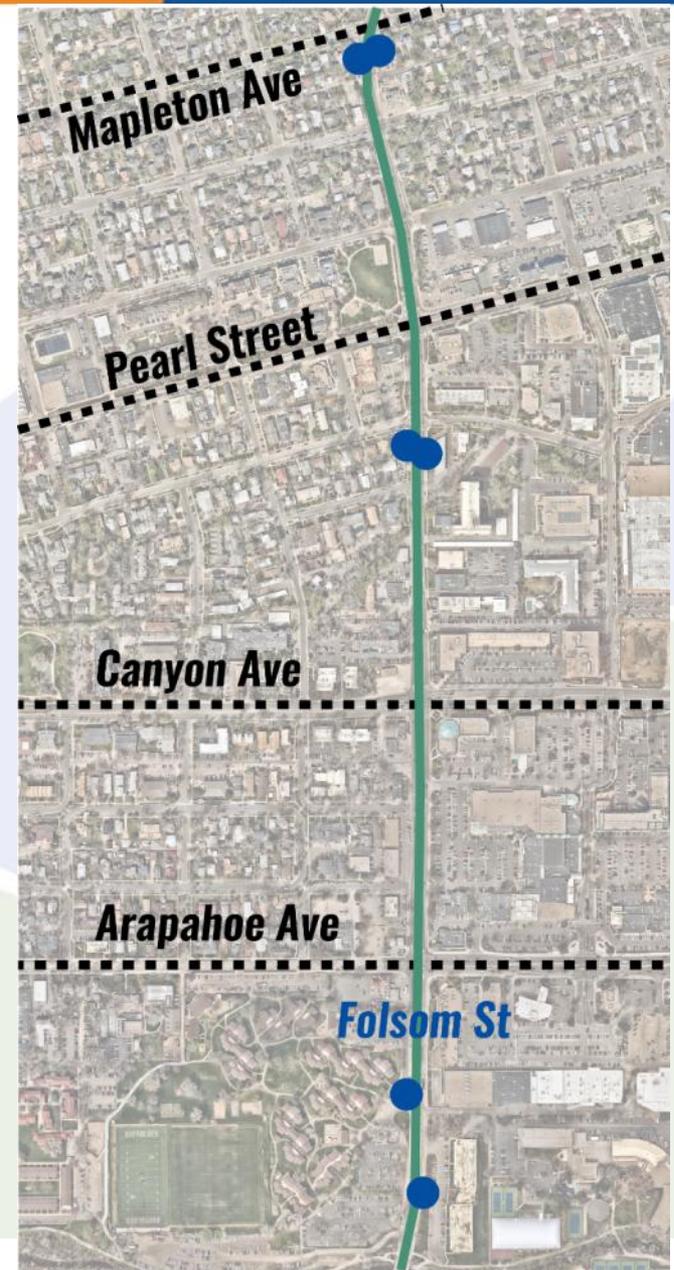
Feedback from Emergency Responders

- Fire Dept – monitoring corridor and too early for specific results
- Police Dept – monitoring corridor, concerns:
 - Corridor/intersection congestion
 - Vehicles turning at driveways and intersections
 - Snow/ice maintenance will be important
 - Few bikes seen riding corridor, some instances of bikes riding on the sidewalk
 - Need to monitor response times and not expect vehicles to drive over bollards



Folsom Street: Preliminary Bicycle Volume & Demographic Data

Continuous Count Site Locations



Public webpage to view data:

