



## **Final Report – Accelerating Light-Duty Zero Emission Vehicle Adoption in Maryland – Phase 2 – Program Design**

Assistance for the Greenhouse Gas Mitigation Working Group of the Maryland Commission on Climate Change

Project funded by: The Nature Conservancy, Maryland/DC Chapter

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# Acknowledgements

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- The Nature Conservancy, Maryland/DC Chapter (TNC) and Maryland Department of Environment (MDE) Climate Change Program staff for their guidance, regular involvement, and insights during the project
- Maryland Commission on Climate Change (MCCC), Greenhouse Gas Mitigation Working Group (MWG) members and stakeholders for their participation in the project stakeholder meetings and provided input and insights
- The Maryland Motor Vehicle Administration for provided used vehicle sales registration data
- Many other stakeholders who provided insights into various specific industries involved in the Zero Emission Vehicle (ZEV) value chain in Maryland

# Executive Summary - Overview

## Project Objective

- The Phase 2 work focuses on taking policy recommendations from the (now) Phase 1 project to the next level through program and implementation design with an equity lens when applicable.
- Topic Areas include: 1) ZEV-focused dealer engagement, 2) incentives/initiatives particularly targeting used car markets and low-income buyers, and 3) technical support for fleet conversion.

## Technical Tasks

- State Agency and Mitigation Working Group Engagement
- ZEV-Focused Dealer Engagement Program Design
- Low-Income ZEV Purchase Program Design
- Fleet Electrification Technical Support Program Design

# Executive Summary – ZEV-Focused Dealer Engagement Program Design

## Why a dealership engagement program?

- Dealers are a critical link when it comes to vehicle purchase decisions and to “demystify” misconceptions about ZEVs. As key partners of any midstream program design, they are also instrumental in providing access to financing and incentives.
- A dealer program can engage new and used car dealerships interested in passing the benefit of ZEVs to their customers. A suite of program activities will provide information and resources needed to guide and support participating dealerships as they navigate transformational changes associated with the auto industry moving toward ZEVs.
- A successful program will feature a network of new and used car dealers empowered to sell and service ZEVs through accountability, recognition, customers lead, information and support

## Keys for success

- Do not crowd-out dealers’ limited bandwidth – programs should complement existing programs and initiatives
- Build partnerships - The Maryland Auto Dealer Association, Maryland Independent Automobile Dealers – ensure program is designed, implemented, and evaluated in partnership with direct beneficiaries
- Design a comprehensive dealer engagement program and ensure consistency across ZEV related programming – program consolidated under one single initiative; like a concierge service. Customer-facing ZEV campaigns must also be coordinated with the dealership engagement materials

# Executive Summary – ZEV-Focused Dealer Engagement Program Design

## Proposed program overview

Main program components	Key details
Enrollment, recognition, and oversight	<ul style="list-style-type: none"> <li>Participating dealerships are promoted via customer facing statewide campaign and are provided with customer leads</li> <li>Participating dealerships are committed to pass full benefit of customers' incentives directly to the end user</li> </ul>
Training and educational resources for dealerships	<ul style="list-style-type: none"> <li>A Maryland specific training complements existing offerings and includes a module catering to the specific needs of independent and used car dealerships.</li> <li>Additional support services ensure ease of enrollment and participation for dealerships; completion of training unlocks sales incentives for dealers</li> <li>A Dealers' Guidebook consolidates all dealers and salespeople need to know about ZEVs in one single up to date publication.</li> </ul>
Customer facing material	<ul style="list-style-type: none"> <li>Dealerships are provided with Maryland specific educational material to support the sales process.</li> </ul>
Sales incentive	<ul style="list-style-type: none"> <li>A \$200 incentive per used or new ZEV sale, with at least half of the incentive to benefit the salesperson directly. A cap on the number of incentives per dealership should be considered in Year 2.</li> <li>Enrollment in the dealer engagement program is mandatory.</li> </ul>
Training incentive	<ul style="list-style-type: none"> <li>A one-time \$200 training incentive is provided, with at least half of the incentive to benefit the salesperson directly. Enrollment in the dealer engagement program is required.</li> </ul>
Readiness incentive for used car dealerships	<ul style="list-style-type: none"> <li>Up to \$50,000 are provided to independent used car dealers for Electric Vehicle Supply Equipment investment. Enrollment in the dealer engagement program is required.</li> </ul>

**Estimated incentive budget** – Between \$19.5M for a 3-year program with EV readiness incentive and \$17M for a 3-year program without an EV readiness incentive.

# Executive Summary – Low-Income ZEV Purchase Program Design

## Why an equity incentive program to encourage the adoption of ZEVs?

- An equity incentive program will provide Marylanders with limited financial resources greater access to clean and affordable vehicles. Direct benefits for beneficiaries include lower operating costs, reduced exposure to emissions and access to more reliable vehicles. In the long term the program will increase access to affordable and healthy mobility for car-dependent households and ensure a more equitable distribution of the benefits of ZEVs. A vehicle incentive program can and must work hand in hand with equitable investment in EV charging infrastructure.

