June 25, 2024

Ms. Lisa Felice
Executive Secretary
Michigan Public Service Commission
7109 West Saginaw Highway
Post Office Box 30221
Lansing, MI 48909

**RE: Case No. U-21538 – In the matter, on the Commission's own motion, to open a docket for certain regulated electric utilities to file transportation electrification plans and for other related matters.**

Dear Ms. Felice:

Enclosed for electronic filing in the above-captioned case, please find **Consumers Energy Company's Transportation Electrification Plan 2024**.

This is a paperless filing and is therefore being filed only in PDF. I have included a Proof of Service showing electronic service upon the parties to Case No. U-21389.

Sincerely,

Digitally signed by Spencer A. Sattler
Date: 2024.06.25 14:52:27 -04'00'

Spencer A. Sattler
Phone: 517-474-6638
Email: spencer.sattler@cmsenergy.com

cc: Parties per Attachment 1 to Proof of Service

# CONSUMERS ENERGY

## Transportation Electrification Plan 2024

Case No. U-21538
June 2024

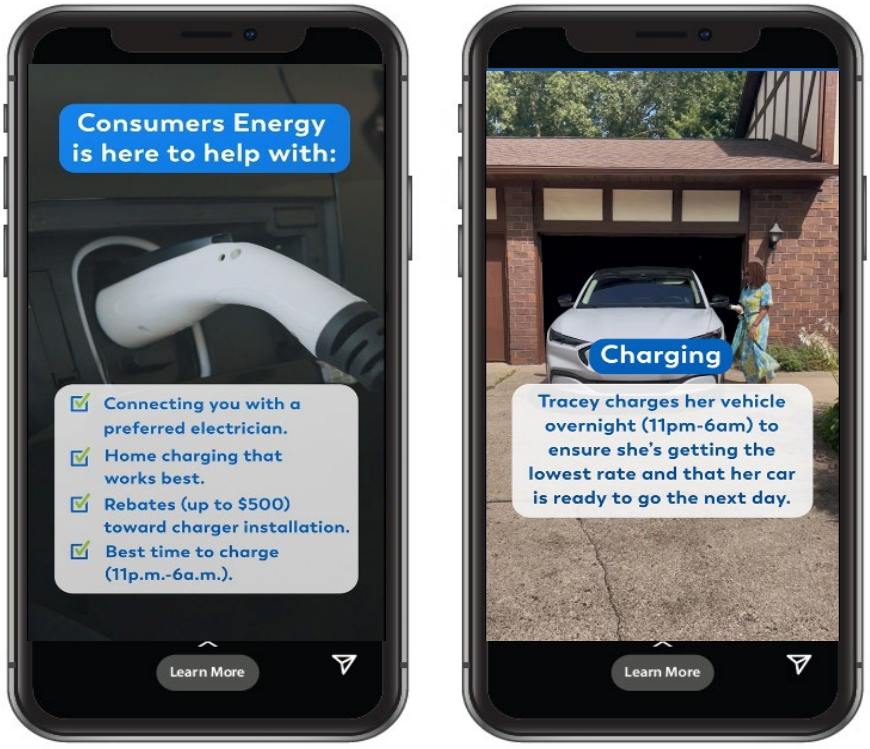
# Table of Contents




*Digital residential customer campaign sample*

# Table of Figures






*Instagram Reels (short videos) were developed to showcase real customers with their EVs*

# BACKGROUND

Consumers Energy (Consumers Energy, CE, or the Company) began the first phase of creating the Company's Transportation Electrification Plan (TEP) via the PowerMIDrive pilot, which was approved by the Michigan Public Service Commission (MPSC) in Case No U-20134. PowerMIDrive subsequently launched in June of 2019, with of a goal of at least 70% off-peak load management for residential customers, and to provide early learnings regarding public charging infrastructure. The Company's TEP formation was further enhanced via the addition of the PowerMIFleet pilot approved in Case No U-20697, and efforts to optimize electric loads from fleets to at least 80% off-peak began in June 2021. The Company believed that the higher level of off-peak charging was possible for PowerMIFleet based on the learnings and promising early results of PowerMIDrive.

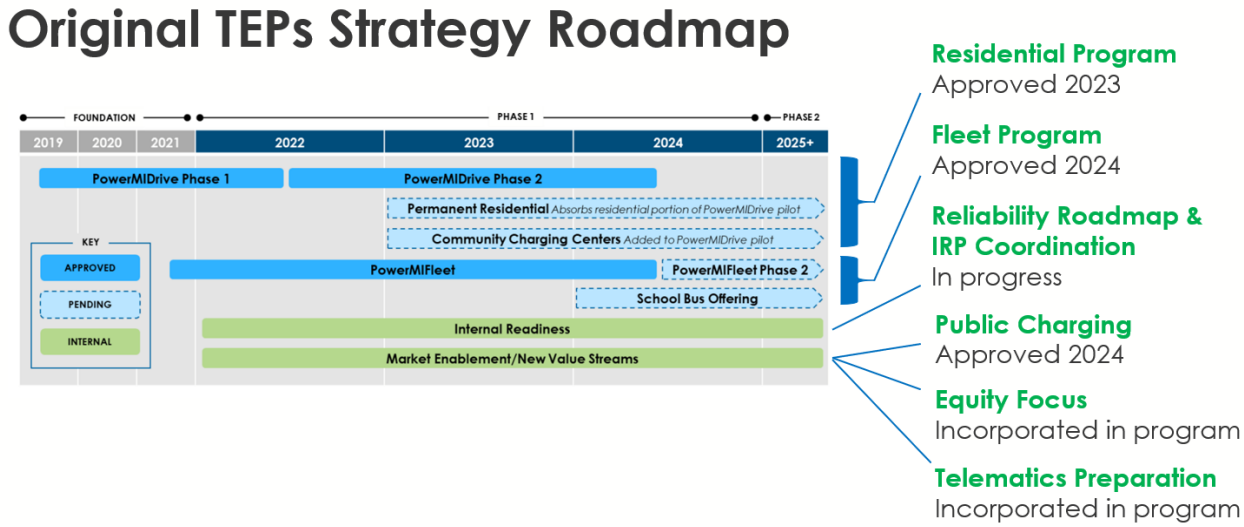
The PowerMIDrive and PowerMIFleet pilots were further refined in Case No U-20963, with the goal of moving closer to permanent programs. PowerMIDrive added the use of advanced metering infrastructure (AMI) for targeted outreach and load management verification. Furthermore, PowerMIDrive shifted the focus of public Level 2 (L2) charging infrastructure to overnight destinations to increase off-peak charging, and multi-dwelling units (MDUs) to enhance customer access and equity. PowerMIFleet added capital funds for fleets serving income qualified customers and disadvantaged communities, again to improve customer equity regarding transportation electrification. These enhancements were approved by the Commission in December 2021.

The first official TEP filing (under the heading of "Consumers Energy 2022-2030 Transportation Electrification Strategic Plan") was included in Case No U-21224. In January 2023, the Commission approved the Company's proposal to make the PowerMIDrive Residential program permanent, including the MDU component, and to add community charging rebates to the PowerMIDrive public infrastructure pilot. The community charging pilot was proposed by the Company to further increase equitable access to off-peak charging by customers.


*Cover of the original TEP filing in U-21224*

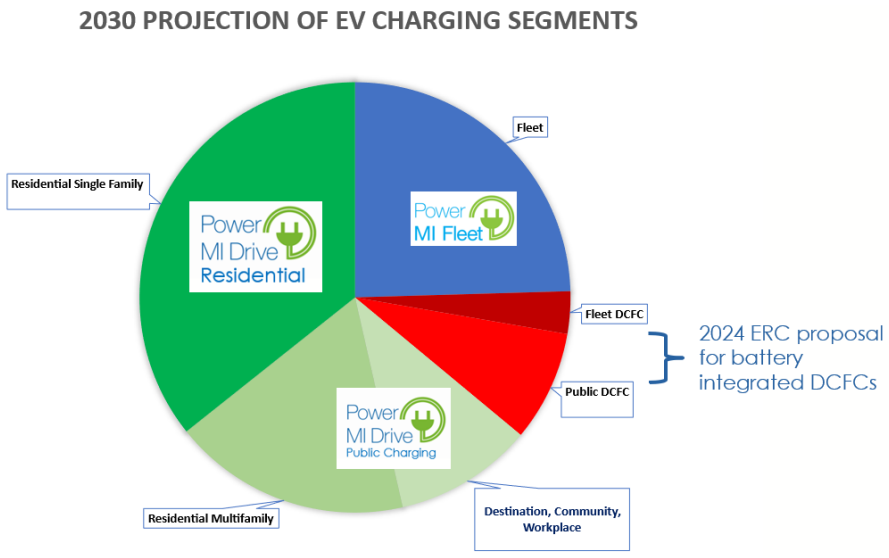
Finally, in Case No U-21389, the Company proposed making both PowerMIFleet and the PowerMIDrive Public programs permanent based on the continued pilot refinements and learnings of the past four years. In March of 2024, the PowerMIDrive Residential, PowerMIDrive Public, and PowerMIFleet programs were authorized by the Commission, creating the first comprehensive utility EV load management program approved without legislative mandates.

The goals laid out in the original TEP filing have now been achieved, as summarized in the graphic below excerpted from the original TEP filing.[1]




The strategic roadmap objectives in the Company's first TEP have all been approved and focus on equitable charging access such as the up to $1,000 income-qualified residential rebate, multifamily rebates, community charging rebates, and workplace charging rebates, in addition to PowerMIFleet's strategic focus on fleets serving income qualified and disadvantaged communities, non-profits, educational institutions, government agencies, and small and medium businesses.

Initial telematic preparation has also been achieved given the Company's focus on Level 2 charging, in addition to some long-duration direct current (DC) and Level 1 rebates, focused on key market segments that are likely to be off-peak, provide 3-hours or more of plug-in time, or can be addressed via energy arbitrage with a battery (our most recent proposal to optimize DCFC load in the 2024 electric rate case or ERC).




[1]See page 19 of Exhibit A-152 (JAM) in Case No. U-21224, which is page 2937 of 2942 in the PDF: 0688y000002IGMIAAM (site.com)

The strategic TEPs focus on key market segments is illustrated in the projection of charging segments by 2030. All market segments in which managed charging is likely to be acceptable to the customer and material to the grid are covered by customer programs.

Active managed charging is not possible if a vehicle is not plugged in, or the electric vehicle supply equipment (EVSE, sometimes also referred to as a charger) is not integrated with a battery, and thus we are ready for future technology developments to complement our coverage of key market segments. In sum, the Company is prepared for future active managed charging via telematics, and potentially bidirectional power flows, as these technologies develop.


*A home charging setup for two EVs from a single NEMA 14-50 outlet offers power sharing for optimal load management*

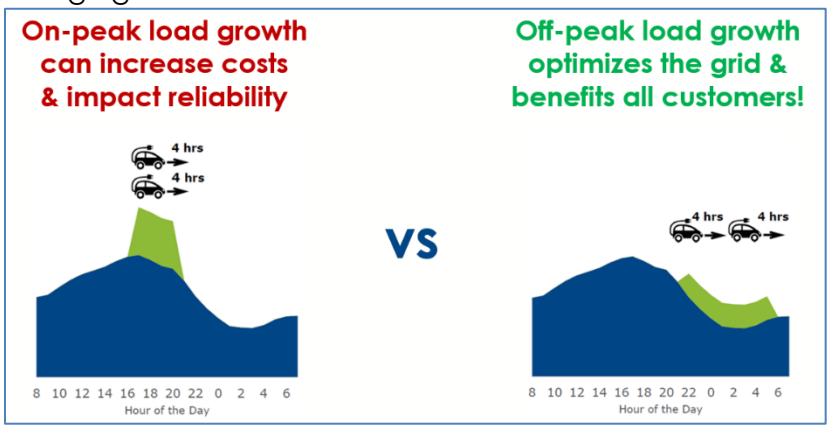
# TEP EXECUTIVE SUMMARY & STRATEGY

Governor Whitmer and the State of Michigan have set a goal of two million EVs in Michigan by 2030, and in support of Michigan's goal and the size of the electric territory the Company serves, Consumers Energy set an ambition to be ready to serve one million of those EVs. The Company TEP is the strategic document that roadmaps how serving one million EVs (and more beyond 2030) will be achieved. Supporting the TEP are three essential customer load management programs (PowerMIDrive Residential, PowerMIDrive Public Charging, and PowerMIFleet), in collaboration with coordinated planning via the Company's reliability road map and integrated resource plan (IRP). All these TEPs elements are critical to meeting the goals while optimizing off-peak EV charging to the benefit of all customers.

Within this context, the Company TEP is focused on three primary strategies:

## 1) Load growth at the right time to benefit reliability and cost for all customers

Not all customers are EV drivers, but the goal of the Company's TEP continues to be that all customers should benefit from the EV programs by maximizing off-peak charging.




On-peak charging can dramatically increase distribution system needs at the service and distribution circuit transformer level. For example, most residential loads peak at near 10 kW, and even L2 charging can double that on a 50-amp circuit (an additional 9.6 kW), or potentially even triple such peak loads if multiple EVs in a household are charging or a more powerful 100-amp circuit L2 is utilized (an additional 19.2 kW). Given the growth trends of EVs, it is easy to imagine how reliability concerns and infrastructure replacement could occur near the grid edge with distribution infrastructure that was constructed to serve customers in a pre-EV era.

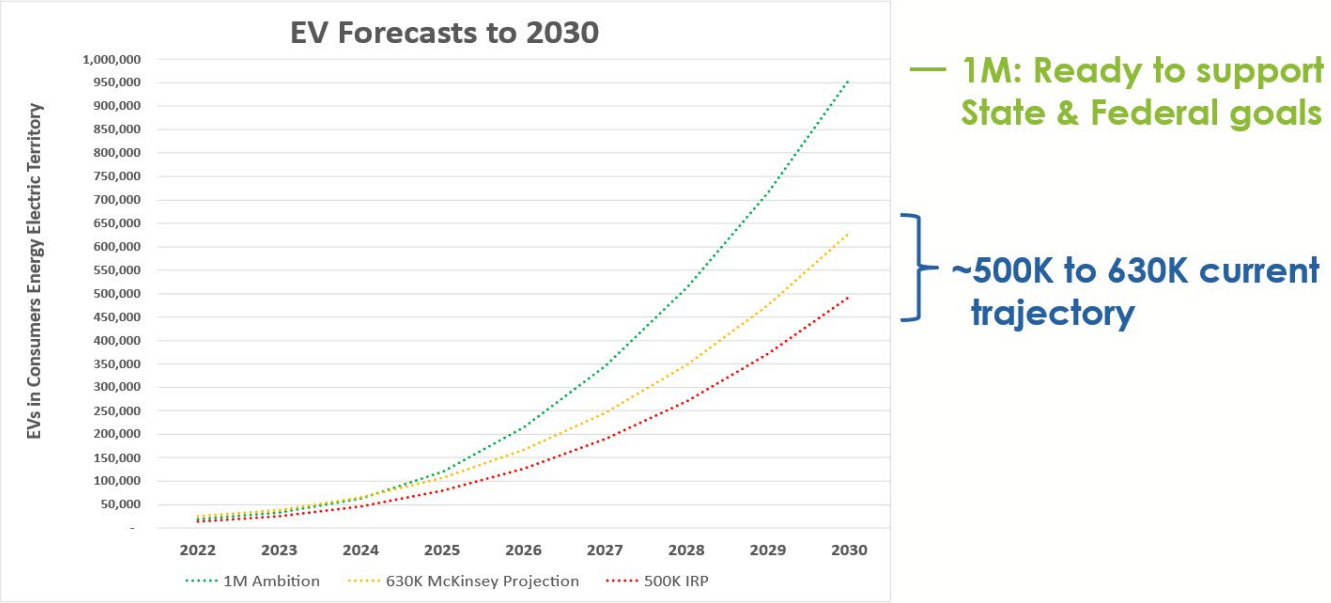
Without EV load management programs, most customers will pay no attention to on-peak time periods (2 PM to 7 PM weekdays) when charging. The Company knows this because in the fall of 2023 our AMI data analysis showed just 493 of the 30,380 EVs in the Company's electric territory enrolled in Rate 1050 (Nighttime Savers) without rebate and incentive engagement. That equates to a mere 1.6% of EV customers and thus relying on time of use (TOU) rates alone is not sufficient to incentivize residential EV load management.

Furthermore, in public settings TOU rates alone for L2 infrastructure made less impact than when combined with specific use cases (e.g. overnight destinations like hotels instead of shopping centers) as noted in the annual reports throughout the pilot phase of PowerMIDrive, because the cost differential for charging is relatively low. This is why

the PowerMIDrive Public program now exclusively focuses on TOU rates plus select off-peak use-case locations like workplaces for the morning hours, and community charging, multifamily, and destination charging for the overnight and weekend hours. With EV load management programs more kWh can flow through the same infrastructure, which not only reduces reliability risks at the grid edge, but also lowers costs for all customers by optimizing energy usage and infrastructure, while helping to avoid or delay local system upgrades.

## 2) Prepare for EV adoption at scale

In the past three years the number of EVs in the Company's electric territory has tripled and the annual mileage driven by EVs has increased. The Company believes that adoption remains on track for at least 500,000 EVs by 2030 as projected in our last IRP to up to 630,000 EVs by 2030 as projected by McKinsey in 2023. Furthermore, EV adoption is viral, with the most likely customers to buy or lease an EV being customers who live near someone with an EV. For example, residential distribution circuits that served three EVs near the start of the pilot may now be serving 17 or more EVs. Thus, while seasonal EV sales will vary, it is prudent to remain focused on the long term given how quickly EV adoption has been occurring and the potential for concentrated distribution level circuit impacts.




