Self-Service Ride & Drive and Rural EV Sharing

American Public Power Association DEED Grant Program

FORTH
Empowering Mobility

PROJECT TITLE

Self-Service Ride & Drive and
Rural EV Sharing

KEY PERSONNEL

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Justin approves contractor's work and reporting. Justin also remains the primary point of contact with DEED administrations regarding the execution of the project.

PROJECT SUBJECT AREAS

Transportation Electrification
Customer Electric Vehicle Adoption

UTILITY NAME AND ADDRESS

Northern Wasco County Public Utility District
2345 River Rd, The Dalles, OR 97058

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Connor oversees and coordinates all aspects of the project and its deliverables and facilitates reporting with Justin Brock.

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SELF-SERVICE RIDE & DRIVE AND RURAL EV SHARING

The "Self-Service Ride & Drive (SSRD) and Rural EV Sharing" tested a model over two and a half years for residents in predominantly rural communities to receive exposure to electric vehicles and have access to increased clean transportation options, in partnership with local community-owned utilities. The program evolved greatly from application, through implementation, and now into project closeout.

Overall, the project was a success, with 161 users driving nearly 64,000 miles with 1,600 unique trips. More data, both quantitative and qualitative, is provided in aggregate and broken down by site in the Results section.

The project team gained insight into developing and implementing this service. A key takeaway is that there is widespread support for this service by utilities, host sites and community members.. However, expenses associated with delivering these programs can quickly balloon beyond what was planned. This report provides insights into the learnings and recommendations for advancing this work in the future.

The project concept was developed to research the feasibility of a Self-Service Ride & Drive (SSRD) and Rural EV Sharing program for electric vehicles. As an alternative to traditional ride-and-drive events and carsharing programs, this model was intended to be more cost-effective, accessible and sustainable for utilities that want to introduce their customers to electric vehicles. Getting people behind the wheel is critical to alleviating many EV-related misconceptions. However, in rural regions, ride-and-drive events and carsharing are rare and residents typically have less access or exposure to EVs than their urban counterparts.

The original project concept was designed to work similarly to other station-based carsharing services, with a few key differences: 1) the program focuses on small communities where commercial carsharing isn't available and has made few inroads, 2) it provides users with access to plug-in electric vehicles, and 3) whereas most carsharing services are marketed as an alternative to owning a car, this program was designed to accelerate EV purchases through exposure to new technologies.

Forth assembled the project team, which included a cohort of eight public utilities across Oregon. Northern Wasco County Public Utility District was the lead applicant to the American Public Power Association's DEED grant program. Operational funds were provided by a mix of grant funding from DEED, sponsorship funding from each participating utility, the Bonneville Environmental Foundation and Forth (via other project funds). Forth was the principal project manager and implementer of the project.

METHODOLOGY AND IMPLEMENTATION

Once the project began, it quickly became apparent that the timeline, milestones, and implementation strategy identified in the original application would need to be modified to meet on-the-ground realities. Table 1 shows the actual project implementation timeline and milestones (the original Timeline and Milestones can be viewed in Appendix 1).

REVISED (ACTUAL) PROJECT TIMELINE AND MILESTONES

TABLE 2

APRIL 15, 2021 - NOVEMBER 1, 2021

Vetted software platforms, explored vehicle procurement and insurance options; procured vehicles. Forth signed contracts with at least five participating utilities and host sites for carshare vehicles.

DECEMBER 7, 2021

Presented initial project strategy and findings at Forth's Pacific Northwest COU Roundtable event.

FEBRUARY 1, 2022

First two self-service ride and drive vehicles launched on the platform and made available to the public.

MARCH 1, 2022

Three self-service ride and drive vehicles launched on the platform and open to the public.

MAY 30, 2022

Four more self-service ride and drive vehicles active on the platform (7 total).

SEPTEMBER 30, 2022

8 total vehicles self-service ride and drive vehicles active on the platform.

MARCH 30, 2023

11 self-service ride and drive vehicles active on the platform.

NOVEMBER 30, 2022 - OCTOBER 31, 2023

Refine, streamline, optimize & scale up the program.

OCTOBER 15, 2023

13-vehicles available and negotiate un-subsidized contract extensions with participating utilities.

DECEMBER 31, 2023

End of Pilot Period for vehicles in utility service territories "Project Completion Date." Submit Final Report/Case Study.

When developing the project concept, Forth had an agreement with Wunder Mobility to provide carshare software services. However, this platform was discontinued shortly after signing a contract and Forth was forced to find a new provider. The project team spent several months vetting other platform providers and ultimately partnered with Mobility Development, a company that supports the launch and growth of community-controlled carsharing and other mobility programs. In addition to the platform, Mobility Development would also provide other core components including program vehicles, insurance, call center and operational support.

The program operated publicly as "GoForth Electric CarShare," on the "Miocar Networks" phone application for the duration of the project (Miocar Networks is a white-labeled version of Good Travel Software.)

The original project scope focused primarily on the self-service ride and drive component. While this remained a core focus, a significant amount of the resources from the project were devoted to the following objective of the original application: "to support low-income customers -- including affordable housing residents -- with short-term, self-service EV rentals as an accessible alternative to public transportation." While most carshare users were first-time EV drivers, Forth found that providing a sustainable, reliable, clean transportation source was the primary outcome, and individuals getting first-hand experience with EVs was an important, but secondary outcome.

Additionally, the original application mentioned the potential to leverage the same platform for utilities to place their internal fleet vehicles on the platform. However, this opportunity did not develop (see more in the Challenges section).

