

Results from the

First 6 Months of Evie Carshare

Part of the EV Spot Network, Evie Carshare is America's first and largest all-electric, municipally-owned, renewably-powered, free-floating carshare service based in communities across Saint Paul and Minneapolis.



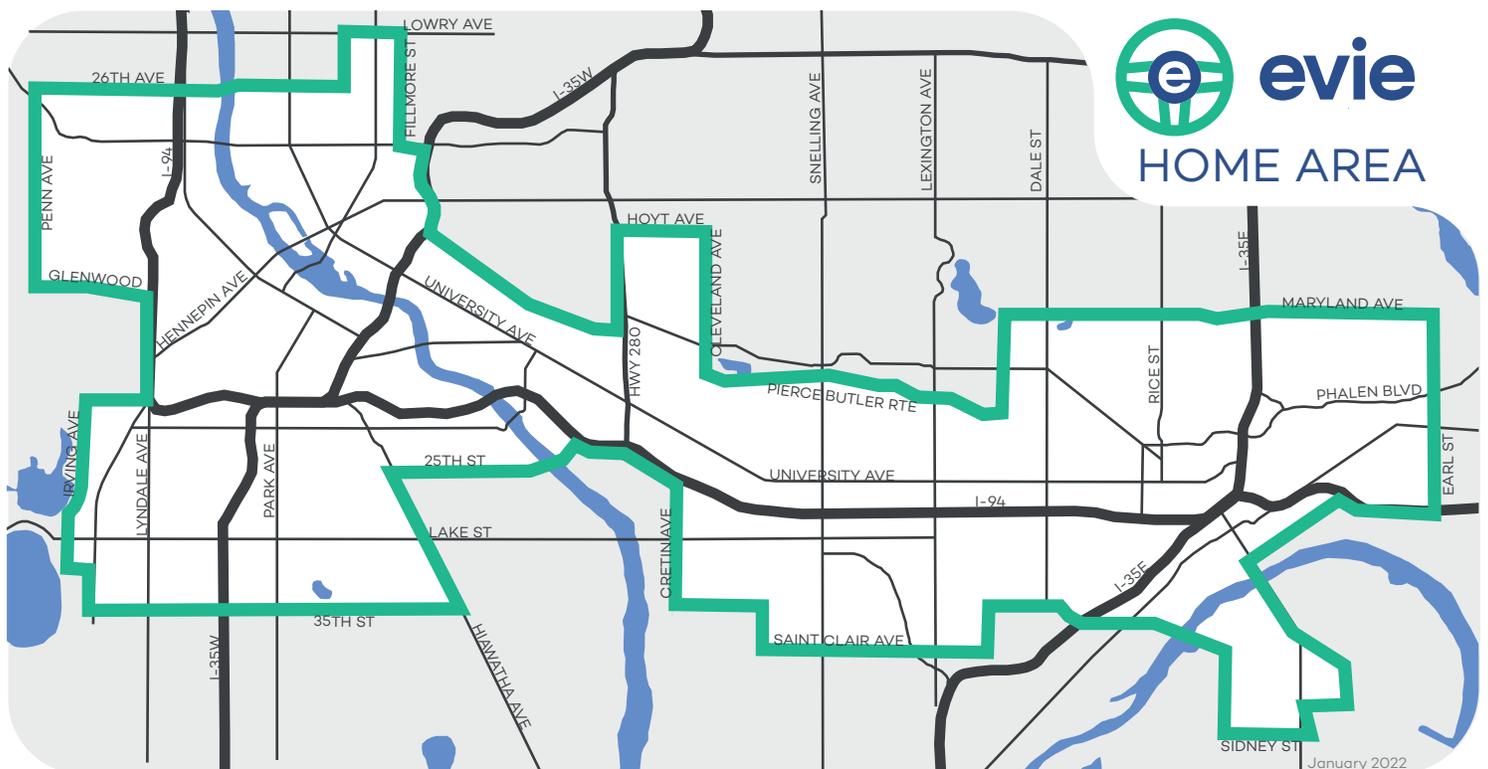
Introduction

Evie Community Carshare is a new all-electric shared mobility service powered by 100% renewable energy. Evie Carshare is operated by HOURCAR under contract to the cities of Saint Paul and Minneapolis. Evie Carshare is part of the EV Spot Network, which was planned and implemented through a public-private partnership that includes the cities of Saint Paul and Minneapolis, HOURCAR, Xcel Energy, East Metro Strong, and the American Lung Association. Evie currently features a fleet of 101 electric vehicles in a home area covering 35 square miles in Saint Paul and Minneapolis, supported by a network of 71 public and dedicated carshare chargers with 142 level 2 charge ports.