Beyond EV adoption levels, residential and commercial charging continues to proportionately evolve. The Company's latest data shows a near 70/30 split between residential and commercial charging (up from approximately 80/20 in 2023), and growing use of public fast charging (Direct Current Fast Chargers or DCFC) as customers drive their EVs longer distances. Utilizing a ratio of one fast charger per approximately 85 EVs, the Company projects 849 to 1,026 new DCFC service requests of 1 MW or greater by 2028, and 1,521 to 1,854 DCFC service requests of 1 MW or greater by 2030. These estimates may well prove conservative as the State of Michigan has a goal of 100,000 chargers by 2030 in support of the 2 million EV goal (which Consumers Energy equates to approximately 45,000 public L2 and 5,000 public DCFCs in our electric territory).

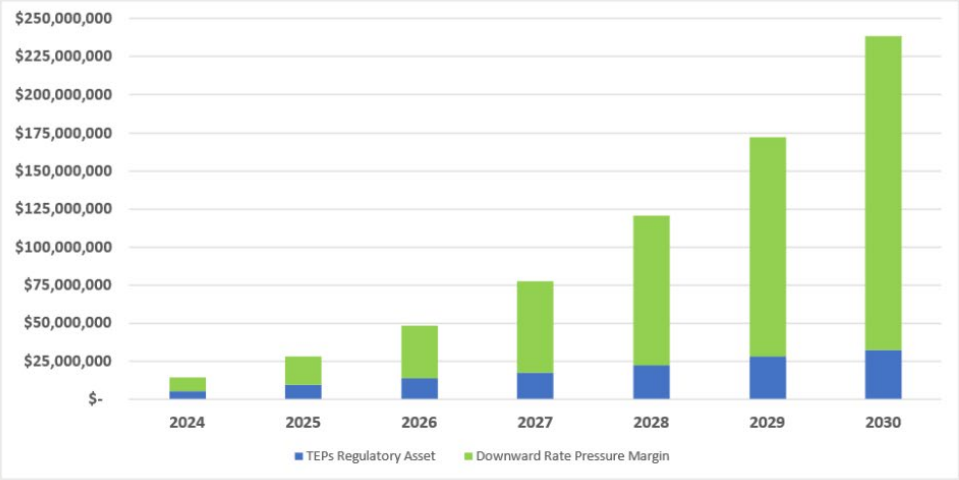
Given that transformers to serve fast charging loads can have a greater than 2-year lead time, and that fast charging is more likely to be on-peak, the Company is moving to get ahead of these challenges via the addition of a rebate for public and fleet DCFCs that utilize battery arbitrage (i.e. charging the DCFC battery overnight to mitigate on-peak EV charging). Consistent with our three core TEP strategies, such stationary battery technology can minimize make ready service upgrades, optimize the load profile of fast charging to 80% or greater off-peak, and be incentivized within the existing EV program budget. Of course, such fast charging will also continue to be augmented with overnight destination charging given the importance of tourism and large proportion of rural service in our electric territory. Strategic locations such as hotels, campgrounds, conference centers, and long-term parking lots, both optimize off-peak charging and power levels needed for service while reducing pressure on DCFCs that can be more challenging to develop.

Circling back to the residential sector and the Company's focus on equity, at least one out of three residential customers may not live in a single-family home or be able to install L2 charging at their residence. The need for alternative charging locations in the future is very real, and of the 90,000 public L2 included in Michigan's 2030 goal (approximately half of which would be in the Company's territory), access to workplace charging, community charging, and multifamily charging are expected to increase dramatically.

For example, the Company's viewpoint is that there will be a near 1-to-1 ratio of L2 chargers and light duty EVs, with approximately 2/3$^{rds}$ of those being private at residences or fleet locations, and 1/3$^{rd}$ of EV drivers seeking or relying on public L2. Utilizing the current EV growth rate projections, this means approximately 157,000 to 198,000 L2 plugs in equitable access and public locations will be needed in the Company's territory by 2030. Again, we believe that long-duration and equitable access locations like workplace, multifamily, community charging, and overnight destination charging are where the vast majority of these L2 should be located.

### 3) The additional margin from EV load growth can pay for EV load management programs while also creating downward rate pressure for all customers

Consumers Energy believes that EV load growth at the right time presents a unique opportunity for a regulatory paradigm that could be benchmarked by utilities and regulators nationwide. Specifically, that a portion of the additional margin from EV load growth should fund EV load management programs while preserving margin for downward rate pressure benefitting all customers. In fact, utilizing the conservative scenario of 500,000 EVs by 2030 in the IRP, the projected cost of EV customer load management programming is a small fraction of the total benefit.



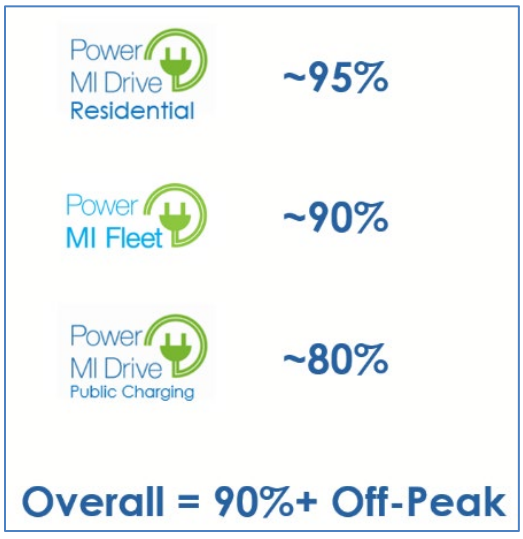

**Totals:**

**~$570M+ Downward Rate Pressure**

**~$130M TEPs Customer Programs**

The much greater proportion of downward rate pressure margin compared to the customer programming cost means that there is significant headroom for additional program budget, especially if EV load growth accelerates beyond the base case, and also that margin from EV load growth would continue to benefit customers even if EV adoption is slower than projected. Thus, the Company believes that increasing load management program and equitable charging access programs up to 1/3rd of the long-term forecast is reasonable and would still preserve significant downward rate pressure for all customers.

Using the three strategic principals above, Consumers Energy's TEP is focused on scaling with programming and planning for key market segments in support of Michigan's 2030 goals. To date, even with efforts that do not include direct control, off-peak load management has achieved breakthrough results benefitting all customers. The Company's EV load management programs have achieved greater than 90% off-peak charging between March 2023 and March 2024, which is best in class for utilities and well beyond the original pilot goal of 70% off-peak charging.

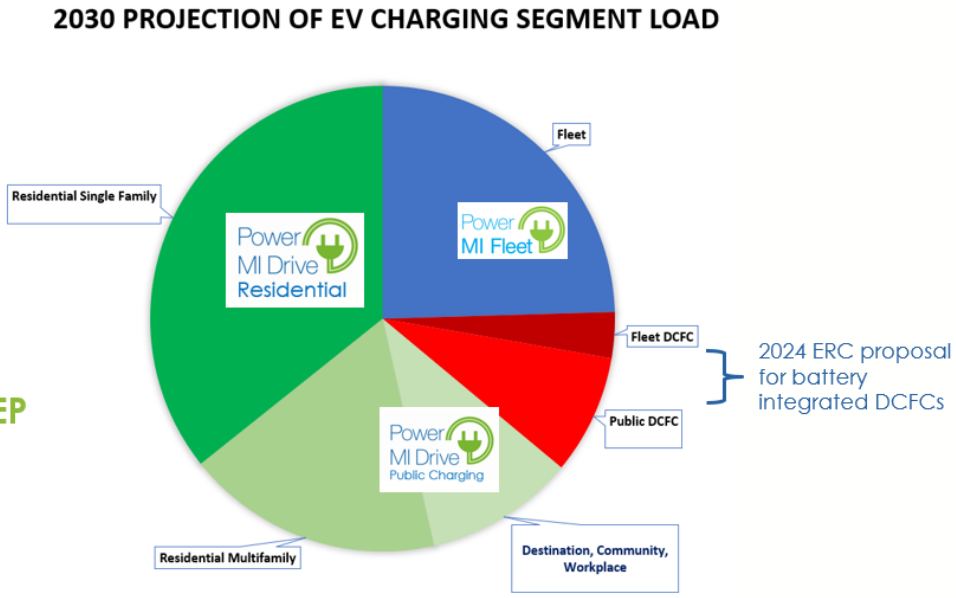



Nonetheless, the Company is prepared for future technology developments, actively monitoring charging management via telematics and other means. Active managed charging is not possible if a vehicle is not plugged in, or the charger is not integrated with a battery, and the customer programs optimize the likelihood of such opportunities.

All market segments in which active managed charging are likely to be acceptable to the customer and material to the grid are covered by approved or proposed customer programs. The graphics below illustrate projections of what 2030 EV charging load and infrastructure may look like. In sum, the Company is prepared via current load management programs, and to

take future action with active managed charging via telematics, and potentially bidirectional power flows, as these technologies develop.

**Majority of managed charging scenarios material to drivers are covered by the TEP**




**Projected Number of Plugs Needed by 2030**

| EVs by 2030 | 1,000,000 | 630,000 | 500,000 |
|---|---|---|---|
| Residential Single Family L2 | 404,000 | 255,000 | 202,000 |
| Equitable Access & Public L2 Multifamily, Community Charging, Workplace, Overnight Destination | 315,000 | 198,000 | 157,000 |
| Fleet L2 | 281,000 | 177,000 | 140,000 |
| DCFC | 11,800 | 7,400 | 5,900 |

# TEP IMPLEMENTATION

The section below summarizes the implementation strategies taken by the Company to continue to optimize EV load growth, across all key market segments for charging, for the benefit of all customers.

## Residential Single-Family Rebate & Incentives

The majority of EV charging occurs on a home on Level 2 (L2), and residential EV loads continue to be the largest kWh target in the TEP. Thus, as a key focus area, in 2023, Consumers Energy received approval to implement the Company's permanent residential program. This is a combined offering of a:

- **$500 (up to $1000 for income qualified customers) home installation rebate** for any UL, EnergyStar certified level 2 charger on a 240-volt circuit of 50 amps or less.
- **$10 monthly incentive** for enrollment into the Smart Charging Incentive Program avoiding on-peak charging (over 12 months and thus $120 potential total incentive).

To be eligible for one, or both, of the rebate and incentive offerings above, a customer must:

- Be a current full-service Consumers Energy electric customer
- Own, lease or have an EV on order
- Agree to enroll in a year-round TOU rate at home, with Nighttime Savers being the recommended option (Rate Code 1050)
    - Program weekday charging to occur during super off-peak timeframe (11PM-6AM) and avoid charging during on-peak times (2PM-7PM)

As Consumers Energy seeks to ensure that grid benefits are optimized while EV market penetration is emerging, the Company's residential program continued to analyze home EV charging patterns of participating customers. The team focused education efforts and customer awareness of the benefits a year-round TOU rate and off-peak charging can offer an EV driver (namely, approximately $1.30 per e-gallon equivalent), with an emphasis on 11 PM or later start time for charging to further assist all customers via super off-peak charging.

The Company continues internal collaboration with the Low Voltage Distribution Planning (LVDP) team to track residential transformers, looking for potential impacts where the electric grid supports multiple residences with home chargers. Analysis of residential participants continues to show no transformer reliability challenges from participating customer EV charging.

The fact that no residential customers that are utilizing a single 50-amp outlet have, to date, required make ready work on the Company's side of the meter is evidence supporting our 9.6 kW residential design standard for EV charging. These experiences were the basis for the decision to utilize a single NEMA 14-50 outlet as the residential standard in the permanent residential program.

Regarding the popularity and efficacy of residential program participation the synergy is between rebates, which get customers to participate in off-peak charging, and an AMI monitoring incentive that positively reinforces off-peak charging behavior through all four seasons, continues to show world class results. With single family homes charging at 95% or greater off-peak, rebates and behavioral incentives are the exact combination of results needed to optimize residential EV charging as the sector continues to grow rapidly. Moreover, TOU rates alone do not attract a significant percentage of customers to engage in the same behavior. For example, less than 400 EV drivers have enrolled in Nighttime Savers (rate code 1050) on their own, compared to the more than 6,500 EV drivers that engaged in the PowerMIDrive Residential program.


*Sample of email communication sent to customers that AMI data indicates a high likelihood of owning an EV*

## Multifamily Property L2 Rebates

More than 30% of Consumers Energy customers call a multifamily property home, and our TEP includes customer programming to ensure equitable access to off-peak charging for these residents. Multifamily properties with five or more residences typically do not have access to or the ability to install private use home charger for their EV like single-family residents do. Given this, and without alternative options, multifamily customers are more likely to rely on fast charging, which is usually not a cost savings compared to gasoline and is also less likely to occur off-peak. Thus, PowerMIDrive's multifamily charging rebate component is designed to incentivize multifamily property owners to invest in EV charging as an amenity for residential tenants.


*PowerMIDrive Multifamily Property Charging in Kalamazoo*

In 2023, Consumers Energy received MPSC approval to launch multifamily property charger rebates as a permanent offering. To ensure optimal grid benefits are achieved, the permanent program provides a $7,500 rebate for at least two L2 charge ports on a maximum 100-amp circuit. The chargers are required to be separately metered and enrolled on CE's commercial TOU rate, which offers a lower cost of electricity during the off-peak hours. To further encourage off-peak charging at multifamily properties, participants will receive a $20/monthly bill credit for the first 12 months the chargers are installed if 80% or greater of charging avoids the peak window of 2pm-7pm Monday through Friday.

As of April 2024, a total of 24 L2 rebates have been paid to multifamily properties across Michigan. Of this total, 22 rebates were paid during the original and extended pilot offering, and 2 rebates have been paid under the permanent program offering with more than two dozen in progress. We are happy to report that the multifamily property participants under the permanent program have achieved at least 80% off-peak charging each month since installation was completed.

## Community Charging L2 Rebates

Sometimes it is not possible or economic to install L2 overnight charging at multifamily residences or low-income communities. In such cases, community charging can offer a viable alternative if located near such properties where overnight and weekend parking is permitted. Thus, PowerMIDrive's community charging rebate is designed to encourage municipalities and business customers to invest in L2 charging for their communities in public parking or curbside locations that are within 1-3 walkable blocks of a multifamily property or underserved residential neighborhood. The goal of this program offering is to further support equitable access to charging for multifamily residents and members of the community without access to home charging for their electric vehicles.

Community charging was originally approved as a pilot offering with 25 total rebates of $7,500 each in 2023 and was approved for transition to a permanent program offering in March 2024. To ensure optimal grid benefits are achieved, the $7,500 rebate provides several eligible installation options, including at least two L2 charge ports on a 100-amp circuit or less. Alternatively, as a bring your own charger option, two NEMA 14-50 outlets designed for outdoor continuous use, or at least five L1 charge ports, are allowed if installed on a maximum 100-amp circuit. The chargers must be separately metered and enrolled on CE's commercial TOU rate to encourage off-peak charging when the cost of electricity is lower.

As of April 2024, a total of 4 community charging rebates have been paid with 16 more sites underway. In addition to the success of implementing more equitable access to charging, the off-peak charging results have been excellent achieving over 85% off-peak to date.


*PowerMIDrive Community Charging in Davison*

## Overnight Destination L2 Rebates

Consumers Energy's electric territory covers the majority of Michigan's lower peninsula, and many popular tourist destinations for Michiganders and tourists coming from out-of-state. Thus, PowerMIDrive's overnight destination Level 2 (L2) charging rebate program is designed to improve charging infrastructure accessibility in locations where EV drivers are most likely to charge for longer off-peak time periods when traveling. Overnight destination charging also reduces pressure on fast charger locations that can see significant increases during specific seasons and holidays, and fast chargers are also more likely to be utilized on-peak.

In 2024, Consumers Energy received MPSC approval to transition the overnight destination rebate pilot to a permanent program offering. To ensure that optimal grid benefits are achieved, the permanent program will provide a $7,500 rebate for at least two L2 charge ports on a circuit of 100-amps or less. At destinations where travelers are likely to park their EV for 48 hours or longer, host sites can also receive a $7,500 rebate per five level one (L1) charge ports on a 100-amp circuit.

A separate meter for the chargers will be required and enrolled on CE's commercial time of use (TOU) rate, which offers a lower cost of electricity during the off-peak hours. Similar to our efforts during the pilot phase, participants will be educated on the benefits of encouraging destination guests to charge during the overnight and weekend hours. Participants will maintain their ability to set pricing and accessibility to reflect their individual business needs.

To date, including the pilot phase, 80 overnight destination L2 rebates have been awarded to host sites statewide and results are tending toward 80% off-peak charging.

*PowerMIDrive Overnight Destination Charging in Bay Harbor*

## Workplace L2 Rebates

Similar to home, people spend a large portion of their week at work. Moreover, many people have a commute of 40 miles or less, meaning that L2 charging can be complete well before the afternoon on-peak time period. Equity benefits also exist with workplace charging, because it can supplement, or in some cases substitute for, charging at home (be it single or multifamily) if such an installation is not possible or economically feasible. For all these reasons, workplace charging is an important market segment for Consumers Energy's TEP.

In 2024, the Company received MPSC approval to launch a permanent workplace charger rebate program offering. Similar to residential, destination, and community charging, to ensure that optimal grid benefits are achieved, the permanent program will provide a $7,500 rebate for at least two L2 charge ports on a maximum 100-amp circuit. A separate meter for the chargers will be required and enrolled on CE's commercial time of use (TOU) rate, which offers a lower cost of electricity during the off-peak hours.

