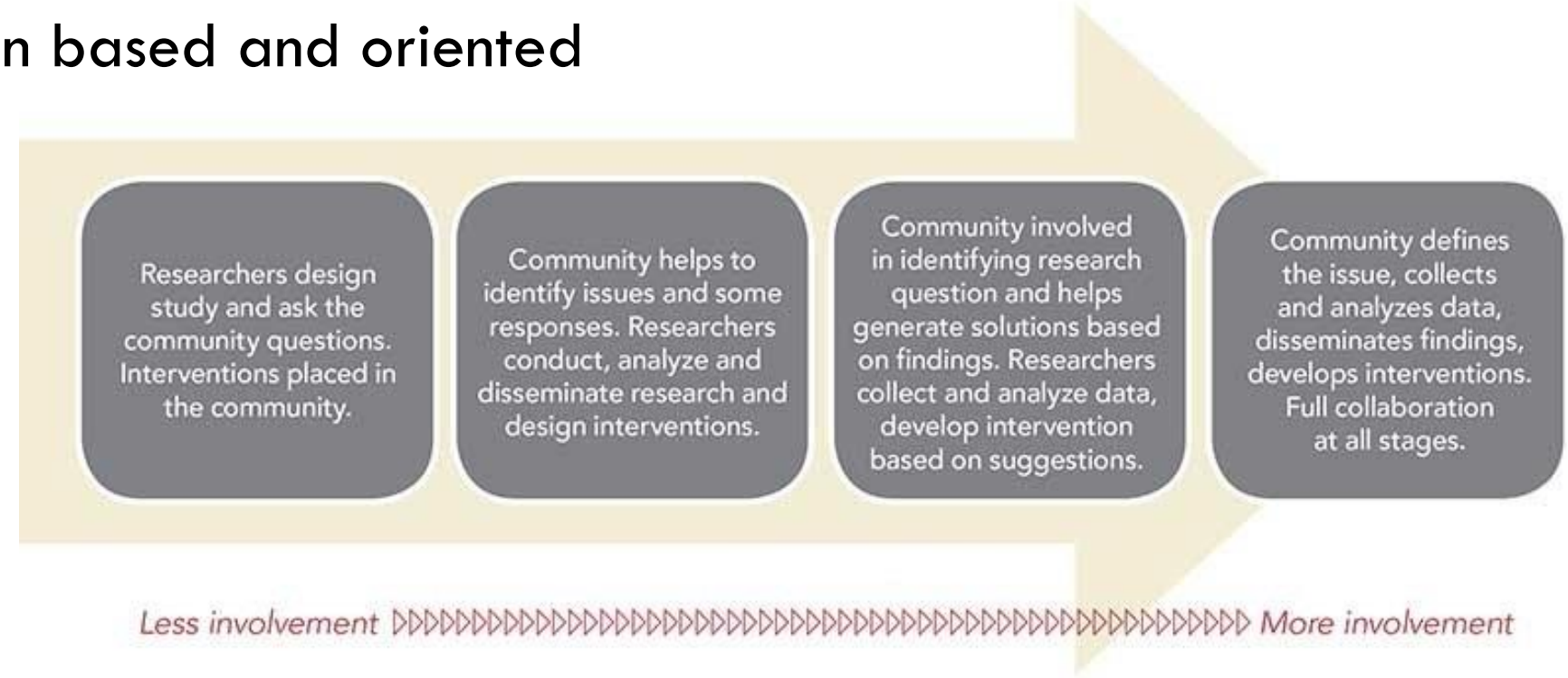
Analysis, Modeling, and Simulation (AMS) Case Studies of Connected and Automated Vehicle (CAV) Implementations Specific to the Southcentral Region

