

ACCESS MANAGEMENT & PARKING STRATEGY

AMPS





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Introduction to AMPS

The City of Boulder is a recognized national leader in providing a variety of options for access, parking, and transportation. To support community's social, economic, and environmental goals, Boulder acknowledges the need to continuously innovate and prepare for a world that is rapidly changing. In early 2014, an interdepartmental team of city staff began a new project called the Access Management and Parking Strategy or AMPS.



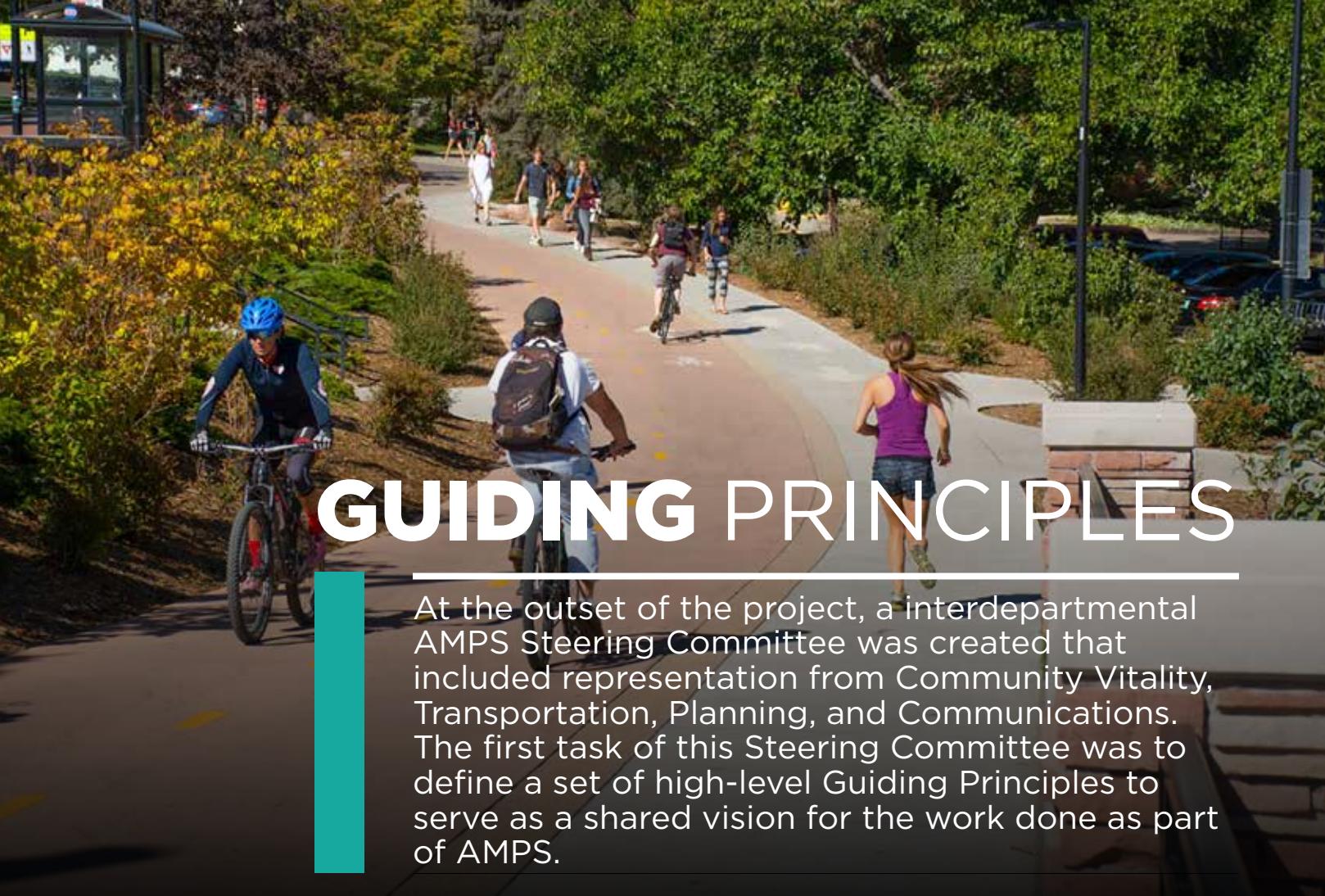
The purpose of AMPS was to develop a process through which city staff, leadership, boards/commissions, and the community at large could work collaboratively to continuously improve Boulder's approach to multimodal access and parking management across the city and within special districts, such as Downtown Boulder, Boulder Junction, and University Hill. AMPS was designed as a "lens" through which existing and future access management policies and practices could be evaluated to develop context-appropriate strategies, using the existing districts as models for other transitioning areas within the community. The work done as part of AMPS also acknowledged numerous past, current, and anticipated planning efforts and initiatives, such as the Sustainability Framework, the Boulder Valley Comprehensive Plan Update, the Transportation Master Plan, the Economic Sustainability Strategy, and the Climate Commitment.

PROJECT GOALS

Define priorities and develop overarching policies, tailored programs, and tools to address citywide access management in a way that supports the community's social, economic, and environmental sustainability principles.

Create a state-of-the-art parking management and multimodal access system for Boulder that works well for people of all ages and abilities.

Evolve and continuously improve citywide access and parking management strategies and programs tailored to address the unique character and needs of the different parts of Boulder.



GUIDING PRINCIPLES

At the outset of the project, a interdepartmental AMPS Steering Committee was created that included representation from Community Vitality, Transportation, Planning, and Communications. The first task of this Steering Committee was to define a set of high-level Guiding Principles to serve as a shared vision for the work done as part of AMPS.



PROVIDE FOR ALL TRANSPORTATION MODES: Support a balance of all modes of access for a safe transportation system. Modes include pedestrian, bicycle, transit, and multiple forms of motorized vehicles—with pedestrians at the center.

CUSTOMIZE TOOLS BY AREA: Use a toolbox with a variety of programs, policies, and initiatives customized for the unique needs and character of Boulder's diverse neighborhoods, both residential and commercial.

SUPPORT A DIVERSITY OF PEOPLE: Address the transportation needs of different people at all ages, stages of life, and mobility levels—residents, employees, employers, seniors, business owners, students, and visitors.

SEEK SOLUTIONS WITH CO-BENEFITS: Find common ground and address trade offs between community character, economic vitality, and community well-being. Seek elegant solutions—those that achieve multiple objectives and have co-benefits.

PLAN FOR THE PRESENT AND FUTURE: While focusing on today's needs, develop solutions that address future demographic, economic, travel, and community design needs. Align with Boulder's master plans, including the updated Transportation Master Plan, the Climate Commitment and Sustainability Framework.

CULTIVATE PARTNERSHIPS: Be open to collaboration and public-private partnerships to achieve desired outcomes.



FOCUS AREAS: Tools for Change

Using the Guiding Principles as a framework, the Steering Committee developed the following six Focus Areas (Tools for Change) to organize the work done as part of AMPS.



1 DISTRICT MANAGEMENT: Address the enhancement and evolution of existing access and parking districts, and the consideration of new districts. Develop a toolkit of policies, implementation strategies, and operational procedures to assist in the creation of new districts.



2 ON- AND OFF-STREET PARKING: Investigate potential policy developments and changes regarding the use of on-street public parking, such as parking for people with disabilities, loading zones, time restrictions, car share parking, electric vehicle (EV) parking, neighborhood permit parking, and the re-purposing of parking spaces for bike parking or parklets. Include all surface lots and parking garages that are city-owned and managed in the off-street analysis.



3 TRANSPORTATION DEMAND MANAGEMENT (TDM): Explore existing and new/future programs, policies, and incentives to increase travel options and reduce single-occupant vehicle trips.



4 TECHNOLOGY AND INNOVATION: Assess parking garage access equipment and internal systems used for permitting and reporting. Ensure systems are compatible and can “talk” to one another to streamline processes and create efficiencies. Explore customer-focused technology to make parking more convenient, lessen unnecessary driving, promote mobility as a service (i.e., Transportation Network Companies [TNCs]), and provide integrated access to multimodal options. Prepare for autonomous vehicles, in both policy and physical infrastructure.



5 CODE REQUIREMENTS: Explore needed updates to the land use code for citywide parking requirements and identify longer-term code changes to ensure responsiveness to changes in travel behavior, such as increased bicycle and transit use.



6 PARKING PRICING: Review and analyze the relationship of parking pricing and enforcement fees through researching comparable cities. Analyze options, including variable and performance-based pricing and graduated fines. Refocus parking management activities to emphasize proactive education, customer service, and regulation to better serve the community.