Forth initially intended to perform all major components of operating the service, including project management, fleet procurement, fleet management, and member services with assistance from the on-the-ground staff of utilities and host sites. Without direct service experience, Forth found it necessary to partner with Mobility Development to execute project workstreams. A high-level list of the implementation strategy follows:
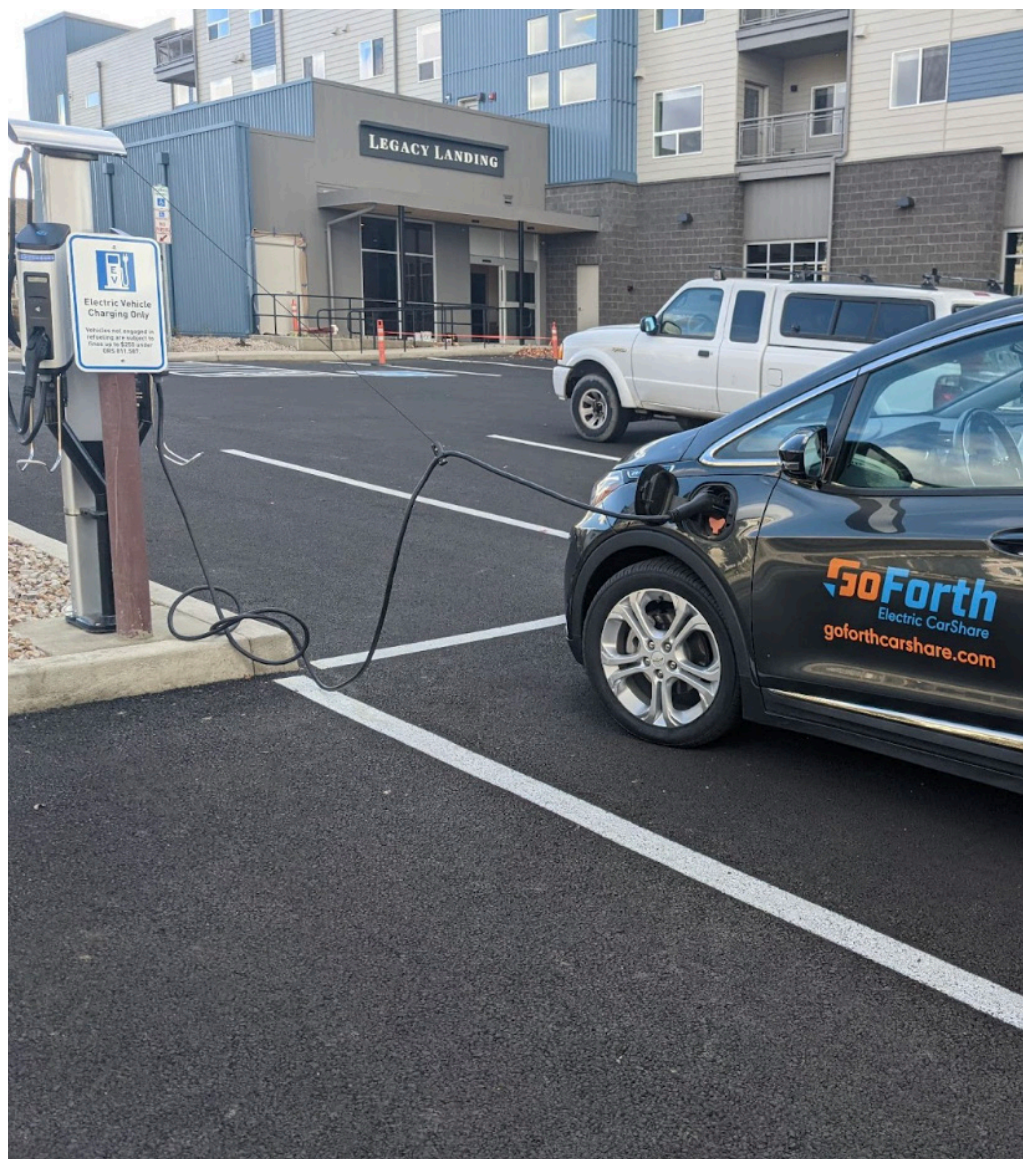
1. Forth established sponsor/participation agreements with utilities and host site agreements with various entities.
2. Forth established the "GoForth Electric CarShare" brand as the public-facing element.
3. Forth contracted with Mobility Development to provide the original cohort of vehicles, carsharing insurance, and carshare software platform (with necessary in-vehicle telematics).
4. Forth created the goforthcarshare.com website and the Member Guidebook.
5. The first two program vehicles (two Chevrolet Bolts) with telematics units, were shipped to and deployed in Bend and La Pine Oregon, in November 2021, with additional vehicles deployed one at a time over the next 15 months. The last vehicle in the original cohort launched on April 1, 2023 in Ashland, Oregon.
6. Forth held a kick-off recruitment event at each newly launched location. In addition, several social media campaigns were held around each vehicle location to gain users.
7. Forth operated the member service phone lines and provided orientations to all new members between 9 AM and 5 PM, Monday-Friday (business hours).
8. Mobility Development provided after-hours call center support (available 24/7 to members).
9. Forth staff maintained the fleet, including contracting with local providers to complete services and cleanings.

The service host sites varied but included participating utility offices, affordable housing developments, public parking lots and transit stations.

HOST SITE NAME	LOCATION	SITE TYPE	VEHICLE TYPE	DEPLOYMENT DATE
Legacy Landing	Bend, OR	Affordable Housing, Senior	Bolt 2018	12/1/2021
Hawk's View	La Pine, OR	Affordable Housing	Bolt 2019	12/1/2021
Consumers Power HQ	Philomath, OR	Utilitiy Offices	Bolt 2017	3/1/2022
Iris Place	Eugene, OR	Affordable Housing	Leaf 2019	5/1/2022
Santa Clara Station	Eugene, OR	Transit Station	Leaf 2019	5/1/2022
Clatskanie PUD	Clatskanie, OR	Utility Offices	Leaf 2019	5/1/2022
Veterans Office	The Dalles, OR	Public Parking Lot	Leaf 2019	5/1/2022
Veneta West Coast Electric Highway	Veneta, OR	Public Parking Lot / Charging Site	Bolt 2017	10/1/2022
Southern Oregon University	Ashland, OR	University Lot	Bolt 2017	4/1/2023
Broadway North Garage	Eugene, OR	Public Parking Lot	Bolt 2017	4/1/2023
Cowlitz PUD*	Longview, WA	Utility Offices	Bolt 2017	4/1/2023
Downtown Bingen*	Bingen, WA	Public Parking Lot	Bolt 2022	6/1/2023
White Salmon Fire Department*	White Salmon, WA	Public Parking Lot	Bolt EUV 2022	6/1/2023

Considerations for Equity

Forth implemented policies to make the program as accessible and equitable as possible.

