



# Metropolitan Transportation Commission

Bay Area Metro Center  
375 Beale Street  
San Francisco, CA 94105

## Meeting Agenda

### Planning Committee

*MTC Committee Members:*

*James P. Spering, Chair Anne W Halsted, Vice Chair*

*Alicia C. Aguirre, Damon Connolly,  
Dave Cortese, Sam Liccardo, Julie Pierce*

*Non-Voting Members: Tom Azumbrado, Dorene M. Giacomini*

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Friday, November 3, 2017

9:30 AM

Board Room - 1st Floor

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This meeting is scheduled to be webcast live on the Metropolitan Transportation Commission's Web site: <http://mtc.ca.gov/whats-happening/meetings> and will take place at 9:30 a.m.

#### 1. Roll Call / Confirm Quorum

*Quorum: A quorum of this committee shall be a majority of its regular voting members (4).*

#### 2. Pledge of Allegiance

#### 3. Compensation Announcement - Committee Secretary

#### 4. Consent Calendar

- 4a. [17-2922](#) Minutes of the October 13, 2017 Meeting

**Action:** Committee Approval

**Attachments:** [4a\\_MTC\\_PLNG MTG\\_Minutes\\_Oct 13 2017.pdf](#)

#### 5. Information

- 5a. [17-2988](#) Future Mobility Research Program - Update

Update on joint program to fund research on emerging technologies, such as current on-demand, ride-hail services, as well as automated, driverless vehicles.

**Action:** Information

**Presenter:** Adam Noelting

**Attachments:** [5a\\_Future Mobility Research Program – Update.pdf](#)

**6. Public Comment / Other Business**

**7. Adjournment / Next Meeting**

**The next meeting of the Planning Committee will be December 8, 2017, 9:30 a.m. at the Bay Area Metro Center, 375 Beale Street, San Francisco, CA.**

**Public Comment:** The public is encouraged to comment on agenda items at Committee meetings by completing a request-to-speak card (available from staff) and passing it to the Committee secretary. Public comment may be limited by any of the procedures set forth in Section 3.09 of MTC's Procedures Manual (Resolution No. 1058, Revised) if, in the chair's judgment, it is necessary to maintain the orderly flow of business.

**Meeting Conduct:** If this meeting is willfully interrupted or disrupted by one or more persons rendering orderly conduct of the meeting unfeasible, the Chair may order the removal of individuals who are willfully disrupting the meeting. Such individuals may be arrested. If order cannot be restored by such removal, the members of the Committee may direct that the meeting room be cleared (except for representatives of the press or other news media not participating in the disturbance), and the session may continue.

**Record of Meeting:** Committee meetings are recorded. Copies of recordings are available at a nominal charge, or recordings may be listened to at MTC offices by appointment. Audiocasts are maintained on MTC's Web site ([mtc.ca.gov](http://mtc.ca.gov)) for public review for at least one year.

**Accessibility and Title VI:** MTC provides services/accommodations upon request to persons with disabilities and individuals who are limited-English proficient who wish to address Commission matters. For accommodations or translations assistance, please call 415.778.6757 or 415.778.6769 for TDD/TTY. We require three working days' notice to accommodate your request.

**可及性和法令第六章:** MTC 根據要求向希望來委員會討論有關事宜的殘疾人士及英語有限者提供服務/方便。需要便利設施或翻譯協助者，請致電 415.778.6757 或 415.778.6769 TDD / TTY。我們要求您在三個工作日前告知，以滿足您的要求。

**Acceso y el Titulo VI:** La MTC puede proveer asistencia/facilitar la comunicación a las personas discapacitadas y los individuos con conocimiento limitado del inglés quienes quieran dirigirse a la Comisión. Para solicitar asistencia, por favor llame al número 415.778.6757 o al 415.778.6769 para TDD/TTY. Requerimos que solicite asistencia con tres días hábiles de anticipación para poderle proveer asistencia.

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Attachments are sent to Committee members, key staff and others as appropriate. Copies will be available at the meeting.

