An Assessment of Connecticut's Hydrogen and Electric Automobile Purchase Rebate Program for 2023 and 2024

March 2025
Pursuant to C.G.S. sec. 22a-202(f)

Connecticut Department of Energy and Environmental Protection

CHEAPR
Connecticut Hydrogen and Electric Automobile Purchase Rebate

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CHEAPR 2023 and 2024 Legislative Report

Executive Summary

This annual report is intended to satisfy the requirements of Connecticut General Statutes (C.G.S.) Sec. 22a-202 (f)[1] for the Connecticut Hydrogen and Electric Automobile Purchase Rebate Program (CHEAPR) for calendar years 2023 and 2024. This report provides information on the status and effectiveness of the CHEAPR program. CHEAPR, initially developed to complement the state's regulatory framework for low and zero emission vehicles, is an important component of the overall strategy for Connecticut to meet its air quality and climate change goals and to spur access to more energy-efficient transportation options for Connecticut residents. The program is designed to provide a point of purchase incentive to Connecticut consumers as the market for light-duty vehicles continues to transition from internal combustion engine vehicles to light duty electric vehicles (EV). This ongoing transition is-critical to meeting Connecticut's mandatory climate targets.[2]

The Department of Energy and Environmental Protection (DEEP) conducts regular evaluations of the CHEAPR program and has issued annual reports that are available on the CHEAPR program website at CHEAPR - Resources. Additionally, the CHEAPR program maintains program statistics which can be accessed at this link. The goal of this document is to integrate DEEP's regular annual program reviews with the new requirements under C.G.S. section 22a-202(f). Pursuant to this section, this report discusses the status of CHEAPR, the effectiveness of the program, participation data, and the environmental benefits accruing to environmental justice communities and communities overburdened by air pollution.

This past year, Connecticut saw interest in EVs skyrocket. During the three-year period from July 2021 through July 2024, EV registrations increased by over 200 percent and hybrid vehicle registrations increased by 162 percent. Over the same time period, DEEP saw a nearly 75 percent year-over-year increase in CHEAPR Rebate+ grant uptake for new electric vehicles, and a 123 percent year-over-year increase in CHEAPR Rebate+ grant uptake for used electric vehicles. The Rebate+ program incentivizes affordable EVs and hybrids for low to moderate-income residents. This report highlights how the CHEAPR program is helping build the EV market in Connecticut and reduce emissions from the transportation sector.

This report also highlights opportunities to further strengthen the program as we work to ensure that it can close the EV affordability gap for low-to moderate-income (LMI) communities. DEEP is already undertaking this reorientation at the programmatic level. DEEP will include more education in how EVs can save Connecticut citizens money, provide more convenience, and show that electric transportation is a strong option when making car buying decisions.

[1] The statutory section requires the Commissioner to evaluate the CHEAPR Program on an annual basis and submit the report to the environment and transportation committees. The annual report must include the status and effectiveness of the program including information on program participation and the environmental benefits accruing to environmental justice communities and communities overburdened by air pollution.

[2] For Connecticut climate reduction targets, see C.G.S. section 22a-200a.

The report also outlines several opportunities for program improvement, including:

1. Continuing the evolution of the program to expand access to low- to moderate-income individuals
2. Maintaining a sustainable budget to meet increasing resident demand, that avoids program pauses or curtailment due to consumer interest outpacing funding. Retaining program continuity is important for both consumers and dealers.
3. Enhancing program outreach in environmental justice communities including strengthening and expanding partnerships with community-based organizations.
4. Increasing program participation rates and voucher redemption rates.
5. Increasing uptake in the used EV market.
6. Expanding the CHEAPR program to include fleets, supporting a pilot fleet program DEEP will be initiating in 2025.

Moving forward, the success of the CHEAPR program will be increasingly important. Beginning with the 2026 model year, car manufacturers will no longer be under a regulatory framework in Connecticut that requires the sale of zero-emission vehicles. This is because the current Zero Emission Vehicle Regulation in Connecticut only applies through 2025, and Connecticut has not adopted the California Clean Cars II standards going forward. The availability of incentives will be critical to achieving the environmental and public health benefits gained from the deployment of cleaner cars-a critical strategy to meet federal health-based air quality standards, and in achieving Connecticut's mandatory climate targets.

DEEP also wants to acknowledge the current uncertainty around the federal programs that support EV manufacturing and deployment, which could impact this program in the future. While this report largely assesses the CHEAPR program retrospectively, it also identifies these future uncertainties in federal policies where applicable.

Background

Connecticut's transportation sector is the largest source of statewide greenhouse gas (GHG) emissions, responsible for 42 percent in 2022, the most recent year for which data is available.[3] Reducing GHG emissions from the transportation sector is required to achieve Connecticut's economy-wide targets of at least 45 percent below 2001 levels by 2030[4], and 80 percent below 2001 levels by 2050[5]. These requirements were established in the 2008 Global Warming Solutions Act (GWSA) and the 2018 Act Concerning Climate Change Planning and Resiliency. These emissions reductions also help to reduce other harmful air pollutants necessary to attain both the 2008 and 2015 National Ambient Air Quality Standard (NAAQS) for ground-level ozone.[6] While emissions

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3 2022 Connecticut Greenhouse Gas Inventory

4 Public Act 18-82, An Act Concerning Climate Change Planning and Resiliency, sec. 7, codified at Conn. Gen. Stat. § 22a-200a

5 Ibid

6 40 C.F.R. parts 50-52 and 58; see also 42 U.S.C. §§ 108-109

from other sectors have decreased over time, transportation sector emissions have continued to increase, rising 10 percent from 2020 levels.[7]

CHEAPR Rebate Levels
For the duration of the review of this report the CHEAPR rebate levels were:

BEVs
- Standard Rebate: $2,250
- Rebate+ New: $4,500
- Rebate+ Used: $3,000

PHEVs
- Standard Rebate: $750
- Rebate+ Used: $5,000

As of January 1, 2025, CHEAPR incentive levels have changed. Please see the Program Website for reference.

Looking Ahead: Federal Policy Framework and Potential Impacts of the Trump Administration and Congressional actions on the CHEAPR Program, and CT access to Affordable EVs
A comprehensive assessment of the CHEAPR program would be incomplete without addressing the potential for major shifts in federal policy towards EVs that could significantly impact the CHEAPR program, as well as the maturation of the national and Connecticut EV markets since the CHEAPR program was launched in 2015. This section provides a brief overview of these potential shifts, which could effectuate a national pivot from both existing policies emphasizing decarbonization and electrification. These shifts could also impact current market trends, which reflect increasing consumer demand and consumer choice in EV vehicle models, as well as lower cost options that achieve parity with the cost of traditional internal combustion engine (ICE) vehicles.

EPA's Light-Duty Vehicle Rules
On March 20, 2024, the Environmental Protection Agency (EPA) finalized new multi-pollutant emissions standards for light-duty and medium-duty vehicles, set to commence with the 2027 model year and carry through the 2032 model year. These regulations will significantly reduce GHG emissions and other pollutants, thereby enhancing air quality and public health while accelerating the transition to cleaner vehicle technologies. While these standards are set to commence with the 2027 model year, the Trump Administration's recently released Executive Order Unleashing American Energy – The White House has the potential to disrupt this timeline.

Corporate Average Fuel Economy (CAFE) Standards
On June 4, 2024, the U.S. Department of Transportation's National Highway Traffic Safety Administration issued new vehicle fuel economy standards that will increase 2% per year for model years 2027-2031 for passenger cars, while light trucks will increase 2% per year for model years 2029-2031. Weakening these standards would allow automakers to produce more fuel-inefficient vehicles, increasing climate pollution and delaying the transition to cleaner technologies.

[7] 2021 Connecticut Greenhouse Gas Emissions Inventory, see: deep_ghg_report_90-21_pre-22.pdf (ct.gov)

Federal EV Subsidies

Current federal policies support EV adoption using monetized tax credits to reduce the up-front vehicle costs. The recently issued Executive Order Unleashing American Energy – The White House identifies the removal of subsidies under Section 2(e) as part of the administration's policy objective.[8] Implementation of these policy measures would impact the current market including consumer demand, model availability and overall, will slow the current growth trajectory of the EV market.

California's Unique Authority to Set Vehicle Emission Standards

California has unique authority under the federal Clean Air Act to adopt emission standards for new cars and trucks that are more stringent than EPA's standards, provided EPA issues a waiver of preemption to California. States with air quality challenges, like Connecticut, are authorized to adopt and implement the California standards in their states, provided this EPA-issued waiver is in place. As of this writing, eleven states have adopted the most current set of California standards applicable to the 2027-2035 model years.[9] EPA has approved California's most recent waiver request;[10] however, President Trump's recently released Executive Order Unleashing American Energy – The White House calls for the termination of California's waiver authority.[11] California has exercised this regulatory authority for over fifty years, and many states struggling with pervasive air quality challenges have chosen to adopt the California standards both as an environmental and public health measure as authorized under the federal Clean Air Act.[12]

Impacts on EV Infrastructure Development

Federal grant funding for EV charging infrastructure under the National Electric Vehicle Infrastructure (NEVI) program has been rescinded, potentially slowing nationwide efforts to expand EV charging infrastructure. Lack of adequate public charging infrastructure is often cited as an impediment to EV adoption. [13]

Changes to any of the federal policies identified above could have significant impacts to overall EV supply, demand, cost and the CHEAPR program, increasing the importance of incentives if federal incentives are eliminated, or decreasing demand for EV's if federal policies make them a less affordable option. DEEP along with the CHEAPR Board and other stakeholders will be closely

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9 See, § 177 States (https://ww2.arb.ca.gov/sites/default/files/2019-03/177-states.pdf)

10 See California State Motor Vehicle and Engine Pollution Control Standards; Advanced Clean Cars II; Waiver of Preemption; Notice of Decision (December 17, 2024)

11 Section 209(b) of the Act provides that the Administrator, after notice and opportunity for public hearing, shall waive Federal preemption for California to enforce new motor vehicle emission standards and accompanying enforcement procedures unless certain criteria are met.

