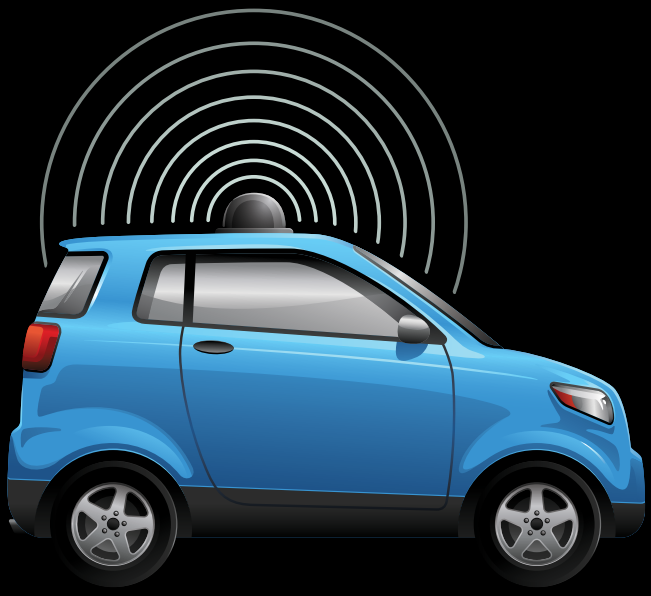

Autonomous VEHICLE Policy Framework SUMMIT

Final Product Report

Presented by:

transpogroup
WHAT TRANSPORTATION CAN BE.

INTRODUCTION

The Autonomous Vehicle Policy Framework Summit (AV Policy Summit) brought together top-level people working with autonomous vehicles (AVs) from various states to formulate draft policies related to AVs. Representatives from academia, industry, all levels of government, consultants and public interest groups gathered in a two-day workshop to synthesize previous work, and to create a policy framework for moving forward.

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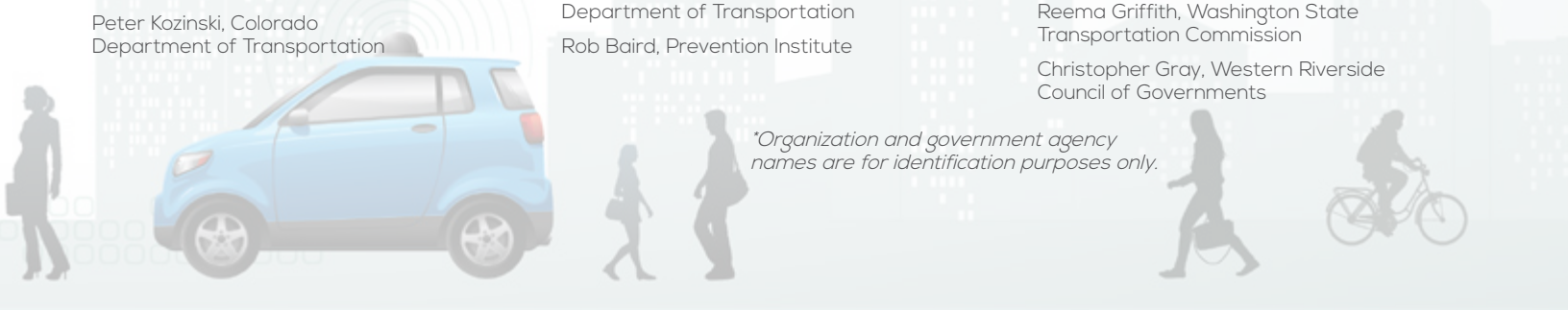

FINAL PRODUCT

This final product addresses a wide range of issues including, but not limited to, greater access, equity, reducing transportation-related greenhouse gases, vehicle safety, public health, land use planning issues, community livability, parking and managing the streets. The effort builds on past policy discussions to offer a framework for governmental bodies to better prepare for AVs.

Each of the 8 breakout groups (as identified below) filled out two tables that recorded their recommendations. The tables and groups are described as follows:

TABLE 1

- Describes the policies
- Names the goals that each policy addresses
- Identifies the time frame in which each policy is most relevant
- Lists significant minority opinions to that policy
- Identifies needed information or research to better develop each policy

TABLE 2

- Lists the appropriate roles for each level of government (federal, state, metropolitan planning organizations and local)
- Identifies which level of government is appropriate to enact each policy
- Names the responsible party who would implement the policy
- Describes how each policy would be enacted

BREAKOUT GROUPS

1. Equity
2. Reducing Vehicle Miles Traveled
3. Technology
4. City Government
5. Land Use
6. Safety
7. Reducing Greenhouse Gases
8. Goods Movement and Services

RESULTS

The following pages present the results from each of the 8 groups. These policies represent the ideas that participants developed in the workshop setting. Some are consistent with one another, while some contradict one another. **The identified policies should be viewed as concepts for further discussion, rather than actual policies are moving towards implementation. They do not represent the views of the agencies or organizations whose representatives participated.**

Each of the breakout groups aimed to develop policies that are intended to meet the following goals.

GOALS*

1. To reduce traffic crashes, injuries and fatalities
2. To improve access for everyone, including all income levels, as well as people of all ages and physical abilities
3. To ensure an equitable transportation system
4. To foster healthy communities
5. To create an environmentally sustainable transportation system
6. To mitigate job loss and to create new well-paying jobs for those displaced
7. To foster sustainable land use development patterns
8. To reduce traffic congestion
9. To enable sharing of rides as a viable and appealing option with a high level of service

**Groups began the session with 7 goals, and then added goals 8 and 9.*

Public policy should, where necessary, align the reality of automation technology with achieving these goals.

These goals were developed by the AV Summit Organizing Committee and borrowed on concepts developed in the Shared Mobility Principles for Livable Cities and the NACTO Blueprint for Autonomous Urbanism.

The excel tables from the Summit may also be downloaded for use of anyone who wants to modify them as a basis for their own policy forming efforts. They are in the folder "Final Product" at www.transpogroup.com/avpolicysummit.html.

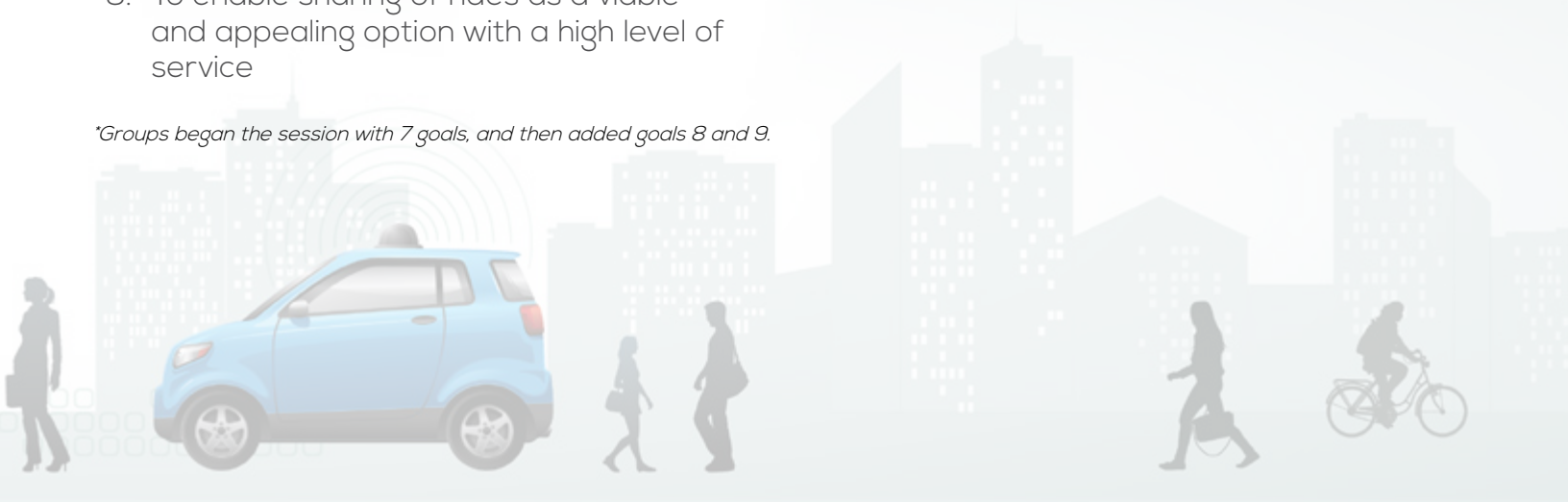

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TABLE 1 - PROPOSED POLICIES
GROUP 1 - EQUITY

POLICY	ISSUE	POLICY/ BEST PRACTICE	GOALS ADDRESSED (SEE TOP)	SHORT-TERM (0-5 years), MID-TERM (6-15 years), OR LONG-TERM (16+ years)? *When do you anticipate this policy will be needed?*	SIGNIFICANT MINORITY OPINIONS *Record any opposing thoughts for the policy that a significant number of participants hold.*	NEEDED RESEARCH OR INFORMATION? *Write in any research/information is needed to further inform this policy.*
1. Equitable access (income, people with disabilities, etc.); ensure that public transit provides high quality access						
1	Transit Agency Capacity and Equity	Use AVs as an opportunity to build capacity at transit agencies to advancing equity.	2,3	Short		
2	Funding	Create federal funding that allows transit agencies to address AVs proactively, changing models of service.	2,3	Short		
3	Equitable Service Administration Models	Enable transit agencies to administer equitable public transit, whether provided in-house or privately.	2,3	Short/Medium		
4	Active Transportation	Ensure that AVs are rolled out in a way that ensures continuation of active transportation.	2,3,4,5	Short		
5	Displacement	Ensure that AVs are rolled out in a way that prevents displacement.	2,3	Short		
6	Land Use	Prioritize land freed up by AVs for housing, public benefit uses.	2,3	Short (policy), Medium-Long (implementation)		
8	Right-of-Way	Create a hierarchy for how to prioritize land freed up by AVs (peds, bikes, transit, freight, shared avs, avs) and prioritize investments in areas based on needs.	2,3,4,5	Short (policy), Medium-Long (implementation)		
9	Land Use	Minimize potential sprawl induced by AVs.	2,3,7	Short		
10	Multi-Modality	Increase mobility options (bike/ped amenities) in suburbs, active transportation/first/last mile solutions to counteract potential impacts of AVs.	2,3,4,5	Short		
11	Insurance	Look at insurance underwriting.	2,3			
12	Access and Payment	Provide multiple ways for accessing AV services, including subscriptions, cell phones, cash.	2,3			
13	Privacy	Protect health, safety, and privacy of all riders through anonymized data.	2,3,4			
14	Emissions	Encourage zero emission AVs with clean energy sources, to reduce AQ impacts. Site vehicle fuel infrastructure/substations to not disparately impact EJ communities.	2,3,5			
15	ADA	Enforce ADA in provision of AV services.	2,3			
16	ADA, Paratransit	Use AVs to improve paratransit service, and related data to improve enforcement of ADA (within privacy).	2,3			

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				When do you anticipate this policy will be needed?	*Record any opposing thoughts for the policy that a significant number of participants hold.*	*Write in any research/information is needed to further inform this policy.*
17	Socioeconomic Equity	Ensure access for all income levels (see best practices from Bay Area/EV purchase program).	2,3			
18	Biases	Ensure that AVs programming (and use/service) eliminates implicit and explcit biases (including discrimination towards specific groups based on age, gender, race/ethnicity, ability, religious beliefs, sexual orientation, etc.).	2,3			
19	Land Use	How to make suburbs more sustainable? (Retrofit, densify, make more walk/bikeable/transit-oriented).	2,3,4,5,7			
2. Job Transition						
1	Focus on people	Focus on people, not jobs and build partnerships to create transition and training opportunities.	6	Short, ongoing		
2	Training	Conduct education, outreach, training with community colleges/unions.	6	Short		
3	Economic impacts	Assess economic impacts of AVs on the economy in terms of job transition and creating economic opportunity.	6	Short		
4	New job opportunities	Look for new opportunities for jobs, not simply those that exist now within transit agencies.	6	Short		
5	AVs connecting to jobs and job training	Deploy AV pilot projects to best connect people to jobs and job training.	6	Short		
6	Collaboration with industry and labor organizations	Convene industry organizations with labor focus to discuss transition, impacts, new opportunities.	6	Short		
7	Research job impacts	Encourage research, trend analysis, on job impacts of AVs.	6	Short		
8	Jobs projections and training	Project where future jobs will be and train people to be able to have those jobs.	6	Short		

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TABLE 1 - PROPOSED POLICIES
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6. To mitigate job loss and to create new well-paying jobs for those displaced
7. To foster sustainable land use development patterns
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POLICY	ISSUE	POLICY/ BEST PRACTICE	GOALS ADDRESSED (SEE TOP)	SHORT-TERM (0-5 years), MID-TERM (6-15 years), OR LONG-TERM (16+ years)?	SIGNIFICANT MINORITY OPINIONS	NEEDED RESEARCH OR INFORMATION?
				When do you anticipate this policy will be needed?	*Record any opposing thoughts for the policy that a significant number of participants hold.*	*Write in any research/information is needed to further inform this policy.*
3. Public health and active transportation						
1	Liability / responsibility for AVs safety	Ensure liability structure incentivizes/prioritizes OEMs taking responsibility for safety (preventing collisions/crashes) .	1	Mid-term		
2	Regulation of speed limits	Regulate speed of AVs (shift setting speeds based on safety of peds/bikes; have different speeds for different uses - highways, neighborhoods with more peds/ bikes, etc.). During transition period, need to design safer roadways. Get rid of 85th percentile method of determining speed limits.	1,4,5	Short to Mid-term		
3	LU / active transport / ROW	Reclaim ROWs and other land freed up from AVs for active transportation use. Catalogue parking and other auto-oriented uses to better understand such assets and use rates.	4,5	Long-term		
4	Infrastructure for active transportation and multimodal mobility options	Retrofit and redesign infrastructure to facilitate/encourage/integrate active transportation and multimodal mobility options.	4,5	Short to Long-Term		
5	Pricing to encourage active transportation and pooled AV use	Gamify pricing to encourage walking and bicycling to/from AV hubs for pooled use (e.g., Uber Xpress Pool--walking to certain location will lower price of trip).	4,5	Short-term		
6	Infrastructure and siting	Don't allow AV infrastructure to segregate neighborhoods. Site AV infrastructure equitably.	2,3	Short-term, ongoing		
7	Data sharing	Have AVs service providers provide data in order for localities to understand if service is being provided equitably. e.g., in order for AVs to operate in localities, required to provide data. Note: Federal legislation in this area is/may preempt State legislation.	2,3	Short-term		
8	In-vehicular safety and service provision for vulnerable populations within vehicles (i.e., attendants in shared vehicles, or some other mechanism).	Protect vulnerable populations within vehicles (i.e., attendants in shared vehicles, or some other mechanism).	1,2,3	Short-term		
9	Prioritizing resources / address social determinants of health and health inequities	Prioritize and direct resources to communities facing most health inequities/ disadvantages, to focus investment of AVs resources to improve social determinants of health and reduce health inequities. Use tools like Healthy Places Index (HPI) to identify communities.	2,3,4,5	Mid-term		
10	Active transportation infrastructure	Integrate active transportation facilities/infrastructure with AVs service provision (e.g., AV hubs with integrated infrastructure/facilities for active transportation). Tie pricing strategies / revenue to funding this.	2,3,4,5	Short to mid-term		
11	LU / healthy and sustainable communities	Prioritize walkable, bikeable, livable communities [continue to advance/support LU policies for healthy, sustainable communities]. This includes not allowing AVs and AV infrastructure to segregate/have negative impacts on communities.	2,3,4,5	Short, ongoing		
12	Community engagement	Ensure robust and meaningful community engagement for communities to identify and develop solutions to the transition to an AVs future. This includes community engagement in developing AV regulations.	2,3	Short		