All items on the agenda are subject to action and/or change by the Committee. Actions recommended by staff are subject to change by the Committee.

MTC's Chair and Vice-Chair are ex-officio voting members of all standing Committees.



# Metropolitan Transportation Commission

375 Beale Street, Suite 800  
San Francisco, CA 94105

## Legislation Details (With Text)

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**File #:** 17-2922      **Version:** 1      **Name:**  
**Type:** Minutes      **Status:** Consent  
**File created:** 10/5/2017      **In control:** Planning Committee  
**On agenda:** 11/3/2017      **Final action:**  
**Title:** Minutes of the October 13, 2017 Meeting  
**Sponsors:**  
**Indexes:**  
**Code sections:**  
**Attachments:** [4a MTC\\_PLNG MTG\\_Minutes\\_Oct 13 2017.pdf](#)

Date	Ver.	Action By	Action	Result
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**Subject:**  
Minutes of the October 13, 2017 Meeting

**Recommended Action:**  
Committee Approval

**Attachments:**

## Meeting Minutes - Draft

### Joint MTC Planning Committee with the ABAG Administrative Committee

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Friday, October 13, 2017

9:40 AM

Board Room - 1st Floor

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#### 1. Roll Call / Confirm Quorum

**Present:** 7 - Chair Spering, Vice Chair Halsted, Commissioner Aguirre, Commissioner Connolly, Commissioner Liccardo, Commissioner Pierce and Commissioner Cortese

Non-Voting Member Present: Commissioner Azumbrado

Non-Voting Member Absent: Commissioner Giacomini

Ex Officio Voting Member Present: Commission Vice Chair Haggerty

Ad Hoc Non-Voting Members Present: Commissioner Josefowitz and Commissioner Worth

ABAG Administrative Committee Members Present: Cortese, Eklund, Gupta, Haggerty, Mltchoff, Pierce, and Scharff.

#### 2. ABAG Compensation Announcement - Clerk of the Board

#### 3. ABAG Administrative Committee Consent Calendar

- 3a. [17-2900](#) Approval of ABAG Administrative Committee Summary Minutes of Meeting on July 14, 2017

**Action:** ABAG Administrative Committee Approval

**Attachments:** [3a\\_AC Minutes 20170714 Draft.pdf](#)

- 3b. [17-2940](#) Ratification of Approval of ABAG Special Liability Insurance Program (SLIP) Proposal by Alliant Insurance Services, Inc.

**Action:** ABAG Administrative Committee Approval

**Attachments:** [3b\\_ABAG SLIP Approval Combined.pdf](#)

#### **4. MTC Planning Committee Consent Calendar**

Upon the motion by Commissioner Pierce and second by Commissioner Aguirre, the MTC Planning Committee Consent Calendar was unanimously approved by the following vote:

**Aye:** 6 - Chair Spering, Vice Chair Halsted, Commissioner Aguirre, Commissioner Connolly, Commissioner Pierce and Commissioner Cortese

**Absent:** 1 - Commissioner Liccardo

**4a.**     [17-2856](#)     Minutes of the September 8, 2017 Meeting

**Action:** Committee Approval

**Attachments:** [4a PLNG MTG Minutes Sept 8 2017.pdf](#)

Commissioner Liccardo arrived after the approval of the Consent Calendar.

#### **5. Information**

**5a.**     [17-2883](#)     CASA - Committee to House the Bay Area

Presentation outlining CASA, the multi-sector housing initiative convened by MTC to address the Bay Area's chronic housing challenges.

**Action:** Information

**Presenter:** Ken Kirkey

**Attachments:** [5a CASA.pdf](#)

The following individuals spoke on this item:

Ken Bukowski;

Roland Lebrun;

Rich Hedges; and

Jane Kramer.

**5b.**     [17-2884](#)     SB 375 Greenhouse Gas Target Update Process

Presentation of potential initiatives and related timeline to update the Greenhouse Gas (GHG) Target for the next iteration of Plan Bay Area to be adopted in 2021 and an overview of the updated Climate Initiatives program and its role in achieving the regional GHG Target.