## Keys for success

- Stacking and financing – Combine financing, sales tax exemption, federal tax credit and sufficient state incentive(s) to address financial barriers and target affordability
- Build partnerships – Strengthen synergies across groups and work at the junction between climate and social objectives; develop implementation plan with the input of a large set of stakeholders
- Target outreach efforts and prioritize community-based approaches – Build a network of trusted messengers and ensure marketing is adapted to the audience; account for the diversity of any equity segment

# Executive Summary – Low-Income ZEV Purchase Program Design

## Proposed program overview

Main program components	Key details
<b>Beneficiaries</b>	<ul style="list-style-type: none"><li>• For the program to complement rather than supplement other clean transportation policy initiatives, stakeholder engagement and outreach activities should be designed for Marylanders living in rural areas and households who are highly car dependent.</li><li>• Households who earn less than 80% of the statewide area median income (AMI) are eligible. In 2023, this equates to an income of \$89,400 for a 4-person household.</li><li>• Households who earn less than 60% of AMI qualify for a “low-income” adder and receive a higher incentive amount. In 2023, this equates to an income of \$70,500 for a 4-person household.</li></ul>
<b>Income verification process</b>	<ul style="list-style-type: none"><li>• Self-certification with enforcement through spot checking audits.</li></ul>
<b>Incentive delivery and program duration</b>	<ul style="list-style-type: none"><li>• Incentives provided at point-of-sale through participating car dealers; compatible with lease financing or sales</li><li>• Provided in tandem with a sales tax exemption offered to used vehicles</li><li>• Set to operate for at least 4 years. Budget should be sufficient and determined based on (a) expected demand for incentives and (b) incentive amount required to avoid “stop-and-go” effects</li></ul>
<b>Eligible vehicles</b>	<ul style="list-style-type: none"><li>• Aligned with those in place for the <a href="#">federal tax credit</a></li><li>• Used vehicles and plug-in hybrid vehicles are eligible</li></ul>

# Executive Summary – Low-Income ZEV Purchase Program Design

## Proposed program overview

Main program components	Key details		
<b>State incentive amount</b>	Incentives are designed so that transportation costs would not exceed 10% of a typical LMI household budget		
	<b>Income level</b>	<b>New vehicle (EV or PHEV)</b>	<b>Used vehicle (EV or PHEV)</b>
	Up to 80% AMI	\$7,000	\$3,000
	Up to 60% AMI	\$11,500	\$6,000
<b>Opportunities for guaranteed or subsidized financing</b>	<ul style="list-style-type: none"> <li>To maximize the leverage effect of public funding, a dedicated financial product can reduce borrower costs and increase accessibility by underwriting the risk associated with a customer’s default on their loan or lease monthly payments, e.g., a loan-loss reserve</li> <li>Another approach would be a financial product intended to provide liquidity to mitigate the risk of late payments</li> </ul>		
<b>Integration with other ZEV initiatives</b>	<p>A successful program will be integrated/designed in conjunction with:</p> <ul style="list-style-type: none"> <li>Dealer engagement, training and incentives targeting vehicle manufacturer franchise and independent used car dealers</li> <li>Equitable ZEV charging infrastructure investment, including for single family, multifamily, and public charging, and</li> <li>Investment in clean and accessible public transportation for non-car dependent households.</li> </ul>		

**Estimated incentive budget** – Approximately \$625 million over 4 years (average of \$155 M/year) for more than 100,000 incentives delivered to households with low to moderate income - sales volume consistent with the Phase 1 project’s Advanced Clean Cars II policy scenario

# Executive Summary – Fleet Electrification Technical Support Program Design

## Why a State-level fleet electrification technical support program?

- Many fleet vehicles have high usage and fuel use so are good targets to reduce GHG emissions
- Many fleets do not fully understand electric vehicles and charging infrastructure and so are not actively considering ZEVs and/or do not have the time or technical expertise to evaluate
- Utility programs are effective, but have limited impact, and may not be designed to meet the State's goals
- Small fleets (<200 vehicles) tend to not have a dedicated Fleet Manager/consultant to understand/evaluate the fleet to plan, finance, implement, and operate the ZEV transitioned fleet, so need outside support

## Keys for success

- Leverage similar programs' structure and learnings – Use the many current utility and state programs' learnings to guide the development of a Maryland program
- Industry-specific marketing – Small fleets are not NAFA members, so program marketing must target organizations and locations where these fleets frequent. For example, plumbing/electrical/HVAC trade associations/unions, accounting groups, supply houses (Grainger, Home Depot, etc.), and potentially dealerships.
- Connect results to information and funding resources – Transition costs for vehicles and charging infrastructure are high and likely a major barrier to transitioning. The program must connect fleets with educational information and financial incentive information (vehicles, charging equipment, and utility programs) in study outputs to overcome barriers and ensure fleets continue to implement ZEVs post-program participation

# Executive Summary – Fleet Electrification Technical Support Program Design

## Proposed program overview

Main program components	Key details
Fleet size/types	<ul style="list-style-type: none"> <li>Smaller fleets (10-199 vehicles) need the most support</li> <li>Including some larger fleets improves GHG reduction per funding</li> </ul>
Awareness and enrollment	<ul style="list-style-type: none"> <li>Broad marketing campaign email marketing to target fleets where they are likely to use/be during their normal business: direct outreach (cold calls), a coordinated marketing campaign including advertisements on radio, social media, billboards, and promotion at fleet and trade shows, typical target fleet-relevant trade associations/unions, accounting groups, supply houses, and dealerships</li> </ul>
Incentive	<ul style="list-style-type: none"> <li>Maximum of \$20k per fleet. Amount scaled based on fleet's size and complexity</li> <li>Modest referral incentive to encourage participating fleets to promote program to their peers</li> </ul>
Outputs	<ul style="list-style-type: none"> <li>Assessment of existing fleet vehicles, operations, facility, and organizational support for (and/or concerns regarding) fleet electrification</li> <li>Modeling results of financial and emissions savings of recommended ZEV replacements and charging infrastructure, including any eligible incentives (vehicle, charging) and/or savings opportunities (ex. cooperative purchasing)</li> <li>Provide specific vehicle and charging hardware guidance and considerations. Recommend specific ZEV and charging station make/model selections where appropriate</li> </ul>
Program implementer	<ul style="list-style-type: none"> <li>Maryland (likely Maryland Energy Administration) could manage centrally and contract with one or more 3<sup>rd</sup> party consultant(s) to execute</li> <li>Or contract with a 3<sup>rd</sup> party consultant team to manage and execute</li> </ul>