12 Trump and California draw battle lines around electric cars – POLITICO, and Regulating Automotive Emissions: Part I – What to Expect Under the Second Trump Administration | BakerHostetler, and Trump's EV Battle With California Has Implications for Entire Industry - Business Insider

13 Overcoming one of the biggest barriers to scaling EVs | World Economic Forum and A new EV survey: What consumers want in charging | McKinsey

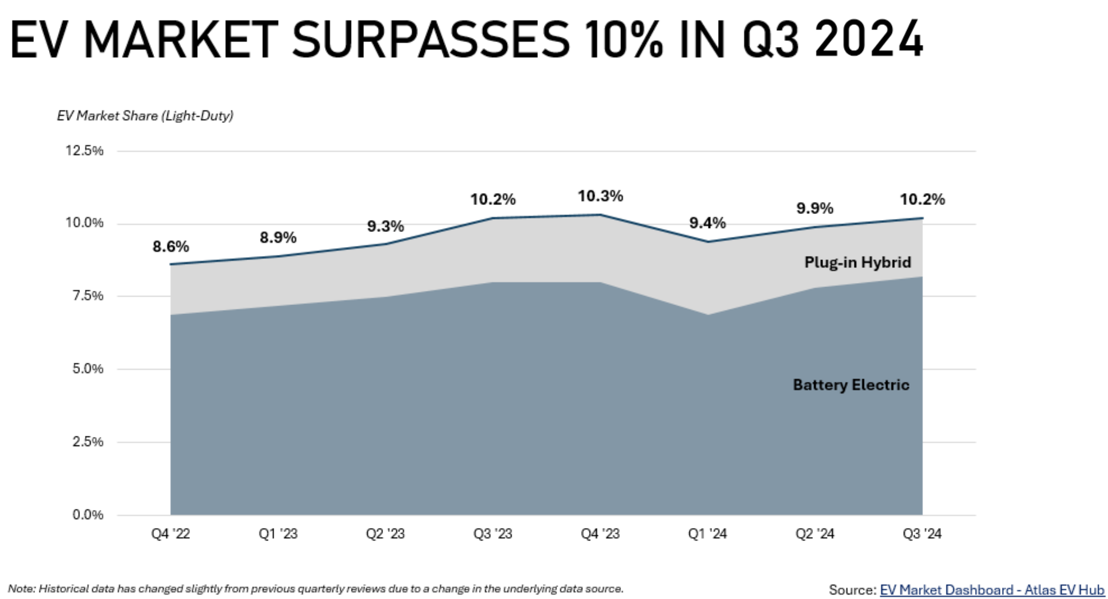
monitoring these changes for long-term implications. The CHEAPR Board will make state-level policy recommendations, as needed, to further advance EV policy in Connecticut.

Market Trends in EV Sales

National Market

The sale of EVs in the U.S. has been on an upward trajectory throughout 2024. In Q3 of 2024, EV sales represented 10 percent of the national market share. This growth is driven by several factors, including increased consumer awareness of environmental benefits and operating savings, expanded federal and state incentives such as tax credits, and a growing availability of EV models across various price ranges. Additionally, advancements in charging infrastructure and reductions in battery costs have made EVs more accessible and practical for a broader set of consumers. Automakers' strategic focus on electrification has also played a crucial role in meeting the rising demand for sustainable transportation options.

Figure 1: National EV Market Share 2022 - 2024



States that Exceed 10 percent EV Market Share

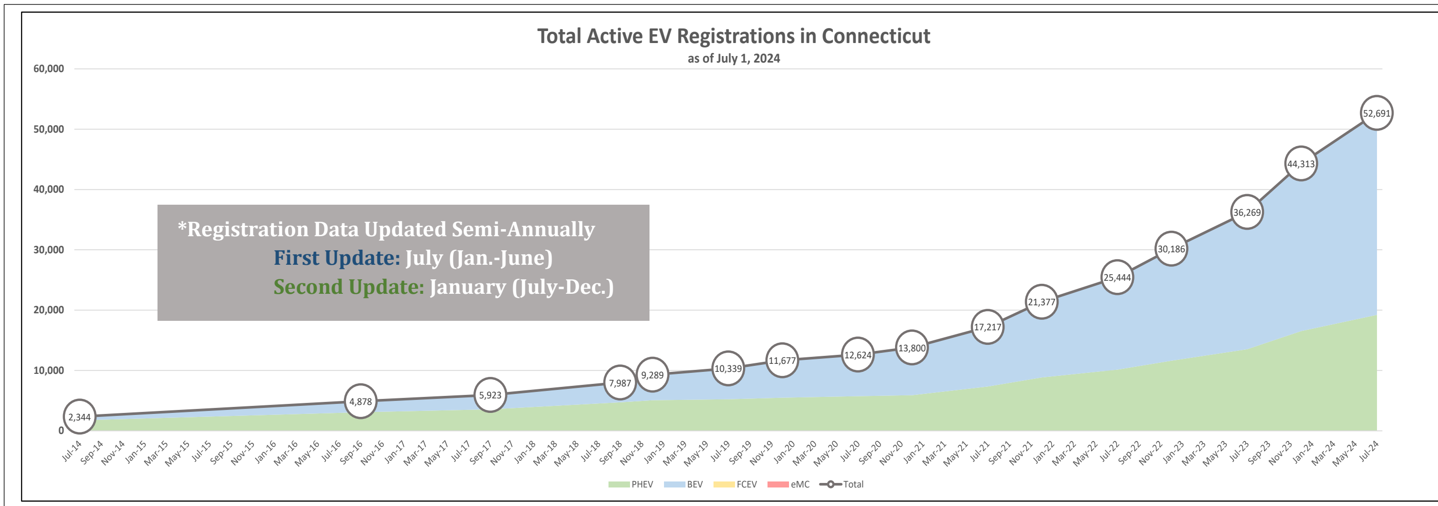
In Q3 of 2024, there were 14 states that exceeded the national EV sales benchmark of 10 percent. These states included: Colorado, California, Washington, the District of Columbia and Oregon. States that are above the national average for the quarter have adopted a combination of progressive policies, infrastructure investments, and consumer incentives. Many have also adopted California's Clean Cars II program, which mandates stricter emissions standards and sets ambitious EV adoption targets. State-level incentives, like tax credits, further encourage consumers to purchase EVs. Additionally, these areas boast well-developed charging infrastructure, making EV ownership more convenient. Strong public awareness campaigns about the environmental benefits of EVs and active support from local governments also contribute to higher adoption rates. Together, these factors create a supportive ecosystem for EV growth, outpacing national trends.

Colorado has implemented a comprehensive suite of policies to achieve a 27 percent EV market share in the third quarter of 2024. The state offers substantial financial incentives, including a $5,000 tax credit for most EV purchases, with an additional $2,500 credit for new EVs priced under $35,000, effective January 1, 2024.[14]

In 2024, sales of EVs in Connecticut for Q1-Q3 remained steady at 11 percent of sales. DEEP also tracks EV registration trends over time. While sales data reflects the number of EVs purchased in a given period, registration data reveals the total number of EVs currently on the road, offering a more accurate picture of the current vehicle fleet. Registration data can also help policy makers assess how many EVs are actively contributing to reductions in emissions and fuel consumption. Additionally, registration data can highlight regional variations in EV adoption, helping to identify areas with strong adoption and those in need of more targeted incentives or charging infrastructure. It also provides insights into the longevity of EVs in use, informing maintenance and recycling needs as the fleet grows older. Furthermore, tracking registrations allows for better forecasting of future market trends and demand for services like charging infrastructure.

The Connecticut Department of Motor Vehicles (DMV) provides updated vehicle registration data to DEEP on or about the first of January and July each year. DEEP derives the number of new EV registrations from this data. As of the last update, there were about 53,000 EVs registered in Connecticut which is an EV growth rate of over 45 percent from July 2023.

Figure 2: Total EV Registrations in Connecticut from July 1, 2014 to July 1, 2024



EVs Registered in CT on:

EV Type	7/1/2014	9/14/2016	9/1/2017	9/24/2018	12/31/2018	7/1/2019	12/31/2019	7/1/2020	12/31/2020	7/1/2021	12/31/2021	7/1/2022	12/31/2022	7/1/2023	12/31/2023	7/1/2024
PHEV	1,723	3,066	3,549	4,705	5,063	5,220	5,480	5,722	5,893	7,321	8,827	10,126	11,615	13,510	16,517	19,211
BEV	621	1,811	2,371	3,280	4,208	5,099	6,172	6,874	7,880	9,861	12,513	15,268	18,509	22,695	27,709	33,386
FCEV	0	1	3	2	2	2	3	3	3	3	3	6	5	3	3	3
eMC	ND	ND	ND	ND	16	18	22	25	24	32	34	44	57	61	84	91
Grand Total	**2,344**	**4,878**	**5,923**	**7,987**	**9,289**	**10,339**	**11,677**	**12,624**	**13,800**	**17,217**	**21,377**	**25,444**	**30,186**	**36,269**	**44,313**	**52,691**

[14] New CO electric vehicle tax credit kicks in 2024

As noted in Figure 2, of July 1, 2024, there had already been an 18 percent increase in EV registrations, on track with percentage increases for the same time periods in 2022 and 2023, 18 percent and 20 percent, respectively. From mid- 2015 to June 2024, active EV registrations have grown by approximately 50,300 vehicles and CHEAPR incentives were issued for 16,128 of these EVs.

