UC Berkeley
Recent Work

Title

California Transportation Plan 2050: Northern and Southern California Visioning Sessions Findings

Permalink

https://escholarship.org/uc/item/8gb659tv

Authors

Shaheen, Susan, PhD
Totte, Hannah
Cohen, Adam

Publication Date

2018-12-01

DOI

10.7922/G2K935Q9

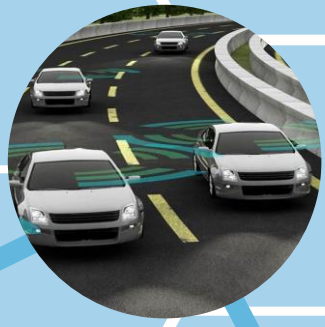
eScholarship.org Powered by the California Digital Library
University of California

doi:10.7922/G2K935Q9

DECEMBER 2018

CALIFORNIA TRANSPORTATION PLAN 2050

NORTHERN AND SOUTHERN CALIFORNIA VISIONING SESSIONS FINDINGS



Author Acknowledgments

We would like to thank Susan Shaheen, Hannah Totte, Adam Cohen, and everyone else from the Transportation Sustainability Research Center team involved with the authoring, research, coordination, and presentation of this paper.

Susan Shaheen, Ph.D.
Co-Director, Transportation Sustainability Research Center
Adjunct Professor, Civil and Environmental Engineering

Hannah Totte
Staff Researcher
Transportation Sustainability Research Center

Adam Cohen
Staff Researcher
Transportation Sustainability Research Center

Table of Contents

Executive Summary **3**

Introduction **6**

Findings **7**

Topic 1: People-Oriented Mobility 9

Topic 2: Housing and Land Use 11

Topic 3: Economy and Goods Movement 12

Topic 4: Technology and Innovation 13

Regional Similarities and Differences Between Northern and Southern California 16

Conclusion **17**

Acknowledgments **23**

Appendix A. Visioning Session Schedule and Breakout Group Protocol **24**

Appendix B: Results from the Visioning Sessions **25**

Executive Summary

CTP 2050 Visioning Sessions: Purpose and Goals

Improving California's transportation system requires cross-sector collaboration, particularly as technologies, policies, and regulations develop simultaneously. The California Transportation Plan (CTP) 2050 aims to integrate perspectives from a diverse array of stakeholder that may not typically participate in the statewide planning process. The Visioning Sessions were conducted in two day-long visioning workshops in October 2018 in Southern and Northern California. Overall, these visioning sessions initiated a much-needed dialogue among experts and practitioners from diverse backgrounds and allowed participants to conceptualize idealized visions for California's transportation system through 2050. Key goals of the visioning sessions included:

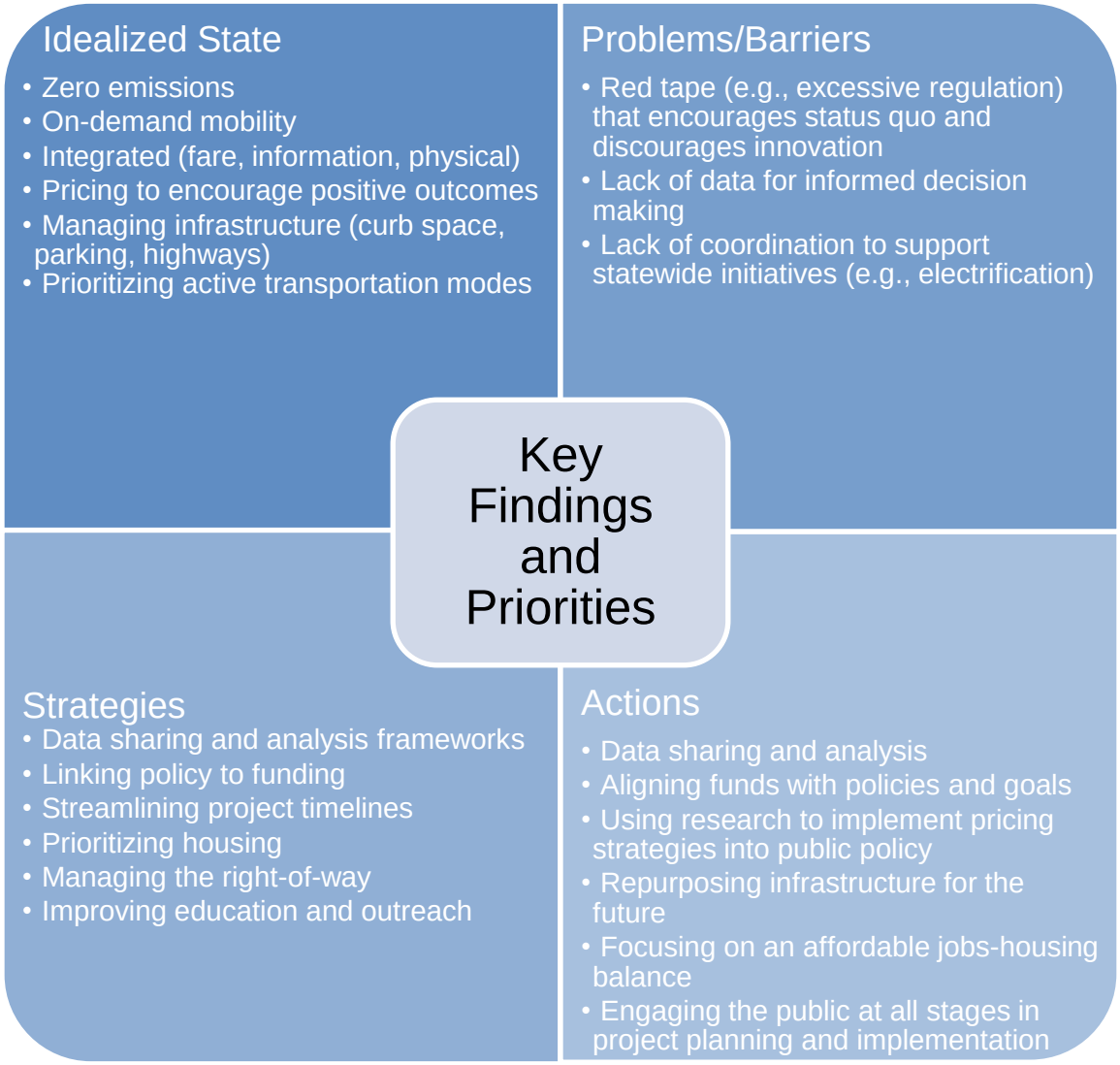
1. Developing visions for CTP 2050 incorporating diverse perspectives from an array of statewide stakeholders including private and public sector, academic, and non-profit experts;
2. Identifying existing policy and investment strategies to actualize the idealized states; and
3. Translating high-level policy and investment suggestions into actionable items.

