Integration of Smart Ride-Sharing into an Existing Electric Vehicle Carsharing Service in the San Joaquin Valley

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Project ID: ti111

Overview

Timeline:

Start: October 1, 2020

End: December 31, 2022

40% Percent Complete

Lead: UC Davis

Partners: Miocar, Mobility Development Operations, Volunteer Transportation Center, Self-Help Enterprises, Sigala, Inc., Kern Council of Governments, Tulare Council of Governments, and San Joaquin Valley Clean Cities Coalition

Pilot volunteer ridesharing with existing e-carsharing in rural low-income communities.

Budget:

Total Project Funding: $1,500,000 ($750,000 DOE /$750,000 Cost Share)

Funding for FY1: $476,331 (187,971/288,360)

Funding for FY2: $517,919 (255,117/262,802)

Barriers:

(1) Travel options and access to opportunities are limited due to high cost of providing services and low incomes in rural communities.

(2)Sustainable shared mobility business model in rural low-income market.

(3) Electric vehicle knowledge and experience.

Project Objectives

Objectives

- Design & operate volunteer ridesharing pilot with e-carshare to fill access gaps in low-income rural communities
- Evaluate pilot performance:
  - User demand (energy use, GHGs, and access)
  - Volunteer recruitment
  - Cost and revenue streams
  - Approaches to barriers

Technology Integration

- National Security:
  - Fuel Diversity
- Affordability:
  - Mobility Enhancements
- Reliability/resiliency:
  - Transportation Options

Barrier Impact

- Reduce energy use and GHGs (increase EV use)
- Improve access to travel options, opportunities and services
- Demonstrate path for cost-effective operations
- Provide direction and lessons learned for scaled operations

Technical Concept

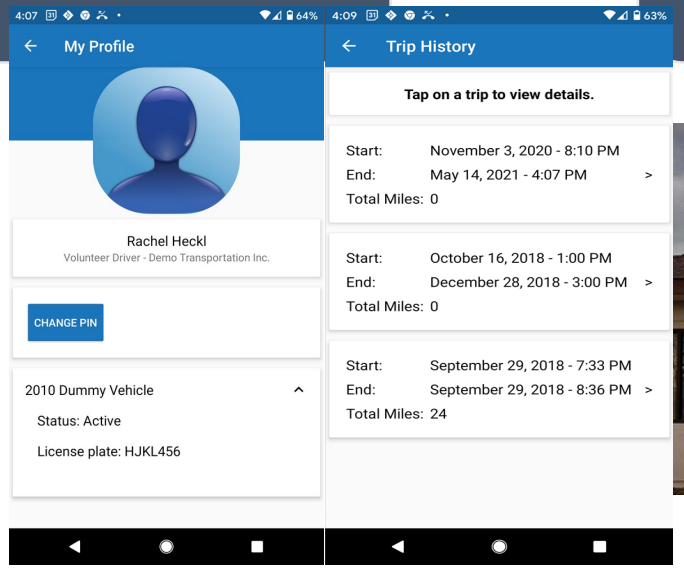
miorides

An investment in Miocar is an investment in the future.

Step 1: Transit agency, health provider or CBO partner broker client trips & submits request to Miorides in encrypted email or administrative software interface (SNAP).

Step 2: Miorides receives request & schedules trip in SNAP. Volunteer accepts trip in SNAP & confirms with client day before trip.

Step 3: Client picked up & taken to destination. Driver waits or another driver picks up & brings rider home. SNAP tracks trip. Driver attest with digital signature after client returned home.