If the participating workplace agrees and meets qualifications to serve as an overnight community charging location (i.e., located within 1-3 walkable blocks of a multifamily property or underserved residential neighborhood), the rebate amount per two L2 chargers will increase from $7,500 to $10,000. In such cases, the workplace may choose to mandate specific overnight parking or charging hours for the public, so as not to interfere with employee access to the charging stations during their work shifts.


*PowerMIFleet Workplace Charging in Charlotte*

To date, 111 workplace rebates for L2 charging have been granted, which includes the PowerMIFleet pilot phase leading up to the permanent program. The kWh results are included with PowerMIFleet results, which continue to trend upwards and presently achieving over 92% off-peak charging.

## PowerMIFleet Rebates and Assessments

In the transportation sector, fleets tend to drive the most miles and thus produce proportionately more emissions from petroleum-based fuels. Conversely, when fleets switch to electric, they achieve outsized emissions reductions but also use proportionately more kWh per EV than a typical residential driver. Nonetheless, this transition is not easy given the technical challenges of switching to a new fuel type, especially for fleets with fewer resources such as those serving in public transport, education, government, non-profit, and small to medium sized businesses. Given this challenge, and the large number of people served by these fleets, the PowerMIFleet program was created to focus on helping those sectors reduce operating costs, eliminate emissions, and optimize the grid, thus producing benefits for everyone.

In March 2024, Consumers Energy received MPSC approval to make PowerMIFleet a permanent program offering within the Company TEP. Under the permanent program offering, with rebates as follows:

- $7,500 per two L2 charge ports
- $15,000 per long-duration DC charger of 50kW or less (mirroring L2 load shapes, but at a higher power to account for larger batteries within some fleets)

*PowerMIFleet Municipal Fleet Charging in Grand Rapids*

Like other customer programs within the TEP, chargers installed and rebated through PowerMIFleet must be separately metered and enrolled on the commercial TOU rate to encourage off-peak charging.

Furthermore, to help overcome technical challenges and ensure that the right EVs are utilized in the optimal use cases, PowerMIFleet has continued partnership with two fleet electrification assessment consultants, ICF Resources and CALSTART, to provide a customized, full-service assessment report to selected participants. To date, a total of 58 fleet assessments have been completed with an additional 4 customer fleet assessments in progress. Anonymized assessments are then published on the PowerMIFleet website.

Going forward, PowerMIFleet will seek to partner with the customer sectors that will benefit most from a fleet electrification assessment, transitioning over time from light-duty to newer and more novel use cases for medium and heavy-duty EVs, as well as off-road, marine, and potentially aviation use cases.

To date, PowerMIFleet continues to trend upward achieving off-peak results of greater than 92%.

## PowerMIFleet Enhanced Rebates for Income Qualified Fleets

As part of the pilot phase of PowerMIFleet, Consumers Energy received a one-time fund of $1.6M to support fleet electrification for organizations whose vehicle fleet serves a community below the poverty line. As of April 2024, the EV team has identified a total of 11 service organizations to support with this funding. Organizations include Dial-A-Ride organizations with Rides to Wellness programs for senior citizens and veterans, rural and urban school districts, and non-profit organizations who deliver meals to children in impoverished communities around the state. To date, five organizations have deployed their new electric fleet vehicles, and the remaining 6 organizations are on track to deploy their vehicles by the end of 2024.

We would like to thank the MPSC for their support in allowing us to provide this funding to worthwhile organizations around the state, connecting members of the community with emissions-free transportation and providing the experience of riding and driving an electric vehicle.

For example, a community celebration was held for Messiah Baptist Church in Grand Rapids, as they deployed their wheelchair accessible Ford E-Transit van and L2 charger. The EV will be used to transport hundreds of children, elderly and differently abled individuals to appointments and resources throughout their community.


*PowerMIFleet Income Qualified Community Fleet Event in Grand Rapids*

Given the success of PowerMIFleet at optimizing the grid, less make-ready has been needed to date for the pilot phase projects still in the works. Thus, in the 2024 electric rate case the Company is proposing utilizing any remaining make ready funds for additional income qualified fleet projects.

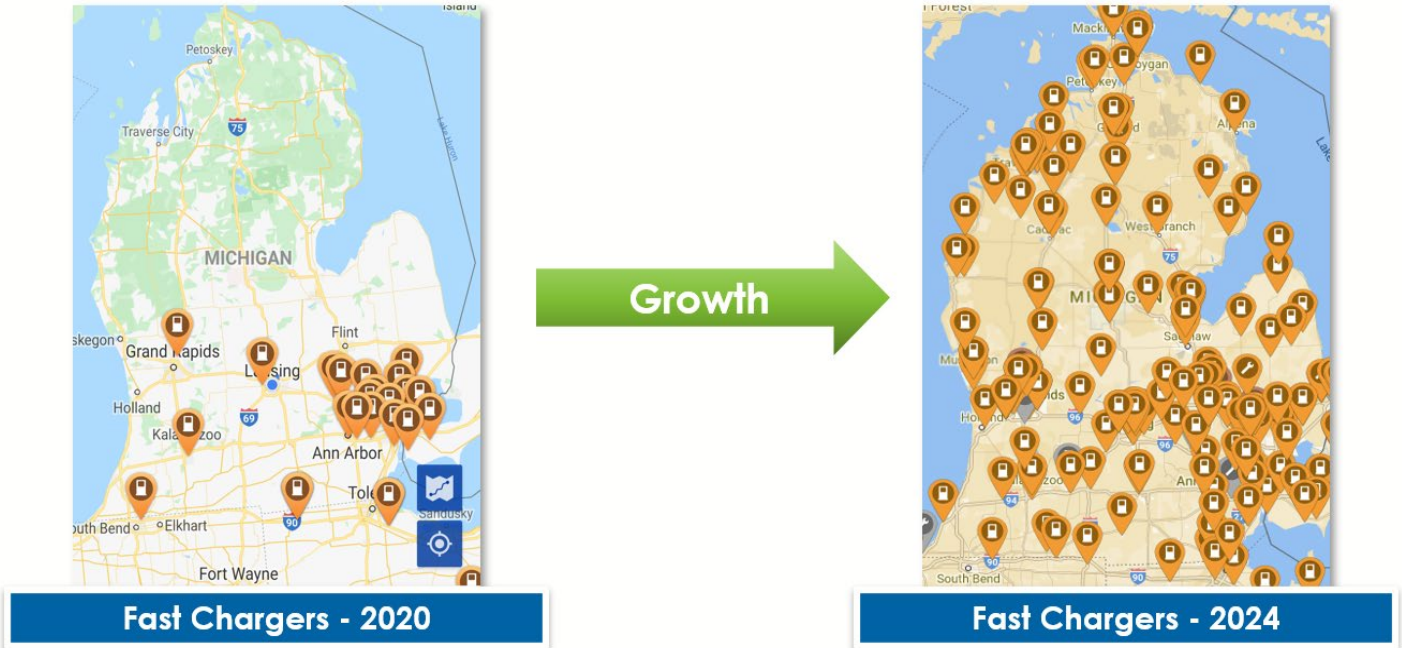
## Direct Current Fast Charging (DCFC) Rebates

PowerMIDrive's DCFC rebate component is presently a continuation of customer projects underway from the pilot phase of the Company's EV initiatives. The DCFC rebates were designed to help create the start of a network of fast charging infrastructure, primarily along four-lane highways throughout the Company's electric service territory.

By incentivizing investment in DCFC infrastructure along such major expressways and travel corridors, benefits are already being realized by the broader community of EV drivers traveling within the state of Michigan. Convenient fast charging is a significant factor in ensuring EVs meet the needs of customers on longer distance travel.

DCFC site hosts participating in PowerMIDrive are educated on the benefits of providing fast chargers to attract more traffic to their respective locations. Like public L2 sites, DCFC site hosts also maintain the ability to set pricing to reflect individual on-site needs. However, unlike public L2 locations, all DCFC rebate recipients implement a fee for charging.

The Company is pleased to report that a total of 61 of the 137 PowerMIDrive DCFC sites are now operational across CE's territory to date. Of the remaining sites in progress, 25 are National Electric Vehicle Infrastructure (NEVI) sites expanding in to provide fast charging every 50 miles along major four-lane highways. Equally important is that many fast-charging sites have been established north of Grand Rapids and Lansing, as shown in the PlugShare screenshots below of CCS sites in 2020 and early 2024, allowing EVs to travel across the full extent of Consumers Energy's territory in Michigan's lower peninsula.



## Future Proofing at DCFC Sites

To help ensure the DCFC infrastructure installed allows for scalability with future EV growth and avoid rework such as replacing relatively new transformers during future upgrades, the PowerMIDrive Program was approved with approximately $40,000 in make ready budget per DCFC rebate in the pilot. These funds are designated to utility side upgrades such as transformers and line upgrades serving the host site.


*PowerMIDrive Fast Charging Rebate Site in Greenville*

The cost and scope of electrical upgrades at DCFC sites are evaluated with the specification to double the minimum required initial output capacity of 150 kW in aggregate per site. Thus, a 300 kVA transformer will continue to be installed at each non-NEVI DCFC site participating in PowerMIDrive as part of the electrical upgrade work performed by the Company.

As with the Company's previous TEP partnership with the State of Michigan's Environment, Great Lakes and Energy (EGLE) department on Charge Up Michigan program funding for DCFC sites, Consumers Energy has developed a close collaborative partnership with Michigan Department of Transportation (MDOT), as Federal National Electric Vehicle Infrastructure (NEVI) funding awards were announced earlier this year. Of the total 41 NEVI site awards announced across Michigan, 25 of those awards fall in the Company's electric service territory.

We are pleased to report that 24 of the 25 sites are currently in the design phase in strong support of the State and Federal goals. As each NEVI site will require four 150kW DCFC stations, make ready infrastructure is being designed accordingly, with a 750 kVA transformer planned at each location.

## Customer Education & Outreach

With EVs in the rapidly growing but still initial adopter phase, customer outreach and education remain a key component of the Company TEP. From the pilot phase of our EV initiatives, we know that education alone is not enough, and pairing outreach with customer programs is necessary to create opportunities for engagement about EV load management. Thus, a multi-faceted strategy continues to be implemented to raise awareness about how off-peak charging benefits both EV and non-EV customers, the cost savings achievable utilizing TOU rates, and the public EV charging infrastructure made possible in part by PowerMIDrive.

The program team utilizes both in-person and digital channels to reach customers, raise awareness of the rebate programs, and achieve program enrollment targets, including:

- Participation in National Drive Electric Week events (September-October)
- Participation in Drive Electric Earth Month events (April)
- Trade and auto shows
- EV101 presentations at community and business organizations
- Email and direct mail outreach campaigns and newsletters
- Press releases and earned media
- Social media posts and digital media advertisements including search terms
- Radio and TV interviews
- EV-focused virtual events, conferences and panels
- Government and trade association engagement


*PowerMIDrive and PowerMIFleet team support customers at the Grand Rapids Auto Show*

The combination of marketing and outreach lead to over 21,000 unique visitors to the PowerMIDrive residential website where customers learned more information online, contact an EV specialist or complete their application.

The Company EV team dedicated to leading PowerMIDrive and PowerMIFleet reach tens of thousands of customers each year via these efforts. Team members include the following:

- Director of Customer Transportation Electrification Products – Jeff Myrom
- PowerMIDrive Public and PowerMIFleet Program Manager – Bethany Tabor
- PowerMIDrive Public Team Members – Doug Reid, Paul Nicklowitz, and Scott Zenner
- PowerMIFleet Team Members – Steven Harris and Kristi Baker
- PowerMIDrive Residential Program Manager – Brittany Fischer
- PowerMIDrive Residential Team Members – Stacey Walkowe, Maria Mejias, Justin Stowe, Nicolas Hutchens, and Jarrod Skogen
- Community Outreach Coordinator – Karl Bloss (recently retired)
- Education & Outreach Support – Therese Vainner and Brett Porterfield
- Media & Press Coordination – Brian Wheeler

# TEP CUSTOMER PARTICIPATION & COSTS

## Residential Single Family

As of March 31, 2024, PowerMIDrive Residential had over 5,600 EV customers in the program, either through the $500 rebate (up to $1,000 for income qualified customers), the Smart Charging Incentive (i.e. $10 per month of charging super off-peak for 12 months), or both.

As part of the rebate process, the program collects residential applicant documentation to validate proof of purchase and installation of an eligible Level 2 home charger. While not all participants share their cost information or may have only part of the costs documented, these findings provide valuable insight into residential L2 retrofit costs. It also highlights the need for EV ready building codes since significant cost savings are possible during the construction process, and much of the housing stock does not have a NEMA 14-50 outlet in the parking area. Based on the program participant documentation received as of March 31, 2024, the average, high and low residential customer costs are outlined in Figure 1 below.

| | Lowest Cost | Highest Cost | Median Cost | Average Cost |
|---|---|---|---|---|
| **Charger Only** | $423 | $897 | $635 | $529 |
| **Installation Included** | $476 | $4,367 | $730 | $830 |

*Figure 1: Residential Customer Costs of Home Charger & Installation*

Some residential participants did not require an electrical contractor for installation at their home because they were existing EV owners (i.e., a benefit of having a 240V outlet already in their garage), and therefore only provided cost documentation to verify proof of charger purchase. Project costs for these customers are captured in the "*Charger Only*" cost line item in Figure 1.

In cases where installation was required and an electrical contractor invoice was provided, the total out-of-pocket costs were significantly higher, as outlined in the "Installation Included" cost line item in Figure 1. Furthermore, the Company has received numerous inquiries from customers seeking general guidance on the scope of work required to install a Level 2 charger at home or looking for a referral to local electricians experienced with home charging station installations in their area. Based on this feedback CE enhanced the Company's electric vehicle webpages to provide the resources such as a NEMA 14-50 outlet specifications so that customers feel more confident about charging their EV overnight at home.

Consumers Energy's insights from this data are that the standardization of a NEMA 14-50 outlet, assistance locating an electrician, and the rebate to assist with the costs of installation by a qualified electrician is a clear benefit to customers and will help draw them into participating with the Company's permanent residential proposal. Moreover, in the 2024 electric rate case the Company has proposed including power-sharing splitters and L2 chargers in the program to further improve grid impacts and customer installation costs as EV adoption continues to increase.


*PowerMIDrive team members test a power-sharing residential L2 that utilizes a single NEMA 14-50 outlet – a solution that reduces customer costs and gid impacts of homes with multiple EVs*

## PowerMIDrive Multifamily & Public Level 2

The program team has shifted emphasis to L2 host sites with overnight use cases. In alignment with the Company TEP goals, this is intended to increase the proportion of off-peak charging that occurs at rebated locations, improve equity via access to charging (i.e. multifamily, community charging, workplace charging), prepare for potential active managed charging in the future via telematics, and to help supplement the still limited DCFC infrastructure supporting long distance travel to overnight destinations.

Since the launch of PowerMIDrive in 2019, a total of 261 L2 rebates have been paid to site host locations across the state of Michigan.

Figure 2 below outlines the breakdown of public Level 2 site accessibility for paid rebates as of March 31, 2024.

| **Public Level 2 Site Host Type** | Rebates Paid | % of 261 Total Program Rebates |
|---|---|---|
| **Multifamily** | **24** | **9%** |
| **Community Charging** | **46** | **18%** |
| **Overnight Destination** | **80** | **31%** |
| **Workplace** | **111** | **42%** |

*Figure 2: Level 2 Site Host Category Participation (Pilot + Permanent Program)*

*Overnight Destination Charging in Saugatuck*

Based on the rebate verification documentation received for completed public Level 2 sites as of March 31, 2024, a breakdown of project costs is outlined in Figure 3 below.

| | Lowest Cost | Highest Cost | Median Cost | Average Cost |
|---|---|---|---|---|
| **Total Project Cost** (Installation, Network & Maintenance Plan Fees, + Charging Station Equipment) | $3,368 | $47,456 | $9,012 | $11,652 |

*Figure 3: Public L2 Site Project Costs Per Dual-Cord L2*

Installation and electrical upgrades at each site continue to be the greatest variable in total project costs. Sites requiring upgrades to supply panels, new electrical service, or underground wiring had higher project costs. Sites that installed pedestal mounted chargers had higher equipment costs than sites that opted for wall mounted chargers.

In some circumstances, sites completed installation of chargers and experienced challenges with maintaining a WIFI signal, resulting in the need for technical troubleshooting or additional equipment to extend or strengthen network range.

In addition to the networking costs, these reliability issues are why more sites are interested in un-networked L2s, utilizing a permit fee, or offering L2 charging at no cost.

*Overnight Destination Charging in Frankenmuth*

*Tenant & EV Carshare Program Charging at a Multifamily Property in Kalamazoo*

Figure 4 below identifies locations of sites which have completed installation and received Level 2 charging station rebates as of March 31, 2024.