Guiding Principles

- Community based
- Participatory
- Action based and oriented

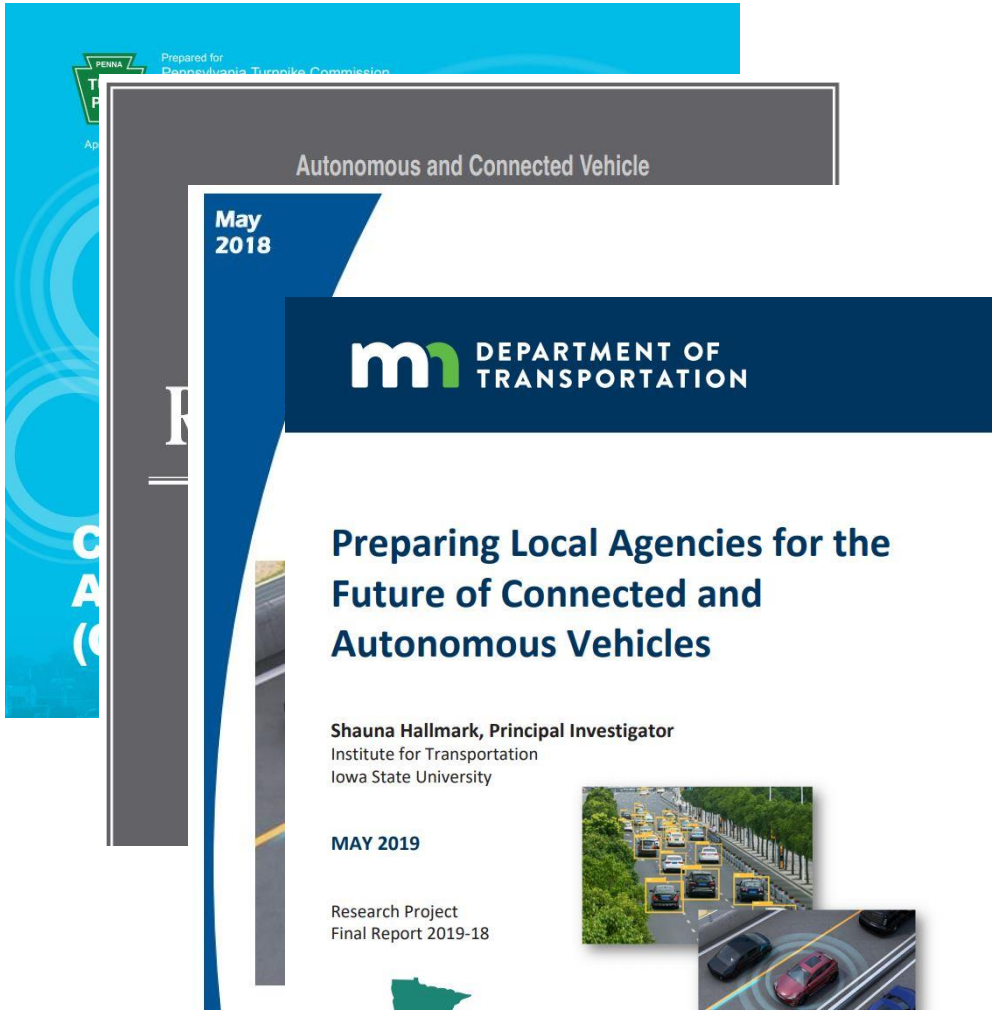


Background

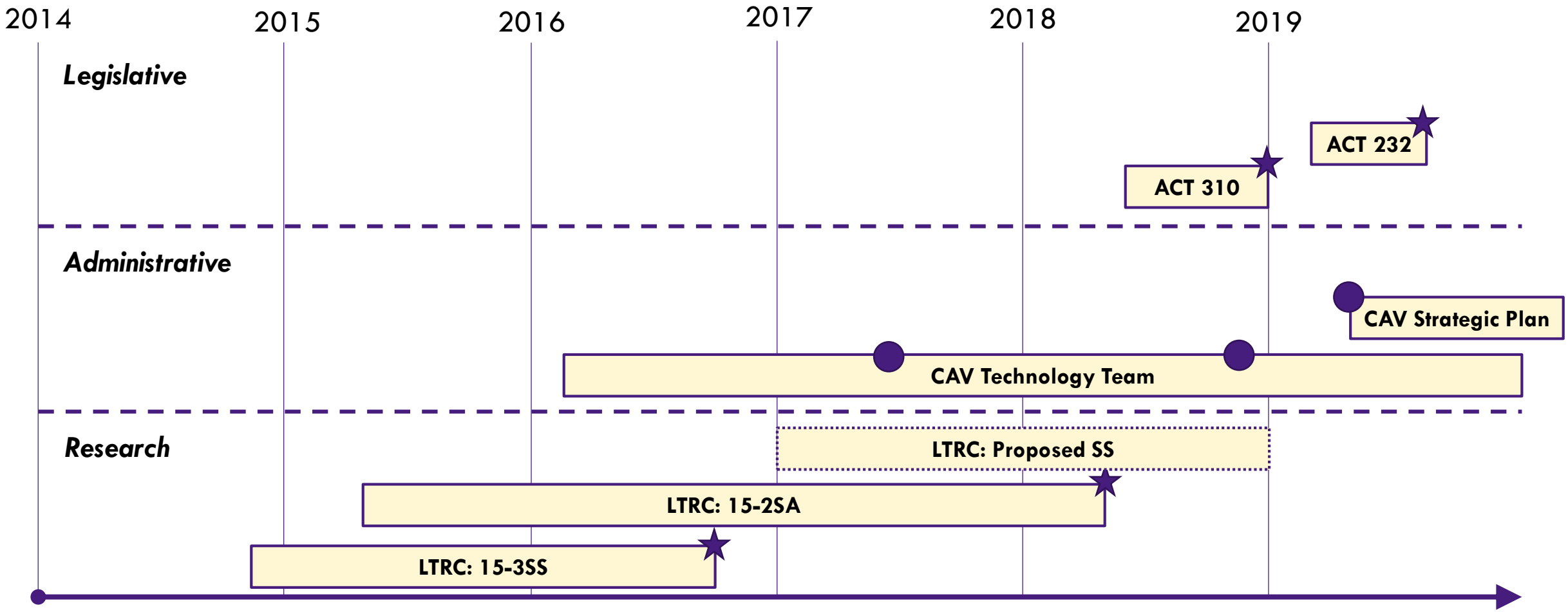
- CAV technologies offer transformative and far-reaching impacts:
  - Public safety
  - Congestion
  - Personal mobility
  - Land use
  - Pollution and the environment
  - Socio-economic characteristics
  - Economy

Importance of Preparation

- Informing (local agencies)
  - Develop more positive attitude/acceptance
- Preparing
  - Benefits directly tied to level of preparation