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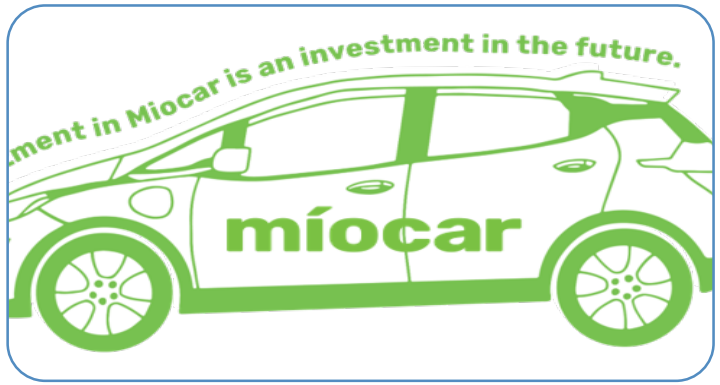


& Mobility Development:

Vehicle reservations

Onboarding volunteers

Fleet Insurance

O&M

Driver reimbursement (driving credit)

Volunteer management

Volunteer Insurance

Trip auditing

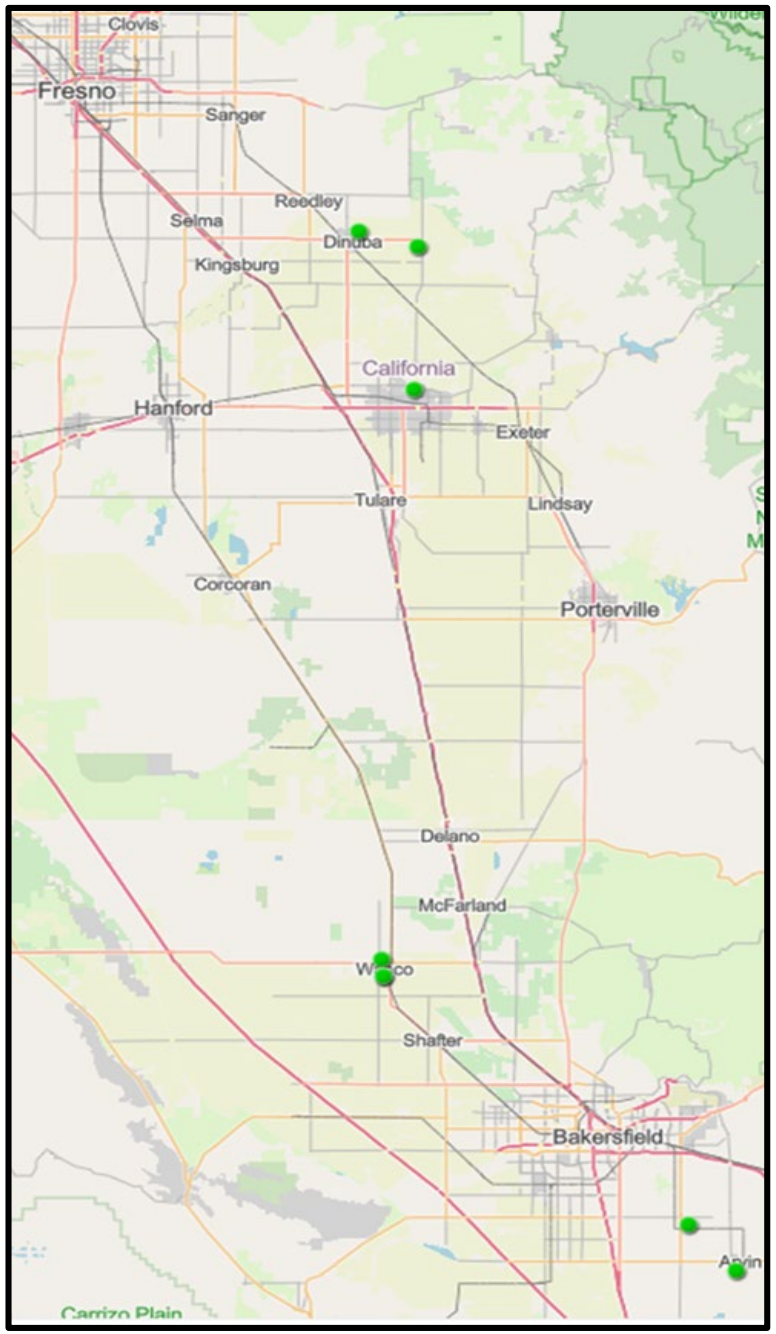
Quality control and compliance

Project management

Research

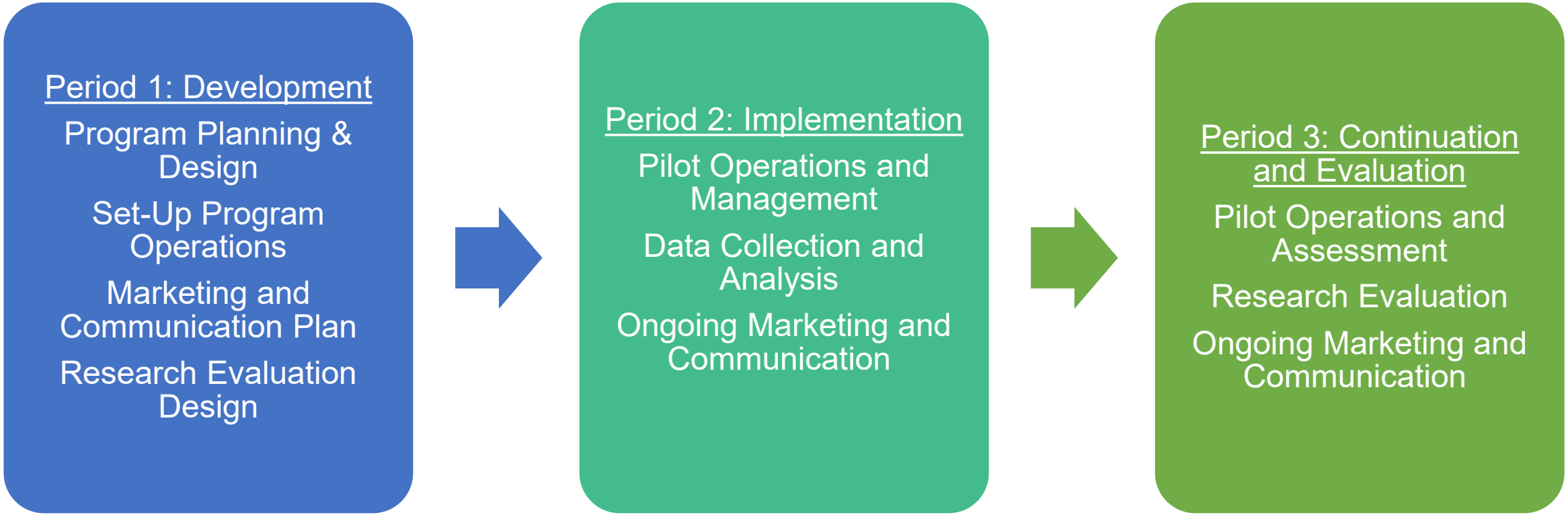
Evaluation

Lessons Learned

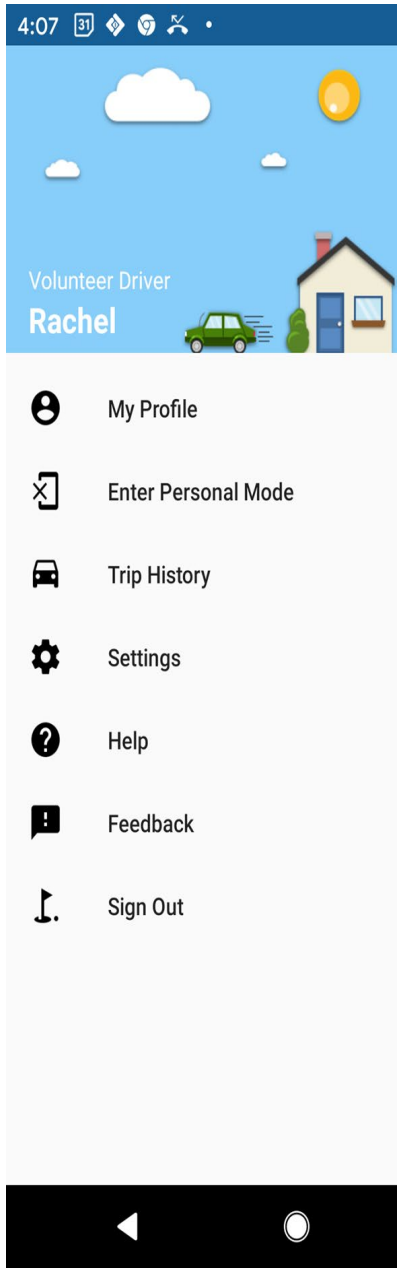


- Mioride Hubs (green dots): Southern Central Valley (CA) north of Los Angeles in rural communities around Bakersfield and Visalia
- 5 Electric Vehicles: Chrysler Pacifica and Chevy Bolts at Affordable Housing Complexes

Project Approach



FY 1 Milestones
✓ Marketing Plan: Integrate ridesharing into ongoing marketing efforts for carsharing. Modify existing marketing carsharing collateral to include ridesharing. Develop a marketing strategy to recruit volunteers and passengers.
✓ Research Evaluation Plan: Includes hypotheses, required test data, data collection methods, data sharing agreements, on-line and telephone survey instruments designed and coded, and human subject approval.
✓ Business Case & Pro Forma:Includes a description of business case/model and forecasted revenues and costs. Technical advisory board established and consulted: Feedback incorporated in program design. EV fleet and hubs in place (Miocar). SNAP automated back-end software completed and integrated with Miocar.
✓ Go or No-Go: Projected revenues meet or exceed costs. GO