**Action:** Information

**Presenter:** Lisa Zorn and Krute Singa

**Attachments:** [5b\\_SB 375 GHG Target Update Process.pdf](#)

Roland Lebrun was called to speak.

Ken Bukowski was called to speak.

**6. Public Comment / Other Business**

The following individuals spoke on this item:

Ken Bukowski;

Aleta Dupree; and

Roland Lebrun.

**7. Adjournment / Next Meeting**

**The next meeting of the Planning Committee will be November 3, 2017, 9:30 a.m. at the Bay Area Metro Center, 375 Beale Street, San Francisco, CA.**



# Metropolitan Transportation Commission

375 Beale Street, Suite 800  
San Francisco, CA 94105

## Legislation Details (With Text)

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**File #:** 17-2988      **Version:** 1      **Name:**  
**Type:** Report      **Status:** Informational  
**File created:** 10/17/2017      **In control:** Planning Committee  
**On agenda:** 11/3/2017      **Final action:**  
**Title:** Future Mobility Research Program - Update

Update on joint program to fund research on emerging technologies, such as current on-demand, ride-hail services, as well as automated, driverless vehicles.

**Sponsors:**

**Indexes:**

**Code sections:**

**Attachments:** [5a\\_Future Mobility Research Program – Update.pdf](#)

Date	Ver.	Action By	Action	Result
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**Subject:**

Future Mobility Research Program - Update

Update on joint program to fund research on emerging technologies, such as current on-demand, ride-hail services, as well as automated, driverless vehicles.

**Presenter:**

Adam Noelting

**Recommended Action:**

Information

**Attachments:**





METROPOLITAN  
TRANSPORTATION  
COMMISSION

**Agenda Item 5a**  
Bay Area Metro Center  
375 Beale Street  
San Francisco, CA 94105  
TEL 415.778.6700  
WEB [www.mtc.ca.gov](http://www.mtc.ca.gov)

## *Memorandum*

TO: Planning Committee

DATE: October 27, 2017

FR: Deputy Executive Director, Policy

W.I. 1121

RE: Future Mobility Research Program – Update

### **Background**

In 2015, the four largest Metropolitan Planning Organizations (MPOs) in California — Metropolitan Transportation Commission (MTC), Southern California Association of Governments (SCAG), San Diego Association of Governments (SANDAG), and Sacramento Association of Governments (SACOG) — partnered to form the Future Mobility Research Program (FMRP). The FMRP pools resources to fund research assessing a range of emerging technologies, such as current on-demand ride-hail services — also referred to as Transportation Network Companies (TNCs) — as well as automated, driverless (“autonomous”) vehicles. The primary goal of the research is to inform assumptions for our regions’ respective Regional Transportation Plans and Sustainable Communities Strategies (RTP/SCS), which must achieve passenger vehicle greenhouse gas (GHG) emissions reduction targets and strive toward other performance targets related to health, equity, and access to jobs.

In 2016, the FMRP established a bench of qualified consultants to begin studying some of these common interests and questions. In 2017, a cooperative agreement was signed by the Executive Directors of each of the four MPOs. The agreement establishes a timeline, budget, and lays out the roles and responsibilities for the FMRP partners. MTC has assumed the project leadership role in this effort, including issuing joint procurements, and overall project management.

In establishing the consultant bench, expertise was requested in the following areas:

- Conducting research and technical or policy analysis of new travel options;
- Assessing observed or potential impacts of newly available travel data on planning and policy outcomes;
- Evaluating the potential impact of public policy interventions;
- Assessing travel patterns resulting from new technologies;
- Convening and facilitating thought leaders on the subject;
- Providing project-level technical oversight, guidance, and coordination; and,
- Providing communications and outreach.