**Estimated budget** – \$2,000,000, likely >100 fleets will be supported since not all studies will be large/complex

# Report Organization

- Acknowledgements
- Core Project Team
- Project Objective and Approach
- ZEV-Focused Dealer Engagement Program Design Recommendations
- Low-Income ZEV Purchase Program Design Recommendations
- Fleet Electrification Technical Support Program Design Recommendations

# Project Team Members

- **Project sponsor** – The Nature Conservancy, Maryland/DC Chapter
- **Direct recipient of project results** – the Maryland Commission on Climate Change, Greenhouse Gas Mitigation Working Group
- **Consultant support team** – Energetics and VEIC

# Energetics

- Since 1979, [Energetics](#) has provided technical analysis and programmatic support for government (federal, state, local) energy programs for advanced stationary, transportation, and manufacturing technologies (**Columbia, MD headquarters, Washington DC office**)
- Engineers, scientists, planners, data analysts, and meeting facilitators/strategic planners
- **Extensive experience in vehicle efficiency and electrified transport technologies** with expertise backgrounds of utilities, universities, and technology developers/ manufacturers & workshop facilitation/strategic planning
- ZEV and transition analysis and planning for states, regions, counties, cities, fleets

# VEIC

- For 36 years, [VEIC](#) has worked with governments, utilities, foundations, and businesses across North America to design and deploy clean-energy services that provide immediate and lasting change (**Vermont headquarters, Washington DC office**)
- Energy efficiency, transportation electrification, building decarbonization, and demand management for a clean and flexible grid, and is a **national leader in transportation electrification policy**
- VEIC's clean transportation team specializes in developing solutions to: 1) **increase ZEV adoption among consumers**, 2) **ZEV incentive program design** and administration, and 3) **address barriers to ZEV adoption among low- and moderate-income and rural households**

# Project Objective

The Phase 2 work focuses on taking policy recommendations from the (now) [Phase 1 project](#) to the next level through program and implementation design with an equity lens when applicable.

Topic Areas include:

1. [ZEV-focused dealer engagement](#)
2. [ZEV incentives/initiatives particularly targeting used car markets and low-income buyers](#)
3. [Fleet electrification technical support](#)

# Project Approach Summary

The project is organized into four technical tasks

## **Task 1 – State Agency and Mitigation Working Group Engagement**

- 3-4 working meetings with small group of key staff (1-2 each) from agencies responsible for program implementation (e.g., MDE, MEA, MDOT, DGS, Planning)
- Gather preliminary input, information, and information sources related to technical tasks. Share information and gather feedback on preliminary program design and issues.
- Present findings to MCCC MWG (June/July)

## **Task 2 – ZEV-Focused Dealer Engagement Program Design**

- Interviews with Maryland auto dealers (association, franchise dealers, used-only dealers) spanning rural to urban to learn more about dealer needs not met (vehicle manufacturer [OEM], etc.)
- Research on similar successful program design/lessons learned elsewhere
- Develop recommended program design

# Project Approach Summary

## Task 3 – Low-Income ZEV Purchase Program Design

- Stakeholder interviews with ~2 low-income supporting organizations or advocates to gather Maryland-specific perspectives to complement existing knowledge
- Analysis of used vehicle market in Maryland to understand size, details, and information on low-income population vehicle purchases
- Research existing regional state and utility low-income programs to determine approach for defining low-income in program design. Determine/describe barriers for low-income purchase of ZEVs.
- Develop recommended program design for low-income purchase incentives of new and used vehicles. Develop recommendations for future consultation with equity stakeholders by TNC/ others.

# Project Approach

## Task 4 – Fleet Electrification Technical Support Program Design

- Stakeholder interviews with vehicle fleet-focused trade associations and/or Maryland fleet managers and *(if needed)* with a Maryland electric utility to gather perspectives
- Research of similar programs in operation/in development (utilities, states). Develop recommendations for technical support program to meet gaps in ZEV transition needs among fleets.
- Develop recommendations for technical support program to meet gaps in ZEV transition needs among fleets

Each task is discussed in a separate section below

# ZEV-Focused Dealer Engagement Program Design – Scope of Work Summary

- Interviews with Maryland auto dealers (association, franchise dealers, used-only dealers) spanning rural to urban to learn more about dealer needs not met (OE, etc.).
- Research on similar successful program design/lessons learned elsewhere
- Develop recommended program design (near- and longer-term objectives, key strategies for success, and possible performance metrics, program components and activities, recommended strategies for dealer engagement, identify opportunities for intersection with other ZEV-related initiatives [e.g., ZEV incentive funding, charging infrastructure installation funding], and estimate of resources needed to operate program [e.g., budget, staff])

# ZEV-Focused Dealer Engagement Program Design – Objectives and Theory of Change

Dealers are a critical link in vehicle purchasing decisions.

A successful dealer engagement program will empower car dealers to sell and service ZEVs.

## **When it comes to a customer’s decision-making process dealers can**

- Provide a firsthand example/reference of ZEVs’ performance and utility for a daily driver vehicle
- Provide overall reassurance to encourage customers who “want to give it a try”
- Guide and advise to support a customer’s final decision when seriously considering a ZEV
- Provide key information on affordability, incentives & financial resources, charging, service, and maintenance