PHASE 1 (2014) ORGANIZATION & BASELINE ASSESSMENT

- Project initiation
- Creation of interdepartmental AMPS Steering Committee
- Background research and planning
- Development of Guiding Principles
- Identification of Focus Areas
- Best practices and peer/aspirational city research

PHASE 2 (2015) PUBLIC INVOLVEMENT & TARGETED PROJECT WORK BY FOCUS AREA

- Multiple rounds of internal and external stakeholder outreach
- Staff workshops
- Board/Commission presentations and meetings
- Project open houses
- City Council feedback and direction
- Online engagement opportunities
- Focus Area project work
(See pg. 30 for a complete list of accomplishments)

PHASE 3 (2016–2017+) PROCESS DEFINITION & MEASURING PROGRESS

- Documentation of AMPS Process and Operational Path *(See pg. 15)*
- Identification of Performance Measures *(See pg. 28)*
- Presentation of AMPS Final Report to community stakeholders and city leadership
- Development of online AMPS Resource Library

BEST PRACTICES SUMMARY

The first activity for the AMPS Steering Committee was to develop a visionary set of Guiding Principles, define Key Focus Areas, and conduct best practice research.

[AMPS Best Practices and Peer City document](#)

Public Involvement

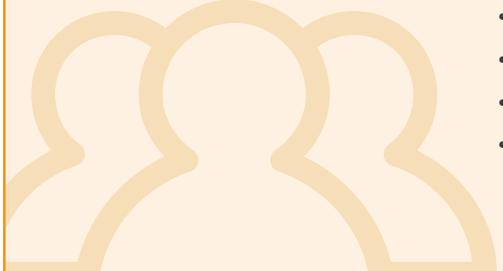
Designing a comprehensive and inclusive public involvement process was a foundational element of AMPS. The public involvement philosophy for AMPS was grounded in two of the Guiding Principles: Support a Diversity of People and Customize Tools by Area. It was recognized early in the AMPS project that public involvement efforts would need to be phased, tailored, and flexible so that both internal and external stakeholder groups would have multiple opportunities to learn, digest, respond to, and assimilate information provided by city staff and consultant teams.

A variety of public involvement strategies and activities have been employed to inform, educate, and engage the community. Outreach activities for the AMPS project were conducted from Summer 2014 through Spring 2017.

AMPS STAKEHOLDER GROUPS

INTERNAL GROUPS

- City staff
- Boards & Commissions
- City Council



EXTERNAL GROUPS

- District-specific residents
- Boulder residents
- Regional transportation partners (i.e., RTD)
- Commuting workforce
- University of Colorado Boulder (CU Boulder)
- Visitors and tourists
- Neighborhood advisory groups (i.e., HOAs, property owners, and business leaders)



IN-PERSON STRATEGIES

Presentations to Community Groups

- Downtown Boulder Partnership
- Downtown Boulder Business Improvement District
- The Hill Boulder
- Frasier Meadows
- Senior Services Advisory Board
- Better Boulder
- Code for America
- Commercial Brokers of Boulder
- Boulder Tomorrow
- PLAN Boulder County
- Open Boulder

Presentations to Boards and Commissions

- Boulder Junction Access District
- Downtown Management Commission
- Planning Board
- Joint Board Workshops
- University Hill Commercial Area Management Commission
- Transportation Advisory Board
- Environmental Advisory Board

"Coffee Talks"

- Gunbarrel
- Spruce Confections NoBo
- The Cup
- Buchanan's
- Ozo on Pearl

Focus Groups

Project- and/or topic-specific focus groups were utilized on an as-needed basis. Focus groups were typically organized and led by city staff or consultant partners and included community stakeholders. For example, members of the development community provided feedback on proposed parking code changes and on the TDM toolkit for private development.

Open Houses

Four total Open Houses, three specific to AMPS and one joint Open House with the Civic Area Project, were held.

Walking Audit with the Youth Opportunities Advisory Board (YOAB)

The project team partnered with the Boulder Walks program to gather youth input and perspectives on the current walking environment and opportunities for improving multimodal access to the University Hill Commercial Area. Students documented feedback during the Walking Audit through the Commonplace digital engagement tool.

Connecting People and Places Series: Value of Parking and Complete Streets

The **Value of Parking** Workshop (with downtown and mobility management leaders from Ann Arbor, MI; Seattle, WA; San Francisco, CA; and Aspen and Denver, CO) was the first in a series of practitioner panels as part of the theme "Connecting People and Places." This was followed in Fall 2016 by Boulder's **Complete Streets** panel, which included staff and elected officials from Austin, TX; Cambridge, MA; Davis, CA; and Denver, CO.

**ONLINE & DIGITAL MEDIA STRATEGIES****Inspire Boulder**

This online engagement platform has covered multiple topics, including TDM, curb management, and general access management questions, through surveys and polls.

**Social Media**

Twitter: [@BoulderParking](#) [@Bouldergobldr](#) [#BoulderAMPS](#)

**Commonplace**

Commonplace is a geographically-based online engagement tool that allows participants to make a comment or "rate a place" using a map of Boulder County. Boulder hosted the first installation of Commonplace in the United States.

WHAT WE LEARNED**2014-2015 COFFEE TALKS****How are community members getting around Boulder?**

- Driving, walking, and biking

How could the way you access Boulder be improved?

- More off-street parking
- Bike parking, lockers, and bike sharing offerings
- Cheaper parking
- More options that connect to other regional destinations

What do you think is the future of transportation in Boulder?

- Better bus and rail
- More bicycle use
- Education on alternatives

2015-2016**COMMONPLACE DIGITAL ENGAGEMENT TOOL**

- First use of this tool in the U.S.
- 1,001 unique visitors
- 4. Traffic calming/pedestrian safety
- 5. Streetscaping

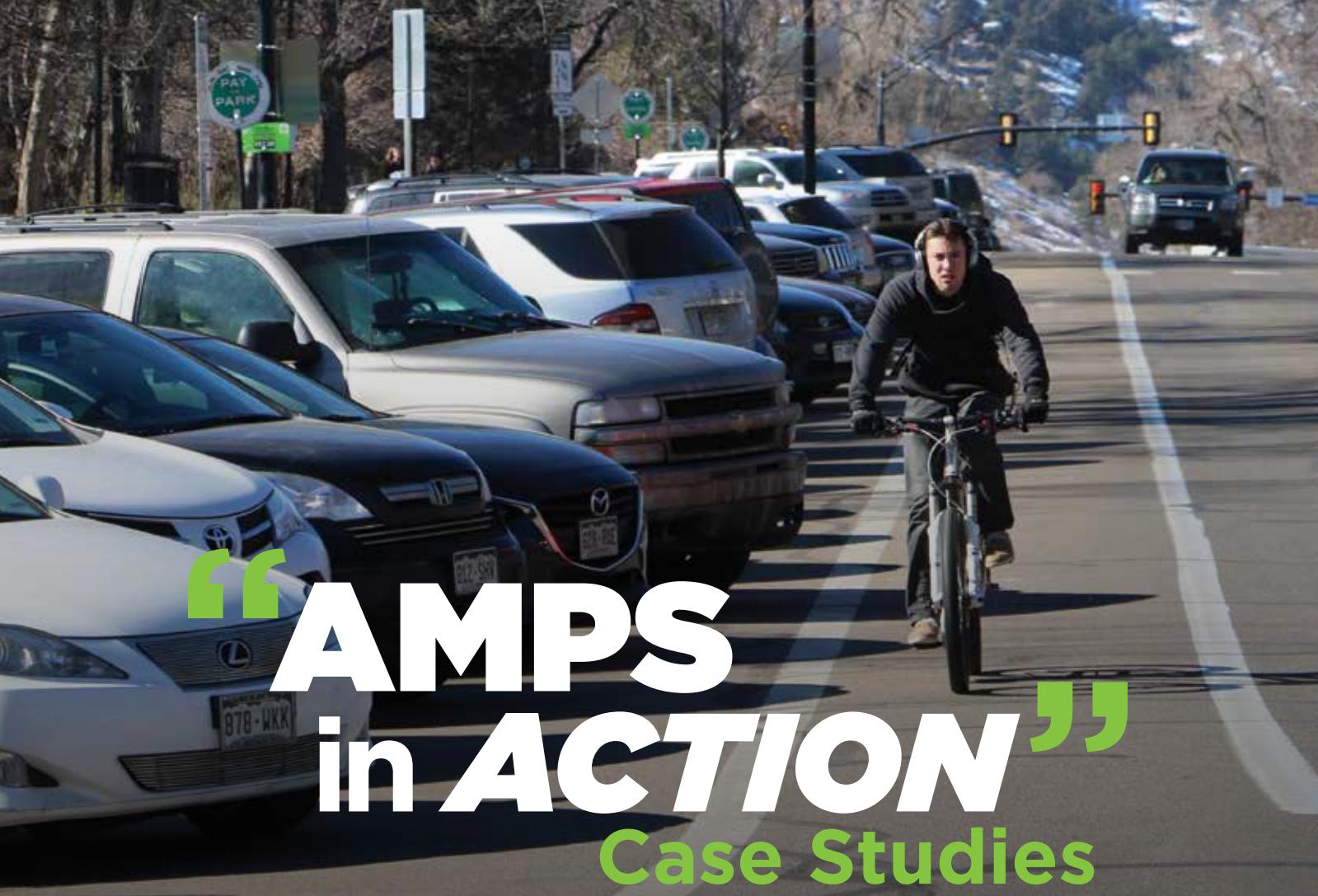
2016 SEPTEMBER**VALUE OF PARKING WORKSHOP****Common Themes:**

- Support climate commitment and TMP.
- Develop shared vision with stakeholders.
- Connect town and gown.
- Clearly define and communicate the "value proposition".
- Create one-stop-shop portal/app; ease of use; communication; customer service/experience.
- Tailor information for audiences; offer solutions for individuals.
- Increased shared use/Public-Private partnerships.
- Use data-driven decision-making.
- Increase mobility and options; don't focus on fewer trips, focus instead on different modes.
- Create viable long-term programs.
- Support economic vitality and access for all (social equity).
- Understand that a "multimodal" city includes parking too.
- Improve relationship management; inform "peer champions".
- Think in terms of human scale, not car scale—we're in the business of placemaking.
- Increase compliance and efficiency of enforcement; reduce complaints.
- Consider demographic shifts and trends.

