



PECAN STREET

Electric Last-Mile Project

Principal Investigator: Grant Fisher

Presenter: Grant Fisher

Organization: Pecan Street Inc

Presentation Date: June 11, 2019

Project ID: TI087

This presentation does not contain any proprietary, confidential, or otherwise restricted information.

Overview

Timeline

Start: October 1, 2017

End: September 30, 2019

~ 90% Complete

Budget

Total Funding: \$2,000,000

DOE share: \$1,000,000

Cost share: \$1,000,000

Budget Period 1: \$1,762,964

Expended: \$1,762,964

Budget Period 2: \$237,036

Expended*: \$13,025

* as of 2/28/2019

Partners

Capital Metropolitan Transportation Authority

Electric Cab of North America

Endeavor Real Estate Group

Catellus Real Estate

Overture Apartment

City of Austin

Autonomous Vehicle Vendor (TBD)

Barriers

Difficult to access transit

Limited technology solutions and understandings of new solutions

Any proposed future work is subject to change based on funding levels



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Project Objectives

Objective

Study public transit ridership in pilot neighborhoods using electric shuttles to help bridge the “last mile”

To provide a demonstration opportunity to evaluate technology solutions to transit problems

VTO TI Goals

National Security

Increase Alternative Fuel Use

Economic Growth

Allow for new technologies to be demonstrated

Reliability/Resiliency

Providing diverse transportation options

Impact

Increase connectivity to and from transit

Improve the awareness of lack of first and last mile connectivity

Provide new technology solutions to address the barriers

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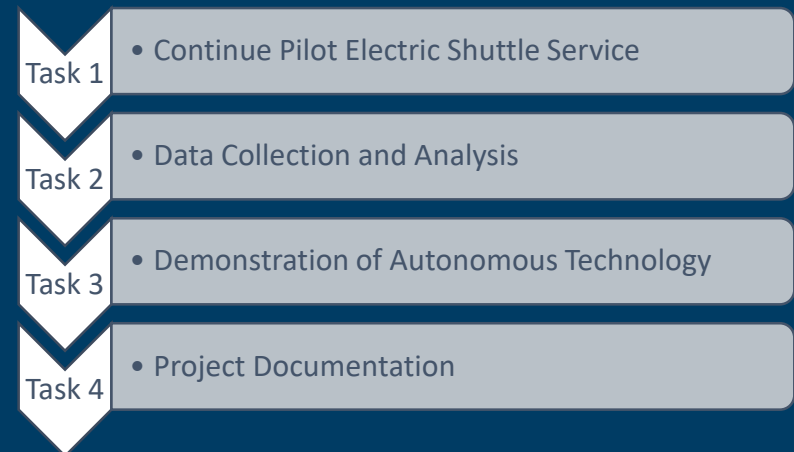
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Project Approach

Budget Period 1



Budget Period 2



Any proposed future work is subject to change based on funding levels

Milestones

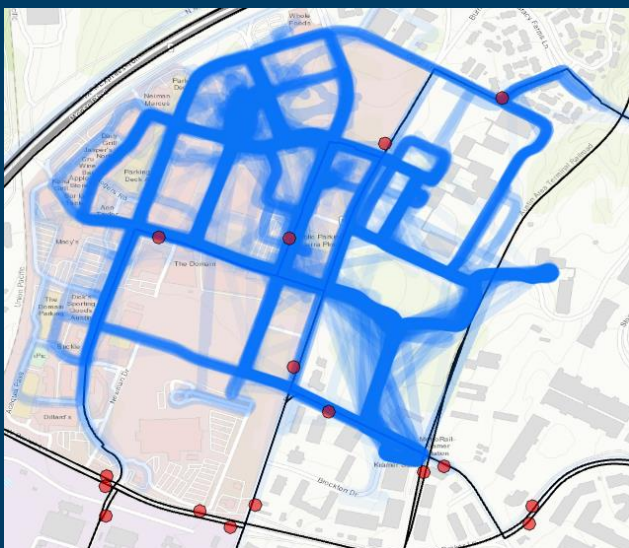
Budget Period 1	Milestone	Type
	Mobile apps integrated	Technical
	Initial ELM report completed	Technical
	Integration of ELM payment process with mobile app completed	Technical
Period 2	Data collection systems integrated and installed in vehicles and passing acceptance protocols	Go/No Go
	Milestone	Type
	Autonomous Vehicle demonstrations completed	Technical
	Data collection & ridership	Technical