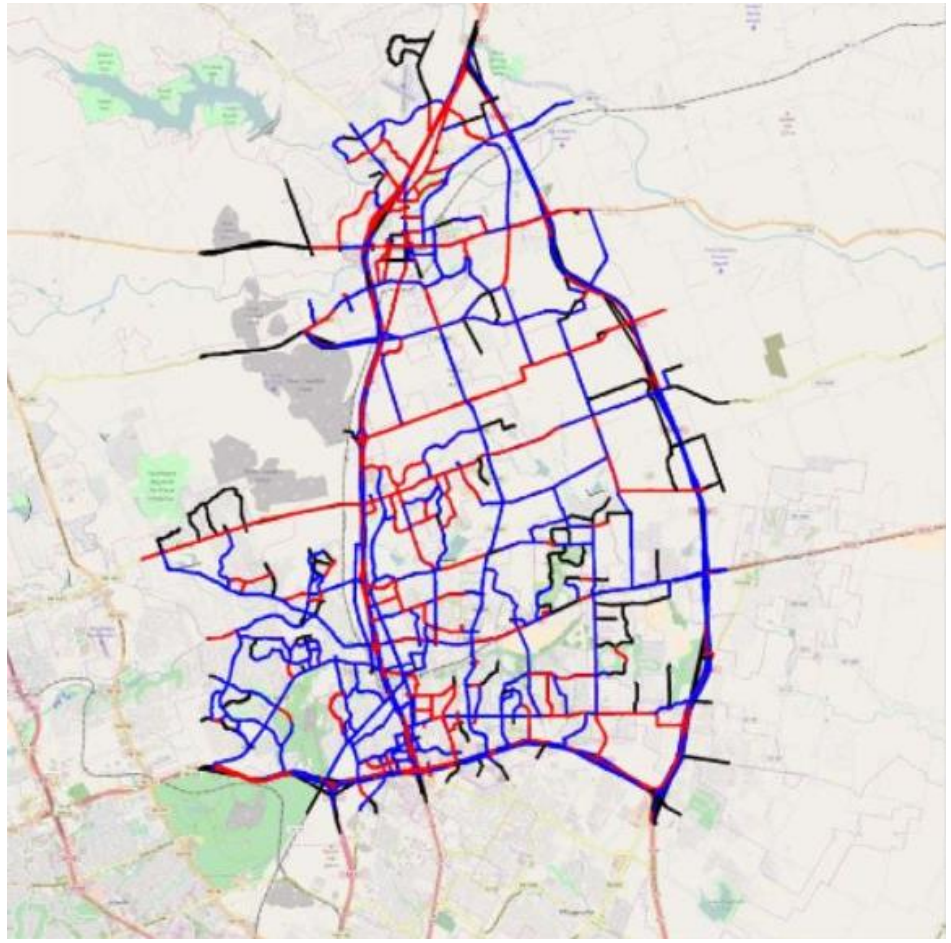


Preparation in Louisiana



Project Description (Original Scope)

- Objective: conduct two mobility-based AMS case studies of specific CAV implementations
  - Detailed analysis on "real-world" network
  - One corridor-level, one network-level
  - Modified (or newly developed) models from research
- Outputs:
  - Case study reports
  - Final report
  - White paper on CAV models
  - "Packaged" models in more readily usable format



Identifying Case Studies

Focus Area Survey

- Simple electronic survey
- Target impacted agencies/communities (not currently engaged)
- Large and diverse participant pool

cutt.ly/CAV

* Identified focus area
* Identified "allies"