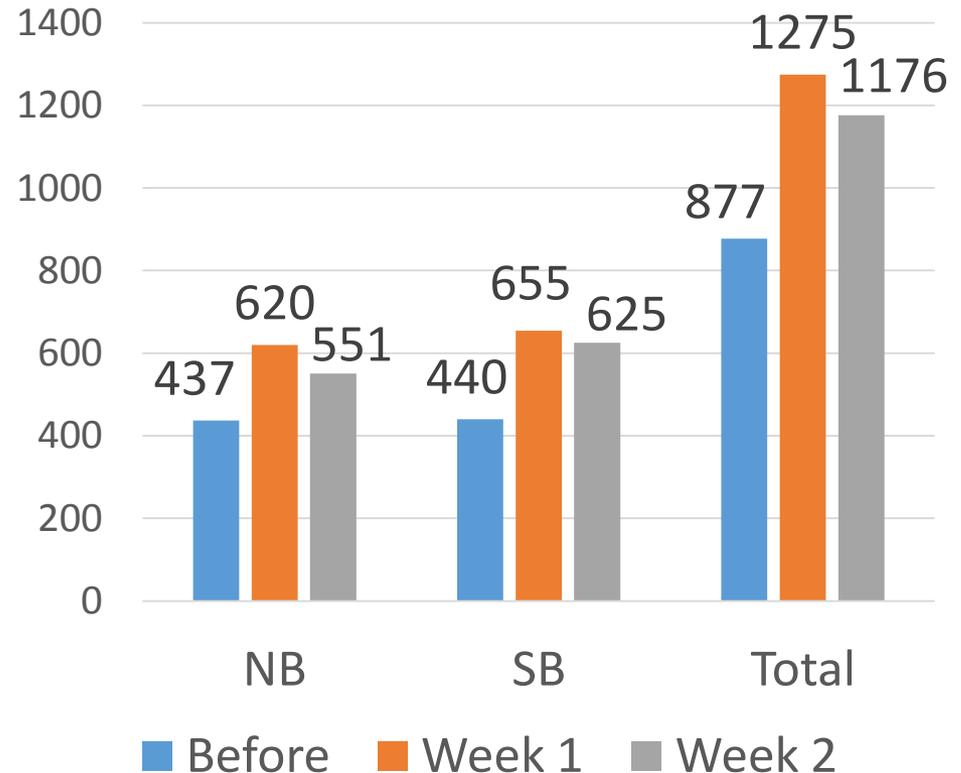
www.boulderlivinglab.net

Daily Bicycle Volumes

“Before” vs. “After”

- “Before” data: collected Tuesday, June 30th
- Week 1 “after” data: average daily volume from 7/28-7/30
- Week 2 “after” data: average daily volume from 8/4-8/6

Folsom north of Pine Street

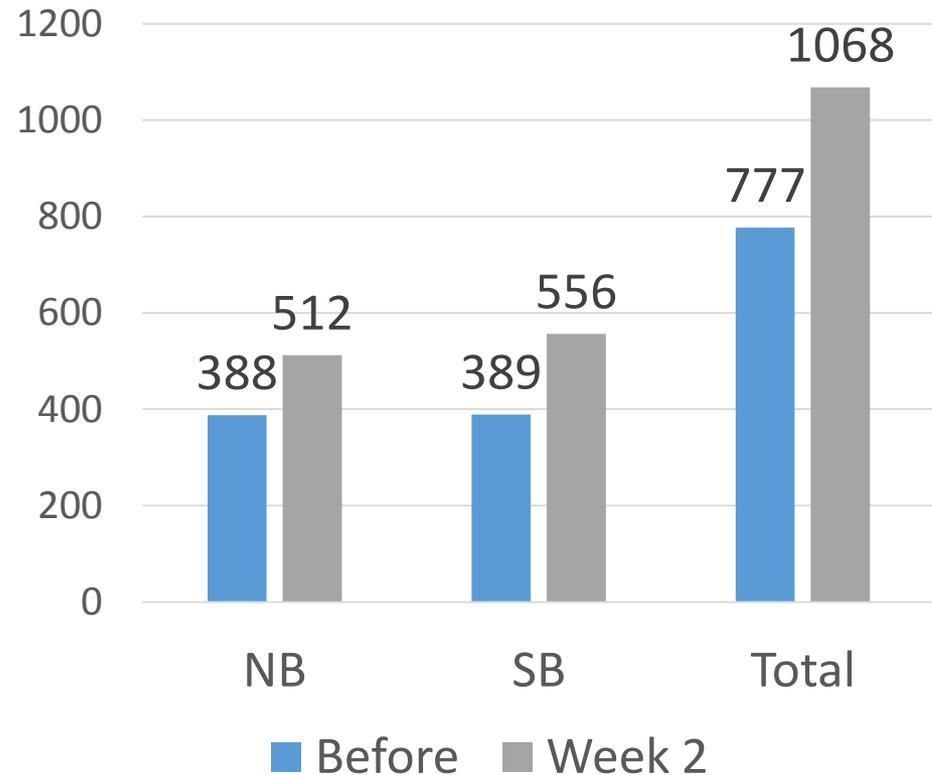


**Validation of counters currently in progress. Volumes may later be adjusted to account for potential variances.*

Daily Bicycle Volumes “Before” vs. “After”

