

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

**MEETING DATE:** Jan. 13, 2014

**AGENDA TITLE:** Staff briefing and TAB input regarding TMP Update progress, with emphasis on the Transportation Demand Management Focus Area and measurable objectives

**PRESENTERS:** Tracy Winfree, Director of Public Works for Transportation  
Michael Gardner-Sweeney, Transportation Planning and Operations  
Coordinator  
Kathleen Bracke, GO Boulder Manager  
Chris Hagelin, Senior Transportation Planner  
Randall Rutsch, Senior Transportation Planner

**EXECUTIVE SUMMARY**

This memo provides a brief status report, check-in and opportunity for the Transportation Advisory Board (TAB) to provide input on progress to date on the Transportation Master Plan (TMP) Update, with an emphasis on the Transportation Demand Management (TDM) Focus Area and on the plan's measurable objectives. The Jan. 13, 2014 TAB meeting will include brief updates on all the TMP focus areas and feature a more in-depth discussion of the TDM and measurable objectives areas. This material and the material from the Dec. 9, 2013 memo that focused on the Complete Streets Focus Area will form the basis for an upcoming potential information memo and council study session, which is still being scheduled and may not occur until April. The draft information memo for Council will be the focus of the Feb. TMP agenda item for the TAB. Staff will provide an update to TAB that features the other TMP Update Focus Areas including Funding, Transportation Demand Management, and Regional in more detail. The goal is to provide multiple opportunities for in-depth input from TAB for all areas of the TMP Update in advance of the City Council informational memo and study session geared toward February and April 2014.

Staff continues to move forward with the TMP Update process in 2014 in accordance with City Council and TAB guidance. Upcoming topics include the results of the modeling of the transit scenarios, regional updates, the TDM toolkit and the TMP investment program. Staff will continue to incorporate TAB comments and community

input throughout the update process. In addition, staff is actively working on a number of other efforts in collaboration with city-wide planning and sustainability initiatives.

#### **TAB ACTION REQUESTED**

Review and provide input on work completed in the TMP update with emphasis on the TDM Focus Area and the existing and proposed measurable objectives for the TMP.

#### **COMMUNITY SUSTAINABILITY ASSESSMENTS AND IMPACTS**

- **Economic:** Transportation costs are a significant portion of household expenses and important to business competitiveness and employee retention. Enhancing the travel options available to residents and employees supports more sustainable travel behavior and the movement of goods and people essential to the local economy. Providing regional transit and bike options is a particularly important option for in-commuters as it provides alternatives to long distance single-occupant vehicle (SOV) travel. Biking and walking reduce road construction, repair and maintenance costs. Completing the walk, bike and transit systems and supporting their use with effective TDM programs responds to the lifestyle choices and desires of younger workers, particularly those in the “creative class” that are a foundation of the Boulder economy.
- **Environmental:** Achieving the TMP objectives of reducing single occupant vehicle (SOV) travel, reducing congestion and air pollution emissions including greenhouse gases have direct environmental benefits. Transit has the potential to replace mid and long distance SOV trips with significant greenhouse gas (GHG) emission reductions. Biking and walking are zero emission transportation options reducing greenhouse gas and vehicle miles traveled. TDM programs are key to reducing the number of trips made by cars.
- **Social:** Enhanced travel options improve access for all community members. Improved transit access is particularly important to seniors, low income and people with disabilities. Recent research shows that transit riders tend to walk more and be healthier than auto commuters while neighborhood accessibility is an increasing focus related to public health for both children and adults. The increased focus on transit, accessibility and TDM will have multiple benefits to the community, including expanding modal choice for low-income, older adults and children.

#### **OTHER IMPACTS**

- **Fiscal:** The TMP Update is supported by existing funding from the city’s 2013-14 budget.
- **Staff time:** Staff resources for this project have been funded and included in the 2013-14 budget.

#### **BACKGROUND**

The TMP exists within the broader context of the Boulder Valley Comprehensive Plan (BVCP), the city’s Sustainability Framework and Climate Commitment goals. The

resulting transportation system is expected to support the sustainability and quality of life goals set by the community. As a mature plan, the TMP reflects more than 20 years of consistent policy direction and documented results. The TMP update began with the Policy Refinement phase in 2012, with the results and following work program approved and supported by City Council in 2013-14. Council has directed that:

- The plan should maintain the existing four TMP Focus Areas with the following emphasis:
  - *Complete Streets*, formerly Multimodal Corridors: Rename, address transit system planning, explore bike and pedestrian innovations
  - *Regional Travel*: continue existing approach with a focus on US 36, the Northwest Area Mobility Study and other regional connections
  - *Transportation Demand Management (TDM)*: explore community-wide Eco-Pass and develop TDM packages for development review
  - *Funding*: expand transportation funding focus as the funding shortfall has increased and funding is essential to continued progress. (While recent progress has been made to stabilize service levels and provide limited enhancements, the TMP will continue to explore appropriate funding approaches for future TMP enhancements.)
- Add “Integrate with Sustainability Initiatives” as a new, fifth Focus Area. This includes integration of the TMP Update with the city’s sustainability efforts including the Civic Area plan, Climate Commitment, Sustainable Streets and Centers, Access Management & Parking Strategies, East Arapahoe and North Boulder community/corridor plans.
- Add three new measurable objectives of *Safety, Neighborhood Accessibility and Vehicle Miles Traveled (VMT) Per Capita*.

### **TMP Focus Area Progress**

Planning work continues under all the Focus Areas of the TMP Update with substantial progress to-date in the Complete Streets Focus Areas. While TAB has and will be receiving specific and detailed materials on each area in the coming months, a brief summary of the work and progress in each area is provided below:

#### ***Complete Streets***

The Complete Streets Focus Area includes all the modes of travel, including transit and the Bicycle/Pedestrian innovations which were discussed in the Dec. 2013 TAB memo. Since that memo, the consultant team has conducted the initial round of modeling of the transit scenarios. The results of this modeling are currently being reviewed by city staff and will be the focus of the intradepartmental meeting and Technical Advisory Committee meetings during the week of Jan. 13, 2014. This information will be shared with TAB and City Council in February and April 2014.

### ***Regional Travel***

The city continues to work with our regional partners to advance our goals to fully implement true bus rapid transit (BRT) service on US 36 and to expand travel options on regional corridors through the Regional Transportation District's (RTD) Northwest Area Mobility Study (NAMS). City representatives remain active on both the technical and policy committees of the NAMS study. The TMP transit scenarios are consistent with the NAMS study corridors and data from the city's analysis is intended to help inform RTD's study. The results of the TMP transit scenario analysis for the regional corridors will be shared with the NAMS team through a scheduled meeting with RTD in Jan. 2014.

Work has continued to promote high quality bus rapid transit (BRT) service on US 36 in the high occupancy toll (HOT) lanes to Boulder. RTD recently decided to use over the road coaches that are similar to the existing buses for this service though members of the US 36 coalition continue to work for BRT aspects for the vehicles and service to improve travel times and quality. The US 36 construction is scheduled to be complete by the first quarter of 2016.

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

This TDM Focus Area includes partnership activities in the areas of community-wide Eco-Pass with Boulder County, as well as local focus on updates to the city's TDM Tool Kit, and the Access Management and Parking Strategies (AMPS) study. Staff is also working with Boulder Transportation Connections (BTC) on a new scope of work for 2014 that will set a foundation for a performance-based contract in the future. These activities are described in more detail in the Analysis section of this memo.

### ***Funding***

With the recent voter approval of the transportation funding measures, approximately \$4.2 million per year will be generated, with \$3.2 million used for transportation operations and maintenance (O&M) and the remaining funds allocated to core system enhancements. In approving the two recent ballot measures, Council also directed that the city continue to explore user-based funding sources for future additional/replacement funding. The TMP Update will outline a work plan/schedule and evaluation criteria for continuing to explore future transportation funding mechanisms.