CHEAPR has provided rebates for approximately 31 percent of all EVs purchased in the state, however it is worth noting that not all EVs qualify for the program due to MSRP caps. CHEAPR's participation rate, defined as the number of vehicles that have gotten a rebate that are eligible for the program, is tracked in CHEAPR yearly reports available on the program website.[15.] The CHEAPR participation rate peaked at 34 percent in the 2022-2023 time period. During this same period, national EV sales rose to a peak of 16 percent, showing the effectiveness of CHEAPR in accelerating EV adoption in Connecticut.[16]

Looking Back at the CHEAPR Program: Program Status and Data Analysis

EV Program Statistics

Table 1: Program Statistics of CHEAPR from 2015 to November 2024

Program Summary

Select a vehicle category to filter visuals	Total Amount		Rebates		Percent	
	New	Used	New	Used	New	Used
PHEV	$6,714,500	$13,500	6,099	12	33.6%	9.9%
BEV	$28,103,500	$327,000	12,049	109	66.4%	90.1%
Total	$34,818,000	$340,500	18,148	121	100.0%	100.0%

New EVs	18,148
Used EVs	121
Standard Rebate	17,489
Rebate+ New	659
Rebate+ Used	121

The following section includes statistics for the CHEAPR program which can be found on the CHEAPR Statistics webpage. The statistics track incentives from the inception of the program and cover several program metrics such as incentives issued, vouchers per vehicle type- including battery electric vehicles (BEV) and plug-in electric vehicles (PHEV), and new and used vehicle vouchers. CHEAPR program statistics also include information on the eBike rebate program. In 2023, the inaugural eBike program provided $750,000 in funding exclusively to income qualified residents or residents of environmental justice communities. DEEP launched Round 2 of the eBike

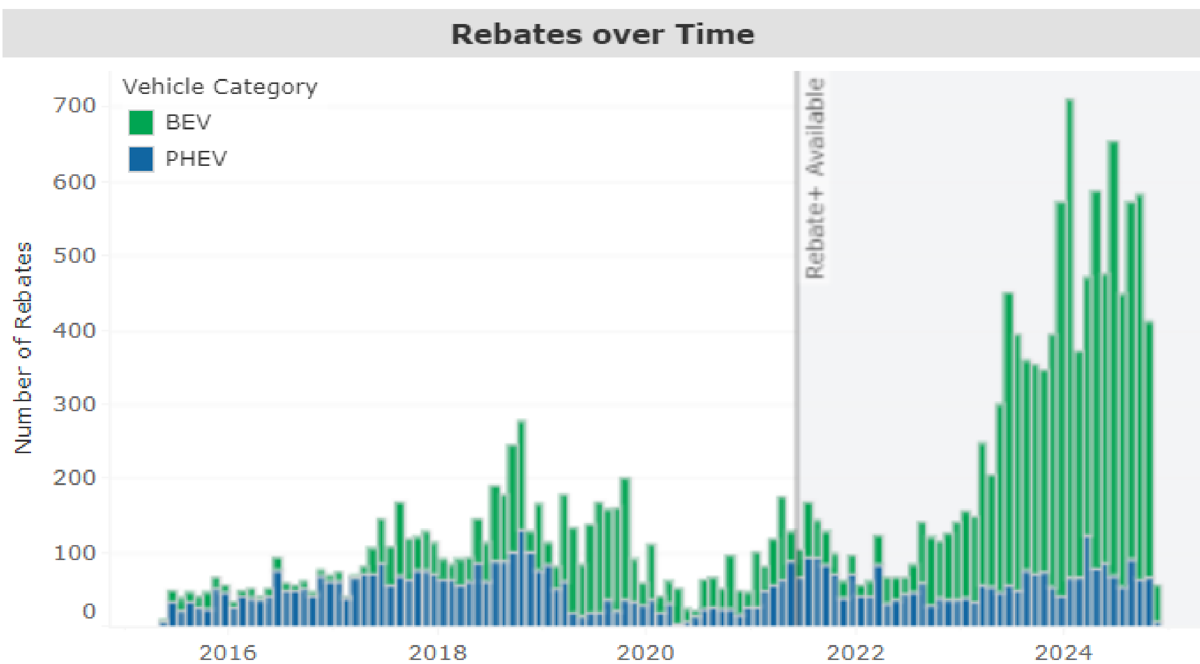
[15] Connecticut eBike Program at page 44
[16] Electric vehicles and hybrids surpass 16percent of total 2023 U.S. light-duty vehicle sales - U.S. Energy Information Administration (EIA)

program in 2024 and is currently awarding vouchers. While statistics for the 2024 program will be available in next year's report, statistics for the 2023 program are included in the subsection below.

Table 1 tallies the funding from the CHEAPR program allocated to incentives per EV type, the number of rebates redeemed for new and used vehicles and the percentages of each over the course of the program since its inception in 2015. On the right, the small table breaks down how many new and used EVs were purchased or leased through the program and the number of Standard rebates given compared to Rebate+.[17] Battery Electric Vehicles (BEVs) account for the majority of rebates issued through the CHEAPR program and represent 96 percent of all rebates issued. In June 2021, DEEP expanded the program to include rebates for income qualified applicants as well as used EVs and based on the most recent data, there is a steady increase in uptake for the Rebate+ New and Rebate+Used incentives reflecting greater accessibility and awareness of the program within EJ communities.

Comparing Popular Types of Electric Vehicles Battery Electric Vehicles (BEVs) and Plug-in Hybrid Electric Vehicles (PHEVs)

Figure 3: Comparison of BEV and PHEV Rebates in CHEAPR from 2015 to November 2024



The CHEAPR program has offered Connecticut consumers rebates for both BEVs and PHEVs. Both are popular types of electric vehicles, but they operate differently. BEVs rely entirely on an electric motor powered by a rechargeable battery, with no internal combustion engine (ICE). They produce

[17] Any Connecticut resident, with a valid Connecticut driver's license, is eligible for the CHEAPR "Standard Rebate." This incentive is for the purchase or lease of a new EV from a registered Connecticut car dealership or direct sales from an Original Equipment Manufacturer (OEM). A "Rebate+" incentive is an additional incentive for Connecticut residents who are: 1) A resident of an Environmental Justice Community or a Distressed Municipality, 2) A participant in a qualifying state or federal income qualifying program or 3) Have income less than 300percent of the Federal Poverty Level.

zero tailpipe emissions and typically offer longer electric ranges. In contrast, PHEVs combine an electric motor with an ICE, allowing them to operate in electric-only mode for short distances before switching to gasoline for extended range. While BEVs depend solely on charging infrastructure, PHEVs offer flexibility for drivers who may not always have access to chargers, making them a transitional option toward full electrification.

Figure 3 above is a graph from the program statistics website shows the number and distribution of rebates since the program began with BEVs noted in green and PHEVs noted in blue. Over the course of the program, an increasing number of incentives have shifted from PHEV to BEV as more models of BEVs have become available and Tesla's have been shown to be an exceptionally popular EV. Overall, CHEAPR rebates for BEV vehicles have dominated the program compared to PHEVS with roughly 90 percent of the incentives being applied towards the purchase of a full battery electric vehicle rather than PHEVs at on average, less than 10 percent of total rebates.

Geographic Distribution of CHEAPR Incentives in Connecticut

DEEP also tracks the location of EV incentives on a geographic basis. This information is important to understand the distribution of EVs, as well as the potential air quality and GHG reduction benefits. One of the important objectives of the CHEAPR program is to encourage EV adoption, and analyzing the distribution of incentives allows DEEP to assess whether the program ensures equitable access across urban, suburban, and rural areas. Urban regions with higher vehicle density can see significant reductions in greenhouse gas emissions and pollutants like nitrogen oxides when EV adoption increases, leading to improved air quality and public health outcomes. Conversely, rural areas may require targeted incentives to overcome barriers such as limited charging infrastructure. This data-driven approach allows policymakers to align incentives with environmental justice goals, maximize air quality benefits, and accelerate the state's transition to a cleaner transportation future.

Figure 4: Rebate Distribution Map by Zip Code from 2015 to November 2024

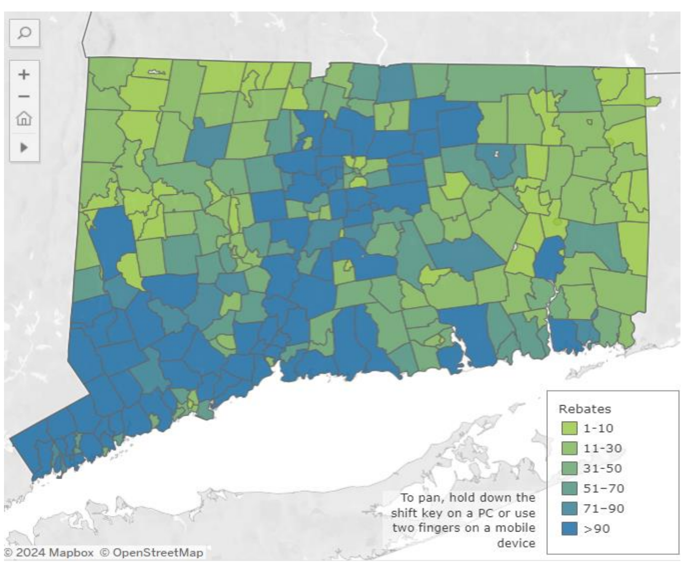
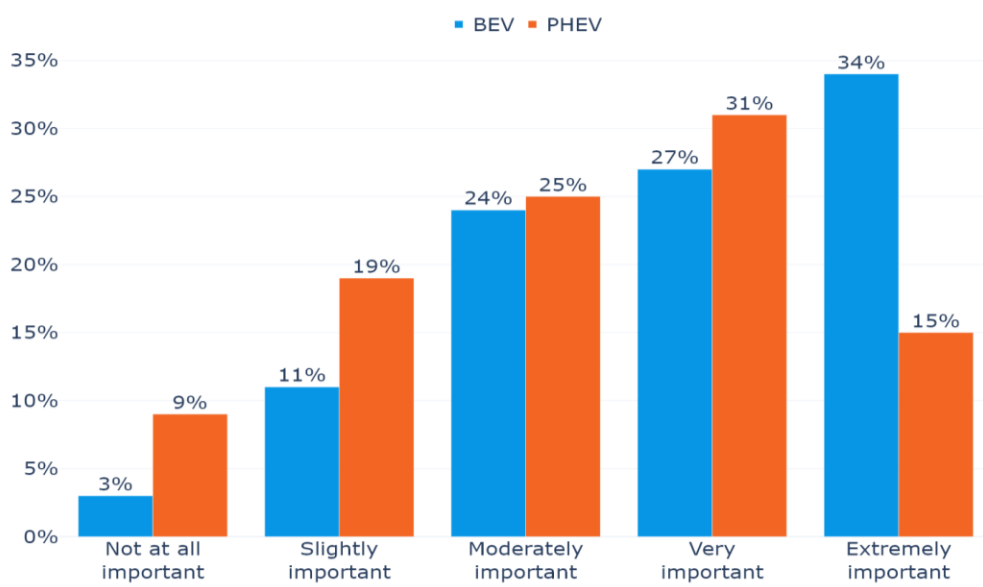


Figure 4 above is a color-coded map identifying the number of incentives issued by consumer zip code. As the key indicates, the darker shades of blue indicate that more residents have received an EV incentive through CHEAPR.