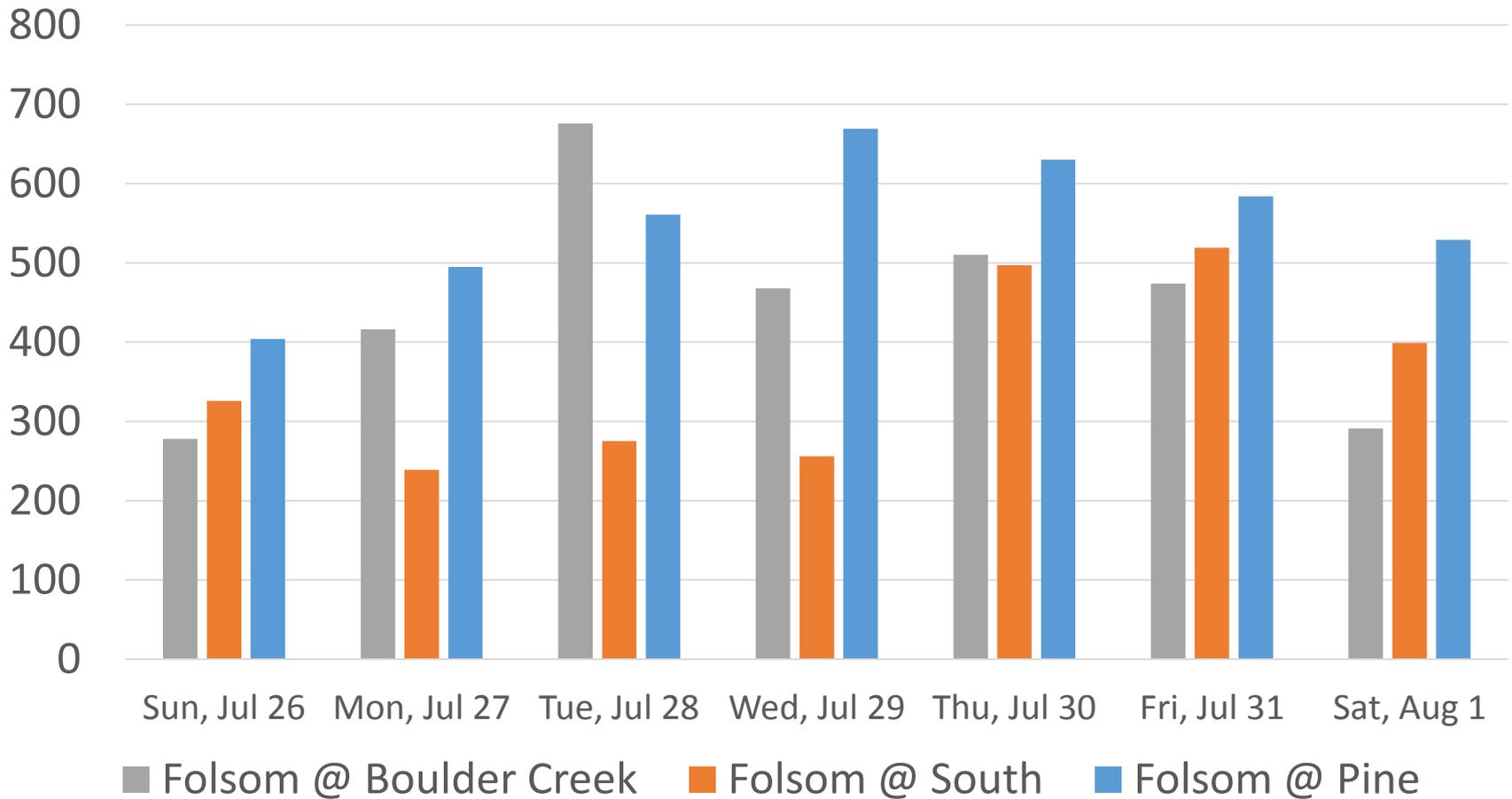
- “Before” data: collected Tuesday, June 30th
- Week 2 “after” data: average daily volume from 8/4-8/6