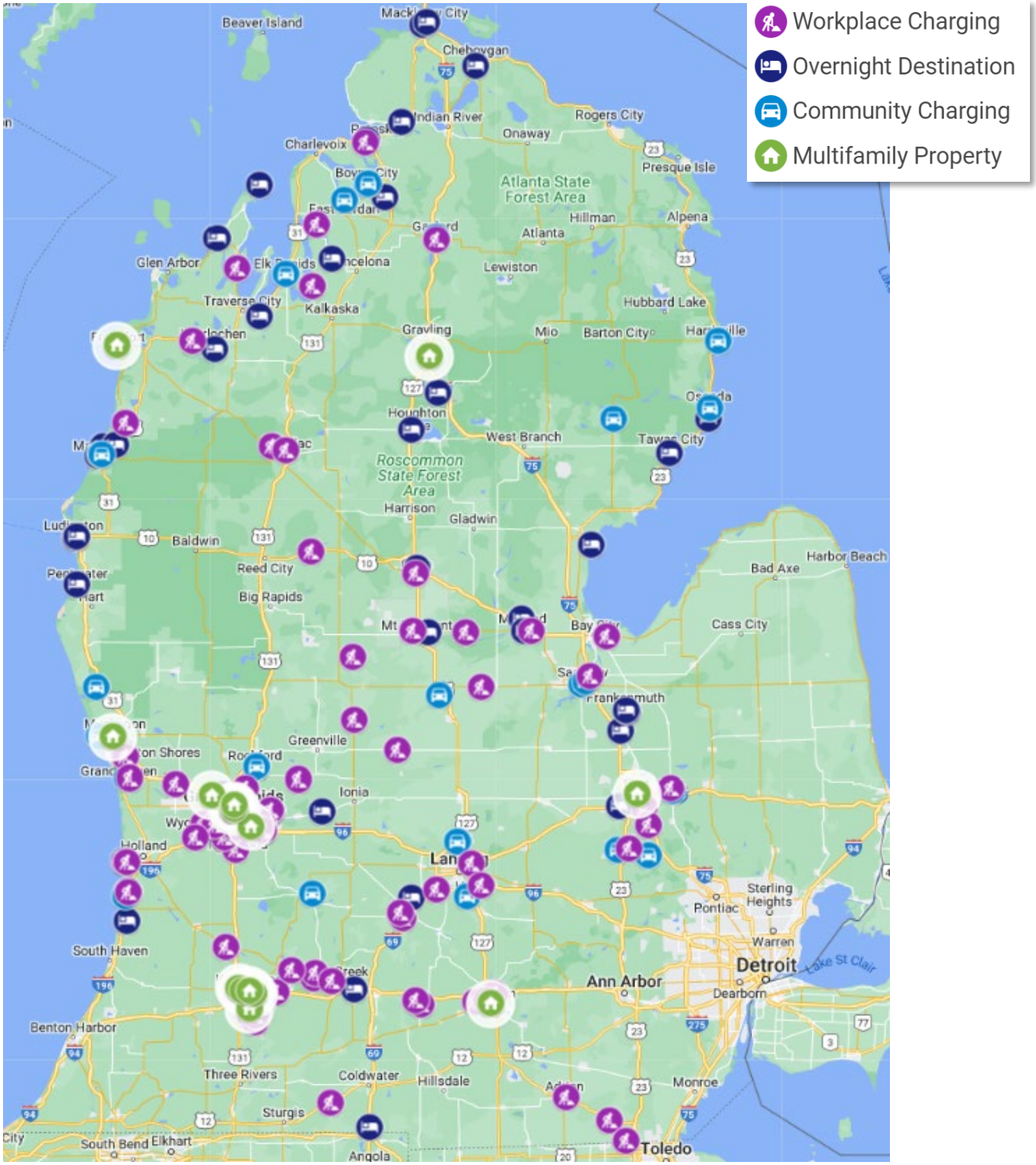



*Figure 4: Public Level 2 Sites by Location & Type*

## DCFC Pilot

As of March 31, 2024, the continued implementation of the PowerMIDrive fast charging pilot had awarded a total of 62 of the 137 committed DCFC rebates for operational sites across the Company's service territory. The 75 DCFC projects still underway include 25 sites selected by MDOT to receive NEVI funding.

As part of our partnership with MDOT on DCFC sites awarded NEVI funding, we have begun make ready upgrade evaluations including project scope and cost estimate for each site. This information will be included in each contractual agreement between NEVI site host and MDOT.

Because NEVI sites require four (4) 150kW charge ports to qualify for federal funding, Consumers Energy is designing each NEVI site with a 750KVA transformer to ensure the infrastructure is adequate for the higher load of the chargers. We are anticipating the first NEVI sites to be completed before end of year 2024. Non-NEVI sites are more likely to utilize a transformer between 300 kVA and 500 kVA. In general, all these transformers are in short supply and can have lead times of 24 months.

Thus, the PowerMIDrive team works in close collaboration with our Demand Planning and Supply Chain partners to ensure we are forecasting new demand accurately and placing long lead time orders for higher power transformers, which have been challenged by supply chain limitations in the last several years.

Based on rebate verification documentation received for completed DCFC customer projects, a breakdown of project costs, excluding make ready upgrades, is outlined in Figure 5.

| | Median Cost | Average Cost | Standard Deviation |
|---|---|---|---|
| **Total Project Cost** Scope includes installation, Network & Maintenance Plan Fees, and Charging Station Equipment | $168,654 | $191,239 | $76,565 |
| **Project Cost in $/kW** | $839 | $951 | $303 |

*Figure 5: DCFC Site Project Costs*

Figure 6 below outlines the breakdown of make ready expenses for the 62 completed DCFC sites in PowerMIDrive through March 31, 2024.

| | Median Cost | Average Cost | Standard Deviation |
|---|---|---|---|
| **DCFC Make Ready**<br>Scope includes 300-750 kVA transformer and service meter, underground or overhead multiphase extension, boring costs, and local system upgrades | $30,608 | $45,509 | $72,717 |
| **Make Ready Cost in $/kW** | $180 | $248 | $247 |

*Figure 6: DCFC Site Make Ready Costs*


*A DCFC in Ludington provides nighttime charging for travel along Michigan's west coast*


*A DCFC in Glennie helps power Huron coast road trips*

Figure 7 shows the geographic distribution and of the 62 operational PowerMIDrive DCFC Sites and the 75 fast charging projects in progress at customer locations. Consumers Energy does not own or operate any of these sites. All rebates are awarded to customers.

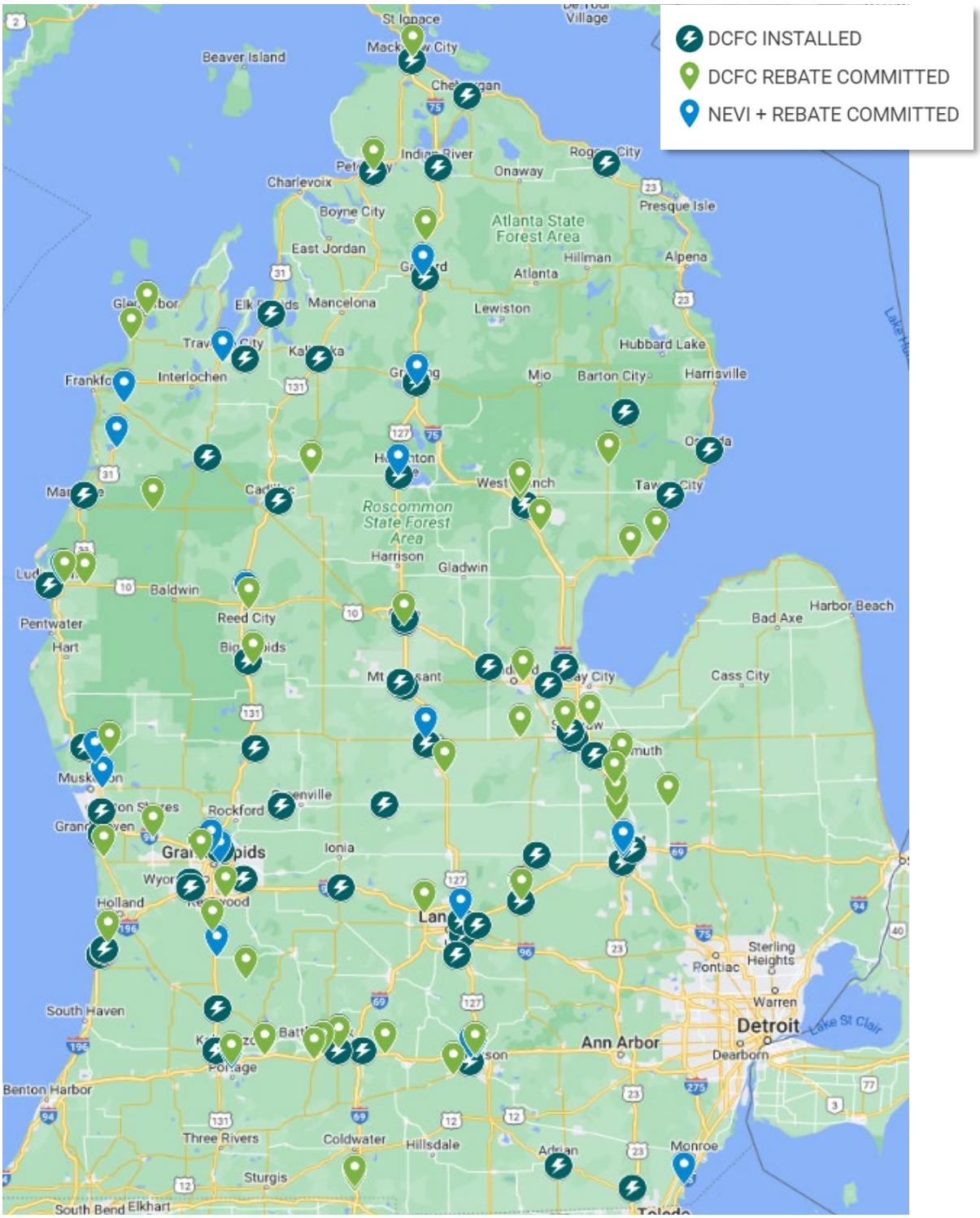



*Figure 7: Fast Charging Locations*

## PowerMIFleet

As of March 31, 2024, a total of 58 customer fleet electrification assessments have been completed, with 4 additional assessments in progress. The strongest interest in assessment participation continues to be seen in the education and municipal sectors, followed by small- to medium-sized retail businesses and transportation. This again is why the permanent program chose to focus on these sectors, as they need the most assistance. As an additional benefit, fleet assessments within these sectors also benefit a large number and wide variety of Michiganders given their service territories. Figure 8 illustrates the breakdown of assessment participation for all 62 fleet assessments by customer sector.

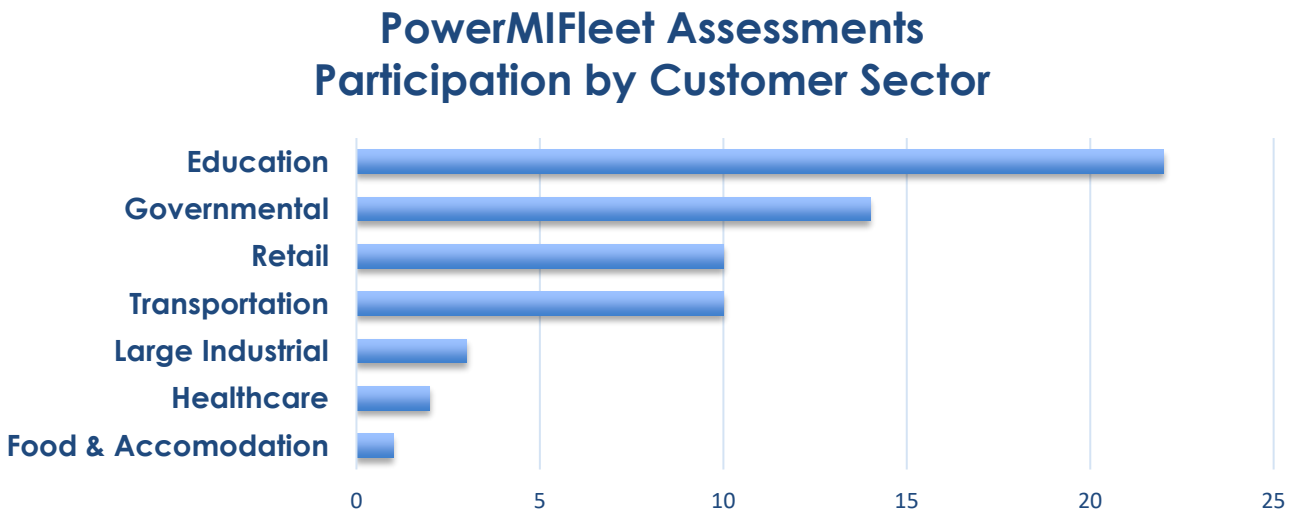



*Figure 8: PowerMIFleet Assessments by Customer Sector*

For the 58 completed customer fleet assessments to date, a total of 8,273 total vehicles were evaluated, with 2,932 of those vehicles, or 35%, recommended for electrification. In other words, more than 1 out of 3 vehicles are projected to save these agencies money compared to their ICE equivalent. Figure 9 below shows the percentage of vehicles recommended to electrify by customer sector.

Every assessment completed identified a net positive cost savings achievable through fleet electrification. Estimated achievable cost savings per customer fleet ranged from $7,700 to $24,00,000 over the lifetime of ownership, depending on fleet size and type.

Customer sectors with the highest proposed cost savings included transportation, municipal, and education. The most lucrative vehicle types evaluated included light-duty pickup trucks, transit vans, and school buses. A total of $187.7M in proposed cost savings was identified for all completed assessments in aggregate; however, without fleet assessments finding such cost savings would not have been possible by most of these agencies, institutions, and non-profits.

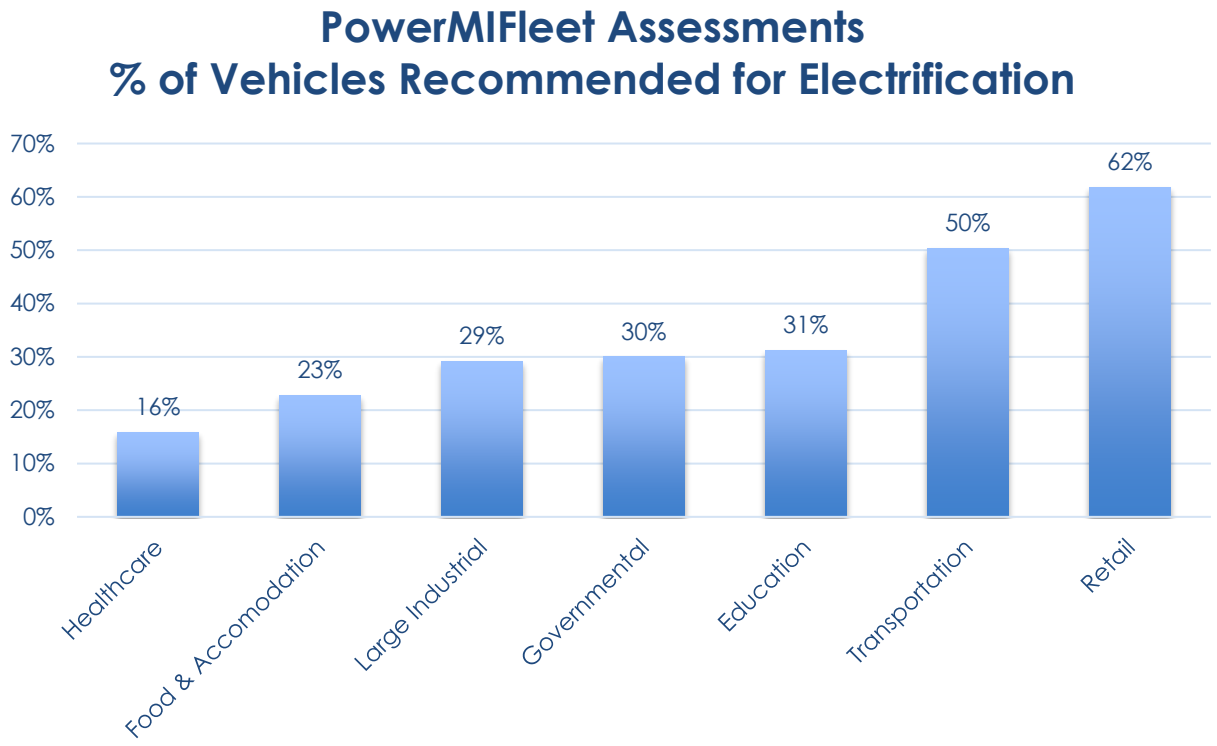



*Figure 9: PowerMIFleet Percent Recommended for Electrification*

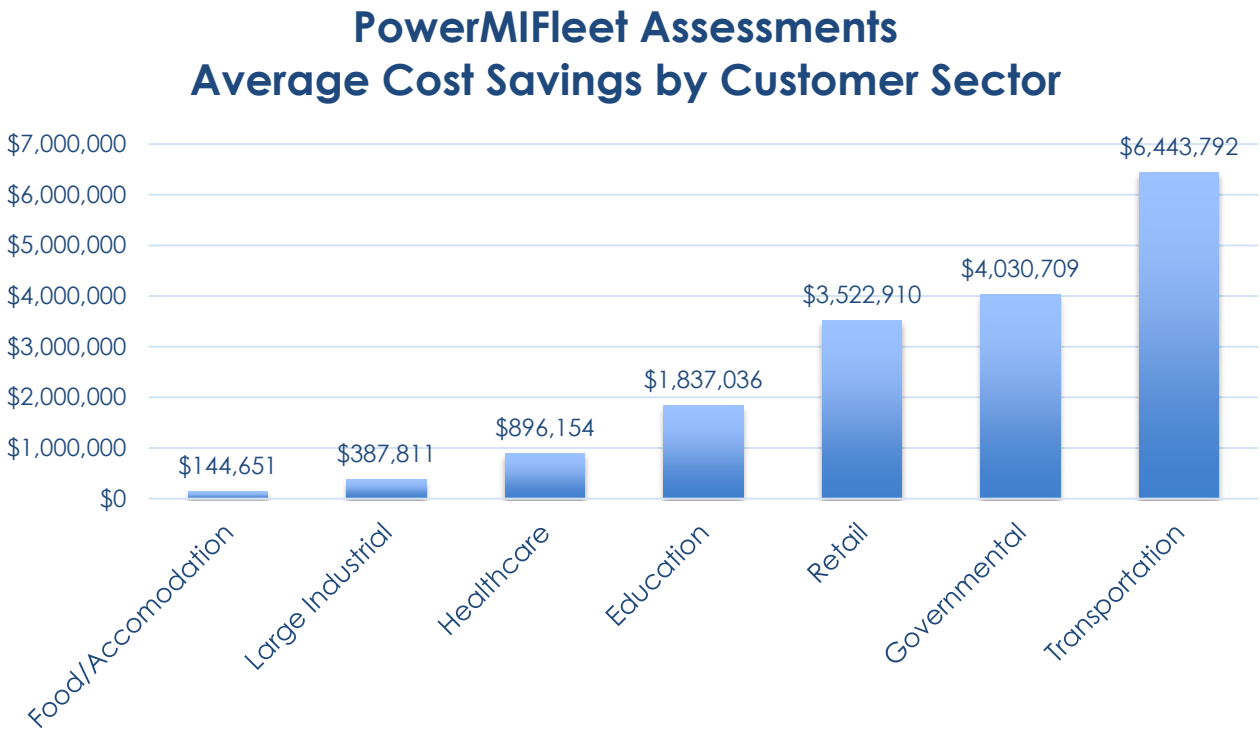



*Figure 10: PowerMIFleet Percent Recommended for Electrification*

Every assessment completed also identified significant environmental benefits through $CO_2$ emissions reduction via fleet electrification. A total of 230,242 metric tons in potential $CO_2$ emissions could be eliminated from the atmosphere if all vehicles were to electrify as recommended in the fleet assessments. These values are shown in Figure 11 below.