This report summarizes statistics from the first six months of operations, February – July 2022.

During that time, Evie Carshare:

- logged nearly 25,000 trips totaling almost a quarter of a million miles
- reduced an estimated 741 metric tons of greenhouse gas
- resulted in an estimated \$2.6 million in savings on transportation costs for area residents, including \$0.85 million in estimated savings to very low-income households.



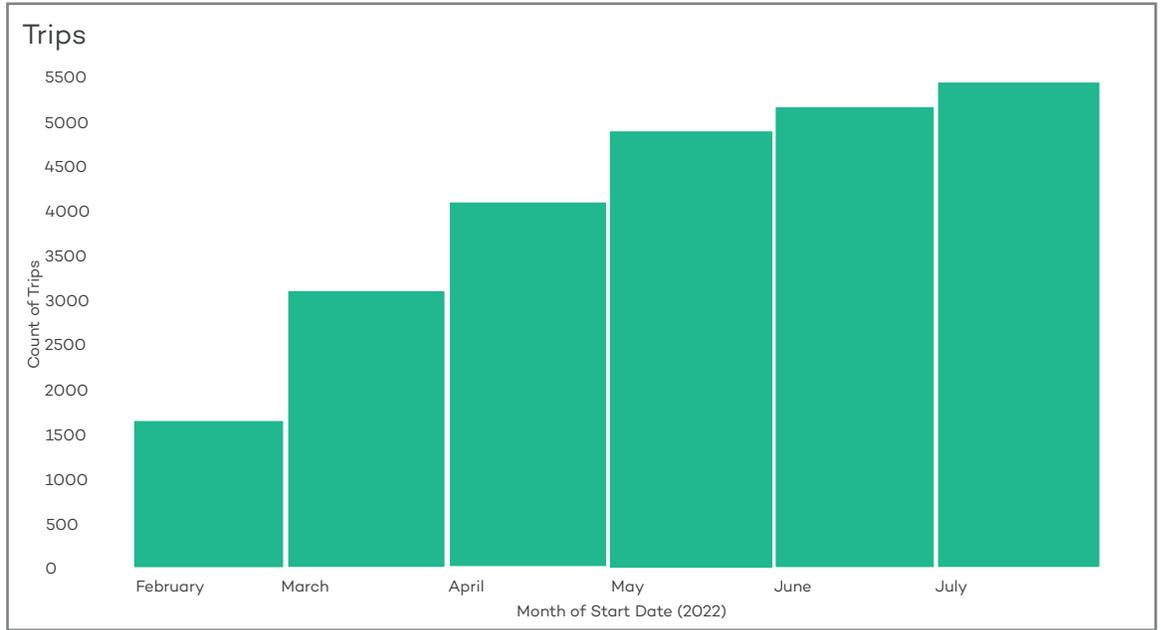
I. Six Month Results

Active Users: 1,456 unique unduplicated individuals used Evie Carshare.

