



Memorandum

8.1

1111 Broadway, Suite 800, Oakland, CA 94607 • 510.208.7400 • www.AlamedaCTC.org

DATE: June 18, 2020

TO: Alameda County Transportation Commission

FROM: Saravana Suthanthira, Principal Transportation Planner
Chris G. Marks, Associate Transportation Planner

SUBJECT: 2020 Countywide Transportation Plan: New Mobility Framework Update

Recommendation

This item provides the Commission with an update on the New Mobility Framework, which will be a part of the 2020 Countywide Transportation Plan (CTP). This update covers the overall approach, key elements of the framework, and next steps. This item is for information only.

Summary

The transportation landscape has been transformed by new mobility technologies and services and the pace of that change continues to accelerate. In 2019, Alameda CTC launched an effort to establish a technology framework and action plan—the New Mobility Framework (Framework). The Framework is intended to support Alameda CTC and local jurisdictions implement new mobility technologies and services in a way that capitalizes on opportunities and strategically manages risk, and encourage information sharing across the county. To guide this effort, Alameda CTC formed a Technology Working Group (TWG), with representatives from local jurisdictions and transit agencies with experience working on new and advanced technologies and projects. The Framework identifies overarching Goals, a suite of Smart Strategies, and specific Actions within several new mobility Technology Categories. Staff will present an overview of the Framework, which will be the technology component of the 2020 CTP.

Background

As transportation technology evolves rapidly it impacts access and overall mobility for everyone, both positively and negatively. Alameda CTC initiated the Framework development as a proactive plan for Alameda County to have a framework to leverage any potential benefits from new mobility technologies and services while strategically managing and protecting the public infrastructure and the public from any associated risks. The Framework has been developed with a clear

acknowledgement of the rapid and continuing change throughout the transportation industry and an understanding that the Framework needs to be revisited and updated periodically.

Concurrently, Alameda CTC is engaged in development of the 2020 CTP, which will be completed in late 2020. In looking forward to 2050, new mobility technologies and services are a key topic that warrant a concentrated effort to explore opportunities and challenges. The Framework will provide a foundation for agency policy, advocacy and funding decisions as Alameda CTC and partner agencies, as well as the private sector, advance new mobility technologies and services.

The Framework is the culmination of a variety of agency efforts. Alameda CTC began discussions around new mobility at the May 2019 Commission Retreat, with a presentation on new technologies. In October 2019, staff shared the current understanding of the use and effects of Shared Mobility and Transportation Networking Companies (TNCs) at ACTAC and PPLC. Around that time, Alameda CTC formed the TWG to guide the overall development of the Framework and provide a forum for information exchange. The TWG consists of members from local jurisdictions within each Planning Area of Alameda County, as well as AC Transit and LAVTA, that are implementing technology initiatives. The TWG's main role is to support the Framework by sharing expertise on new mobility initiatives, local implementation issues, priorities and constraints, and conceptualize regional and national best practices in a local context.

New Mobility Framework

The Framework is intended to support Alameda CTC and local jurisdictions as they implement new mobility technologies and services to capitalize on opportunities and strategically manage risk, and encourage information sharing across the county. The Framework identifies goals based on countywide planning efforts and defines a set of broader strategies to meet these goals, as well as specific actions to facilitate implementation of new mobility technologies and services in Alameda County by Alameda CTC and member agencies. As a supplementary outcome, the Framework will also include a Technology Toolbox for the member agencies and a guidance on public and private partnerships.

The Framework identified nine New Mobility Goals. The Goals support the 2020 CTP goals, but focus on how they relate to new mobility technologies and services. Table A details the New Mobility Framework Goals and how they relate to the 2020 CTP goals.

Table A – New Mobility Goals, Goal Statement and Related CTP Goals

New Mobility Goal	Goal Statement	Related CTP Goal
Multimodal and High-occupancy	Complement public transit and shared trips, and support active transportation, by providing convenient travel options while considering the urban, suburban and rural contexts of Alameda County.	Accessible, Affordable and Equitable High Quality and Modern Infrastructure
Safety	Improve traveler safety and reduce conflicts between modes.	Safe, Healthy and Sustainable
Environment	Support system and environmental sustainability, promote convenient non-auto modes, and reduce vehicle miles traveled.	Safe, Healthy and Sustainable
Equity and Accessibility	Be easily and equitably accessible to all travelers, including disadvantaged populations.	Accessible, Affordable and Equitable
Service Quality	Support and complement convenient and reliable public transit options and offer high quality travel options.	High Quality and Modern Infrastructure
Cost-efficiency	Promote a positive fiscal impact on infrastructure investments and delivery of publicly-provided transportation services	Economic Vitality
Connectivity	Improve connections across jurisdictions, offer seamless connectivity through improved modal transfers, and better connect and integrate land use, housing, jobs and transportation.	Accessible, Affordable and Equitable
Economy	Support vibrant communities and engage in fair labor practices.	Economic Vitality
Data Sharing and Security	Engage and collaborate to share all relevant data to improve the transportation system and agency efficiency, and protect the traveling public and infrastructure from cyber security threats.	New mobility technologies and services specific goal

Technology Categories

The above Goals point to a number of desired outcomes, described by the goal statements. These outcomes are often cross-cutting and serve multiple Goals. In order to better understand the nature of impacts of the new mobility technologies and services and help identify an approach to meet the Goals, the Framework identifies five primary areas or categories of transportation technology, widely used throughout the industry:

- Connected: The ability to communicate information real-time between mobility modes, infrastructure, users, and any other component critical to the movement of people and goods.
- Electric: Transportation that uses stored or transmitted electricity to power a vehicle instead of traditional internal combustion engines (ICE), usually by means of batteries, ultra-capacitors, or hydrogen fuel cells.
- Shared: Transportation services and resources that are shared among users, either concurrently or one after another.
- Autonomous: Vehicle automation for the purpose of transporting people and goods that can navigate and operate without assistance from a human driver or operator.
- Data (cross cutting category): Information generated by the vehicle, infrastructure, or user that can be used for decision-making, analysis, or operation of transportation.