To-date the FMRP has issued three procurements:

- Task 1: Roles for MPOs (Sam Schwartz)
- Task 2: Modeling Assumptions for Emerging Technologies (Arup)
- Task 3: On/Off-Model Analysis of Emerging Technologies (WSP USA)

## Key Findings

Two key themes — *opportunity* and *uncertainty* — emerge from the completed tasks. These themes can help inform the regions as they work toward long range planning goals and near-term project and program delivery. These two themes emphasize that as the regional planning agencies charged with formally steering the future of transportation in our respective regions, we must consider:

- *What are the potential roles for MPOs and other public agencies?*
- *What are the outcomes we need and want to achieve?*
- *What are the changes that are here, and what is coming?*
- *How should planning adapt?*

### *Opportunity:*

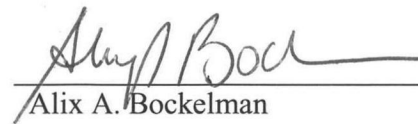
MPOs and other public agencies have an opportunity to be more proactive when it comes to emerging technologies. Task 1 identified potential additional roles to MPO's primary planning function, including: monitoring and/or influencing federal and state policy and programs; collecting, analyzing, and sharing data; research; funding; education; technical assistance; and pilots/demonstrations. MPOs need to support programs and projects that ensure wide benefits among all users of the transportation system.

### *Uncertainty:*

To better understand the future of new transportation technologies, the study performed twenty-two (22) expert interviews, reviewed two recent surveys, and performed the Delphi survey method, where industry experts and researchers answered two-rounds of questionnaires, in an attempt to foresee how fully driverless vehicles might influence travel behavior in the Bay Area. Some of these findings are listed in **Attachment A**. While these findings suggest that fully driverless vehicles are likely to take hold within the horizon year of our next RTP/SCS, there is not unanimous agreement among the experts and researchers on these forecasts.

## Next Steps

The FMRP is meant to inform the third and subsequent rounds of RTP/SCS development. The FMRP cooperative agreement established a completion timeline of June 30, 2021. To date, approximately 70 percent of the project budget has been committed to tasks one through three. The findings from tasks one through three will inform the FMRP partners to identify future projects for the remaining funds. In addition, MTC, SCAG, SANDAG, and the San Francisco County Transportation Authority (SFCTA) submitted a funding application to Caltrans for a Sustainable Communities' Planning Grant to collect and analyze data from on-demand ride-hail ("TNC") services' (e.g. Uber and Lyft) passengers and drivers. Grant awards will be announced in December 2017. The project, if awarded, would be managed under the umbrella of the FMRP.



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Alix A. Bockelman

## Attachments:

- Attachment A: Key Findings, Task 2
- Presentation

AAB:kk/an

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## Key Findings, Task 2: Modeling Assumptions for Fully Driverless Vehicles<sup>1</sup>

### A. Interview Findings<sup>2</sup>:

- **Consensus:** Driverless vehicles will likely induce trips, generate longer trips, increase capacity, and increase vehicle miles traveled/emissions (until electric vehicles dominate the market).
- **Uncertainty:** There is tremendous uncertainty related to timing and overall market penetration of driverless vehicles, the adoption of shared driverless vehicles compared to owned driverless vehicles, time sensitivity, per-mile operating costs, etc.
- **Impacts will differ across regions:** driverless vehicle impacts will differ significantly between higher density urban areas with a higher level of amenities and lower density, lower amenity urban areas.
- **Transit:** Public transit will change considerably with high utilization of driverless vehicles, but will still play a role. Driverless vehicles will compete with public transit services in areas with relatively low capacity and low frequency service. However, driverless vehicles could also be complementary to high capacity transit, as a first- and last-mile solution.
- **Vehicle miles traveled (VMT) increases:** Increased driverless vehicle usage will result in empty vehicle miles, which will contribute to VMT. However, greater efficiency with and higher vehicle occupancy in shared driverless vehicles could mitigate the aggregate increase in VMT.
- **Policy interventions:** VMT taxes, congestion charging, and subsidies and other regulatory responses, such as dedicated lanes for high-occupancy shared driverless vehicles, can help mitigate projected increases in VMT.