### **Investment Program**

Staff has continued the internal review of the existing TMP investment programs. The transportation funding ballot measures provided additional funding for filling the existing operations and maintenance deficit. The biggest issues in the investment area for the update will be the level of transit and Eco Pass funding desired by the community, and the need to reconcile and "right-size" the existing Fiscally Constrained, Action and Vision Plan investment programs with current economic realities.

### ***Integrate with Sustainability Initiatives***

This new focus area emphasizes city-wide integration under the city's Sustainability Framework. These are collaborative, interdepartmental project management approaches for the TMP Update in coordination with the city-wide planning initiatives such as Climate Commitment, Sustainable Streets and Centers, East Arapahoe corridor planning, and the Access Management and Parking Strategies projects. TAB and Transportation staff recently participated in a joint Board workshop on the Sustainable Streets and Centers and the East Arapahoe planning project on Dec. 19, 2013. This type of joint board workshop is an example of opportunities to integrate input from a variety of city boards on inter-related topics. Future joint board workshops will be scheduled in 2014 influencing the TMP Update.

### **STAFF ANALYSIS – TMP UPDATE: TDM AND MEASURABLE OBJECTIVES**

The discussion in this section provides more detailed information regarding progress to date for the TDM Focus Area and for the TMP measurable objectives. Development of the TDM Toolkit was the focus of the TAB memo and discussion on Nov. 14, 2013 while the TMP objectives were included in the Policy Review material presented to the TAB on Aug. 13, 2012 and to council at a study session on Aug. 28, 2012.

### **Transportation Demand Management Focus Area**

Within the TDM Focus area, the immediate priorities of the TMP Update include conducting the Community-wide Eco Pass Feasibility Study in partnership with Boulder County, modifications to the city's TDM Toolkit and Site Review policies and processes, collaboration with Parking Services staff on AMPS work program, and refining the work program with Boulder Transportation Connections (BTC).

#### ***Eco Pass Study***

The Community-wide Eco Pass Feasibility Study is scheduled to be completed in mid-January. City and County staff are working together to jointly release the document to the City Council, Boards, County Commissions, and the public. Staff will update the city's webpage and provide a Frequently Asked Questions or "FAQ" document for the community and media. The data analysis and results of the feasibility study will be incorporated into the TMP Update and specifically the development of future transit scenarios and investment plans. The TAB has been briefed on the study in the past and staff will provide highlights and responses to the TAB comments from the finalized study as part of the presentation at the TAB meeting on Jan. 13, 2014.

#### ***TDM Toolkit***

In November 2013, staff briefed the TAB on the background of the city's current TDM program that applies to new development projects as well as anticipated refinements being considered to the TDM Toolkit and Development Review policies and processes. In first quarter 2014, staff will continue to work on the TDM Toolkit and related policies as part of the Access Management and Parking Strategies (AMPS) program. This work will include research of national best practices and identification of potential options for

modifications to the city's TDM Tool Kit. In addition, staff will incorporate the prior work from 2013 regarding updates to the city's bike parking requirements for new development. Staff will seek input from TAB, Planning Board, and the community through a series of group discussions with local developers and transportation consultants who are regularly involved in the design of TDM Plans and on-site bicycle parking facilities, to get their feedback on the proposed changes. Following those discussions, staff will incorporate the bike parking and TDM Tool Kit recommendations into the TMP Update process and subsequent approval steps with Planning Board as needed to formalize these development related code changes in accordance with city policy.

### ***AMPS***

In late 2013, city staff selected consultants of Kimley Horn and UrbanTrans to assist staff with the AMPS work program. As part of the consultant team, UrbanTrans, will be working with city staff on the TDM-related elements of the AMPs projects including work on the TDM Toolkit. City staff has met internally to identify TDM related priorities and will work with the consultant team to refine the scope of work and program timeline. One of the first tasks will include a review of best practices related to TDM and Development Review policies and strategies and the integration of TDM and parking policies. More information will be provided to TAB on the AMPS work program for 2014 at the February TAB meeting.

### ***Boulder Transportation Connections***

As part of the 2003 TMP, Transportation Management Organizations or Associates (TMOs/TMAs) were identified as important vehicles for expanding TDM activities across the community. TMOs have been established across the country with significant success in reducing SOV travel and supporting other policy goals. TMOs differ from city efforts in that they are public/private partnerships representing specific areas and are generally governed by a Board of Directors composed of public and private sector members. They have the advantage of being close to their membership and responsive to their specific needs. They can also move quickly on innovative programs or experiment in areas that are more difficult for a governmental organization. The 2003 TMP envisioned a number of TMOs representing different parts of Boulder Existing organizations that function as TMOs are the Downtown Parking District, the Boulder Junction Parking and Access Districts, and Boulder Transportation Connections. Since CU manages its own parking and access, it could also be considered as a type of TMO.

In recent years, Boulder Transportation Connections (BTC), formerly Boulder East, has undergone significant changes in both their service area and the tasks they perform as the transportation management organization (TMO) operating within the city limits. As a result of these changes, city staff is working with BTC to design an updated work program to address these changing conditions and prepare for future opportunities. The goal is to develop a scope of work for 2014 that addresses the current needs of the city as well as local employers and sets the foundation for future opportunities to grow BTC's

services as new employers join the program as well as with new districts such as Boulder Junction coming to life.

The 2014 scope of work represents a new phase of the relationship between the City of Boulder/GO Boulder and BTC. The scope sets up 2014 as a transitional year when time, expenses and results will be tracked and measured through more thorough and transparent methods. The goal in 2014 is to establish baselines for future performance, measurable objectives and budgets. The general areas of responsibility for BTC will include:

- Continue outreach to the Boulder businesses community and employers through efforts like the Employee Transportation Coordinator (ETC) network;
- Expand and manage the business and Boulder Junction Eco Pass programs as well as the Merchant Discount pass program;
- Work in coordination with regional TDM programs such as the regional Way to Go program and the Denver and North Front Range vanpool programs;
- Assess and report on the success and progress of these efforts.

### **TMP Measurable Objectives**

Since the 1996 TMP, the plan has contained a set of goals and objectives meant to be the measurable reflections of those goals. The 2020 Goals of the 1996 TMP were:

- develop an integrated, multimodal transportation system **which emphasizes the role of the pedestrian mode as the primary mode of travel;**
- a transportation system supportive of community goals;
- provide sufficient, timely and equitable financing mechanisms for transportation;
- encourage public participation and regional coordination in transportation planning; and,
- establish a transportation system supportive of desired land use patterns and functional, attractive urban design.

The four 2020 original objectives from the 1996 TMP were:

- no growth in long-term vehicle traffic;
- reduction in single-occupant vehicle travel to 25% of trips;
- continuous reduction in mobile source emissions of air pollutants; and,
- no more than 20% of roadways congested (at LOS F).

While the 1996 goals have been carried into the following plans, two additional objectives were added in the 2003 TMP and the target year was extended to 2025. The two new objectives were intended to more fully reflect the kind of transportation system desired by the community. While the four original objectives could be seen as statements of things that were not wanted, the new objectives were seen as positive statements of the desired future. These new objectives were:

- Expand fiscally viable transportation alternatives for all Boulder residents and employees, including the elderly and those with disabilities; and

- Increase transportation alternatives commensurate with the rate of employee growth.

Each of the existing six TMP objectives were discussed in the Policy Review report presented to council in the Aug. 28, 2012 study session. In addition, three additional objectives were proposed based on progress in developing additional data sources and identified gaps in the existing objectives. These suggested additions were establishing objectives for safety, “20-minute neighborhood” accessibility, and vehicle miles traveled per capita. Council agreed that the update process should retain the six existing objectives and that the three proposed objectives should be developed for this update.

As part of this TMP update, staff has been considering improvements to all of the objectives as well as developing approaches to the three new ones. This work will be discussed below for each objective. In all cases, factors that need to be considered in developing or changing how these objectives are measured is the availability of meaningful data, the effort needed to collect and process the data, and the continuity of the measures over time. While the city always tries to collect accurate and meaningful data, consistent measurement allows for the comparison of data over time to see change and trends. The most valuable aspect of any objective is to track change over time as a measure of progress toward the goals of the TMP.