Smart Strategies

A number of specific Smart Strategies were developed for each Goal in the context of the Technology Categories. These Strategies are broad approaches—aligning with the overall CTP work—to address the anticipated opportunities and risks posed by the new mobility technologies and services for each Technology Category to meet the intent of the Goals. These Smart Strategies include and build upon the technology-related strategies identified in the 2020 CTP effort that have been presented to the Commission in May as part of the planning area meetings.

Attachment A contains the full list of Smart Strategies for each Goal including a list of risks and opportunities related to the respective Goal and the Technology Categories. Table B shows an example Smart Strategy for each Goal. Actions (in terms of policies, programs, projects or pilots) related to the Smart Strategies will be developed this summer.

Table B – New Mobility Goals and Example Smart Strategies

Goal	Example Smart Strategy
Multimodal and High-occupancy	Use advances in technology to improve the effectiveness, affordability, and ease of access to transit
Safety	Ensure new mobility services and technologies are safe for travelers and all other users of the right of way
Environment	Promote the electrification of the vehicle fleet
Equity and Accessibility	Guarantee access to all publically-available mobility options
Service Quality	Use new mobility and associated technologies to provide better level of service, experience, and reduced cost for transit passengers
Cost-efficiency	Maximize utility of existing infrastructure

Connectivity	Facilitate communication, agreements, and partnership between agencies and jurisdictions operating within the county
Economy	Promote agility and flexibility in the management, use, and benefits of new technologies
Data Sharing and Security	Establish the function and role of the Alameda CTC related to data sharing and security that will provide the most benefit to member jurisdictions and agencies.

Next Steps

The draft Smart Strategies will be updated to incorporate comments from partner jurisdictions and the Commission. Over the summer, staff will work with the TWG to develop a set of recommended actions. The final Framework, including recommended actions, will be completed in Summer of 2020 as shown in Attachment B and will be presented to the Commission in early Fall.

Fiscal Impact: There is no fiscal impact for this item. This is an information item only.

Attachments:

- A. New Mobility Framework – Draft Strategies Memorandum including Goals, Principles and Smart Strategies
- B. New Mobility Framework Development Schedule

This page intentionally left blank

Alameda County

New Mobility Framework



Draft Goals and
Smart Strategies

2020

Alameda County
Transportation
Commission

8.1A

Overview

Alameda CTC, with input from the Transportation Working Group (TWG), based on various Planning efforts including the County-wide Transportation Plan, identified nine goals for New Mobility services and technologies in the spring of 2019:

- » Multimodal and High-occupancy
- » Safety
- » Environment
- » Equity and Accessibility
- » Service Quality
- » Cost-efficiency
- » Connectivity
- » Economy
- » Data Sharing and Security

These goals point towards a number of desired outcomes in the context of New Mobility services and technologies. These outcomes are often cross-cutting and serve multiple goals. As we move to identify ways to get to these outcomes, it is evident that New Mobility services and technologies create opportunities for a more convenient, efficient, and safe transportation network. However, they also create risks with the potential to further exacerbate inequalities, fracture the network, create congestion, and new security threats, if not implemented in a thoughtful manner, guided by effective strategies. Alameda CTC and the TWG began to identify these opportunities and risks previously. The Project Team developed a set of Technology Categories in the context of the broad spectrum of transportation technology areas:

- » Connected
- » Shared
- » Electric
- » Autonomous
- » Data

The idea is that the anticipated opportunities and risks posed by the New Mobility services and technologies for each goal and technology category will automatically lend itself to identify a set of approaches or high level strategies that Alameda CTC need to consider to move Alameda County towards the desired mobility outcomes. These strategies form the heart of the New Mobility Framework for Alameda County and for the 2020 CTP. These strategies, in coordination with the TWG, will later help identifying a number of specific supportive actions: pilots, programs, and projects which Alameda CTC can undertake or support.

New Mobility Goal:

Multimodal and high occupancy

New Mobility services and technologies must complement public transit and support active transportation and provide convenient travel options while taking into account the urban, suburban, and rural parts of Alameda County. They must also consider effects on traffic congestion, mode choice, and transit reliability.

Overview

New and emerging modes and technologies hold enormous potential for increasing mobility options for travelers. While some of the policy areas (connected, electric, shared, autonomous, and data) will offer substantial benefit, others may offer both benefits and risks for the desired outcomes as described in the goal. For example, automation could offer numerous choices for mobility, even offering a better level of service for transit passengers. But these modes could also out-compete transit in terms of availability and come at the cost of increased congestion and equity issues throughout the County.

Elements of Goal Statement

Derived from the goal statement, each of the elements should serve as a guide for potential risks and opportunities related to the goal. A qualitative breakdown of the risks and opportunities associated with goals and technology categories is located in the Appendix.

- » **Complement public transit** - New mobility modes and technologies should be used to support public transit options, including physically connecting travelers to transit, as well as information and data connecting travelers to transit.