GOALS ADDRESSED:

2. To improve access for everyone, including all income levels, as well as people of all ages and physical abilities
3. To ensure an equitable transportation system

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POLICY	ISSUE	POLICY/ BEST PRACTICE	GOALS ADDRESSED (SEE TOP)	SHORT-TERM (0-5 years), MID-TERM (6-15 years), OR LONG-TERM (16+ years)? *When do you anticipate this policy will be needed?*	SIGNIFICANT MINORITY OPINIONS *Record any opposing thoughts for the policy that a significant number of participants hold.*	NEEDED RESEARCH OR INFORMATION? *Write in any research/information is needed to further inform this policy.*
4. Equity in pricing						
1	Pricing	Any pricing should mitigate unintended equity impacts, recognizing current system is profoundly inequitable. Reasons for pursuing pricing concerns other desired outcomes (i.e., VMT control, sprawl, emissions/GHGs).	2,3,7	Short		
2	Housing	More housing needed (address distance/pricing/equity issue).	2,3,7	Short		
3	Taxing	Transition away from regressive tax mechanisms to fund transportation systems/ roads.	2,3	Medium		
4	Access	Provide more mobility access to more people through use of AVs, particularly for under-served populations, regardless of the model we use. Pair this with better land use and housing policy. (Currently, not clear what that model is and who will provide. It is different if transit provides that service vs. if private company provides).	2,3,7	Short, ongoing		
5	Transit-Oriented Land Use	Develop new model for "transit-oriented" services (which doesn't require or depend on existing model, e.g., transit hub, etc.).	2,3,7	Short		
6	Incentives	Use cities/jurisdictions' ability to price/incentivize/provide assets for AVs use.	2,3,4,5,7	Short, mid-term		

TABLE 2 - PROPOSED POLICIES BY LEVEL OF GOVERNMENT
GROUP 1 - EQUITY

GOVERNMENT LEVEL	ROLE	POLICY AREA	POLICIES	RESPONSIBLE PARTY TO IMPLEMENT	ENACTED BY: STANDARD, LAW, ORDINANCE, FUNDING, PLAN, REGULATION
Federal	• Equipment requirements • Funding	Equitable Access	Use AVs as an opportunity to build capacity at transit agencies to advancing equity.	FTA, Congress	law, funding
			Create federal funding that allows transit agencies to address AVs proactively, changing models of service.	USDOT, Congress	law, funding
			Enable transit agencies to administer equitable public transit, whether provided in-house or privately	FTA, Congress	law
			Ensure that AVs are rolled out in a way that ensures continuation of active transportation.	USDOT, Congress	funding
			Ensure that AVs are rolled out in a way that prevents displacement.	USDOT, Congress	funding
			Protect health, safety, and privacy of all riders through anonymized data.	USDOT	administration
			Encourage zero emission AVs with clean energy sources, to reduce AQ impacts. Site vehicle fuel infrastructure/substations to not disparately impact EJ communities.	FTA, Department of Justice, Congress	regulation, funding
			Enforce ADA in provision of AV services.	Department of Justice, Congress	regulation, enforcement
			Ensure that AV programming (and use/service) eliminates implicit and explcit biases (including discrimination towards specific groups based on age, gender, race/ethnicity, ability, religious beliefs, sexual orientation, etc.).	Department of Justice, Congress	regulation, enforcement
			How to make suburbs more sustainable? (Retrofit, densify, make more walk/bikeable/transit-oriented.)	USDOT, Congress	plans, best practices, funding
		Job Transition	Assess economic impacts of AVs on the economy in terms of job transition and creating economic opportunity.	Labor Department	study
			Encourage research, trend analysis, on job impacts of AVs.	Labor Department	study, plan
		Public Health and Active Transportation	Ensure liability structure incentivizes/prioritizes OEMs taking responsibility for safety (preventing collisions/crashes) .	NHTSA	regulations
			Gamify pricing to encourage walking and bicycling to/from AV hubs for pooled use (e.g., Uber Xpress Pool--walking to certain location will lower price of trip).	USDOT	funding, regulation
			Don't allow AV infrastructure to segregate neighborhoods. Site AV infrastructure equitably.	USDOT	funding, regulation
			Have AVs service providers provide data in order for localities to understand if service is being provided equitably. E.g., in order for AVs to operate in localities, required to provide data. Note: Federal legislation in this area is/may preempt State legislation.	USDOT	regulation, administration
			Protect vulnerable populations within vehicles (i.e., attendants in shared vehicles, or some other mechanism).	USDOT	regulation
			Prioritize and direct resources to communities facing most health inequities/disadvantages, to focus investment of AVs resources to improve social determinants of health and reduce health inequities. Use tools like Healthy Places Index (HPI) to identify communities.	Center for Disease Control, Congress	standard, funding
			Integrate active transportation facilities/infrastructure with AVs service provision (e.g., AV hubs with integrated infrastructure/ facilities for active transportation). Tie pricing strategies/revenue to funding this.	USDOT, Congress	plan, funding
			Prioritize walkable, bikeable, livable communities [continue to advance/support LU policies for healthy, sustainable communities]. This includes not allowing AVs and AV infrastructure to segregate/have negative impacts on communities.	USDOT, Congress	funding
			Ensure robust and meaningful community engagement for communities to identify and develop solutions to the transition to an AVs future. This includes community engagement in developing AV regulations.	USDOT, Congress	funding, regulation
		Equity in Pricing	Any pricing should mitigate unintended equity impacts, recognizing current system is profoundly inequitable. Reasons for pursuing pricing concerns other desired outcomes (i.e., VMT control, sprawl, emissions/GHGs).	USDOT, Congress	regulation
			More housing needed (address distance/pricing/equity issue).	HUD, Congress	funding
			Transition away from regressive tax mechanisms to fund transportation systems/roads.	USDOT, Congress	regulation

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GROUP 1 - EQUITY

GOVERNMENT LEVEL	ROLE	POLICY AREA	POLICIES	RESPONSIBLE PARTY TO IMPLEMENT	ENACTED BY: STANDARD, LAW, ORDINANCE, FUNDING, PLAN, REGULATION
State	• Driver licensing • Vehicle registration • Traffic control • Statewide planning • Enacting and enforcing traffic laws • Regulating insurance/liability • Requirements for testing	Equitable Access	Use AVs as an opportunity to build capacity at transit agencies to advancing equity.	state DOT, state legislature	law, funding
			Ensure that AVs are rolled out in a way that ensures continuation of active transportation.	state DOT, state legislature	regulations, funding
			Ensure that AVs are rolled out in a way that prevents displacement.	state DOT, state legislature	regulations, funding
			Create a hierarchy for how to prioritize street space freed up by AVs (peds, bikes, transit, freight, shared avs, avs) and prioritize investments in areas based on needs.	state DOT, state legislature	plan, best practices, law
			Minimize potential sprawl induced by AVs.	state planning	plan, law
			Increase mobility options (bike/ped amenities) in suburbs, active transportation/first/last mile solutions to counteract potential impacts of AVs.	state DOT, state legislature	plan, funding
			Look at insurance underwriting.	state insurance commission	regulations
			Provide multiple ways for accessing AV services, including subscriptions, cell phones, cash.	state legislature	enabling legislation
			Protect health, safety, and privacy of all riders through anonymized data.	state DOT	administration
			Encourage zero emission AVs with clean energy sources, to reduce AQ impacts. Site vehicle fuel infrastructure/substations to not disparately impact EJ communities.	state public utilities commission, air resourses board, state legislature	regulation
			Ensure access for all income levels (see best practices from Bay area/EV purchase program).	state DOT	plan, best practices
			Ensure that AV programming (and use/service) eliminates implicit and explcit biases (including discrimination towards specific groups based on age, gender, race/ethnicity, ability, religious beliefs, sexual orientation, etc.).	state DOT	plan
			How to make suburbs more sustainable? (Retrofit, densify, make more walk/bikeable/transit-oriented.)	planning department, state legislature	enabling legislation, funding
		Job Transition	Focus on people, not jobs and build partnerships to create transition and training opportunities.	labor department, state legislature	funding
			Look for new opportunities for jobs, not simply those that exist now within transit agencies.	labor department	administration
			Conduct education, outreach, training with community colleges/unions.	universities, community colleges, state legislature	hold classes, funding
			Assess economic impacts of AVs on the economy in terms of job transition and creating economic opportunity.	labor department, universities, state legislature	study, funding
			Encourage research, trend analysis, on job impacts of AVs.	labor department, universities, state legislature	study, funding
			Project where future jobs will be and train people to be able to have those jobs.	labor department, universities, state legislature	study, funding
		Public Health and Active Transportation	Ensure liability structure incentivizes/prioritizes OEMs taking responsibility for safety (preventing collisions/crashes) .	state insurance commission, state legislature	administration, regulation
			Regulate speed of AVs (shift setting speeds based on safety of peds/bikes; have different speeds for different uses--highways, neighborhoods with more peds/bikes, etc.). During transition period, need to design safer roadways. Get rid of 85th percentile method of determining speed limits.	state DOT, state legislature	administration, regulation, enforcement
			Retrofit and redesign infrastructure to facilitate/encourage/integrate active transportation and multimodal mobility options.	state DOT	plan, standards
			Gamify pricing to encourage walking and bicycling to/from AV hubs for pooled use (e.g., Uber Xpress Pool--walking to certain location will lower price of trip).	state DOT	regulation

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State	Driver licensing • Vehicle registration • Traffic control • Statewide planning • Enacting and enforcing traffic laws • Regulating insurance/liability • Requirements for testing	Public Health and Active Transportation	Don't allow AV infrastructure to segregate neighborhoods. Site AV infrastructure equitably.	state DOT	regulation
			Have AVs service providers provide data in order for localities to understand if service is being provided equitably. e.g., in order for AVs to operate in localities, required to provide data. Note: Federal legislation in this area is/may preempt State legislation.	state DOT	regulation
			Prioritize and direct resources to communities facing most health inequities/disadvantages, to focus investment of AVs resources to improve social determinants of health and reduce health inequities. Use tools like Healthy Places Index (HPI) to identify communities.	state department of health, state legislature	plan, standard, funding
			Integrate active transportation facilities/infrastructure with AVs service provision (e.g., AV hubs with integrated infrastructure/ facilities for active transportation). Tie pricing strategies / revenue to funding this.	state DOT, state legislature	plan, funding
			Prioritize walkable, bikeable, livable communities [continue to advance/support LU policies for healthy, sustainable communities]. This includes not allowing AVs and AV infrastructure to segregate/have negative impacts on communities.	state DOT, state legislature	plan, funding
			Ensure robust and meaningful community engagement for communities to identify and develop solutions to the transition to an AVs future. This includes community engagement in developing AV regulations.	state legislature	funding, regulation
		Equity in Pricing	Any pricing should mitigate unintended equity impacts, recognizing current system is profoundly inequitable. Reasons for pursuing pricing concerns other desired outcomes (i.e., VMT control, sprawl, emissions/GHGs).	state DOT, state legislature	regulation
			More housing needed (address distance/pricing/equity issue).	state housing department, statewide planning, state legislature	plan, regulation, funding
			Transition away from regressive tax mechanisms to fund transportation systems/roads.	state DOT, state legislature	regulation
MPO/ County	• Regional planning • Funding	Equitable Access	Use AVs as an opportunity to build capacity at transit agencies to advancing equity.	transit operators	funding, plan
			Ensure that AVs are rolled out in a way that ensures continuation of active transportation.	MPO staff and boards	funding, plan
			Ensure that AVs are rolled out in a way that prevents displacement	MPO staff and boards	funding, plan
			Prioritize land freed up by AVs for housing, public benefit uses.	MPO staff and boards, planning department, housing department	
			Create a hierarchy for how to prioritize street space freed up by AVs (peds, bikes, transit, freight, shared avs, avs) and prioritize investments in areas based on needs.	MPO staff and boards	plan, best practices, law
			Minimize potential sprawl induced by AVs.	MPO staff and boards	plan
			Increase mobility options (bike/ped amenities) in suburbs, active transportation/first/last mile solutions to counteract potential impacts of AVs.	MPO staff and boards	plan, funding
			Provide multiple ways for accessing AV services, including subscriptions, cell phones, cash.	MPO staff	administration, funding
			Encourage zero emission AVs with clean energy sources, to reduce AQ impacts. Site vehicle fuel infrastructure/substations to not disparately impact EJ communities.	MPO staff and boards	plan, funding
			How to make suburbs more sustainable? (Retrofit, densify, make more walk/bikeable/transit-oriented.)	MPO staff, transit operators	plan, funding
		Job Transition	Focus on people, not jobs and build partnerships to create transition and training opportunities.	MPO staff, transit operators	create partnerships
			Assess economic impacts of AVs on the economy in terms of job transition and creating economic opportunity.	MPO staff, transit operators	study
			Deploy AV pilot projects to best connect people to jobs and job training.	transit operators	administration, funding
			Encourage research, trend analysis, on job impacts of AVs.	MPO staff, transit operators	study