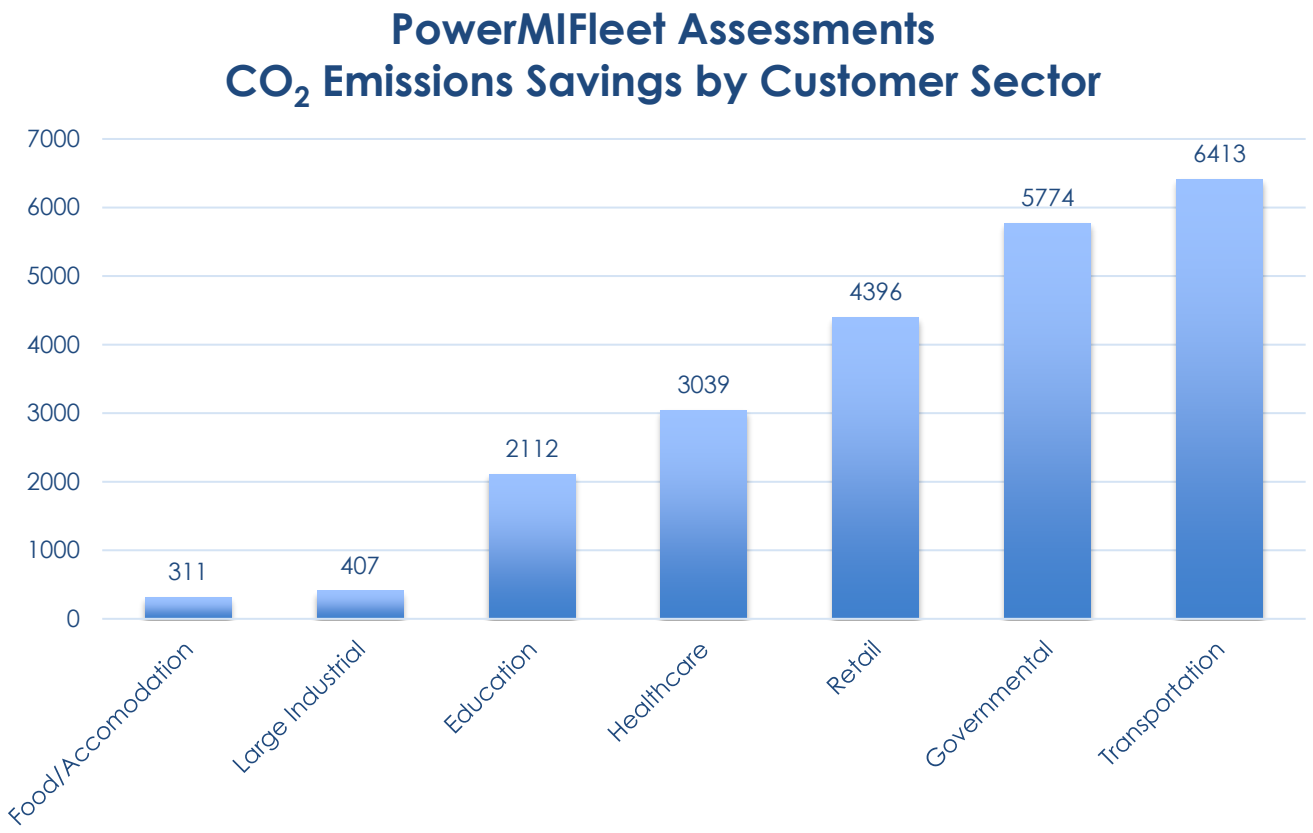



*Figure 11: PowerMIFleet Emissions Reduction Projections by Sector*

As part of our TEPs strategy, the goal is not to just gain information on potential but assist customers with the transition to electrification while optimizing the grid. Thus, we are pleased to report that more than half of the participants have deployed, or are actively deploying, EVs for their fleet. Figure X below shows the breakdown of fleet electrification or workplace charger deployments PowerMIFleet assessment customers as of April 2024.

For those participants who have not moved forward with fleet electrification, the overwhelming majority have advised they intend to do so in the future. Some anecdotal reasons provided by this subset of customers include waiting for grant funding announcements (e.g., school districts applying for EPA Clean School Bus Grants or Rebates), budgetary constraints, or market availability of desired fleet EV conflicting with existing fleet vehicle retirement cycles. Thus, the impact of PowerMIFleet in the long run is very likely to be greater than the initial results in Figure 11.

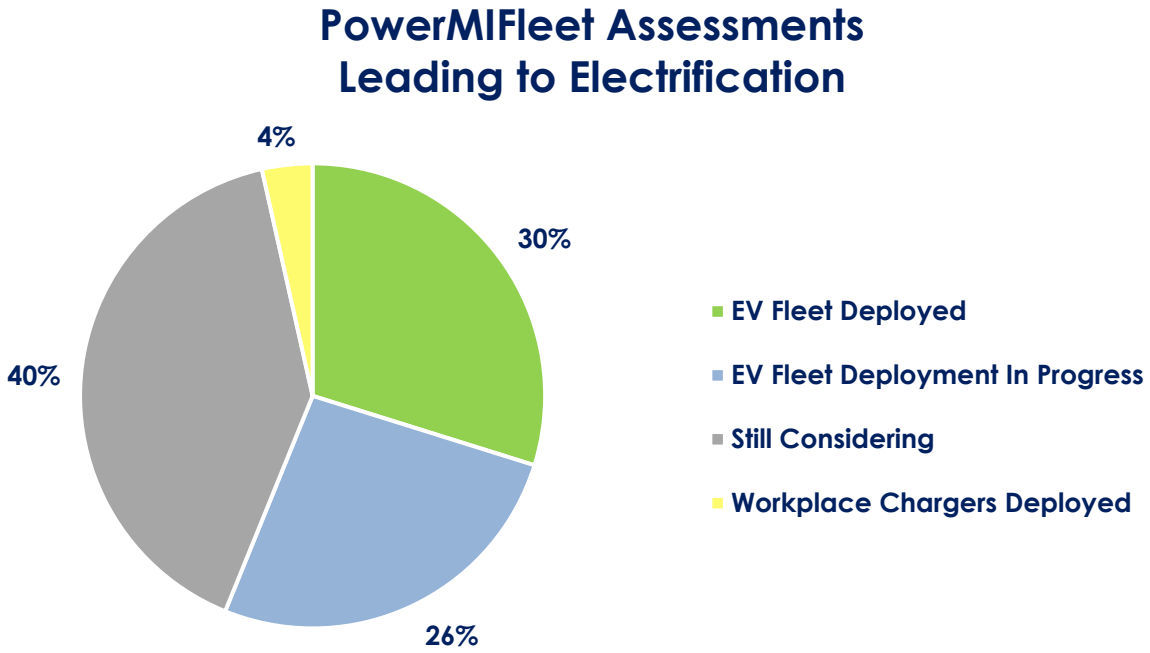



*Figure 12: PowerMIFleet Assessment Participant Electrification Status*

The PowerMIFleet team has established a quarterly follow-up cadence with assessment participants to ensure that we are able to provide technical support and guidance as organizational decisions are made to electrify fleet vehicles.

In several cases, we have proactively provided workplace charging rebates to customers who wish to establish a network of chargers for employee use in preparation for future fleet EV deployment. Furthermore, fleet charging rebates have also been provided to customers who did not require a fleet assessment prior to deploying fleet EVs.

As of March 31, 2024, a total of 102 L2 charger rebates and 8 DC charger rebates have been paid to PowerMIFleet program participants. An additional 65 L2 charger rebates and 13 DC charger rebates are committed to customers with in-progress projects.

Figure 13 illustrates the breakdown of PowerMIFleet program participants' fleet electrification status by vehicle type to date, with more EVs yet to come given purchasing schedules.

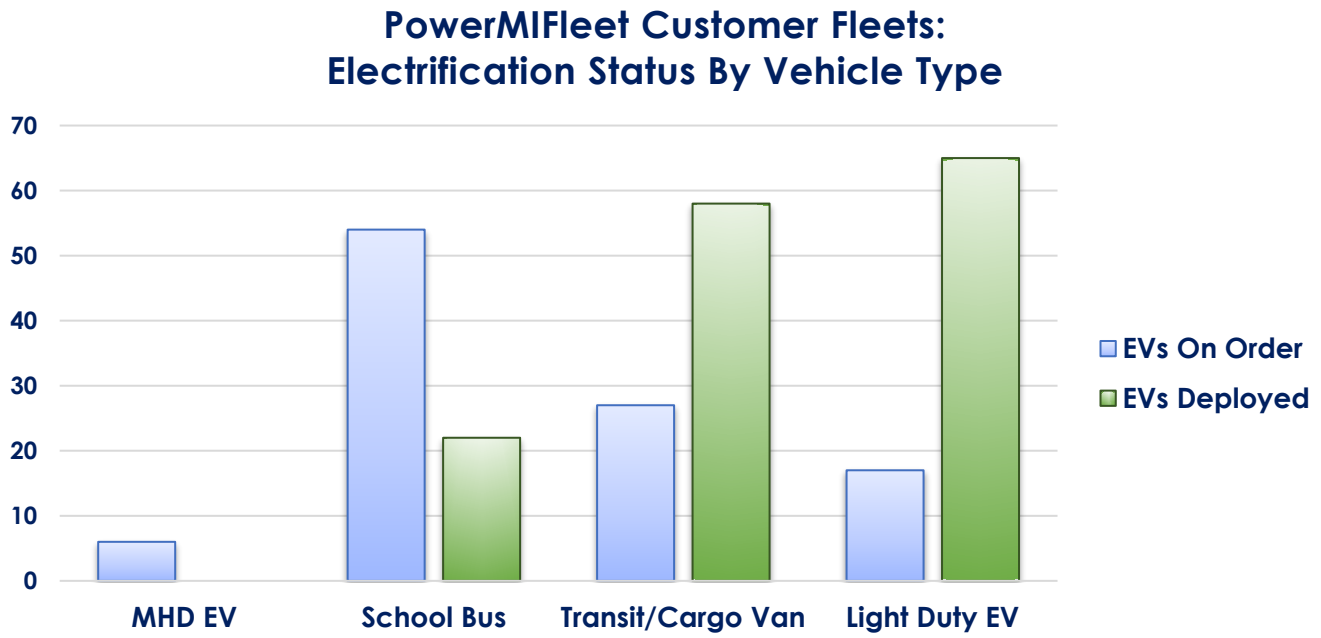



*Figure 13: PowerMIFleet Customer Electrification Status by Vehicle Type*


*The Grand Rapids municipal fleet powers up with help from PowerMIFleet*

Finally, Figure 14 shows the geographic distribution of PowerMIFleet customer electrification projects as of March 31, 2024. The program team has intentionally sought projects from across our entire service territory to ensure fleet electrification benefits a wide variety of customers and use cases.

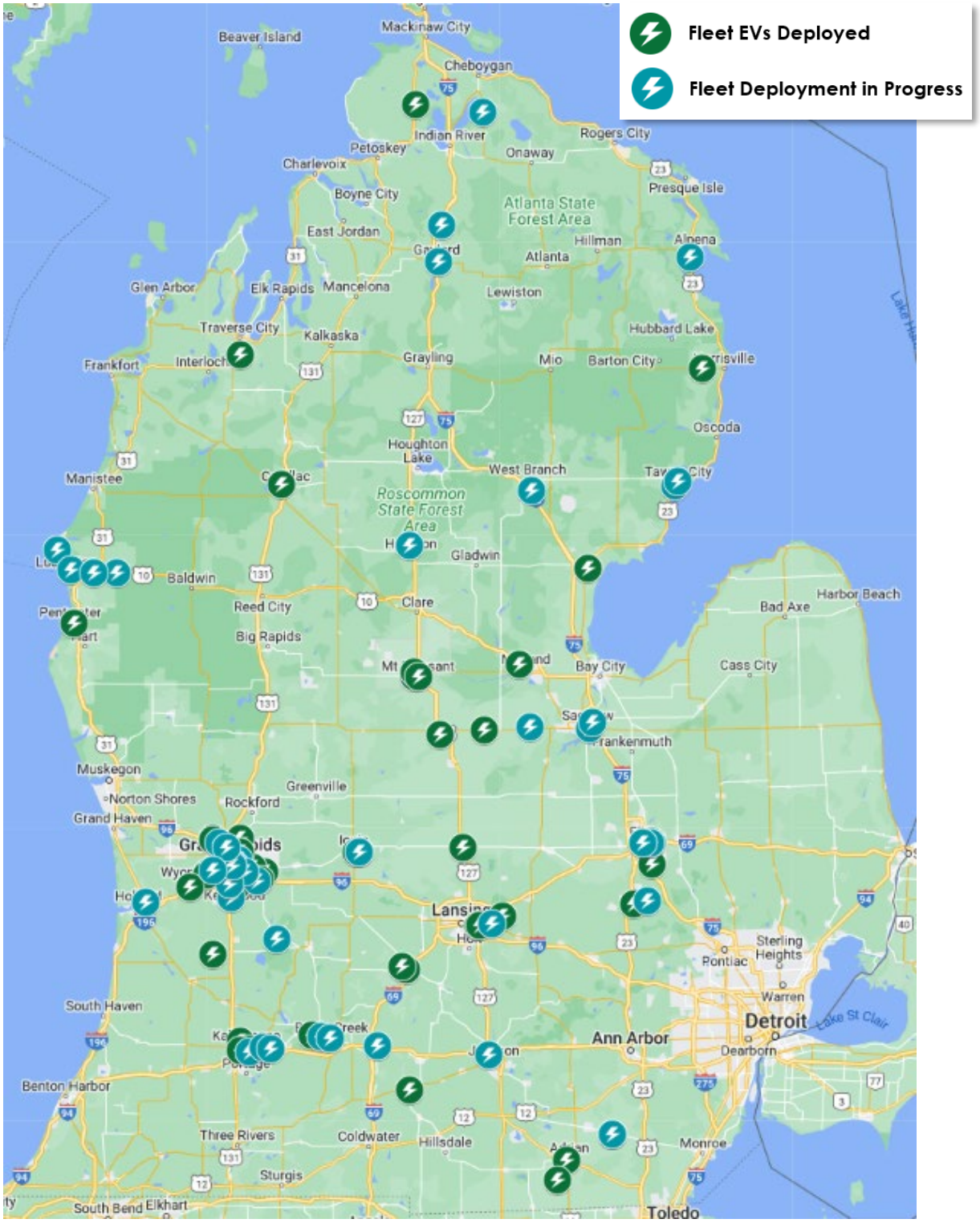



*Figure 14: PowerMIFleet Customer Electrification Locations*

## Customer Education & Outreach

In the last three years the number of EVs in the Company's electric territory has tripled. Given this early and rapidly growing stage of EV market adoption, it is extremely important to identify segments of customers who are likely to already own an EV or purchase an EV as their next vehicle and to get in front of the even larger number of customers intending to drive an EV in the future.

*Customers explore EVs on a winter day*

The amount of direct customer contacts via phone calls and email communications has been high. A high level of effort can be needed to assist customers with understanding their charging options, rate options, vehicle questions, and concerns about successful business models, which is why we have worked to significantly enhance our website and outreach materials. In the last year, the program team made 16,699 direct communications with EV customer contacts. This averages about 64 customer contacts per working day.