- » **Support active transportation** - Communications technology can support active transportation options, such as shared dockless modes.
- » **Create convenient travel options** - Utilize new mobility and technologies to inform travelers of public and private mobility options and their associated benefits and drawbacks.
- » **Support context-relevant mobility (rural, suburban, urban)** - Ensure mobility options are accessible to Alameda's population, but coordinated to fit the context.
- » **Minimize congestion** - Utilize technologies to reduce congestion and ensure new modes and technologies do not add to congestion.
- » **Increase mode choice** - Embrace new mobility options and more ways to connect to travelers
- » **Promote reliable transit** - Transit that is efficient, consistent, dependable, on-schedule, and competitive with other modes.

Smart Strategies

These strategies are a broad approach for how the County, partner agencies, and local jurisdictions should address the opportunities and risks provided by each technology category, with the intent of meeting the outcomes outlined in the goals. Each of these strategies will be supported by actions (policies, programs, or projects) that describe specifically what should be done to achieve each strategy.

- 1. Provide reliable, high capacity transit on major corridors:** Move people along key corridors, utilizing the latest in new technologies to improve the service.
- 2. Use new mobility to better connect travelers to transit:** Whether connecting physically or through information, new mobility services and technologies should be used to close the gap between travelers and transit.
- 3. Promote a full mobility ecosystem throughout the County and its diverse geographies and populations:** Every member of the Alameda County community should have options when it comes to mobility, regardless of who they are and where they live.
- 4. Use advances in technology to improve the effectiveness, affordability, and ease of access to transit:** Transit should serve as the backbone of the transportation system, and new mobility services and technologies should be used to extend service and access at a lower cost to travelers and agencies.

New Mobility Goal:

Safety

New Mobility services and technologies must improve traveler safety and reduce conflicts between modes.

Overview

Many of the trends in transportation technology have been applied to increase safety for travelers on roadways, including Intelligent Transportation Systems (ITS) technologies that can better manage traffic and detect pedestrians to reduce conflicts. Advances in communications technologies have likewise provided a backbone for enhanced safety features in vehicles that can communicate with infrastructure and other vehicles.

At the same time, new modes that are enabled by advanced technology represent both opportunities and risks. As new modes come to market, it is unclear how they will operate within existing infrastructure, creating an issue for conflicts with other system users, including drivers, pedestrians, and other emerging modes.

Elements of Goal Statement

Derived from the goal statement, each of the elements should serve as a guide for potential risks and opportunities related to the goal. A qualitative breakdown of the risks and opportunities associated with goals and technology categories is located in the Appendix.

- » **Improved traveler safety** - Safety is a top priority, and advances in new and emerging technologies should all work to promote safe travel for all modes throughout the county.
- » **Reduced conflicts between modes** - Many new technologies and modes are competing for existing right-of-way and conflicts between users should be minimized.

Smart Strategies

These strategies are a broad approach for how the County, partner agencies, and local jurisdictions should address the opportunities and risks provided by each technology category, with the intent of meeting the outcomes outlined in the goals. Each of these strategies will be supported by actions (policies, programs, or projects) that describe specifically what should be done to achieve each strategy.

- 1. Ensure new mobility services and technologies are safe for travelers and all other users of the right of way:** Mobility of one mode should not come at the expense of the safety of the passenger or any other traveler on the road.
- 2. Develop and promote right of way orientations that can accommodate safe deployment of new and emerging modes, services and technologies:** When new modes are introduced into public rights of way, communities will need a guide for how and where they should operate to ensure safety of all travelers and modes.
- 3. Develop a coordinated county-wide approach to Intelligent Transportation System (ITS) implementation to increase safety and ensure coordinated management of the transportation system:** A set of technology applications intended to increase safety, capacity, and effective management of key corridors and arterials within the county.
- 4. Ensure the transportation system supports resiliency:** This accounts for the resiliency of the transportation system itself in regards to challenges and threats, but also supports the reliable movement of people and goods in times of crisis.

New Mobility Goal:

Environment

Support system and environmental sustainability, promote convenient non-auto modes, and reduce vehicle miles traveled.

Overview

The historic reliance on single-occupant automobiles has resulted in significant climate and public health impacts. In California, 47% of total carbon emissions comes from the transportation sector, including passenger vehicle and truck emissions. Technology holds enormous promise for addressing carbon emissions, whether through the electrification of the transportation fleet, by creating better access to high-capacity and shared modes through increased connectivity, or through personal mobility modes that use far less energy to operate. But these changes won't happen in a vacuum, and governments can play a role in directing the trends in new mobility and technology to deliver the best possible outcomes for community members.

Alameda County is home to the primary production facility of the world's largest electric car manufacturer, Tesla. Electrified mobility is already part of the region's economy, and will likely be a part of the region's future identity. Considering the scale of the shipping and freight in the county, significant opportunity exists to electrify substantial portions of the goods movement system. Alameda County has an opportunity to build off its strengths and become a national leader in the electrification of our transportation system.

Elements of Goal Statement

Derived from the goal statement, each of the elements should serve as a guide for potential risks and opportunities related to the goal. A qualitative breakdown of the risks and opportunities associated with goals and technology categories is located in the Appendix.

- » **Environmentally sustainable** - Reducing carbon emissions is a key environmental imperative, and reducing carbon from our transportation system will be a substantial step toward that goal.
- » **Support convenient non-auto modes** - Moving travelers to cleaner, smaller, shared, and more convenient modes than privately-owned automobiles.
- » **Reduce VMT** - This principle is strongly aligned with the goal of multimodal and high-capacity transportation, and any automobile trip that can be diverted to shared, electric, or active mobility will be beneficial.

Smart Strategies

These strategies are a broad approach for how the County, partner agencies, and local jurisdictions should address the opportunities and risks provided by each technology category, with the intent of meeting the outcomes outlined in the goals. Each of these strategies will be supported by actions (policies, programs, or projects) that describe specifically what should be done to achieve each strategy.