The Visioning Process

A total of 46 organizations participated in both visioning sessions, including 16 representing the private sector, 19 from the public sector, eight from academia, and three non-profits. During each Visioning Session, participants were divided across four topic areas: 1) People-Oriented Mobility, 2) Housing and Land Use, 3) Economy and Goods Movement, and 4) Technology and Innovation. Throughout the day, participants in these groups developed a vision statement, identified key problems or challenges, identified potential strategies, and developed action items to implement needed strategies.

Key Findings and Priorities

The following themes emerged from both the Northern and Southern California workshops.



The Northern and Southern California visioning sessions had a number of areas that were fundamentally different, driven by differences in land use and transportation cultures between the regions. In the Northern California visioning session, participants emphasized reprioritizing existing funds and policy around higher-density development, rail transit, and transit-oriented development as key focus areas. In the Southern California visioning session, participants emphasized the need for additional funding for new projects and capacity enhancement. Southern California participants focused on the need for secure data management and addressing privacy concerns, while the Northern California group focused on how data analytics are essential to decision-making processes. Similarly, differences in the economy, technology, and goods movement were also apparent in both visioning sessions. While both regions emphasized the need for the logistics sector to evolve into a zero-carbon fleet (trucking, rail, and maritime), Northern California emphasized the potential for new technology applications for goods movement (e.g., Hyperloop or a sealed tube or system of tubes

through which a pod may travel free of air resistance or friction conveying people or objects at high speed) compared to automated vehicles in Southern California.

The visioning sessions identified five key priorities:

1. Establishing a dedicated statewide group of leaders to draft a data sharing framework for the public and private sectors. This necessitates further research on how to ensure privacy with user data, in addition to what level of data aggregation is appropriate, depending on the relevant policy questions. Additionally, this research could address uncertainty with respect to how to use data and how to reduce bias in data sets.

2. Clarifying funding priorities, then identifying those to fund, as appropriate. Direct funding sources, including bundled existing funding streams, toward priorities.

3. Creating an accessible and frequently updated platform to communicate findings of pilot projects, including lessons learned. Compare findings *across* reports via a transparent, dynamic resource to address confusion regarding how to move forward on existing research.

4. Launching housing development incentives that reflect community input. Encourage transportation agencies and land use authorities to collaborate when creating new housing initiatives.

5. Continuing outreach to foster cross-sector collaboration and conversations, such as these Visioning Sessions. This presents an opportunity for Caltrans, a statewide agency, to act as a liaison. Feedback from the Visioning Session participants indicated that dedicating time to addressing big-picture goals is valuable and rare. However, participants suggested that future sessions should include representatives from both rural and suburban areas to accurately depict challenges and goals of non-urban geographies.

This information will be used to inform the CTP 2050 Scenario Workshops.

Introduction

The California Department of Transportation (Caltrans) updates California's Transportation Plan (CTP) every five years. The CTP2050 integrates perspectives from a diverse array of stakeholders that may not typically participate in the statewide planning process. To do this, Caltrans contracted with the University of California, Berkeley to facilitate two day-long visioning sessions in October 2018 in Southern and Northern California. Overall, these visioning sessions initiated a much-needed dialogue among experts and practitioners from diverse backgrounds and allowed participants to conceptualize idealized visions for California's transportation system through 2050.

Goals of the Visioning Sessions included:

1. Developing visions for CTP 2050 by incorporating diverse perspectives from an array of statewide stakeholders which included experts from the private and public sector, academic institutions, and non-profit organizations;
2. Identifying existing policy and investment strategies to actualize the idealized states; and
3. Translating high-level policy and investment strategies into actionable items.

The Visioning Process

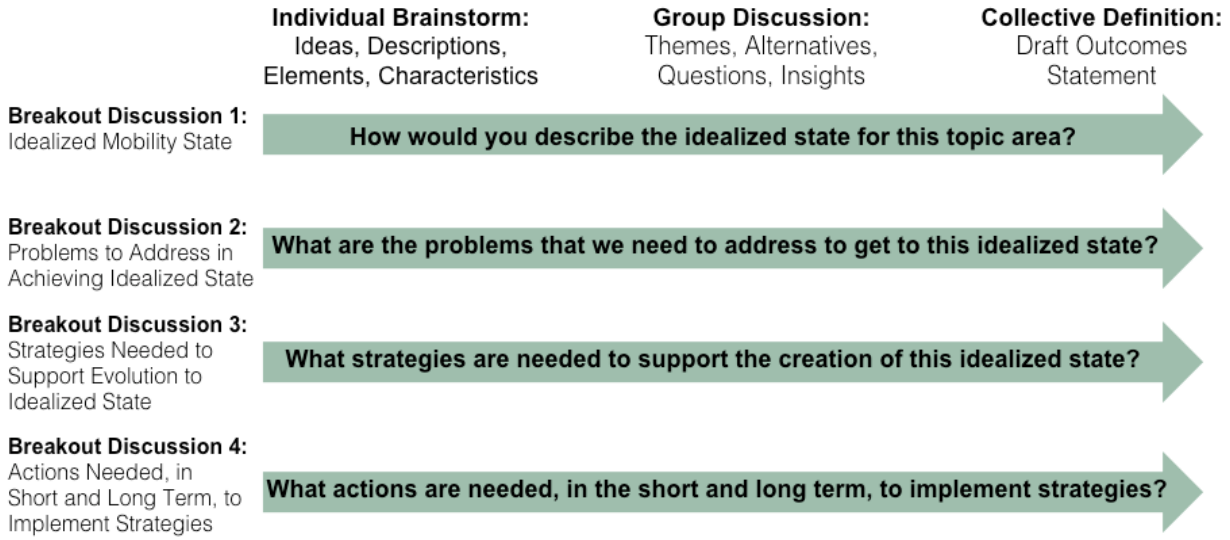
As part of the planning process, researchers identified stakeholders representing the private sector, public sector, academia, and non-profits to participate in one of the two visioning sessions. Researchers contacted 163 organizations. A total of 46 organizations participated in both visioning sessions, including 16 from the private sector, 19 from the public sector, eight from academia, and three non-profits. During each Visioning Session, participants were divided into groups across four topic areas for the entire day: 1) People-Oriented Mobility, 2) Housing and Land Use, 3) Economy and Goods Movement, and 4) Technology and Innovation. Throughout the day, each of these four groups discussed the following questions as part of a four-step planning process:

1. **Developing a Vision Statement:** How would you describe the idealized state for this topic area?
2. **Identifying Problems:** What are the problems that need to be addressed to get to the idealized state?
3. **Identifying Potential Strategies:** What strategies are needed to support the creation of this idealized state?
4. **Developing Action Plans:** What actions are needed, in the short and long term, to implement strategies?