Folsom south of South Street



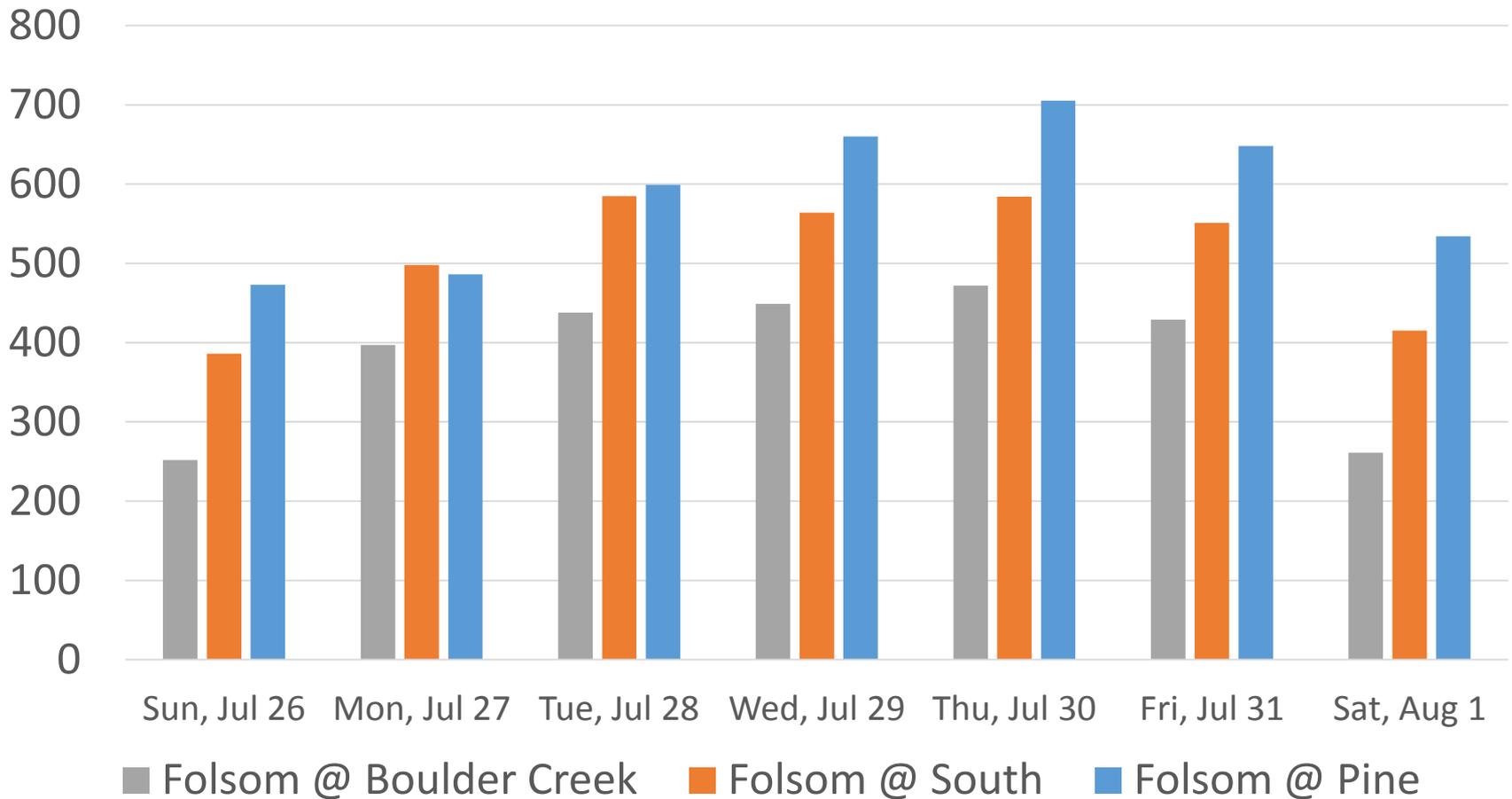
**Validation of counters currently in progress. Volumes may later be adjusted to account for potential variances.*