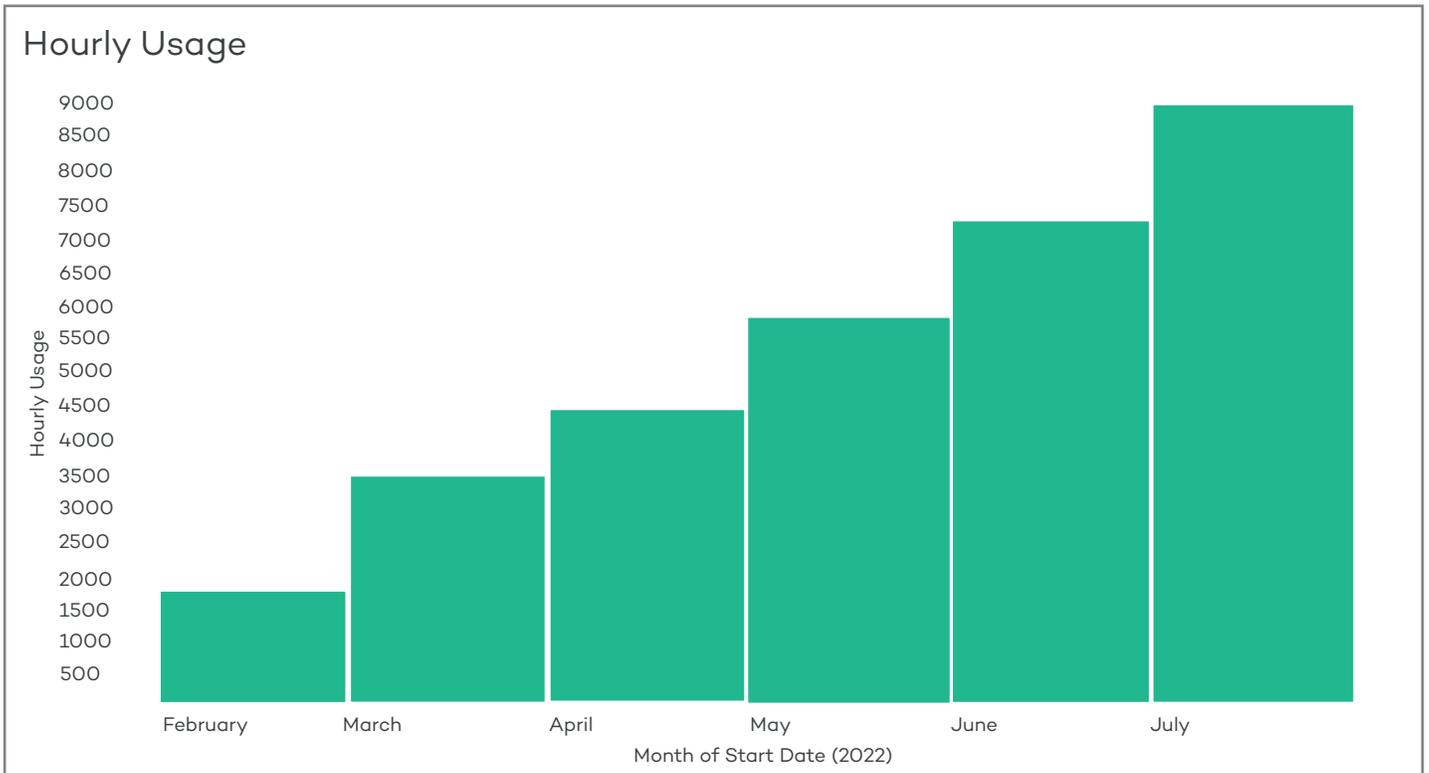
Trips: Evie Carshare users logged 24,474 trips.

During the first three months, the vehicles averaged 1 trip per vehicle per day (pvpd).

During the second three months, the vehicles averaged 1.7 trips pvpd.