### *Existing TMP Objectives*

#### Continued progress toward no growth in long-term vehicle traffic

The 1996 TMP update closely followed the city’s Integrated Planning Process (IPP) where the growth and impacts of vehicle traffic were identified as a top issue by Boulder residents. Consequently, controlling the growth in vehicle traffic was the headliner objective of the TMP. This is expressed by average vehicle miles of travel (VMT) for the Boulder Valley. The initial VMT number for the Boulder Valley was produced by the Boulder Valley transportation model developed as part of that update process. This model was built on the Denver Regional Council of Governments (DRCOG) regional model, with significant enhancements and additional calibration work to reflect travel in Boulder. The 1994 calibration year for the model was taken as the baseline for this objective with a modeled daily VMT of 2.44 million miles of travel for all vehicles in the Boulder Valley. As this estimate is only for the Boulder Valley, it includes only those portions of a longer regional trip that occurs within the valley. The Boulder Valley transportation model was re-built for the 2003 TMP with a 2001 base year, again based on the DRCOG regional model of the time. Due to the limited change shown in the modeling results, the expense involved and DRCOG’s change to an entirely new and untested model and modeling methodology, the current update process does not include rebuilding the Boulder Valley model.

While the most reliable estimate of Boulder Valley VMT comes from a transportation model, the city has a comprehensive program of annual vehicle counts used for VMT estimates. This program captures all vehicles coming into and out of the Boulder Valley

as well as counts on arterials within the Valley. Since 1994, the city has prepared annual estimates of average daily VMT for the Boulder Valley using data from the vehicle count program. These estimates have been presented in a graph contrasting Boulder Valley VMT change with change in the Denver region as shown in the **Attachment A** pages from the Policy Review report. This process appears to produce an accurate estimate as the vehicle count estimate for 2001 was 2.73 million and VMT using the revised modeling result was 2.77 million VMT. While it would be desirable to verify the estimates again based on modeling, the cost to do so and the unknowns of the current DRCOG model out-weigh the potential benefit. Consequently, staff recommends that we continue to use this process to produce the Boulder Valley daily VMT estimate.

A new factor related to VMT estimates is the city's greenhouse gas (GHG) reduction goal and the need to produce a VMT estimate consistent with the International Council for Local Environmental Initiatives (ICLEI) methodology. This approach requires that the city account for half of the in and out-commute trips by non-residents employed in the Boulder Valley and by residents employed elsewhere. The transportation sector represents approximately 22 percent of the city's GHG emissions and initial consultant estimates show that in-commuters contribute 32 percent of these. Transportation staff is in the process of reviewing the consultant's methodology and developing a methodology for estimating external commuter VMT based on existing city data for use in the Climate Action inventory. A focus on reducing the single occupant vehicle (SOV) mode share of the external commuter is important to achieving both the TMP and Climate Commitment goals so reporting this number should be reported under the emissions objective.

#### Reduce single-occupant-vehicle travel to 25 percent of trips

With a focus on reducing the growth in vehicle traffic, the 1996 TMP has a fundamental premise of accommodating increased person travel while reducing SOV travel to 1994 levels by 2020. This would be accomplished by shifting existing and future trips into the non-SOV modes. The 1996 TMP has modal targets for 2020 travel, with the 25 percent of all trips occurring in the SOV being the level needed to maintain traffic at 1994 levels. Consequently, this remains an important objective and is a shorthand way of reflecting the increase in non-SOV trips as well.

While the modal targets from the 1996 TMP have not been changed to date, several aspects of the current update suggest they should be reviewed and potentially adjusted. These are:

- To meet the city's transportation and GHG reduction goals, we need to increase utilization of the existing non-SOV modal systems. In promoting and encouraging use of these systems, the city can benefit from best practices across the world and from benchmarking our efforts to programs like the Bicycle Friendly Communities awards. The Living Lab portion of Bike/Walk innovations is part of the effort to encourage more use of the system. While the city is one of four Platinum Award recipients from the national League of American Bicyclists, the challenge of the new Diamond level designation provides the opportunity to learn from best practices to reach a 15 percent bike mode share by 2015-16. Experience

- around the world shows that a 15 percent bike mode share seems to be a tipping point in developing a bicycle oriented community.
- The city's GHG reduction goals will likely require additional reductions in SOV mode share, particularly for the long distance external commute trip. While reductions need to come from reducing SOV mode share, other city projects such as AMPS and Sustainable Streets and Centers will provide the basis for supportive land use changes that will reduce SOV travel and provide more neighborhood access to shorten trip lengths.
  - A renewed vision for transit is a major focus of this TMP update and significant changes to the transit system would be designed to increase its mode share. Transit is one of the few options to the SOV for long distance travel. The planning horizon for this TMP is being extended from 2025 to 2035 to be consistent with the existing DRCOG plan. This means that additional population and employment will be expected in the Boulder Valley with a higher number of person trips.

Staff proposes that the modal targets be reviewed and updated as needed once the major changes of this TMP update are determined. The SOV mode percent may need to be adjusted downward to maintain vehicle traffic at 1994 levels. Highlighting modal shares for the other modes may be helpful for other areas such as GHG reduction and for benchmarking our efforts to the best practices of other communities.

#### Continued reduction in mobile source emissions of air pollutants

Air pollution has a variety of direct health effects and motor vehicles are significant sources of air pollution. Motor vehicles have been regulated by the Federal Clean Air Act since 1990 and since that time, the Environmental Protection Agency (EPA) has had the authority to set emission standards for different classes of motor vehicles. Largely due to this regulation, cars have become 90 percent cleaner with technological change being the biggest driver of emission reductions. This objective recognizes that the city does not have a regulatory role in reducing vehicle emissions but that reductions in VMT also produce a direct reduction in pollution. As the city does not have air quality monitoring capabilities, we have used the nearest state air quality monitoring station as the best available indicator of air quality for the Boulder Valley.

Mobile GHGs have not been a regulated pollutant, so the city's new Climate Commitment GHG reduction goal adds a new dimension to this objective. GHG emissions are directly tied to the amount of fuel burned, so the mobile source GHG emissions can be calculated from a VMT estimate and knowledge of vehicle fleet mix. Initial consultant work for Climate Commitment provides information on fleet mix and with the ICLEI VMT estimate discussed above, staff will be able to calculate a GHG estimate to supplement the existing reporting. The initial inventory of GHG emissions from the transportation sector is shown in the table below:

## Daily Transportation GHG Contributed

	VMT	% VMT	GHG BY Sector	% GHG
<b>Resident GHG</b>	385,531,250	43%	1,147,850	46%
<b>Non-Resident Employee GHG</b>	281,050,000	32%	830,830	33%
<b>Student GHG</b>	177,268,333	20%	161,875	6%
<b>Freight GHG</b>	9,125,000	1%	160,000	6%
<b>Transit GHG</b>	8,833,000	1%	145,480	6%
<b>Visitor GHG</b>	25,550,000	3%	56,630	2%
<b>Boulder Personal Aircraft GHG</b>	NA	NA	13,216	0.5%

<b>Daily Total (LBS of GHG)</b>	<b>2,515,880</b>
<b>Daily VMT</b>	<b>2,431,117</b>
<b>2013 VMT</b>	<b>887,357,583</b>
<b>2013 Annual Metric Tons of GHG Contributed</b>	<b>416,532</b>

While the city will need to take aggressive actions in all areas to reach an 80 percent reduction in GHG emissions, the transportation sector will likely prove to be the most challenging. Fairly well documented strategies are available for conservation, increasing efficiency and substituting clean sources of energy in buildings. But changing travel behavior is more challenging while the options for clean transportation fuels are limited and expensive. As a significant percent of all trips, about 40 percent nationally, are already short enough that they could be walked or biked if facilities are available to do so safely, the most effective transportation strategies are to increase the walk/bike mode share for these short trips and to improve access to daily needs so that more trips become short trips that can be made by these modes. The mixed-use design strategies that increase access also tend to support many city goals across transportation, community design, housing and economic sustainability.