TABLE 2 - PROPOSED POLICIES BY LEVEL OF GOVERNMENT
GROUP 1 - EQUITY

GOVERNMENT LEVEL	ROLE	POLICY AREA	POLICIES	RESPONSIBLE PARTY TO IMPLEMENT	ENACTED BY: STANDARD, LAW, ORDINANCE, FUNDING, PLAN, REGULATION
MPO/ County	• Regional planning • Funding	Public Health and Active Transportation	Don't allow AV infrastructure to segregate neighborhoods. Site AV infrastructure equitably.	planning department	plan
			Prioritize and direct resources to communities facing most health inequities/disadvantages, to focus investment of AVs resources to improve social determinants of health and reduce health inequities. Use tools like Healthy Places Index (HPI) to identify communities.	county health department, planning department, MPO boards	plan, funding
			Integrate active transportation facilities/infrastructure with AVs service provision (e.g., AV hubs with integrated infrastructure/ facilities for active transportation). Tie pricing strategies / revenue to funding this.	MPO staff and board	plan, funding
			Prioritize walkable, bikeable, livable communities [continue to advance/support LU policies for healthy, sustainable communities]. This includes not allowing AVs and AV infrastructure to segregate/have negative impacts on communities.	MPO staff and board	plan, funding
			Ensure robust and meaningful community engagement for communities to identify and develop solutions to the transition to an AVs future. This includes community engagement in developing AV regulations.	MPO board	funding requirement
		Equity in Pricing	Any pricing should mitigate unintended equity impacts, recognizing current system is profoundly inequitable. Reasons for pursuing pricing concerns other desired outcomes (i.e., VMT control, sprawl, emissions/GHGs).	county board	ordinance
			More housing needed (address distance/pricing/equity issue).	county planning, county board	plan, ordinance
			Transition away from regressive tax mechanisms to fund transportation systems/roads.	county board	ordinance
			Provide more mobility access to more people through use of AVs, particularly for under-served populations, regardless of the model we use. Pair this with better land use and housing policy. (Currently, not clear what that model is and who will provide. It is different if transit provides that service--vs. if private company provides.)	regional planning/transit agency	plan, funding, ordinance
			Develop new model for "transit-oriented" services (which doesn't require or depend on existing model, e.g., transit hub, etc.).	regional planning/transit agency	plan, funding, ordinance
			Use cities/jurisdictions' ability to price/incentivize/provide assets for AVs use.	regional planning/transit agency	plan, funding, ordinance
Local	• Citywide planning • Street planning and design • Street maintenance	Equitable Access	Ensure that AVs are rolled out in a way that ensures continuation of active transportation.	local DOT, planning department, public works, city council	funding, plan, ordinance
			Ensure that AVs are rolled out in a way that prevents displacement.	local DOT, planning department, public works, city council	funding, plan, ordinance
			Prioritize land freed up by AVs for housing, public benefit uses.	planning department, housing department, city council	plan, ordinance
			Create a hierarchy for how to prioritize street space freed up by AVs (peds, bikes, transit, freight, shared avs, avs) and prioritize investments in areas based on needs.	local DOT, planning department, public works, city council	plan, ordinance
			Minimize potential sprawl induced by AVs.	planning department, city council	plan, ordinance
			Increase mobility options (bike/ped amenities) in suburbs, active transportation/first/last mile solutions to counteract potential impacts of AVs.	local DOT, planning department, public works, city council	plan, ordinance
			Provide multiple ways for accessing AV services, including subscriptions, cell phones, cash.	local DOT, city council	administration, funding
			Encourage zero emission AVs with clean energy sources, to reduce AQ impacts. Site vehicle fuel infrastructure/substations to not disparately impact EJ communities.	public works, utilities, city council	plan, ordinance, funding
			Ensure access for all income levels (see best practices from Bay area/EV purchase program).	local DOT	plan, administration
			How to make suburbs more sustainable? (Retrofit, densify, make more walk/bikeable/transit-oriented).	planning department, city council	plan, ordinance

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GOVERNMENT LEVEL	ROLE	POLICY AREA	POLICIES	RESPONSIBLE PARTY TO IMPLEMENT	ENACTED BY: STANDARD, LAW, ORDINANCE, FUNDING, PLAN, REGULATION
Local	• Citywide planning • Street planning and design • Street maintenance	Job Transition	Focus on people, not jobs and build partnerships to create transition and training opportunities.	city council	create partnerships
			Look for new opportunities for jobs, not simply those that exist now within transit agencies.	local transit operators	administration
			Deploy AV pilot projects to best connect people to jobs and job training.		
			Convene industry organizations with labor focus to discuss transition, impacts, new opportunities.	local transit operators, industry organizations, labor	meetings
		Public Health and Active Transportation	Regulate speed of AVs (shift setting speeds based on safety of peds/bikes; have different speeds for different uses--highways, neighborhoods with more peds/bikes, etc.). During transition period, need to design safer roadways. Get rid of 85th percentile method of determining speed limits.	local DOT, police department, city council	plan, ordinance, enforcement
			Reclaim ROWs and other land freed up from AVs for active transportation use. Catalogue parking and other auto-oriented uses to better understand such assets and use rates.	planning department, local DOT, city council	plan, ordinance
			Retrofit and redesign infrastructure to facilitate/encourage/integrate active transportation and multimodal mobility options.	planning department, local DOT, public works, city council	plan, ordinance, standard
			Don't allow AV infrastructure to segregate neighborhoods. Site AV infrastructure equitably.	planning department	plan
			Prioritize and direct resources to communities facing most health inequities/disadvantages, to focus investment of AVs resources to improve social determinants of health and reduce health inequities. Use tools like Healthy Places Index (HPI) to identify communities.	planning department, city council	plan, funding
			Integrate active transportation facilities/infrastructure with AVs service provision (e.g., AV hubs with integrated infrastructure/ facilities for active transportation). Tie pricing strategies / revenue to funding this.	planning department, local DOT, public works, city council	plan, funding
			Prioritize walkable, bikeable, livable communities [continue to advance/support LU policies for healthy, sustainable communities]. This includes not allowing AVs and AV infrastructure to segregate/have negative impacts on communities.	planning department, city council	plan, funding
			Ensure robust and meaningful community engagement for communities to identify and develop solutions to the transition to an AVs future. This includes community engagement in developing AV regulations.	planning department	plan
		Equity in Pricing	Any pricing should mitigate unintended equity impacts, recognizing current system is profoundly inequitable. Reasons for pursuing pricing concerns other desired outcomes (i.e., VMT control, sprawl, emissions/GHGs).	local DOT, city council	ordinance
			More housing needed (address distance/pricing/equity issue).	planning department, housing department, city council	plan, funding, ordinance
			Provide more mobility access to more people through use of AVs, particularly for under-served populations, regardless of the model we use. Pair this with better land use and housing policy. (Currently, not clear what that model is and who will provide. It is different if transit provides that service--vs. if private company provides.)	planning department, city council	plan, funding, ordinance
			Develop new model for "transit-oriented" services (which doesn't require or depend on existing model, e.g., transit hub, etc.).	planning department, city council	plan, funding, ordinance
			Use cities/jurisdictions' ability to price/incentivize/provide assets for AVs use.	planning department, local DOT, city council	plan, funding, ordinance

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8. To reduce traffic congestion
9. To enable sharing of rides as a viable and appealing option with a high level of service

TABLE 1 - PROPOSED POLICIES
GROUP 2 - VMT

POLICY	POLICY/ BEST PRACTICE	GOALS ADDRESSED (SEE TOP)	SHORT-TERM (0-5 years), MID-TERM (6-15 years), OR LONG-TERM (16+ years)?	SIGNIFICANT MINORITY OPINIONS	NEEDED RESEARCH OR INFORMATION?
			When do you anticipate this policy will be needed?	*Record any opposing thoughts for the policy that a significant number of participants hold.*	*Write in any research/information is needed to further inform this policy.*
1. Reduce VMT					
Intro	*We need to keep the vision of a greatly reduced VMT future alive through goals and policies that lead to shared, electrified, and connected AVs that enable more equitable efficient, and accessible cities. These goals and policies foster choices and options for residents across all different types of living environments.*		Varies	*If one follows press statements by OEMs and Technology company representatives none of these companies plan on selling highly automated vehicles to individuals. All of them intend on deploying AVs on shared platforms, and the business case dictates that they will be deployed as Electric Vehicles (EVs). The vehicles will also operate as mobile data gathering machines therefore there will be no need to enact policies to achieve these goals.*	
1	Achieve policy reductions. We should endeavor to achieve VMT reduction targets (whether ARB's, Caltrans', etc.). There are a number of policies, practices, and incentives aimed at reducing VMT that we can adopt and apply to AVs.	5	Mid		How will AVs be considered under environmental law?
2	Encourage broad TDM strategies including parking & employer and development mandates	3,5	Short-term		
3	Promote innovation in mobility solutions. There are many mobility/AV innovations coming from the private sector. The public sector may be able to support these through subsidies, providing testing grounds, etc.	2, 6	Short-term		
4	Involve elected officials. Promoting mobility/AV innovations requires political support. Legislators and local leaders need to be educated about these topics to garner support.	3	Short		
5	Address parking issues. Make sure cars are not driving long distances without passengers.	5, 7	Mid-term		
6	Support active transportation. AVs will likely affect active transportation including pedestrian and cyclist safety, first-last mile connectivity, and urban form. AV policies should enhance the roadway and urban environment to support modal split goals, improve safety for all roadway users, and encourage active lifestyles. The built environment should serve the needs of people and active, sustainable transportation rather than being reshaped to fit a particular transportation technology.	1, 2, 3, 5, 7,	Short-term		How will AVs interact with pedestrians and cyclists?
7	Connected vehicles. AVs should be connected (car-to-car/car-to-cloud) with the goals of reducing congestion, collisions, improving intersection operations, etc. Vehicle routing should minimize VMT.	1, 5	Short-term		Agencies with land use authority
8	Shared AVs. Passenger AVs should be available in a shared platform. Currently, only approximately 20% of all vehicles or fewer are on the road during peak travel times. Shared vehicle platforms can support goals of reducing cruising for parking and reducing land dedicated to parking.	7	Mid-term		
9	AV-only zones. Areas such as downtowns or high pedestrian areas can be restricted to AVs to reduce collisions, congestion, noise, etc.	1,4,5	Mid-Long		

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			When do you anticipate this policy will be needed?	*Record any opposing thoughts for the policy that a significant number of participants hold.*	*Write in any research/information is needed to further inform this policy.*
2. Ensuring Maximum Pooling of Rides, Modernizing Public Transit					
Intro	*AVs should foster safe, efficient, equitable, and integrated transportation (the stated objective of many of today's transportation plans). Transportation should foster sustainable land use in communities, as well as provide accessibility for all residents, whether via public transportation agencies or private sector entities. Mobility should be measured by person throughput rather than vehicle throughput to encourage more efficient use of roadways. Policies should improve the flexibility of public agencies, and the accountability of private companies.*	1,2,3,4,5,6,7	Varies		Use existing research to model travel costs and benefits at different occupancy levels (for example, what are GHG emissions at a given avg. occupancy?). What would it take to get to a given avg. occupancy (e.g., incentives and disincentives)? Would an informational campaign help change behavior? For goal setting, can we convert ARB's targets into avg. occupancy rates? What other investments and improvements will we need to support these goals.
1	Occupancy goal. Establish goal for existing average vehicle occupancy to reduce overall VMT (will this vary in urban/suburban/rural areas?). Current avg. occupancy is ~1.1; increasing this to around 1.4 could drastically reduce VMT. Shared autonomous vehicles may provide opportunities to connect people to transit, reduce trips, save costs, etc.	2, 5	Short		
2	AVs may revolutionize public transit. The policies below aim to support AV public transit that supports efficient mass transit and access for all.	1, 2, 3, 4, 5, 6, 7	Mid		
2.1	AVs for public transit. Subsidized transit/shared AVs. Encourage public transit by subsidizing public transit providers' use of AVs.	1, 2, 3, 7	Short-term		
2.2	Transit-supportive AVs. Have automated vehicles support transit rather than compete. AVs should be in service of first-last mile connections instead of competing with transit.	5, 7	mid-term		
2.3	Improve frequency and reliability of high ridership lines. Implement bus only lanes. Transit should have priority on roadways.		short-term		
2.4	Make transit free, increase frequency, add bus only lanes, operate 24 hours	1,2,4,6,7	long-term		
3	Public sector leadership. Executive order or other policy tool to mandate that the public sector adopt AV innovations (car sharing, AV fleets that reduce VMT, etc.)	1,4,5	mid-term		
4	Redefine federal and state guidelines for formula funding to allow Shared AV on-demand services.	3,7	mid-term		What role should public transit providers play? Should they own AVs? What will it take to regulate monopolization of services? If monopolies are allowed, how much service must they provide? How will levels of subsidization vary compared to current transit? How will ADA and equity concerns be addressed? What changes will need to be made to funding for AV/on-demand service? What are implications for providing service for suburban areas? Are the issues with TNCs also applicable to shared AVs? What will the business model/platform for public sector AV transit be?
5	Enable State legislation that allows local communities (counties) to establish performance metrics for Shared AV fleets	3,7	short-term		