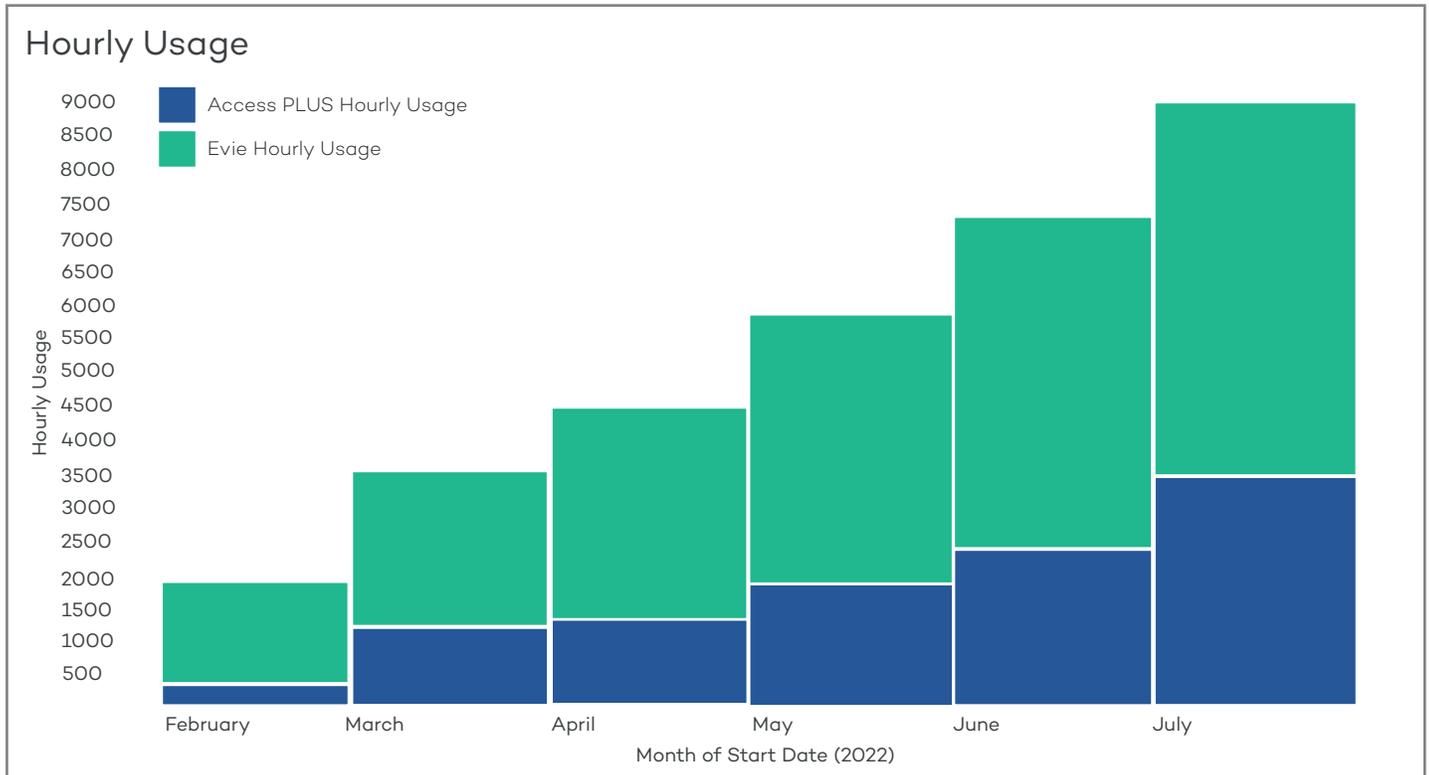


Hourly Usage: Members drove Evie vehicles a total of 31,825 hours. During the first three months, the vehicles averaged 1.1 hours of use pvpd. During the second three months, the vehicles averaged 2.4 hours of use pvpd. The average trip duration over the six-month period was 78 minutes.



Mileage: Evie vehicles were driven 241,733 total miles. The average trip was 9.9 miles.