- Promote the electrification of the vehicle fleet:** A movement away from carbon-based transportation options and toward electrification that can utilize renewable power sources.
- Support Infrastructure for Near-Zero and Zero-Emission Truck Technology:** The electrification of freight and movement of goods will be an area of immense opportunity to positively impact air quality in the county.
- Encourage behavior that reduces pollution** - Prioritize best practices of local deliveries, truck behavior, routing, and vehicle idling.
- Discourage dead-heading, SOV trips, and other behavior detrimental to the transportation system:** Regulating adverse behavior enabled by new technologies will be easier before those modes are widely available. This will create a framework for addressing and mitigating changes before they happen.
- Use technology to promote alternative forms of transportation and services:** Moving people in other ways than cars, including Transportation Demand Management (TDM) strategies, carsharing, and new non-auto modes that can satisfy travel demand.

New Mobility Goal:

Equity and Accessibility

New Mobility services and technologies must be easily and equitably accessible to all travelers, including disadvantaged populations.

Overview

Ensuring that new mobility services and technologies are serving every member of Alameda County equitably is critical for ensuring equitable access to mobility. The development and deployment of new mobility services and technology must consider and address the needs of disabled passengers, disadvantaged populations, and disadvantaged geographies.

Elements of Goal Statement

Derived from the goal statement, each of the elements should serve as a guide for potential risks and opportunities related to the goal. A qualitative breakdown of the risks and opportunities associated with goals and technology categories is located in the Appendix.

- » **Easy for travelers to use** - A low barrier of entry for travelers to access mobility. New mobility services and technologies need to have a straightforward interface, easy to understand service model, and equally serve disadvantaged communities within the greater mobility ecosystem.
- » **Accessible to all travelers** - Every person within Alameda County should have access to reliable and affordable transportation.

Smart Strategies

These strategies are a broad approach for how the County, partner agencies, and local jurisdictions should address the opportunities and risks provided by each technology category, with the intent of meeting the outcomes outlined in the goals. Each of these strategies will be supported by actions (policies, programs, or projects) that describe specifically what should be done to achieve each strategy.

1. **Guarantee access to all publicly-available mobility options:** This would ensure that all travelers have access to new mobility services and technologies, regardless of location, class, or disability.

New Mobility Goal:

Service Quality

New Mobility services and technologies must support and complement convenient and reliable public transit options and offer high quality travel options.

Overview

As new modes continue to evolve, and new approaches to mobility become adopted, transit can move large volume of people equitably and in an efficient manner. Although some new mobility modes may compete with transit, there is opportunity to use those same approaches to better connect travelers to transit, and to offer other options and approaches to efficiently move people throughout the county.

Elements of Goal Statement

Derived from the goal statement, each of the elements should serve as a guide for potential risks and opportunities related to the goal. A qualitative breakdown of the risks and opportunities associated with goals and technology categories is located in the Appendix.

- » **Support and complement convenient and reliable public transit options** - Transit should remain the backbone of a high-quality transportation system, and new mobility technologies will serve to improve the effectiveness, reliability, and access to transit.
- » **Offer high quality travel options** - With new technologies have come new modes, many of which have no dedicated space within the right-of-way.

Smart Strategies

These strategies are a broad approach for how the County, partner agencies, and local jurisdictions should address the opportunities and risks provided by each technology category, with the intent of meeting the outcomes outlined in the goals. Each of these strategies will be supported by actions (policies, programs, or projects) that describe specifically what should be done to achieve each strategy.

- 1. Explore innovative transit service and fare options:** New technologies are bringing new capabilities that can improve the transit riding experience and improve transit reliability and efficiency.
- 2. Expand First and Last Mile Options & Improve Access to Major Transit Hubs:** New mobility and associated technologies to be used to support transit and move people from transit stops to their origin/destination.
- 3. Use new mobility and associated technologies to provide better level of service, experience, and reduced cost for transit passengers:** Leverage the benefits brought by innovations in new mobility to increase the effectiveness and level of service of transit.

New Mobility Goal:

Cost Efficiency

New Mobility services and technologies must promote a positive fiscal impact on infrastructure investments and delivery of publicly-provided transportation services.

Overview

Transportation infrastructure is costly, and new technologies hold the promise to reduce cost and increase efficiency of that infrastructure. For example, technology can be used to better utilize existing infrastructure by increasing capacity through technology instead of pavement expansion. Or by supporting transit by employing new mobility and technologies to increase service to passengers and better connect travelers to transit options.

As new investments are made, risks can be reduced by investing in systems that are modular, easily upgradeable, and compatible with other systems throughout the county and region. Infrastructure must also be coordinated across the county, but also the greater Bay Area Region to enable data sharing and comprehensive management and operations of the transportation system.

Elements of Goal Statement

Derived from the goal statement, each of the elements should serve as a guide for potential risks and opportunities related to the goal. A qualitative breakdown of the risks and opportunities associated with goals and technology categories is located in the Appendix.

- » **Promote positive fiscal impact on infrastructure**
 - Leverage technology to decrease capital costs, increase system capacity and efficiency, while reducing maintenance costs.

- » **Positive fiscal impact on delivery of public transportation** - Public transportation can absorb many of the benefits of new mobility and technologies, and effort should be made to maximize the effectiveness of transit while reducing costs to operators and riders.

Smart Strategies

These strategies are a broad approach for how the County, partner agencies, and local jurisdictions should address the opportunities and risks provided by each technology category, with the intent of meeting the outcomes outlined in the goals. Each of these strategies will be supported by actions (policies, programs, or projects) that describe specifically what should be done to achieve each strategy.