Moderators led these four groups through parallel discussions that yielded topic-specific results. In each breakout discussion, the moderator first elicited responses from group members individually, then prompted group-wide conversation. By dedicating time for each person to write responses, facilitators received feedback from each group

member, making the experience as collaborative as possible. The discussion format is presented in Figure 1.

Figure 1. Discussion Format for Breakout Groups



Ultimately, each group produced vision statements, problem statements, strategies, and action-oriented steps, which related to their specified topic area. Please see the appendix for a copy of the discussion protocol and event agenda.

The findings from both the Northern and Southern California visioning sessions are discussed in the remainder of this document. These results highlight and synthesize perspectives from organizations not typically consulted during the long-range statewide planning process. These findings will subsequently inform the CTP 2050 Scenario Workshops, a forthcoming step in the plan's development. Those scenarios will be presented to stakeholders for revision and referenced as part of the CTP 2050 modeling and engagement processes.

Findings

In both Northern and Southern California, each of the four groups generated the following vision statements:

Table 1. Northern and Southern California Vision Statements

Northern California

People-Oriented Mobility	The idealized mobility state for Northern California includes equitable, affordable, sustainable access to transportation for urban, rural, and suburban residents, as well as for travelers and visitors. People have many quality transportation options to choose from, and multi-modal trips are seamless, efficient, and can be paid for at one time. The transportation experience is enjoyable and designed around people rather than private vehicles.
Housing and Land Use	The ideal land use and housing environment in 2050 is people and pedestrian focused and prioritized. It provides a variety of housing choices, including well-distributed affordable housing options. Complete, walkable communities are connected with high-quality transportation options.
Economy and Goods Movement	California increases its economic competitiveness by promoting equitable and sustainable outcomes. Goods movement focuses on an optimized multimodal network based on secure information technology, while minimizing adverse environmental and social impact.
Technology and Innovation	Ideally, mobility technology in 2050 provides the following: – Mobility on Demand: Seamless integration of many real-time choices. The integration and choice offerings are resilient to unpredicted disruptions. – Innovation and Efficiency of Systems: Connections of people to places with zero negative impact (zero emissions, zero inequities). Travel is enjoyable. – Pricing: Equitable pricing and use of services. Externalities (the side effects of consequences of transportation behaviors) are priced according to their impact on the system, people, and the environment. – Data: Data are standardized, shared, secure; the data inform decision making.

Southern California

People-Oriented Mobility	The idealized state for people-oriented mobility in 2050 includes an integrated transportation system, where payment systems and links are seamless. People have more transportation options, with an increase in convenient, high-quality multimodal and shared modes (including high capacity public transit for intra- and inter-regional travel). Clean, electric options and active modes are prioritized. To achieve seamless integration, data will need to be shared securely between the public and private sectors. The transportation system of the future will be equitable (accessibility for all), sustainable, healthy it focuses on improving quality of life.
Housing and Land Use	The idealized state of Housing and Land Use in Southern California allows people to live their daily lives without driving. A variety of multimodal transportation options and housing choices are available to residents. This includes improving access to jobs (and a balance of jobs and affordable housing, such that an equal number of housing units are affordably priced and in close vicinity to jobs); enhancing affordability; increasing density along corridors and activity centers; and preserving natural and farmlands. Areas should be resilient and equipped with new infrastructure to leverage technological innovation.
Economy and Goods Movement	A reliable and efficient transportation system that provides economic and environmental benefits, while broadly and equitably supporting a diverse workforce and staying resilient to economic and technological shifts.
Technology and Innovation	We use data and technology to measure and minimize environmental externalities (the side effects of consequences of transportation behaviors); to determine how to access opportunities (e.g., educational opportunities, economic opportunities); and to optimize how we use space and infrastructure. Our values drive our decision making by informing what data we collect and analyze. Integrated systems (e.g., utilities, pricing

	services) enable us to balance optimized values per individual with societal benefits by incentivizing desired outcomes. We use technology as a tool to create the society we want, showing users that they are co-creators of this system by making their mobility options transparent.

Similarities and differences among the vision statements help account for variations in the problems, potential strategies, and action items identified between groups and between the Northern and Southern California visioning sessions. The findings of each breakout theme are detailed in a matrix containing summarized points by Northern and Southern California in Appendix B.

Topic 1: People-Oriented Mobility

The People-Oriented Mobility participants produced similar vision statements in Northern and Southern California. In the idealized future state, physical links and payment systems for public transit are seamless, enabling people to travel from their origin to destination using a variety of modes. Wait times and inconvenience are minimized. While both regions addressed current land use issues, including a need for more density, the Northern California group addressed compact development more frequently. The Northern California participants also discussed in greater depth the spatial mismatch between jobs and residential areas.

Both regions defined a future in which all people have access to sustainable and active transportation modes. Participants defined sustainability as a shift toward shared use of vehicles or high-occupancy modes, passenger rail, and zero-emission vehicles. However, those in the Southern California session specified a need to focus on the promotion of *low-energy* modes in addition to electric motorized modes. In their future state, electrification would be complemented with higher occupancy vehicles and a shift toward low-energy modes, like bicycling. In addition, sustainability, safety, affordability, and accessibility were all common characteristics of the two future visions. For Southern California, data security was an additional component of their ideal future state.