### B. Literature Findings<sup>2</sup>:

- **Timing:** 3 to 13 years until fully driverless will be available for purchase
- **Safety:** +40% to +90% increase in safety
- **Capacity:** 0% to +45% increase in roadway capacity
- **Demand:** +5% to +40% increase in VMT
- **Energy/Emissions:** -50% to +100% change in greenhouse gas (GHG) emissions

### C. Delphi Findings<sup>2</sup>:

Variable – Fully Driverless Vehicles	Average Response	Standard Deviation
Vehicles Available for Purchase	2026	6 years
Relative Cost to Legacy Vehicle (%)	↓ 14%	25%
Consist of 50% of Urban Trips	2036	5 years
Consist of 90% of Urban Trips	2049	7 years
Resulting Increase in Freeway Capacity (%)	↑ 44%	41%
Resulting increase in Urban Street Capacity (%)	↑ 23%	22%
Distance from Home to Work (%)	↑ 31%	27%
Time Spent in Vehicle (%)	↑ 31%	23%
Percent of Trips that are Shared (%)	61%	24%
Percent of Trips by Empty Vehicle Circulation (%)	26%	18%
Congestion (worse 1 - 10 better)	6	2

<sup>1</sup> Fully Driverless Vehicles = Level 5 “Full Automation.” The Society of Automotive Engineers (SAE) describes Level 5 autonomy as “fully driverless under all conditions.”

<sup>2</sup> Task Order 2 – Task 3: Review of MTC’s approach to simulating automated vehicles (Arup, September 7, 2017)

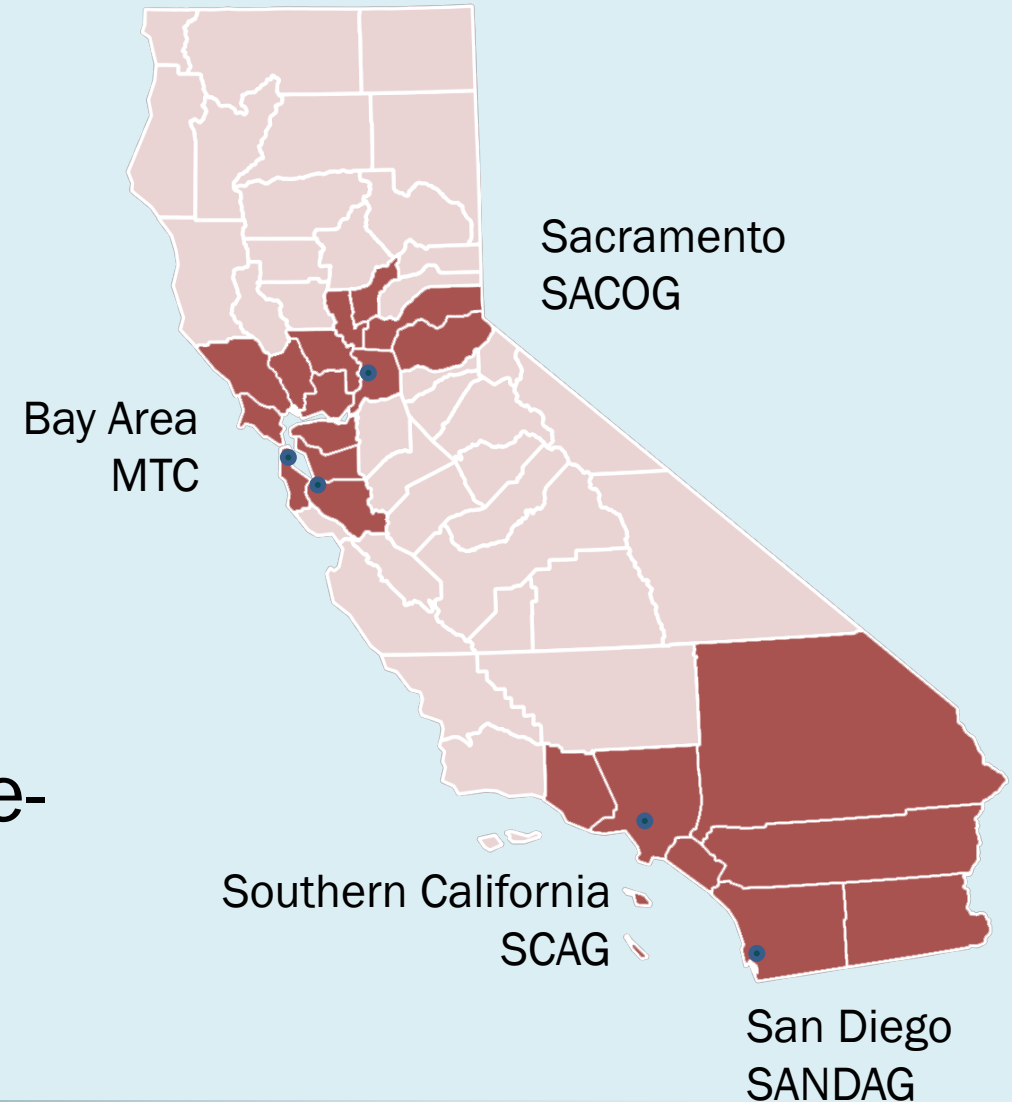
# The Future Mobility Research Program Overview