1. The service had no registration or sign up costs.
2. The first four hours of a user's first trip were free to eliminate barriers to entry and encourage test drives.
3. A "member first" approach was taken when users encountered misunderstandings or technical issues.
4. Prepaid debit cards were accepted as a payment method.
5. Member fees were established at $4/hour, or $35 per day.
6. Most expenses, including initial fuel, call center, roadside assistance and insurance were included in the single hourly/daily fee.
7. One-on-one phone orientations were provided to every new user before they could take a drive, providing education and awareness on new technology, including EVs, carsharing and the program.
8. The phone app and member support line were available in Spanish as well as English.

Utilization Data

Over 440 individuals signed up to use the GoForth platform, of which 161 took at least one trip (excluding Forth staff and contractors). Below are several tables providing the utilization data of service across all locations. All data collected from 12/1/21 - 11/27/23.

UTILIZATION DATA, SUMMARY

TABLE 4

Metric	Across Entire Fleet	Average Per Car
Hours/Day Utilized	17.9	1.4
Total Hours Used	13,003	1,000.3
Total Trips Taken	1,606	123.5
Unique Users	161	15.5
Total Trip Revenue	$18,389	$1,415

UTILIZATION DATA PER SITE, TOTALS

TABLE 5

Location	Active Users	Hours Used	Miles Driven	Trip Revenue	First Trip Date
Across Entire Fleet	161	13,003.0	63,918	$18,389	11/15/21
Legacy Landing (Bend)	16	1,165.7	7,647	$3,051	11/15/21
Hawk's View (La Pine)	15	1,469.2	14,355	$4,030	3/2/22
Consumers Power HQ (Philomath)	13	631.8	3,507	$693	3/19/22
Clatskanie PUD (Clatskanie)	5	61.3	765	$96	5/10/22
Santa Clara Station (Eugene)	27	1,488.5	5,152	$1,918	5/13/22
Iris Place (Eugene)	27	3,019.2	8,577	$3,817	5/17/22
The Dalles Chamber (The Dalles)	10	398.0	983	$519	6/25/22
West Coast Electric Highway (Veneta)	12	1,026.7	5,266	$1,260	10/17/22
Cowlitz PUD (Longview)	13	1,469.0	3,950	$1,098	4/6/23
Southern Oregon University (Ashland)	13	508.3	3,559	$826	4/21/23
Broadway Garage (Eugene)	12	484.2	2,173	$190	5/14/23
Downtown Bingen (Bingen)	20	658.0	5,021	$436	7/25/23
White Salmon Fire Dept. (White Salmon)	18	623.5	2,963.0	$457	7/27/23

Figure 1 below shows the number of hours per month that vehicles across the GoForth fleet were reserved, or utilized, over time. Utilization varied during the first year and a half of the program, normally totaling between 200-800 hours per month. In August of 2023 the hours of utilization (totaling nearly 1,700) were more than double what had previously been the highest-utilization month.

UTILIZATION DATA PER SITE, TOTALS

TABLE 6

Location	Number of Trips	Utilization	Avg. Trip Time (Hours)	Avg. Distance (Miles)
Across Entire Fleet	1,606	17.9	11.02	49.40
Legacy Landing (Bend)	385	1.6	3.03	19.86
Hawk's View (La Pine)	373	2.02	3.94	38.49
Consumers Power HQ (Philomath)	73	0.9	8.65	48.04
Clatskanie PUD (Clatskanie)	13	0.1	4.71	58.85
Santa Clara Station (Eugene)	164	2.0	9.08	31.41
Iris Place (Eugene)	207	4.2	14.59	41.43
The Dalles Chamber (The Dalles)	30	0.5	13.27	32.77
West Coast Electric Highway (Veneta)	41	1.4	25.04	128.44
Cowlitz PUD (Longview)	87	2.0	16.89	45.40
Southern Oregon University (Ashland)	74	0.7	6.87	48.09
Broadway Garage (Eugene)	24	0.7	20.18	90.54
Downtown Bingen (Bingen)	72	0.9	9.14	69.74
White Salmon Fire Dept. (White Salmon)	63	0.9	9.90	47.03