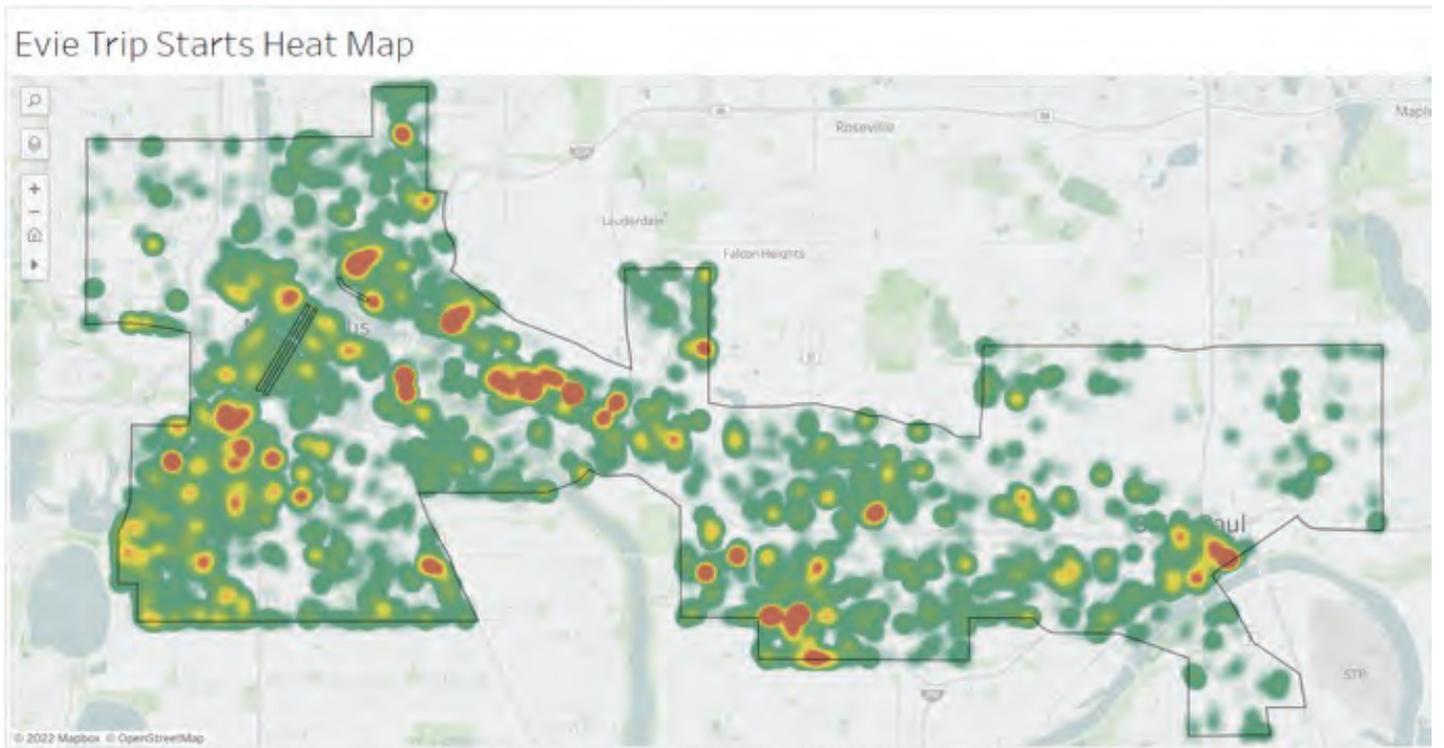
Usage by Very Low-Income Members: HOURCAR offers Access PLUS, a qualified low-income rate plan, to very low-income members, defined as members of households earning less than 50% of Area Median Income (\$52,450 for a family of four). In the first six months, usage by Access PLUS members accounted for 33% of total Evie usage. Usage by Access PLUS members rose throughout the first six months as a share of total usage. In the first three months, Access PLUS usage accounted for 29% of total usage. In the second three months, it accounted for 35% of total usage.



Usage by BIPOC Members: Our analysis of usage by Black Indigenous People of Color (defined for purposes of this report as members who do not identify as European American/White) is based on a sample of users who responded to our annual member census questionnaire in the fall of 2021. 300 respondents who indicated their race on the survey used Evie in the first six months of the service, about 19% of total users. Usage from these members accounted for 25% of total Evie usage. 41% of usage from these members came from BIPOC users. This is a small sample and may be skewed by a variety of factors, not least of which is that it does not include any users who signed up after the service was launched. More data is needed to draw firm conclusions about usage by BIPOC members, though the initial results are encouraging. We should have more robust data on usage by BIPOC members after our annual census this fall.

Distribution of Trips: Of the 24,474 trips logged by Evie Carshare users, 9,193 (38%) originated in Saint Paul, and 15,281 (62%) originated in Minneapolis. The difference in trip origins grew over the six-month period; in the first three months, 40% of trips originated in Saint Paul and 60% in Minneapolis, while in the second three months 36% of trips originated in Saint Paul and 64% in Minneapolis. There is also a pattern of vehicle “drift” between the two cities that became more pronounced over the six-month period: more one-way trips that began in Saint Paul ended in Minneapolis than the reverse, leading to imbalances between the two cities (more cars in Minneapolis than in Saint Paul) and requiring manual logistics to correct. In the first three months about 4 vehicles a week drifted from Saint Paul to Minneapolis, compared with about 9 vehicles a week in the second three months.

As the following heat map of trip starts shows, trips originating in Saint Paul were most concentrated in the downtown area and the Hamline-Midway and Macalester-Groveland neighborhoods. Trips originating in Minneapolis were most concentrated in and around the University of Minnesota East and West Bank campuses, and in Dinkytown, Northeast, Loring Park, Uptown, and Powderhorn. These are all within the original HOURCAR service area where there was already an existing member base. As the service develops, we anticipate more trips originating in areas not covered by in the original HOURCAR service area, including Payne-Phalen, Dayton’s Bluff, North End and the West Side in Saint Paul, as well as in North Minneapolis.