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GROUP 2 - VMT

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POLICY	POLICY/ BEST PRACTICE	GOALS ADDRESSED (SEE TOP)	SHORT-TERM (0-5 years), MID-TERM (6-15 years), OR LONG-TERM (16+ years)?	SIGNIFICANT MINORITY OPINIONS	NEEDED RESEARCH OR INFORMATION?
			When do you anticipate this policy will be needed?	*Record any opposing thoughts for the policy that a significant number of participants hold.*	*Write in any research/information is needed to further inform this policy.*
6	Develop performance metrics that look holistically at transit to determine if transit lines need to be protected.	3	mid-term		How can we tell when/where transit should be retained/expanded or terminated and replaced with on-demand service? How do we model future transportation? What will roadway capacity and operations be with some to all vehicles as AVs?
7	Due diligence on major infrastructure to determine if current capital projects and plans should be evaluated to consider their costs, benefits, and usefulness in a transportation system with AVs.	5,7	short-term		
8	Deploy traveler information to compare different trip options and mode. See "buying down demand below under pricing strategies."	5			
9	Enable Mobility as a Service to encourage a broad range mobility services.	5			
10	Dictate automobile size. Roadway capacity can be increased with smaller vehicles. Smaller vehicles also require less energy to operate, take up less parking space, and damage roads less.	5			
	3. Pricing Strategies				
Intro/ Policy 1	Pricing strategies should be deployed to capture operating and maintenance costs, improve the integrated transportation system, manage limited supply of roadways and land, and internalize externalities (such as energy, emissions, and congestion). Focus on policies that incentivize and encourage behaviors such as higher vehicle occupancies and driving during off-peak hours. Fees should not necessarily discourage travel, rather they should help achieve mobility goals. Fees could vary based on vehicle type, travel time, location, or other factors.	4,6,7	Varies		How should VMT fees be set? When should they be flat and when should they differ across space or time? How can equity concerns be addressed?
1.1	Implement State-wide VMT user fees on vehicles, establish equity based rebates or waivers.	3,5	short	J. - Need to differentiate from AV pricing	Research equity aspects of pricing schemes
1.2	Layer pricing schemes on VMT user fees to de-scentivize zero-occupancy, and charge by location and time of day to mitigate congestion. Fine tune pricing scheme to properly address goods movement and delivery.	5	mid-term		Research equity aspects of pricing schemes, figure out how to deal with freight and economic impacts. elasticities.
1.3	Shared Automated Pooled Vehicle Fees - Passenger Mile Traveled/ Vehicle Mile Traveled Fee goes down as occupancy goes up.	5	mid-term		
1.4	Cities should plan on collecting pick-up/drop-off fees to compensate for loss of parking revenue.		short		
1.5	Shared Automated Pooled Vehicle would have access to infrastructure (i.e.. downtown, airport) when filled.	5	mid-term		
1.6	Require additional data on environmental performance to waive fees.	7	mid-term		
1.7	Price VMT like a utility so that VMT is priced on a tiered structure; higher VMT is priced higher.	5			

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			When do you anticipate this policy will be needed?	*Record any opposing thoughts for the policy that a significant number of participants hold.*	*Write in any research/information is needed to further inform this policy.*
1.8	Tie VMT to parking. Avoid vehicles without passengers cruising or driving long distances to avoid expensive parking or find cheap parking.	5			
1.9	Freight VMT. Price freight VMT to encourage freight movement during off-peak hours. There is potential to move freight or other trips to night time or other off-peak times to reduce congestion and emissions (due to cooler night time weather). Shifting freight VMT to less congested times may improve delivery time reliability and improve conditions for businesses.	1,4,6			Need research on Vehicle Size to Roadway damage/cost.
1.10	Support VMT-based driving insurance	5			
2	Cap VMT based on statewide goal. Cap-n-Trade type scheme wherein regional per capita VMT are trade-able commodities. VMT allocated on an individual or regional basis, giving users the right to buy, sell, and consume VMT allocations. Regions or individuals that use a low amount of VMT may exchange their VMT allocation on a market.	1, 2, 3, 7			How can VMT be tracked on a regional or individual basis? How can an effective market for VMT be created?
3	Use public transportation dollars traditionally spent on expanding capacity to buy down travel demand. Use mobility technology to inform individual travelers of real-time travel options that reduce VMT and possibly congestion. Options that reduce VMT would be subsidized to make them more attractive. Under this policy, taxes paid for 'transportation purposes' would be returned to users to influence their travel behavior.	5			
4	Vehicle fees. In addition to VMT fees, other fees may help achieve mobility goals. Some of these include: 1) Vehicle registration fee/vehicle sales tax to incentivize shared mobility with fewer vehicles serving more people; 2) size and weight fees that encourage smaller vehicles and help cover costs of damage to infrastructure caused by heavy vehicles; 3) zonal pricing to charge vehicles more or less in certain locations, such as different prices for driving in wilderness areas or fees for entering areas, similar to London's congestion charges.	5			
5	Policies that focus on regulating or disincentivizing existing vehicles	5			
	Other				
	Non-ground transport. AVs might also be useful for air or sea travel in the future.				
	Emergency controls. Require AVs to be connected to network that enables agencies, such as public safety/ emergency vehicles, to have some control of AVs.				
	Require that public sector employees take the safest mode of travel				

Desired Outcomes:
Create a future where VMT reduction occurs because travel to destinations is less dependent on high speed vehicles. This future includes more travel choices fostered by origins and destinations in closer proximity. AVs are a part of this future to the extent that vehicle travel is needed, but the preference is that AVs are electric, shared, and carry multiple passengers.

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GROUP 2 - VMT

GOVERNMENT LEVEL	ROLE	POLICY AREA	POLICIES	RESPONSIBLE PARTY TO IMPLEMENT	ENACTED BY: STANDARD, LAW, ORDINANCE, FUNDING, PLAN, REGULATION
Federal	• Equipment requirements • Funding	Pricing	Implement Federal-wide VMT user fees on vehicles, establish equity based rebates or waivers.	Congress - USDOT	
		Maximize Pooling / Transit	Radical Idea! Mandate that all AVs only be deployed on shared platforms.	NHTSA	
		Maximize Pooling / Transit	Radical Idea! Mandate that any private individually-owned AVs be deployed in smaller footprints vehicles.	NHTSA	
		Maximize Pooling / Transit	Develop a tax incentive structure to encourage OEM production of right sized vehicles.		
		Maximize Pooling / Transit	Revise Federal and State guidelines funding and restrictions to allow more flexibility to deploy public and private shared AV on-demand service		
		Maximize Pooling / Transit	Enable Federal / State legislation that allows local communities (counties) to establish performance metrics for Shared AV fleets		
		Reduce VMT	Connected vehicles. AVs should be connected (car-to-car/car-to-cloud) with the goals of reducing congestion, collisions, improving intersection operations, etc. Vehicle routing should minimize VMT.		
		Reduce VMT	Support active transportation. AVs will likely affect active transportation including pedestrian and cyclist safety, first-last mile connectivity, and urban form. AV policies should enhance the roadway and urban environment to support modal split goals, improve safety for all roadway users, and encourage active lifestyles. The built environment should serve the needs of people and active, sustainable transportation rather than being reshaped to fit a particular transportation technology.		
		Pricing	Use public transportation dollars traditionally spent on expanding capacity to buy down travel demand. Use mobility technology to inform individual travelers of real-time travel options that reduce VMT and possibly congestion. Options that reduce VMT would be subsidized to make them more attractive. Under this policy, taxes paid for 'transportation purposes' would be returned to users to influence their travel behavior.		
		Other	Due diligence on major infrastructure to determine if current capital projects and plans should be evaluated to consider their costs, benefits, and usefulness in a transportation system with AVs.		

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State	• Driver licensing • Vehicle registration • Traffic control • Statewide planning • Enacting and enforcing traffic laws • Regulating insurance/liability • Requirements for testing	Pricing	Implement State-wide VMT user fees on vehicles, establish equity based rebates or waivers.	Legislature - DMV - CALSTA	
		Pricing	Shared Automated Pooled Vehicle Fees - Passenger Mile Traveled/ Vehicle Mile Traveled Fee goes down as occupancy goes up.	Legislature - DMV - CALSTA	
		Pricing	Vehicle fees. In addition to VMT fees, other fees may help achieve mobility goals. Some of these include: 1) Vehicle registration fee/vehicle sales tax to incentivize shared mobility with fewer vehicles serving more people; 2) size and weight fees that encourage smaller vehicles and help cover costs of damage to infrastructure caused by heavy vehicles; 3) zonal pricing to charge vehicles more or less in certain locations, such as different prices for driving in wilderness areas or fees for entering areas, similar to London's congestion charges.	Legislature - DMV - CALSTA	
		Pricing	Continue to develop and deploy pay as you drive insurance to encourage VMT reductions.		
		Maximize Pooling / Transit	Revise Federal and State guidelines funding and restrictions to allow more flexibility to deploy public and private shared AV on-demand service		
		Maximize Pooling / Transit	Enable Federal / State legislation that allows local communities (counties) to establish performance metrics for Shared AV fleets		
		Reduce VMT	Connected vehicles. AVs should be connected (car-to-car/car-to-cloud) with the goals of reducing congestion, collisions, improving intersection operations, etc. Vehicle routing should minimize VMT.		
		Reduce VMT	Enable Mobility as a Service to encourage a broad range mobility services.		
		Reduce VMT	Support active transportation. AVs will likely affect active transportation including pedestrian and cyclist safety, first-last mile connectivity, and urban form. AV policies should enhance the roadway and urban environment to support modal split goals, improve safety for all roadway users, and encourage active lifestyles. The built environment should serve the needs of people and active, sustainable transportation rather than being reshaped to fit a particular transportation technology.		
		Pricing	Use public transportation dollars traditionally spent on expanding capacity to buy down travel demand. Use mobility technology to inform individual travelers of real-time travel options that reduce VMT and possibly congestion. Options that reduce VMT would be subsidized to make them more attractive. Under this policy, taxes paid for 'transportation purposes' would be returned to users to influence their travel behavior.		
		Pricing	Cap VMT based on statewide goal. Cap-n-Trade type scheme wherein regional per capita VMT are trade-able commodities. VMT allocated on an individual or regional basis, giving users the right to buy, sell, and consume VMT allocations. Regions or individuals that use a low amount of VMT may exchange their VMT allocation on a market.		
		Reduce VMT	Public sector leadership. Executive order or other policy tool to mandate that the public sector adopt AV innovations (car sharing, AV fleets that reduce VMT, etc.)		
		Other	Due diligence on major infrastructure to determine if current capital projects and plans should be evaluated to consider their costs, benefits, and usefulness in a transportation system with AVs.		

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MPO/County	• Regional planning • Funding	Pricing	Shared Automated Pooled Vehicle Fees - Passenger Mile Traveled/ Vehicle Mile Traveled Fee goes down as occupancy goes up.	County	
		Maximize Pooling / Transit	Enable Federal / State legislation that allows local communities such as counties to establish performance metrics for Shared AV fleets		
		Reduce VMT	Connected vehicles. AVs should be connected (car-to-car/car-to-cloud) with the goals of reducing congestion, collisions, improving intersection operations, etc. Vehicle routing should minimize VMT.		
		Reduce VMT	Maintain Regional proactive ITS database / Transportation System Center that can feed AVs with real time transportation data.		
		Reduce VMT	Enable Mobility as a Service to encourage a broad range mobility services.		
		Reduce VMT	Support active transportation. AVs will likely affect active transportation including pedestrian and cyclist safety, first-last mile connectivity, and urban form. AV policies should enhance the roadway and urban environment to support modal split goals, improve safety for all roadway users, and encourage active lifestyles. The built environment should serve the needs of people and active, sustainable transportation rather than being reshaped to fit a particular transportation technology.		
		Pricing	Use public transportation dollars traditionally spent on expanding capacity to buy down travel demand. Use mobility technology to inform individual travelers of real-time travel options that reduce VMT and possibly congestion. Options that reduce VMT would be subsidized to make them more attractive. Under this policy, taxes paid for 'transportation purposes' would be returned to users to influence their travel behavior.		
		Maximize Pooling / Transit	Due diligence on major infrastructure to determine if current capital projects and plans should be evaluated to consider their costs, benefits, and usefulness in a transportation system with AVs.		
		Other	Due diligence on major infrastructure to determine if current capital projects and plans should be evaluated to consider their costs, benefits, and usefulness in a transportation system with AVs.		

TABLE 2 - PROPOSED POLICIES BY LEVEL OF GOVERNMENT
GROUP 2 - VMT

GOVERNMENT LEVEL	ROLE	POLICY AREA	POLICIES	RESPONSIBLE PARTY TO IMPLEMENT	ENACTED BY: STANDARD, LAW, ORDINANCE, FUNDING, PLAN, REGULATION
Local	• Citywide planning • Street planning and design • Street maintenance	Pricing	Shared Automated Pooled Vehicle Fees - Passenger Mile Traveled/ Vehicle Mile Traveled Fee goes down as occupancy goes up.		
		Pricing	Layer pricing schemes on VMT user fees to disincentivize zero-occupancy, and charge by location and time of day to mitigate congestion. Fine tune pricing scheme to properly address goods movement and delivery.		
		Pricing	Cities should plan on collecting pick-up/drop-off fees to compensate for loss of parking revenue.		
		Reduce VMT	Connected vehicles. AVs should be connected (car-to-car/car-to-cloud) with the goals of reducing congestion, collisions, improving intersection operations, etc. Vehicle routing should minimize VMT.		
		Maximize Pooling / Transit	Encourage public transit to deploy transit AVs, subsidizing public transit AVs.		
		Maximize Pooling / Transit	Transit-supportive AVs. Have automated vehicles support transit rather than compete. AVs should be in service of first-last mile connections instead of competing with transit.		
		Maximize Pooling / Transit	Improve frequency and reliability of high ridership transit lines. Implement bus only lanes. Transit and high capacity shared AVs should have priority on roadways.		
		Reduce VMT	Enable Mobility as a Service to encourage a broad range mobility services.		
		Reduce VMT	Support active transportation. AVs will likely affect active transportation including pedestrian and cyclist safety, first-last mile connectivity, and urban form. AV policies should enhance the roadway and urban environment to support modal split goals, improve safety for all roadway users, and encourage active lifestyles. The built environment should serve the needs of people and active, sustainable transportation rather than being reshaped to fit a particular transportation technology.		
		Pricing	Use public transportation dollars traditionally spent on expanding capacity to buy down travel demand. Use mobility technology to inform individual travelers of real-time travel options that reduce VMT and possibly congestion. Options that reduce VMT would be subsidized to make them more attractive. Under this policy, taxes paid for 'transportation purposes' would be returned to users to influence their travel behavior.		
		Reduce VMT	Encourage broad TDM strategies including parking & employer and developer mandates that reduce VMT and adapt them to the AV future.		