## **Ultimately customers need their car dealer to**

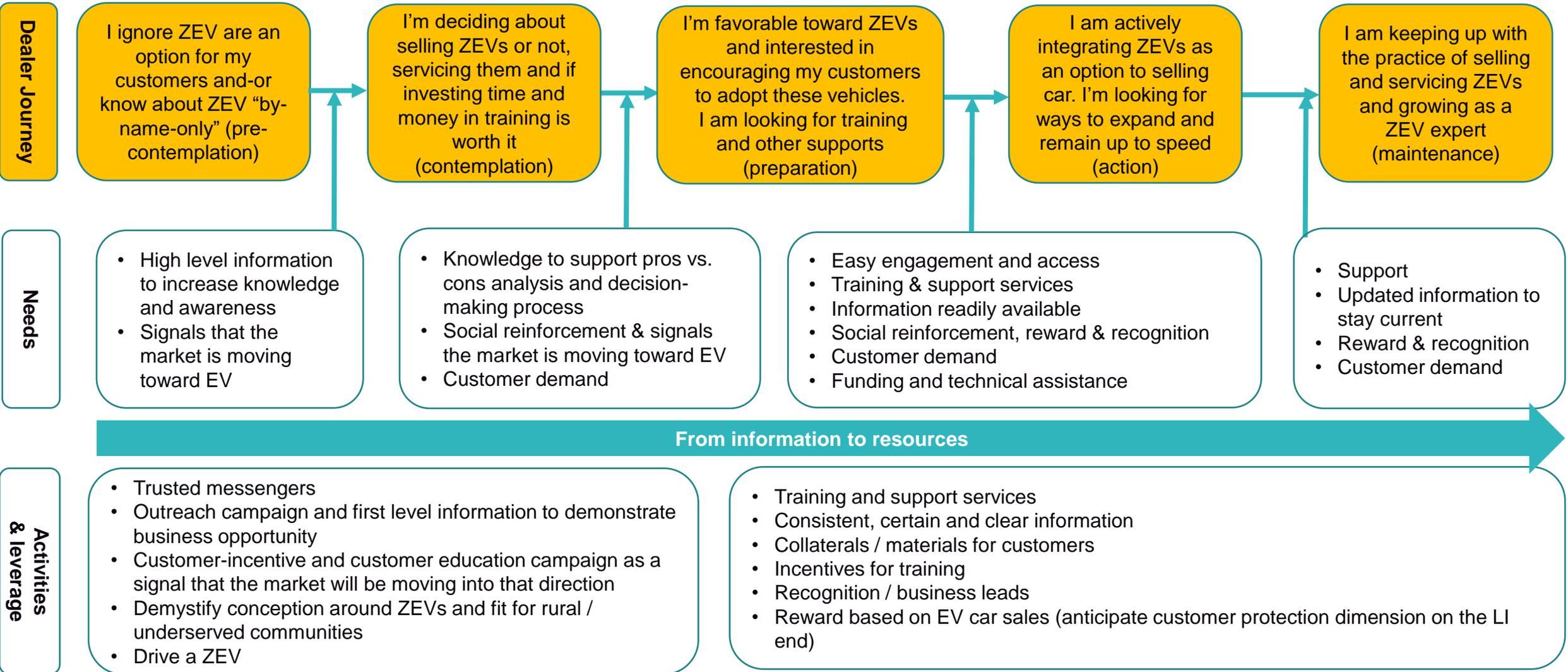
- Be a positive force toward adoption
  - Includes not being discouraged (including implicitly) from buying a ZEV
- Have a sufficient level of ZEV expertise to:
  - Answer key questions
  - “Demystify” known misconceptions about EVs
- Provide access to financing and incentives
  - Customers who are income-eligible for a State incentive may be fearful of falling for predatory lending practices
- Service their vehicle

# ZEV-Focused Dealer Engagement Program Design – Objectives and Theory of Change

## To play this role car dealers need

- Consistent and focused training to support the ZEV sales process and service ZEVs which requires
  - Training from manufacturer on the vehicle and maintenance
  - Time and resources
  - Battery capacity degradation/health information for used EV sales
  - Information to address potential misconception associated with ZEVs (for e.g., needing Level 3 charging)
- Customer-facing marketing and outreach collaterals to support customer education, legitimize information provided, and answer key questions
  - Requires program administrators to provide timely and concise information
  - May require program administrators to offer dealers' support services (e.g., dedicated hotline) to answer ZEV related questions, including on financial incentives.
- Certainty in incentive design (for both customers and dealers)
  - Act as a reliable source of information about federal and state programs and policies
- Sufficient on-site charging equipment – for which customers need
  - Access to trusted electrical contractors experienced with installing charging equipment
  - Dependable utility interconnection process
  - (for people in multi-unit dwellings) available charging on property or very close nearby
- Tools and equipment to service ZEVs
- Vehicle inventory (current and pipeline)

# ZEV-Focused Dealer Engagement Program Design – Selling ZEV: Adoption Model from a Car Dealer’s Perspective



# ZEV-Focused Dealer Engagement Program Design – Car Dealers’ Perspective: Main Takeaways from Interviews

## Car dealers' main concerns

- Automaker requirements for franchisee ZEV sales
- Utility interconnection and grid capacity to serve "clusters" of dealer's charging stations
- Existence of clear communication and smooth processes for customer incentives deployment; stability and certainty
- Customers' satisfaction toward ZEVs. Car dealerships express concerns of being blamed by customers and their need to be confident "people will be happy" with the ZEV
  - Sufficient/widespread customer charging – at home and on the road
- Strength of the ZEV market (increasing interest in ZEVs, constrained supply, and increasing interest rate)
- Maryland’s adoption of the Advanced Clean Cars II rule deployment (and implications for out-of-state vehicle purchases)

## Considerations when designing an engagement program

- Account for Manufacturers-dealerships relationship and align with manufacturer's requirements and offerings
  - Dealers "not doing anything manufacturers are not on board with"
- The Maryland Auto Dealer Association (MADA) expressed an interest in a program combining training, customer resources, and salespersons' incentives above what manufacturers offer

# ZEV-Focused Dealer Engagement Program Design – Creating and Promoting a Dealership Engagement Program: Key Considerations for Success

## Do not crowd-out dealers' limited bandwidth for engagement

- Coordinate with County-level initiatives when existing. For example, Montgomery County is implementing the [“Montgomery County EV Purchasing Co-op”](#).
- Account for training provided by other actors: manufacturers, dealer's association, and national nonprofits