Savings on Transportation Costs: Studies have shown that users of carshare services derive significant savings due to reduced spending on personally owned vehicles. According to a synopsis of five studies prepared by the Transportation Research Center at [UC Berkeley](#), households that use carsharing save \$1,848 - \$5,220 per year on transportation costs (AAA currently calculates the annual cost of auto ownership at [\\$10,728](#)). Averaging high- and low-end estimates (divided by two for a six-month period) and multiplying by the number of Evie active users (1,456), we estimate that Evie Carshare has saved Twin Cities residents \$2,572,752. Based on the “Usage by Very Low-Income Households” analysis above, we estimate that 33% of this savings, or \$849,008, went to very low-income households.

Emissions Reductions: We estimate that Evie Carshare has reduced 741 metric tons of greenhouse gas in its first six months of operation. Our estimates of emissions reductions are based on three sets of factors: (1) direct replacement of trips in internal-combustion engine vehicles with trips in EVs powered by renewable energy; (2) estimated vehicle miles traveled reductions due to mode shift from personally owned vehicles to transit, biking, and walking; and (3) estimated acceleration of EV adoption as a result of the service.

1. Direct replacement of trips: In the first six months of the service, users drove 241,733 miles in Evie vehicles. Using the Argonne Laboratories AFLEET tool, we estimate that had these miles been driven in internal-combustion engine vehicles, they would have consumed 162 barrels of petroleum and emitted 83 metric tons (mT) of greenhouse gas (GHG). Since Evie vehicles are powered by 100% renewable energy, these miles generated effectively zero GHG emissions.

2. Estimated VMT reductions/mode shift: Most of the beneficial effects of carsharing are achieved, not by direct trip replacement, but by “mode shift,” i.e., vehicle miles traveled (VMT) diverted to transit, biking, walking, and batched/foregone trips. As the Federal Highway Administration (FHWA) notes in its 2020 Congestion Mitigation and Air Quality Improvement (CMAQ) Program Cost Effectiveness Tables, carsharing “enables households to carry out travel activities while reducing the number of cars owned by households, both of which may result in decreases in VMT through eliminating some discretionary trips and mode shift to public transit.”¹ Based on measures used by FHWA, we estimate Evie Carshare users have reduced 589 mT of GHG via mode shift.²

3. Estimated acceleration of EV adoption: By building out new and highly visible curbside public infrastructure and familiarizing people with EVs through the carshare service, we anticipate the EV Spot Network and Evie Carshare will have significant knock-on effects in terms of increased adoption of new and used EVs by vehicle purchasers. Based on a review of the available research,³ we estimate that 3% of Evie Carshare users each year will go on to purchase an EV, resulting in an estimated GHG reduction of 69 mT.⁴

Adding these three factors together, we arrive at a total of 741 metric tons of greenhouse gas reduced.

¹ https://www.fhwa.dot.gov/ENVIRONMENT/air_quality/cmaq/reference/cost_effectiveness_tables/fhwahep20039.pdf p. 35.

² In its 2020 CMAQ Cost Effectiveness Tables (op cit. p. 37), FHWA estimates that users of carshare services reduce annual VMT by 2,500-4,500 miles. Assuming the mean of the upper and lower bound estimates (3,500 VMT reduced annually), divided by two for a six-month period, and multiplied times the number of active users (1,456), we estimate that Evie Carshare users have reduced 2,548,000 VMT through mode shift. Using USDOT estimates of .96 pounds of GHG emitted per trip-mile for single-occupant vehicles and .45 pounds per trip-mile for transit (<https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/PublicTransportationsRoleInRespondingToClimateChange2010.pdf>), we arrive at 589 mT reduced. We also note that our calculation of GHG reduction via mode shift assumes that all VMT were shifted to transit; GHG reductions would be higher if some VMT were shifted to biking, walking, and/or batched/foregone trips.

³ A study by JD Powers and Assoc. finds that 46% people who have previously driven an EV are “very likely” to purchase one in the future: <https://www.jdpower.com/business/press-releases/2021-us-electric-vehicle-consideration-evc-study>. There are also numerous studies supporting the conclusion that construction of new public charging infrastructure leads to accelerated adoption of EVs; cf. “Availability of Public Electric Vehicle Charging Pile and Development of Electric Vehicle: Evidence from China,” <https://www.mdpi.com/2071-1050/12/16/6369>; “The Market for Electric Vehicles: Indirect Network Effects and Policy Design,” <https://www.journals.uchicago.edu/doi/full/10.1086/689702>; and “The role of demand-side incentives and charging infrastructure on plug-in electric vehicle adoption: analysis of US States,” <https://iopscience.iop.org/article/10.1088/1748-9326/aad0f8>.