○ Public Launch: Miorides programmatic and operational component ready for implementation: Fleet management, insurance, volunteer recruitment, marketing, driver screening and training, client referrals, back-office software, scheduling, and dispatching. Testing and launched delayed because of COVID19.
FY 2 Milestones
○ Volunteer and Rider Targets: Completed field tests of all components and their integration, include the volunteer ridesharing software (SNAP). Implemented marketing campaign. Four volunteers have been recruited, screened, and trained. Continuing efforts to obtain client referrals and provide rides. Rider targets not met because of reduced travel demand due to COVID19.
○ Go or No-Go: Sufficient driver and rider recruitment (in progress)
FY 3 Milestones
○ Volunteer and Rider Targets: 20 volunteer drivers and 130 riders are actively participating in the pilot.
○ Final Research Report: Analysis of program benefits, in terms of GHG emissions and mobility.



Accomplishment: Software Development and Testing

- Improved SNAP driver-side functionality:
  - Reduces number of steps to audit odometer,
  - Created real-time features to add clients,
  - Enters trip notes, and
  - Interfaces with administration through app to upload of required driver documents (license, registration, vehicle, and photo)

- Improved administration-side functionality:
  - Volunteer schedule management through better driver location tracking, real-time driver schedule refresh, multiple view for volunteer schedule, and detail depending on which administration department is accessing information (e.g., finance, schedule manager, and safety compliance)

Accomplishments: Data Collection and Evaluation

Data Type	Rider Behavior	Driver Behavior	Data Measures