Rail was a key element of the Northern California future state, which was not originally mentioned in the Southern California session. The Northern California group expressed concern over rail infrastructure requirements and funding needs. They suggested supporting capital investments with operational funds for rail infrastructure. When probed, the Southern California participants included rail as part of their vision for the future, and they perceived rail as a component of a high-capacity public transit, multimodal future.

Challenges to creating the future idealized state included a culture centered on privately owned vehicles. In this culture, resources (e.g., funds), regulations, and market forces (e.g., consumer choice) heavily favor the privately-owned vehicle. Participants also explained that stakeholders and the public lack a unified vision when planning for the future and solving today's problems. Participants cited mistrust of government based on perceptions of wasteful government spending; this mistrust inhibited public support for transportation solutions. Both groups expressed a need for more collaboration across different levels of government and between public and private entities. Southern California participants identified non-governmental organizations as potential mediators between the public and private sectors, especially with regard to data sharing and protecting individual privacy. The Southern California group also mentioned a need to avoid "technological determinism," i.e., the idea that technology will solve all problems. Northern California participants emphasized pricing as a feasible method to drive change.

The Northern and Southern California groups discussed distinct perspectives on the role and usefulness of data collection and management. Northern California participants identified the need for a shared platform across modes to increase efficiency in travel time and transfers. They also mentioned data as a possible metric for evaluating program success. The Southern California group, on the other hand, expressed concerns over data management, and they highlighted a need to develop management strategies. Southern California participants viewed data sharing as a key component to improving public-private partnerships and solving mobility issues. However, they were also very concerned about the potential for privacy violations and the lack of transparency in the current market. One of their main actions for the future involved developing a "Data Bill of Rights." Managing data did not directly factor into Northern California's list of proposed actions. However, this may have been due to one of the participants in the Southern California session being the main voice for data concerns and leading many of the discussions surrounding it, rather than the topic being initially raised by multiple participants.

Topic 2: Housing and Land Use

Discussions across the Northern and Southern California regions differed most significantly for the Housing and Land Use topic area. While both regions emphasized repurposing the suburbs, conversations were different in discussing housing options. The Northern California group highlighted a geographically universal need to increase affordable housing. The Southern California group discussed, more particularly, increasing a *balance* between housing options and job opportunities to allow people to live in housing near their jobs, priced according to their income levels.

Responses to the Housing and Land Use theme illustrated differences in the transportation and planning challenges in the Los Angeles and San Francisco metropolitan regions. The Vision Statements which defined the idealized state for housing and land use in California differed between the two regions. While Northern and Southern California participants all expressed the need for higher density, the Southern California group focused more on increasing job accessibility and creating a network of "centers and corridors." In this state, high-density centers would be connected via corridors, optimizing existing infrastructure including highways. Northern California participants, on the other hand, focused on how higher densities would enable people-oriented design on a local scale.

When discussing barriers to achieve the idealized state, participants in both regions targeted the decentralized governance systems as inhibiting system-wide changes. However, Northern California participants expressed more concerns with barriers from local opposition to housing (i.e., NIMBY-ism ["Not In My Backyard"] or resistance to new high-density housing developments) and public transit developments. Southern California participants discussed the difficulties of grappling with a significant auto-centric culture and anti-transit bias in the region.

In conversations proposing strategies to address these barriers. The Northern California group focused on incentives and process improvements to the local planning infrastructure to streamline planning processes and encourage high-density development. Additionally, Northern California participants suggested that statewide agencies, such as Caltrans, play a larger role in California's housing and land use policy. The group highlighted opportunities for actions to improve community transportation services, addressing politicized local planning barriers to improving active transportation infrastructure and repurposing parking. The Southern California group focused on regional strategies that would facilitate building housing and planning

coordination at higher levels of government. In Southern California, participants discussed actions to address regional or state-level policies, such as loosening restrictions on building, shifting land use authority, and investing in stronger regional governance structures.

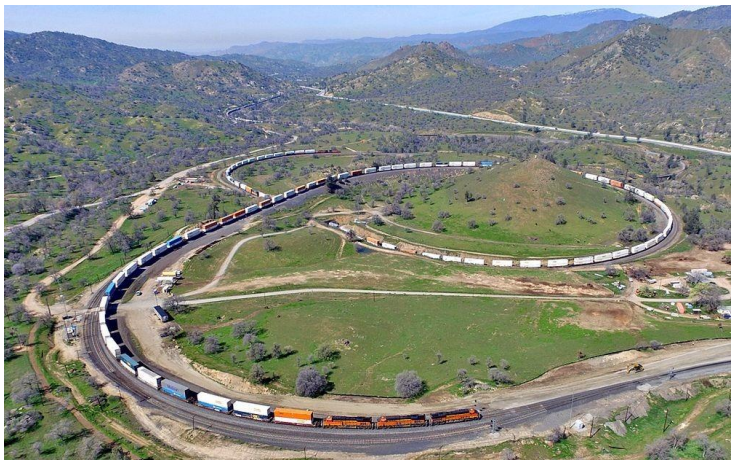
Topic 3: Economy and Goods Movement

Across Northern and Southern California, there were notable recurring themes to improve the economy and goods movement in California: a stronger dedication and quicker transition to zero-emission energy, improved communication between the public and state agencies, and a transportation system that all communities and workforces can access. Both the Northern and Southern California groups discussed regulatory processes, zero-emission technology, adjusting educational curriculum, and the California's goods movement systems.

To reduce emissions in the freight sector, the Northern California group proposed electric hyperloop technology. Southern California participants suggested incorporating automated vehicles to reduce emissions through improved goods movement efficiency. Participants noted as barriers to electrification the high upfront costs of zero-emission technologies and the state's dependency on centralized power generation and distribution. Both groups suggested pricing externalities, using data-driven pricing mechanisms, to create support for zero-emission technology adoption.

Participants in the two regions also noted the potential for new regulations to increase the flexibility of the state's freight sector. Procurement processes could promote innovation amidst risk calculations, as suggested by the Northern California group. Southern California noted that identifying how statewide plans and projects could be adapted could improve policy effectiveness and malleability.

The Economy and Goods Movement regional group discussions also varied in depth and specificity. This was partially due to differences in group sizes and dynamics. In Northern California, participants contributed broader viewpoints, which resulted in a discussion about the surrounding institutions and elements affecting the economy and goods movement. For example, participants discussed the energy system and market, California's education system, and current regulatory structures. As a result, the Northern California section's solutions could be applied by Caltrans and/or other agencies.