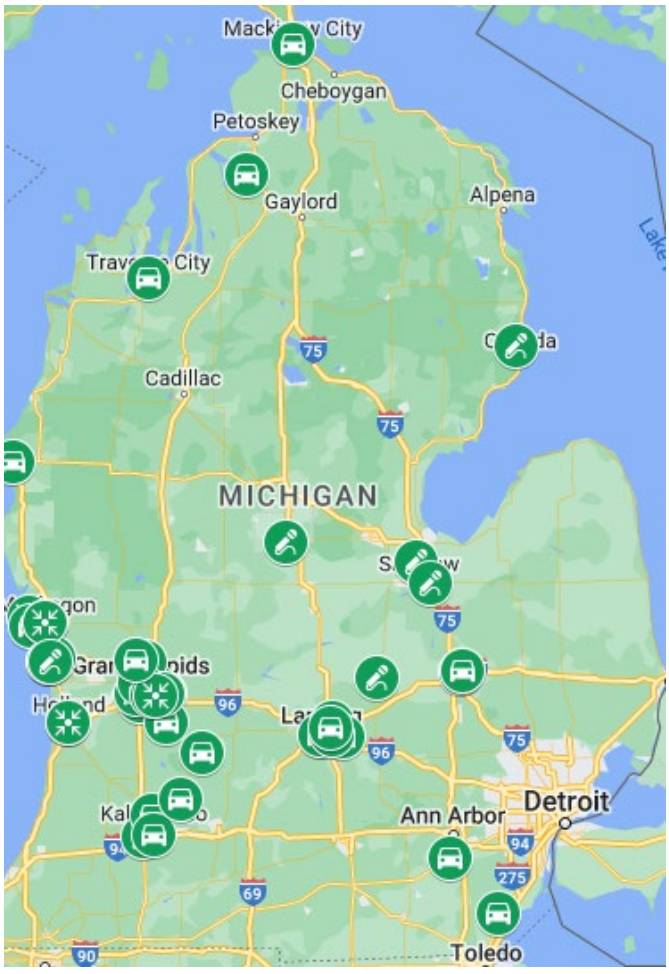



*Figure 15: Customer Education & Outreach*

This level of administrative support has demonstrated that permanent staffing for EV customer specialists is a clear requirement for the future. While it has been a challenging volume, it has also provided the core team direct insight into the challenges EV customers face regarding charging infrastructure, both home and in the public.

There is no substitute for getting in front of an engaged and interested audience, and Consumers Energy has actively sought such opportunities to educate customers about the benefits of pairing EVs with TOU rates, the expansion of public charging infrastructure, and EV charging etiquette. Over the last year, The PowerMIDrive team hosted or attended 45 EV engagement events as presenter, panelist, or exhibitor. These events reached close to 4,000 participants, including many potential future EV drivers.

As shown in Figure 15, the program team organized and executed public L2 and DCFC charging station ribbon cutting ceremonies, car shows and ride and drives (e.g., Drive Electric Earth Day and National Drive Electric Week), EV101 presentations to both online and in-person, and EV driver social events.

We have found in person events to be invaluable in creating word of mouth campaigns for the program, earned media that helps reiterate program messaging, getting PowerMIDrive information into the hands of EV drivers and the EV curious, and often leads to additional speaking engagements for educational opportunities.

Furthermore, we have continued to send the PowerMIDrive e-Newsletter to enrolled customers, with the option for non-enrolled customers to also subscribe, and the readership continues to grow.


Power MI Drive
Consumers Energy Count on Us®

*Starting in the late 1940s with a ski run, a used single chairlift and a warming hut, Boyne Mountain founder Everett Kircher began a resort and leisure corporation that now includes not only winter sports but an indoor waterpark, lodging, dining, golf, zipline adventures, and a host of outdoor sports for all seasons. And you can even plug in your EV while you're playing or staying. We spoke with Sustainability Specialist Aaron Clark about Boyne Mountain's journey to provide EV charging.*

**PROTECTING THE PLAYGROUND**

In 2021, Boyne Resorts introduced the ForeverProject to address sustainability, accountability, and reduction of environmental impacts through reporting, training, and action. Learn more about Boyne's commitment to sustainability and net zero emissions at www.boyneresorts.com/sustainability.

**WHAT LED BOYNE MOUNTAIN TO OFFER EV CHARGING?**

Examples of the ForeverProject include low-energy snowmaking equipment, a 1.7-Megawatt photovoltaic solar panel system that generates clean power for the resort, and EV charging stations. Leveraging the rebates from the Consumers Energy PowerMIDrive program, Boyne Mountain offers EV charging at no cost to guests at two locations. The Mountain Grand Lodge and Spa parking lot features two EnelX JuiceBox Level 2 chargers and two Tesla Destination chargers. The Boynehof Lodge accommodation has two more JuiceBoxes.

**HAVING FUN WHILE BEING GREEN**

Load up your EV with skis to hit the slopes, hiking boots to walk across the 1,200 foot long and 118-foot high SkyBridge Michigan, and a swimsuit to float in Avalanche Bay Waterpark.

Whether you're toying with the idea of enjoying winter sports made possible by Mother Nature or high-efficiency snowmakers, floating in the advanced energy pools and hot tubs or just grabbing a bowl of white chicken chili, drive up to Boyne Mountain Resort in your EV and get charged up at Everett Kircher's vision of Pure Michigan.

**Station Host Profile**

*Boyne Mountain Resort*

**Location**
1 Boyne Mountain Rd, Boyne Falls, MI 49713

**EV Charging**
(4) EnelX 9 KW Level 2 chargers
(2) Tesla 16 KW Destination chargers

**Amenities**
Year-round ski resort with lodging, dining, world-class golf, waterpark, adventure activities, spa, shopping, and SkyBridge Michigan.

*Example of an e-Newsletter highlighting an overnight charging destination*

*Kalamazoo Nature Center overflows with EVs during a National Drive Electric Earth Month event*

# TEP MANAGED CHARGING RESULTS

## Charging Time Summary

A key strategy of our TEP customer programs is to maximize off-peak charging (residential and commercial) to benefit all customers via downward rate pressure and improved reliability. Optimized EV charging also directly supports our one-million EV by 2030 readiness in collaboration with Michigan's two million EV goal.

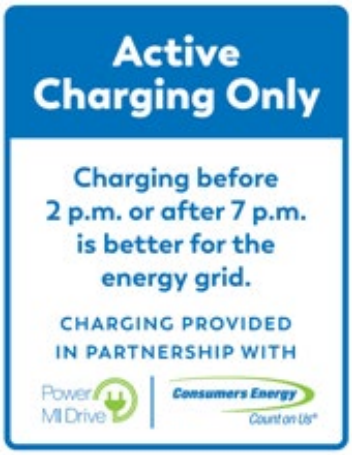
When the customer EV load management pilots initially began, it was projected that approximately 80% of charging would occur at home, and 20% in commercial settings which mostly consisted of public charging. The very first pilot also aimed to steer that EV load to at least 70% off-peak charging. Initial pilot data tracked toward the 80/20 residential vs commercial projection and achieved over 80% off-peak charging.

Per Figure 15, Consumers Energy is pleased to report that off-peak charging has continued to improve, now achieving world-class near 97% off-peak charging across all the permanent customer programs! However, the EV charging market continues to evolve and significant growth in commercial charging is occurring. Thus, the Company's latest data shows a near 70% residential to 30% commercial split, with the majority of commercial EV load growth at fast chargers and within fleets, indicating that these are important areas for the TEP going forward. The continued changes in the market are reflective of both increased miles driven by EV drivers thanks the initial build out of the DCFC network, and PowerMIFleet data which shows that many light duty EVs, and a growing number of medium and heavy duty EVs, provide cost savings for fleets.

| EV Customer Program Category | On-Peak 2PM-7PM | Off-Peak 7AM-2PM 7PM-11PM | Super Off-Peak 11PM-7AM & Weekends | Total Off-Peak by Category | Total kWh by Category |
|---|---|---|---|---|---|
| *Residential Single Family* | *2.1%* | *6.7%* | *91.2%* | *97.9%* | *70.69%* |
| *Community Charging* | *14.3%* | *25.7%* | *59.9%* | *85.7%* | *0.01%* |
| *Multifamily* | *27.7%* | *38.0%* | *34.3%* | *72.3%* | *0.14%* |
| ***Total Residential*** | ***2.2%*** | ***6.8%*** | ***91.0%*** | ***97.8%*** | ***70.84%*** |
| *Destination L2+L1* | *21.0%* | *35.6%* | *43.4%* | *79.0%* | *1.21%* |
| *Fleet & Workplace* | *7.1%* | *34.9%* | *58.0%* | *92.9%* | *10.48%* |
| *Original Pilot: DCFC* | *24.2%* | *35.3%* | *40.5%* | *75.8%* | *17.47%* |
| ***Total Commercial*** | ***18.0%*** | ***35.1%*** | ***46.9%*** | ***82.0%*** | ***29.16%*** |
| ***Permanent Programs*** | ***3.1%*** | ***10.8%*** | ***86.1%*** | ***96.9%*** | ***82.53%*** |
| **Permanent & DCFC Pilot** | **6.8%** | **15.0%** | **78.2%** | **93.2%** | **100.00%** |

*Figure 16: EV Charging per Category & Time Block*

Figure 15 above shows the percentage of charging that happens in different on-peak and off-peak time blocks, in addition to the percentage of charging per category. In the residential sector, single family charging continues to lead all categories, with nearly 98% off-peak charging and nearly 7% of the total EV load. Community charging, which just launched this year and thus a very small percentage of the total kWh, is off to a good start with nearly 86% off-peak results. Multifamily properties are also still a small percentage of the total and continues to present off-peak charging challenges given resident turnover. Nonetheless, the program team is leaning in with additional signage and outreach efforts for multifamily property L2 program participants.




*An example of new signage for multifamily properties*

In the commercial space, the fleet and workplace programs are also off to a strong start, with nearly 93% off-peak charging and over 10% of the total kWh due to rapidly increasing EV adoption. Public L2 destination charging is still a small component of the total kWh, but the off-peak percentage is increasing toward nearly 80% as more overnight and weekend travel locations are targeted. Moreover, overnight location L2 infrastructure helps infill the still emerging but fast growing DCFC infrastructure to aid long distance travel and replicates the residential overnight charging opportunities while on the road.

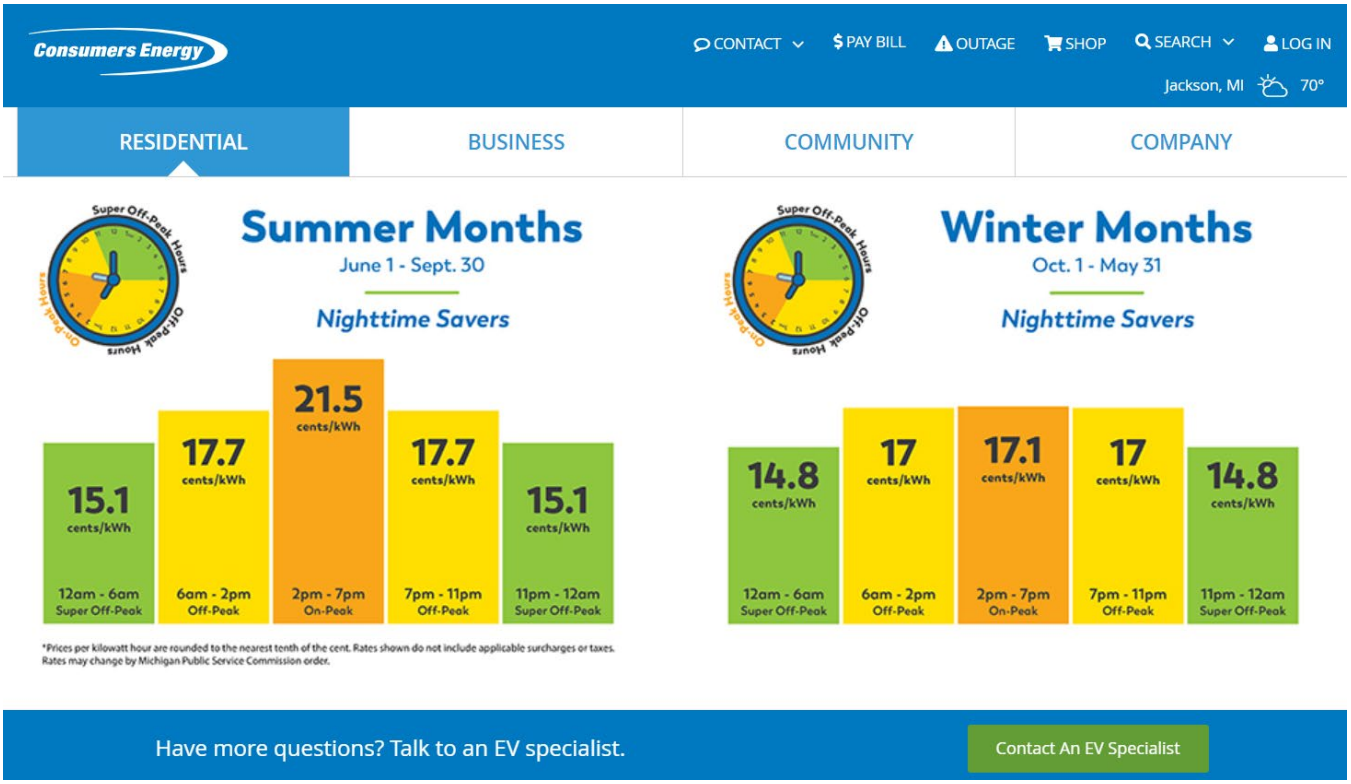
Our position remains that DCFC infrastructure is highly unlikely to benefit from managed charging other than through technological means (e.g., pairing with battery storage for peak arbitrage in the future as battery prices continue to fall) that do not impact the customer experience. Customers needing to charge immediately to get to their location are unlikely to accept active charge management that increases their wait time for charging or be deterred by marginally higher costs when charging is a necessity to reach their destination.


*Consumers Energy's Best in Class Award for Utility EV Load Management*

While approximately 75% of DCFC charging avoided the peak without any active management, this is largely due to the increase of weekend charging and relatively little fast charging occurs in the overnight hours. Furthermore, the proportion of charging kWh from DCFCs continues to rise from 3.8% in the 2021 report, to 11.5% in the 2022 report, 14.7% in the 2023 report, and now 17.5% over the last year. The growth is clearly reflective of the fact that Consumers Energy's electric service territory covers much of the lower peninsula thereby enabling EV drivers even from outside the Company's electric service territory to travel longer distances (e.g., Chicago, Detroit, Toledo) to Michigan's great destinations.

The underlying fundamentals of continued proportional load growth from fast charging, the Company's large electric service territory with popular travel destinations, the low overnight utilization, and the continuing constraints of transformers supply (see the "TEP Grid Considerations" section), mean that the time is ripe to address energy arbitrage at DCFCs. Thus, in the 2024 electric rate case we have proposed a rebate for battery-integrated fast charging that is proportional to the cost of make ready infrastructure typically seen during the DCFC pilot.

To be clear, the Company is not presently seeing significant grid risk from additional DCFC adoption given that sites which have installed DCFC to date already had 3-phase power, but battery integration is also expected to provide resiliency benefits for the host sites given potential backup power and may help lead to additional V2X market developments.




*An example of TOU rate informational materials from the Consumers Energy website, with options to directly reach EV Specialists for assistance*

# TEP GRID CONSIDERATIONS

## Residential Success

To proactively understand how areas of EV clustering could impact existing electric infrastructure, the PowerMIDrive team collaborated with internal CE stakeholders in the LVDP and Electric GIS teams to identify and track residential transformers on the electric grid supporting multiple homes with EVSE. The intent of this effort is to proactively monitor load where areas of EV clustering have been identified to understand potential impacts to electric supply infrastructure.

As mentioned in the Company's previous annual reports, the Company continues to see the proliferation of multiple EVs within a single household, and one of the most reliable indicators of EV adoption is if a neighbor has an EV (i.e. EV growth is largely viral). In fact, there are now residential circuits with 17-20 EVs, and the TEP customer programs are managing load very well to date. Thus, Consumers Energy will continue to monitor impacts and recommend that a single NEMA 14-50 outlet per residence, as reflected in the Company's permanent residential program, is the reasonable residential design standard to accommodate for the new anticipated load of widespread EV adoption.

For a light duty EV common in residential settings, the output from one NEMA 14-50 can add over 200 miles of range overnight, while the average driver travels about 40 miles or less per day. The PowerMIDrive team often explains this reassuring fact to customers who commonly receive marketing for higher power chargers and are thus thinking that greater than 9.6 kW is needed in a residential setting.

*A power sharing splitter allows two L2 to safely utilize a single NEMA 14-50 outlet*

In fact, 9.6 kW is plenty for one EV, and future proofs for a multiple EV household. Moreover, a power-sharing 9.6 kW L2 further helps to spread the load over the super off-peak periods, reduces ramp rates compared to multiple L2s and higher power L2s in the home, and saves significant money on installation costs compared to multiple circuits and EVSE. This is why the Company is proposing including the cost of splitters and power sharing devices as eligible costs in our residential rebate program. Encouraging this technology now can help spread the load even more as households continue to transition to multiple EVs.

## Growth of Fast Charging and Fleets

Given market trends, which are also reflected in our customer program data (see the prior discussion regarding Figure 15) the Company anticipates that fast charging sites (i.e. DCFCs) and fleets will continue to grow, and these two customer types have concentrated loads that can be a sizable increase compared to the existing business. Thus, the Company anticipates that new service requests for EV loads of 1 MW or greater will grow dramatically as existing and new DCFC locations, and larger fleets continue to expand. Thus, in support of continued EV market growth, the Company must proactively prepare for new and expanded DCFC locations.