2016 OCTOBER**COMPLETE STREETS WORKSHOP****Common Themes:**

- Design places for people, not cars.
- Leverage pricing to encourage use of all modes.
- Manage congestion.
- Support climate commitment and TMP.
- Develop a shared vision with stakeholders.
- Make data-driven decisions.
- Increase mobility and options.
- Be mindful of social equity issues.
- Hold parking pricing workshop.
- Establish Public-Private partnerships.
- Consider demographic shifts and trends (i.e., no car and "car-lite" households, seniors, youth, and lower-income individuals without good transit access).
- Ensure greatest and best use for the public right-of-way.
- Actively follow new technology (i.e., autonomous vehicles and micro-transit).
- Emphasize economic vitality initiatives.
- Promote voluntary compliance over enforcement.
- Improve access to "real" regional and local transit options

“AMPS in ACTION” Case Studies



The AMPS project is a new lens through which future parking and multimodal access projects will be approached. As such, it is important to illustrate how the AMPS vision and Guiding Principles are put into practice and tested through a well-defined operational path. Shown on the following page, the **operational path** serves as the guiding framework through which future parking and access management projects will be approached today and in the future.

This chapter features key local case studies “AMPS in Action,” organized by Guiding Principle. The case studies each highlight a different Focus Area. They have been organized as practical, and in many cases replicable, illustrations of how the AMPS Guiding Principles have transitioned from vision to planning to implementation.

AMPS IN ACTION

PROVIDE FOR ALL TRANSPORTATION MODES

Case Study (CS): Downtown Boulder
Tools for Change (TC):

CUSTOMIZE TOOLS BY AREA

CS: Boulder Junction Access District
TC:

SUPPORT A DIVERSITY OF PEOPLE

CS: University Hill
TC:

SEEK SOLUTIONS WITH CO-BENEFITS

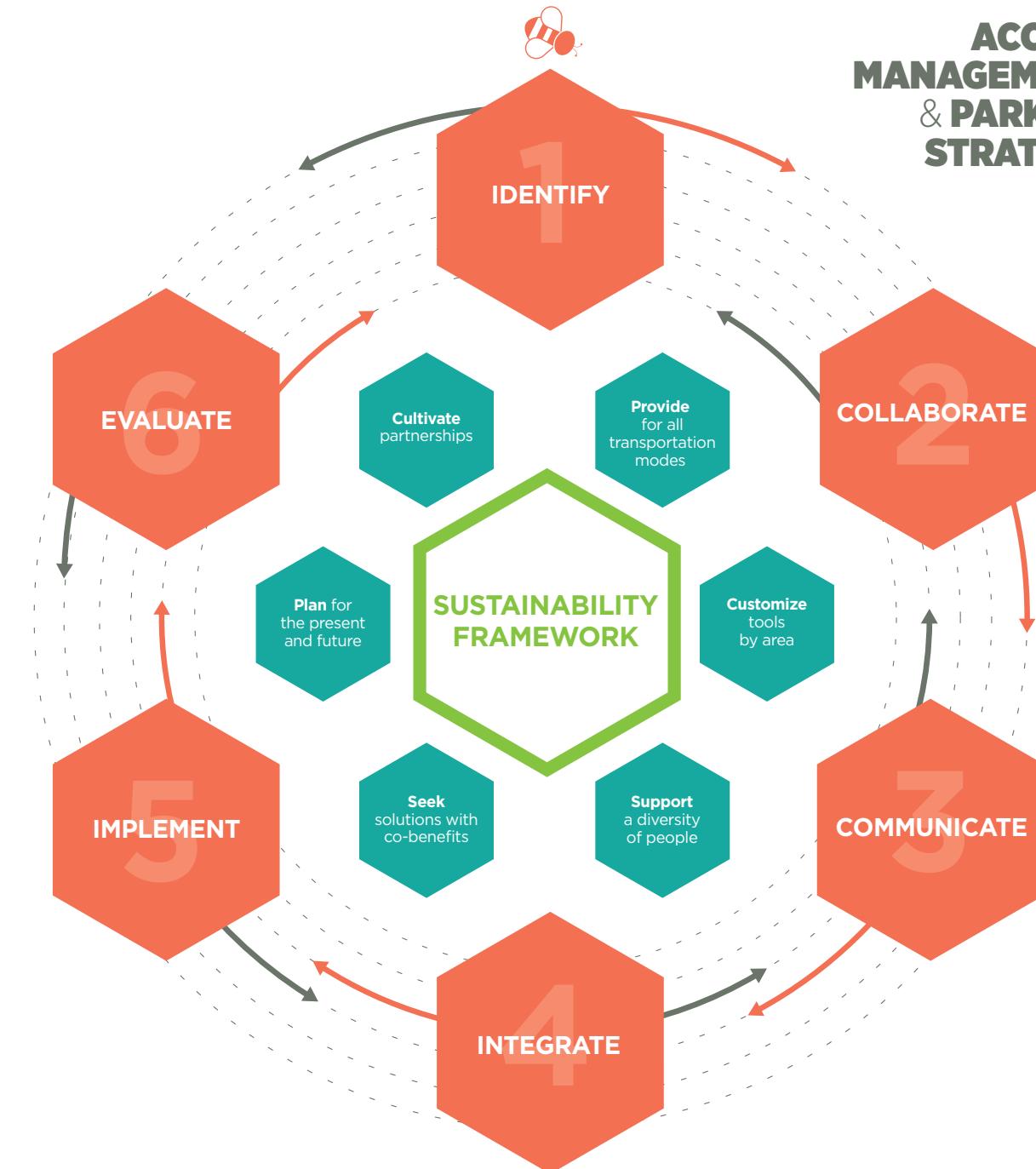
CS: Chautauqua Area Management Plan (CAMP)
TC:

PLAN FOR THE PRESENT AND FUTURE

CS: East Arapahoe Transportation Plan
TC:

CULTIVATE PARTNERSHIPS

CS: d2d Pilot
TC:



“Where we want to go”

◆ GUIDING PRINCIPLES ◆

Provide transportation modes

Customize tools by area

Support a diversity of people

Seek solutions with co-benefits

Plan for the present and future

Cultivate partnerships

“How we’re going to get there”

◆ OPERATIONAL PATH ◆

IDENTIFY 1
Project type
Workload balance
Budget
Timing

COLLABORATE (INTERNAL) 2
Project management structure
Intra-/Interdepartmental partners
Consulting support

COMMUNICATE (EXTERNAL) 3
Public involvement
Key audiences
Tools
Public/media relations
Messaging

INTEGRATE 4
Incorporate feedback
Identify key issues
Develop recommendations
Coordinate with partners
Re-engage community

IMPLEMENT 5
Pilot
Ordinance revision
New program
Define/refine policy

EVALUATE 6
Document process and results
Performance measure review
Process improvement

PROVIDE FOR ALL TRANSPORTATION MODES

CASE STUDY: DOWNTOWN BOULDER

Introduction

Downtown Boulder is both the heart of the community and one of the city's oldest neighborhoods. Boulder has long been a progressive, forward-thinking community and Downtown Boulder is the best example of the city's innovative spirit in action. Historic photographs show the evolution of passenger rail travel dating back to the 1800s; at one point an estimated 16 railroad and streetcar lines snaked through the community.

Boulder's first parking meters were installed in 1946. Since that time, Downtown Boulder has evolved into a nationally-recognized, multimodal access hub that supports transit, bicyclists, and pedestrians, alongside vehicular parking. In the 1970's the downtown created a special property tax district, Central Area General Improvement District (CAGID) that was created to fund, build and manage parking for the entire downtown. In the intervening years CAGID constructed five parking garages that accommodate both permit (employee) and short term (customer and visitor) parking. This concept for shared parking became the foundation for the SUMP principles – shared, unbundled, managed and paid – which are the hallmarks for Boulder's parking management. As Downtown Boulder grew and matured, the city's parking management philosophy paved the way for investment in other transportation modes and enhanced public spaces. In 1977, the construction of the iconic Pearl Street pedestrian mall solidified Boulder's commitment to designing the built environment for people and the places they love, not just for the car.