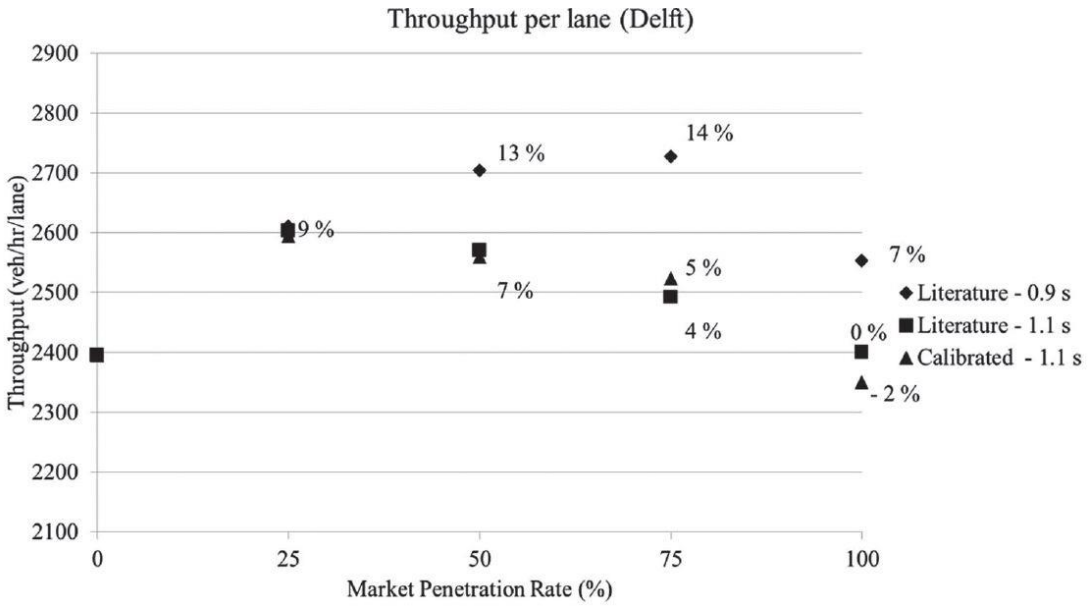
Case Study List

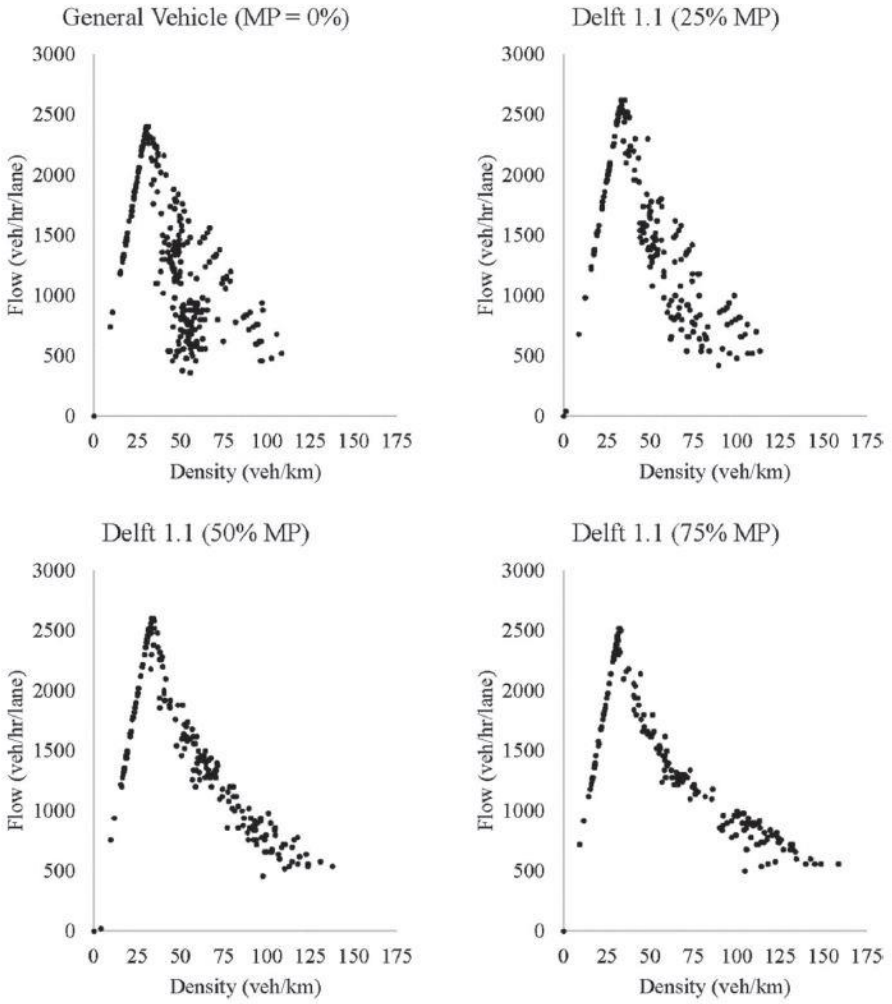
- List of bundled CAV applications and locations
- Corresponding ranking criteria

* Identified case studies
* Identified existing networks

Potential Analysis (Micro)

- Microscopic analysis (Vissim)
  - Specialized CAV logic coded in C++
  - Interfaced via API/DLL capability