HOURS/MONTH UTILIZED OVER TIME

FIGURE 1
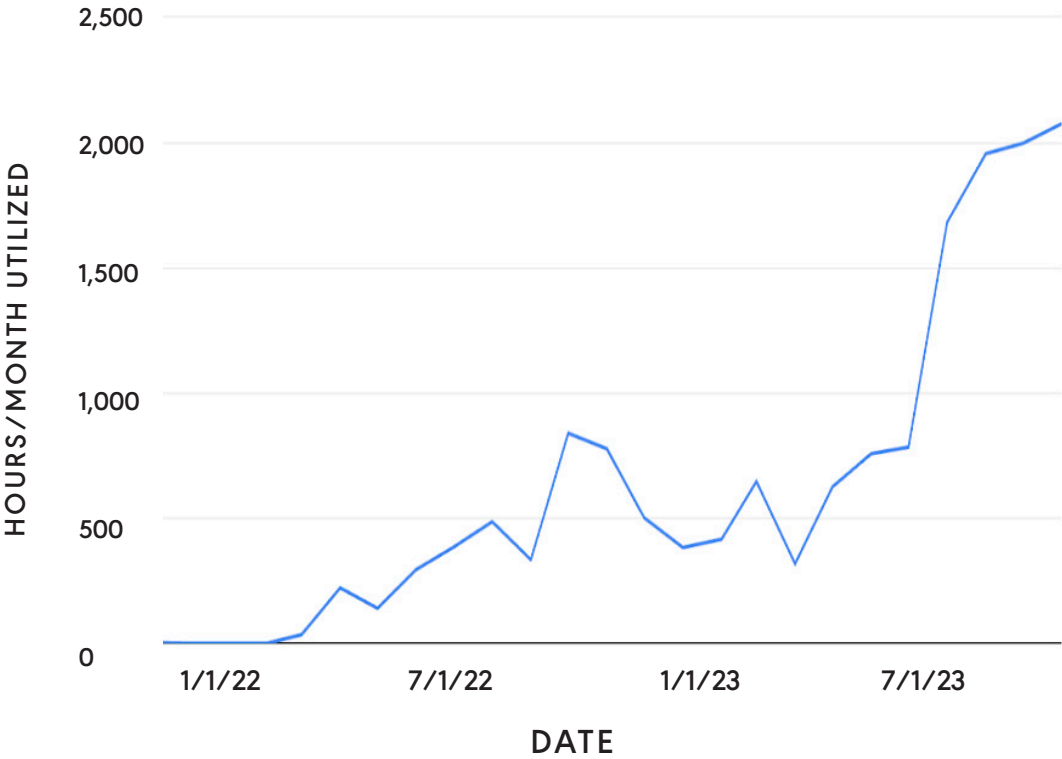
SURVEY DATA

The project team utilized a post-trip survey to collect data on carshare members' prior experience with and opinions regarding EVs, the types of trips taken, their experiences with GoForth CarShare, and member demographics. The survey was originally accessible through a link provided to members and was later offered automatically in the Miocar Networks app after each trip taken. The survey was anonymous, although some members provided their email addresses. Members who provided their email addresses were given a promo code for $8 (later increased to $16) in driving credit for completing the survey for the first time. However, members had the option to take the survey multiple times. Between 4/29/2022 and 12/1/2023, the post-trip survey was taken 215 times, by at least 83 unique members (confirmed based on the number of unique email addresses tied to survey responses). Because members could take the survey anonymously and multiple times, the data in this section is based on the first survey completed by each unique individual (n=83).

City of Ashland, Forth, and Southern Oregon University staff at the SOU location

Care Share Locations

Responses to the survey represented carshare members who rented GoForth cars from each of the 13 locations. The fewest responses (1.2%) came from members who rented the GoForth car from The Dalles, OR and the most responses (13.3%) came from members who rented the GoForth car at Santa Clara Station in Eugene, OR.

EV Experience

For over 75% of survey respondents, the first time they drove a GoForth car was the first time they drove an all-electric vehicle. Nearly 80% of respondents reported that they were more likely to consider an electric vehicle as a personal car in the future after taking their first drive with GoForth (see Figures 2-3 below).

Types of Trips Taken

Respondents primarily drove the GoForth cars on personal trips for their first trip, with nearly 80% of trips being personal trips and 12% being test drives. Personal trips may have included trips taken for appointments, to get groceries, to run errands, and more.

Service Experience

94.0% of respondents said they would consider using the service again and 93% said they would recommend it to others. See Figure 5 for more details on user experience.
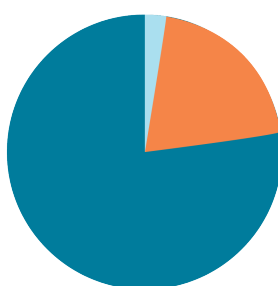
FIGURE 2

WAS THIS YOUR FIRST TIE DRIVING AN ALL-ELECTRIC VEHICLE?
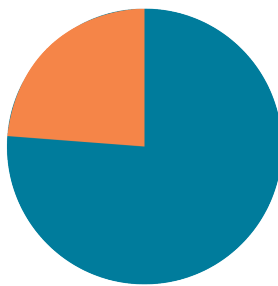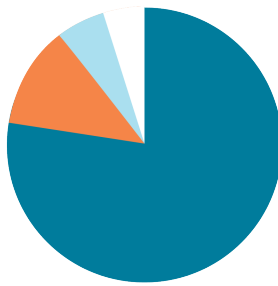
NO - 24.1%
YES - 75.9%

FIGURE 3

AFTER YOU DRIVE, ARE YOU MORE LIKELY TO CONSIDER AN ALL-ELECTRIC CAR FOR PERSONAL VEHICLE IN THE FUTURE?
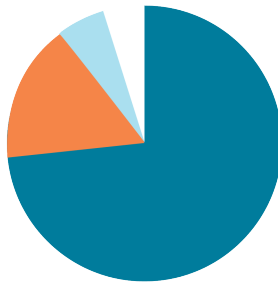
NO - 2.4%
YES - 78.3%
MAYBE - 19.3%

FIGURE 4

WHAT KIND OF TRIP DO YOU TAKE?

BUSINESS TRIP - 3.6%
OTHER - 4.8 %
TEST DRIVE - 12.0%
PERSONAL TRIP - 79.5%

FIGURE 5

IT WAS EASY TO CHARGE THE EV AFTER MY DRIVE.