Over the past decades, Downtown Boulder has served as the testing ground for parking and access management policies, programs and technology. From creating dedicated bike lanes and installing bike-sharing stations, piloting an employee bus pass program that eventually became the regional RTD Eco Pass and providing free Eco Passes to all full time downtown employees, to supporting car share programs, "crazy ideas" sparked and cultivated right in the heart of Downtown Boulder, have shaped our residents and visitors travel to and around Boulder. These multi-modal strategies are all in service of the city's goal of promoting all transportation modes and reducing the impacts of single occupant vehicle trips.

One example of how AMPS has continued to highlight Downtown Boulder as an innovation hub is through the "Parking Cash Out" pilot with downtown businesses.

Parking Cash Out

Parking Cash Out is a financial incentive offered to employees to encourage the use of commute modes other than driving alone, which both reduces parking demand and helps ensure that company benefits are distributed equitably. Commuters can choose to keep an employer-subsidized parking spot at their employment site or accept the approximate cash equivalent of the cost of parking within that facility or system and use an alternative transportation option. Essentially, parking cash out programs pay employees to not drive alone to and park at work.



SolidFire, Boulder, CO

SolidFire is a Boulder-based company with 262 employees that builds cloud-based, all flash storage systems for next-generation data centers. Located in Downtown Boulder, within the CAGID, SolidFire was facing a shortage of available employee parking.

SolidFire developed its parking cash out program, ATIP (Alternative Transportation Incentive Program), to encourage employees to commute via alternative transportation modes, such as walking, biking, taking transit, or carpooling. The company now pays a set amount per month to any employee who foregoes a monthly parking pass or reimburses employees for occasional daily or hourly parking charges. Full-time employees are also eligible to receive an RTD EcoPass, which is an unlimited-access annual transit pass. Initially limited to full-time employees, ATIP was recently expanded to part-time employees.



Currently, 86 of SolidFire's employees, 33 percent of its Boulder workforce, participate in ATIP. The company estimates that the net savings of this program amounts to approximately \$17,000 per month. Employees enjoy the program and SolidFire believes it is beneficial in recruiting and retaining employees.

Observations

- Parking Cash Out has resulted in lower parking demand and single-occupant vehicle travel rates.
- Implementation can be as simple or elaborate as desired.
- Implementation and administration costs tend to be low, and in some cases the employer saves money.
- Designing a flexible program that takes into account occasional parking needs can result in higher participation because it allows for incremental change.
- Employees consider cash out programs to be fair and both employers and employees see them as win/win solutions.

Public Involvement

KEY PLAYERS

- Downtown Boulder Partnership
- Downtown Business Improvement District (BID)
- Downtown property and business owners
- Boards/Commissions

TOOLS

- Focus group meetings
- Presentations to Boards/Commissions
- Online engagement tools (i.e., Commonplace, InspireBoulder)

What's in the Works?

- Pilot of Smarking, a data analytics company, which connects on- and off-street parking data points from five different sources into one comprehensive dashboard.
- Analysis of in-bound traffic and identify sites for satellite/edge parking (pilot/demonstration area is ready).
- Consideration for potential for shared parking with developments in the parking district.
- Comprehensive review of parking pricing.
- Comprehensive review of the existing Neighborhood Parking Permit Program (NPP), including stakeholder engagement and best practice and peer/aspirational community research.

Resources:

- [AMPS website](#)

"This program is simple to use and a great way to incentivize employees to use alternate modes of transportation, especially since there are not enough parking spaces in Downtown Boulder".

– *Mia Sanchez-O'Dell,
Global Total Compensation & Services Manager, SolidFire
on Parking Cash Out Pilot*



CUSTOMIZE TOOLS BY AREA

CASE STUDY: BOULDER JUNCTION ACCESS DISTRICT (BJAD)

Introduction

Boulder Junction (previously known as the Transit Village) is a 160-acre redevelopment area that is being transformed into a mixed-use, pedestrian-oriented neighborhood with regional transit connections and public spaces that will benefit the entire community. Since the adoption of the Transit Village Area Plan (TVAP) in 2007, Boulder, RTD, and private developers have begun implementing the vision outlined for Boulder Junction.

To realize the goals of the TVAP and create a transit-oriented development, two general improvement tax districts were created in 2010: a parking district and a TDM district. They were named Boulder Junction Access General Improvement District-Parking (BJAD-P) and Boulder Junction Access General Improvement District-TDM (BJAD-TDM). These two overlapping districts were based on the successful Downtown Boulder parking district. In some sense, Boulder Junction has become the city's "proving grounds", a culmination of lessons learned from innovative policies and programs that were initially piloted in Downtown Boulder. These programs were initially implemented in conjunction with zoning regulations for parking maximums (for residential uses) to reduce single-occupant vehicle trips and promote transit and other alternative modes.

BJAD-TDM provides funding for EcoPasses, car and bike share programs. BJAD-P provides mechanisms to create parking that follow Boulder's "SUMP" philosophy. To purchase EcoPasses, BJAD-TDM uses residential and commercial property taxes and payment-in-lieu-of-taxes (PILOT) fees that developers pay for the first two years after they are issued a certificate of occupancy. BJAD-TDM also uses these taxes and fees to provide discounted Boulder B-Cycle memberships and free carshare memberships for all residents and employees of Boulder Junction.

Key Goals

- Create a lively and engaging place with a diversity of uses, including employment, retail, and arts and entertainment, with housing that serves a diversity of ages, incomes, and ethnicities.
- Don't overplan; allow a "charming chaos" that exhibits a variety of building sizes, styles, and densities.
- Offer both citywide and neighborhood-scale public spaces.
- Attract and engage a broad spectrum of the community, not just people who live and work in the district or come to access transit in the area.
- Emphasize and provide for alternative energy, sustainability, walking, biking, and possible car-free areas.



Observations

- Development at Depot Square presented the opportunity to construct a shared parking garage for BJAD-P and the other Depot Square uses, including the hotel, the Depot, RTD, and the housing units. The Depot Square parking garage is now shared between five different users through a condominium association and BJAD-P has 100 spaces to manage. The goal is to support the access needs of all users within the district.
- With district-wide limitations on parking for residential units (one parking space per unit), Boulder Junction may not be for everyone. The district was developed with the goal of prioritizing pedestrians first, cyclists second, transit users third, and automobile users fourth.

Staff & Consultant Collaboration

CITY OF BOULDER

- Community Vitality
- Transportation, Planning, Housing & Sustainability
- Public Works
- City Attorney's office
- Fire Department

CONSULTANTS

- Fox Tuttle Hernandez, RRC

Public Involvement

KEY PLAYERS

- BJAD-P Commission
- BJAD-TDM Commission
- District property owners
- Private developers
- Depot Square owners' association
- RTD

TOOLS

- Boards/Commission meeting presentations
- Online engagement tools (i.e., Inspire Boulder)
- Open Houses
- Inside Boulder News

What's in the Works?

- Develop the city-owned site at 30th and Pearl in the context of affordable housing.
- Reimagine transit, including the RTD "HOP" route along the Pearl Street Corridor, particularly between Downtown Boulder and Boulder Junction.
- Collaborate with RTD to increase transit service to Boulder Junction.
- Add other petitioning properties into BJAD-TDM.

Resources:

- [Transit Village Area Plan](#)
- [Boulder Junction website](#)
- [BJAD Commission website](#)
- [BJAD-P Map](#)
- [BJAD-TDM Map](#)



SUPPORT A DIVERSITY OF PEOPLE

CASE STUDY: UNIVERSITY HILL

Introduction

University Hill is a dynamic historic neighborhood adjacent to the main CU Boulder campus. The Hill features an eclectic mix of housing, restaurants, shops, and entertainment venues. As a parking district, similar in organization to Downtown Boulder and Boulder Junction, planning for parking and access is a fundamental part of promoting economic vitality on the Hill. The focus of AMPS for The Hill has been on intentionally identifying and promoting connectivity for all modes, with specific emphasis on reducing The Hill's auto-oriented feel and making the area more accessible and inviting for pedestrians and bicycles.

Four key access management and parking projects/concepts are currently underway on The Hill, including:

- Ecopass Pilot
- Alleyway Project
- "Event Street"
- Potential New Garage & Hotel

Ecopass Pilot

In 2016, a Hill Employee EcoPass program was piloted to reduce employee parking demand and expand multimodal access to The Hill. Pilot goals included:

- Increase connectivity between Downtown Boulder and The Hill, to both reduce parking demand and address topographical challenges for pedestrians.
- Improve access to The Hill for lower income and/or service industry employees.