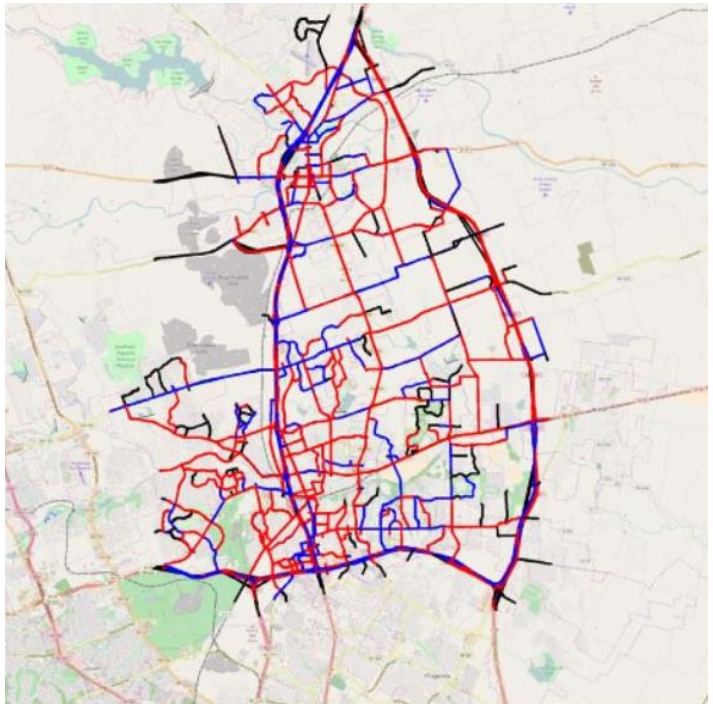


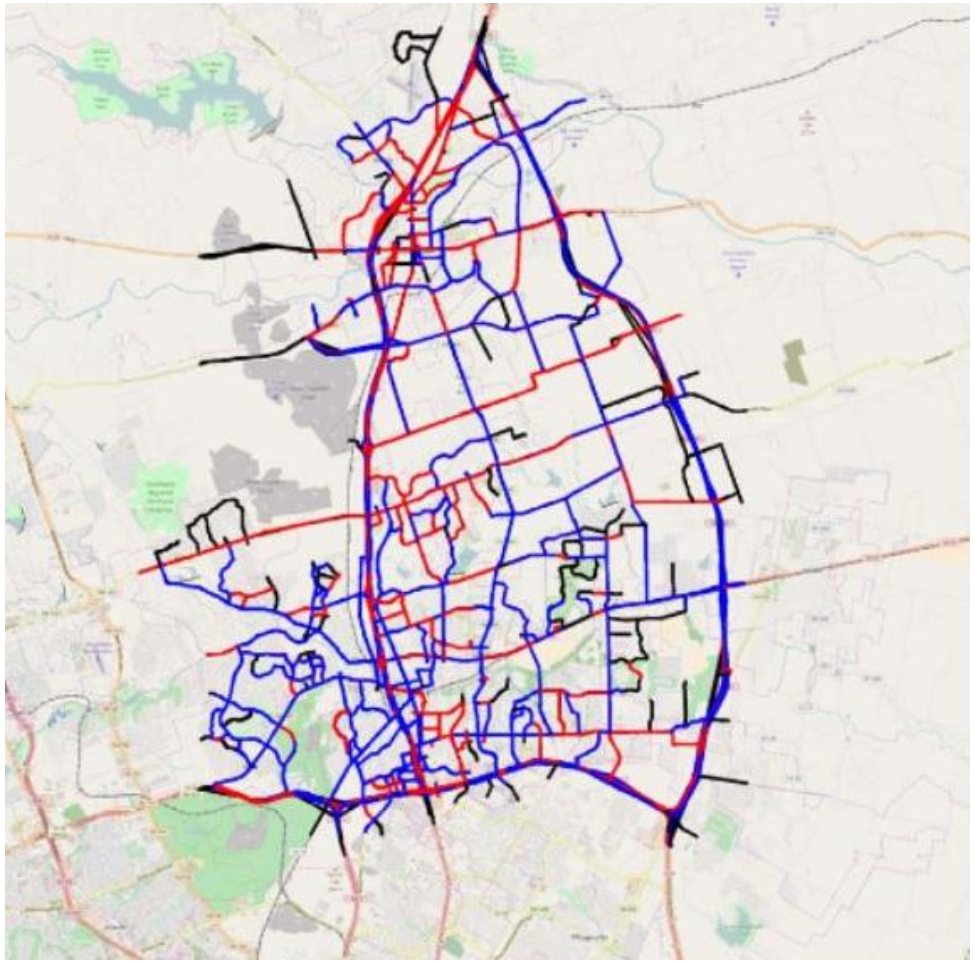


James, R., C. Melson, J. Hu, and J.G. Bared (2019). Characterizing the impact of production adaptive cruise control on traffic flow: An investigation. *Transportmetrica B: Transport Dynamics* 7(1), 992-1012.

Potential Analysis (Meso)