As noted above, geographic distribution of incentives provides valuable insights into patterns and trends for EV adoption. It also provides useful information that can inform effective planning for Connecticut's electric distribution system and help inform policy makers on how concentrated EV adoption in certain areas can increase demand on local electricity distribution systems, and impact grid capacity. By mapping the CHEAPR incentives and sharing information on EV adoption trends, utilities and policymakers can identify regions requiring upgrades, such as enhanced transformers, substations, or localized renewable energy integration. This data also supports strategic placement of EV charging stations to meet current and anticipated demand, ensuring equitable access while preventing grid bottlenecks. Proactive planning based on geographic data helps create a resilient electric infrastructure capable of supporting widespread EV adoption.

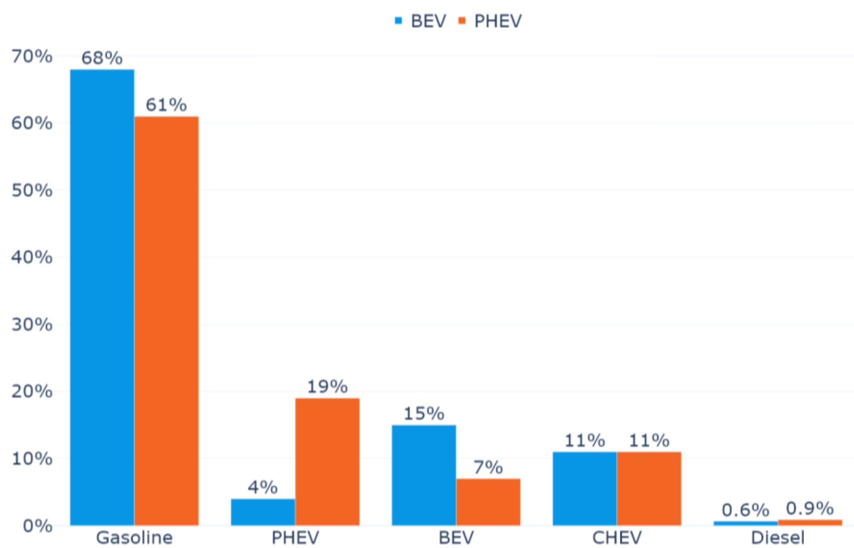
Figure 5: Significance of Rebate Availability in Purchasing an EV



All recipients of a CHEAPR incentive receive a survey as part of the program. In Figure 5 above, CHEAPR participants were asked how important the CHEAPR rebate was in their EV purchasing decision, a concept known as "rebate essentiality." The percentages of respondents that purchased or leased a BEV or PHEV that rated the rebate as "very" or "extremely" important were 61 percent and 46 percent, respectively. Over one-third of BEV respondents rated it "extremely" important.

Additional information around the effectiveness of the CHEAPR program at improving air quality can be drawn by determining the number of rebate recipients who are transitioning from gasoline-powered vehicles to EVs. Survey respondents were asked the fuel type of their previous vehicles, and most respondents used gasoline vehicles (68 percent of BEV drivers and 61 percent of PHEV drivers); however, a considerable amount (11 percent) of both BEV and PHEV drivers previously drove conventional hybrids. Roughly 4 percent of BEV drivers indicated that they had previously owned a PHEV, which could indicate increasing comfort with electric vehicle technology.

Figure 6: Fuel Types of Participants' Previous Vehicles



CHEAPR survey respondents were also asked about the purpose of their rebated EV. For BEV drivers and PHEV drivers, 79 percent and 84 percent, respectively, responded that the vehicle was purchased or leased to replace a previous vehicle. This indicates that gasoline fueled vehicles are being replaced.

From these responses, DEEP can reasonably infer that that CHEAPR program has been effective at replacing gasoline vehicles, increasing comfort with emerging technologies and has shown significant rebate essentiality, meaning that but for the incentive most respondents would not have purchased an electric vehicle.

Program Participation

Overall Participation

As of May 31, 2024, CHEAPR has issued $28,544,500 for the purchase or lease of 15,299 EVs to since the inception of the program in 2015, as depicted in Table 1. The same table breaks down the number of new EVs, and the number of Rebate+ incentives compared to the Standard rebate.

CHEAPR Participating Dealers

Dealers serve as principal partners in the program as all rebate applications are processed through a dealership or by an OEM under a direct consumer sale. DEEP has worked with the Connecticut Automobile Retailers Association (CARA) throughout the program to ensure that almost all new car dealers are enrolled in the program.

Figure 7 shows all enrolled dealers as well as the number of rebate applications that have been applied for at that dealership

Figure 7: Rebates by Dealership Distribution Map from 2015 to November 2024

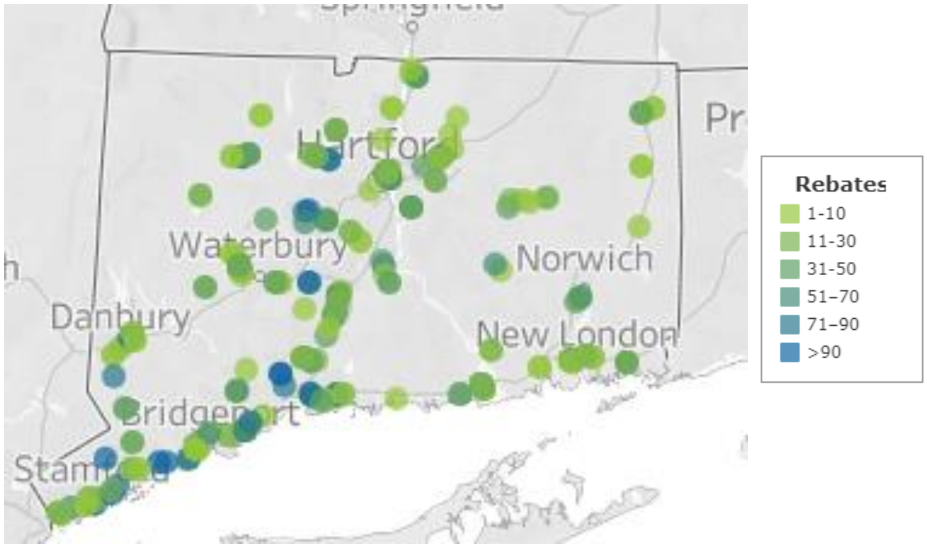


Figure 8: Top 20 Participating Dealers

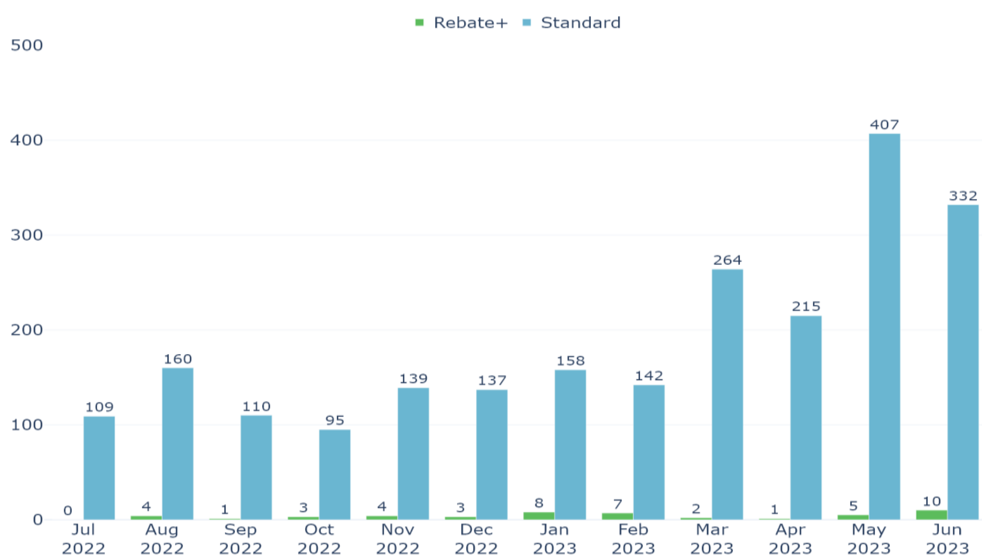
Top 20 Rebate CT Dealerships	
Lynch Toyota	460
A-1 Toyota	431
Westbrook Toyota	260
Middletown Toyota	252
Toyota of Stamford	242
Danbury Hyundai	229
Hoffman Toyota	229
Richard Chevrolet, Inc.	229
Maritime Chevrolet	202
Premier Kia	184
Karl Chevrolet	179
Brandfon Hyundai	174
New Country Toyota of Westport	158
Executive Kia	153
Toyota of Wallingford	153
Torrington Toyota	143
Colonial Motors Inc	140
Crowley Nissan	140
Honda of Westport	129
Ingersoll Auto of Danbury	126

Figure 8 lists of the top twenty dealerships enrolled in the Program. Most are located in central and southwestern Connecticut. From the twenty top dealerships listed on the CHEAPR statistics website, there have been a total of 3,475 rebates awarded, which is approximately 25 percent of the total amount distributed. Meanwhile, Tesla is the top selling OEM within CHEAPR and through their direct sales, they have processed 4,062 rebates as of February 2024 which is about 29 percent of the total amount distributed through the program.

Rebate+ Participation

In 2020, Connecticut adopted legislation codifying the CHEAPR pilot program which can be found in Section 22a-202 of the Connecticut General Statutes[18] and is funded through fees on new motor vehicle sales and motor vehicle registration renewals. The newly reestablished CHEAPR incentive program launched on June 7, 2021, and consisted of three different incentive categories for low-to-moderate income individuals. Currently, demand for Standard rebates far outnumber Rebate+ rebates. Rebate+ applications began to increase in May 2023 when the program shifted Rebate+ from a post-purchase incentive to one available at the point-of-sale via a prequalification voucher process. This program change has contributed to lowering the upfront acquisition cost of an EV for Rebate+ applicants, which has contributed to increased utilization of Rebate +, which data showed continued through the end of 2023.