## Build partnerships for promotion and dealership recruitment

- MADA is interested in exploring a partnership for program deployment
- MADA covers mainly new car dealerships (except Tesla)
- Additional trusted partners remain to be identified on the used-market side
  - Engage with the [Maryland Independent Dealers Association](#)

## Design a comprehensive dealer engagement program and ensure consistency across ZEV related programming

- As an example, dealer sales incentives should align with type of vehicle to be incentivized on the customer's side
- Customer-facing educational and outreach campaign needs to be coordinated with a dealer engagement program
- Enroll dealers in a dedicated program
  - Consolidate all program activities under one single initiative
  - Provide visibility to participating dealers
  - Provide an avenue to mitigate risk of price increase resulting from availability of incentive

# ZEV-Focused Dealer Engagement Program Design – Key Program Components

Program component	Program details
Partnerships and oversights	<ul style="list-style-type: none"> <li>• Leverage outreach partners trusted by car dealers to promote Maryland dedicated engagement program</li> <li>• Consult with dealers and related stakeholders to get feedback to design the program and improve it over time</li> <li>• Ensure synergies between customer- and dealership-facing programs; at both State and County levels (for example, customer-facing materials provided to dealers should match customer-facing materials provided direct to the public; and customer point-of-sale incentives need to be easy for the dealer to use)</li> <li>• Participation in State specific training is required for enrollment. Participating dealerships may be required to maintain inventory.</li> </ul>
Dealers' guidebook and other “one-stop-shop” media	<ul style="list-style-type: none"> <li>• “All you need to know in one place” (Charging and utility interconnection, incentive programs for customers and dealers), kept up-to-date</li> <li>• Clear guidance on how to enroll in dealer engagement program and criteria for maintaining participation in the program</li> <li>• Can build on existing <a href="#">Maryland EV website</a></li> </ul>
Maryland-specific training and support services	<ul style="list-style-type: none"> <li>• Maryland-specific training to complement existing initiatives</li> <li>• Dedicated support team to 1) answer questions on customer incentives, 2) enroll in dealer engagement program, and 3) connect to the right organization as needed</li> <li>• "Utility concierge support": information, contacts, and technical support to help dealers work effectively with utilities on Electric Vehicle Supply equipment (EVSE) questions and issues</li> </ul>

# ZEV-Focused Dealer Engagement Program Design – Key Engagement Program Components

Program component	Program details
Dealer incentives program	<ul style="list-style-type: none"> <li>• <b>Sales incentive</b> to benefit salesperson selling ZEV               <ul style="list-style-type: none"> <li>• \$200 per vehicle, part of the incentive may be kept by the dealership, but at least 50% should be required to be passed to the salesperson</li> </ul> </li> <li>• <b>One-time \$200 training incentive</b> for participating in Maryland specific program, part of the incentive may be kept by the dealership, but at least 50% should be required to be passed to the salesperson attending</li> <li>• <b>Up to \$50,000 “Readiness incentives”</b> to support independent used car dealers with EVSE related investments.</li> <li>• <u>Contingent to participation in Maryland training and dealership enrollment in engagement program</u></li> </ul>
“Recognition” program	<p>Promotion of dealers who have participated in Maryland-specific sales training via customer facing education and awareness material</p> <ul style="list-style-type: none"> <li>• Can create different level based on sales volume</li> <li>• Provides customer leads to dealers who respect specific commitment (for e.g., ZEVs selling price in line with Black Book or Blue Book in line, with a commitment to not raise markup because of incentives availability)</li> </ul>
Customer-facing material	<ul style="list-style-type: none"> <li>• Ensure dealers can provide educational material to prospective clients to support the sales process</li> <li>• Develop Maryland-specific material and outreach campaign as needed</li> <li>• Address language and literacy barriers</li> </ul>

# ZEV-Focused Dealer Engagement Program Design – Dealership Training and Support Services

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## Key recommendations for deployment

- Develop training offering with the input of MADA, MidAtlantic Independent Dealers Association, other car dealers associations, and key manufacturers
- Identify gaps in existing manufacturer initiatives, to complement and supplement them. For example, financial incentive for charging infrastructure might be more critical for independent and used-car only dealers who lack support from manufacturers.
- Develop a list of approved existing trainings
- Give credit for participation in State-specific training and incentivize participation
- Offer a dealership “hotline” to quickly answer questions about training and provide ad hoc support

## Existing initiatives

- PlugStar (by Plug-in America) [EV Dealer Training Course](#)
- National Automobile Dealers Association (NADA) and Center for Sustainable Energy (CSE) [EV Sales Training Certification Program](#)
- Assurant [EV Sales Professional Blueprint Course](#)
- Recurrent [Used EV 101 Dealer Training](#)
- Manufacturer-specific: [Ford Electric University](#)

# ZEV-Focused Dealer Engagement Program Design – Training Needs Analysis for a State-Specific Initiative

State-specific dealers' training needs	Dealers' training needs likely to be addressed by manufacturers (existing or in the near future)
<ul style="list-style-type: none"> <li>• Maryland market trends</li> <li>• Utilities' programs (e.g., rates for charging) and interconnection processes</li> <li>• Incentive and financing programs (customer facing)</li> <li>• Maryland customer education campaign</li> <li>• Dealer engagement program and dealer incentives</li> <li>• Addressing financially vulnerable customers' questions about driving, charging and maintaining a ZEV</li> </ul>	<ul style="list-style-type: none"> <li>• ZEV market trends</li> <li>• Selling ZEVs (sales best practices, fundamentals of ZEVs, addressing consumers' questions about driving, charging and maintaining a ZEV)</li> <li>• Servicing ZEVs</li> <li>• Model specific training</li> <li>• Technical assistance and other manufacturer specific engagement programs</li> </ul>

A Maryland program implementer will also need to develop:

- A training module dedicated to the needs of independent and used car dealers who would not have the benefit of a training provided by manufacturers
- A refresher combined with additional resources to help dealers stay current and engaged