No more than 20 percent of roadways congested (at Level of Service [LOS] F)

This objective recognizes that the roadway system is used by all residents and modes, including private vehicles, delivery vehicles, transit and bikes. Safe and efficient functioning of the road system is then in everyone's best interest. This objective is evaluated on the basis of counts and modeling for the city's signalized intersections. There are currently 139 signalized intersections in the city that are counted and modeled for the three peak hours, a.m., noon, and p.m., and the percent of those that are congested in the worst period is reported in this measure. As the vast majority of congestion occurs at intersections, this is an accurate measure for the functioning of the roadway system for vehicles.

During the policy review discussion with Council, council members observed that the current measure does not incorporate the number of people impacted by congestion at those intersections operating at a congested Level of Service (LOS). The level of service analysis performed also calculates total intersection delay which accounts for the number of vehicles passing through the intersection. A potential option would be to supplement the current reported measure with total system delay. Staff does not recommend replacing the current measure because it would break continuity of this measure over time, but supplementing it with total system delay would be a reasonable approach. A second concern is that weighting by vehicle volume would accentuate the current weakness of this objective by focusing only on motor vehicles. Staff proposes that in addition we work to add a multimodal level of service (MMLOS) to this objective.

Multimodal level of service is an area of active research in transportation planning, led by Florida and California. Florida has developed a methodology for Quality of Service (QOL) based on traveler perception with LOS being a quantitative subset of QOL. California has legislation relative to climate change (SB 743) requiring a change in the analysis of transportation impacts under the California Environmental Quality Act. This research recognizes that traditional LOS relates to capacity ratios and measures of automobile delay while a variety of other factors are important in considering level of service for other modes. MMLOS is seen as a metric of user comfort for travelers on various modes. While one version of MMLOS methodology contained in the 2010 Highway Capacity Manual, the city should develop a MMLOS methodology that reflects best practices and includes considerations for delay, facility characteristics and accessibility for all modes.

Expand fiscally viable transportation alternatives for all Boulder residents and employees, including the elderly and those with disabilities

This objective was added to the 2003 TMP and was intended to recognize the aging of the population and the diversity of transportation needs. Close to a third of the population does not drive due to age or infirmity and transit access is a key aspect of mobility for this population. With bicycle and pedestrian systems that area largely complete, expanding access to transit and special transit services seem to be the best measure for this objective. As shown in Attachment A, this has recently been reported as city contributions to Via, the area's special transit provider, and the number of Eco Passes available to the community.

With one of the focuses of this update being a renewed vision for transit, an area of potential improvement for this object would be to report the percent of Boulder's population that has access to high quality transit service. A recent geographical information system (GIS) analysis of access to transit stops shows that 86 percent of Boulder's population is within a quarter mile of a transit stop. But this does not reflect the actual walk distance to the stop or the quality of the available transit service. Using the Neighborhood Access Tool and the service levels developed in the transit analysis and *State of the System Report*, we can report the portion of the population that has actual quarter mile access to high quality transit.

Increase transportation alternatives commensurate with the rate of employee growth.

This objective was also added to the 2003 TMP to express the desire to expand transportation options in the employment areas of the city. This reflects the reality that many of city's employment centers are in the eastern part of the community and are auto focused in their development pattern. Redevelopment of this area and the completion of the modal systems in these areas is one of the challenges and opportunities in reaching the city's transportation and GHG goals.

The current measures in this objective are the least developed of the six existing objectives. Currently they have been reported as simply the change in transit service hours and miles of bike facilities relative to employment change. As with the objective above, using the Neighborhood Access Tool and the transit service levels, we can report the portion of employees having access to high quality transit. And given the opportunity for redevelopment in the area to create a more pedestrian and transit supportive environment, there is the opportunity to track and report this change. Potential measures that can be mapped would be:

- the change in intersection density to reflect the change to a finer, more pedestrian friendly grid;
- land use and zoning change to mixed use; and,
- areas with TDM programs and with managed parking.

These kinds of land use changes are goals of the Boulder Valley Comprehensive Plan.

*New TMP Objectives*

Safety

Safety has always been a priority under the TMP, with safety being the first investment priority of the plan. The 2012 Safe Streets Boulder Report was the result of several years of staff work to adapt the city's comprehensive database of crashes to allow for a comprehensive city-wide review and analysis of pedestrian and cycling crashes. As staff maintains and updates this database, it is now practical for the first time to accurately analyze pedestrian and cycling crashes across the city and set an objective related to safety.

Staff recommends establishing an objective of: “Continuous improvement in safety for all modes of travel.” Draft measures to track progress include total crashes, injury crashes, and fatal crashes by mode expressed as a rate to reflect usage and allow benchmarking to national, regional, and other cities.

#### Neighborhood Access

Over the last year, city staff has been working with a consultant to develop the GIS-based Neighborhood Access Tool. Based on a travel time budget, this tool develops a travel shed around each attractor based on the available facilities for the mode. Multiple travel sheds can then be overlaid to show the access to a set of attractors for each area of the city. Over this time the consultant has completed development of the access model, carried out an initial proof of concept test on city data and then imported all applicable city data into the access model. In addition to the city’s transportation system, the initial model included eight categories of destinations including schools, parks, public facilities, and social activity sites (coffee shops, etc.). A series of maps illustrating this process for two attractors is contained in **Attachment B**. Development of the access model has been supported by a staff team including members from city Transportation, Parks and Recreation and Community Planning and Sustainability groups as well as from the Boulder County Health and Information Technology Departments.

The fully developed and functional model was imported to the city’s GIS system and has been explored and tested by city GIS staff. The staff team participated in an exercise to develop a comprehensive set of attractors and then rank and weight the top ten of these. City staff is currently working with the consultant to produce a revised access map reflecting these rankings and expect to have this map available at the Jan. 2013 TAB meeting. Evaluation and review of this map by city staff will be the basis for continued development and refinement of the model. The continued development of the model was significantly delayed by the flood and the need for city and county GIS resources to support flood recovery. However, the goal of this work remains an access model that can be continuously improved and enhanced as an analysis tool city and county staff. The model has the potential to improve access and investment decisions across the community.

#### Vehicle Miles Traveled Per Capita

While the first TMP objective measures VMT in the Boulder Valley, the number of million daily VMT has little meaning or personal relevance to a Boulder resident. It also is a gross number for all travel in the Boulder Valley and is not related to the location in the city, the modal choices available or make a distinction between travel by residents or commuting employees. At the Aug. 2013 study session with council, there was general agreement that the TMP should track per capita VMT for both Boulder residents and commuting trips in and out of the city.

Staff has prepared initial estimates of per capita VMT based on our survey data. These are shown in the table below.

<b>VMT per capita (SOV+MOV)</b>		<b>Source of Calculations</b>
Boulder Residents, all trips	11.16 miles	2012 Modal Shift Report
All commute trips	19.23 miles	2011 Boulder Valley Employee Survey
Boulder Residents, commute trips	6.0 miles	2012 Modal Shift Report
Non-resident employees, commute trips	28.7 miles	2011 Boulder Valley Employee Survey

While a per capita VMT number for different classes of travelers is helpful for tracking trends in these categories and for comparing individual behavior to these averages, it does not take into account the location in the community, the factors that support non-SOV use and the options available. An additional refinement of the objective would consider these factors to track per capita VMT by areas of the city or by development types. Through work in the TDM Toolkit and the Neighborhood Access tool in support of the Sustainable Streets and Centers project, it should be possible to develop per capita VMT data and expectations at a finer grain. This would encourage continuous improvement in all areas of the community toward the city’s transportation and Climate Commitment GHG reduction goal of 80 percent from 1990 levels by 2050.