To gain perspective on the magnitude of the challenge, we must first recognize that all utilities are reporting that transformers needed to support larger customer projects, such as NEVI sized DCFC sites (i.e., 4 x 150 kW DCFCs), are backordered nearly 24 months and wait times are trending longer, not shorter. This means that waiting until a request for new or modified service to place an order for these transformers and related equipment will severely bottleneck fast charging infrastructure development. The same goes for new fleet locations, even if Level 2 charging is utilized given the scale of load for hundreds of EVs.

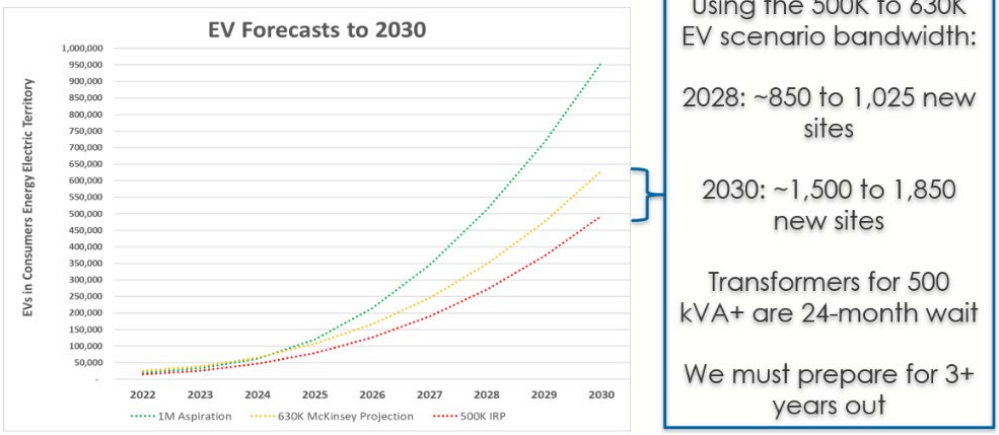
*A string of six 350 kW fast chargers in Hudsonville*

Looking at trends in DCFC development, new or expanded fast charging sites are larger and higher power and being installed at an increasing frequency. For example, market data indicates that one fast charger is constructed for approximately every 85 EVs on the road. This ratio is logical given that fast charging typically comprises about 10% of EV load, and additional capacity must account for holidays, seasonal fluctuations, and EVs traveling through the area. Moreover, more fast charging sites are being installed with at least four chargers each of 250 kW or higher ratings, and thus potentially drawing up to 1 MW at max output. The reason for this is the capabilities of new EVs can often reach higher charging inputs, and customers prefer to choose a fast-charging destination with multiple chargers and higher power outputs to avoid queuing.

Thus, many fast-charging sites are now trending toward sets of 12 fast chargers, and we have learned of potential plans for 16 or more chargers along major travel corridors, which thus could potentially draw 3 MW or more. These are very important trends to prepare for given continued EV adoption and ensuring Michigan businesses and residents are timely served.

In sum, utilizing the ratio of 1 fast charger per every 85 EVs, and growth rates trending between 500 and 630 thousand EVs by 2030, the Company projects 850 to 1,025 new DCFC service requests of 1 MW or greater by 2028, and 1,500 to 1,850 DCFC service requests of 1 MW or greater by 2030. Fleet growth could cause these projections to go even higher. With the near two-year timeframe to procure and receive larger transformers, it is prudent to act now in preparation for forthcoming service requests.

**Projections: Fast Charger Sites of 1 MW or Greater**





*Certain fleets are likely to need fast charging in addition to Level 2*

## Capacity Maps & Tariff Updates

Per Case No. U-21389, the Company is working on capacity maps to assist with EV charging infrastructure siting, and potential new tariffs for DCFC and L2 charging.

The Company's LVD team is on track to complete the capacity maps in 2025. In addition, we are exploring further collaboration with EPRI to take the more macro load forecasts utilized for the 500K and 630K EV by 2030 scenarios, to a more granular scale for future planning. We believe this is necessary to hone transformer, circuit, and potentially substation upgrades necessary to serve larger fast charging loads (e.g. big box stores and near offramps on major travel routes), and fleet developments (e.g. distribution centers and warehouse locations). While we cannot predict which businesses will act first, Consumers Energy can use this data to surgically optimize the grid and be prepared to quickly serve Michigan business growth.

Regarding potential tariff changes, the data from this TEP update, and pilot programs before it, are being shared internally with the Company rates team. Some commercial Level 2 load shapes will take more time to gather data for given that they are relatively new programs, so in the near term we are focused on potential tariff updates for DCFCs. The Company also plans to hire a consultant to evaluate this data in preparation for additional tariff considerations in the anticipated 2025 Electric Rate Case and subsequent cases thereafter as more data is gathered.

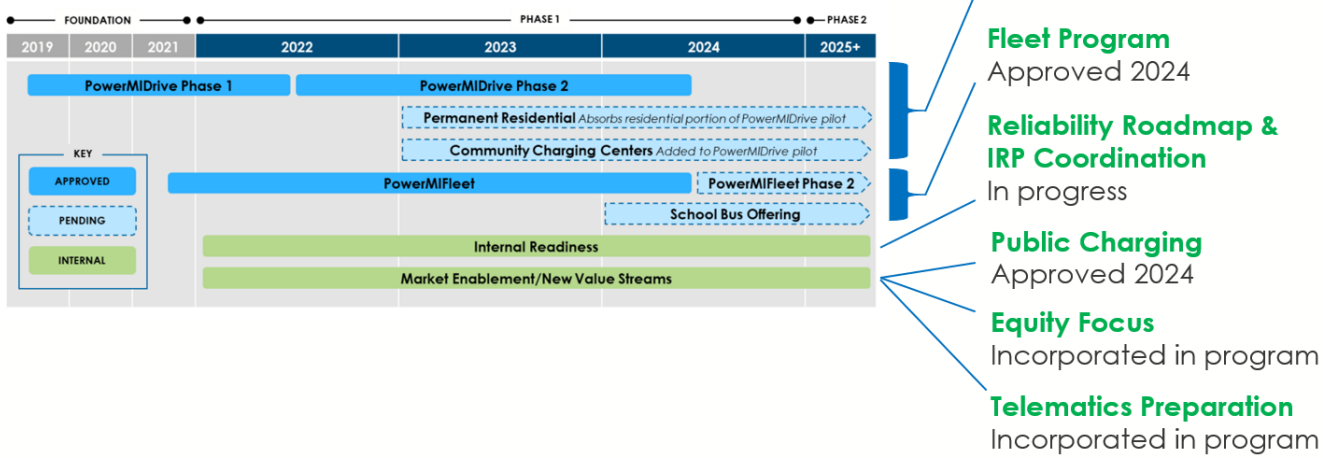

*Stakeholders gather for an electric school bus ride around Michigan's Capitol*

# TEP LOOKING FORWARD & STAKEHOLDER FEEDBACK

With the goals from the first phase of the original TEP filing[2] complete, the Company continues to look forward to future phases of our TEP to continue to ensure:

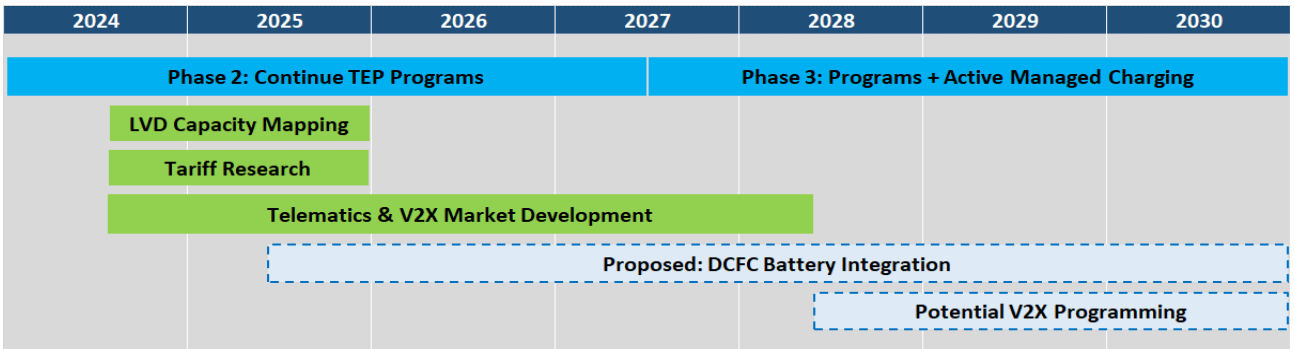
1. Load growth at the right time to benefit reliability and cost for all customers.
2. Prepare for EV adoption at scale in support of Michigan's 2-million EV goal.
3. Utilize margin from EV load growth to pay for EV load management programs while also creating downward rate pressure for all customers.

## Original TEPs Strategy Roadmap




The next phases of the Company TEP logically expand upon existing programs to further integrate technology as it matures and becomes cost effective.

## Future TEP Roadmap




[2] See page 19 of Exhibit A-152 (JAM) in Case No. U-21224, which is page 2937 of 2942 in the PDF: 0688y000002lGMlAAM (site.com)

As noted in the "Grid Considerations" section, the Company plans to continue the highly effective customer EV load management programming, develop capacity maps to assist customers with siting charging locations, and review tariffs for potential updates in future electric rate cases. Furthermore, we will continue to monitor developments regarding active load management via telematics and potential bidirectional capabilities (i.e. V2X) as costs improve.

The potential addition of battery integrated DCFCs is not only a way to help relieve transformer supply challenges, but also an important tool for energy arbitrage at infrastructure that can have significant ramp rates during the day but little overnight activity. Furthermore, this infrastructure could provide bidirectional power flow capabilities for the host sites, leading to improved reliability and potentially additional value streams for Michigan businesses.

In the long run, we see all of these developments potentially leading into V2X TEP programming once costs and technology mature.

## TEP Stakeholder Meetings & Feedback

In addition to holding regular informal conversations with customers and stakeholders throughout the last year, the Company held two formal online meetings to present the TEP and our strategic efforts to optimize EV loads for the benefit of all customers. These online meetings, per Case No. U-21389, were held on May 20th and 31st, 2024. Questions at the meeting focused on existing program information details much more than suggestions for changes, and the tone of all the meetings was very positive regarding Company efforts and outcomes to date. Thus, we believe the Consumers Energy's TEP is on the right track, but will continue to monitor market development and customer load management outcomes for further refinement.

The following is a summary of suggested TEP enhancements and the Company's initial responses. Of course, we remain open to additional conversations and collaborations.

**Suggestion 1:** In addition to the number of EVs by 2030, projections of the charge ports needed would be helpful. (Environmental Groups, State of Michigan Staff)

**Company Response:** We have updated this report to include current projections regarding the number of charging plugs (L2 and DCFC) based on different EV adoption rates by 2030 on page 11 in the executive summary. Related to the number of fast charging ports, an estimate of DCFC sites capable of 1 MW or greater output is also included on page 44 in the grid considerations section.

**Suggestion 2:** There is additional revenue to expand program investment for disadvantaged and income-qualified communities. (Environmental Groups)

**Company Response:** We agree that both the TEP customer program budget could be increased for this purpose, and that dedicated funding for additional fleet assistance in the

income qualified and disadvantaged community sector could be continued. For example, Company has proposed that any remaining make ready funds from the PowerMIFleet pilot be utilized for enhanced rebates to fleets serving these communities, but such a program could be made permanent as well.

**Suggestion 3:** TOU data related to fast charging would be useful to see. (State of Michigan Staff)

**Company Response:** Aggregated and anonymized data related to fast charging has been included in the table below. The data shows that a significant amount of fast charging is now happening on weekends in support of tourism travel, and that proportionately little fast charging occurs in the overnight hours. Thus, in addition to forecasted fast charging growth and present transformer supply challenges, the Company believes that additional investment in battery arbitrage for this market segment is prudent to help optimize fast charging loads.