- 1. Maximize utility of existing infrastructure:** New mobility services and technologies should use existing infrastructure where possible, and work to maximize the efficiency and capacity of that infrastructure.
- 2. Identify and address the risks associated with new and existing infrastructure brought by advances in new mobility and technology:** Limit the implementation of costly technologies that may not have a long useful life, and identify potential areas where existing capital investments may be at risk of obsolescence due to new mobility.
- 3. Coordinate the rollout of advanced communications infrastructure throughout member jurisdictions, agencies, and providers:** Best practices for advanced communications technologies that minimize the risk of obsolescence, promote connectivity between jurisdictions and agencies, and operate to allow seamless communications infrastructure across the region.

New Mobility Goal:

Connectivity

New Mobility services and technologies must improve connections across jurisdictions, offer seamless connectivity through improved modal transfers, and better connect and integrate both land use, housing, jobs, and transportation. They must be consistent with a common county-wide approach, and support shared regional communication infrastructure.

Overview

Connecting people, connecting places, and connecting information are all components of this goal. Understanding that new mobility services and technologies offer greater opportunity to connect communities, both physically and digitally, governments and agencies should be coordinating efforts to enable the greatest benefit to their communities.

The concept of a holistic mobility ecosystem should be a driver for collaboration among County agencies and communities, and integrated within the regional system. Within this mobility ecosystem, travelers would have access to mobility-related data to make informed decisions on their best options for a particular trip. The ability to move throughout the county and across modes in a seamless manner will take a heavy amount of coordination to connect mobility elements throughout the community both digitally and physically.

Elements of Goal Statement

Derived from the goal statement, each of the elements should serve as a guide for potential risks and opportunities related to the goal. A qualitative breakdown of the risks and opportunities associated with goals and technology categories is located in the Appendix.

- » **Improve connectivity between and across jurisdictions**
 - Connectivity in the form of connecting travelers, connecting services, and connecting data across jurisdictions will increase mobility and access for

communities across Alameda County

- » **Seamless connectivity across modes** - The ability to plan, request, ticket, and pay for trips across multiple modes, and for those modes to physically connect to each other would be enormously beneficial for the traveling public. The incorporation of new mobility modes, services, and technologies are all part of the technology ecosystem that can enable this functionality.
- » **Connect housing and jobs** - Understanding where people live, where they work, how they commute, and offering options to reduce their travel time, cost, and convenience.
- » **Promote a integrated approach** - Creating a holistic approach to mobility will require coordination of policy, infrastructure, technology, and service-offerings across the agencies and jurisdictions in Alameda County and throughout the region.
- » **Support a shared regional communications infrastructure** - Technology infrastructure across the county should be compatible between jurisdictions, agencies and the greater region, allowing real-time sharing of transportation data.

Smart Strategies

These strategies are a broad approach for how the County, partner agencies, and local jurisdictions should address the opportunities and risks provided by each technology category, with the intent of meeting the outcomes outlined in the goals. Each of these strategies will be supported by actions (policies, programs, or projects) that describe specifically what should be done to achieve each strategy.

- 1. Promote a frictionless mobility across modes and geographies:** Make it as easy as possible to plan, compare, book, and pay for travel throughout the County.
- 2. Promote consistent county-wide communication infrastructure inputs and outcomes across communities:** Systems should be compatible, allowing consistent and usable data across jurisdictional boundaries.
- 3. Facilitate communications, agreements, and partnerships between agencies and jurisdictions operating within the County:** Continue collaboration among governments and agencies to promote the best possible outcomes for community members.

New Mobility Goal:

Economy

New Mobility services and technologies must support vibrant communities and engage in fair labor practices.

Overview

The technologies and services emerging today offer the potential to reshape economies across regions, with the promise of less cost, greater access, and better safety. Our economies depend on the efficient movement of people and goods, and ensuring that emerging mobility options continue to improve the transportation system should lead to greater opportunities for community members and more dynamic, prosperous, and vibrant communities across the County.

Elements of Goal Statement

Derived from the goal statement, each of the elements should serve as a guide for potential risks and opportunities related to the goal. A qualitative breakdown of the risks and opportunities associated with goals and technology categories is located in the Appendix.

- » **Promote vibrant communities** - Advances in new mobility must support the communities that use them, and work to enhance the safety, prosperity, and equity of community members.
- » **Promote fair labor practices** - New approaches to transportation should not result in worse standards for workers, and labor fairness needs to be a key component of new mobility systems.

Smart Strategies

These strategies are a broad approach for how the County, partner agencies, and local jurisdictions should address the opportunities and risks provided by each technology category, with the intent of meeting the outcomes outlined in the goals. Each of these strategies will be supported by actions (policies, programs, or projects) that describe specifically what should be done to achieve each strategy.

- 1. Establish a hierarchy of travel modes with the individual as the basic component:** The intent is to move people and goods efficiently.
- 2. Promote agility and flexibility in the management, use, and benefits of new technologies:** As technologies continue to evolve and advance, be flexible in the regulation and implementation, allowing the ability to easily pilot and scale when opportunities arise.
- 3. Promote local innovation and economic development:** The Bay Area is a hotbed of technology and innovation, and local efforts to increase mobility effectiveness and choices should be supported.
- 4. Protect mobility-related labor across Alameda County:** New mobility services and technologies should promote fair labor practices among operators.

New Mobility Goal:

Data Sharing and Security

New mobility providers, cities, transit and other agencies, and Alameda CTC must engage and collaborate with each other and the community to share all relevant data to improve the transportation system and agency efficiency. They should also protect traveling public and infrastructure from cyber security threats.