***Integration of Objectives across Sustainability Efforts***

While the TMP objectives have existed to evaluate progress relative to the city’s transportation policies, the development of the Sustainability Framework and the other planning efforts under it offer the opportunity for a broader application of these objectives. A number of integration efforts have already been called out in this memo, including Climate Commitment, AMPS, Sustainable Streets and Centers, etc. Another example that the city is investigating is the concept of eco districts as applied in Portland, Oregon. The eco district would focus all of the city’s sustainability efforts on a defined geographic area where residents wanted to integrate and advance these efforts. Improved neighborhood access to provide more daily needs by walking as measured by the Neighborhood Access Tool would likely be a major aspect of the eco district. The eco district would likely include high efficiency construction, clean and shared energy sources, mixed use development, live-work opportunities and new housing options that would support the city’s housing and economic sustainability goals as well as transportation and GHG reduction goals. City staff working across the sustainability planning efforts will be exploring how these objectives can be linked across these efforts.

**TMP UPDATE - COMMUNITY OUTREACH**

The TMP update process continues to involve a broad cross section of the community through a wide range of new tools and technologies. These include open houses, Web materials and print media, and a comprehensive set of social media tools. Two advisory committees of stakeholders are also working in the transit and bike/pedestrian areas. Staff has also integrated outreach efforts with other planning initiatives ranging from Climate Commitment to North Boulder Subcommunity Planning.

On December 9th, 2013, staff held a Community Open House prior to the Transportation Advisory Board meeting. The Open House provided information on the update process to date with information on all focus areas. The public was able to provide input on the transit scenarios and the proposed performance measures and evaluation criteria for the transit planning area. With respect to Bike and Walk Innovations, an initial map detailing existing Low-stress Bicycling Network Connectivity was presented along with a summary of key themes and living Laboratory feedback to date. And as noted in the Sustainability Focus area, staff participated in the joint Board workshop on the Sustainable Streets and Centers and the East Arapahoe planning project on Dec. 19, 2013. While a summary of this workshop is being prepared, the discussion of the boards indicated a desire for continued dialogue between the boards and for a higher level approach to the sustainability challenges facing the city.

During the first quarter of 2014, the project team will present the transit scenario evaluation and the initial findings of the bicycle and pedestrian innovations evaluation to the public, TAB and City Council. The purpose of this outreach will be to gather feedback on key tradeoffs and identify service, capital, and programmatic elements that the community supports. The specific details of the outreach efforts are still under development but will include storefront workshops, a public open house, and/or online feedback through Inspire Boulder and other social media tools and will strive to coordinate with other outreach efforts from the city.

### **BOARD ACTION REQUESTED**

The TAB is asked to review the proposed activities in the TDM Focus Area and the proposed measures for each Measurable Objective and provide comments or suggestions on each.

### **NEXT STEPS**

While much of the existing work on the update has occurred within the Focus Areas and the community groups supporting that focus, over the coming months the update process will be integrating these efforts into a draft plan. City Council needs to be briefed on the Focus Area work to date and then consider options for the major building blocks of the updated TMP. While several study sessions have been tentatively scheduled with council, those dates are in flux. Staff is working on re-scheduling these and revising the schedule of topics coming to the TAB.

Given the winter conditions likely for the next few months, the focus of the Bicycle and Pedestrian Innovations effort will be on implementing the e-bike ordinance and the BikeWalk Summit in late-January or early February. Staff will also be working with the BikeWalk Steering Committee on developing the BikeWalk action plan that will be included in the TMP.

Staff will continue to move forward with transit planning work in accordance with City Council and TAB guidance. Staff is currently evaluating the results of the transit

modeling and will be presenting these to the TAB and council in Feb. 2014. Staff continues to develop the TDM Toolkit and the TMP investment program. Staff plans to return to the TAB monthly in 2014 to present work in these areas and to prepare for anticipated council memos and study sessions on these materials currently being scheduled for February as well as April. The TMP Update currently is scheduled for completion in May/June 2014.

**Attachments:**

- A. Measurable Objectives from the *Policy Review Report*
- B. Illustrative Maps from the Neighborhood Access Tool



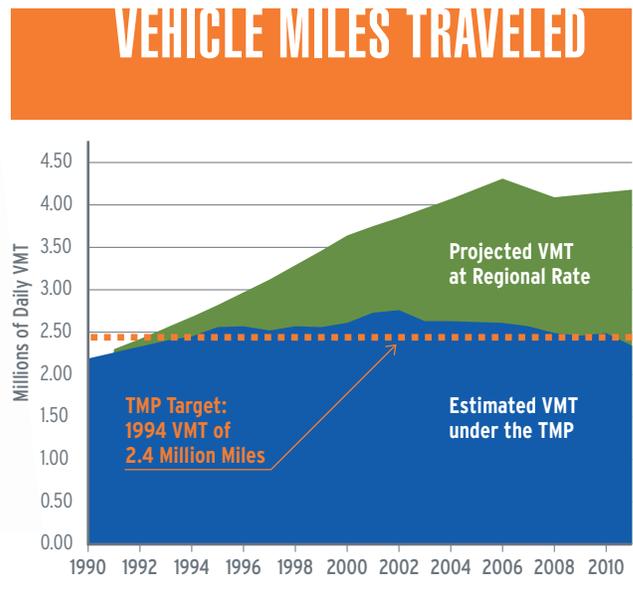
# TMP OBJECTIVES

The following section briefly discusses the evaluation of the six objectives contained in the TMP. These objectives are meant to reflect the goals of the plan and be reasonably measurable.



## No long-term growth in vehicle traffic

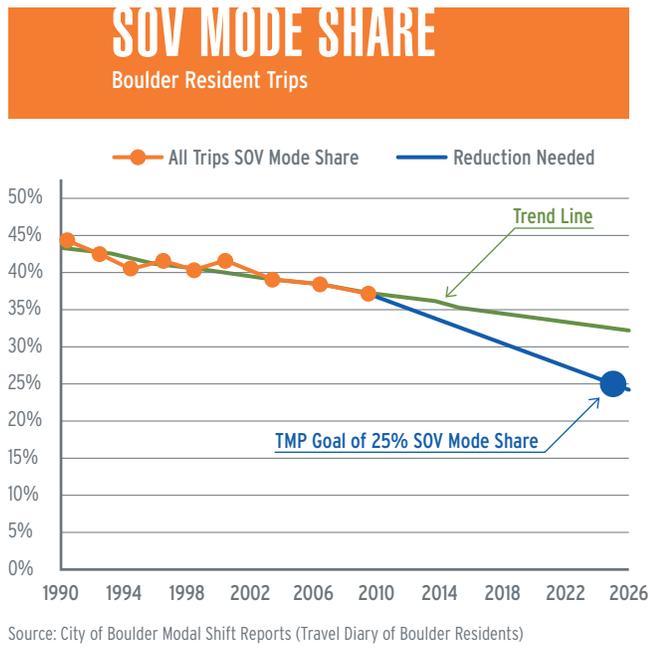
Since the 1996 TMP, the city has pursued a policy of accommodating an increased number of person trips while reducing vehicle miles of travel (VMT) to 1994 levels. Boulder benefits from a relatively compact physical form and has many neighborhoods that are friendly to pedestrians. Transportation efforts build on these advantages by completing the bike and pedestrian systems, increasing transit service and promoting the use of non-single occupant vehicle trips. The following graph shows the estimated daily VMT based on yearly vehicle count data. That count data shows reductions in most years since 2002 on city arterials.



