Driverless AV Experience in San Francisco

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Principles for Emerging Mobility Services and Technologies

Equity
Economic Vitality
Environmental Sustainability
Safety and Livability
Accountability and Engagement
## AV Regulatory Framework

<table>
<thead>
<tr>
<th>Federal</th>
<th>California</th>
<th>Local</th>
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<tbody>
<tr>
<td><img src="#" alt="NHTSA" /></td>
<td><img src="#" alt="DMV" /></td>
<td><img src="#" alt="SFMTA" /></td>
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| • Emphasis: Vehicle equipment  
  • Establishes vehicle safety standards  
  • Monitors and enforces vehicle safety issues and defects | • Emphasis: Driver  
  • Permits drivers and vehicles to operate in CA roadways | • No authority over AVs specifically  
  • SFMTA regulates use of ROW in SF  
  • SFCTA sets congestion management policy |

### GAPS

- In AV case, the vehicle equipment is the driver
- Road safety performance of commercial services
- Transportation system impacts on SF streets
Current context for AVPS

- AVPS = Autonomous Vehicle Passenger Services
- AVPS companies testing in SF for last 5 years, most prominently Cruise and Waymo - first with safety driver, and then in fully driverless mode
- **August 10:** The CPUC granted full approval to Cruise and Waymo to offer driverless commercial passenger service throughout all SF, 24/7, with no fleet restrictions
- **August 16:** SF filed Motion to Stay of CPUC’s approval of commercial operations in SF for Cruise and Waymo
- **August 18:** Following various malfunctions and safety incidents, the DMV requests Cruise to cut their fleet in half pending further investigation
8/11 Ten vehicle platoon traffic obstruction
North Beach

8/17 Crash with Fire Truck responding to emergency
@ Turk x Polk

8/17 Crash with private car
@ 26th x Mission
Driverless AV VMT in SF:

- Cruise/Waymo - 3M/1M miles driven in SF (SF: 6M VMT per day)
- 600+ traffic/transit/emergency interference incidents

Source: SFMTA
Driverless AV Incidents with Fire Department

- Blocking fire trucks responding to emergencies
- Intrusion into active fire scenes
- Driving over charged hoses
- Intrusion into areas marked with caution tape
Incidents with Bus & Rail Transit

Rear-end crash with Muni bus

Near-miss collision & repeated track encroachments on Muni light rail

Encroachment into transit lanes interrupting service
Other incidents

Violating CVC & creating traffic hazards

Unsafe pick-up/drop-off in travel lanes

Unsafe stops in pedestrian crosswalks

AV failures at peak travel hours leading to traffic jams

Intrusions into work zones endangering workers

Challenges operating in fog

Waymo dog fatality

Waymo Robotaxi Kills Dog on San Francisco Street, DMV Report Says

Written by Liz Lambert

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Chronology of Events

- Sept ‘22: SF files letter to NHTSA documenting Cruise’s driverless performance and impacts (Cruise Origin Exemption process)
- Dec ‘22: SF Board of Supervisors AV Policy resolution, signed by Mayor Breed
- Dec ‘22: Cruise and Waymo submit applications to the CPUC for full driverless commercial operations in SF
- Jan ‘23: SF input to DMV AV regulations public workshop
- Feb-May ‘23: SF input to CPUC’s assessment of Cruise and Waymo applications for full driverless commercial operations in SF
- June ‘23: SF input to CPUC AV data reporting rulemaking
- July ‘23: SF input to DMV AV regulations public workshop
- Aug 7 ‘23: SF input to CPUC hearing on AV emergency response obstructions
- Aug 10 ‘23: CPUC approval of Cruise and Waymo full driverless commercial operations in SF
- Aug 16 ‘23: SF files Motion to Stay of CPUC approval of Cruise and Waymo full driverless commercial operations in SF
- Aug 17 ‘23: SF files update letter to NHTSA documenting Cruise’s driverless performance and impacts (Cruise Origin Exemption process)
- Aug 18 ‘23: DMV requests to Cruise to reduce SF operating fleet in half
- Aug 28 ‘23: Letter from Assembly Committee on Communications & Conveyance Chair to DMV and CPUC requesting clarification on inter agency coordination and processes
SF’s Proposed Approach for Deployment & Regulation of AVs

- AV operations demonstrate CA’s great success in setting up conditions for industry growth and technology development
- Time to leverage that success and incorporate real-world experience into more mature regulatory framework:
  - Expanded and transparent data reporting
  - Performance benchmarks: competency and impact KPIs
  - Incremental stage-gates for expansion of permitted activities
- Need for updates to state traffic and vehicle codes
Treasure Island AV Shuttle Pilot: the “Loop”

- Operates entirely on public roads 7 days / week, 9 am – 6 pm
- Fully electric, free autonomous shuttle with attendant on board
- Fixed route, wheelchair accessible
Thank you.

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