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4. To foster healthy communities
5. To create an environmentally sustainable transportation system
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7. To foster sustainable land use development patterns
8. To reduce traffic congestion
9. To enable sharing of rides as a viable and appealing option with a high level of service

TABLE 1 - PROPOSED POLICIES
GROUP 3 - TECH

POLICY	POLICY/ BEST PRACTICE	GOALS ADDRESSED (SEE TOP)	SHORT-TERM (0-5 years), MID-TERM (6-15 years), OR LONG-TERM (16+ years)?	SIGNIFICANT MINORITY OPINIONS	NEEDED RESEARCH OR INFORMATION?
			When do you anticipate this policy will be needed?	*Record any opposing thoughts for the policy that a significant number of participants hold.*	*Write in any research/information is needed to further inform this policy.*
1. Communications Technology Along Roadways					
1	*Standardization of truck platooning regulations across the country*	1	short, mid-term		*Technical issues to deployment (e.g., communications over steel bridges)*
2	Protect existing bandwidth reserved for safety	1,3	short, mid, long	Revenue stream is an avenue to protection; sell off parts of bandwidths where available (federal government responsible for this)	
3	Provide a resource group or create guidelines for public agencies to help provide expertise in communication technologies	3	mid to long-term	joint powers authorities (JPAs) (cities pool together); entirely new organizational structure that will be independent of typical civil services requirement	Cities' and states' dedicating the proper staff and resources for doing so
4	Create national roadway classification system that identifies a road's readiness to support CAVs	3	short, mid, long term	Managed lanes generate revenue - who will cover debt services when you no longer charge?	
5	Assure national level of interoperability standards (e.g., cyber security, certification process)	1,3	mid to long-term	DSRC and cellular should be left to the states	
6	Model for data ownership, management, and sharing	1,3,5	mid to long-term	Automakers want to own it, but why can't they share it?	Advances in technology
7	Develop data exchange and management protocol for CAV that is technology-agnostic	3	long-term	Until the federal government acts, bands of states should set their own framework; Car companies are already employing AVs that are not CVs and will continue to do so	
8	Standardization of platooning regulations by vehicle classification across the country	1	long-term		Technical issues to deployment
2. Local Control of Right-of-Way					
1	Create a new land valuation process to be used in the federal right of way process that supports the safe deployment of CAVs	1,3	long term		
2	Promote the future-proofing of construction projects to enable CAV operations (i.e., installing conduit)	3	mid to long-term		

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			When do you anticipate this policy will be needed?	*Record any opposing thoughts for the policy that a significant number of participants hold.*	*Write in any research/information is needed to further inform this policy.*
3. V2V, V2I Strategies					
1	*Advocate for a basic connected vehicle standard at a national level (may be necessary for states to collaborate in the near-term to move this forward)*	1,3	short, mid-term		
2	all ITS architecture updates incorporate CVRIA	3	long-term		
3	Articulate the inevitability of CAVs and their uncertainty in the planning process to retain maximum flexibility as technology advances	3,5	mid-term, long-term		
4	Promote flexibilty of federal funds and support additional opportunities for CAV deployment	3,5	mid, long term		
5	Create incentives for AV to connect to infrastructure and share data (i.e., curbspace access, subsidies, shared autonomous vehicles etc.)	3,5	long-term		

TABLE 2 - PROPOSED POLICIES BY LEVEL OF GOVERNMENT
GROUP 3 - TECH

GOVERNMENT LEVEL	ROLE	POLICY AREA	POLICIES	RESPONSIBLE PARTY TO IMPLEMENT	ENACTED BY: STANDARD, LAW, ORDINANCE, FUNDING, PLAN, REGULATION
Federal	• Equipment requirements • Funding	1. Communications Technology Along Roadways	*Standardization of truck platooning regulations across the country*		standard
			Protect existing bandwidth reserved for safety		standard
			Provide a resource group or create guidelines for public agencies to help provide expertise in communication technologies		standard
			Create national roadway classification system that identifies a road's readiness to support CAVs		law
			Assure national level of interoperability standards (e.g., cyber security, certification process)		standard
			Model for data ownership, management, and sharing		standard
			Develop data exchange and management protocol for CAV that is technology-agnostic		standard
			Standardization of platooning regulations by vehicle classification across the country		standard
		2. Local Control of Right-of-Way	Create a new land valuation process to be used in the federal right of way process that supports the safe deployment of CAVs		standard
		3. V2V, V2I Strategies	Articulate the inevitability of CAVs and their uncertainty in the planning process to retain maximum flexibility as technology advances		standard

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GROUP 3 - TECH

GOVERNMENT LEVEL	ROLE	POLICY AREA	POLICIES	RESPONSIBLE PARTY TO IMPLEMENT	ENACTED BY: STANDARD, LAW, ORDINANCE, FUNDING, PLAN, REGULATION
State	• Driver licensing • Vehicle registration • Traffic control • Statewide planning • Enacting and enforcing traffic laws • Regulating insurance/liability • Requirements for testing	1. Communications Technology Along Roadways	Develop data exchange and management protocol for CAV that is technology-agnostic		standard
			Provide a resource group or create guidelines for public agencies to help provide expertise in communication technologies		standard
			Model for data ownership, management, and sharing		standard
		2. Local Control of Right-of-Way	Create a new land valuation process to be used in the federal right of way process that supports the safe deployment of CAVs		standard
		3. V2V, V2I Strategies	*Advocate for a basic connected vehicle standard at a national level (may be necessary for states to collaborate in the near-term to move this forward)*		standard
			all ITS architecture updates incorporate CVRIA		standard
			Articulate the inevitability of CAVs and their uncertainty in the planning process to retain maximum flexibility as technology advances		standard
			Promote flexibilty of federal funds and support additional opportunities for CAV deployment		funding
			Create incentives for AV to connect to infrastructure and share data (i.e., curbspace access, subsidies, shared autonomous vehicles etc.)		standard

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GROUP 3 - TECH

GOVERNMENT LEVEL	ROLE	POLICY AREA	POLICIES	RESPONSIBLE PARTY TO IMPLEMENT	ENACTED BY: STANDARD, LAW, ORDINANCE, FUNDING, PLAN, REGULATION
MPO/County	• Regional planning • Funding	3. V2V, V2I Strategies	*Advocate for a basic connected vehicle standard at a national level (may be necessary for states to collaborate in the near-term to move this forward)*		standard
			all ITS architecture updates incorporate CVRIA		standard
			Articulate the inevitability of CAVs and their uncertainty in the planning process to retain maximum flexibility as technology advances		standard
			Promote flexibility of federal funds and support additional opportunities for CAV deployment		funding
			Create incentives for AV to connect to infrastructure and share data (i.e., curbspace access, subsidies, shared autonomous vehicles etc.)		standard
Local	• Citywide planning • Street planning and design • Street maintenance	2. Local Control of Right-of-Way	Promote the future-proofing of construction projects to enable CAV operations (i.e., installing conduit		standard
		3. V2V, V2I Strategies	Articulate the inevitability of CAVs and their uncertainty in the planning process to retain maximum flexibility as technology advances		standard
			Promote flexibilty of federal funds and support additional opportunities for CAV deployment		funding
			Create incentives for AV to connect to infrastructure and share data (i.e., curbspace access, subsidies, shared autonomous vehicles etc.)		standard

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GROUP 4 - CITY GOV

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POLICY	POLICY/ BEST PRACTICE	GOALS ADDRESSED (SEETOP)	SHORT-TERM (0-5 years), MID-TERM (6-15 years), OR LONG-TERM (16+ years)?	SIGNIFICANT MINORITY OPINIONS	NEEDED RESEARCH OR INFORMATION?
			When do you anticipate this policy will be needed?	*Record any opposing thoughts for the policy that a significant number of participants hold.*	*Write in any research/information is needed to further inform this policy.*
1. Curbside and Right-of-Way Management					
1	*Create standards for an inventory of curbside resources (designations, height etc)*	1, 2	short term 1-2 years	*It's hard enough for people to figure out curb rules. "I don't think an algorithm is going to be able to figure it out". Metro isn't going to want to do this. In the end, the curb is the city's asset*	*Curbs will need to have some sort of symbol for AVs to read. Colored curb painting easily rubs off. State currently manages SWITTER database, maybe they could manage this as well? NACTO?*
2	Maintain and update physical and digital inventory of curbside resources and conditions (can companies collect the info?)	1, 2	short term 1-2 years	Inventory only useful if constantly maintained (and funded). The vehicle companies need this information, why don't they pay for the inventory?	
3	Update municipal curbside ordinances following creation of inventory	1, 2	short term 1-2 years		Do we still give parking tickets? How do we know if it's an AV or not?
4	Facilitate and encourage more dynamic curb use (drop-off) through regulations, pricing, time of use...update signage accordingly	1, 2	short term 1-2 years	Could consider charging for drop-off. If you want "rockstar" drop-off, you pay extra. We should try to incentivize use of priority drop-off areas. Currently, several of these spaces are occupied by people misusing disabled placards.	Technology to allow curbside rules to change throughout the day according to demand. During transitional period, we need to consider both AVs and non-AVs. Lots of behavioral issues that probably need further study (San Francisco is running pilot studies)
5	Prioritize curb space for pick-up, drop-off for priority riders (shared vehicles, disabled), with long-term parking mainly located in structures	1, 2	short term 1-2 years	This can't wait for AVs. Thanks to Uber, Lyft, shared vehicles in general, we already need this	Currently most curb space is used for parking. We need a full-scaled rethinking of the efficient allocation of curb space
6	Prevent AVs from allowing passengers to disembark when not safely docked	1, 2	short term 1-2 years	Safety? Psychological issues? Liability?	
7	Assess curb height need for safe and accessible docking (have car account for height differences?), disincentivize drop offs where curb height isn't ideal	2	short term 1-2 years	Standardizing curb heights across inventory logistically very difficult	LA County is using LIDAR to inventory sidewalk conditions
8	Prioritize retrofitting curbs to consolidate property-street access points (i.e.driveways)	2, 7	short term		Nelson-Nygaard wilshire blvd. street redesign study, best practices, reduce personal driveways to increase curbside space
9	Dig once- when you are retrofitting your roads put conduit in for AVs/CVs				Caltrans might have a role to play here?

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GROUP 4 - CITY GOV

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POLICY	POLICY/ BEST PRACTICE	RESPONSIBLE PARTY TO IMPLEMENT (FEDERAL, STATE, MPO/COUNTY, LOCAL)	ENACTED BY:	GOALS ADDRESSED (SEETOP)	SHORT-TERM (0-5 years), MID-TERM (6-15 years), OR LONG-TERM (16+ years)? *When do you anticipate this policy will be needed?*	SIGNIFICANT MINORITY OPINIONS *Record any opposing thoughts for the policy that a significant number of participants hold.*	NEEDED RESEARCH OR INFORMATION? *Write in any research/information is needed to further inform this policy.*
2. Parking Codes							
1	*Inventory and assess viability of repurposing municipally owned parking for drop offs/pick ups*	local	plan	2	short-term	*AVs still need some physical place to park when not in use, to charge, etc.*	
2	Identify depots or hubs for municipally-owned AV docking, storage, and charging	local (state/national best practices based on different densities and land uses)	plan	2, 7	short-term	Consider saving existing parking garages as future depots	Prioritize locations outside city center, but also keep some depots in city center. Research needed into the right size of these depots, based on density, land use ,etc. Have universities model different scenarios, case studies
3	Reassess permitting/leasing process for curbside space (vs. privately owned)	local government	ordinance	2, 7	short-term		
4	Assess pricing and management strategy (location), incentivize shared/fleet services	local government	plan	2, 5, 7	short-term		We want to disincentize less efficient travel, and prioritize shared vehicles
5	Reassess current minimum parking requirements for all types of new development, consider modular or adaptable design (integrate into LEED)	local government (academic or associations to do design best practices)	plan	2, 7	short-term	Parking is a hot-button issue. We need a phased approach to avoid pushback. Consider the design of buildings (design guidelines for retrofits?).	Research convertibility (space currently used for parking, but which can be retrofitted/re-purposed in the future). Connect to LEED design?
6	Spearhead a public education/engagement campaign to prepare the public for AVs and changes associated with them	FHWA and OEMs, private sector, local city planning departments	funding	2	mid-term	Utilize virtual reality, augmented reality technology. It's hard to get people to pay for things that they used to get for free.	
7	Reassess and optimize parking: District-based, shared parking approach, parking maximums	local government	plan	2	short-term	These are issues we've been talking about for a long time. Are AVs just a "Trojan horse" to accomplish these? Or is this a unique moment that has to be leveraged?	LA County is using LIDAR to inventory sidewalk conditions
3. Fiscal Issues							
1	Implement pricing that is aligned with state goals: least price to highest occupancy electric vehicles, elasticity to encourage behavior that meets state goals (registration fees, micro-charges)	local and state		5, 7	short-term	blockchain technology to lower cost of processing and capture as much of the revenue as possible	base the pricing on a sliding scale of "virtuousness", prioritizing favored transportation types over others. This has potentially problematic effects on equity
2	Assess revenue share split between state and local governments, transition from gas tax to VMT. CA road user charge expansion to AVs. Charge would change based on vehicle weight and efficiency	local and state	funding	2			Vary fee structure based on vehicle type/ ecological footprint

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POLICY	POLICY/ BEST PRACTICE	RESPONSIBLE PARTY TO IMPLEMENT (FEDERAL, STATE, MPO/COUNTY, LOCAL)	ENACTED BY	GOALS ADDRESSED	SHORT-TERM (0-5 years), MID-TERM (6-15 years), OR LONG-TERM (16+ years)? *When do you anticipate this policy will be needed?*	SIGNIFICANT MINORITY OPINIONS *Record any opposing thoughts for the policy that a significant number of participants hold.*	NEEDED RESEARCH OR INFORMATION? *Write in any research/information is needed to further inform this policy.*
2. Parking Codes							
3	*Geofence priority areas (downtown, congested) for higher charge or prohibit all but high occupancy vehicles, could use fast track model/transponder for non-AVs which exceptions for low-income etc.*	local, state enabling (state work with OEMs on transponder standardization)		5, 7	mid term	Can we charge cars without transponders a penalty, to encourage everyone to get a transponder?	SCAG project to assess viability of tolling on city streets
4	Consider taxing distance driven/VMT based	state		5	mid term	Tax daily VMT? Annual VMT? How to apportion revenue based on where the VMT took place? What about traditional cars during the transition period? Vary fee based on vehicle type/fuel efficiency	
5	Fiscal impact anaylis of driving related revenues and expenditures (parking and safety enforcment, street permitting etc.) how does it change % discretionary funding	statewide study, local assessment and implementation of best practices			short-term	Parking enforcement is inefficient because it is labor-intensive. Future systems will need to be less labor-intensive, more automated	Cities need to plan for a future where parking revenue and speeding tickets are much lower than they are today. Research on fiscal impact of parking revenue loss. Need an academic fiscal model.
6	Identify opportunities to reduce expenditures on parking management	local	planning		short-term	Beware of union issues	Recruit universities to help undertake this research
7	Provide payment platforms that can be paid through various options (to account for unbanked and people without smart phones). pricing for both AVs and non AVs	local or MPO (fund common transponder system)			mid-term	Some group members discussed leaving policy out of this, and letting the market decide. Transponder doesn't have to be tied to ID card. There can be pre-paid "anonymous" transponders for libertarian types (?)	
8	Cities can sell, lease or redevelop existing parking structures for other uses (development, charging, drop off and pick ups etc) once demand for parking goes down	local		7	mid-term		
9	Create dynamic pricing for delivery vehicles based on location and time of goods delivery	local		2	mid-term		Need AB testing, best practices research, trials and pilots
10	Consider Congestion pricing	state enabling legislation for cities to do congestion pricing		2, 3, 5	mid-term	This could be the right "moment" in history to introduce this radical concept	
11	Assess cooridors for initial local investments in shared, AV, EV	MPO analysis of prioritiy cooridors		7	short-term	Differing opinions on the efficacy of "desginated AV routes/corridors"	
12	Consider revenue lost from transit and opportunities to optimize transit in an AV future	MPO, national transit associations		2, 3	mid-term		more research needed on the "substitution effect". Exactly what mobility services are being substituted by AVs? Detailed behavioral data needed. Scenario planning.
13	Assess current bus route ridership, identify routes that could be eliminated due to AVs, identify other options for those riders	transit agencies				Really depends on who the ridership is. Keep in mind that not everybody has smartphones and is going to become rideshare customer	What role should insurance providers play?
14	Identify mechanisms for public-private data sharing/ governance structure	universities, think tanks					