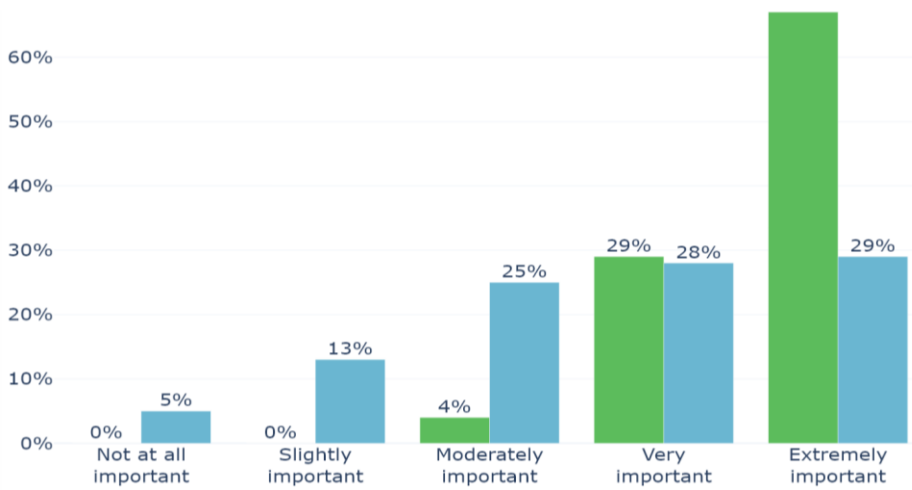
Figure 9: Standard vs. Rebate+ Participation from July 2022 through June 2023



Survey data indicates "rebate essentiality" is more important for Rebate+ participants as they were especially likely to rate the rebate as "extremely important" to acquiring an electric vehicle. This further underscores the importance of incentives for Connecticut residents with low to moderate income and for residents of Environmental Justice Communities and Distressed Municipalities (see Figure 10 below).

[18] Sec. 22a-202. Connecticut Hydrogen and Electric Automobile Purchase Rebate program

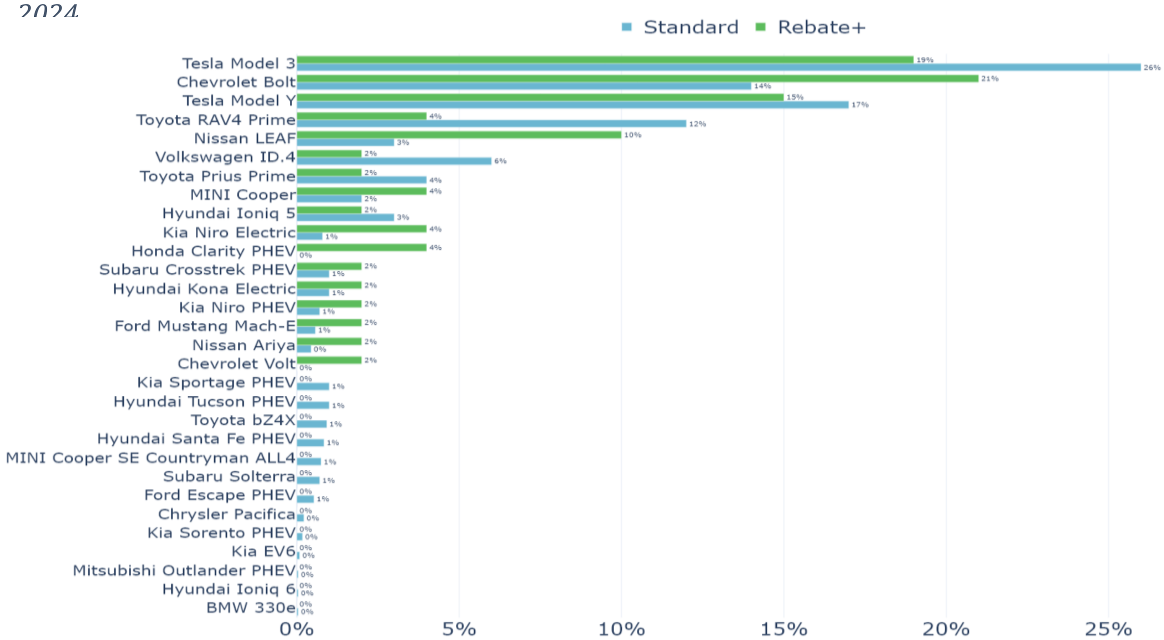
Figure 10: Significance of Rebate Availability with Standard vs. Rebate+



All survey participants who received a Rebate+ rebate indicated in survey data that CHEAPR was "moderately important" or higher to their EV purchasing decision. This shows the program is achieving its goal of providing significant support to Connecticut residents who need it most. CHEAPR is helping EVs reach cities and lower-income residents who might not necessarily be able to acquire an EV otherwise.

Figure 11 featured below shows vehicle model broken out by Standard rebate and Rebate+. This data may help Connecticut dealers identify changes in vehicle availability over time as well as by incentive type. While Rebate+ has a relatively small sample size, the Chevrolet Bolt, a more modestly priced BEV offered during this period is the most popular model, whereas the Tesla Model 3 is the most popular model among Standard rebate recipients.

Figure 11: Standard and Rebate+ Incentive Breakdown by Vehicle Model through November 2024

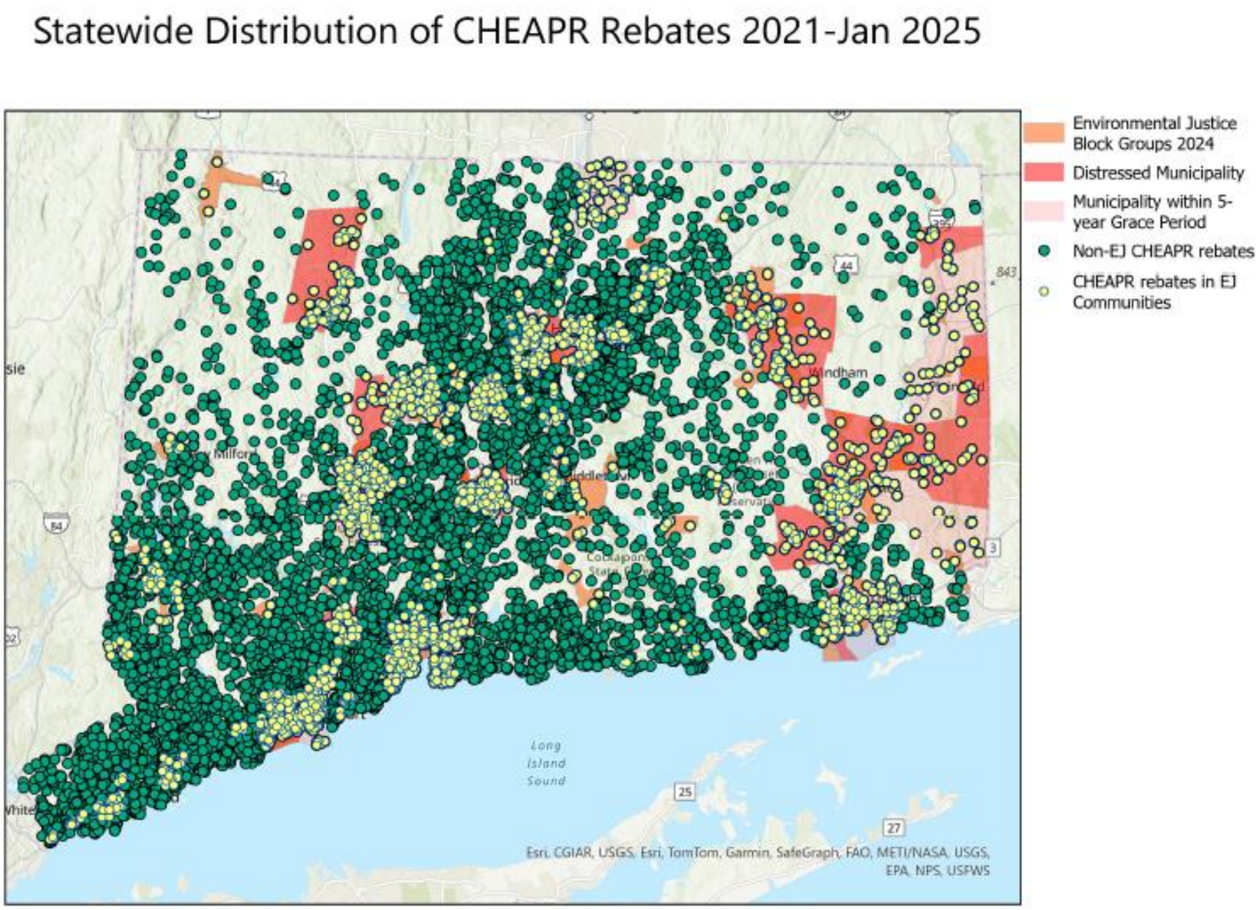


Environmental Justice (EJ) Community Participation

One of the eligibility paths for the enhanced Rebate+ is residency in an EJ Community census block or in a Distressed Municipality. DEEP measured the number of rebates going to these neighborhoods since 2021 when the program was updated to increase EV penetration in these areas. Since Rebate+ began in 2022, 1,544 rebates have been utilized by residents of EJ communities, which is 22 percent of all rebates since P.A. 22-25 went into effect. When considering rebates that took place before these changes, the percentage increases slightly.

The map pictured in Figure 12 shows the locations of all CHEAPR rebates that have been processed since Rebate+ began in June 2021 through the first week of January 2025. The darker green represents rebates redeemed outside of any EJ block or Distressed Municipality while the yellow shows rebates redeemed in those areas specified by color in the key.