Before Surveys	Administered to passengers as part of the application process.	Administered to volunteer drivers as part of the application process.	Before and after demographics, personal vehicle ownership (year, make, model, annual miles per vehicle, level of comfort with driving, modes (use and frequency), anticipated and stated use of ride-sharing by trip purpose, and user demographics
After Surveys	Administered to passengers at the end of their participation in the pilot or at the end of the pilot period, via the reservation app, email, phone, and/or mail.	Administered to volunteer drivers at the end of their participation in the pilot or at the end of the pilot period, via the reservation app, email, phone, and/or mail.	
Post-Reservation Surveys	Administered after passengers take trips, via the reservation app.	Administered after the volunteer driver uses incentive carsharing hours, via the reservation app.	Trip purpose, induced trip, changes in mode compared to counterfactual scenario, and changes in destination compared to counterfactual scenario
Usage Data	Collected for each passenger and driver trip, from vehicle reservation technology.	Collected for each incentive carsharing reservation, from vehicle and reservation technology.	◦ Rideshare: Driver and rider trip distance, travel time, origin and destinations, time of day, trip purpose, type of vehicle used, and trip ◦ Incentive Carsharing: Origin, stop, and destination locations by time, distance traveled, electricity use, type of vehicle reserved by location, duration of reservation. ◦ Electricity use and cost data from meters for rideshare vehicles and incentive carshare vehicles by location, time, day, month, and year.