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Project Accomplishments and Progress

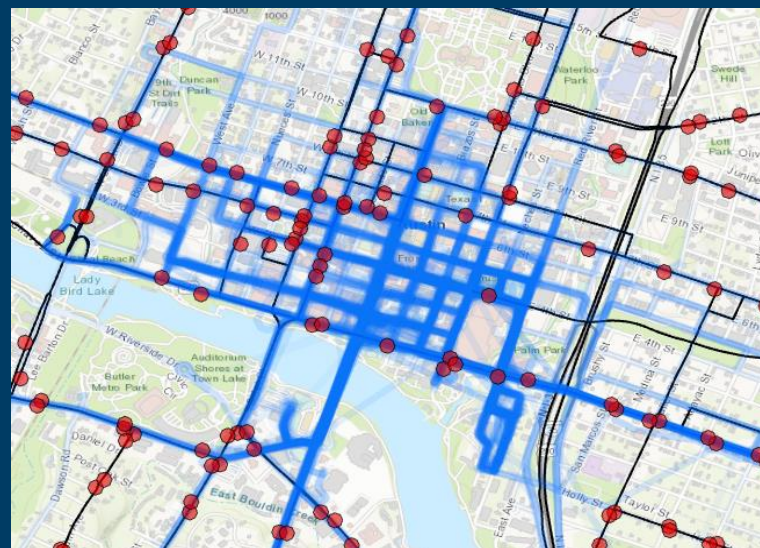
Budget Period 1 Recap

Domain



Over 10k Yearly Miles*

Downtown

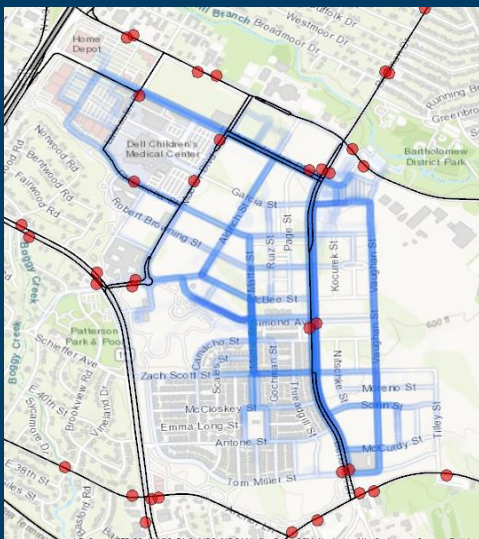


Over 5k Yearly Miles*

*Yearly miles extrapolated based upon project duration

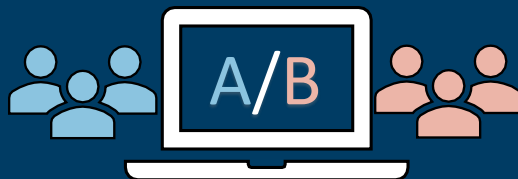
Project Accomplishments and Progress

New Shuttle Route Most Successful to Date



Over 13k Yearly Miles*

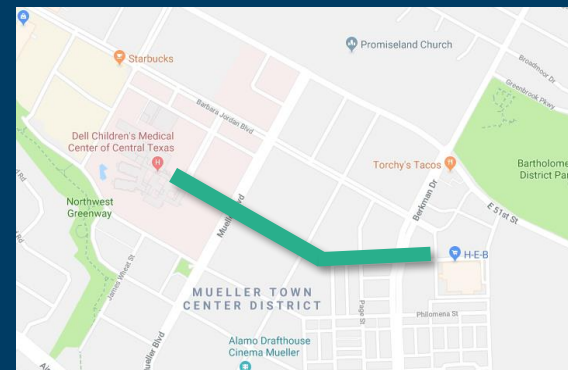
Pricing Trial Completed with Fascinating Results



Half of the pricing trial was offered rides at \$1, the other was name-your-own-price.