Overview

The generation and use of data is becoming a central component of our transportation system. Enabled by advances in sensors, communications technologies, and big data analysis, data holds the promise of robust information readily available to make informed decisions for both travelers and governments regarding mobility. Data permeates many of the other goals for new mobility, such as safety, cost efficiency, service quality, cost efficiency, connectivity, and multi-modal and high capacity, each with a strong reliance on real-time information.

The effectiveness and extent of benefits will depend highly on the ability to share data between member jurisdictions and operators, and protect that data and the privacy of users against outside attackers.

Elements of Goal Statement

Derived from the goal statement, each of the elements should serve as a guide for potential risks and opportunities related to the goal. A qualitative breakdown of the risks and opportunities associated with goals and technology categories is located in the Appendix.

» **Data sharing between operators and governments/agencies** - Strong cooperation and sharing between entities in the County can lead to better overall outcome for everyone involved. Data sharing should be a key

component of building a stronger system in Alameda County.

- » **Use data to improve transportation system and agency efficiency** - New and emerging data and collection methods is an additional resource that can offer better insights for policy makers and travelers to make informed decisions.
- » **Protect public and infrastructure against cyber threats** - Protecting public privacy, data, and infrastructure requires both limiting the personally identifiable information collected on individual travelers, but also continuous improvement to the County's infrastructure to protect against cyber threats.

Smart Strategies

These strategies are a broad approach for how the County, partner agencies, and local jurisdictions should address the opportunities and risks provided by each technology category, with the intent of meeting the outcomes outlined in the goals. Each of these strategies will be supported by actions (policies, programs, or projects) that describe specifically what should be done to achieve each strategy.

- 1. Establish the function and role of the Alameda CTC related to data sharing and security that will provide the most benefit to member jurisdictions and agencies:** Clearly define what role Alameda CTC will have regarding data and security.
- 2. Promote open access to critical data from vehicles operating on public streets:** Governments should have access to valuable travel data to continually optimize the transportation system.
- 3. Promote transparency of the collection and use of traveler data:** The public should be aware what data local governments and agencies are collecting.
- 4. Continuously upgrade and protect against risks and mitigate impacts when cyber attacks do happen:** This will be a continuous process to make sure infrastructure is protected and data is kept safe.
- 5. Establish minimum standards for the collection, transfer, and storage of data:** Reinforce the safety of traveler data.

Appendix

Potential opportunities and risks for goals
and associated technology categories

Table: Multimodal and High Occupancy

Table is intended to connect components of the goal statement with risks and opportunities associated with the technology categories.

Legend

Opp/Risk

✓ : Opportunity

X : Risk

Technology Category

C: Connected A: Autonomous

E: Electric D: Data

S: Shared

	Opp/ Risk	Opportunities and Risks associated with the Goal and Technology Category	Tech. Category					
			C	E	S	A	D	
Elements of Goal Statement	Complement public transit	✓	Better first mile/last mile connectivity with public transit	■				
		✓	Better and real-time information encourages travelers find and use transit and active transportation modes	■				
		✓	Transit boarding and ticketing is made faster and more reliable	■				
		X	Driving alone becomes more convenient leading to increased congestion and safety issues			■		
		X	New modes (AV/MaaS/TNC) could compete with public transit			■		
	Support active transportation	✓	Technology-enabled options, such as bikeshare	■		■		
		X	Competition from new, similar modes, such as e-scooters			■		
	Create convenient travel options	✓	Technology-enabled choices and payment options	■				
		✓	More modal options available with automated, electrified, and connected mobility				■	
		X	Convenience of modes may come at the expense of other goals (ie., private AV/MaaS)				■	
	Relevant to the context	X	Some modes may not be applicable throughout every context			■		
	Minimize congestion	✓	Smaller modes, such as e-scooters, could displace SOV trips in some cases			■		
		X	AV/MaaS/TNC could increase congestion and even create induced demand if prices decrease				■	
	Increase mode choice	✓	Technology-enabled planning and payment	■				
		X	ROW allocations that do not account for new and emerging modes			■	■	
	Promote reliable transit	✓	Potential for autonomous transit options.				■	
✓		Technology-enabled real-time transit status	■					
X		Potential lower ridership due to AV/MaaS/TNC could deteriorate transit operations and reliability				■		

Table: Safety

Table is intended to connect components of the goal statement with risks and opportunities associated with the technology categories.

Legend

Opp/Risk

✓ : Opportunity

X : Risk

Technology Category

C: Connected A: Autonomous

E: Electric D: Data

S: Shared

		Opp/ Risk	Opportunities and Risks associated with the Goal and Technology Category	Tech. Category				
				C	E	S	A	D
Elements of Goal Statement	Improved traveler safety	✓	Automated vehicles reduce crashes that occur due to human error				■	
		✓	Robust data availability allows better detection on near-misses	■				■
		✓	New and emerging technologies developed to improve safety and management of ROW	■				
		X	More pick-ups and drop-offs create more conflict at the curb			■		
		X	Injury collisions become more severe as perceived safety leads to riskier behavior			■		
		X	Active transportation options such as scooter share also likely impacts bike/pedestrian safety without proper policy guidance.			■		
	Reduced conflict between modes	✓	Traffic controls help reduce mode conflict	■		■		
		X	Existing infrastructure is not necessarily oriented to accommodate a proliferation of modes and service models brought by tech advances			■		

Table: Environment

Table is intended to connect components of the goal statement with risks and opportunities associated with the technology categories.