## Partners:

MTC, SACOG, SCAG, SANDAG

## Purpose:

Jointly fund research on the potential impacts of emerging transportation technologies, such as on-demand, ride-hail services and driverless vehicles.



# Emerging Technologies and Trends

- Expanded consumer mobility services
- Transportation system management technologies
- Data
- Vehicle technologies
- Freight

# Current Research Efforts

- **Task One:** Roles for MPOs
- **Task Two:** Modeling Assumptions for Emerging Technologies
- **Task Three:** On/Off-Model Analysis of Emerging Technologies

# What is the Industry's Vision of the Future?



Source: Qualcomm 2017

# A unique opportunity...



New travel choices  
Ridesharing  
Reduced car ownership



Repurposed parking  
Space for Housing  
Public space



Safer streets  
Improved user experience  
Efficient network management



Higher efficiency transit  
Lower operating costs



# ... but not without risks

Increased VMT  
Empty vehicle circulation  
Fight for the market



Urban sprawl  
Higher congestion  
Longer travel times



Cyber attack  
Privacy concerns

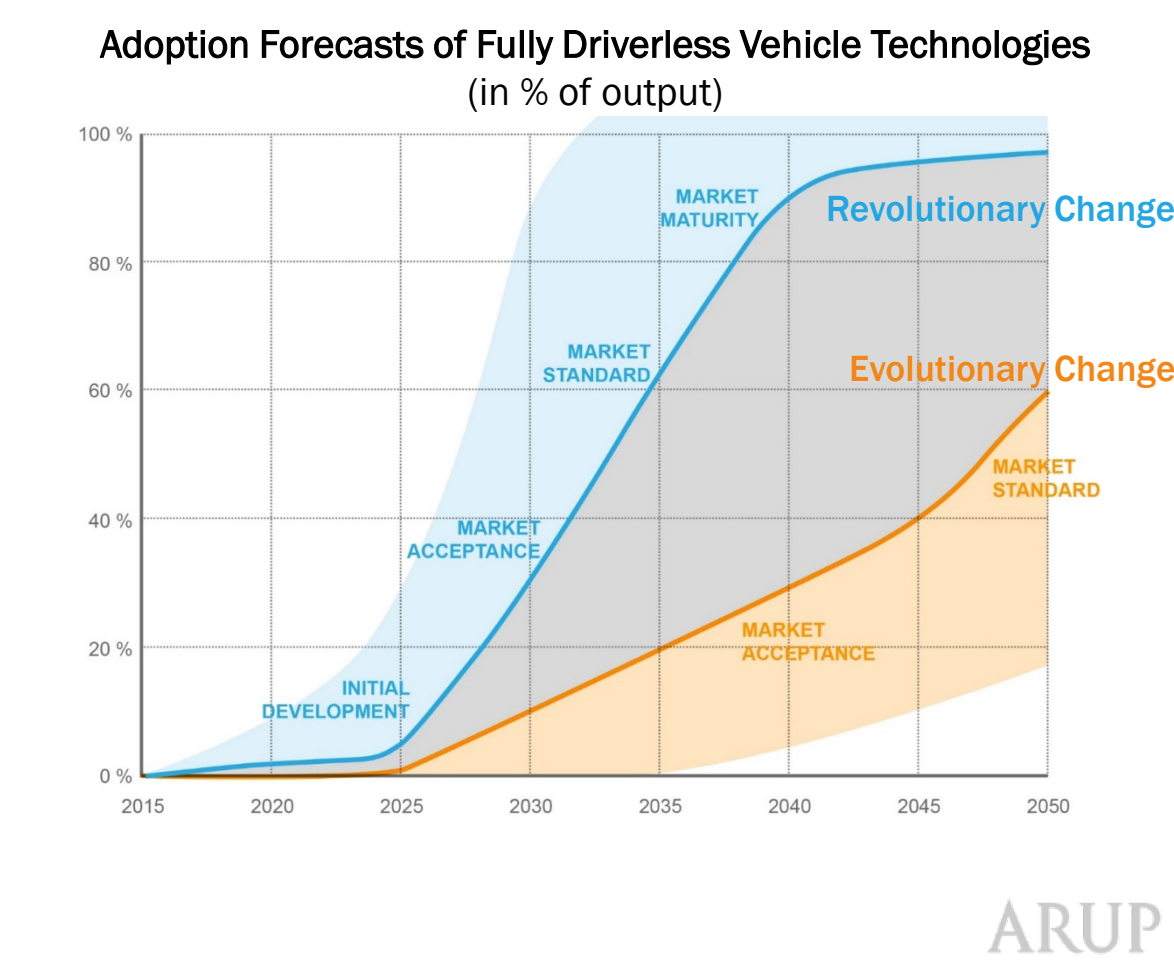
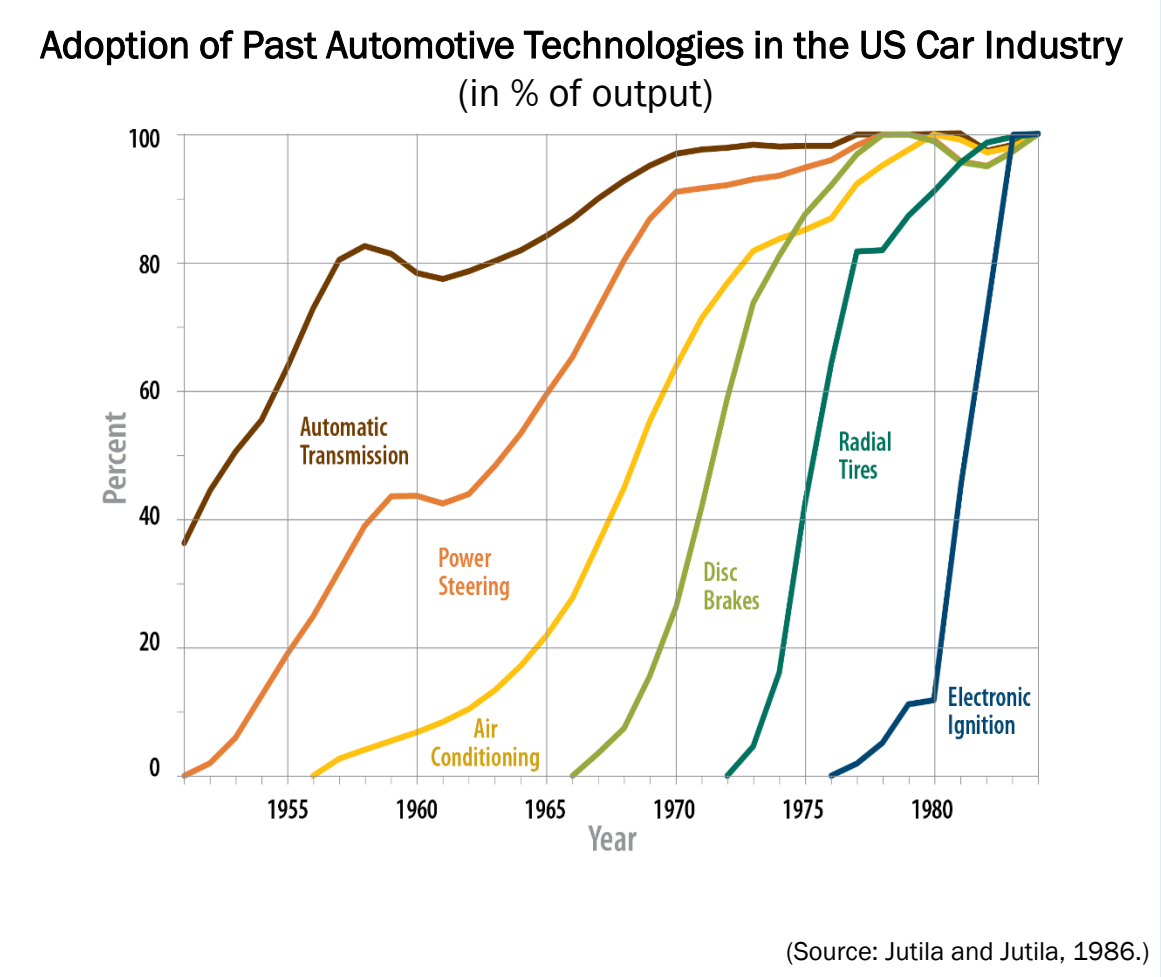