STRONGLY AGREE - 72.1%
AGREE - 19.1%
OTHER - 4.4%
DISAGREE - 4.4%

SELF-SERVICE RIDE & DRIVE AND RURAL EV SHARING

DEMOGRAPHICS OF SURVEY RESPONDENTS

Gender

- 50.6% Female
- 46.8% Male
- 1.3% Non-binary/Non-conforming
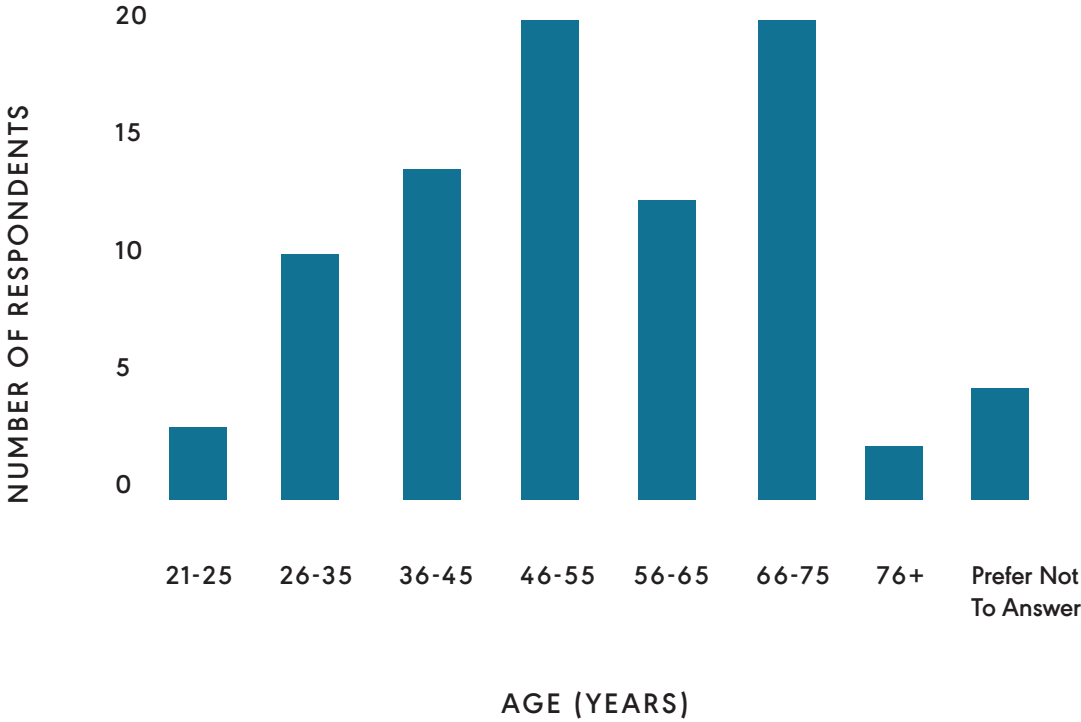- 1.3% Prefer not to answer

Race

- 87.3% White or Caucasian
- 2.5% Native American or Alaska Native
- 1.3% Asian
- 1.3% Two or more races
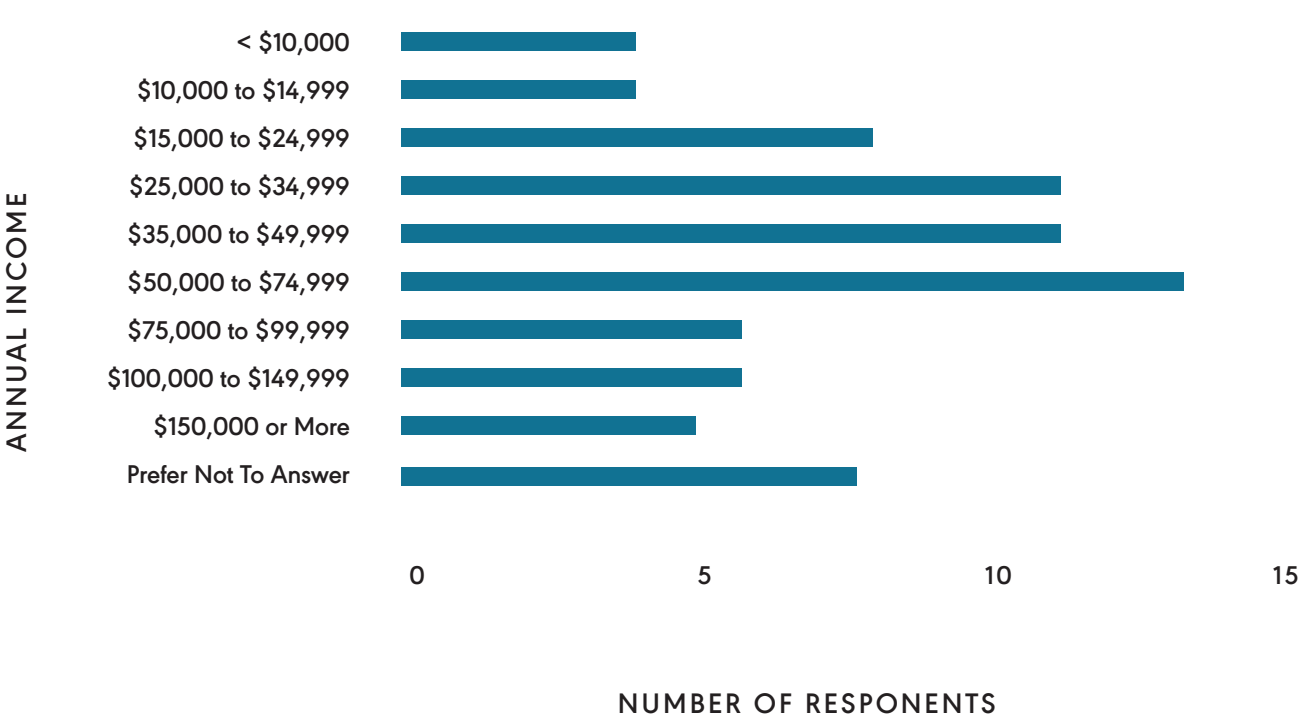- 7.6% Prefer not to answer

AGES OF SURVEY RESPONDENTS

FIGURE 6

ANNUAL INCOME OF SURVEY RESPONDENTS

FIGURE 7

QUALITATIVE FEEDBACK

The project team collected qualitative data about carshare members' experiences through the optional post-trip survey, and one-on-one story-sharing sessions. Feedback was gathered on a variety of topics, including user experience, customer service and accessibility. From these conversations, the team learned that users value the flexibility and affordability of GoForth CarShare, and that the service empowers some users to take trips that would otherwise be challenging.