Legend

Opp/Risk

✓ : Opportunity

X : Risk

Technology Category

C: Connected A: Autonomous

E: Electric D: Data

S: Shared

	Opp/ Risk	Opportunities and Risks associated with the Goal and Technology Category	Tech. Category					
			C	E	S	A	D	
Elements of Goal Statement	Environmentally sustainable	✓	Cleaner, electrified vehicles create less pollution		■			
		✓	Electrified mobility options to offset carbon-based options		■			
		X	VMT increases due to increased convenience options		■			■
		X	Potential environmental issues with battery manufacturing and disposal		■			
		X	Uneven presence of charging infrastructure		■			
		X	Insufficient supporting infrastructure for power distribution and charging		■			
		X	Transportation system reliant upon unreliable power grid		■			
	Support convenient non-auto modes	✓	Technology-enabled trip planning, ticketing, payment, specifically for transit and personal mobility options	■				
		✓	Electrification of the transit fleet		■			
		✓	Expanded data collection allows better data collection on near-misses					■
		X	Lower-cost AV/MaaS/TNC could move people toward auto-based modes		■			
	Reduce VMT	✓	Vehicle occupancy increases		■	■		
		X	Occupancy declines because of empty vehicles				■	
		X	New modes to offset SOV trips			■		
X		AV/MaaS/TNC may increase dead-heading, and create potential induced demand due to lower costs				■		

Table: Equity and Accessibility

Table is intended to connect components of the goal statement with risks and opportunities associated with the technology categories.

Legend

Opp/Risk

✓ : Opportunity

X : Risk

Technology Category

C: Connected A: Autonomous

E: Electric D: Data

S: Shared

	Opp/ Risk	Opportunities and Risks associated with the Goal	Policy Area				
			C	E	S	A	D
Elements of Goal Statement	Easy for travelers to use	✓ Digital communications for planning, ticketing, payment	■		■		■
		X Uneven distribution across geographies and communities in County	■				■
		X Universal design may not be present in through third-party services and modes			■		
	Accessible to all travelers	✓ People who don't own a car have more mobility choices	■		■		
		✓ Existing options become more affordable	■		■		
		✓ Service hours extended: mobility options expanded for people with disabilities and populations under-served by public transit	■		■		
		X Services focus on more affluent customers			■		
		X Unbanked population may have less access to smart-phone application based mobility and data options.	■				
		X Access to essential services, jobs, etc reduced for vulnerable populations	■				■
		X Roads, transit, parking inequitably priced	■				
		X Potential limited service areas for third-party operators	■		■		
		X Third party operators may pull service once established as an option	■		■		

Table: Service Quality

Table is intended to connect components of the goal statement with risks and opportunities associated with the technology categories.

Legend

Opp/Risk

✓ : Opportunity

X : Risk

Technology Category

C: Connected A: Autonomous

E: Electric D: Data

S: Shared

	Opp/ Risk	Opportunities and Risks associated with the Goal	Policy Area					
			C	E	S	A	D	
Elements of Goal Statement	Support and complement convenient and reliable public transit options	O	New mobility used for better first mile/last mile connectivity	■	■	■	■	
		O	Communications and data used to better connect travelers to transit	■				■
		R	New mobility could compete directly with transit			■	■	
		R	Proliferation of new mobility modes could add congestion, negatively impacting transit efficiency and reliability			■	■	
	Offer high quality travel options	O	Improve operation and efficiency of transit through technology approaches	■		■	■	■
		R	Competition with transit			■	■	

Table: Cost Efficiency

Table is intended to connect components of the goal statement with risks and opportunities associated with the technology categories.

Legend

Opp/Risk

✓ : Opportunity

X : Risk

Technology Category

C: Connected A: Autonomous

E: Electric D: Data

S: Shared

		Opp/ Risk	Opportunities and Risks associated with the Goal	Policy Area				
				C	E	S	A	D
Elements of Goal	Promote positive fiscal impact on infrastructure	✓	Better utilization of existing infrastructure	■		■		■
		✓	Data collection more efficient	■				■
		✓	Project delivery more efficient	■				
		X	Project delivery costs out-pace benefits of technology					
		X	Orphaned infrastructure due to technology changes	■				
	Fiscal impact on public transportation	✓	Costs fall, enabling more projects and greater benefits			■		
		X	Perceived/promised benefits never realized			■		

Table: Connectivity

Table is intended to connect components of the goal statement with risks and opportunities associated with the technology categories.

Legend

Opp/Risk

✓ : Opportunity

X : Risk

Technology Category

C: Connected A: Autonomous

E: Electric D: Data

S: Shared

	Opp/ Risk	Opportunities and Risks associated with the Goal	Policy Area					
			C	E	S	A	D	
Elements of Goal Statement	Improve connectivity between and across jurisdictions	✓	Seamless service across jurisdictions	■				
		✓	Ability for travelers to compare all available mobility options and their	■				
		X	Uneven service quality between jurisdictions	■				
		X	Incompatible equipment across the jurisdictions preventing effective communication between the transportation systems.	■				
	Seamless connectivity across modes	✓	Connected technologies improve or maximizes the efficiency of the system	■				
		X	Private services reluctant to cede control of their platform and services	■				
	Connect housing and jobs	✓	Better connected land use/TDM efforts	■				
		✓	Better understand transportation demand with additional data	■				■
	Promote a county-wide approach	✓	Address mobility and transportation comprehensively throughout the County	■		■		
		✓	Greater ease of use for passengers when transportation options are consolidated	■		■		
	Support a shared regional communications infrastructure	✓	Consistency in data and equipment across jurisdictions	■				■
		✓	More support, better base of knowledge and available equipment when infrastructure is established regionally	■				■
X		Jurisdictions may be reluctant to abandon already-installed infrastructure	■					

Table: Economy

Table is intended to connect components of the goal statement with risks and opportunities associated with the technology categories.