## 2

### Reduction in travel by a Single Occupant Vehicle (SOV) to 25 percent of all trips

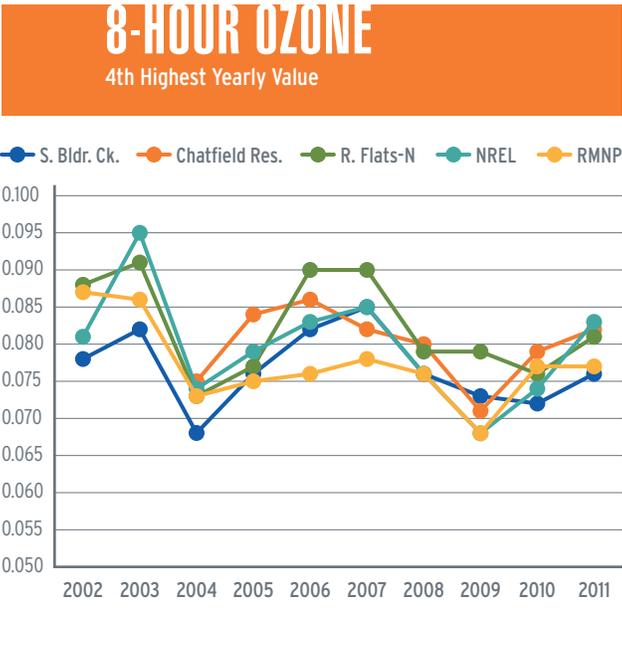
**To reduce vehicle travel while accommodating the desire for more person trips, the share of trips made in a SOV needs to decline over time.** The 1996 TMP established targets for each mode with the goal of reducing the SOV mode share of all trips by 19 percent in 2025. While the city has been successful in reducing SOV mode share, the current rate of decrease will not reach that target by 2025. Additional action is likely needed to change this trend line. Enhancements in transit service, a community Eco Pass, increased transportation demand management efforts and parking policy changes could support reduced SOV travel.



## 3

### Continuous reduction in automobile emissions of air pollutants

**While the Denver region has historically been troubled by CO<sub>2</sub> air pollution, in recent years the region has violated national standards for ozone.** This type of pollution is produced from reactive chemicals and the products of combustion and results when these products are reacted in presence of strong sunshine. Consequently, ozone is generally worse during the summer months. Reduction in driving and the use of volatile chemicals reduce the likelihood of ozone formation. Fewer miles driven also reduce greenhouse gas emissions, as one gallon of gas burned produces about 22 pounds of CO<sub>2</sub>. The region's ozone history is shown in this graph from the Regional Air Quality Council. The nearest measurement station to Boulder for ozone is at Rocky Flats. The city's Climate Action Framework highlights the need for mobile emissions reductions to achieve climate goals. This reinforces the objective to reduce automobile emissions and integration with the Climate Action Framework will be an important aspect of the update.

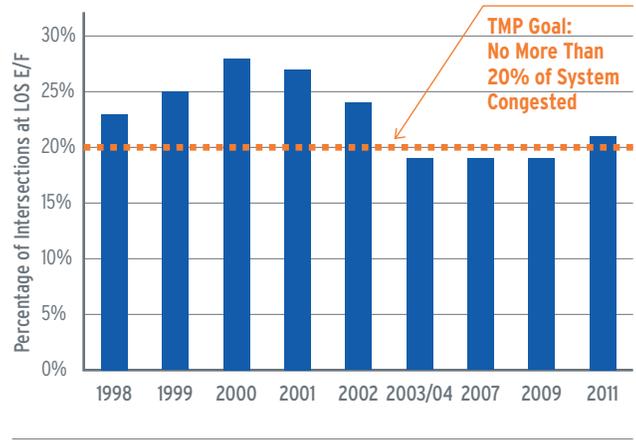


4

**No more than 20 percent of roadways congested (LOS E or F)**

In addition to supporting the increased use of the non-SOV modes, the TMP also aims to operate the existing road system as efficiently as possible for all modes. This means managing congestion at acceptable levels so that autos, buses and bikes are not unreasonably delayed. As most congestion results from vehicle conflicts at intersections, the city measures congestion at its 133 signalized intersections. Operational improvements such as adding turn lanes at most major intersections and improved signal timing have allowed the city to meet this standard in most years since 2003. For 2011, 21 percent in the a.m. and 18 percent in the p.m. of signalized intersections were at a calculated level of service (LOS) of E or F.

**CONGESTION**  
At Signalized Intersections



Via was intended to recognize the increasing diversity and the aging of the community.

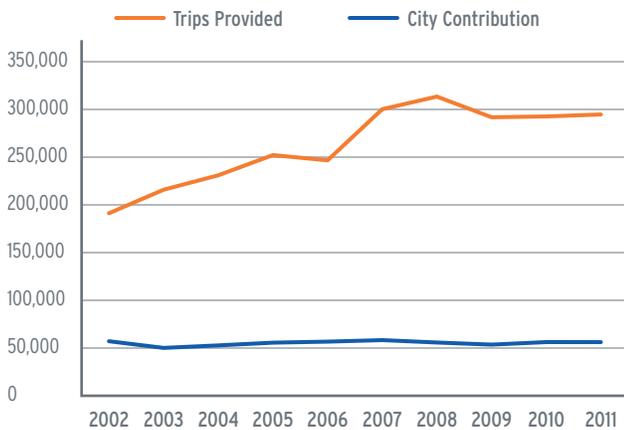


5

**Expand fiscally viable transportation alternatives for all Boulder residents and employees, including the elderly and those with disabilities.**

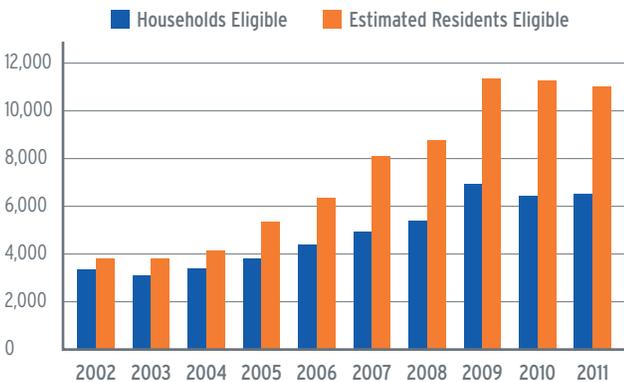
**This objective was added in the 2003 TMP and was intended to recognize the increasing diversity and the aging of the community. In particular, the aging of the population requires increased support for paratransit services.** Expansion of the modal systems and growth in programs like the Eco Pass also increase the travel choices available to residents, particularly those that may not drive.

**TRIPS PROVIDED VS. CITY CONTRIBUTION**



The neighborhood Eco Pass (NECO) program has shown continued growth.

**NECO PASS PROGRAM GROWTH**



Source: City of Boulder Modal Shift Reports (Travel Diary of Boulder Residents)



6

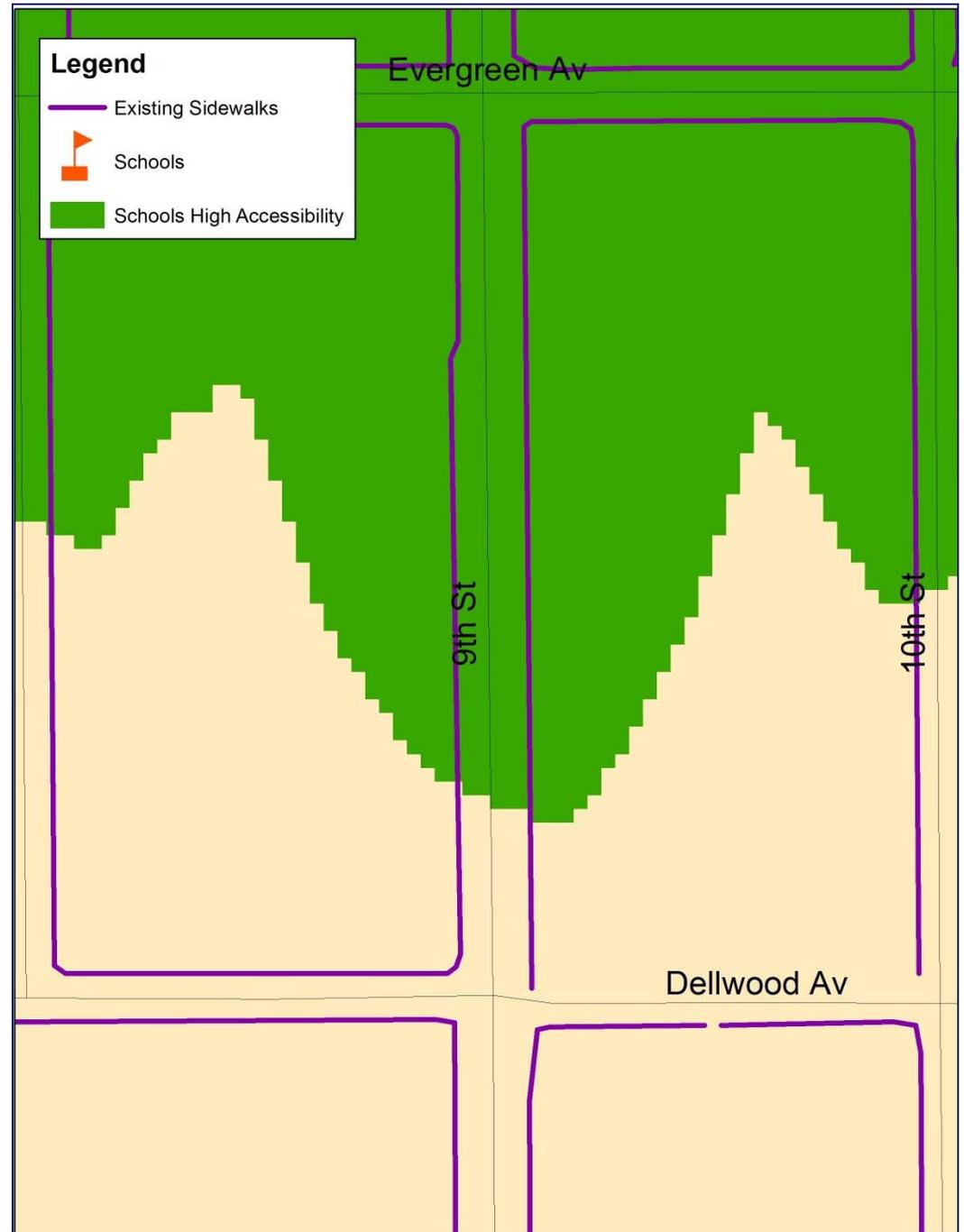
**Increase transportation alternatives commensurate with the rate of employee growth**