The post-trip survey served as a way for users to share their appreciation for and positive experiences with the carshare, or to report issues they experienced with the Miocar Networks app, GoForth vehicles or charging stations, or customer service.

Many members expressed positive feedback with brief phrases of appreciation, i.e. "Great experience!" or "Love this car!" Some provided more detailed information about what they appreciated, such as an enjoyable driving experience, reducing their environmental impact, saving money, or not having to stop at gas stations. Examples of positive feedback are listed below.

"The car was wonderful! The stereo sounds amazing, lots of room for groceries and my teenagers! I'm so very happy to have found out about car sharing! Great for the environment and not too shabby on the wallet either! I will be recommending it to my customers, friends and family! Thank you for a great experience!" –Member in Longview, WA

"I think this is an exceptional service for people, and if more people looked into it, they would realize that also. It's a fun little car to drive. It's got good power and it's smooth." –Member in Philomath, OR

"I absolutely love this program. The cars are fun to drive and it's an inexpensive way to get to where you need to go." –Member in Veneta, OR

"Love the peppy, quiet ride. Can't wait to get one of my own! This is a great service for my community." –Member in Longview, WA

In cases when issues were reported, the survey was a useful tool for the remote project team to gain information about the vehicles, charging stations, app, and customer service. Receiving information directly from carshare members enabled the team to understand and address challenges promptly.

BUDGET SUMMARY

Project costs ended up being higher than anticipated. This project was conceived in the winter of 2021, a peak time for the COVID-19 virus. Costs for many things increased dramatically during this period. The price of EVs was up between 50%-100% compared with budgeted costs. This immediately created budget challenges.

The anticipated staff time needed to implement and maintain the project increased significantly. Other stakeholders, (utilities and host sites) were more hands-off than originally expected. This led Forth to spend more staff time, and thus increased expenses.

Table 7 is an estimated summary of the income and expenses for the APPA AMP project, March 2021 - November 2023. For a full profit and loss statement for the project, view Appendix 3. In total, the project raised about $19,000 in user revenue, or less than 3% of total project expenses. The loss of roughly $200,000 was funded out of Forth's financial reserves.

SUMMARY ESTIMATE OF TOTAL INCOME AND EXPENSES FROM THE APPA AMP PROJECT

MARCH 2021 - NOVEMBER 2023

TABLE 7

Income (Includes APPA funding, Bonneville Environmental Foundation, Earned Revenue from Other Sources)	$ 454,588
Expenses	$684,802

Technology

Software

The project utilized Good Travel Software (GTS) as the carshare software platform, which ran on the white-labeled app "Miocar Networks." The app provides the basic administrative features necessary to operate a carshare service. Other products may have provided additional features, but these were cost prohibitive.

Several issues made user-facing software appear "clunky." Some of these challenges included: the way promotional codes show up to members, not having a vehicle availability feature (which sometimes lead users to call to find a time to use the vehicle) and glitches that required restarting or redownloading the app.

Forth vetted a number of platforms before selecting GTS, which was chosen based on features and cost.

Some users reported that the overall process of signing up (downloading an app, inserting a payment method, uploading a driver's license, and having to wait several days for a motor vehicle record check to be completed) was cumbersome, and may have led to some individuals not completing the process.

Hardware

To utilize the GTS software, an in-vehicle telematics device was needed. At the time of project implementation, INVERS Cloudboxx was the only compatible option. Finding a technician to install the INVERS device remained a barrier throughout the process. Occasionally, in-car locks would make vehicles inoperable until a backup key fob could reset the vehicle. Additionally, the 12-volt battery needed to operate the hardware would occasionally drain in underutilized cars. If the vehicles required maintenance, some dealerships would either blame the telematics hardware or simply refuse to work on the vehicles at all until the devices were removed, adding cost and complexity to diagnosing vehicle issues.

Vehicle / Host Site Locations

Location likely made the biggest difference in the utilization of the vehicles. Several vehicles (such as the Philomath site), were located at utility offices outside of a town center and not in close proximity to traditional or active transit sites. This created a barrier for potential drivers to get to the vehicles. Vehicles in more urban areas (such as Eugene) or at housing sites (Bend, La Pine, Eugene) typically ended up being the most utilized. Providing vehicles at multi-unit housing locations is advisable, as is having the vehicle be publicly visible and accessible through other transportation means.

After driving the carshare vehicle in Philomath, OR, one member noted that "Having cars in more accessible and less remote places would encourage use. The Philomath location is not accessible by public transit, and is not on a bike-friendly route." A different member, who biked to the carshare vehicle in Philomath, said "It's not possible to get here on foot and the building doesn't have any bicycle storage. Alternatively, it's a 13-minute walk away from a Corvallis bus stop every two hours. I've had to bring my bike with me into the car and I doubt others would be as tenacious. One might see better uptake if it's placed closer to the core of Philomath. In the short term, a bicycle locker (or even a rack) would go a long way. As it currently stands, an hour-long round trip bike ride means I can only justify using it for occasions like visiting friends in Monmouth or Salem, and accessing trailheads unavailable by transit."