⁴ Using the Argonne AFLEET tool set to an electricity generation mix based on Xcel Energy's Upper Midwest mix (<https://mn.my.xcelenergy.com/s/energy-portfolio/power-generation>), and estimating 11,467 annual miles per vehicle based on FHWA averages (<https://www.fhwa.dot.gov/policyinformation/statistics/2018/pdf/vm1.pdf>), divided by two for a six-month period, we arrive at GHG reductions of 69 mT as a result of accelerated EV adoption.

II. Benchmarking Against Other Electric Vehicle Carshare Services

Our results in the first six months results are extremely robust when compared with other one-way EV carshare systems in the US. Published reports suggest that most EV carshare networks have averaged less than one trip per vehicle per day.⁵

We attribute the rapid uptake of Evie Carshare to the following factors:

- 1. Community engagement:** In partnership with the City of Saint Paul and East Metro Strong, HOURCAR executed an extensive community engagement project in 2019-20. We worked closely with ten community-based organizations representing predominantly low-income and BIPOC neighborhoods to identify transportation challenges and develop strategies to eliminate or mitigate these challenges. We produced a Community Engagement Report with findings and recommendations, as well as a scorecard to track our progress. Since then, we've made progress on most of the recommendations in the report, including implementing an app for ease of use (while also making alternative options available for non-smartphone users) and implementing a qualified low-income rate structure.
- 2. Pricing:** As a direct result of our community engagement process, HOURCAR lowered rates by nearly 40% in 2021, and implemented a qualified low-income rate structure, Access PLUS. Access PLUS provides our lowest rates, a damage fee waiver, and \$6 of monthly driving credit, all for \$1 a month. Even for non-Access PLUS members, Evie Carshare rates are extremely affordable, about half what most other one-way carshare services charge.⁶
- 3. System design:** Our semi-free-floating model is designed to maximize utility for users by combining the convenience of a free-floating system (users can start and end a trip anywhere within a 35 square mile service area) with the reliability of a hub-based system (users can reliably find vehicles at fixed charging hub locations, and receive a credit for retuning a vehicle to a hub and plugging it in to charge at the end of their trip). The charging hubs simplify the logistics of operating an EV carshare service, and help ensure users find charged vehicles available in their neighborhoods.

⁵ Cf. reports for BlueLA in Los Angeles (https://sharedusemobilitycenter.org/wp-content/uploads/2019/04/NewFile_-SUMC_04.15.19.pdf), Gig Carshare in Sacramento (<https://media.electrifyamerica.com/assets/documents/original/790-Q32021ElectrifyAmericaReporttoCARBv2Public.pdf>), and BlueIndy in Indianapolis (<https://www.ibj.com/articles/66511-blueindy-car-sharing-program-striving-to-be-in-black-by-2020>). The number of trips per vehicle per day can be derived by dividing the total number of trips by the number of vehicles by the number of days in the report period.

⁶ Cf. <https://eviecarshare.com/rates/individual-plans/>, <https://gigcarshare.com/rates/>, <https://blog.shuttlefare.com/free2move-re-view>. Evie Carshare rates are comparable to those of BlueLA: <https://blinkmobility.com/rental-rates/>.

III. Looking Ahead

In the second six months of Evie Carshare, we anticipate adding 22 additional vehicles (Nissan Leaf Pluses), increasing the fleet to 123 vehicles. This will likely have the effect of increasing the total number of trips, usage hours, and miles on a fleetwide basis, though it may also dilute these measures to some extent on a per-vehicle basis. The usual seasonal pattern of carsharing is for usage to fall as the colder weather sets in;⁷ we therefore anticipate usage will level off and/or decline somewhat starting in late October/early November.

By the end of 2024, the EV Spot Network is expected to feature 175 electric vehicles, 280 level 2 charge ports, and 10 DC Fast Charge (DCFC) ports.



⁷ VMT falls across all modes in the winter: <https://www.bts.gov/sites/bts.dot.gov/files/docs/explore-topics-and-geography/topics/202101/seasonally-adjusted-vmtv7.pdf>.