Figure 12: Rebates Redeemed in EJ Communities from June 2021 to January 2025



Distressed Municipality Participation

Table 2: Distressed Municipality Program Summary post-2021 to April 2024

Program Summary

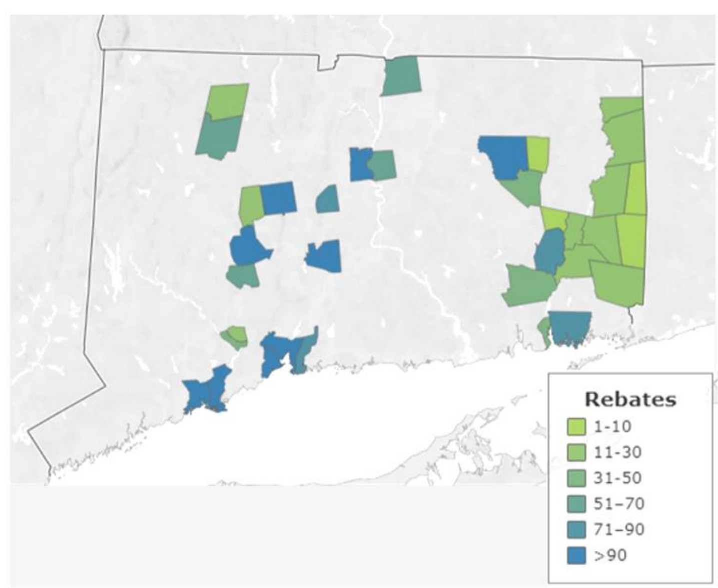
Select a vehicle category to filter visuals	Total Amount		Rebates		Percent	
	New	Used	New	Used	New	Used
PHEV	$264,500	$4,500	319	4	28.5%	12.1%
BEV	$2,175,250	$87,000	799	29	71.5%	87.9%
Total	$2,439,750	$91,500	1,118	33	100.0%	100.0%

New EVs	1,118
Used EVs	33
Standard Rebate	916
Rebate+ New	202
Rebate+ Used	33

Table 2 contains information on rebates that specifically went into Distressed Municipalities since Rebate+ was implemented on June 7, 2021. Since that point, $2,531,250 in funds has gone to CHEAPR participants who reside in these communities for 1,151 new and used EVs. 61 percent of the funding that has gone to these areas has been since the creation of Rebate+.[19]

The color-coded map in Figure 13 is like the map shown previously in Figure 4 except only Distressed Municipalities are featured. There are thirty-five identified Distressed Municipalities in Connecticut with ten currently in a five-year grace period since they no longer meet the definitional requirements. In all thirty-five areas, residents have received CHEAPR rebates. Residents in all but eight Distressed Municipalities also received eBike vouchers in 2023.

Figure 13: Rebate Distribution Map in Distressed Municipalities as of February 2024



CHEAPR and its extensions are proving to be effective for reaching residents within environmental justice and distressed municipalities who are more overburdened by air pollution

[19] Throughout the history of CHEAPR, a total of $4.14 million in incentives have gone to participants who reside in Distressed Municipalities from a total of 2,184 rebates of both new and used EVs.

than residents of other parts of Connecticut and will benefit from reduced transportation sector emissions.

Electric Bicycle (eBike) Incentive Program

For completeness, DEEP has included a review of the eBike program which was funded out of the budget for CHEAPR. The first round of eBike incentives was launched in 2023 as part of the state's efforts to advance e-mobility goals, improve air quality and reduce GHG emissions. EBikes offer a sustainable alternative for short-distance commutes and helps to promote equitable alternatives by making clean mobility options more accessible to a broader population.

Program Statistics

Table 3 shows the results of the eBike Incentive Program that launched on June 28, 2023. After the initial launch, the application portal was opened for ten days during which DEEP received 1,343 Standard Voucher applications and 5,051 Voucher+ applications. Due to high demand, the program prioritized Voucher+ applications and those applicants were awarded funds first in the order of applications received until the allocated budget was exhausted.[20] The table shows 371 EJ Community/Distressed Municipality vouchers have been approved for a total of $556,5000, five Income Qualification vouchers have been approved for a total of $7,500 and 92 Public assistance Program vouchers have been approved for a total of $138,000. The fourth column shows the number of approved vouchers redeemed at a participating retailer and the fifth column shows the total value of redeemed vouchers.

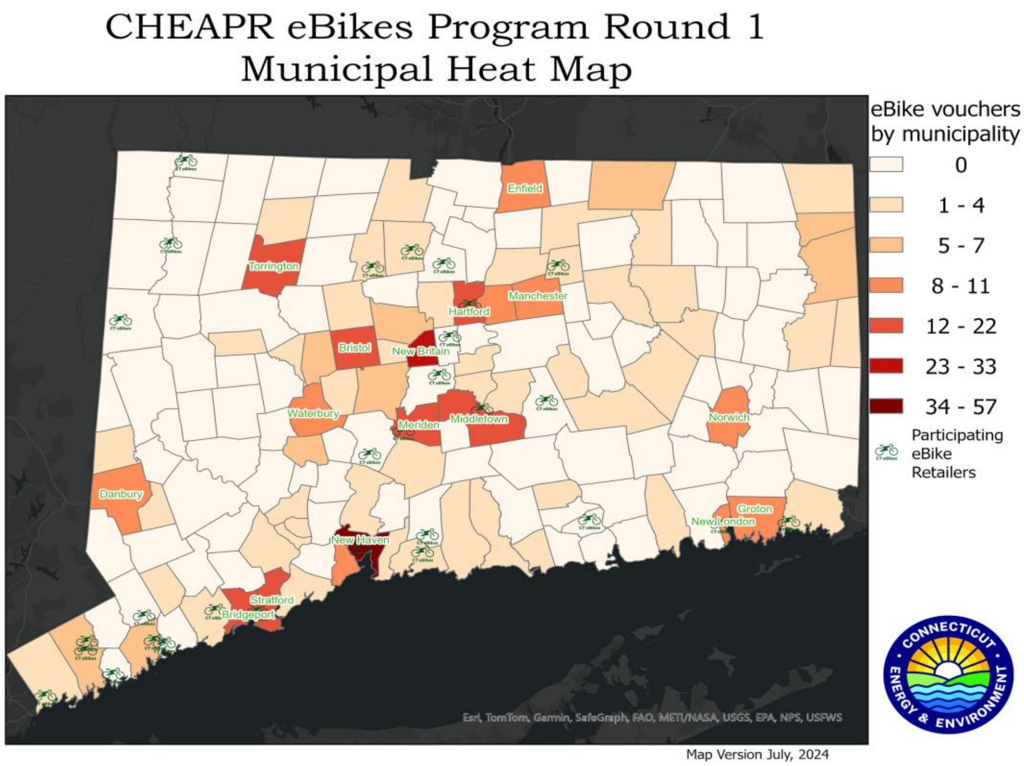
Table 3: Program Statistics of Round 1 of the eBike Incentive Program

Total Vouchers Approved	Total Vouchers Redeemed	Total Funds Redeemed
468	422	$621,128

	Funds Approved	Vouchers Approved	Vouchers Redeemed	Funds Redeemed
EJ Community/Distressed Municipality	$556,500	371	341	$501,866
Income Qualification	$7,500	5	5	$7,276
Public Assistance Program	$138,000	92	76	$111,986

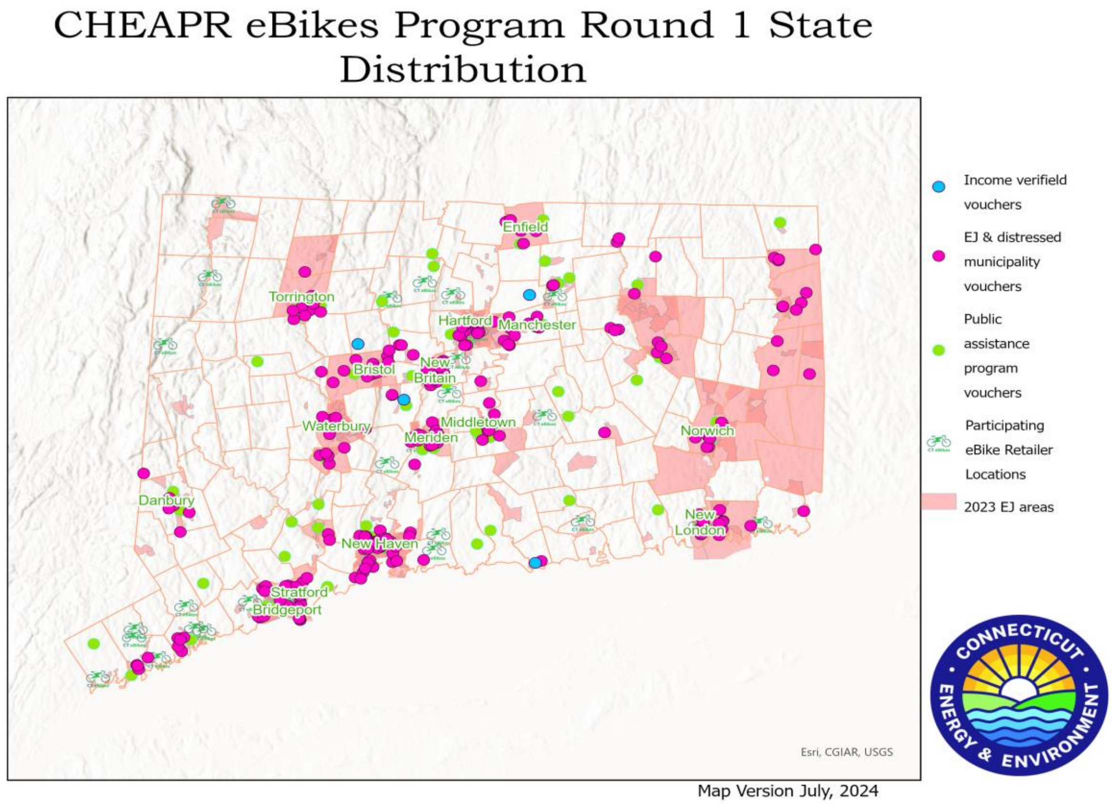
[20] eBike Program Terms and Conditions

Figure 14: eBike Incentive Program Round 1 Voucher Distribution Heat Map



The color-coded map in Figure 14 shows the number of Voucher+ eBike incentives that were distributed across Connecticut by city. As the key indicates, the darker shades of orange mean more residents have received an eBike incentive through CHEAPR. Vouchers were consolidated in large cities including Hartford, Waterbury, Norwich, and Bridgeport, which is consistent with the program's focus on environmental justice areas. Figure 15 below shows the distribution across the state using the metrics of the different pathways that were taken to qualify for an eBike voucher.