Volunteers at the Bingen Huckleberry Festival

Marketing and Promotion

In addition to location and visibility of carshare vehicles, establishing a strong community presence by attending local events such as farmers markets, parades, or community meetings was key to promoting the carshare program. Forth worked with partners at each host site to promote the program and found that when partners were more invested in sharing the program with the community, it substantially contributed to the success of the individual careshare. Forth also established an ambassador program, where volunteers could take a carshare vehicle to local events to spread the word about the program in exchange for discounts and driving credits.

Forth had some success with running social media campaigns on Facebook and Instagram, and creating press releases, news articles, and video content in collaboration with partners and carshare members, but the most effective way to promote the program was through visibility of the carshare vehicles in more densely populated areas, and through word of mouth.

Erin Lusch (Forth) and Catherine Kiewit, Mayor of the City of Bingen, promoting GoForth CarShare at Bingen's Huckleberry Festival and Parade

Operations

While there were many operational learnings, the most challenging component was having such a dispersed fleet. By design, the project was meant to work in rural communities around Oregon. Being a large state, this meant that vehicles were often several hours from each other (5 hours between most north and south vehicles), which made responding to issues as well as regular vehicle maintenance, such as replacing windshield wipers/fluid and correcting tire pressure challenging. It is not fiscally feasible to have a staff person in each location, and identifying contractors, like cleaners, in many of these small towns also created challenges. In other cases, there was not a qualified dealership or shop to work on EVs, which often meant shuffling vehicles hundreds of miles between cities.

Forth utilized a mixed approach to issues. In some places, the utility staff or host site was able to help out with small issues. In most cases, we were able to find a third-party contractor for cleanings (in The Dalles, North Waco PUD took on this component of the work). In some cases, vehicles were taken offline until the issue could be attended to by a Forth staff member. One affordable housing host site staff member spent about four hours a month assisting with the project.

Member Services

While many rules were explicit in the Member Guidebook and orientation, this did not stop a multitude of issues from arising. A few examples of these included: key fobs being taken from vehicles, smoke and pet hair in vehicles, windows being left open, cars being left on, vehicles not being plugged in, tires being slashed and vehicles not being returned with renters going AWOL. All issues required attention and resources.

Another challenge was how the member services component was implemented. Forth staff operated the member service phone lines between the hours of 9-5, Monday-Friday (business hours) and provided orientations to all new members. Outside of business hours, Mobility Development provided call center support. With two different organizations splitting responsibilities, this sometimes led to members receiving conflicting information, or the responsibility for resolving a member issue getting lost in the process.

Insurance

Procuring carsharing insurance proved a significant challenge. While Forth's broker tried for over a year to get a policy, finding plans was difficult, and the ones that did come in were over budget or had certain qualifications (like premium minimums across the fleet) that were not able to be reached with a small start-up fleet. We feel that a purpose-built carsharing organization, would be better equipped for this. To get around this issue, Forth partnered with Mobility Development to insure its vehicles through its policy.

Vehicles

All of the project vehicles used were Nissan Leafs (~150 mile range) or Chevy Bolts (~240 mile range). Overall, the Leafs tended to require less maintenance and worked more efficiently with the telematics devices. However, the added range of the Bolts was a benefit for many users. Especially in some particularly rural environments, utilization was limited by the shorter range of the Leafs. The data GoForth acquired and discussed in the "Result" chapter of this report supports a correlation between the average miles traveled for a project vehicle and the vehicle range. However, there could be other factors, like the specific users or locations of these vehicles also having an effect on how they were used.

During the project, Chevrolet Bolts received numerous recalls (including a total battery replacement and a seatbelt recall). This required cars being out of service, remedying the fix, and handling a multitude of customer inquiries on the safety of the vehicles.

This factor informed another challenge: by design, there was only one vehicle in a community (outside of Eugene). If a vehicle was taken offline for repairs or a recall, there was no longer a service option for members. Having redundancy in a community, and a variety of vehicle types is important to ensure the program maintains accessibility. As more vehicle models become available, all-wheel drive, number of passengers and cargo should be considered.

Charging

As part of the project design, the utility sponsors were responsible for ensuring charging infrastructure was available and reserved for the carshare vehicles. In most scenarios, utilities installed charging stations at the host sites and passed ownership to the site. Some provided a stipend for the host site to do the work themselves. Others, particularly the vehicles that were at utility offices, were stations the utility already had or installed for this project. In one case, Forth utilized a public charging station operated by a third-party vendor. While it was a benefit for Forth to not have to focus resources on this aspect of the work, operationally there were additional challenges. When stations were not functioning properly, this meant there was a chain of contacts to go through for a fix. In some cases, chargers were down for days before a remedy was found. Forth also did not have direct access to data, nor was it able to manually initiate a charge, which created further barriers for management and tracking.

In one location, a charging station was vandalized, where the charging cable was cut and removed. The site host recommended a camera as a possible remedy for deterrent.

Carshare for Utility Fleets

One initial component of the project was to utilize the carshare software as a resource for utilities to access their fleet vehicles, improving efficiency for their internal team, while also partially subsidizing the program for the public. However, this part of the project never materialized. Having to use a specific telematics device (which often differed from the established technology the utility used) was a limitation. Many utilities shared that downloading a separate phone app and making a reservation was too cumbersome of a process compared to the status quo of grabbing keys from the office and taking the vehicle out.

CONCLUSION

The project team learned much over the course of the pilot project.
A summary of these findings is below:

1. **EV sharing in rural and less populated urban environments is needed and desired.** While a project such as this is far from being cost-neutral on a revenue-earned basis, there are innumerable benefits for communities having access to transportation options. Unfortunately, there are not many companies or organizations offering services in this area. For these programs to be affordable, only a small portion of the revenue will come from the fees renters pay. A majority of funds will need to come from third parties, such as utilities, grant funders, municipalities, state agencies, or others. And while utilities were generally supportive of the program, some stated it was difficult to justify sponsoring such a program with benefits seeming to go to a relatively small percentage of their overall service members.