NOTES: Enforce parking occupancy tax (LA)

TABLE 2 - PROPOSED POLICIES BY LEVEL OF GOVERNMENT
GROUP 4 - CITY GOV

GOVERNMENT LEVEL	ROLE	POLICY AREA	POLICIES	RESPONSIBLE PARTY TO IMPLEMENT	ENACTED BY: STANDARD, LAW, ORDINANCE, FUNDING, PLAN, REGULATION
Federal	• Equipment requirements • Funding	Curbside and Right-of-Way Management	Inventory of curbside resources	USDOT	pilot to inform state or federal government standard-setting, database, funding
			Maintain and update physical and digital inventory of curbside resources and conditions (can companies collect the info?); ID best practices for collecting data and updating inventory	USDOT	funding
			Prevent AVs from allowing passengers to disembark when not safely docked	Congress	law
			Assess curb height need for safe and accessible docking (have car account for height differences?)	Congress	law
		Parking Codes	Identify depots or hubs for municipally-owned AV docking, storage, and charging	USDOT	best practices based on different densities and land uses
			Spearhead a public education/engagement campaign to prepare the public for AVs and changes associated with them	FHWA or OEMs	funding
State	• Driver licensing • Vehicle registration • Traffic control • Statewide planning • Enacting and enforcing traffic laws • Regulating insurance/liability • Requirements for testing	Curbside and Right-of-Way Management	inventory of curbside resources	state DOTs	pilot to inform state or federal government standard-setting, database, funding
			Maintain and update physical and digital inventory of curbside resources and conditions (can companies collect the info?);ID best practices for collecting data and updating inventory	state DOTs	funding
			facilitate more dynamic curb use (drop off)	state legislature	state regulations to incentivize or streamline process for local govts to update ordinaces
			Prevent AVs from allowing passengers to disembark when not safely docked	state legislature	law
		Parking Codes	Identify depots or hubs for municipally-owned AV docking, storage, and charging	state DOTs	best practices based on different densities and land uses
		Fiscal Issues	Implement pricing that is aligned with state goals: least price to highest occupancy electric vehicles, elasticity to encourage behavior that meets state goals (registration fees, micro-charges)	state DOTs, state legislatures	law
			Assess revenue share split between state and local governments, transition from gas tax to VMT. CA road user charge expansion to AVs. Charge would change based on vehicle weight and efficiency	state DOTs, state legislatures	law
			Geofence priority areas (downtown, congested) for higher charge or prohibit all but high occupancy vehicles, could use fast track model/transponder for non-AVs which exceptions for low-income etc.	state legislatures	state enables by working with OEMs on transponder standardization
			Consider taxing distance driven/VMT based	state legislatures	regulation
			Fiscal impact analysis of driving related revenues and expenditures (parking and safety enforcment, street permitting etc.) how does it change % discretionary funding		statewide study
			Consider Congestion pricing	state DOTs, state legislatures	state enablling legislation for state, counties, MPOs, local
			Identify mechanisms for public-private data sharing/governance structure	universities, think tanks	study

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GOVERNMENT LEVEL	ROLE	POLICY AREA	POLICIES	RESPONSIBLE PARTY TO IMPLEMENT	ENACTED BY: STANDARD, LAW, ORDINANCE, FUNDING, PLAN, REGULATION
MPO/County	• Regional planning • Funding	Curbside and Right-of-Way Management Fiscal Issues	Maintain and update physical and digital inventory of curbside resources and conditions (can companies collect the info?)	MPO staff	plan
			Update municipal curbside ordinances following creation of inventory	MPO staff	provide models and templates
			Dig once- when you are retrofitting your roads put conduit in for AVs/CVs	MPO staff	provide models and templates
			Provide payment platforms that can be paid through various options (to account for unbanked and people without smart phones). pricing for both AVs and non AVs	MPO staff	procedure
			Assess cooridors for initial local investments in shared, AV, EV	MPO staff	MPO analysis of priority corridors
			Consider revenue lost from transit and opportunities to optimize transit in an AV future	MPO staff, national transit associations	study
			Assess current bus route ridership, identify routes that could be eliminated due to AVs, identify other options for those riders	transit agencies	study
Local	• Citywide planning • Street planning and design • Street maintenance	Curbside and Right-of-Way Management	Inventory of curbside resources		pilot to inform state or federal government standard-setting, database, funding
			Maintain and update physical and digital inventory of curbside resources and conditions (can companies collect the info?)	local DOT, public works, planning department	plan
			Update municipal curbside ordinances following creation of inventory	planning department, city council	ordinance
			Facilitate more dynamic curb use (drop off)	city council, public works	regulations, pricing, time of use, update signs
			Prioritize curb space for pick-up, drop-off for priority riders (shared vehicles, disabled), with long-term parking mainly located in structures	planning department, local DOT, public works, city council	plan
			Disincentivize drop offs where curb height isn't ideal	local DOT, public works, city council	ordinance
			Prioritize retrofitting curbs to consolidate property-street access points (i.e.driveways)	local DOT, public works, city council	funding
			Dig once- when you are retrofitting your roads put conduit in for AVs/CVs	public works	funding
		Parking Codes	Inventory and assess viability of repurposing municipally owned parking for drop offs/pick ups	local DOT, planning department	plan
			Identify depots or hubs for municipally-owned AV docking, storage, and charging	local DOT, planning department	plan
			Reassess permitting/leasing process for curbside space (vs. privately owned)	local DOT, public works, city council	ordinance
			Assess pricing and management strategy (location), incentivize shared/fleet services	planning department, local DOT	plan
			Reassess current minimum parking requirements for all types of new development, consider modular or adaptable design (integrate into LEED)	planning department, city council (academic institutions or professional associations may develop best practices)	plan
			Reassess and optimize parking: District-based, shared parking approach, parking maximums	planning department, local DOT, city council	plan

TABLE 2 - PROPOSED POLICIES BY LEVEL OF GOVERNMENT
GROUP 4 - CITY GOV

GOVERNMENT LEVEL	ROLE	POLICY AREA	POLICIES	RESPONSIBLE PARTY TO IMPLEMENT	ENACTED BY: STANDARD, LAW, ORDINANCE, FUNDING, PLAN, REGULATION
Local	• Citywide planning • Street planning and design • Street maintenance	Fiscal Issues	Implement pricing that is aligned with state goals: least price to highest occupancy electric vehicles, elasticity to encourage behavior that meets state goals (registration fees, micro-charges)	planning department, local DOT, public works, city council	ordinance
			Assess revenue share split between state and local governments, transition from gas tax to VMT. CA road user charge expansion to AVs. Charge would change based on vehicle weight and efficiency	planning department, local DOT, public works, city council	ordinance
			Geofence priority areas (downtown, congested) for higher charge or prohibit all but high occupancy vehicles, could use fast track model/transponder for non-AVs which exceptions for low-income etc.	planning department, local DOT, public works, city council	ordinance
			Fiscal impact analysis of driving related revenues and expenditures (parking and safety enforcment, street permitting etc.) how does it change % discretionary funding	local DOT	local assessment and implementation of best practices
			Identify opportunities to reduce expenditures on parking management	local DOT, planning department	plan
			Provide payment platforms that can be paid through various options (to account for unbanked and people without smart phones). pricing for both AVs and non AVs	local DOT	procedure
			Cities can sell, lease or redevelop existing parking structures for other uses (development, charging, drop off and pick ups etc) once demand for parking goes down	city property management	administrative
			Create dynamic pricing for delivery vehicles based on location and time of goods delivery	local DOT, city council	ordinance or regulation
			Consider Congestion pricing	local DOT, city council	ordinance

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TABLE 1 - PROPOSED POLICIES
GROUP 5 - LAND USE

POLICY	POLICY/ BEST PRACTICE	GOALS ADDRESSED (SEETOP)	SHORT-TERM (0-5 years), MID-TERM (6-15 years), OR LONG-TERM (16+ years)?	SIGNIFICANT MINORITY OPINIONS	NEEDED RESEARCH OR INFORMATION?
			When do you anticipate this policy will be needed?	*Record any opposing thoughts for the policy that a significant number of participants hold.*	*Write in any research/information is needed to further inform this policy.*
1. Contain Urban Sprawl					
1	*Fees to reduce inefficient transport (zero occupancy vehicles)*	4, 5, 7	Short-Term		Take all taxes and applicable fees into account before enacting additional congestion pricing.
2	Increased housing supply in downtown cores and complete/transit neighborhoods	2, 4, 7	Short-Term		AV oriented deveopment viable?
3	Regionally coordinated AV policies that are integrated into Regional Transportation Plans	2, 3, 5, 7	Short-term		AV only lanes on freeways?
4	Smart Growth: Complete communities with a mix of "live, work, and play"	2, 4, 5, 6, 7	Short-term		Inconsistencies with existing policies?"
5	Land use that is supportive of efficient transit systems.	2, 3, 4, 5, 7	Short-term		
6	To ensure that AV based transit meets the needs of current transit deserts in urban and suburban areas	2, 3, 4, 5	Short-term		Incentivize shared AV fleets
2. Land Use Planning Issues					
1	*Unbundle parking requirements from development so the cost of parking is better reflected in the marketplace*	7	Short-term		Opportunities to capture some savings from reducing parking for low-income housing and economic development.
2	AV first-mile-last-mile connections while encouraging active transportation modes.	1, 2, 3, 4, 5, 7	Short-term		
3	Develop local land-use pilot programs to test policy, program, and fiscal options	1, 2, 3, 4, 5, 6, 7	Short-term		Studies and dissemination of the findings of these pilot projects.
4	Infrastructure investments to provide adequate technology and information in regards to AV	1, 3, 4, 7	Mid-term		Inconsistencies with existing policies?"

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TABLE 1 - PROPOSED POLICIES
GROUP 5 - LAND USE

POLICY	POLICY/ BEST PRACTICE	GOALS ADDRESSED (SEETOP)	SHORT-TERM (0-5 years), MID-TERM (6-15 years), OR LONG-TERM (16+ years)?	SIGNIFICANT MINORITY OPINIONS	NEEDED RESEARCH OR INFORMATION?
			When do you anticipate this policy will be needed?	*Record any opposing thoughts for the policy that a significant number of participants hold.*	*Write in any research/information is needed to further inform this policy.*
5	*Implement AV-only lanes/zones in downtowns, institutions, freeways, and for freight movement*	1, 5	Mid-term		Higher priority for downtown, freight and goods movement
6	Incorporate AV technology into all aspects of freight and goods movement (Rail, Trucks, delivery vehicles, etc)	1, 7	Long-term		Including Aerial AVs
7	Converting parking for redevelopment, green space, mixed use or existing zoning	4, 6, 7	Mid-term		Is there a need for rezoning for different uses. Housing, commercial, greenspace.
8	Encourage telecommuting through incentives/disincentives or mandates	2, 5, 7	Short-term		
	3. Urban vs Rural Issues				
1	*Connect communities without compromising rural lifestyle*	2, 3, 4, 5, 7	Mid-term		Pressure of sprawl in small towns outside of metropolitan areas. Connect communities.
2	Ensure that communities across all geographies and income levels have access to affordable, reliable internet access (enabling telecommuting and AV communication)	2, 3, 4, 5, 7	Short-term		
3	Fair pricing of rural roads for infrastructure funding	3	Mid-term		
4	Protect rural/resource lands for non-urban uses.	7	Short-term	But some rural communities want to take advantage of economic opportunities and not restrict development.	How much does the development of AV impact the rural-urban relationship?