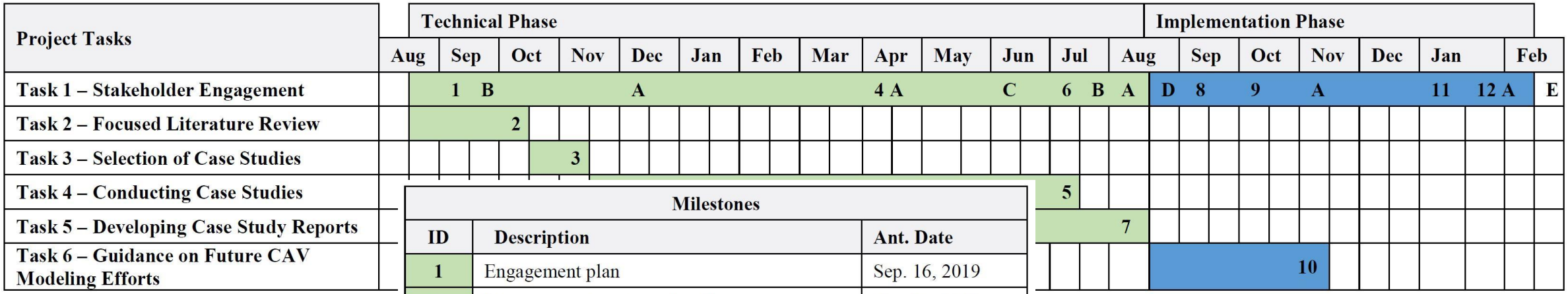
- Mesoscopic (Vissum, Dynameq, Other)
  - Specialized CAV logic





Melson, C., M. Levin, B. Hammit, and S.D. Boyles (2018). Modeling cooperative adaptive cruise control in dynamic traffic assignment. *Transportation Research Part C* 7(1), 114-133.

Project Timeline



Milestones		
ID	**Description**	**Ant. Date**
1	Engagement plan	Sep. 16, 2019
2	Literature review (completed)	Oct. 15, 2019
3	Selected CAV case studies	Nov. 15, 2019
4	2020 Tran-SET Conference	Apr. 2020
5	CAV case studies (completed)	Jul. 15, 2020
6	2020 ITE International Annual Meeting (presenting CAV-related research efforts)	Jul. 2020
7	Case study reports (completed)	Aug. 15, 2020
8	Presentation at Joint Tran-SET Webinar series	Sep. 2020 (Est.)
9	Presentation at SimCap Louisiana meeting	Oct. 2020 (Est.)
10	Completed white paper and packaged tools	Nov. 16, 2020
11	2021 TRB Annual Meeting	Jan. 2021
12	Prepared manuscript for journal publication	Feb. 2021 (Est.)

Contact Information

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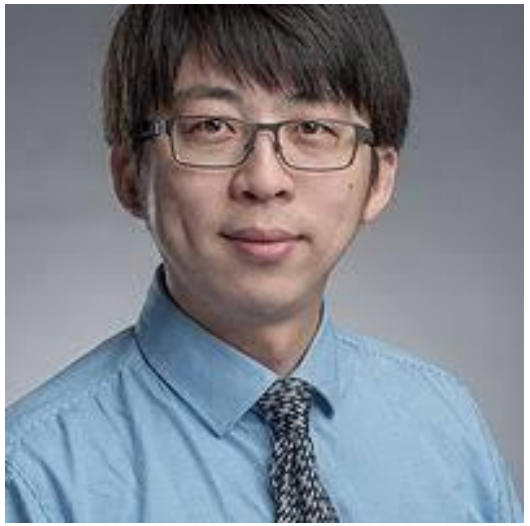

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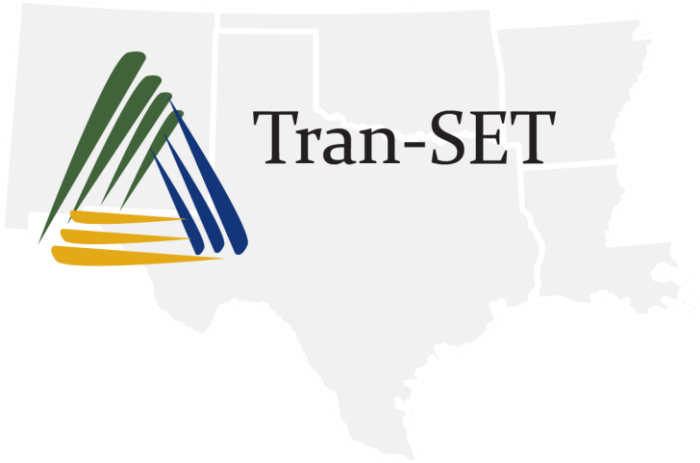

PTV GROUP

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Capital Region Planning Commission

CRPC

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