In contrast, the Southern California discussion about the transportation economy and California's goods movement system resulted in fewer, but more specific, solutions (e.g., increasing infrastructure resilience, economic development through the innovative mobility market). The Northern California group explored a variety of themes. Participants regularly returned to a discussion of energy, education, the workforce, and the California's political structure.

Both regions examined opportunities for the transportation sector to address the income divide by:

- Increasing access to jobs
- Recognizing where those job options are located
- Creating flexible transportation options that allow people to shift their commute patterns

As noted in Southern California, limited data on the current workforce and job trends prevents system-wide shifts in how people access their workplaces. Additionally, technology adoption outpaces the system's ability to adapt. The Northern California group suggested incorporating frequent, consistent, expedient, and holistic community engagement on plans and projects. Southern California participants discussed aligning transportation plans and investments with economic development and workforce goals. For example, developing and incubating innovative technologies can create economic opportunities. Building workforce capacity to address innovation, particularly in the public sector, can accelerate government adoption of new technologies.

Topic 4: Technology and Innovation

Group members in the Technology and Innovation topic area explored how technology and innovation would ideally be deployed through 2050. Instead of focusing on specific technologies (e.g., automated vehicles, hyperloop), the Vision Statements in both Northern and Southern California prioritized integration and Mobility on Demand (MOD). Both regions underscored increased equity as foundational to the ideal state, by referring to equal access to transportation options for disadvantaged populations. Group members in Northern and Southern California referenced the phrase "transportation as a human right." Optimizing user choice, while maximizing the social good was stated as a goal in both groups.

In the Idealized State discussion, the central focus of the Southern California group was envisioning technology that reflected societal values, i.e., aligning individual choice with the benefit of the greater good. The group also discussed investing in "mobility as a utility," such that investment is considered a requirement, and that mobility is a right for all, rather that a choice that one can opt out of. This paralleled the Northern California group experience, in which "transportation as a human right" arose out of a discussion about pricing and increased affordability. Much of the discussion for the Northern California group centered on an idealized MOD system, with fully integrated multimodal trip planning and single payment technology that is resilient to disruption and allows for seamless connections to many modal choices.

Throughout each of the four topic discussions, the theme that both groups raised most consistently revolved around data. The conversations covered insights into data sharing, data privacy and security, data management, data standards, and data capabilities of the public versus private sector. Data sharing and standardization will be fundamental to the ideal state. In Northern California, participants discussed challenges in addressing misunderstandings across the public and private sector, including miscommunications about which data are important and necessary.

While this idea was addressed in Southern California, the group dedicated more time to discussing how to navigate privacy concerns, since some personal data can be traced back to individuals. One highlight from the Southern California group was the need to find a balance between the usefulness of disaggregated data and the privacy of individuals. It was argued that figuring out this equilibrium state would encourage more data sharing among entities, both private and public. The Northern California group also focused on data sharing, noting that slow procurement cycles associated with public-private partnerships were often responsible for the lack of collaboration between the two entities. Participants suggested that policy changes, such as removing institutional

barriers to provide data access for regulatory reasons or developing a statewide data strategic plan, could help bridge the gap between data inconsistencies within the public and private sector. By aligning incentives to goals, both groups agreed that harnessing data would enable actualization of their respective idealized states.

Both Northern and Southern California conversations focused on how to fund pilot projects, research, and procurement across sectors and modes to optimize pricing schemes. While the groups touched on a similar overall set of themes, the amount of attention given to each theme and the ways in which they were discussed, varied. For instance, in Northern California, participants discussed how much they envisioned certain trips in the future ideal state to cost. The group then expanded on how costs of rides could translate into new funding sources for services, using technology to track prices. Though briefly mentioned in Southern California, pricing strategies were not discussed as thoroughly. In Southern California, pricing was discussed with respect to pricing policy designs that optimize user choice while prioritizing the public good.

Regional Similarities and Differences Between Northern and Southern California

Both visioning sessions identified common problems and potential across both regions:

Problems

1. Lack of a shared vision across agencies
2. A burdensome regulatory environment that discourages affordability and stifles innovation and economic competitiveness
3. Lack of defined and standardized priorities for funds and research
4. Bias and/or incomplete data sets

Strategies

1. Clarifying funding priorities
2. Developing creative financing (e.g., leveraging different funding sources, directing funds from pricing into public transit)
3. Pricing transportation options based on their impacts to the system (e.g., emissions, congestion, time-of-day)
4. Incentivizing choices to move the system toward clean energy and equity targets (e.g., monetary incentives)
5. Sharing data across public and private sectors (e.g., a third-party data platform)
6. Standardizing metrics
7. Managing curb space (e.g., through policy and technological solutions)
8. Changing existing parking practices (e.g., remove parking minimums, unbundle parking from housing)
9. Integrating zero-emissions technology into goods movement systems (e.g., trucking, rail, and maritime)
10. Enhancing outreach and education with the public

Although the visioning sessions were similar for most groups in the Northern and Southern California discussions, the Housing and Land Use vision had marked differences. The Northern California discussion focused heavily on how to create walkable communities, including developing more active transportation infrastructure and addressing resistance to high-density development. In Southern California, group discussions noted walkability, but they focused more on how to maximize the efficiency of regional infrastructure (e.g., highway corridors). The Southern California group identified the auto-oriented culture as a significant barrier, as well as fragmentation in land use decision stifling innovative planning. The Northern California group noted cultural resistance to high-density housing development, but they acknowledged the necessity of this type of development for creating the future state. Table 2 provides a brief comparison of regional differences identified in the visioning session process.