**This objective was added in the 2003 TMP and was intended to support the expansion of travel options throughout the community and in recognition of the projected increase in employment.** One perspective on the objective is presented in the following table, which measures changes in the various modal systems to the growth in population. Not reflected in the table but shown in the following maps are the number of improvements that have happened east of 28th Street, where the alternative mode systems are less developed.

	2002	2010	% Change
Estimated Boulder Employees	96,938	96,800	-0.14%
Local Transit Service Hours	215074	197500	-8.90%
Regional Transit Service Hours	100956	109980	8.21%
Centerline miles of bike system	138	159	15.2%

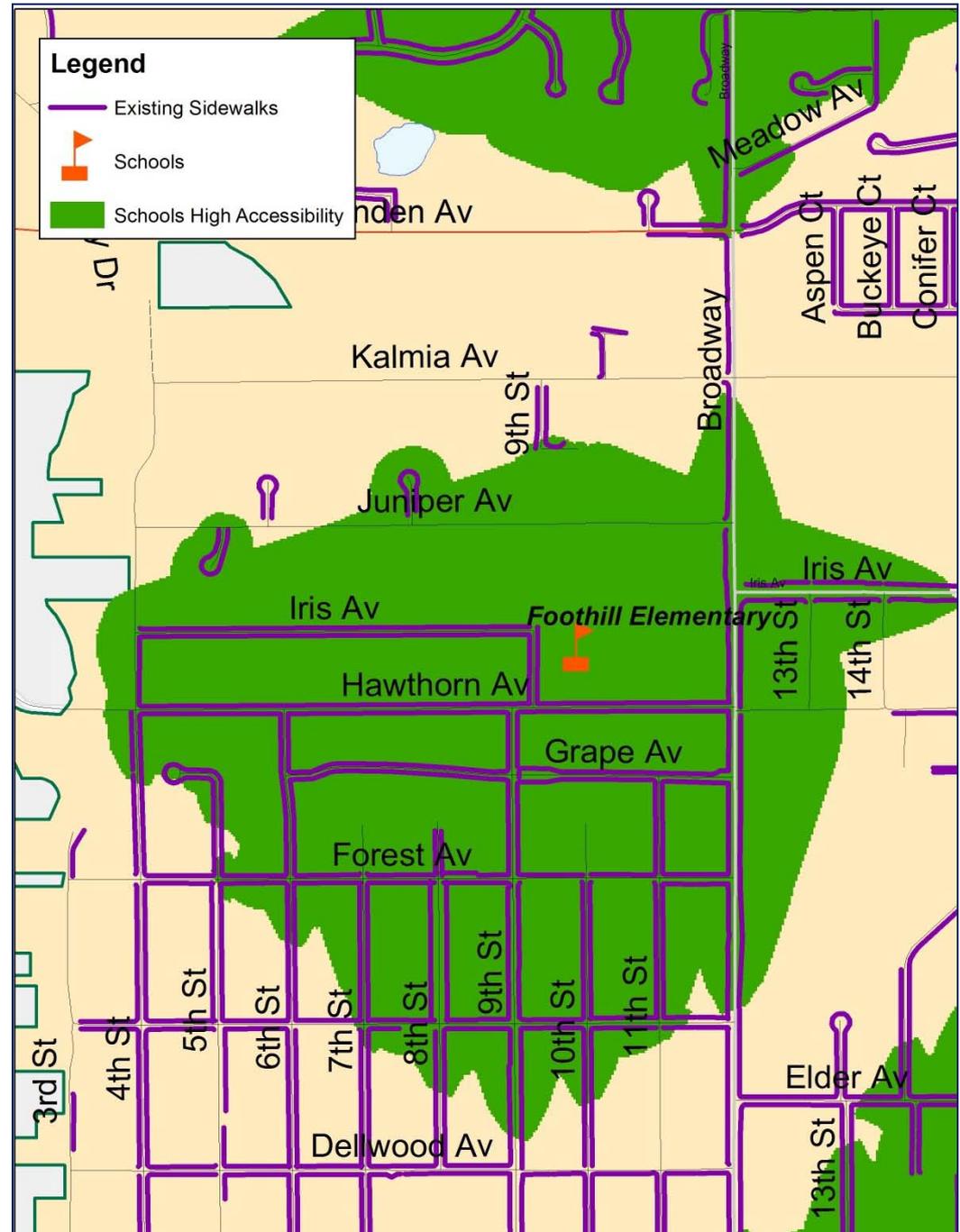
# Neighborhood Access Tool

- GIS Tool
- Raster based analysis
- 10' x 10' squares
- Each square has a “travel time”
- Measures how far can travel with a travel budget