Price Named	% of Riders
\$0.00	55%
\$0.50	6%
\$1.00	11%
\$1.50	27%
\$2.00	2%

AV Route Selected for Autonomous Demonstration



Working with project team for deployment

Any proposed future work is subject to change based on funding levels

Collaboration and Coordination Among Project Team



Partners



Location
Support
From



Any proposed future work is subject to change based on funding levels



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Overall Impact

Achievements to date

- Completed three electric shuttle deployments with over 10k trips and almost 19k passengers served
- Successfully Developed Technology Kit for vehicle data collection systems
- Published all collected data for researchers
- Created a reproducible, new form of transit service for agencies to implement (one has already!)
- Published pricing data for new forms for pricing for transit and deeper understanding of price models

Upcoming

- Demonstrating autonomous vehicle transit route



Any proposed future work is subject to change based on funding levels

Summary

Project Objectives

Study public transit ridership in pilot neighborhoods using electric shuttles to help bridge the “last mile”



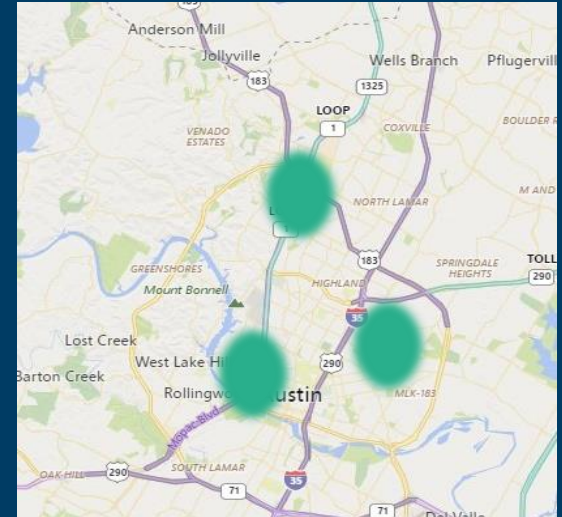
Pricing Trial

New Transit Type

To provide a demonstration opportunity to evaluate technology solutions to transit problems



Autonomous
Vehicle
Demonstration



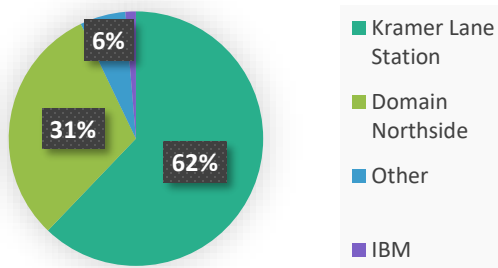
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Technical Backup Slides