Alleyway Project

Boulder recently selected designer Russell + Mills Studios, whose work in Fort Collins, CO has helped improve access to and the utilization of alley spaces. The Hill's alleyway beautification project seeks to:

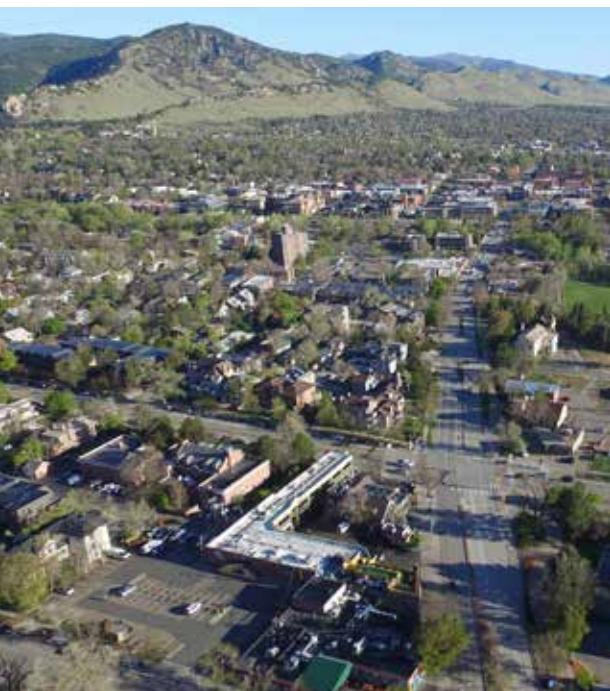
- Create greater connectivity and make alleyways more inviting for pedestrians and cyclists;
- Open up additional space for Hill businesses to interact with public spaces;
- Maintain access for delivery trucks; and
- Prioritize alleyway access in a balanced way that supports students, businesses, residents, and visitors.

"Event Street"

The intersection of 13th Street and Pennsylvania Avenue is being redesigned into an "event street", to provide much-needed community gathering space in The Hill Commercial Area and to accommodate smaller community events, such as outdoor film screenings and poetry readings. This project is funded by the Community, Culture, and Safety sales tax adopted by Boulder voters in 2014. The event street will remain an active street with parking.

Potential New Garage and Hotel

Boulder is pursuing a public-private partnership with the local development community to create a new hotel and conference center, to be located at the intersection of University Avenue and Broadway. The project will include 400 new hotel rooms, 1,500 sqft. of ballroom space, 30,000 sqft. of new retail and dining space, and a 250-car public garage. The vision is for a truly shared-use facility, all on one street, that could potentially house a transit hub similar in scale to the BJAD's, with amenities like a bus to the Denver International Airport and B-cycle stations.



University Hill (photo courtesy of Sam Veucavovic, City of Boulder, May 2017)



Observations

- Connectivity between Downtown and The Hill is key, both to reduce parking demand and address topographical challenges.
- Access to the Hill needs to be improved for lower income and/or service industry employees.
- Alleyways present an opportunity to activate underutilized space.
- Infrastructure and connectivity improvements are essential for creating people-oriented places.

Staff & Consultant Collaboration

CITY OF BOULDER

- Community Vitality
- City Attorney's office
- Arts & Culture
- Zero Waste Boulder
- Transportation

CONSULTANTS

- Russel + Mills Studio
- RRC Associates

Public Involvement

KEY PLAYERS

- CU Boulder
- The Hill Boulder
- University Hill Commercial Area Management Commission
- Hill property and business owners

TOOLS

- Design workshops
- Presentations and meetings to boards, commissions, and other neighborhood stakeholder groups
- Project website

What's in the Works?

- Assess EcoPass pilot in 2017.
- Implement Alleyway project.
- Implementation of the Event Street project, concluding construction by Fall 2017.

Resources:

- [Hill Event Street Project website](#)
- [Hill Event Street Design Concept](#)
- [Zero Waste Boulder](#)



Sketch from Russel + Mills Studio University Hill Event Concept

SEEK SOLUTIONS WITH CO-BENEFITS

CASE STUDY: CHAUTAUQUA ACCESS MANAGEMENT PLAN

Introduction

Chautauqua is an iconic landmark that attracts a wide variety of people. Attractions like the National Historic Landmark District, open space trails, the dining hall, city park land, park ranger talks, rentable meeting space and cottages, and much more make Chautauqua very popular. However, with popularity comes challenges, especially during peak times. This is particularly true for parking, which impacts people who live, work, and recreate in and around Chautauqua.

In response to this longstanding issue, Boulder, the Colorado Chautauqua Association (CCA), and community members teamed to create a Chautauqua Access Management Plan (CAMP). Their goal was to create a plan to improve the experience of traveling to and from the Chautauqua area, which includes the National Historic Landmark, adjacent green space, and trailheads. The plan was also developed to minimize the impacts of vehicles to neighbors, visitors, and the area's natural and cultural resources. A diverse working group appointed by the city manager helped staff evaluate the challenges and opportunities of Chautauqua access.

Data Collection

During Summer 2016, multiple types of data collection efforts were undertaken, including more traditional parking supply/demand and duration counts, customer intercept surveys, and visitation count reviews. Specifically, data collection focused on understanding:

- Travel pattern and arrival routes
- Vehicle traffic and speeds
- Parking supply, duration, and utilization
- Bicycle parking and utilization
- Shared street interactions

Observations

The following key issues have been identified from the data collection, evaluation, and public engagement process to date. Summer 2017 pilot projects will target and aim to mitigate these key issues in preparation for development of the final CAMP strategy:

- The vast majority of visitors to the Chautauqua area arrive by automobile, which, combined with the popularity of the area, creates traffic congestion, neighborhood livability/parking congestion, and greenhouse gas emission levels that do not meet Boulder's transportation mode choice or environmental goals.
- Within the National Historic Landmark itself, pedestrians walking in the street (where there are no sidewalks) come into conflict with motor vehicles, including those looking for parking spaces.
- Chautauqua Auditorium event night shuttle buses become problematic for the neighborhood east of Chautauqua when shuttle riders request Americans with Disabilities Act (ADA) drop-offs at the Auditorium via Columbine Avenue opposed to regular drop-offs on Baseline Road. This creates noise and odor concerns for east-side neighborhood residents, and conflicts with pedestrians and other vehicles along Columbine.
- The Chautauqua Working Group (CWG) recommended adding speeding on residential streets within and outside of the historic district as an issue for future consideration.



Staff & Consultant Collaboration

CITY OF BOULDER

- Open Space and Mountain Parks

CONSULTANTS

- Fox Tuttle Hernandez, RRC
- RRC Associates

Public Involvement

KEY PLAYERS

- CAMP Working Group
- CCA
- Open Space users
- Boulder Convention and Visitors Bureau
- Residents in Chautauqua neighborhoods
- City of Boulder
 - › Community Vitality
 - › Transportation
 - › City Attorney's office
 - › Parks and Recreation

TOOLS

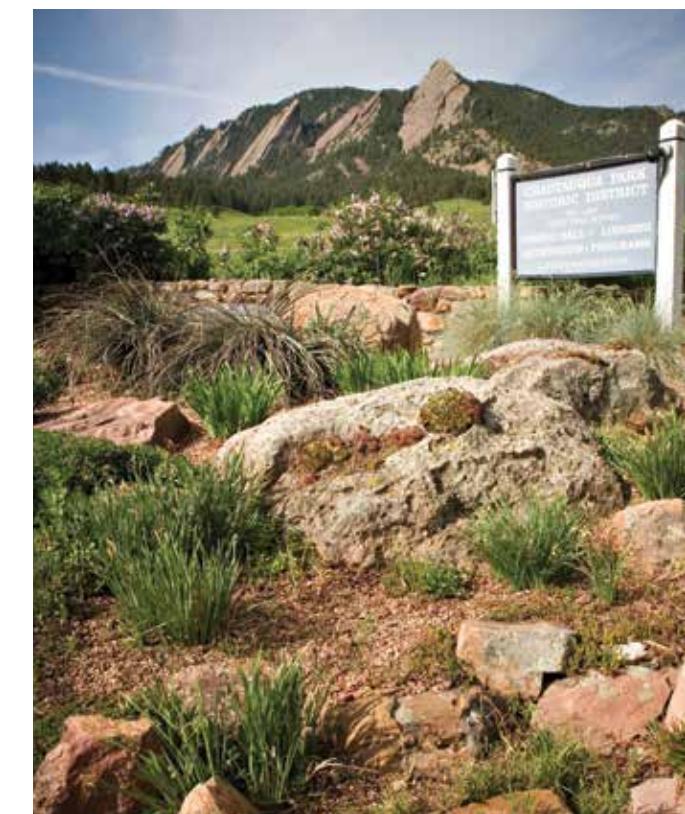
- Online questionnaire
- Open houses
- City Council, Boards, and Commission presentations
- Project website

What's in the Works?

- Implement pilot strategies (only on weekends) in Summer 2017, based on direction from City Council. The holistic pilot approach includes:
 - › Improving transit and other ways to get to and from Chautauqua.
 - › Implementing managed parking in Chautauqua and/or in surrounding neighborhood.
 - › Exploring innovative solutions like real-time parking information, ridesharing, and TNCs (i.e., Uber and Lyft).
 - › Implementing transportation incentives for Chautauqua employees.