Table 2. Regional Distinctions

	Northern California	Southern California
People-Oriented Mobility	*Strategy:* Equitable Vehicle Miles Traveled (VMT)/congestion pricing *Strategy:* Support capital investment with operational funds	*Problem:* Fragmented governance structures *Strategy:* Standardize data management practices
Housing and Land Use	*Problem:* Biased planning processes lack community engagement *Strategy:* Proactive zoning *Strategy:* Inform lower parking minimums with research to show real demand for parking *Strategy:* Dedicate right-of-way (including highway right-of-way) toward non-auto-oriented purposes	*Problem:* Fragmented governance structures *Strategy:* Grant land use authority to regional governance *Strategy:* Increase corridor density
Economy and Goods Movement	*Strategy:* Revise CTP 2045 scoping plan with binding greenhouse gas reduction targets *Strategy:* Fund public purchase of rail corridors *Strategy:* Fund a statewide Data Security Institute	*Strategy:* Promote transportation as a new sector of the economy to spur job creation
Technology and Innovation	*Strategy:* Redirect existing funds into public transit *Strategy:* Data sharing public-private partnerships	*Strategy:* Data sharing frameworks

Conclusion

The following themes emerged across the four topic areas in both Northern and Southern California:

1. Idealized State

- California's transportation system produces zero emissions;
- Real-time user choices are prioritized, transparent, flexible, and resilient to disruptions in the system
- Seamless integration of modes, routing, payment systems
- Pricing: Externalities are priced accurately, using data-driven measurements pricing balances individual priorities with societal benefits, cost calculations are available and transparent to users
- All community members benefit from improved health, job access, and transportation options
- Existing infrastructure (e.g., curb space, parking, highways) is managed based on data-driven decisions
- Communities prioritize active transportation modes; this is reflected in land use decision making
- High-speed, convenient, efficient modes are available for all trip purposes
- Areas with high trip densities are supported by mass and/or shared transit.

2. Problems/Barriers

- Political status quo and outdated public engagement processes inhibit innovation
  - Distrust exists among public sector, private sector, community members
  - Lack of public political will and agency leadership slow changes;

- Lack of guidance to increase sharing of high-quality data for decision making
  - Development of data sharing guidelines is prevented by uncertainties regarding which data types apply to distinct problem-solving efforts
  - Privacy concerns emanate from confusion on how to use and protect personal data
  - Inadequate resources for use of data to answer questions across agencies;
- Lack of coordination for mass electrification
  - Lack of knowledge regarding integration of energy systems, transitioning the grid to renewables, and ensuring placement of and responsibility for charging infrastructure.

3. Strategies

- Creating a framework for flexible data sharing and analysis
- Combining and integrating of existing funding sources
- Pricing to incentivize sustainable transportation and accurately reflect externalities
- Establishing priorities to dedicate funds and prevent funding waste
- Adjusting procurement processes to increase speed of project roll-outs
- Modifying land use decision-making processes to prioritize appropriate housing developments
- Maximizing curb-use efficiency, and prioritizing people-oriented mobility
- Improving communication, education, and outreach to the public.

4. Actions

- Data Sharing, Management, and Analysis:
  - Establish a leadership group (e.g., external nonprofit, think tank, internal working group) to:
    - Draft guidelines for needed data types to answer various questions
    - Provide examples of data analysis
    - Answer questions regarding privacy concerns
- Funding:
  - Confirm that funds are allocated according to their priority rankings
  - Pool existing funds (i.e., for pilot projects, research and development efforts)
  - Provide funding to public transit, especially in areas with high trip frequencies;
- Pricing:
  - Measure and price externalities through research
  - Companies charge users based on system impacts
  - Public sector incentivizes transportation behavior that improves the system’s accessibility and equity
- Repurposing Infrastructure:
  - Implement data-driven curb management policies based on transparent analysis
  - Obtain public rights of rail ownership with parallel goods movement

    - Repurpose highway right-of-way toward non auto-oriented outcomes;
- Land Use Policy:
    - Prioritize affordable housing development based on regional needs
    - Detatch parking requirements from new housing developments
    - Incentivize land use policies that increase active transportation modes
    - Identify which regional governance policies can be adjusted to redistribute land use authority
- Communication/Outreach:
    - Make results of pilot projects available to the public
    - Create a platform to track investments and funds through project implementation
    - Creatively engage communities in planning processes (e.g., beyond surveys or focus groups)

Conversations about the remaining three topic areas reflected nuanced differences. In both People-Oriented Mobility groups, funding strategies were named. However, only the Northern California group identified funding "waste" as a challenge to address. The Southern California group suggested raising more operational funds for projects. The Northern California group also highlighted rail and high-density development more frequently than the Southern California group. Regarding data, Southern California participants emphasized secure data management to address privacy concerns, while the Northern California group focused on how data analytics are essential to decision-making processes.

Across the two regions, the visions for the Economy and Goods Movement topic area underlined the necessity of transitioning California's freight systems to using zero-emission technologies. However, *which* specific technologies differed across the two regions. The Northern California group included hyperloop in the future state. In Southern California, AVs could reduce emissions from goods movement. The economy-related discussions were also slightly distinct. Northern California group members connected education to a more equitable workforce, highlighting opportunities for K-12 curriculum development. Economy discussions in the Southern California region referenced the mobility sector's potential in stimulating economic growth.

In the Technology and Innovation topic area discussions, both regional groups suggested the use of pricing as a strategy to address externalities. The Southern California group wanted the cost of rides to reflect user impacts, while the Northern California group discussed how a seamless platform would ideally integrate mode payments, with dynamic pricing of transportation options. This conversation also addressed technological and institutional hurdles to creating such a platform. Technological challenges focused on the secure sharing of data and institutional challenges included integrating different fare payment structures (e.g., monthly passes versus per ride passes) and legally sharing data between different transportation entities (e.g., account information, user information, etc.). The Northern California Technology and Innovation group also emphasized using public transportation as the

“backbone” of the Northern California system, and using innovative modes to augment public transit. Funds from priced externalities could flow back into transit.

The Housing and Land Use visions of the future state were most distinct across the two regions. Both groups also identified different problems to address. Key distinctions across the Northern and Southern California Housing and Land Use topic are highlighted in Table 33 below.

Table 3. Distinctions Across Northern and Southern California Housing and Land Use Topic Area

	Northern California	Southern California
Housing and Land Use	**Vision:** More affordable housing and dense housing developments in walkable communities. Land use decisions prioritize pedestrians and active transportation modes. **Problem:** Planning processes skew toward historical biases, community voices are not well represented, active transportation initiatives are stifled, housing developers are not incentivized to build transit-oriented developments **Strategies:** Proactive zoning processes, repurpose highway right-of-way, discourage privately owned vehicles, lower and/or remove parking requirements for new housing developments	**Vision:** Jobs and housing options are "balanced," meaning that housing options are priced based on which jobs residents have. Increased corridor density and highway efficiency. **Problem:** Fragmented, disaggregated government structure **Strategy:** Grant land use authority to regional governing body

In Southern California, participants highlighted governance *structures* (i.e., organizational inefficiency) as inhibitive to improving existing infrastructure use. In the future state, existing highway infrastructure would be used to move groups of people between dense Southern California hubs more efficiently. The Northern California group alluded to repurposing infrastructure entirely, creating pedestrian-focused communities with public transit access. The Northern California discussions highlighted active transportation access within these communities more than improving the larger regional network.