# ZEV-Focused Dealer Engagement Program Design – Sales and State-Specific Training Incentives

## Under the dealer engagement program

- Sales incentives are provided for each new or used vehicle registered and garaged in Maryland and sold to a Maryland customer.
  - To mitigate concerns over the impact of sales incentives on final sales price – but also over the impact of federal tax credit and any additional state ZEV incentive for income-eligible Marylanders - annual renewal of a dealership enrollment in the program may be contingent to commitment to not increase selling price as a result of receiving incentive.
  - For monitoring and enforcement, a state program can cross reference selling price data with data available via the [Black Book](#)
- The share of sales and training incentives is passed to the salesperson through the participating dealership. This model is built on trust in participating dealers. Should a program administrator prefer to send payment directly to the salesperson, resources will be needed to account for the additional administrative burden (to include collecting IRS W-2 forms for every payee).
- For budget purpose the number of sales incentive can be capped to a maximum amount per year. The number of incentives needed to initiate market transformation, especially within the used car market segment, should be determined with the input of used car dealers
  - As an example, the State of Vermont caps the number of sales incentive that can be claimed at 40 per year per participating dealership
  - This number should be in conjunction with the deployment of a ZEV incentive programs for income-eligible

Marylanders

# ZEV-Focused Dealer Engagement Program Design – Opportunities for Intersection with Other ZEV-Related Initiatives and Programs

## Customer facing initiatives

- Customer point-of-sale incentive needs to be easy for dealers to use
- EVSE incentives and support programs should actively engage with dealers
- Customer education materials provided through dealers should match materials provided to public (e.g., on [Maryland Zero Emission Electric Vehicle Infrastructure Council website](#))
- Recognition that dealers are a key point of information about ZEV programs – but are also reluctant to offer promises to customers about programs beyond their control that might change or disappear
- Partnerships with community and/or advocacy groups focused on scaling ZEVs in Maryland. Some organizations are listed [here](#).

## Utility programs

- Incorporate incentives and support from utility EV programs (e.g., [EVSmart](#) from BG&E, Pepco, & Delmarva Power; [EV Driven](#) from Potomac Edison; [EV Recharge](#) from SMECO)

## Fleet electrification providers and customers

- Incorporate support from fleet electrification providers (e.g., vehicle OEMs) and lessons learned from fleet electrification customers (e.g., [Maryland Dept. of General Services, Fleet Electrification](#))

# ZEV-Focused Dealer Engagement Program Design – Dealer Engagement Program Budget

The following budget includes:

- Program labor costs associated with dealer outreach, enrollment, administration of incentive programs
- 3 types of financial incentives as described previously: ZEV sales incentive, incentive for participation in Maryland specific ZEV sales training, and EVSE or “ZEV readiness” incentives.

## 1. Program cost

Program costs include program management, project coordination, trainings, and other associated labor costs for the entire dealer engagement initiative. Below is a breakdown of expected costs, at a **total estimated budget of \$675k after 3 years.**

- **Role:** Program Administrator or Manager
- **Responsibilities:** Dealership outreach and enrollment; ZEV dealer guidebook and media management; Maryland ZEV sales training program development and support as well as "recognition" activities; dealership ZEV incentive management; consumer facing marketing material
- **Estimated annual program costs:** Up to 3 FTE at \$75k per FTE = \$225k per year
- **Estimated 3-year program costs:** \$675k

# ZEV-Focused Dealer Engagement Program Design – Dealer Engagement Program Budget

## Dealer readiness incentives (EVSE or ZEV readiness)

OEM dealers (selling new and used cars) are being prompted, and in some cases supported, by manufacturers to complete ZEV readiness upgrades. This report recommends incentives should be geared toward independent, used car dealerships that are unlikely to receive this same engagement. Further research and interviews or surveys with dealers on incentive needs and assumptions are recommended.

The following estimate is provided for a base of **30 independent, used car dealers** participating in this program at a **total estimated budget of \$1.5 M over 3 years**. This is considered a relatively ambitious target.

Year	Incentive \$\$ per Dealer	# of Participating Dealers	Cost per Year	Details
1	50% of eligible expenses up to \$50,000 per dealer	10 (estimated)	\$500,000	<ul style="list-style-type: none"> <li>EV Readiness incentive should only be applied to eligible expenses.</li> <li>Eligible expenses may include: EVSE, EV service tools and equipment, and technical trainings</li> </ul>
2	50% of eligible expenses up to \$50,000 per dealer	10 (estimated)	\$500,000	<ul style="list-style-type: none"> <li>Same as Year 1</li> </ul>
3	50% of eligible expenses up to \$50,000 per dealer	10 (estimated)	\$500,000	<ul style="list-style-type: none"> <li>Same as Year 1</li> </ul>

# ZEV-Focused Dealer Engagement Program Design – Dealer Engagement Program Budget

**Sales and Maryland specific training incentives.** For ACC scenario, total budget is ~\$17 M for 3 years. Adding a per dealership cap to the ZEV sales incentive budget could reduce this figure and is worth investigating further for Years 2 and 3.