Resources:

- [CAMP website](#)
- [2016 Chautauqua Lease between CCA and City of Boulder](#)
- [OSMP-Chautauqua Trailheads website](#)
- [CAMP PowerPoint presentation](#)
- [2016 Fox Tuttle Hernandez, RRC data report](#)
- [Transit Analysis](#)
- [CAMP: City Council Information Packet Jan. 17, 2017](#)
- [CAMP Questionnaire results](#)



Boards from CAMP presentation

PLAN FOR THE PRESENT AND FUTURE

CASE STUDY: EAST ARAPAHOE TRANSPORTATION PLAN

Introduction

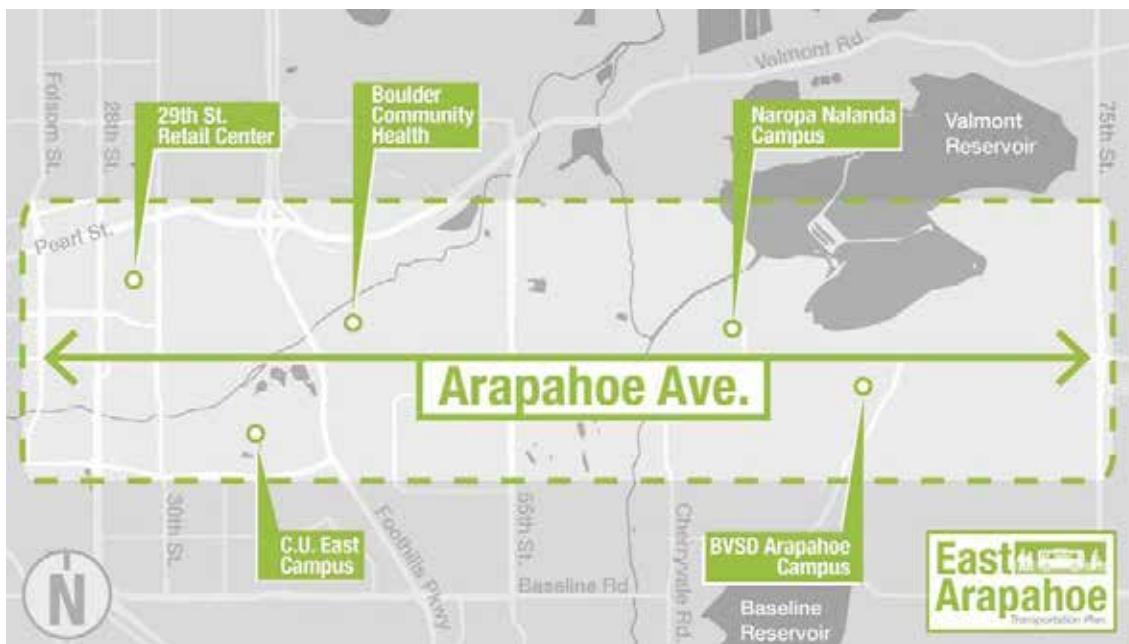
In 2014, an RTD Northwest Area Mobility Study recommended State Highway 7 Corridor (Arapahoe Avenue to 287, and Baseline Road east to I-25) between Boulder, Lafayette, and Brighton as a strong candidate for a regional arterial Bus Rapid Transit (BRT) line.

As part of the East Arapahoe Transportation Plan, Boulder began looking at how a BRT might function (design, service, and operations). Community stakeholders involved in the project urged Boulder to consider a number of potential transportation improvements within the East Arapahoe Corridor (in addition to BRT feasibility), including TDM programs, and managed parking. Today, the East Arapahoe Corridor is one of Boulder's busiest regional travel corridors.

As Boulder plans for the future, exponential growth in surrounding communities will likely place additional demands on the corridor's existing transportation system. From people commuting into Boulder for work or school, traveling to Boulder for healthcare services, or simply accessing recreational and shopping amenities, forecasted regional transportation demands on the East Arapahoe Corridor will continue to impact how the corridor functions today and in the future.

Key Goals

- Provide Complete Streets in the East Arapahoe Corridor that offer people a variety of safe and reliable travel choices.
- Increase the number of trips the East Arapahoe Corridor can carry to accommodate growing local transportation needs and projected growth in surrounding communities.
- Promote a more efficient use of TDM, manage parking, and offer people multimodal travel options.
- Deliver cost-effective transportation solutions that can be phased over time.
- Develop transportation improvements that support Boulder's Sustainability Framework and the Boulder Valley Comprehensive Plan Update.



Observations

- Regional transportation demands will change how the East Arapahoe Corridor functions.
- Effective stakeholder engagement can produce unexpected and creative solutions.
- East Arapahoe used to be a "pass-through" corridor; with CU Boulder's East Campus, it is now more of a destination.
- The corridor provides an opportunity to implement edge/satellite parking concepts.

Staff & Consultant Collaboration

CITY OF BOULDER

- Community Vitality
- Comprehensive Planning
- Transportation
- Parks and Recreation

CONSULTANTS

- Nelson\Nygaard Consulting Associates
- Fox Tuttle Hernandez, RRC
- Fehr & Peers Transportation Consultants

Public Involvement

KEY PLAYERS

- Community working group
- Small and large businesses
- Neighborhood associations
- Cycling advocates
- Disabled community
- Community at large
- Boards/Commissions

TOOLS

- Community working group
- Online questionnaire
- Public workshops
- Small group meetings
- Project website
- Webinars
- Email

What's in the Works?

- Continue working on draft district cross section alternatives, designed with input from a community working group and public comment.
- Provide edge/satellite parking options in Erie, Lafayette, Broomfield, and East Boulder to encourage commuters to transition out of their cars sooner.
- Implement a targeted marketing campaign to better inform commuters about their options.
- Expand the EcoPass program.
- Encourage the use of ridesharing options with regional TNCs.

Resources:

- [Project website](#)
- [Public input summary](#)
- [Community working group website](#)
- [Open House boards](#)
- [Best Practice and Case Study Research](#)
- [Draft District Cross Sections](#)
- [Area Maps](#)

CULTIVATE PARTNERSHIPS

CASE STUDY: DOOR TO DOWNTOWN (d2d PILOT)

Introduction

In November 2016, Boulder and the Downtown Boulder Partnership debuted a new service that provided discounted door-to-door access to and from Downtown Boulder. The pilot program, Door to Downtown, or “d2d,” was a collaborative, Public-Private partnership between Boulder, the Downtown Boulder Partnership, TNCs Uber and Lyft, taxi company zTrip, the Rocky Mountain Institute (RMI), and mobility technology provider Commutifi.

The goal of the d2d pilot, which initially ran over the 2016-17 holiday season from Thanksgiving to New Year’s Day, was to bring holiday shoppers and diners from their homes directly to their Downtown Boulder destinations and back again. The program provided a \$25 credit good for five \$5 credits on rides into Downtown Boulder between 11 a.m. and 9 p.m., and participating merchants offered a \$5 credit for the trip home with a purchase of \$50 or more. The initial pilot was extended through Valentine’s Day 2017.

According to key partner, RMI, “the long-term opportunity d2d presents is exciting. To date, great research has been done to understand how the cost of a mobility service affects demand. However, in practice (at current prices) door-to-door services are more expensive than operating a car in most situations. The d2d pilot offers a unique opportunity to test the demand for new transportation options when they are essentially the same price as driving and parking. For the first time, we can test the price elasticity of demand for mobility services.”

Key Goals

- Reduce Downtown Boulder parking demand by customers who currently drive and park single-occupant vehicles (SOVs).
- Support the economic vitality of Downtown Boulder during the holiday season.
- Introduce a new mode to a demographic that reportedly does not visit Downtown Boulder due to the cost/perceived lack of parking.
- Provide increased roadway safety for return trips after an evening Downtown Boulder.
- Encourage customers to explore a new way of accessing Downtown Boulder.



Observations

- Potential d2d users responded to the idea of a subsidy but did not fully utilize the provided benefit.
- The subsidized ride was the primary motivation for using the service, over avoiding traffic/parking or as an alternative to driving impaired.
- Younger demographics are more comfortable with accepting of the technology versus older demographics.
- Consistent and creative marketing, along with an easy to use customer interface, is important.
- The program was more effective when the pilot period was extended from the original six weeks.
- The Thanksgiving to New Year’s Day period may not have been ideal—many potential users were out of town or otherwise engaged.
- People respond better to surveys when meaningful incentives are provided.

Staff & Consultant Collaboration

CITY OF BOULDER

- Community Vitality
- Transportation
- City Attorney’s office

CONSULTANTS

- Commutifi
- Rocky Mountain Institute

Public Involvement

KEY PLAYERS

- Downtown Boulder Partnership
- TNCs Uber and Lyft
- Taxi company zTrip
- Commutifi
- Downtown property and business owners
- Boards/Commissions

TOOLS

- Customer surveys
- Promotion through local media channels—print, digital, and televised

What's in the Works?