2. **Location, location, location.** Users need a way to get to the project vehicles, and access to complementary transportation options, such as traditional transit and active transit are critical to establish a well-used service. Moreover, having an anchor tenant, such as a dense housing site, proves to be a recipe for ensuring higher usage.

3. **"Self-service" when it comes to vehicles is far from self-service.** A program involving vehicles and hardware-software integration requires a significant level of human support. Having systems and resources to handle these inquiries is crucial. Additionally, technology knowledge is not evenly distributed. For some individuals, this project introduced a number of new technologies, including electric vehicles, charging stations, carsharing as a service and phone applications. A much more hands-on approach (coaching individuals through the process) was required in order for the program to be accessible.

4. **Utilities and host sites want to be (mostly) hands-off.** While the project was originally designed as being decentralized, with the

utility taking on important operational responsibilities, in actuality, most utilities were not ready to take on the management of a public-facing asset. In order to move forward, a central organization was required to own most project aspects. In this case, Forth assumed the role. Most utilities highlighted the hands-off component as one of the biggest positives from the project. However, this hands-off approach ended up being very costly to the project as a whole. Setting clear expectations and project roles with sponsors and host sites is critical for sustainability.

5. **Redundancy is key.** With technology, having multiple options when things do not work is important. For vehicles and charging stations this meant that if one of these were out of service, the entire service for the community was not removed. Unfortunately, this was the experience in most project areas, so having sites with at least two accessible charging stations and vehicles to prevent the service going offline for an entire community would have been ideal.

6. **More support for equity.** While the project aimed to be as accessible as possible, low-income folks still faced roadblocks, especially when taking longer journeys. Unreliable fast charging (not present or down), but also the many DC fast charging networks place a large hold (e.g. $50) on user's accounts, which prohibited individuals from using charging stations. A variety of networks, apps and payment methods for charging also complicated this issue. Traveling a farther distance, especially in rural Oregon, requires more planning than many gas vehicle drivers are prepared to handle.

The sites in Bend and La Pine, Oregon are now offline, with several more to follow over the next couple of months. Funding has been secured to support the operations of several of these vehicles for another 1-2 years. Forth will continue to explore and iterate on this project concept in the years to come.

Appendix 1- Original Application Summary

Northern Wasco County PUD is partnering with Forth and several other public power utilities to research the feasibility of a Self-Service Ride & Drive (SSRD) and Rural EV Sharing program for electric vehicles. As an alternative to traditional, utility-sponsored Ride & Drive events and rural car-sharing programs, this model is intended to be more cost-effective, accessible, and sustainable for utilities that want to introduce their customers to electric vehicles.

Based on many years' of experience, Forth knows that getting people behind the wheel is critical to alleviating many of the misconceptions associated with EVs. A DOE study revealed that 45% of consumers who test drove a vehicle at the GoForth Electric Showcase purchased an EV. However, rural regions typically have less access to EVs than their urban counterparts, and Ride & Drive events are very rare, as is rural car-sharing. In addition, many car buyers try to avoid going to a dealership until they're ready to actually purchase a vehicle. Northern Wasco County PUD hopes that Forth's SSRD program will demonstrate a new, uniquely cost-effective, and customer-friendly way to help ratepayers experience the benefits and enjoyment of EVs first-hand.

DEED funding, if awarded, will support rural and small city utilities that wish to give their customers access to Forth's comprehensive Self-Service Ride & Drive (SSRD) and Rural EV Sharing Program. Forth's program works much like Zipcar's popular car-sharing service, but with three significant differences: 1) Forth's program focuses on small communities where commercial car-sharing isn't viable and has made few inroads, 2) it provides users with access to plug-in electric vehicles, and 3) whereas Zipcar is marketed as an alternative to owning a car, Forth's program is designed to accelerate EV purchases. Forth's program also helps utility fleet managers simplify employees' access to company fleet EVs.

This grant will help Northern Wasco County PUD and nine other public power utilities offer their customers and employees self-service EV access. In addition, to support utilities' transportation equity initiatives, the same vehicles will, in some locations, also be made available to community members for affordable, by-the-hour, self-service EV rentals.

The Forth SSRD and Rural EV Sharing program will provide interested drivers with basic EV education and then lead them through an account creation process to give them access to nearby self-service EVs using an app on their smartphone or an RFID card. Forth will provide live customer support by phone. After downloading a mobile application and creating a member account, users will receive a promo code redeemable for a free two-hour test drive. They will then make a reservation, and at their reserved time they will unlock the car with their cell phone or an individually assigned RFID card. After using the car for two hours free of charge, they'll return, lock up and plug in the EV at its home location. This charging requirement ensures that each new user experiences not only a test drive, but also the use of a public EV charger, which many utility customers may still find unfamiliar. After each user's test drive, Forth will collect survey data and send follow-up EV education resources. Whereas every user's first two-hour test-drive will be free, additional trips by the same driver are permissible and even encouraged. However, subsequent trips will not be free, and any earned revenue will be shared between the site host and Forth.

ORIGINAL PROJECT TIMELINE AND MILESTONES

April 15, 2021	Begin 6-8 week process of configuring Forth's Wunder platform while formalizing contracts with participating utilities, onboarding vehicles, and developing outreach & marketing materials
June 15, 2021	Launch with 10-15 vehicles, about 50/50 SSRD and fleet. This includes assisting participating utilities in marketing the program to their customers
June 15, 2021 - June 15, 2022	Refine, streamline, optimize & scale up the program
November 30, 2021	Present initial project strategy and findings at Forth's Pacific Northwest COU Roundtable event
June 15, 2022	Achieve 25-vehicle milestone
June 15, 2023	Achieve 50-vehicle milestone and negotiate un-subsidized contract extensions with participating utilities, if possible
June 15, 2023 - September 30, 2023	Complete project analysis and summary to present findings at Roadmap 2023 and other public-utility events and conferences