Annual Car Sales Scenario	ZEV Sales Incentive Budget	ZEV Training Incentive Budget	Details/Assumptions
1B-REF	2024: \$1,300,000 2025: \$2,700,000 2026: \$3,150,000  3-year total: <b>\$7,150,000</b>	2024: \$18,000 2025: \$36,000 2026: \$18,000  3-year total: <b>\$72,000</b>	<ul style="list-style-type: none"> <li>Reference Scenario 1A (see Phase I of project).</li> <li>\$200 one-time incentive per salesperson attending Maryland specific training</li> <li>\$200 incentive per vehicle sold by salesperson who has completed training</li> <li>Assumes 2 salespeople per dealership attend training. Goal of &gt;50% dealership participation.</li> <li>Assume 30-50% of ZEV sales qualify for sales incentive between 2024 – 2026.</li> </ul>
5-ACC II_20%PHEV	2024: \$2,800,000 2025: \$5,000,000 2026: \$9,000,000  3-year total: <b>\$16,800,000</b>	2024: \$30,000 2025: \$75,000 2026: \$40,000  3-year total: <b>\$145,000</b>	<ul style="list-style-type: none"> <li>Assumes adoption of ACC II regulations</li> <li>Same incentives as for 1B-REF scenario above</li> <li>Assumes 2-3 salespeople per dealership attend training. Goal of &gt;80% dealership participation.</li> <li>Assume 25-40% of ZEV sales qualify for sales incentive between 2024 – 2026.</li> </ul>

# Low-Income ZEV Purchase Program Design – Scope of Work Summary

- Stakeholder interviews with a small number of low-income supporting organizations or advocates to gather Maryland-specific perspectives to complement existing knowledge about low-income stakeholder vehicle practices and needs and ZEV equity programs including best practices
- Analysis of used vehicle market in Maryland to determine: market size/structure, sales channels (franchise dealers, used-only dealerships, and person-to-person), information on low-income population vehicle purchases (locations, income level, funding path, vehicle ages/types/prices, how used vehicles are disposed of
- Research existing regional state and utility low-income programs to determine approach for defining low-income in program design
- Determine/describe barriers for low-income purchase of ZEVs

# Low-Income ZEV Purchase Program Design – Scope of Work Summary

- Develop recommended program design for low-income purchase incentives of new and used vehicles, including: 1) Near- and longer-term objectives, key strategies for success, 2) modifications to existing sales tax exemption, 3) vehicle eligibility for battery electric vehicles (BEVs) and/or plug-in hybrid electric vehicles (PHEVs), 4) customer eligibility, including options for income verification (including self- certification), 5) incentive amounts, 6) potential for coordination with federal ZEV incentive programs, 7) examples of outreach and/or marketing practices to support utilization, including targeting, and 8) estimated resources needed for program (e.g., operating budget, contractors, staff)
- Develop recommendations for future consultation with equity stakeholders by TNC (or others)
- Develop initial assessment of opportunity for enhanced or subsidized financing for low-income households

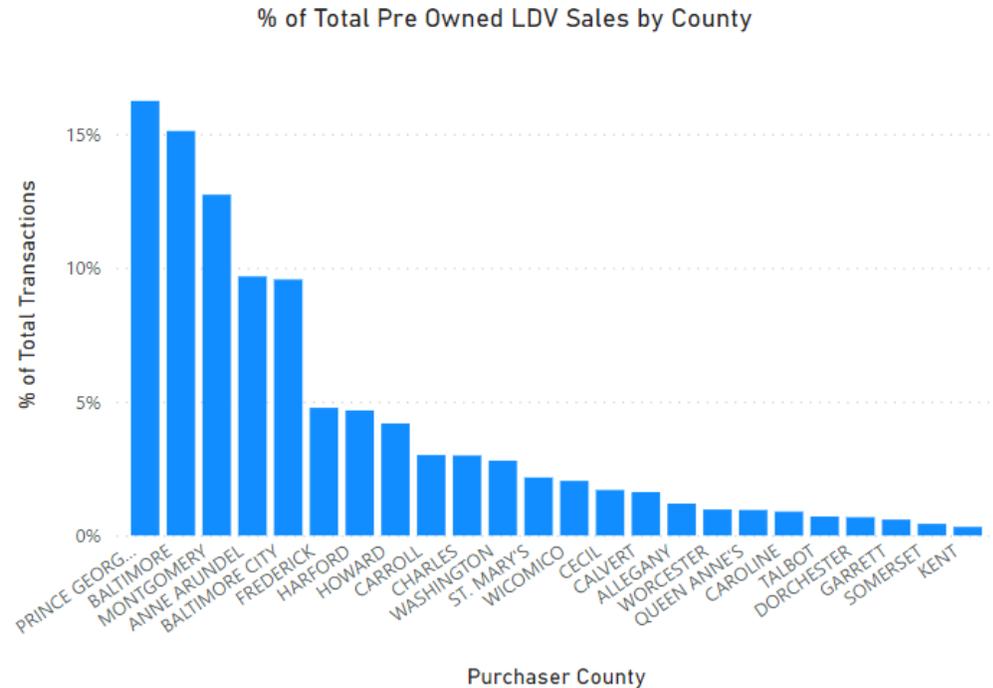
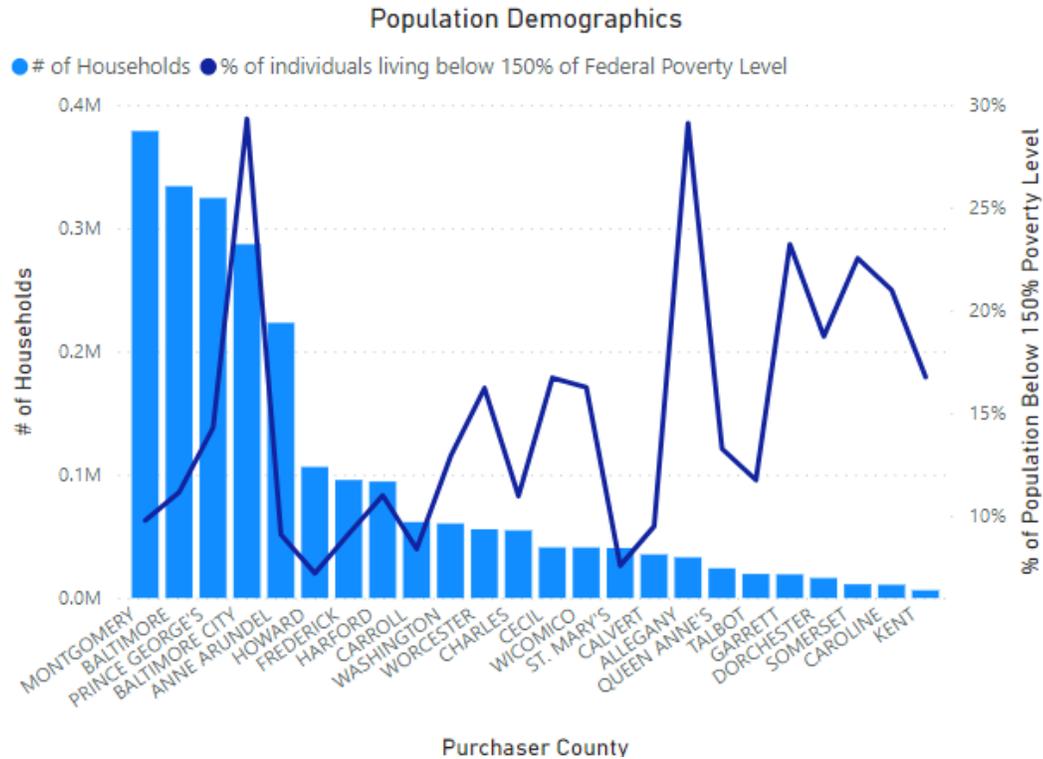
# Used Vehicle Market Analysis – Data Cleaning and Assumptions