Accomplishments: Marketing

- Miocar, Miorides, and partners organization staff conducted extensive marketing, including:
  - Word of mouth (most successful method for volunteer drivers): description of service and volunteer opportunities to social and professional networks, which snowballs.
  - Miocar newsletters that described the program and asked members to volunteer to be drivers.
  - Marketing collateral distributed at miocar hubs.
  - Attend local events with Miocar vehicles and answer questions


Market Impact and Sustainability

Problem

- Pilot communities have limited fixed transit service with stops in town centers.
- Residents in sparsely populated areas around towns use on-demand transit to get to stops.
- On-demand transit very expensive (~ $50/one-way trip).
- Private shared mobility services are not available outside major county city.
- Vanpooling is available for work trips only.

Impact

- Miorides currently an operational pilot with launch delays due to COVID-19.
- At this point in the project, realistic cost estimates are possible:
  - One-way trip costs will be $5-$12 (due to pooling and distance), significantly lower than on-demand transit
- Key pilot components that lower program costs:
  - Non-profit operator with volunteers cost less in insurance premiums for same coverage as livery services,
  - Use of EVs instead of conventional vehicles cut energy and maintenance costs,
  - Software that automated volunteer ridesharing functions, and
  - Customer service consolidated to 1 phone tree requiring only 1.5 staff per 72 volunteers.

Collaboration and Coordination among Project Team

Organization	Expertise	Areas of Contribution				
UC Davis	Management and Research	Planning			Research	Communications
Miocar	Carshare Operations	Planning	Operations	Marketing	Research	Communications
Mioride	Ridesharing Operations	Planning	Operations	Marketing	Research	Communications
Mobility Development Operations	Shared Mobility Business	Planning	Operations	Marketing		Communications
Self-Help Enterprises	Affordable Housing Developer	Planning	Operations	Marketing		Communications
Volunteer Transportation Center	Volunteer Rideshare Business	Planning	Operations	Marketing	Research	Communications
Sigala Inc.	Transportation Planning	Planning	Operations	Marketing		Communications
Kern Council of Goverments	Transportation Planning	Planning		Marketing		Communications
Tulare Council of Goverments	Transportation Planning	Planning		Marketing		Communications
SJV Clean Cities Coalition	Electric Vehicles	Planning		Marketing		Communications

Methods of Communications: Weekly project zoom meetings, advisory board zoom meetings and advisory board check-ins as needed, and frequent email, text, and phone communications.

Summary

- **Goals and Objectives**
  - Pilot an affordable volunteer ridesharing program with e-carshare in low-income rural communities with limited transit and personal vehicles access to:
    - Reduce energy use and GHGs (replace conventional vehicle travel with EVs and pooled modes)
    - Improve access to travel options, opportunities and services
    - Demonstrate path for cost-effective operations
    - Provide direction and lessons learned for scaled operations
- **Approach**
  - Design, set-up, launch, and operate the pilot over a three year period
  - Gather linked user and survey data before, during, and after pilot participation
  - Analyze data measure how well the pilot achieved its objectives
- **Accomplishments: Pilot design and set-up includes**
  - Cost saving measures that predict low cost operation: Non-profit operator with volunteer drivers for low insurance, use of EVs, automated back-office, and consolidated customer service
  - Partnerships with transit, social services, and health care agencies for pilot ride request could result in paid service subscribers because the cost of the volunteer ridehailing service will be significantly lower than ride-hailing, taxis, and on-demand transit.
  - Research evaluation plan including data collection, survey instruments, and methods of data analysis have been documented and can be replicated (note that the approach is innovative in that multiple data sources can be integrated at the indiidual level and induced travel is assessed).
  - Effective collaboration process with the right mix of expertise (community-based, operators, planning, and research organizations)
- **Next Steps:**
  - Operate pilot, Collect data, Evaluate outcomes