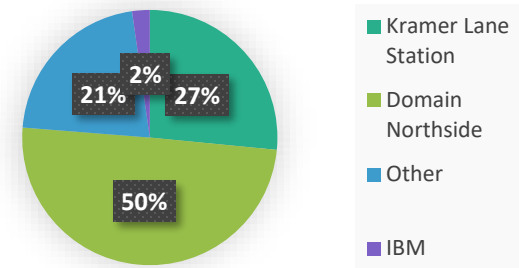
Technical Backup Slides

Domain Electric Shuttle Data

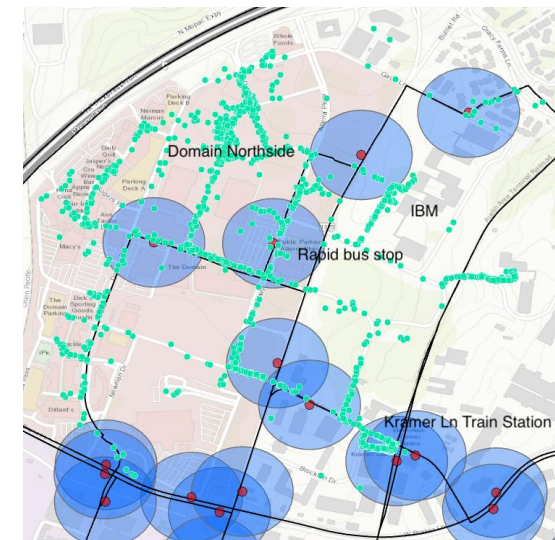
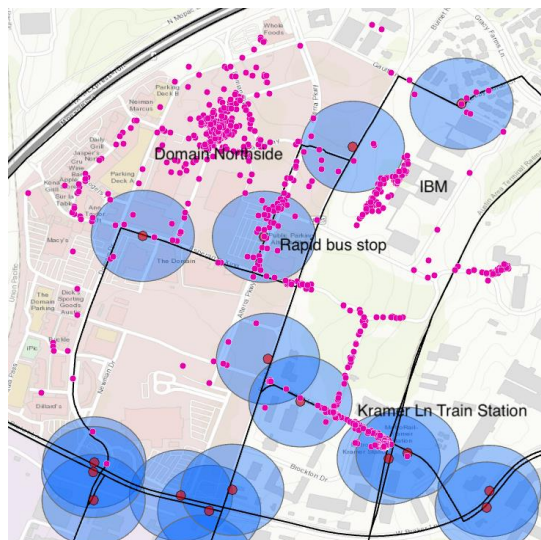
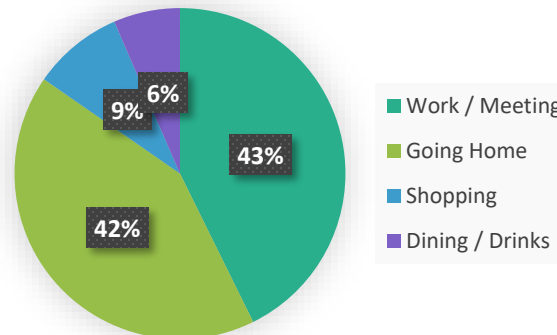
Kramer-Domain Pickup Locations