# Neighborhood Access Tool

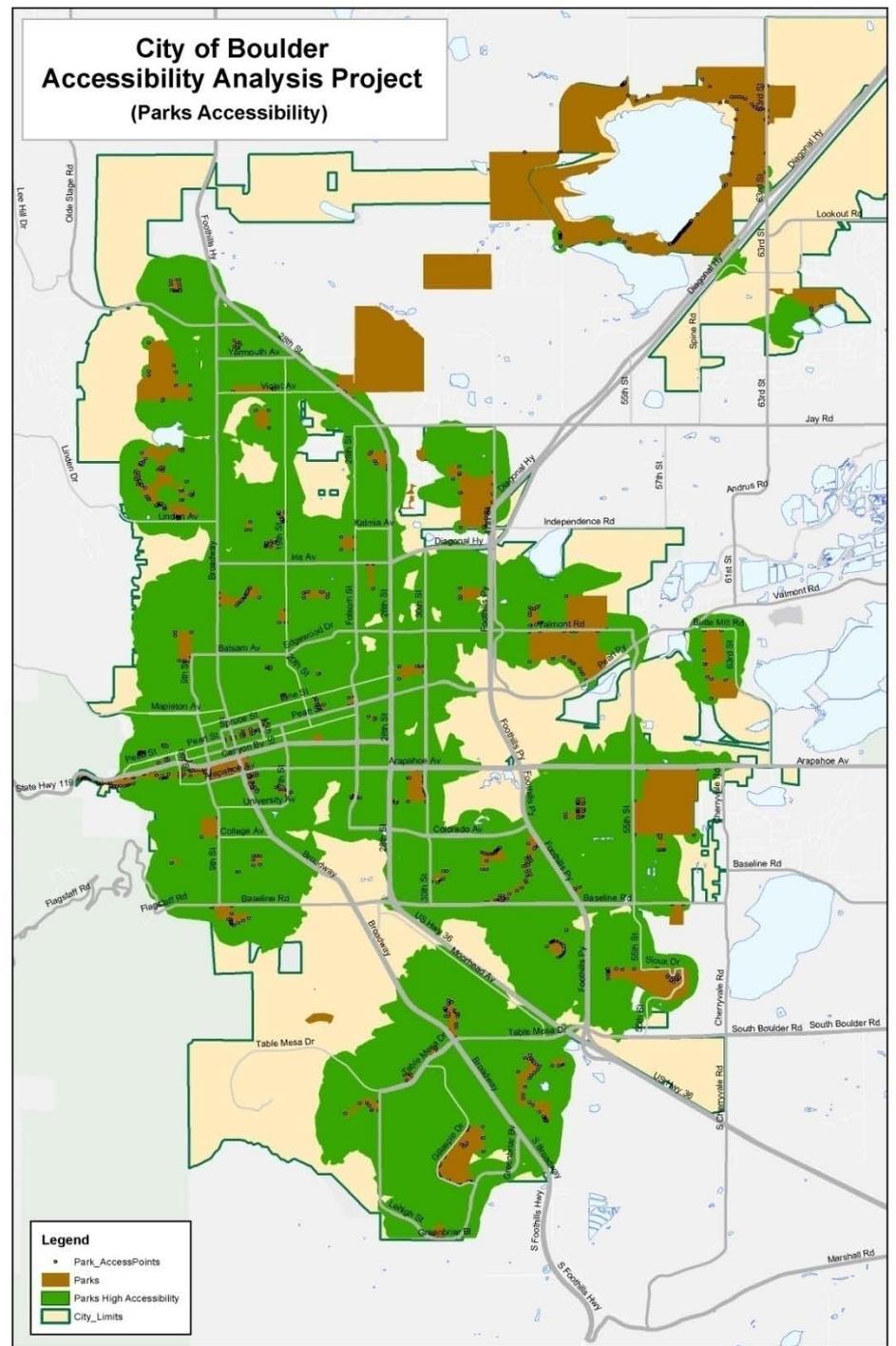
- Uses the transpo. system- sidewalks
- Determines the travel shed for a given attractor
- Barriers or other characteristics expressed in travel time can be included





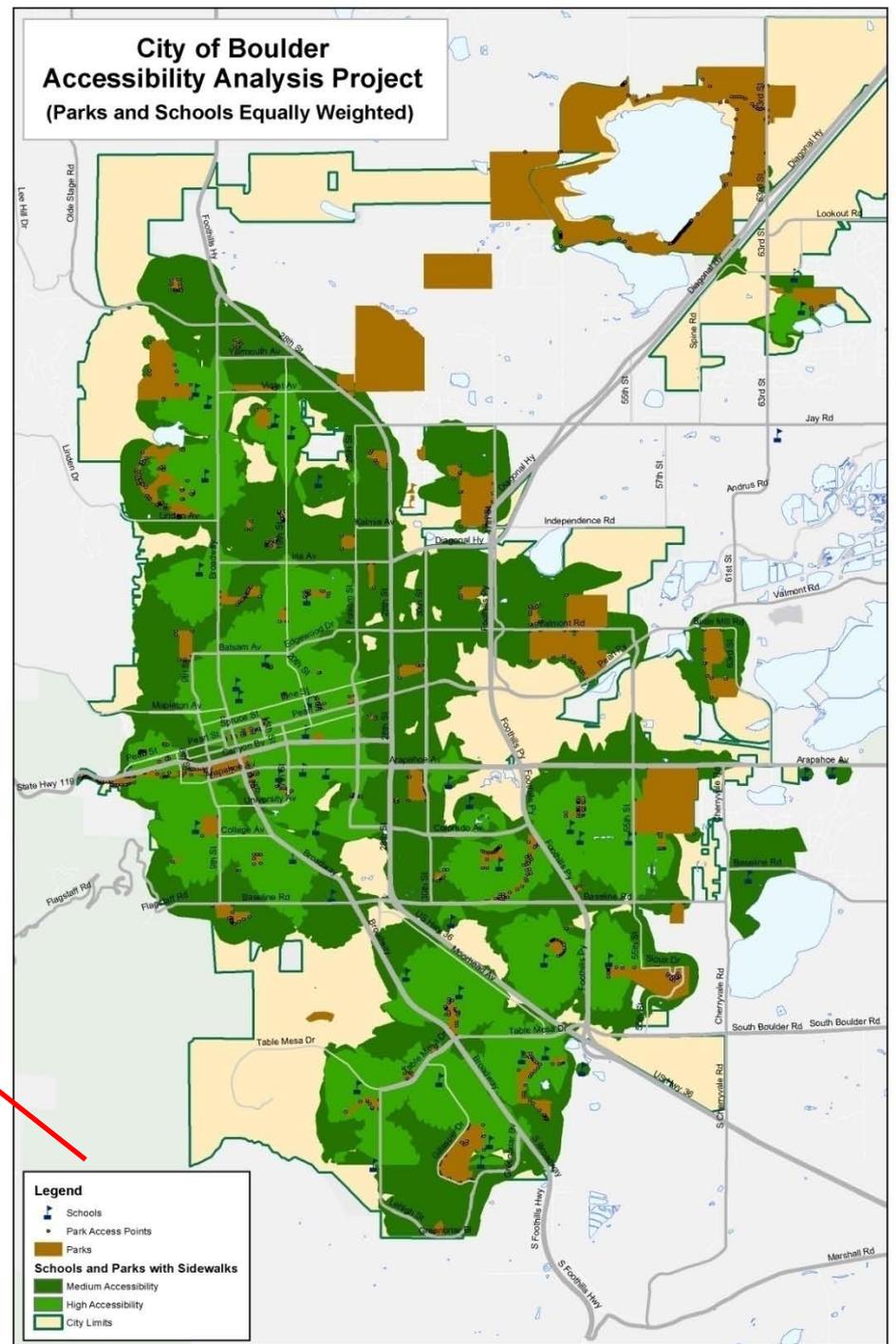
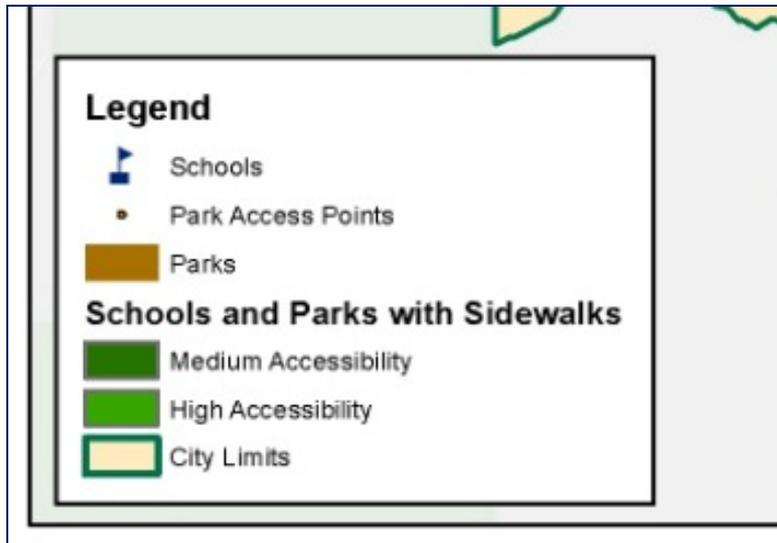
# Neighborhood Access Tool

- Access areas for city parks within city limits
- Assumes access at each vertex



# Neighborhood Access Tool

- Can then overlay the access areas
- Ranks those areas with the “best” access



# Neighborhood Access Tool

- Can overlay many sets of attractors
- Can weight the attractors
- Can apply ranked areas to Census info.- pop., emp., seniors, etc.