- Consider another pilot in the future, based on this assessment.

Resources:

- [Program Information and FAQ](#)
- [RMI final report](#)

“This project demonstrates how public and private partners can collaborate to bring innovative mobility solutions to cities. If we can replicate and scale such efforts, we will see more people relying on mobility services, rather than owning their own cars, which sit unused 95 percent of the time.”

– Jeruld Weiland, Managing Director
Rocky Mountain Institute



EXISTING PLANS & RESOURCES

- [Sustainability Framework](#)
- [Climate Commitment](#)
- [Boulder Valley Comprehensive Plan \(BVCP\)](#)
- [Transportation Master Plan \(TMP\) and Transportation Report on Progress \(TROP\)](#)
- [Safe Streets Boulder: Toward Vision Zero \(TVZ\)](#)
- [Human Services Strategy](#)
- [Economic Sustainability Strategy](#)
- [District and Corridor Plans](#)
- [Resiliency Strategy](#)
- [Boulder Valley Employee Survey](#)
- [Downtown Employee Travel Survey](#)
- [Hill Employee Travel Survey](#)
- [TVAP Plan](#)
- [Downtown Boulder Intercept Survey](#)

Performance MEASURES

AMPS is designed to integrate with and support Boulder's existing master plans and other community planning efforts while also offering an opportunity to build on and evaluate existing measures in new ways. Making use of measures that can be evaluated citywide and/or by local area (i.e., district, neighborhood, or activity center) provides more flexibility for measuring the social, economic, and environmental impact of projects approached through the AMPS process.

This context-sensitive approach supports the AMPS Guiding Principles, and can be more qualitative in measurement. It promotes a more open process for realigning and adjusting while projects are in progress, as opposed to waiting until projects are completed to measure their effectiveness. It also supports the basic premise of AMPS, which is to look at parking and access management initiatives through an integrated lens. The following performance measures, organized by the AMPS Guiding Principle, are offered as guidelines for future parking and access management projects and are based on performance measures from existing master/strategic plans and readily-available data.

AMPS Guiding Principle: Provide for All Transportation Modes

PERFORMANCE MEASURES:

- Change in mode share by residents and non-residents
- Change in mode share by employees during workday
- Miles of bikeway
- Transit ridership
- Parking utilization



AMPS Guiding Principle: Customize Tools by Area

PERFORMANCE MEASURES:

- Percentage of defined districts/activity nodes aligning with the 15-minute neighborhood concept
- Alignment of transportation alternatives with districts experiencing the largest job growth
- Transit service changes over time—both locally and regionally
- Impacts on commercial areas and businesses, measured through surveys and feedback, including economic benefits

AMPS Guiding Principle: Support a Diversity of People

PERFORMANCE MEASURES:

- Average commute distance for resident and non-resident employees
- Accessibility of employee mobility options by diverse income levels
- Relationship between availability of transit service and availability of jobs
- Percentage of older adults and people with disabilities served by transit

AMPS Guiding Principle: Seek Solutions with Co-Benefits

PERFORMANCE MEASURES:

- Vehicle miles traveled per capita for employees and residents citywide and within districts
- Traffic congestion to/from prioritized nodes of workforce trip generation
- Travel options that support economic vitality

AMPS Guiding Principle: Plan for the Present and Future

PERFORMANCE MEASURES:

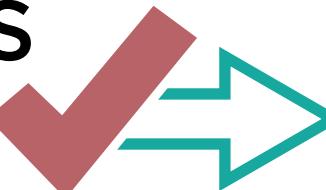
- Impact of TDM Toolkit implementations (i.e., adoption rate of parking cash out, EcoPass, and alternative work schedules utilization) related to mode share and Vehicle Miles Traveled (VMT) reduction goals
- Support for pilot programs that explore new technologies and travel options

AMPS Guiding Principle: Cultivate Partnerships

PERFORMANCE MEASURES:

- Utilize the existing Boulder Valley Employee Survey and Downtown Intercept Survey to track progress over time
- Consider developing district-specific intercept surveys
- Build on the existing d2d partnership with Downtown Boulder, TNCs, and technology provider Commutifi
- Use public-private partnerships to minimize needed parking and maximize a mix of uses

ACCOMPLISHMENTS & Ongoing Work



Since AMPS was initiated in Spring 2014, interdepartmental teams of city staff have collaborated with a variety of consultant partners and community members to complete an impressive list of accomplishments.

PHASE 1 ORGANIZATION & BASELINE ASSESSMENT ✓

The first activity for the AMPS project team was to develop a visionary set of Guiding Principles, define key Focus Areas, and conduct best practice research. The team also spent much of 2014 developing a comprehensive community engagement plan to support the AMPS process.

2014 Accomplishments

- Completed an [AMPS Best Practices and Peer City document](#).
- Completed short-term auto and bike parking code changes.
- Developed a Request for Proposals for the replacement of Downtown Boulder garage access equipment.
- Developed and reviewed TDM Toolkit for private development options.
- Installed pilot Parklet on The Hill May through October.
- Installed solar-powered charging stations at Broadway and Spruce Street.
- Implemented pay-by-cell in all parking districts.
- Installed variable messaging signage in Downtown Boulder garages.

Phase 1 Resources

- [Oct. 28, 2014 AMPS Memo](#)
- [July 29, 2014 AMPS Presentation](#)
- [June 10, 2014 AMPS Memo](#)

PHASE II: PUBLIC INVOLVEMENT &

TARGETED WORK BY FOCUS AREA ✓

Throughout 2015, the extensive community engagement planning work was put into practice. From Open Houses and "Coffee Talk" meetings to a new online engagement platform, Commonplace, the public was given multiple opportunities to provide input on the AMPS philosophy and project Focus Areas ("Tools for Change").

Targeted work by Focus Area included:

- Refined options and draft recommendations for TDM policies for new developments.
- Explored potential modifications to long-term on-street parking ("72-hour Rule").
- Reviewed options for edge/satellite parking.
- Analyzed shared parking policies between districts and private developments.
- Examined parking-related code changes.

2015 Accomplishments

- Issued a Request for Proposals for the replacement of Downtown Boulder garage access equipment, revenue control, and permitting systems to a state-of-the-art system that will coordinate with other technologies such as the variable messaging system.
- Negotiated Public-Private partnerships for a mixed-use project with a shared parking option between the CAGID and Trinity Lutheran Church in Downtown Boulder.
- Initiated a public-private partnership redevelopment of the UHGID 14th Street parking lot.

Phase II Resources

- [AMPS infographic](#)
- [Open House Boards & Project Update](#)
- [Spring 2015 Community Engagement Summary](#)
- [Fall 2015 Community Engagement Summary](#)
- [May 26, 2015 AMPS Presentation](#)
- [May 26, 2015 AMPS Memo](#)

2015 Accomplishments cont.

- Explored a mobility hub for North Boulder, at the intersection of North Broadway and US36, with CDOT, RTD, and Boulder County.
- Increased the Downtown CAGID long-term parking permit rate for Downtown Boulder and Hill surface lots and garages.
- Completed best practice and peer city reviews of on-street car share parking policies to provide flexibility with new car share programs.
- Implemented the community-wide Downtown Employee Travel Survey.
- Coordinated parking management and TDM program development for the mixed-use neighborhood in anticipation of the completion of Depot Square at Boulder Junction.
- Coordinated with Southwest Energy Efficiency Project (SWEEP) and Climate Commitment staff regarding EV charging stations at parking facilities.
- Implemented Civic Area parking and TDM plans.
- Studied Downtown Boulder parklet to determine potential criteria and locations, operational parameters and considerations, installation requirements, and recommendations for potential sites.
- Evaluated the pilot parklet on The Hill.
- Worked with multiple parties—the hotel, RTD, affordable housing, and Boulder Junction Parking District—to implement a parking management system to accommodate the variety of users of the shared parking garages in the Depot Square mixed-use development.
- Developed a parking pricing strategy in BJAD to implement the SUMP principles and reflect the market of the surrounding area.
- Conducted a Downtown Boulder bike rack occupancy count.
- Partnered with Downtown Boulder startup company, Parkifi, to install parking sensors.

PHASE III: PROCESS DEFINITION & MEASURING PROGRESS ✓

The following projects are ongoing, with start dates between 2016 and 2017.

CAMP

The CAMP project began as part of a new lease with the CCA in October 2015. The lease included a commitment to develop an access and parking management plan for the historic district and surrounding area. The traffic and parking data collection and a visitor intercept survey were completed in Summer 2016. A CAMP working group was created to work with staff to develop recommendations for trial, short-term measures to be implemented and evaluated in Summer 2017 to create a final CAMP.



Next Steps

- Implement CAMP Summer 2017 pilot on Saturdays and Sundays, June 3 through August 27, 2017.
- Collect data throughout the pilot period.
- Share results of data collection and public input, re: visitor experience with the community, Boards and Commissions, and City Council to determine future CAMP implementation strategies.