Kramer-Domain Dropoff Location



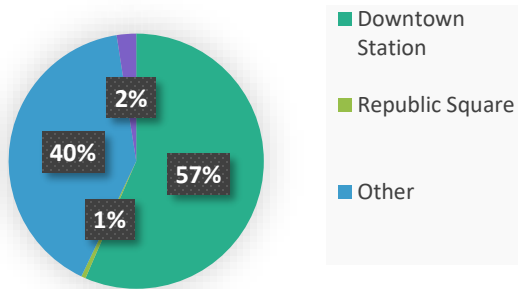
Kramer-Domain Reason for Trip



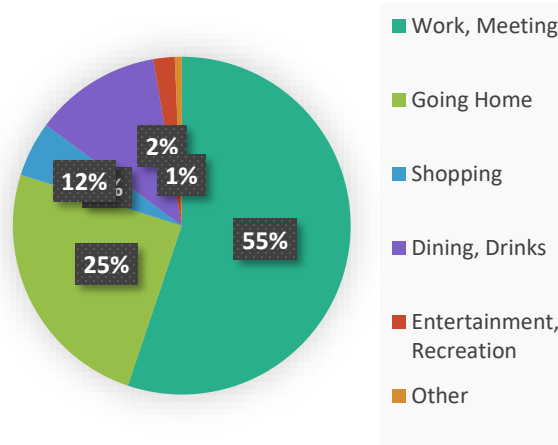
Technical Backup Slides

Downtown Electric Shuttle Data

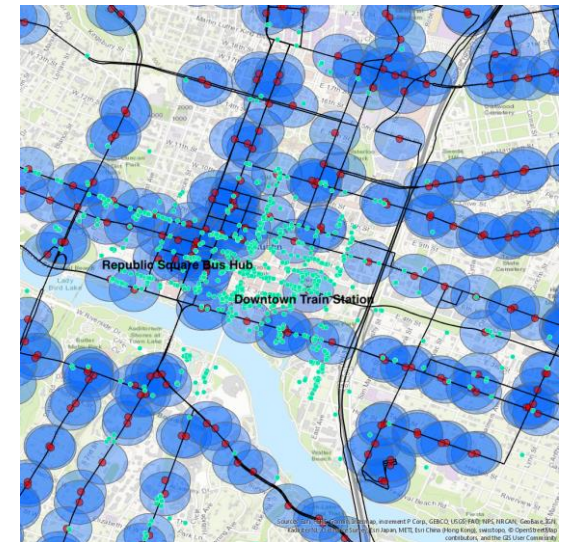
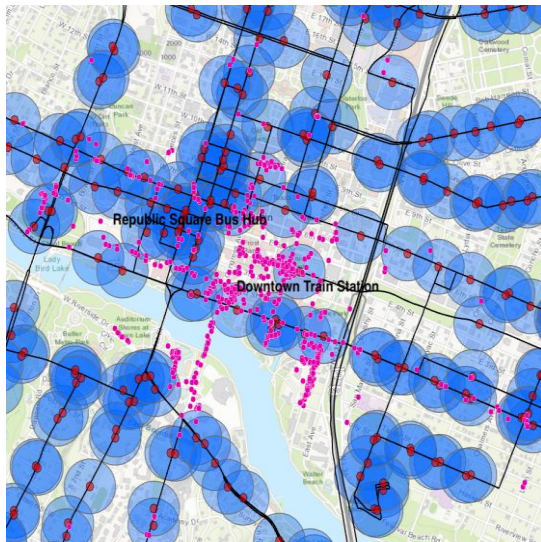
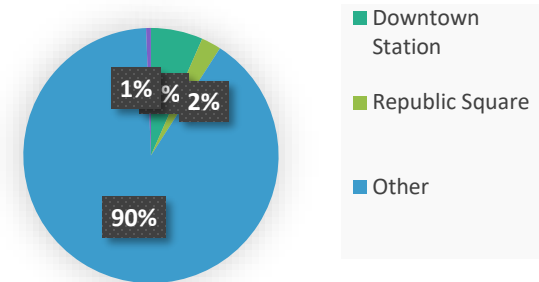
Downtown Pickup Location



Downtown Reason for Trip



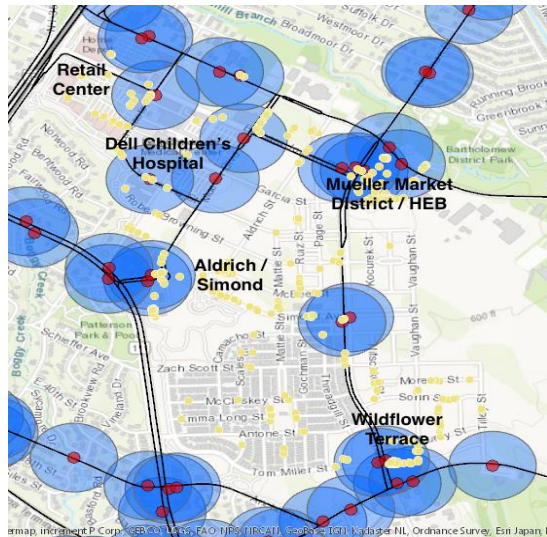
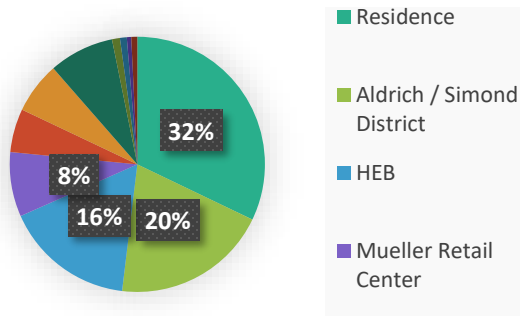
Downtown Dropoff Location