Figure 15: eBike Incentive Program Round 1 Voucher+ Redemptions Distribution Map



Environmental Benefits in EJ Communities

CHEAPR survey results noted above show that EVs are replacing gas powered and older vehicles. As such, DEEP can use existing methodologies and information to determine emission reductions from the program.

According to data reported by the U.S. Department of Energy and the Energy Information Administration (EIA), gasoline-fueled vehicles have annual emissions of 12,594 pounds of carbon dioxide (CO_2) per vehicle while a PHEV emits approximately a third of that annually and a BEV emits approximately only a seventh of that amount.[21] NO_x emissions are also important to note since it plays a critical role in the creation of surface level ozone (smog). The U.S. Department of Transportation reports that vehicles fueled by gasoline typically emit over 8 pounds of NO_x a year while PHEVs emit just over 5 pounds. BEVs are unique in this case as they have no tailpipe NO_x emissions.[22]

Connecticut DMV reported that there were 2,252,152 total passenger vehicle registrations in 2023. From the data shown in Figure 2, we know that there were 16,517 PHEVs registered in Connecticut in 2023 as well as 27,709 BEVs.

[21] U.S. Department of Energy, Alternative Fuels Database, Average Annual Vehicle Emissions
[22] U.S. Department of Transportation, Bureau of Transportation Statistics

DEEP estimated total annual tailpipe emissions for each category of vehicles in Table 4.

Table 4: Estimated Emissions Reductions from all 2023 CT EVs

Table 4: Estimated Emissions Reductions from all Registered EVs in Connecticut in 2023

Types of Vehicles	Gasoline	PHEV	BEV	Totals
Total Personal Vehicle (PV) Registrations (as of Dec 31, 2023)	2,207,839	16,517	27,709	2,252,152*
CO^2 Annual Emissions per Vehicle (metric tons)[23]	5.71	1.86	0.78	8.35
Total CT CO^2 Emissions in 2023 (metric tons)	12,612,373.70	30,687.17	21,731.09	12,664,791.96
CO^2 Emissions that *all* EVs reduced (metric tons)	N/A	63,666.89	136,557.74	200,224.63
NO_x Annual Emissions per Vehicle (pounds)[24]	8.30	5.23	0	13.52
Total CT NO_x Emissions in 2023 (pounds)	18,316,232.34	86,329.73	0	18,402,562.08
NO_x Emissions that *all* EVs reduced (pounds)	N/A	50,695.30	229,873.86	280,569.16

*Includes de minimis unlisted categories (CNG, LNG, eMC etc.)

In 2023, non-EV passenger vehicles generated 12,612,373.70 metric tons of CO_2 while the combination of PHEVs and BEVs generated 52,419.26 tons of CO_2, a significant decrease. And with BEVs producing no direct tailpipe NO_x emissions while PHEVs use some gasoline and therefore produce emissions 63 percent of the time[25], there is a substantial difference in NO_x emissions on a per vehicle basis.

When looking at the total potential emissions savings, EV technology reduced direct GHG emissions in Connecticut by 200,224.63 tons of CO_2 emissions from 2023 alone.[26] To put these reductions into

[23] U.S. Department of Energy, Alternative Fuels Database, Average Annual CO^2 Emissions

[24] U.S. Department of Transportation, Bureau of Transportation Statistics, Average Annual NO_x Emissions

[25] ICCT: Real-World Usage of Plug-In Hybrid Electric Vehicles

[26] Manufacturers don't differentiate very well between PHEVs and non-PHEVs. The calculations therefore don't take non-PHEVs into account and consider that their emissions output would be lower than a gasoline-fueled vehicle.

perspective, the amount is equivalent to eliminating the emissions of the number of passenger vehicles registered in the town of Stratford as of 2023 (35,105) or registered in the town of Manchester (35,422).[27]

Looking at calendar year 2023, CHEAPR rebated a total of 4,338 EV vehicles between three different vehicle types. The table below shows the emissions reductions vehicles will provide in the next year.

Table 5: Estimated Emissions Reductions from all 2023 CHEAPR Rebated EVs

Types of CHEAPR Rebate Vehicles	eBike	PHEV	BEV	Totals
Total CHEAPR Incentives in 2023	422	655	3,261	4,338
Total CO^2 Emissions by 2023 CHEAPR Vehicles (metric tons)	0.24	1,216.93	2,557.48	3,774.65
CO^2 Emissions that CHEAPR EVs reduced (metric tons)	194.15	2,524.78	16,071.12	18,790.05
Total NO_x Emissions by 2023 CHEAPR Vehicles (pounds)	N/A	3,423.685	N/A	3,423.685
NO_x Emissions that CHEAPR EVs reduced (pounds)	3,500.912	2,010.195	27,053.256	32,564.363

By looking at the results of estimated emissions reductions from both tables, vehicles rebated through CHEAPR in 2023 will be responsible for over a tenth of the possible CO_2 reductions from all EVs and almost a ninth of all possible NO_x reductions. With CHEAPR responsible for rebating close to 14,000 vehicles overall, the impact of the program is significant.

Distressed Municipalities and EJ Communities are vulnerable to being disproportionately impacted by air pollution as most of these areas are located within, or abut, transportation corridors. Since CHEAPR is helping remove older, gasoline-fueled vehicles from Connecticut roadways and

[27] CT EV Registration Factsheet

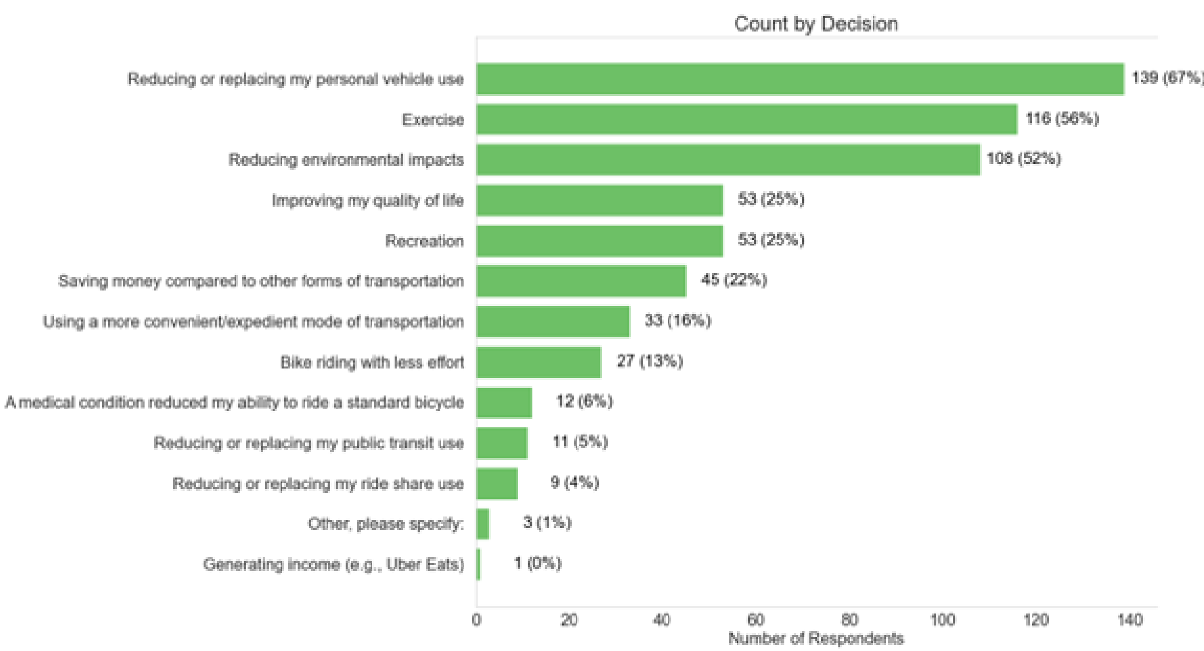
replacing them with newer and more environmentally friendly options, the program is reducing emissions from the transportation sector and creating a positive impact on EJ Communities.

Likewise, eBike vouchers went solely to residents of EJ communities and distressed municipalities. The 422 vouchers redeemed in round one means that 422 eBikes are on the road in EJ communities, partially displacing vehicle emissions, where impacts will be felt the most.

As noted in Table 3, eBike vouchers and funding were distributed to residents who fell into one of three categories: 1) Those residing in EJ Communities/Distressed Municipalities, 2) Those who meet Income Qualification or 3) Those who are enrolled in a Public Assistance Program. Residents of EJ Communities were the most funded and awarded category. Notably, fifty-six (56) eBike vouchers were redeemed in New Haven, the largest amount distributed to any town or city and a current Distressed Municipality.

When eBike Incentive Program participants were surveyed, respondents were asked to indicate their top three reasons for choosing to purchase an eBike. As seen in Figure 16 below, the top reason selected was to replace or reduce the use of a motor vehicle and the third most selected reason was to reduce environmental impacts.