Phase III continued

Civic Area Parking Management and TDM Programs

In 2016, a new parking management system was implemented that holistically manages all the lots in the Civic Area, provides one and a half hours of free parking, and employs license plate recognition to enforce paid parking. For city government employees, the expanded TDM program provided satellite parking options, a parking cash out program, and personalized concierge travel assistance.

Next Steps

- Continue evaluating parking supply and demand and the effectiveness of the TDM program.
- Expand EcoPass benefits to new categories of city government employees.
- Increase vanpool rebate from \$20 to \$40 per month for city government employees.

Parking Code Changes

The intent of this project is to update Boulder's parking code to include supply rates by land use type and area type, as appropriate, to:

- Reflect the actual parking supply and demand rates that currently exist throughout Boulder.
- Minimize the construction of underutilized parking spaces.
- Reflect the multimodal goals of the Transportation Master Plan.
- Reflect changing market conditions nationwide.
- Decrease the number of parking reductions that are requested.
- Coordinate and align parking supply rates with Boulder's evolving TDM goals, ordinances, and regulations.

In 2016, the project team conducted additional parking supply and occupancy observations at 20 sites, including commercial, office, industrial, mixed-use, and residential land uses. These observations supplemented the more than 30 sites that had previously been studied in 2015. A range of draft parking rate recommendations, including parking maximums and minimums, were then developed for consideration. The potential to coordinate and link the recommended parking supply rates with the evolving TDM ordinance was also identified.

Next Steps

- Refine the draft parking code changes and develop scenarios that range from minimum changes to significant reductions in required parking.
- Coordinate with the ongoing TDM ordinance development process to link the range of parking reductions in each scenario to comply with specific TDM regulations.
- Update Boards, Commissions and Council on findings re: existing parking supply and utilization by land use.
- Present the updated parking supply rate scenarios to Boards, Commissions, and Council for consideration.
- Based on feedback from Boards, Commissions, and Council, develop a recommended set of parking code updates.

Parking Pricing

In Fall 2016, Community Vitality and Parking Services conducted a Parking Pricing Practitioner Panel on the "Value of Parking". The panel was comprised of parking and downtown management professionals from across the nation. Public process and feedback led to the formation of next steps and an action timeline. During 2017, Community Vitality and Parking Services plan to analyze parking-related fees in an effort to maximize the management of parking resources in commercial areas. The review will include an analysis of on-street parking fees, garage short-term parking rates, rates between different garages, and parking citation fines.

In addition to reviewing specific rates, staff will also consider parking pricing as a tool to redistribute parking demand in the Downtown Boulder area.

Next Steps

- Initiate process with parking industry consultant to assist with demand-based pricing research comparison with like organizations.
- Analyze "big data" collected from vendor on and off street to help guide pricing decision making.
- Form a working group from boards and commissions and other organizations to assist with determining the "Value of Parking".
- Provide a recommendation of guiding principles from the working group to city council.
- Initiate public outreach and communication of proposed parking rate changes, if approved.

TDM Plan Ordinance for New Developments

The purpose of having a TDM plan ordinance is to require new developments to meet specific goals related to reducing the development's impact on Boulder's transportation system and to ensure compliance. In 2016, the project team evaluated nine commercial and seven residential developments that were required to submit TDM plans. The project team measured the plans' effectiveness and their evaluations informed the design and administration of the proposed TDM plan ordinance.

Next Steps

- Update Boards, Commissions, and Council on findings of TDM plan evaluations.
- Present updated TDM plan ordinance design concept to Boards, Commissions, and Council.
- Initiate the process of implementing the TDM ordinance for future new development, if council gives direction to move forward.

NPP Review

During 2017, Community Vitality and Parking Services, with guidance from city council, plans to undergo a review of the NPP. The review will include an analysis of NPP zone creations and expansions; resident, commuter, and visitor permit pricing; and zone time limits for commuters. Staff will also consider neighborhood parking issues that are not addressed by current NPP regulations.

Next Steps

- Initiate process with parking industry consultant to assist with a research comparison of similar organizations with neighborhood permit programs.
- Examine the NPP and regulations starting in the 4th quarter of 2016 into 2017.
- Consider the NPP and related issues within the broader AMPS context.
- Provide a recommendation of guiding principles from the working group to city council.
- Create a public outreach process.

Preparing for THE FUTURE

AMPS was designed to be a guiding framework that balances today's multimodal access needs, trends, and choices while also preparing for inevitable shifts in demographics, economics, travel choices, physical design, and technology.

This concluding chapter touches on a few emerging trends that will likely influence and shape how people travel to and around Boulder for years to come:

- Shared travel options
- Data-driven management
- Adaptive reuse principles
- Autonomous and Connected Vehicles (AV/CV)
- Electric Vehicles (EVs)

SHARED TRAVEL OPTIONS

Promote shared travel options over tools that push users to a single mode each day.

One-way travel options are rapidly expanding. These include walking, transit, bike share (B-Cycle), TNCs, carsharing (eGo), and much more. In the near future, shared autonomous vehicles will likely also join this category of transportation options. These travel choices give users even more choices for first- and last-mile connectivity and greater opportunity to live a car-free or "car-lite" lifestyle. Boulder's existing SUMP philosophy for parking management is a great example of how the city is effectively managing a limited resource today while also preparing for changing travel behaviors in the future.

DATA-DRIVEN MANAGEMENT

Pursue data-driven management practices to improve system efficiency and share information effectively.

Performance-based parking pricing, Uber's "surge pricing," and peak-hour transit fares are all examples of how to use pricing to address peak demands. Real-time data collection and analysis—such as commute mode detection that can distinguish between biking, SOV, carpooling, and transit use—will lay the foundation for effective system management moving forward. Boulder has demonstrated a commitment to making data-driven parking and access management decisions by updating its PARCS equipment in publicly-owned parking garages and collaborating with data analytics company, Smarking. Informed decision-making is a Boulder community value. By putting these tools in place now, Boulder will be well-positioned for future policy updates and financial investments.

ADAPTIVE REUSE PRINCIPLES

Consider adaptive reuse principles in new investments that are based on current conditions.

While autonomous vehicles are likely to have a profound effect on transportation systems in the coming years, there are simply too many uncertainties to be able to accurately predict associated changes in land use. Flexible design principles that allow buildings to adapt to different uses are likely to be cost-effective investments. Developing new parking structures that are able to either incorporate an automated vehicle storage and retrieval system (AVSRS) or transform to an alternate use will ensure that the structures are cost-effective investments, whether parking demands increase or decrease.

AUTONOMOUS & CONNECTED VEHICLES



Q&A with Dr. Doug Gettman
Global Director of Smart Mobility and AV/CV Consulting Services, Kimley-Horn and Associates, Inc.

Q: What is the single most significant impact of AV/CV to the parking industry, from your perspective?

A: If I have to pick just one, I would say in the long-term, likely more than ten years from now, as Level 4 driverless vehicles (aTaxis, whether or not they are shared-rides) become more capable to negotiate the majority of roadway facilities, the vast seas of parking lots we currently have around malls and shops in some parts of the country will not be as necessary. We currently seem to build parking lots for the 99th percentile demand day, generating so much land area that goes unused most of the time. The Level 4 driverless fleets of aTaxis may be more efficiently parked in different configurations—perhaps more like how rental car facilities are currently operated (nose-to-tail) since availability of individual vehicles in the middle of the lot is not necessary. SUVs, small vehicles, trucks, etc. could be parked in separate lanes and the next vehicle of a certain type could be dispatched to a user from the front of the queue. Self-driving Level 3 vehicles (privately owned) will still need some traditional parking facilities, as individual owners will need access to their own vehicles at any time.

Q: When should cities start thinking about how AV/CV technology will impact them?

A: We're asked these kind of questions from our public agency clients now; however, the industry as a whole doesn't need to start redesigning parking lots for at least another five years or so. Most of the release dates we see from AV/CV developers for revenue service for taxis are not until at least 2021. However, it isn't clear what capabilities those aTaxis will have initially. Being able to drive on "any" street from any origin to any destination (and park in any lot), completely driverless, is a pretty big challenge. Businesses and parking lot/garage owners that want to be early-adopters or trailblazers could start partnering today with AV developers and parking facility designers to start piloting new concepts and doing demonstration projects.

Q: What are your best "go-to" resources on the topic?

A: Alain Kornhauser from Princeton/Soterea has an excellent curated newsletter of AV-related news items, including his seasoned commentary, that he distributes about once a month.

ITS America's SmartBrief newsletter typically picks up AV announcements as they happen within 1-2 days.

Traffic Technology Today has an excellent email newsletter.



IMPACTS OF EVs

To help support the trend of increased EV ownership, cities across the nation are looking at how to incorporate and prioritize EV investments into existing infrastructure.

Items for consideration include:

- Quantity and location of charging stations, including possible location prioritization
- Variety of charging stations offered (Levels 1-3)
- Fee schedule or time stay limit for EV spaces
- Full or self-service offerings
- Communication and signage to promote utilization
- Payment options