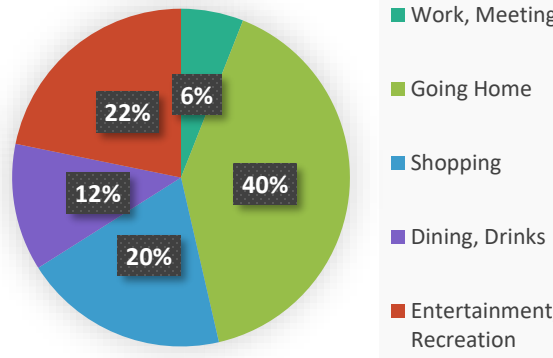
Technical Backup Slides

Mueller Electric Shuttle Data

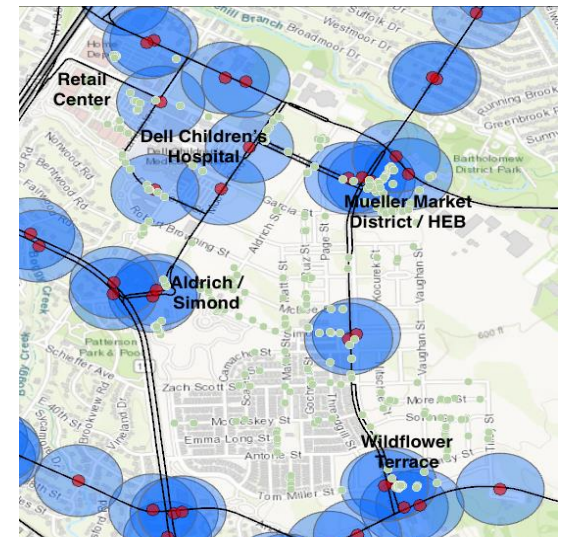
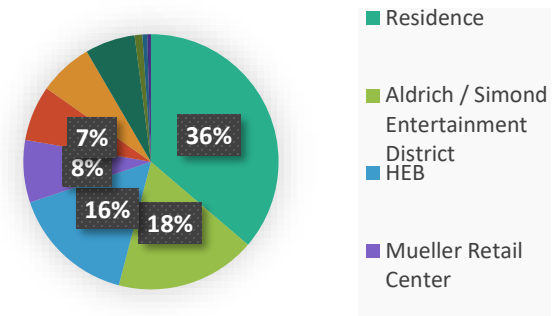
Mueller Dropoff Locations