Based on this analysis, the following priorities are recommended:

1. Establish a dedicated statewide group of leaders to draft a data sharing framework for the public and private sectors. This necessitates further research on how to ensure privacy with user data, in addition to what level of data aggregation is relevant, depending on the policy questions. Additionally, this research could address uncertainty in to how to use data.

2. Clarify funding priorities, then identify which priorities are being funded appropriately. Direct funding sources, including bundling existing funding streams, toward priorities.

3. Create an accessible and frequently updated platform to communicate findings of pilot projects, including lessons learned. Comparing findings *across* reports via a transparent, dynamic resource could address confusion about moving forward on existing research.

4. Launch incentives for housing developments that reflect community input. Encourage transportation agencies and land use authorities to collaborate when creating new housing initiatives.

5. Continue outreach to foster cross-sector collaboration and conversations, such as these Visioning Sessions. This presents an opportunity for Caltrans, a statewide agency, to act as a liaison. Feedback from the Visioning Sessions participants reflected that dedicating time to addressing big-picture goals is valuable and rare. However, future sessions should include representatives from rural and suburban areas to accurately depict challenges and goals of non-urban geographies.

Acknowledgments

The research team would like to thank Reza Navai, Gabriel Corley, Patrick Record, and Dakota Smith for their input and collaboration throughout the designing, planning, and implementation of the Northern and Southern California Visioning Sessions.

We would also like to thank the moderator and notetakers from the University of California, Berkeley's Transportation Sustainability Research Center: Elliot Martin, Adam Stocker, Adam Cohen, Mikaela Hoffman-Stapleton, Emily Farrar, Michael Randolph, and Alex Nelms.

Cambridge Systematics also dedicated time to attend and participate in the Visioning Sessions as preparation for further California Transportation Plan 2050 (CTP 2050) development, which we greatly appreciate. The staff of the David Brower Center and colleagues at the Southern California Association of Governments were gracious with their hospitality as hosts for the Northern and Southern California Visioning Sessions, respectively.

We are also grateful to the private sector, public sector, academic, and non-profit experts for their participation in, contributions to, and feedback on the Visioning Sessions. This group includes representatives from the following agencies, departments, and companies:

AC Transit
AECOM
Bay Area Rapid Transit
Bird Rides
California Transportation Commission
Capitol Corridor
car2go
City of Pasadena
Cruise
Fehr+Peers
Fixing Angelinos Stuck in Traffic (FAST) and FASTLinkDTLA
LA Metro
Lyft
Maven
Metropolitan Transportation Commission
Motivate
Perkins-Will
Port of Long Beach
Riverside County Public Health Department
Sacramento Area Council of Governments
San Francisco Bay Area Planning and Urban Research
San Francisco County Transportation Authority
San Joaquin Joint Powers Authority
South Coast Air Quality Management District
Southern California Association of Governments
TransForm
Transpo Group
Uber
UC Berkeley
UC Davis
UC Irvine
UC Riverside
UCLA

Appendix A. Visioning Session Schedule and Breakout Group Protocol

In each session, moderators guided their respective exploratory groups to consider the problems that California currently faces, discuss an idealized state, and then develop possible strategies and next steps to arrive at that idealized state.

- 9:00-9:45am: Opening Remarks

- **Discussion 1 (10-11am):** What current problems are creating barriers to change?
    - **Outcome:** Identification of high-priority problems in the specified topic area.
    - *How are economic development, social equity, public health, and climate change affected by California's transportation system?*
    - *What are the key obstacles to advancing to a more sustainable transportation system (e.g., finance, policy, behavioral change, etc.)?*

- **Discussion 2 (11:15am-12:15pm):** When you envision the future, how would you describe an idealized state?
    - **Outcome:** Visualization of an ideal transportation and land use context in the future.
    - *How are people and goods being transported in this future world?*
    - *What are the outcomes we actually want to achieve?*
    - *What principles and values underlie this future mobility world and its surrounding communities?*

- **Discussion 3 (1:15-2:15pm):** How can policy and investment strategies support the creation of such an idealized state?
    - **Outcome:** Articulation of policy and investment strategies to guide decision making when designing policies and investments.
    - *How will we achieve this idealized state through policy and investment?*
    - *What else is needed to create this state?*

- **Discussion 4 (2:30-3:30pm):** What actions are needed to achieve this idealized state?
    - **Outcome:** Action-oriented identification of next steps that local, regional, and statewide governments, industry, and academia can take back to put policy and investment strategies into effect.
    - *What must happen immediately, in both the near future, and in the longer term to encourage effective policy and investment decision making (e.g., policies, tools, data, partnerships)?*
    - *What metrics will we use to measure progress?*

- 3:45-4:45pm: Closing Remarks/Feedback

Appendix B: Results from the Visioning Sessions

Table B.1 Northern California Results

	Developing a Vision Statement	Identifying Problems	Identifying Potential Strategies	Developing Action Plans
People-Oriented Mobility	• Equitable, affordable, sustainable access to transportation for all users (e.g., residents, businesses, visitors, etc.) and built environments (e.g., urban, rural, and suburban) • Many quality multi-modal options (e.g., multiple options available for the same origin and destination pairs) • Multi-modal trips are seamless and efficient (e.g., mobility hubs, integrated fare payment)	• Policies, infrastructure, and the built environment encourage private auto use • Unreliable public transportation (e.g., infrequent service, too many transfers, journey time too long). • Lack of political will and public support to endorse change • Economic/market forces favor private auto-use • Mistrust of public institutions, perceptions of funding waste	• Pricing (e.g., tolls, occupancy, time of day) • Partnerships • Thought leadership/planning • Investments in active transportation modes and infrastructure • Investments in infrastructure (e.g., electric vehicle charging) • Data-driven decision making	• Institute parking maximums • Unbundle parking from housing • Financial incentives for developers incorporating active transportation • Integrated statewide platform for planning, payment, and parking • Curb space management that prioritizes short-term, high-occupancy use • Equitable VMT/Congestion pricing • Support capital investment with operational funds
Housing and Land Use	• People and pedestrian focused and prioritized • Well-distributed affordable housing (e.g., jobs/affordable housing balance) • Complete, walkable communities connected by high-quality options	• Achieving shared visions, including compiling *all* community member voices • Process for land use and housing development is too local and not regionally coordinated • Market forces and speculative investment create undesirable transportation outcomes (e.g., sprawl, greenfield development, etc.)	• Fund people-focused mobility and housing • Prioritize investment in low-income and disadvantaged communities (e.g., linking active transportation investments to Cal Enviro-Screen data) • Streamline land use planning decision-making processes • Fund organizational training to transform agency processes • Regional land use and zoning visions and coordination (beyond sustainable communities strategies to actual project implementation)	• Demonstrate actual parking demand to justify lower parking minimums and increase housing supply • Relinquish public right-of-way for non-auto-oriented purposes • Consider road pricing • Develop a plan to address suburbanization of poverty • Possibly repeal and/or rework Proposition 13 • Repurpose highway right-of-way (e.g., air rights, placing facilities below grade, etc.)