| | | 2023 | 2023 | 2023 | 2023 | 2023 | 2023 | 2023 | 2023 | 2023 | 2024 | 2024 | 2024 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | April | May | June | July | Aug | Sept | Oct | Nov | Dec | Jan | Feb | March | | | | |
| | Time | kWh | | | | | | | | | | | | | Totals | % | |
| **Weekday kWh** | 1:00:00 | 374 | 451 | 897 | 935 | 1,380 | 836 | 1,053 | 1,406 | 1,763 | 1,838 | 1,283 | 2,018 | | 14,234 | 1.1% | |
| | 2:00:00 | 320 | 235 | 595 | 408 | 1,061 | 529 | 643 | 911 | 1,233 | 1,128 | 928 | 1,309 | | 9,299 | 0.8% | |
| | 3:00:00 | 246 | 309 | 605 | 381 | 662 | 374 | 458 | 703 | 856 | 702 | 567 | 721 | | 6,584 | 0.5% | |
| | 4:00:00 | 192 | 295 | 340 | 161 | 505 | 498 | 718 | 509 | 522 | 408 | 789 | 534 | | 5,469 | 0.4% | |
| | 5:00:00 | 307 | 367 | 392 | 247 | 566 | 582 | 675 | 667 | 439 | 456 | 617 | 693 | | 6,007 | 0.5% | |
| | 6:00:00 | 344 | 375 | 519 | 480 | 449 | 583 | 1,263 | 947 | 781 | 601 | 599 | 746 | | 7,687 | 0.6% | |
| | 7:00:00 | 687 | 1,110 | 1,276 | 623 | 1,321 | 1,092 | 1,661 | 1,574 | 1,217 | 1,345 | 1,328 | 2,056 | | 15,289 | 1.2% | |
| | 8:00:00 | 1,438 | 1,504 | 2,363 | 2,354 | 3,281 | 2,270 | 2,793 | 2,233 | 2,291 | 2,182 | 2,306 | 2,972 | | 27,987 | 2.3% | |
| | 9:00:00 | 2,267 | 2,703 | 2,938 | 3,252 | 5,332 | 5,018 | 5,847 | 3,757 | 4,230 | 3,693 | 4,431 | 4,403 | | 47,871 | 3.9% | |
| | 10:00:00 | 1,951 | 3,703 | 3,934 | 4,256 | 7,207 | 5,987 | 6,779 | 5,938 | 5,719 | 4,933 | 6,262 | 6,485 | | 63,153 | 5.1% | |
| | 11:00:00 | 2,719 | 4,643 | 4,787 | 5,324 | 8,313 | 5,681 | 5,680 | 7,692 | 6,558 | 6,592 | 6,915 | 7,504 | | 72,408 | 5.8% | |
| | 12:00:00 | 3,921 | 4,766 | 6,308 | 6,197 | 8,890 | 5,620 | 6,374 | 7,765 | 7,492 | 7,035 | 7,582 | 7,054 | | 79,004 | 6.4% | |
| | 13:00:00 | 4,561 | 5,363 | 6,769 | 7,633 | 9,759 | 6,014 | 7,959 | 8,034 | 8,336 | 9,184 | 7,626 | 9,154 | | 90,393 | 7.3% | |
| | 14:00:00 | 4,308 | 5,363 | 7,042 | 8,356 | 9,747 | 6,514 | 8,270 | 8,584 | 8,482 | 9,256 | 8,228 | 9,523 | | 93,671 | 7.6% | |
| | 15:00:00 | 4,055 | 6,835 | 7,303 | 7,635 | 9,476 | 6,431 | 8,545 | 8,776 | 8,649 | 9,321 | 8,618 | 9,398 | | 95,041 | 7.7% | |
| | 16:00:00 | 3,565 | 6,179 | 6,641 | 7,499 | 9,131 | 6,366 | 8,535 | 8,612 | 8,755 | 9,391 | 8,050 | 9,052 | | 91,777 | 7.4% | |
| | 17:00:00 | 3,907 | 5,280 | 6,753 | 6,882 | 8,992 | 7,042 | 8,519 | 9,154 | 8,373 | 9,093 | 8,482 | 9,727 | | 92,203 | 7.4% | |
| | 18:00:00 | 4,638 | 5,623 | 7,021 | 6,408 | 8,860 | 6,675 | 8,938 | 8,497 | 8,124 | 8,139 | 7,320 | 9,440 | | 89,681 | 7.2% | |
| | 19:00:00 | 3,664 | 5,189 | 5,525 | 5,483 | 8,187 | 5,806 | 7,955 | 8,070 | 7,177 | 7,767 | 8,275 | 8,385 | | 81,485 | 6.6% | |
| | 20:00:00 | 3,825 | 4,003 | 4,802 | 5,362 | 9,994 | 6,263 | 6,980 | 7,595 | 5,987 | 6,703 | 7,581 | 7,922 | | 77,018 | 6.2% | |
| | 21:00:00 | 2,741 | 3,687 | 4,619 | 5,087 | 8,921 | 6,068 | 6,540 | 5,981 | 4,765 | 5,481 | 6,957 | 6,073 | | 66,922 | 5.4% | |
| | 22:00:00 | 2,156 | 3,147 | 3,692 | 4,297 | 6,323 | 4,358 | 4,720 | 4,258 | 4,155 | 4,038 | 4,590 | 5,548 | | 51,283 | 4.1% | |
| | 23:00:00 | 1,744 | 1,629 | 2,502 | 2,750 | 4,062 | 2,378 | 3,430 | 2,980 | 2,484 | 2,660 | 2,511 | 3,345 | | 32,477 | 2.6% | **Weekday Total** |
| | 0:00:00 | 796 | 1,009 | 1,975 | 1,997 | 2,418 | 1,904 | 1,995 | 1,777 | 1,393 | 2,294 | 2,066 | 2,628 | | 22,253 | 1.8% | **1,239,196** |
| | | | | | | | | | | | | | | | | | |
| **Weekend kWh** | 1:00:00 | 385 | 486 | 350 | 557 | 646 | 797 | 916 | 733 | 1,193 | 705 | 747 | 873 | | 8,387 | 1.3% | |
| | 2:00:00 | 187 | 232 | 284 | 214 | 433 | 527 | 571 | 583 | 595 | 465 | 418 | 629 | | 5,138 | 0.8% | |
| | 3:00:00 | 140 | 165 | 99 | 204 | 300 | 275 | 590 | 444 | 446 | 447 | 386 | 619 | | 4,115 | 0.6% | |
| | 4:00:00 | 128 | 173 | 75 | 171 | 340 | 387 | 474 | 597 | 508 | 320 | 319 | 437 | | 3,928 | 0.6% | |
| | 5:00:00 | 102 | 144 | 97 | 205 | 163 | 241 | 259 | 309 | 312 | 379 | 331 | 504 | | 3,045 | 0.5% | |
| | 6:00:00 | 118 | 125 | 213 | 184 | 315 | 294 | 438 | 303 | 423 | 436 | 175 | 308 | | 3,332 | 0.5% | |
| | 7:00:00 | 252 | 339 | 445 | 589 | 590 | 409 | 599 | 800 | 548 | 344 | 666 | 603 | | 6,184 | 0.9% | |
| | 8:00:00 | 403 | 780 | 561 | 1,545 | 1,232 | 1,291 | 1,119 | 1,242 | 1,112 | 781 | 1,069 | 1,011 | | 12,147 | 1.8% | |
| | 9:00:00 | 1,026 | 1,288 | 1,352 | 2,585 | 2,097 | 3,102 | 2,142 | 2,329 | 1,980 | 1,222 | 1,698 | 2,057 | | 22,877 | 3.4% | |
| | 10:00:00 | 1,328 | 1,984 | 1,802 | 3,189 | 2,832 | 3,709 | 3,125 | 2,479 | 2,003 | 2,178 | 2,009 | 3,268 | | 29,905 | 4.5% | |
| | 11:00:00 | 2,040 | 2,532 | 2,374 | 4,905 | 4,297 | 5,378 | 3,902 | 3,585 | 2,989 | 2,468 | 3,134 | 3,877 | | 41,483 | 6.2% | |
| | 12:00:00 | 2,567 | 3,092 | 2,961 | 5,754 | 4,353 | 5,181 | 5,112 | 4,174 | 4,370 | 3,199 | 3,588 | 4,340 | | 48,691 | 7.3% | |
| | 13:00:00 | 3,125 | 3,641 | 3,260 | 5,466 | 4,561 | 5,454 | 5,372 | 4,261 | 5,633 | 3,870 | 3,575 | 5,126 | | 53,343 | 8.0% | |
| | 14:00:00 | 3,365 | 4,055 | 3,294 | 5,891 | 5,006 | 5,539 | 5,531 | 4,761 | 5,330 | 4,282 | 4,114 | 5,886 | | 57,055 | 8.5% | |
| | 15:00:00 | 3,511 | 3,976 | 3,416 | 5,644 | 5,115 | 5,054 | 5,703 | 4,205 | 5,442 | 4,072 | 4,470 | 5,836 | | 56,444 | 8.5% | |
| | 16:00:00 | 2,911 | 3,100 | 3,390 | 4,748 | 5,176 | 5,018 | 5,160 | 4,561 | 5,189 | 3,977 | 4,302 | 5,265 | | 52,798 | 7.9% | |
| | 17:00:00 | 2,562 | 3,384 | 3,731 | 4,502 | 4,127 | 4,586 | 5,207 | 4,144 | 4,854 | 3,635 | 4,038 | 5,143 | | 49,913 | 7.5% | |
| | 18:00:00 | 2,929 | 2,860 | 2,928 | 4,801 | 4,827 | 4,103 | 4,546 | 4,326 | 4,202 | 3,448 | 4,174 | 5,829 | | 48,972 | 7.3% | |
| | 19:00:00 | 2,554 | 2,858 | 2,858 | 4,050 | 3,762 | 4,127 | 4,070 | 3,572 | 4,135 | 3,096 | 3,329 | 5,424 | | 43,836 | 6.6% | |
| | 20:00:00 | 2,125 | 2,096 | 2,526 | 3,526 | 3,265 | 3,628 | 3,382 | 2,708 | 3,344 | 2,522 | 2,601 | 4,235 | | 35,959 | 5.4% | |
| | 21:00:00 | 1,786 | 1,755 | 2,141 | 3,513 | 2,771 | 3,147 | 2,976 | 2,815 | 2,515 | 1,929 | 2,061 | 3,595 | | 31,004 | 4.6% | |
| | 22:00:00 | 1,182 | 1,545 | 1,051 | 2,458 | 1,895 | 1,967 | 2,158 | 2,310 | 1,873 | 1,586 | 1,790 | 2,477 | | 22,292 | 3.3% | |
| | 23:00:00 | 808 | 739 | 1,232 | 1,673 | 1,425 | 1,321 | 1,949 | 1,284 | 1,456 | 1,298 | 1,131 | 1,604 | | 15,920 | 2.4% | **Weekend Total** |
| | 0:00:00 | 273 | 712 | 753 | 1,058 | 749 | 870 | 1,109 | 1,229 | 1,031 | 1,068 | 915 | 1,256 | | 11,022 | 1.7% | **667,789** |
| | | | | | | | | | | | | | | | | | |
| **TOTAL KWH** | | **90,531** | **115,829** | **130,791** | **161,442** | **195,113** | **161,294** | **182,740** | **174,172** | **171,264** | **161,966** | **164,950** | **196,891** | | **1,906,985** | | |
| **PEAK** | | 20,471 | 29,280 | 34,759 | 36,780 | 46,207 | 33,027 | 42,807 | 43,622 | 42,382 | 45,200 | 40,697 | 47,140 | | 462,373 | **24.2%** | |
| **OFF-PEAK** | | 29,930 | 39,818 | 47,015 | 49,868 | 77,528 | 54,177 | 63,288 | 62,897 | 57,928 | 58,953 | 63,854 | 67,557 | | 672,814 | **35.3%** | |
| **SUPER OFF-PEAK** | | 40,130 | 46,731 | 49,017 | 74,793 | 71,377 | 74,090 | 76,646 | 67,653 | 70,954 | 57,813 | 60,400 | 82,194 | | 771,798 | **40.5%** | |

Power MI Drive | Power MI Fleet | Consumers Energy Count on Us®

STATE OF MICHIGAN

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

| | | |
|---|---|---|
| In the matter, on the Commission's own motion, to open a docket for certain regulated electric utilities to file transportation electrification plans and for other related matters. | ) ) ) ) ) | Case No. U-21538 |

**PROOF OF SERVICE**

STATE OF MICHIGAN )
) SS
COUNTY OF JACKSON )

Melissa K. Harris, being first duly sworn, deposes and says that she is employed in the Legal Department of Consumers Energy Company; that on June 25, 2024, she served an electronic copy of **Consumers Energy Company's Transportation Electrification Plan 2024** upon the persons listed in Attachment 1 hereto, at the e-mail addresses listed therein.

Melissa K. Harris

Subscribed and sworn to before me this 25th day of June 2024.

Crystal L. Chacon

Crystal L. Chacon, Notary Public
State of Michigan, County of Eaton
My Commission Expires: 05/25/30
Acting in the County of Jackson

**ATTACHMENT 1 TO CASE NO. U-21538**
**(Including Parties to Case No. U-21389)**

| Party | Mailing Address | Email Address |
|---|---|---|
| **Administrative Law Judge** | | |
| Hon. Sally Wallace | 7109 West Saginaw Highway<br>Post Office Box 30221<br>Lansing, MI 48909 | wallaces2@michigan.gov |
| **Counsel for Consumers Energy Company** | | |
| Bret A. Totoraitis, Esq.<br>Anne M. Uitvlugt, Esq.<br>Spencer A. Sattler, Esq.<br>Gary A. Gensch, Jr., Esq. | One Energy Plaza<br>Jackson, MI 49201 | bret.totoraitis@cmsenergy.com<br>anne.uitvlugt@cmsenergy.com<br>spencer.sattler@cmsenergy.com<br>gary.genschjr@cmsenergy.com<br>mpsc.filings@cmsenergy.com |
| **Counsel for the Michigan Public Service Commission Staff** | | |
| Amit T. Singh, Esq.<br>Nicholas Q. Taylor, Esq.<br>Anna B. Stirling, Esq.<br>Monica M. Stephens, Esq.<br>Alena Clark, Esq. | Assistant Attorneys General<br>Public Service Division<br>7109 West Saginaw Highway<br>Post Office Box 30221<br>Lansing, MI 48909 | singha9@michigan.gov<br>taylorn10@michigan.gov<br>stirlinga1@michigan.gov<br>stephensm11@michigan.gov<br>clarkA55@michigan.gov |
| **Michigan Public Service Commission Staff** | | |
| Mike Byrne<br>Bill Stosik<br>Paul Proudfoot<br>Bob Nichols<br>Lori Mayabb<br>Julie Baldwin | 7109 West Saginaw Highway<br>Post Office Box 30221<br>Lansing, MI 48909 | byrnem@michigan.gov<br>stosikb@michigan.gov<br>proudfootp@michigan.gov<br>nicholsb1@michigan.gov<br>mayabbl@michigan.gov<br>baldwinj2@michigan.gov |
| **Counsel for Attorney General Dana Nessel** | | |
| Celeste R. Gill, Esq. | ENRA Division<br>525 West Ottawa Street<br>6th Floor Williams Building<br>Post Office Box 30755<br>Lansing, MI 48909 | gillc1@michigan.gov<br>AG-ENRA-Spec-Lit@michigan.gov |
| **Consultants for Attorney General Dana Nessel** | | |
| Sebastian Coppola | Corporate Analytics, Inc.<br>5928 Southgate Road<br>Rochester, MI 48306 | sebcoppola@corplytics.com |
| Michael Deupree<br>Emily Mouch<br>Taylor Deshotels | Acadian Consulting Group, LLC<br>5800 One Perkins Place Dr.<br>Suite 5-F<br>Baton Rouge, LA 70808 | michaeldeupree@acadianconsulting.com<br>emilymouch@acadianconsulting.com<br>taylordeshotels@acadianconsulting.com |
| **Counsel for the Michigan Cable Telecommunications Association ("MCTA")** | | |
| Sean P. Gallagher, Esq. | Fraser Trebilcock Davis & Dunlap, P.C.<br>124 West Allegan Street<br>Suite 1000<br>Lansing, MI 48933 | sgallagher@fraserlawfirm.com |

**ATTACHMENT 1 TO CASE NO. U-21538**
**(Including Parties to Case No. U-21389)**

| | | |
|---|---|---|
| **Counsel for the Michigan Environmental Council, Citizens Utility Board of Michigan, Natural Resources Defense Council, and Sierra Club ("MNSC")** | | |
| Christopher M. Bzdok, Esq.<br>Tracy Jane Andrews, Esq.<br>Breanna Thomas | Troposphere Legal<br>420 East Front Street<br>Traverse City, MI 49686 | chris@tropospherelegal.com<br>tjandrews@tropospherelegal.com<br>breanna@tropospherelegal.com |
| **Consultant for MNSC** | | |
| Douglas B. Jester | 5 Lakes Energy<br>220 M.A.C. Ave., Apt. 218<br>East Lansing, MI 48823 | djester@5lakesenergy.com |
| **Counsel for The Kroger Co. ("Kroger")** | | |
| Kurt J. Boehm, Esq.<br>Jody Kyler Cohn, Esq.<br>Michael L. Kurtz, Esq. | Boehm, Kurtz & Lowry<br>36 East Seventh Street, Ste. 1510<br>Cincinnati, OH 45202 | kboehm@bkllawfirm.com<br>jkylercohn@bkllawfirm.com<br>mkurtz@bkllawfirm.com |
| **Consultant for Kroger** | | |
| Justin Bieber | Energy Strategies, LLC<br>Parkside Towers<br>215 South State Street, Ste. 200<br>Salt Lake City, UT 84111 | jbieber@energystrat.com |
| **Counsel for Michigan Municipal Association for Utility Issues ("MAUI")** | | |
| Valerie J.M. Brader, Esq.<br>Valerie Jackson, Esq. | Rivenoak Law Group, P.C.<br>3331 W. Big Beaver Rd, Ste. 109<br>Troy, MI 48084 | valerie@rivenoaklaw.com<br>valeriejackson@rivenoaklaw.com<br>ecf@rivenoaklaw.com |
| Rick Bunch | Executive Director and Chairman<br>Michigan Municipal Association<br>for Utility Businesses<br>4989 Earhart Road<br>Ann Arbor, MI 48105 | rick@mi-maui.org |
| **Counsel for Energy Michigan, Foundry Association of Michigan, Michigan Energy Innovation Business Council ("Michigan EIBC"), Institute for Energy Innovation ("IEI"), Advanced Energy United ("United"), and ChargePoint** | | |
| Timothy J. Lundgren, Esq.<br>Laura A. Chappelle, Esq.<br>Justin K. Ooms, Esq.<br>Summer Dukes | Potomac Law Group<br>120 N. Washington Square<br>Suite 300<br>Lansing, MI 48933 | tlundgren@potomaclaw.com<br>lchappelle@potomaclaw.com<br>jooms@potomaclaw.com<br>sdukes@potomaclaw.com |
| **Counsel for The Ecology Center, The Environmental Law & Policy Center ("ELPC"), Union of Concerned Scientists ("USC"), and Vote Solar** | | |
| Nicholas J. Schroek, Esq. | University of Detroit Mercy<br>School of Law<br>Environmental Law Clinic<br>651 E. Jefferson<br>Detroit, MI 48226 | schroenj@udmercy.edu |
| Daniel Abrams, Esq.<br>Alondra Estrada<br>Carolyn Boyce | Environmental Law &<br>Policy Center<br>35 East Wacker Drive, Suite 1600<br>Chicago, IL 60601 | dabrams@elpc.org<br>aestrada@elpc.org<br>cboyce@elpc.org<br>mpscdockets@elpc.org |

**ATTACHMENT 1 TO CASE NO. U-21538**
**(Including Parties to Case No. U-21389)**

| | | |
|---|---|---|
| **Counsel for Michigan Electric Transmission Company, LLC ("METC")** | | |
| Richard J. Aaron, Esq.<br>Olivia R.C.A. Flower, Esq.<br>Hannah Buzolits, Esq.<br>Courtney F. Kissel, Esq. | Dykema Gossett PLLC<br>201 Townsend Street, Suite 900<br>Lansing, MI 48933 | raaron@dykema.com<br>oflower@dykema.com<br>HBuzolits@dykema.com<br>ckissel@dykema.com<br>mpscfilings@dykema.com |
| Lisa Agrimonti, Esq.<br>Haley Waller Pitts, Esq. | Fredrikson & Byron<br>115 West Allegan, Ste 700<br>Lansing, MI 48933 | lagrimonti@fredlaw.com<br>hwallerpitts@fredlaw.com |
| **Counsel for Urban Core Collective ("UCC")** | | |
| Amanda Urban, Esq.<br>Mark Templeton, Esq.<br>Jacob R. Schuhardt, Esq.<br>Madison Wilson | Univ of Chicago Law School –<br>Abrams Env Law Clinic<br>6020 South University Avenue<br>Chicago, IL 60637 | t-9aurba@lawclinic.uchicago.edu<br>templeton@uchicago.edu<br>jschuhardt@uchicago.edu<br>madisonswilson@uchicago.edu<br>aelc_mpsc@lawclinic.uchicago.edu |
| **Counsel for the Association of Businesses Advocating Tariff Equity ("ABATE")** | | |
| Stephen A. Campbell, Esq.<br>Michael J. Pattwell, Esq. | Clark Hill PLC<br>500 Woodward Avenue,<br>Suite 3500<br>Detroit, MI 48226 | scampbell@clarkhill.com<br>mpattwell@clarkhill.com |
| **Consultant for ABATE** | | |
| James Dauphinais<br>Jessica York | Brubaker & Associates, Inc.<br>P.O. Box 412000<br>St. Louis, Missouri 63141-2000 | jdauphinais@consultbai.com<br>jyork@consultbai.com |
| **Counsel for Hemlock Semiconductor Operations LLC ("HSC")** | | |
| Jennifer Utter Heston, Esq. | Fraser Trebilcock Davis &<br>Dunlap, P.C.<br>124 West Allegan Street<br>Suite 1000<br>Lansing, MI 48933 | jheston@fraserlawfirm.com |
| **Counsel for Walmart, Inc. ("Walmart")** | | |
| Melissa M. Horne, Esq. | Higgins, Cavanagh & Cooney, LLP<br>10 Dorrance Street, Suite 400<br>Providence, RI 02903 | mhorne@hcc-law.com |
| **Counsel for Residential Customer Group ("RCG") and Great Lakes Renewable Energy Association ("GLREA")** | | |
| Don L. Keskey, Esq.<br>Brian W. Coyer, Esq. | University Office Place<br>333 Albert Avenue, Suite 425<br>East Lansing, MI 48823 | donkeskey@publiclawresourcecenter.com<br>bwcoyer@publiclawresourcecenter.com |