Legend

Opp/Risk

✓ : Opportunity

X : Risk

Technology Category

C: Connected A: Autonomous

E: Electric D: Data

S: Shared

	Opp/ Risk	Opportunities and Risks associated with the Goal	Policy Area				
			C	E	S	A	D
Elements of Goal Statement	Promote vibrant communities	✓ Improved mobility options opens doors to creating a vibrant economic future	■	■	■		
		✓ New job opportunities and training	■	■	■	■	■
		✓ New partnerships and collaboration between all types of stakeholders – public, private and non-profit.	■				
	Promote fair labor practices	X Lack of skilled labor force to meet the new job type/skill	■	■	■	■	
		X Likely Labor issues as in ride-hail services that public agency has limited control over	■	■	■		
		X Potential negative impact to transit impacting their performance and fair-box recovery.			■		
		X Impact due to Autonomous Industry is still unclear.				■	

Table: Data Sharing and Security

Table is intended to connect components of the goal statement with risks and opportunities associated with the technology categories.

Legend

Opp/Risk

✓ : Opportunity

X : Risk

Technology Category

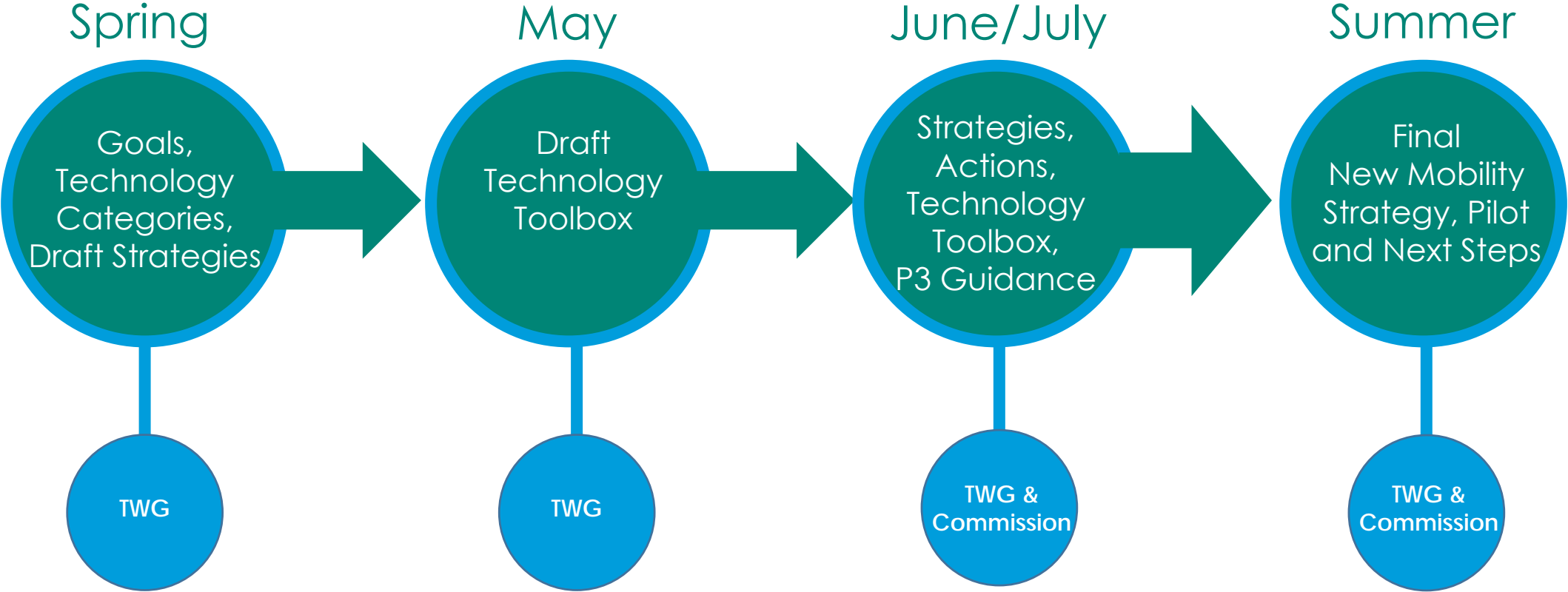
C: Connected A: Autonomous

E: Electric D: Data

S: Shared

	Opp/ Risk	Opportunities and Risks associated with the Goal	Policy Area					
			C	E	S	A	D	
Elements of Goal Statement	Data sharing between operators and governments/agencies	✓	Data shared across jurisdictions for efficiency					■
		✓	Collecting transportation data becomes more efficient	■				■
		X	Resources wasted in duplicative efforts in multiple jurisdictions					■
		X	Poor communication between jurisdictions creates new barriers					■
		X	Missed opportunities					■
		X	Limited access to proprietary data					■
		X	No transparency in public access/ownership of data					■
	Use data to improve transportation system and agency efficiency	✓	More informed planning and decision making					■
		✓	Better prices (transit, rideshare, bikeshare, roadways, parking, etc.)					■
		✓	Enables feedback loops					■
		✓	Data-based decision-making and insights					■
		✓	Real-time system conditions	■				■
		X	Private companies withhold data from public agencies and resist oversight					■
		X	Ineffective pricing creates both overcrowding/congestion and reduces demand					■
X	Too much data/inability to draw conclusions					■		
Protect public and infrastructure against cyber threats	X	Infrastructure becomes more vulnerable to cyberattacks					■	

New Mobility Framework 2020 Development Schedule



This page intentionally left blank