Economy and Goods Movement	• Optimize multimodal goods movement through information technology applications • Minimize environmental and social impact (e.g., emissions, truck parking, etc.)	• Today's system is good at protecting itself: political agents preserve the status quo • Equitable policy is limited by data gaps • System depends on outdated energy sources and regulations • Lack of exposure hinders education	• Clarify and incentivize clean energy targets • Obtain public rights of rail ownership • Parallel goods movement and passenger movement • Improve curriculum for systems planning	• Revise 2045 scoping plan with binding targets • Fund public purchase of rail corridors • Fund a Data Security Institute • Establish K-12 curriculum to focus on the new economy
Technology and Innovation	• Leverage opportunities with Mobility on Demand • Externalities are priced based on impacts to the system • Data are standardized, secure, and shared to inform decision-making	• Public funding systems are incompatible with technology development • Public and private sector analytical mismatch • Lack of strong communication of results • Externalities are unpriced and unmeasured	• Shift funding sources into transportation modes that vary based on density • Redirect existing funds into public transit • Establish public-private partnerships for data sharing • Integrate cost of externalities into mode pricing	• Evaluate priorities and fund them appropriately • Research to define and measure externalities • Create data sharing frameworks • Make results of research and pilot programs publicly accessible and understandable

Table B.2 Southern California Results

	Developing a Vision Statement	Identifying Problems	Identifying Potential Strategies	Developing Action Plans
People-Oriented Mobility	• Enhance end user convenience (e.g., multimodal integration, integrated fare payment, etc.) • High capacity inter-regional travel • Secure data sharing between the public and private sectors (e.g., a third-party data repository) • Transportation is focused on quality of life outcomes (e.g., reduced emissions, improved health, etc.)	• Fragmented governance (e.g., too many jurisdictions and the lack of centralized regulatory oversight) • Lack of priorities in how to spend public funds • Physical constraints (e.g., lack of curb space) • Auto-centric culture • Barriers to communicating with the public • Public distrust of governmental agencies, especially with regard to fund management	• Risk management of public data (e.g., a third-party data repository) • Developing people-centric infrastructure (e.g., investments in active transportation, integrated fare payment, mobility hubs, etc.) • Promote active modes through public outreach and education • Variable pricing based on emissions and/or trip demand	• Non-profit strategy/legislation for data management (e.g., Data Bill of Rights) • Catalog spatial infrastructure • Joint data acquisition by metropolitan planning organizations (MPOs) • Reallocate existing infrastructure financing (capital and operating budgets)
Housing and Land Use	• Promoting lifestyles that do not require a private automobile (e.g., active transportation investments) • Improving access to jobs through a jobs-affordable housing balance (e.g., planning for an equal number of housing units at an accessible price point commensurate to the jobs in the same vicinity) • Increasing density along corridors and activity centers (e.g., implementation through regional land use)	• Households do not have sufficient options regarding where to live • High barriers to housing relocation • Auto-centric culture • Adverse perceptions of public transit • Fragmented governance	• Developer incentives that enable parking reductions and housing variety (e.g., location, size, density, lot size, etc.) • Streamlining excessive building codes that unnecessarily increase housing costs • Grant land use authority to regional governance (e.g., a coastal commission model for development around high speed rail stations and other mobility hubs) • Curb space management (through policy and technology) • Develop infrastructure to support information technology	• Pricing the curb • Require density for local/MPO transportation funding • Implement transit-oriented redevelopment program • Reduce excessive building codes • Identify funding resources • Launch a sustainable development bank
Economy and Goods Movement	• Reliable and efficient transportation system provides economic and environmental benefits	• Regulatory environment cannot adapt to address future solutions	• Guide goods movement toward zero-emissions technology (requires	• Regular meetings between the California Transportation Commission and Public Utilities Commission

	• Transportation broadly and equitably supports a diverse workforce and is resilient to economic and technological shifts	• Innovation incentives do not align with operational needs of the system • Lack of coordinated charging infrastructure development	interstate coordination to ensure clean fleets) • Promote public transit and mobility as a new sector of the economy • Invest in resilient infrastructure (both environmentally and financially sustainable)	• Work nationally to build a battery market • Price externalities (e.g., idling, polluting vehicles, etc.) • Focus equally on passenger movement and goods delivery
Technology and Innovation	• Data and technology are used to measure and minimize environmental externalities • Optimize how space and infrastructure (e.g., curb space) are used • Large-scale systems (e.g., utilities, pricing) are integrated • Pricing reflects values and user impacts on society	• Lack of a shared and standardized vision for desired outcomes • Inconsistent definitions and metrics • Biased data sets • No integrated platform for decision makers • Legislative landscape slows or inhibits research and pilot programs	• Pool and share resources (e.g., funding for research and development, analytical tools, lessons learned) • Develop and test data sharing frameworks • Standardize metrics • Pricing and incentives	• Encourage public-private partnerships (e.g., through the regulatory/legislative policy, risk-sharing partnerships, etc.) • Test policy designs through pilot projects • Pool funds (across jurisdictions and between the public and private sectors) • Track funds • Create a data working group • Define minimum privacy requirements (e.g., through legislation or regulations) • Launch platform to communicate research (e.g., a third-party data platform) • Collaborate with private sector to design pricing schemes