Mueller Reason for Trip

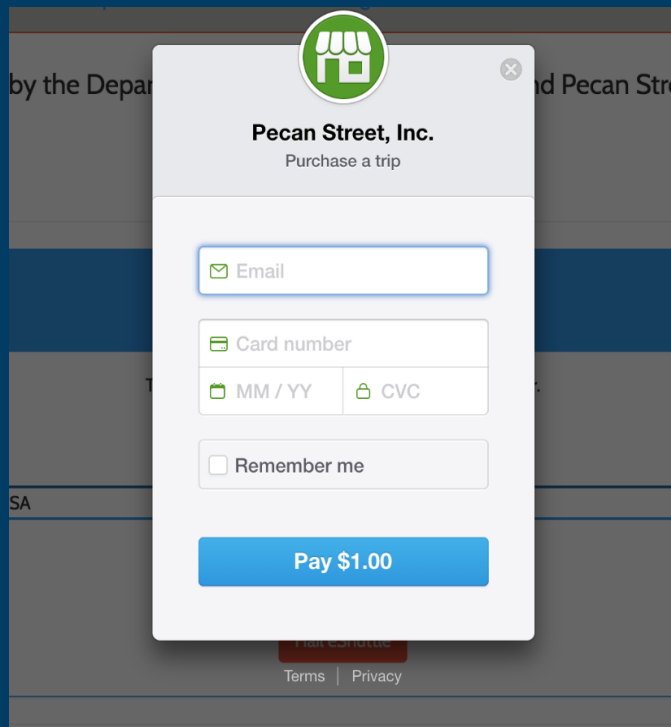


Mueller Pickup Locations

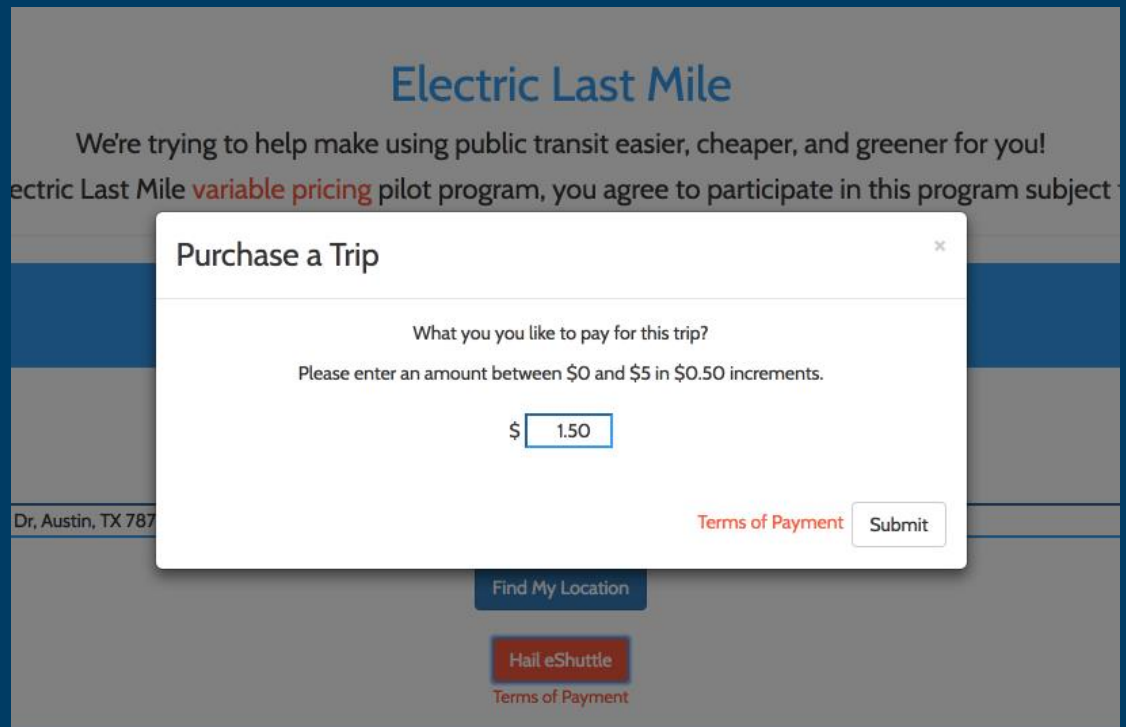


Technical Backup Slides

Pricing Trial Data



A screenshot of a web application showing a payment modal for Pecan Street, Inc. The modal is titled "Pecan Street, Inc." with a green house icon and the text "Purchase a trip". It contains a form with the following fields: "Email" (with an envelope icon), "Card number" (with a card icon), "MM / YY" (with a calendar icon), and "CVC" (with a lock icon). There is a "Remember me" checkbox and a blue "Pay \$1.00" button. At the bottom, there are links for "Terms" and "Privacy".



A screenshot of a web application showing a payment modal for "Electric Last Mile". The modal is titled "Purchase a Trip" and contains the text "We're trying to help make using public transit easier, cheaper, and greener for you!" and "Electric Last Mile variable pricing pilot program, you agree to participate in this program subject to". It asks "What you you like to pay for this trip?" and "Please enter an amount between \$0 and \$5 in \$0.50 increments." The input field shows "\$ 1.50". There are links for "Terms of Payment" and a "Submit" button. Below the modal, there are buttons for "Find My Location", "Hail eShuttle", and "Terms of Payment".

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