TABLE 2 - PROPOSED POLICIES BY LEVEL OF GOVERNMENT
GROUP 5 - LAND USE

GOVERNMENT LEVEL	ROLE	POLICY AREA	POLICIES	RESPONSIBLE PARTY TO IMPLEMENT	ENACTED BY: STANDARD, LAW, ORDINANCE, FUNDING, PLAN, REGULATION
Federal	• Equipment requirements • Funding	Land Use Planning Issues	Incorporate AV technology into all aspects of freight and goods movement (Rail, Trucks, delivery vehicles, etc)	Fed & State	Regulation
State	• Driver licensing • Vehicle registration • Traffic control • Statewide planning • Enacting and enforcing traffic laws • Regulating insurance/liability • Requirements for testing	Contain Urban Sprawl	Fees to reduce inefficient transport (zero occupancy vehicles)	State DOT and DOR	Law
		Land Use Planning Issues	Infrastructure investments to provide adequate technology and information in regards to AV	State, County, Local	Plan, Funding, Standard, Data agreements
			Implement AV-only lanes/zones in downtowns, institutions, freeways, and for freight movement	State and Local	Plan and Regulation
		Contain Urban Sprawl	Ensure that communities across all geographies and income levels have access to affordable, reliable Internet access (enabling telecommuting and AV communication)	State, County, and Local	Plan and Funding
		Urban vs. Rural Issues	Fair pricing of rural roads for infrastructure funding	MPO and County	Plan and Regulation
			Protect rural/resource lands for non-urban uses.	State, County, and Local	Plan and Law
MPO/County	• Regional planning • Funding	Contain Urban Sprawl	Regionally coordinated AV policies that are integrated into Regional Transportation Plans	MPO	Plan
			To ensure that AV based transit meets the needs of current transit deserts in urban and suburban areas	Transit Agency	Plan
		Land Use Planning Issues	Encourage telecommuting through incentives/disincentives or mandates	Local Agencies	Plan
		Urban vs. Rural Issues	Connect communities without compromising rural lifestyle	MPO, County, and Transit	Plan
Local	• Citywide planning • Street planning and design • Street maintenance	Contain Urban Sprawl	Increased housing supply in downtown cores and complete/transit neighborhoods	City	Plan & Ordinance
			Smart Growth: Complete communities with a mix of "live, work, and play"	City	Plan & Ordinance
			Land use that is supportive of efficient transit systems.	City	Plan & Ordinance
		Land Use Planning Issues	Unbundle parking requirements from development so the cost of parking is better reflected in the marketplace	City	Plan & Ordinance
			AV first-mile-last-mile connections while encouraging active transportation modes.	City	Plan & Ordinance
			Develop local land-use pilot programs to test policy, program, and fiscal options	City	Plan & Ordinance
			Converting parking for redevelopment, green space, mixed use or existing zoning	City	Plan & Ordinance

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TABLE 1 - PROPOSED POLICIES
GROUP 6 - SAFETY

6. To mitigate job loss and to create new well-paying jobs for those displaced
7. To foster sustainable land use development patterns
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9. To enable sharing of rides as a viable and appealing option with a high level of service

POLICY	POLICY/ BEST PRACTICE	GOALS ADDRESSED (SEETOP)	SHORT-TERM (0-5 years), MID-TERM (6-15 years), OR LONG-TERM (16+ years)?	SIGNIFICANT MINORITY OPINIONS	NEEDED RESEARCH OR INFORMATION?
			When do you anticipate this policy will be needed?	*Record any opposing thoughts for the policy that a significant number of participants hold.*	*Write in any research/information is needed to further inform this policy.*
1. Vehicle Regulation and Safety; Modification of Vehicle Codes					
1	*Federal agency regulation needs to expand to include non-compliance regulation of AV software and learning systems*	1	short-term	*Nil*	Focus on non-traditional, non-compliance based regulation that focuses on motivating good organizational behaviors (such as liability, burden of proof et cetera)
2	Regulation needs to be performance based and technologically agnostic.	1	short-term	While not an objection, there will still need to be some requirements in design that can be either technological (such as extant FMVSS) or procedural in addition to performance. This may require the manufacturer to (for example) identify hazards and hazardous conditions and how they are being managed or mitigated.	Ongoing research about performance based regulation versus or in concert with compliance based regulation.
3	Establish quantitative safety goals that foster risk-informed decision making and continual improvement from 'today's' safety statistics that address (1) fatalities per million km; (2) injuries per million km; and (3) damages	1	short-term	This will need involvement and engagement with 'broader society' about what these safety levels need to be.	"Analyzing extant road safety characteristics and identifying a suitably feasible growth curve for AV safety.
4	Federal legislation require manufacturers who fail to meet quantitative goals to undertake remedial action that could include things like (1) triggering of NHTSA investigation; (2) fines levied by organizations such as the DOJ; and (3) withhold certification or 'authorization' to operate.	1	short-term	Provisions need to allow the right of reply to allow operational characteristics to be taken into consideration	
5	AV specific testing, validation and verification frameworks (that include things like simulation) and tools should only be subject to performance-based regulations and not prescriptive regulations... but these processes be publicly available for independent vetting	1	short-term	It was suggested that at a three prong approach to validation and verification (current data, simulation and test data) be subject to this framework.	This approach (in terms of specifying 'how safe is safe enough') has been used in other industries such as nuclear power (NRC)."
6	AVs should not be held to any higher levels of specific ethical decision making requirements than that imposed on current typical human licensing requirements (such as moral decisions to choose killing certain people in lieu of others in the event of a likely fatal accident.	1	short-term		
7	FMVSS, vehicle codes and regulations need to be modernized to ensure that human driver specific requirements (such as having one hand on the steering wheel) is specifically aimed at non-AVs.	1	short-term	Note is that we are trying to ensure that AVs don't need to request exemptions for 'AV' characteristics that are part of normal design process	Developing best practice goals as they relate to AV simulation.
8	AVs may need to violate the hard-and-fast traffic laws in unusual situations (e.g., crossing a double-yellow line to pass a double-parked vehicle). In all other cases, manufacturers should be issued a formal notice of violation and instructed to rectify the fault in its design. State/local regulators and law enforcement bodies can exercise their authority to penalize traffic violations through fines and other actions.	1	short-term		Ethic norms and behaviors for machines replacing human functions
9	Manufacturers are 'defaultly liable' for all level 4/5 (perhaps level 3) AV incidents. The burden of proof for demonstration of liability for a third party resides with the manufacturer.	1	short-term		

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TABLE 1 - PROPOSED POLICIES
GROUP 6 - SAFETY

POLICY	POLICY/ BEST PRACTICE	GOALS ADDRESSED (SEETOP)	SHORT-TERM (0-5 years), MID-TERM (6-15 years), OR LONG-TERM (16+ years)?	SIGNIFICANT MINORITY OPINIONS	NEEDED RESEARCH OR INFORMATION?
			When do you anticipate this policy will be needed?	*Record any opposing thoughts for the policy that a significant number of participants hold.*	*Write in any research/information is needed to further inform this policy.*
2. Insurance and Liability					
1	Operating boundaries for AV operation (acceptable level of disrepair) need to be defined along with responsibilities for each. This would inform liability arguments that manufacturers would need to make in line with policies above (such as arguing for liability of an accident to be transferred to a local government jurisdiction for not maintaining a road properly).	1	short-term	Scenarios discussed include communication systems (especially between vehicles) where the data communicated is incorrect.	Determining what these (AV technological centric) boundaries are
2	There should be no impediments to AV safety (and anti-theft) performance affecting insurance premiums	1	short-term	Potential discrimination-based insurance premiums	
3. Data Sharing, Protection and Privacy					
1	Regulation and legislation needs to focus on the following categories of information (1) incident investigation information; (2) commercially valuable information; and (3) transportation planning and operations information	1	short-term		How is data collected/transferred? Who has access to data?
2	A standard of each category of information (such as incident information that would be accessible via the EDR by law enforcement agencies) needs to be established along with automated reporting requirements to respective regulatory and legislative agencies. All other sensor data remains the property of the manufacturer (not operator, owner or local jurisdiction).	1	short-term	Some opinions were conflicted regarding a more universal right of access to data. Other opinions revolved around the OEM desire to protect proprietary data.	Identification of the standards that relate to what data needs to be shared or transmitted for safety.
3	Commercially valuable data (not required for safe operation) is owned by the vehicle operator. The manufacturer requires passenger permission to provide that information to a third party, or for non-operational or non-safety purposes more broadly.	1	short-term		
4. Cyber Security					
1	For the purpose of cybersecurity, an 'AV ecosystem' needs to be defined that includes (amongst other things) the vehicles, transport infrastructure, manufacturer infrastructure and relevant third party devices.	1	short-term		
2	A federally administered AV cybersecurity 'body' be established with mandated membership that includes cyber-related national security elements (such as the NSA), federal agencies (such as NHTSA), manufacturers, state governments, other stakeholders and an advisory element that discusses and reviews AV specific cyber threats on a routine basis.	1	short-term		What are cyber security best practices? R Street Cybersecurity Report: http://2o9ub0417chl2lg6m43em6psi2i.wpengine.netdna-cdn.com/wp-content/uploads/2017/11/118.pdf
3	This body makes recommendations to the Federal Trade Commission (FTC) and NHTSA regarding vulnerabilities that may require rectification, defect investigation and fines.	1	short-term		
4	Manufacturers are required to advise a federal agency (NHTSA/FTC) of their cybersecurity strategy - specific requirements regarding minimum reporting or informing requirements.	1	short-term		What would this process look like?
5	Beyond responsibilities above, manufacturers are to develop a robust, continuous, and resourced 'patch management' or 'release engineering' plan or program to include both incremental, minor and major automated function enhancement and addressing evolving cybersecurity threats.	1	short-term		

TABLE 2 - PROPOSED POLICIES BY LEVEL OF GOVERNMENT
GROUP 6 - SAFETY

GOVERNMENT LEVEL	ROLE	POLICY AREA	POLICIES	RESPONSIBLE PARTY TO IMPLEMENT	ENACTED BY: STANDARD, LAW, ORDINANCE, FUNDING, PLAN, REGULATION
Federal	• Equipment requirements • Funding	1. Vehicle Regulation and Safety; Modification of Vehicle Codes	*Federal agency regulation needs to expand to include non-compliance regulation of AV software and learning systems*	US DOT	FMVSS?
			Regulation needs to be performance based and technologically agnostic.	NHTSA	Policy Statement?
			Establish quantitative safety goals that foster risk-informed decision making and continual improvement from 'today's' safety statistics that address (1) fatalities per million km; (2) injuries per million km; and (3) damages	NHTSA	Policy Statement?
			Federal legislation require manufacturers who fail to meet quantitative goals to undertake remedial action that could include things like (1) triggering of NHTSA investigation; (2) fines levied by organizations such as the DOJ; and (3) withhold certification or 'authorization' to operate.	US DOT	Law?
			AV specific testing, validation and verification frameworks (that include things like simulation) and tools should only be subject to performance-based regulations and not prescriptive regulations... but these processes be publicly available for independent vetting	NHTSA	Policy Statement and Regulation?
			AVs should not be held to any higher levels of specific ethical decision making requirements than that imposed on current typical human licensing requirements (such as moral decisions to choose killing certain people in lieu of others in the event of a likely fatal accident.	USDOT	Policy Statement?
			FMVSS, vehicle codes and regulations need to be modernized to ensure that human driver specific requirements (such as having one hand on the steering wheel) is specifically aimed at non-AVs.	NHTSA	FMVSS?
			Manufacturers are 'defaultly liable' for all level 4/5 (perhaps level 3) AV incidents. The burden of proof for demonstration of liability for a third party resides with the manufacturer.	DOT	Law
		3. Data Sharing, Protection and Privacy.1	Regulation and legislation needs to focus on the following categories of information (1) incident investigation information; (2) commercially valuable information; and (3) transportation planning and operations information	US DOT	Law
			A standard of each category of information (such as incident information that would be accessible via the EDR by law enforcement agencies) needs to be established along with automated reporting requirements to respective regulatory and legislative agencies. All other sensor data remains the property of the manufacturer (not operator, owner or local jurisdiction).	US DOT	Law
			Commercially valuable data (not required for safe operation) is owned by the vehicle operator. The manufacturer requires passenger permission to provide that information to a third party, or for non-operational or non-safety purposes more broadly.	US DOT	Law
		4. Cyber Security	For the purpose of cybersecurity, an 'AV ecosystem' needs to be defined that includes (amongst other things) the vehicles, transport infrastructure, manufacturer infrastructure and relevant third party devices.	NHTSA	Law
			A federally administered AV cybersecurity 'body' be established with mandated membership that includes cyber-related national security elements (such as the NSA), federal agencies (such as NHTSA), manufacturers, state governments, other stakeholders and an advisory element that discusses and reviews AV specific cyber threats on a routine basis.	US DOT	Law
			This body makes recommendations to the Federal Trade Commission (FTC) and NHTSA regarding vulnerabilities that may require rectification, defect investigation and fines.	US DOT	Law

TABLE 2 - PROPOSED POLICIES BY LEVEL OF GOVERNMENT
GROUP 6 - SAFETY

GOVERNMENT LEVEL	ROLE	POLICY AREA	POLICIES	RESPONSIBLE PARTY TO IMPLEMENT	ENACTED BY: STANDARD, LAW, ORDINANCE, FUNDING, PLAN, REGULATION
State	• Driver licensing • Vehicle registration • Traffic control • Statewide planning • Enacting and enforcing traffic laws • Regulating insurance/liability • Requirements for testing	1. Vehicle Regulation and Safety; Modification of Vehicle Codes	FMVSS, vehicle codes and regulations need to be modernized to ensure that human driver specific requirements (such as having one hand on the steering wheel) is specifically aimed at non-AVs.	State DOTs, law enforcement agencies, legislatures	Law, regulation
			AVs may need to violate the hard-and-fast traffic laws in unusual situations (e.g., crossing a double-yellow line to pass a double-parked vehicle). In all other cases, manufacturers should be issued a formal notice of violation and instructed to rectify the fault in its design. State/local regulators and law enforcement bodies can exercise their authority to penalize traffic violations through fines and other actions.	State DOTs, law enforcement agencies, legislatures	Law, regulation
		2. Insurance and Liability	Operating boundaries for AV operation (acceptable level of disrepair) need to be defined along with responsibilities for each. This would inform liability arguments that manufacturers would need to make in line with policies above (such as arguing for liability of an accident to be transferred to a local government jurisdiction for not maintaining a road properly).	State Legislature	Law
			There should be no impediments to AV safety (and anti-theft) performance affecting insurance premiums	State Legislature	Law
		1. Vehicle Regulation and Safety; Modification of Vehicle Codes	Manufacturers are 'defaultly liable' for all level 4/5 (perhaps level 3) AV incidents. The burden of proof for demonstration of liability for a third party resides with the manufacturer.	DMV	Law
		3. Data Sharing, Protection and Privacy	Regulation and legislation needs to focus on the following categories of information (1) incident investigation information; (2) commercially valuable information; and (3) transportation planning and operations information	State Legislature	Law
			A standard of each category of information (such as incident information that would be accessible via the EDR by law enforcement agencies) needs to be established along with automated reporting requirements to respective regulatory and legislative agencies. All other sensor data remains the property of the manufacturer (not operator, owner or local jurisdiction).	State Legislature	Law
			Commercially valuable data (not required for safe operation) is owned by the vehicle operator. The manufacturer requires passenger permission to provide that information to a third party, or for non-operational or non-safety purposes more broadly.	State Legislature	Law