Decline in transit use  
Inequity





# When will driverless vehicles become common?



# Expert Interviews

Phone and in-person interviews  
with 26 experts

## Researchers



## Practitioners



Department  
for Transport

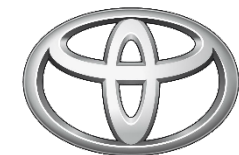
F R O S T & S U L L I V A N



Mid-Ohio Regional  
Planning Commission

## Industry

UBER



TOYOTA

Partial list

METROPOLITAN TRANSPORTATION COMMISSION

ARUP

# Interview Findings on Fully Driverless Vehicles

**Consensus:** induce trips, generate longer trips, increase capacity, and increase VMT/emissions (until EVs dominate the market).

**Uncertainty:** tremendous uncertainty related to timing and overall market penetration of fully driverless vehicles, the adoption of shared vs owned, time sensitivity, per-mile operating costs, etc.

## Other Areas:

- Impacts will differ across regions
- Transit
- VMT increases
- Policy interventions

# Literature Review Ranges for Key Variables

**Timing**    **3 to 13** years until fully driverless vehicles available for purchase

**Safety**    **+40% to +90%** increase in safety

**Capacity**    **0% to +45%** increase in roadway capacity

**Demand**    **+5% to +40%** increase in vehicle miles traveled (VMT)

**Energy/Emissions**    **-50% to + 100%** change in greenhouse gas (GHGs) emissions

# Delphi Survey Results

Conducted a two-round  
Delphi survey with the experts

## Variable – Fully Driverless Vehicles

## Average Response

## Standard Deviation

Available	2026	6 years
Relative Cost to Legacy Vehicle (%)	↓ 14%	25%
50% of Urban Traffic	2036	5 years
90% of Urban Traffic	2049	7 years
<i>New Freeway *Capacity* (%)</i>	↑ 44%	41%
<i>New Urban Street *Capacity* (%)</i>	↑ 23%	22%
Distance from Home to Work (%)	↑ 31%	27%
Time Spent in Vehicle (%)	↑ 31%	23%
Shared Vehicle Trips (%)	61%	24%
Empty Vehicle Circulation (%)	26%	18%
Congestion (worse 1 - 10 better)	6	2

*\*Capacity increase when fully driverless vehicles consist of 90% of urban traffic.*

# Next Steps

- Future Topics
- SB 1 Sustainable Communities Planning Grant