Northbound Bicycle Volumes*



**Validation of counters currently in progress. Volumes may later be adjusted to account for potential variances.*

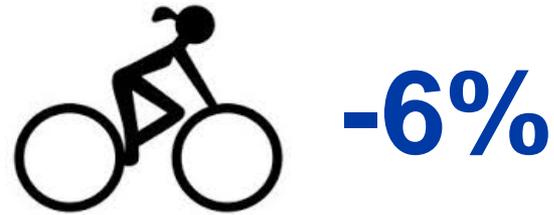
Southbound Bicycle Volumes*



**Validation of counters currently in progress. Volumes may later be adjusted to account for potential variances.*

March 2015 “Before” vs. 4 days after installation*

Women



Families



Men



* *CU and BVSD not in fall session yet*



Lessons Learned

Living Lab Phase II

Lessons Learned

- Public Outreach & Communications
 - Importance of both traditional & social media
 - Need to be more proactive with messages and make info/data easier to find on website
 - More time for public outreach process (1-2+ months more time needed in advance)

Living Lab Phase II

Lessons Learned (cont.)

- Public Outreach & Communications
 - More information ready to go prior to installation (FAQs, project purpose, what to expect & when, information on the corridor elements, evaluation plan/criteria, etc)
 - Better ways to access and view information quickly (ex. install camera on corridor for 24/7 viewing)
 - Vocabulary – word choice matters

Living Lab Phase II

Lessons Learned

- Data collection, analysis, and reporting
 - Extensive “before” data was collected and analyzed to determine recommendations, but didn’t clearly communicate it to community.
 - Information on data/analysis was lost in volume of materials to TAB & Council

Living Lab Phase II

Lessons Learned (cont.)

- Data collection, analysis, and reporting
 - Positive to do NACTO peer city design review
 - More data displayed on the website, before, during installation, and immediately after
 - Difference in travel time change compared with driver experience
 - Impact of mid-block pedestrian crossings

Living Lab Phase II

Lessons Learned

- Installation
 - Underestimated time for install process
 - Need to have more information available for people to see during install
 - Install camera for 24/7 viewing
 - More frequent information updates during install
 - More quickly provide data on initial, preliminary results
 - More quickly respond to community's concerns regarding congestion



Living Lab Phase II Proposed Options

Living Lab Phase II - Proposed Options

1. Continue Living Lab Phase II project as planned with monthly check-ins with TAB and council with in-depth evaluation at 1, 3, 6, and 12 month milestones
2. Based on initial feedback and evaluation, refine/modify Folsom corridor and/or intersections, particularly in segment between Pearl and Canyon. 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 Folsom corridor Living Lab project.



Next Steps

Continue to monitor/make adjustments

Respond to community concerns

- August- Sept 2015
 - Focus on Folsom from Pearl to Canyon
 - Evaluate/Adjust signal timing and coordination, number & placement of bollards, turn lane storage length, flashing yellow arrows for left turns, and other refinements
- October 2015
 - Full one month analysis report of all multimodal criteria
 - Continue to make corridor/intersection operational adjustments, refinements, and modifications as-needed
 - Continue updates to TAB & Council

Upcoming Meetings & Events

- August 25th City Council Study Session
- City Council Public Hearing - September (Specific Date TBD)
- Continuing opportunities for public input:
 - On-line Inspire Boulder, Emails, calls
 - Events: Walk, Bike, and Drive Audits
 - Specific dates/times on website:
www.boulderlivinglab.net

Future Steps

- Based on feedback from August 25th City Council Study Session and September City Council Public Hearing, proceed with preferred option for Folsom.
- Living Lab projects for Iris and 63rd street corridors will not move forward until further direction from City Council
- For more information and updates on the Living Lab program, please see:
 - www.boulderlivinglab.net



Questions? Feedback on Proposed Options?

Question for TAB:

- Does council have feedback on the ongoing implementation and evaluation of the Complete Streets Living Lab Phase II corridor projects, including the installed Folsom Street project?
 - Feedback on Proposed Options