Figure 16: Top Surveyed Responses for Purchase of an eBike



From the survey data provided and shown in Figure 16, most voucher recipients will use eBikes to reduce their vehicle miles travelled (VMT), which will create a positive environmental impact. With eBike usage emitting about 534 pounds of CO_2 a year[28] with no direct tailpipe NOx emissions, there will be emission reductions attributable to the eBikes incentivized under CHEAPR. These reductions are shown in Table 5. Research conducted at the University of British Columbia has found that each eBike adopted is expected to result in approximately 1,014 pounds of net CO_2

[28] Carbon Footprint of eBikes – Polytechnique Institute of Paris

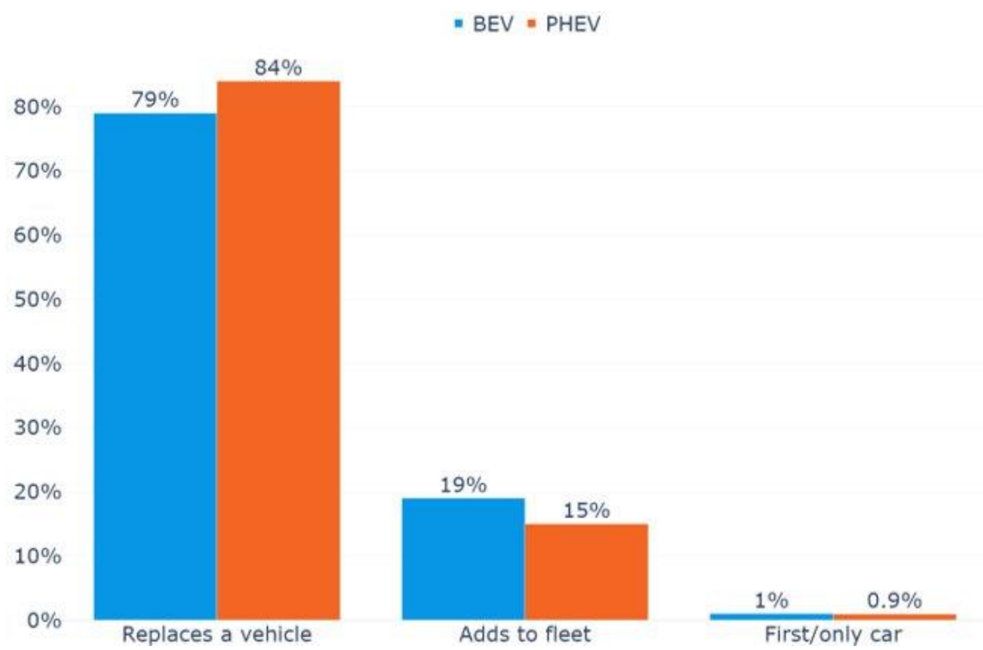
emissions reductions per year.[29] Resultantly, the 422 eBikes deployed under the first round of the eBike Incentive Program will result in 194.15 tons of CO_2 reductions. For context, the number of deployed eBikes is equivalent to removing approximately forty-two (42) cars from Connecticut roadways.

Environmental Benefits in Communities Overburdened by Air Pollution

*EVs and eBikes are **replacing** ICE vehicles and reducing emissions from gasoline powered vehicles*

As noted above in Figure 6, EVs and other electrified products incentivized by the CHEAPR program are replacing older, gasoline-fueled vehicles. For example, 68 percent of BEV drivers and 61 percent of PHEV drivers said their previous vehicle before their EV was fueled by gasoline, the highest answered category of all possible fuel types. Survey respondents were also asked about the purpose of their new EV as seen in Figure 17.

Figure 17: Survey of CHEAPR Rebate Recipients' Reasons for Program Participation



For BEV and PHEV drivers, 79 percent and 84 percent, respectively, responded that the vehicle was purchased or leased to replace a vehicle and not add on to their current fleet. This shows that EVs are replacing ICE vehicles and are, in turn, also reducing emissions. As noted in Table 5, ZEV technology deployment made possible by CHEAPR has resulted in over 18,000 tons of CO_2 emissions reductions in 2023, much of which occurred in communities that are overburdened by air pollution.

[29] REACT (Research on Active Transportation) Lab University of British Columbia

There is an indication of increasing comfort with electric vehicle technology.

Most respondents indicated they used gasoline vehicles (68 percent of BEV drivers and 61 percent of PHEV drivers); however, a considerable amount (11 percent) of both BEV and PHEV drivers drove conventional hybrids prior to their acquisition of a plug-in vehicle as shown in Figure 6. Roughly 4 percent of BEV drivers indicated that they had previously owned a PHEV as well. This could indicate that a subset of Connecticut drivers is becoming increasingly comfortable with EV technology. As OEMs offer plug-in technology in more vehicle platforms, access to publicly available charging increases,[30] and costs are reduced by economies of scale, the percentage of drivers converting to this technology will increase. Tables 4 and 5 highlight the potential air quality impacts from 2023 in terms of CO_2 that CHEAPR played in reducing emissions, equivalent to taking 3,289 ICE vehicles off the road, an amount similar to the number of cars registered in Preston, Connecticut (3,291).[31] Areas that are overburdened by air pollution will continue to be positively impacted by the increasing numbers of EVs displacing ICE vehicles on Connecticut roadways.

Opportunities for Program Improvement

1) Continued Program Evolution to Expand LMI Access

   As the timing of price parity[32] between gasoline vehicles and EVs comes into focus, DEEP is making programmatic changes that, within existing program funding levels, decrease standard incentive levels and increase incentives to LMI residents through the Rebate+ program. Section 54 of Public Act 24-81 directs DEEP to amend the CHEAPR program to adopt incentive levels for LMI residents that are at least 200 percent of the standard rebate.[33] This important statutory change must be balanced against finite program resources that are directed to other programs such as Fleets and eBikes. However, DEEP will continue to explore opportunities to utilize CHEAPR to support access to cleaner transportation options for LMI residents.

2) Enhanced Program Outreach in EJ Communities

   Continued and expanded outreach is required to better reach residents of environmental justice communities and distressed municipalities. DEEP is looking to expand on its outreach and communication efforts, including by providing program materials in languages other than English. Section 54 of Public Act 24-81 expands DEEP ability to use CHEAPR funding for community engagement.

   Continued and expanded outreach is also needed to provide information about EVs, identify concerns about the new technologies, and reduce or remove barriers. Range anxiety and access to charging remain critical barriers for prospective EV purchasers who live in multi-unit dwellings.

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30 Alternative Fuels Data Center: Electric Vehicle Charging Infrastructure Trends (energy.gov)
31 CT EV Registration Factsheet
32 Price parity is defined as point at which an automaker can theoretically build and sell an EV with the same margin as a comparable combustion vehicle, assuming no subsidies are available.
33 2024HB-05523-R00-HB.PDF (ct.gov)

3) eBike Incentive Program – Lessons Learned

DEEP learned a great deal from Round 1 of the eBike program and internalized the helpful and constructive feedback from both bike shops and eBike advocates. Based on this feedback, DEEP included several enhancements as part of the second round, including holding an open application period and implementing a lottery system to both resolve the first come first served "click race" while enabling DEEP to prioritize income eligible applicants (i.e., applicants who either meet the categorical eligibility standard or who have household incomes less than 300 percent of the federal poverty level). This ensured income eligible applicants would be prioritized over both applicants who solely resided in an EJ community or applicants who submitted standard applications. As such, DEEP expects the entire second round of funding to be awarded to income eligible applicants. DEEP also reached out to community-based organizations to assist applicants with limited internet accessibility.

4) Program Budget

Program sustainability is important for both consumers and retailers. Some states must pause their programs, create wait lists, and disrupt cash flow for retailers. CHEAPR is one of the few incentive programs in the country that has never had to shut down or go on hiatus due to budget concerns. Consistent availability of funding maintains the momentum of the program, as well as providing Connecticut automotive dealers with certainty and continuity as the dealers are important partners in the CHEAPR program.

5) Program Participation Rates

CHEAPR and its extended programs are a success story for Connecticut and its environment. eBike vouchers were all claimed within minutes of the portal opening in 2023 due to strong demand. Standard rebates for EVs have been used steadily and 50 percent of all Rebate+ vouchers have been issued since the beginning of 2024. Businesses and municipalities are looking forward to the launch of CHEAPR fleets. There was also great interest in the second eBike incentive round. CHEAPR serves many different groups in Connecticut and should continue to meet those expectations through expanded outreach and education. DEEP is in the process of developing further outreach to engage with EJ communities in response to feedback from the Legislature and community stakeholders.

6) Importance of EV Incentives on EV supply in Connecticut when there is no regulatory framework requiring OEMs to bring EVs to this market.

Beginning with the 2026 model year, OEMs will no longer be under a regulatory program that requires the sale of EVs in Connecticut. As such, it is imperative to keep incentives in place to support consumer demand and encourage OEMs to continue to supply EVs to Connecticut for sale. Connecticut is currently running a significant risk that EV's will be in limited supply in the state. Data shows States that impose regulatory standards on OEMs have higher EV sales rates than states that have not adopted the standards. DEEP will continue to track EV sales and registration data and communicate with Connecticut dealerships to determine if Connecticut's failure to adopt ACC II leads to either economic or air quality disbenefits.

7) Used Vehicle Uptake and Secondary Market Uptake

As new EV sales increase and older EVs come off initial leases, more EVs will end up on the secondary, used vehicle market. This expanding market of used vehicles will be important to increase access of EVs to LMI households and many others who do not purchase new vehicles and instead rely on the secondary market. To support both EV adoption among LMI and EJ communities as well as to keep off-lease EVs in Connecticut, the Rebate+Used incentive increased as of January 1, 2025. Details are available here.

8) Expansion to include Fleets

The CHEAPR Fleets program required by P.A. 22-25 is under development. With the fleet program, municipalities, businesses and tribal entities will be able to apply to secure post-purchase funding to support the purchase of EV vehicles for their use. Prioritization will be given to fleets operating in EJ neighborhoods, fleets with older vehicles or fleets with high VMT. Allowing CHEAPR to expand to new programs will help EVs reach areas and businesses that might not have thought it was a viable option before. Through the structure of these programs, DEEP will be able to collect more data on EV usage and help foster sustainable transportation options for business, nonprofit, tribal nation and municipal vehicles. Pending development of the fleets program, DEEP submitted a $2,000,000 grant application to the United States Department of Energy under the Energy Efficiency Community Block Grant Program to support municipal fleet EV procurement. DEEP intends to use this grant opportunity as a programmatic springboard for a broader fleet program under CHEAPR.

Conclusion

CHEAPR is an effective tool to help build the EV market in Connecticut, and to reduce emissions from the mobile source sector. For two consecutive calendar years, DEEP has seen significant increases in program uptake including the number of rebates provided, LMI participation in the Rebate+ program, and emission reductions from the program, and early data from CY 2024 show these trends continuing. With CHEAPR's overarching goal to reduce criteria pollutant and greenhouse gas emissions and support Connecticut's clean air goals, the program is achieving its intended purpose. Most importantly, it's helping the state transition to sustainable transportation and providing essential support to allow the purchase of electric vehicles for all Connecticut residents.

There are opportunities to expand the program, to focus on LMI communities and do more in its future to make a more significant impact, which DEEP is in the process of undertaking at the programmatic level. DEEP will include more education in how EVs can save Connecticut citizens money, provide more convenience, and show that electric transportation is not just a concept but a strong option when making car buying decisions.