TABLE 2 - PROPOSED POLICIES BY LEVEL OF GOVERNMENT
GROUP 6 - SAFETY

GOVERNMENT LEVEL	ROLE	POLICY AREA	POLICIES	RESPONSIBLE PARTY TO IMPLEMENT	ENACTED BY: STANDARD, LAW, ORDINANCE, FUNDING, PLAN, REGULATION
MPO/County	• Regional planning • Funding	1. Vehicle Regulation and Safety; Modification of Vehicle Codes	FMVSS, vehicle codes and regulations need to be modernized to ensure that human driver specific requirements (such as having one hand on the steering wheel) is specifically aimed at non-AVs.	County governments, law enforcement agencies	Law, regulation
			AVs may need to violate the hard-and-fast traffic laws in unusual situations (e.g., crossing a double-yellow line to pass a double-parked vehicle). In all other cases, manufacturers should be issued a formal notice of violation and instructed to rectify the fault in its design. State/local regulators and law enforcement bodies can exercise their authority to penalize traffic violations through fines and other actions.	County governments, law enforcement agencies	Law, regulation
Local	• Citywide planning • Street planning and design • Street maintenance	1. Vehicle Regulation and Safety; Modification of Vehicle Codes	FMVSS, vehicle codes and regulations need to be modernized to ensure that human driver specific requirements (such as having one hand on the steering wheel) is specifically aimed at non-AVs.	Municipal governments, law enforcement agencies	Ordinance, regulation
			AVs may need to violate the hard-and-fast traffic laws in unusual situations (e.g., crossing a double-yellow line to pass a double-parked vehicle). In all other cases, manufacturers should be issued a formal notice of violation and instructed to rectify the fault in its design. State/local regulators and law enforcement bodies can exercise their authority to penalize traffic violations through fines and other actions.	Municipal governments, law enforcement agencies	Ordinance, regulation

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TABLE 1 - PROPOSED POLICIES
GROUP 7 - GHG

POLICY	POLICY/ BEST PRACTICE	GOALS ADDRESSED (SEETOP)	SHORT-TERM (0-5 years), MID-TERM (6-15 years), OR LONG-TERM (16+ years)? *When do you anticipate this policy will be needed?*	SIGNIFICANT MINORITY OPINIONS *Record any opposing thoughts for the policy that a significant number of participants hold.*	NEEDED RESEARCH OR INFORMATION? *Write in any research/information is needed to further inform this policy.*
1. Reducing GHG					
1	Emissions performance standards for TNCs/fleets	5	short-term: draft rules for fleets of automated vehicles with internalized costs (or incentives for electric and shared)		study of fleet performance approaches to pricing based on VMT, environmental damage
2	AV registration fees linked to GHG intensity	5	short-term		research on actual AV GHG intensity based on real-world use, and data needs to verify performance
3	Policies to enable safe platooning of long-haul trucks: (a) Identify highway corridors for platooning (b) adjust requirements for safe following distance (3) evaluate other state and federal policies needed to enable deployment	5	short term: review federal truck safety standards based on automation technology and GHG reduction opportunities		Identify safe corridors for platooning.
4	Ensure federal policy does not prohibit state and local action on GHGs	5	short - clarify bill language		
5	Collect performance data (electric miles, MPGge, emissions, occupancy) and local planning needs (routes, time of day, demand and supply)	5	"short - develop standards and data management plan		3rd party, independent but accountable (probably nonprofit or government) data repository for vehicle performance data that can be anonomized for research and compliance testing use
2. Electrifying Transportation					
1	Electrifying freight- Various needs: Long haul /short haul drayage / last mile delivery (focus on last mile)	5,4	"near term: demonstrate and consider incentivizing last mile electric automated delivery vehicles		What are the net effects of last-mile delivery (increased freight use, decreased personal travel) What about city climate plans? Are there strategies for them. Geofencing based on air quality needs (based on V2I communications? Are there policy options related to utilities ground storage, TOU pricing, etc? What about the importance of microgrids? Is there an issue with emergency services? Austin (City of) has quantitative goals.
2	Charging infrastructure- Utility pricing/ real time pricing, Parking garage access/underutilized public infrastrcture , Infrastructure for TNCs (especially automated)	5,4	long term: price delivery vehicles by the mile and provide incentives for electric via lower fees"		Charging infrastructure needs identify areas of grid infrastructure with available capacity
3	Require automated vehicles be electric	5,4	short term: demonstrate technology for automated charging technology. Evaluate available public infrastructure availability for fleet use. Utility pilot projects for implementation of TNC-used charging infrastructures (explore topics like demand charges, real time tariffs).		Could this be done under existing authority (emissions or DMV policy)?

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TABLE 1 - PROPOSED POLICIES
GROUP 7 - GHG

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POLICY	POLICY/ BEST PRACTICE	GOALS ADDRESSED (SEETOP)	SHORT-TERM (0-5 years), MID-TERM (6-15 years), OR LONG-TERM (16+ years)?	SIGNIFICANT MINORITY OPINIONS	NEEDED RESEARCH OR INFORMATION?
			When do you anticipate this policy will be needed?	*Record any opposing thoughts for the policy that a significant number of participants hold.*	*Write in any research/information is needed to further inform this policy.*
4	Adapting existing policies 1) Strengthen ZEV policies, with or without specific links to fleets and automated vehicles 2) Consider increasing GHG standards for vehicles with new credits for fleet Evs subject to tracking of electric miles 3) set up an LCFS accounting to incentivize use of electric vehicles for automated fleets	5,4	short term (California): 2) workshop and policy process in 2018 should include AV aspects 3) LCFS revision should reflect improved EV accounting. Medium term - consider expansion of these approaches to other interested or aligned states (e.g. S177 states) Medium term (federal) - review post 2025 standards to increase based on the availability of automated electric vehicles		best practices and reporting - verification of electric miles. Demonstration projects. For LCFS, can this be done under existing pathway or do we need new pathways?
5	Congestion pricing exemption for EVs (ideally pooled as well)	5,4	link to developing local discussions on congestion pricing proposals.		research on methods for collecting data from TNCs etc. on occupancy and vehicle
6	EV access to restricted lanes (e.g. BRT) (TNCs/fleets)	5,4	link to building of new infrastructure. Consider auctioning off access to favorable use (e..g EV and pooled) by TNCs		evaluate cost / benefit of auctioning off access
7	Transit vehicles (electric bus purchases), route prioritization. If transit agencies move to automated, they should also be electric	5,4	"short-term: integrated planning to include automated and electric. medium-term: prefer contacts with microtransit providers that use electric vehicles"		demonstrate automated electric routes, automated charging systems
8	EV infrastructure data availability	5,4	"Short term: develop and promulgate data sharing standards for infrastructure status, availability, power, cost, and usage medium: link infrastrcuture finding to provision of data in standards, especially for automated applications"		design data standards
9	Ensure federal policy does not prevent state and local policies and actions on EVs (e.g. vehicle standards, data collection)	5,4	short - clarify bill language		
10	AV-ready EV infrastructure	5,4	"short - develop standards for wireless and wired automated charging technology short - demonstration projects of automated charging for early AV fleets medium - consider incorporating automated charging spots into key charging infrastructure (colocated with early AV deployment)"		testing of automated and wireless charging technology

TABLE 2 - PROPOSED POLICIES BY LEVEL OF GOVERNMENT
GROUP 7 - GHG

GOVERNMENT LEVEL	ROLE	POLICY AREA	POLICIES	RESPONSIBLE PARTY TO IMPLEMENT	ENACTED BY: STANDARD, LAW, ORDINANCE, FUNDING, PLAN, REGULATION
Federal	• Equipment requirements • Funding	Reducing GHG	Ensure federal policy does not prohibit state and local action on GHGs	Congress, DOT	Law and regulation
		Electrifying Transportation	Policies to enable safe platooning of long-haul trucks	DOT	Regulation
			Consider increasing GHG standards for vehicles with new credits for fleet Evs subject to tracking of electric mile	EPA	Regulation
State	• Driver licensing • Vehicle registration • Traffic control • Statewide planning • Enacting and enforcing traffic laws • Regulating insurance/liability • Requirements for testing	Reducing GHG	AV registration fees linked to GHG intensity	DMV	Regulation
			Policies to enable safe platooning of long-haul trucks: Safe following distance regulations	State Legislature	Law
			Collect performance data (electric miles, MPGge, emissions, occupancy) and local planning needs (routes, time of day, demand and supply)	State Legislature	Laws and Regulations
		Electrifying Transportation	Require automated vehicles be electric	State Legislature	Law
			Strengthen ZEV policies, with or without specific links to fleets and automated vehicles	State executive (e.g. CARB)	Regulation
			Consider increasing GHG standards for vehicles with new credits for fleet Evs subject to tracking of electric mile	State executive (e.g. CARB)	Regulation
			set up an LCFS accounting to incentivize use of electric vehicles for automated fleets	State executive (e.g. CARB)	Regulation
MPO/County	• Regional planning • Funding	Reducing GHG	Emission performance standards for TNCs / Fleets	Eg. Port Authority if applied to TNCs operating at airports	Regulation
			Collect performance data (electric miles, MPGge, emissions, occupancy) and local planning needs (routes, time of day, demand and supply)	MPOs	Regulation
		Electrifying Transportation	Congestion pricing exemption for EVs (ideally pooled as well)	MPOs or Cities	
			EV access to restricted lanes (e.g. BRT) (TNCs/fleets)	MPOs or Cities	
Local	• Citywide planning • Street planning and design • Street maintenance	Electrifying Transportation	Transit vehicles (electric bus purchases), route prioritization. If transit agencies move to automated, they should also be electric	Transit agencies	
			EV infrastructure data availability		Standard
			AV-ready EV infrastructure		

TABLE 1 - PROPOSED POLICIES

GROUP 8 - GOODS, MOVEMENT, AND SERVICES

1. To reduce traffic crashes, injuries and fatalities
2. To improve access for everyone, including all income levels, as well as people of all ages and physical abilities
3. To ensure an equitable transportation system
4. To foster healthy communities
5. To create an environmentally sustainable transportation system
6. To mitigate job loss and to create new well-paying jobs for those displaced
7. To foster sustainable land use development patterns
8. To reduce traffic congestion
9. To enable sharing of rides as a viable and appealing option with a high level of service

POLICY	POLICY/ BEST PRACTICE	GOALS ADDRESSED (SEETOP)	SHORT-TERM (0-5 years), MID-TERM (6-15 years), OR LONG-TERM (16+ years)?	SIGNIFICANT MINORITY OPINIONS	NEEDED RESEARCH OR INFORMATION?
			When do you anticipate this policy will be needed?	*Record any opposing thoughts for the policy that a significant number of participants hold.*	*Write in any research/information is needed to further inform this policy.*
1	Allow large AVs		Short-term		
2	Professional driver Re-training Program	1	Mid-term		Review the trends for job displacement, job transformation and job creation. Provide case studies on past re-training programs.
3	Research truck size optimization as it relates to roadway damage.	1, 2	Short-term		
4	Border crossings for AVs	1, 2	Short-term		
5	Public Acceptance	1	Short term		
6	Sidewalk friendly AVs - deliveries, snow plow, parks maintenance, etc.	1, 2, 3	Short term - URGENTLY		Research existing sidewalk AV projects/programs.
7	Public AV services within the public ROW.	1, 2	Short term		
8	Data use: Data Heaven & Data Hell (AVs see everything visible from the street & data can be mined for intelligence)	1	Short term		
9	Promote autonomous-friendly corridors	1, 2	Short term		
10	Promote development of self-delivering bicycle concept	1, 2	Short-term		

TABLE 2 - PROPOSED POLICIES BY LEVEL OF GOVERNMENT
GROUP 8 - GOODS, MOVEMENT, AND SERVICES

GOVERNMENT LEVEL	ROLE	POLICY AREA	POLICIES	RESPONSIBLE PARTY TO IMPLEMENT	ENACTED BY: STANDARD, LAW, ORDINANCE, FUNDING, PLAN, REGULATION
Federal	• Equipment requirements • Funding		Allow large AVs	USDOT	Standard
			Professional driver Re-training Program	FMCSA	Funding
			Research truck size optimization as it relates to roadway damage.	USDOT; GAO	Law
			Border crossings for AVs	DHS - Customs and Border Protection	
			Public Acceptance	USDOT; US Ad Council	
			Sidewalk friendly AVs - deliveries, snow plow, parks maintenance, etc.	NEPA (federal lead agencies will vary); ADA	
			Public AV services within the public ROW.	FHWA; Potentially NPS	
			Data use: Data Heaven & Data Hell (AVs see everything visible from the street & data can be mined for intelligence)	Every Agency (security, enforcement, regulation, use of)	
			Promote autonomous-friendly corridors		
State	• Driver licensing • Vehicle registration • Traffic control • Statewide planning • Enacting and enforcing traffic laws • Regulating insurance/liability • Requirements for testing	1	Allow large AVs	AAMVA?	
		3	Research truck size optimization as it relates to roadway damage.		
		4	Border crossings for AVs	Highway Patrol; Office of Public Safety (the local enforcement agency)	
		5	Public Acceptance	DOTs, Economic Development Offices	
		6	Sidewalk friendly AVs - deliveries, snow plow, parks maintenance, etc.	DOT; Housing and Human Services	
		7	Public AV services within the public ROW.	DOT; Potentially State Parks Departments	
		8	Data use: Data Heaven & Data Hell (AVs see everything visible from the street & data can be mined for intelligence)		
		9	Promote autonomous-friendly corridors		

TABLE 2 - PROPOSED POLICIES BY LEVEL OF GOVERNMENT
GROUP 8 - GOODS, MOVEMENT, AND SERVICES

GOVERNMENT LEVEL	ROLE	POLICY AREA	POLICIES	RESPONSIBLE PARTY TO IMPLEMENT	ENACTED BY: STANDARD, LAW, ORDINANCE, FUNDING, PLAN, REGULATION
MPO/County	• Regional planning • Funding	5	Public Acceptance	Established Innovation Districts	
		6	Sidewalk friendly AVs - deliveries, snow plow, parks maintenance, etc.		
		7	Public AV services within the public ROW.	Probably many departments (DOTs, Parks and Recreation, etc.)	
		8	Data use: Data Heaven & Data Hell (AVs see everything visible from the street & data can be mined for intelligence)		
		9	Promote autonomous-friendly corridors		
Local	• Citywide planning • Street planning and design • Street maintenance	5	Public Acceptance	City Planning Departments	
		6	Sidewalk friendly AVs - deliveries, snow plow, parks maintenance, etc.	Local jurisdictions (Planning Departments, Public Works, etc.)	
		7	Public AV services within the public ROW.	Probably many departments (DOTs, Parks and Recreation, etc.)	
		8	Data use: Data Heaven & Data Hell (AVs see everything visible from the street & data can be mined for intelligence)		
		9	Promote autonomous-friendly corridors		