- The Maryland Vehicle Administration provided data for used vehicle registrations between Jan 2021 and Dec 2022 (2-years of data). The data incl
- This data was analyzed to better understand the current state of the used vehicle market in Maryland
- In addition to the vehicle registration data, the project team also used datasets from the U.S. Department of Transportation, National Highway Traffic Safety Administration (NHTSA) and the Census Bureau to derive additional vehicle and demographic information
  - Vehicle body class and electrification level were derived from the NHTSA's vehicle identification number (VIN) decoding tool
  - Zip code level demographic data such as number of households, median income, and poverty metrics were gathered from the Census Bureau's 2021 American Community Survey dataset

# Used Vehicle Market Analysis – Data Cleaning and Assumptions

- As is typical with large datasets, additional cleaning was required remove erroneous data prior to analysis. The following filters were applied to the data:
  - Body classes were restricted to light-duty relevant vehicles including sedan, hatchback, SUV, CUV, pickup trucks, coupe/convertible, minivan, and wagon
  - Transactions with sale prices above \$200,000 were excluded
  - Vehicles with odometer values above 250,000 miles were excluded
  - Sales to out of state individuals were excluded
  - Sales from motorcycle dealers and trailer dealers were excluded

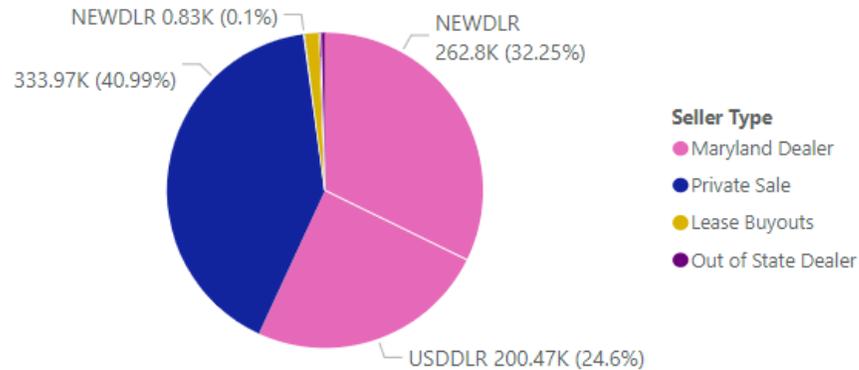
# Low-Income ZEV Purchase Program Design – Maryland Used Vehicle Market Analysis



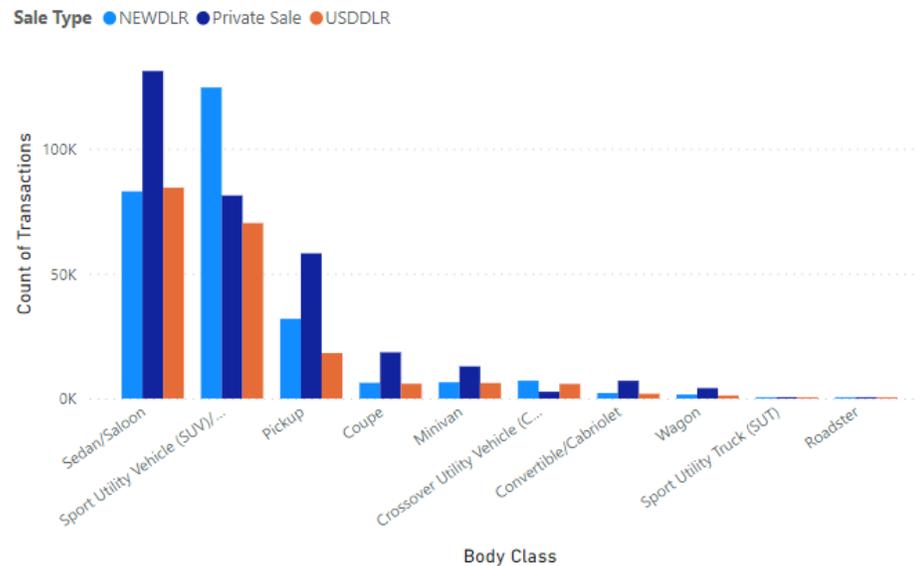
- Baltimore City, Allegany County, and Garrett County are the three most economically disadvantaged areas in the state
- Rural areas and Baltimore City tend to have higher poverty levels
- The top five (5) counties in terms of population are also the top 5 counties by % of used vehicle purchases

# Low-Income ZEV Purchase Program Design – Maryland Used Vehicle Market Analysis

Proportion of Pre Owned LDV Sales by Seller Type and Dealer Type



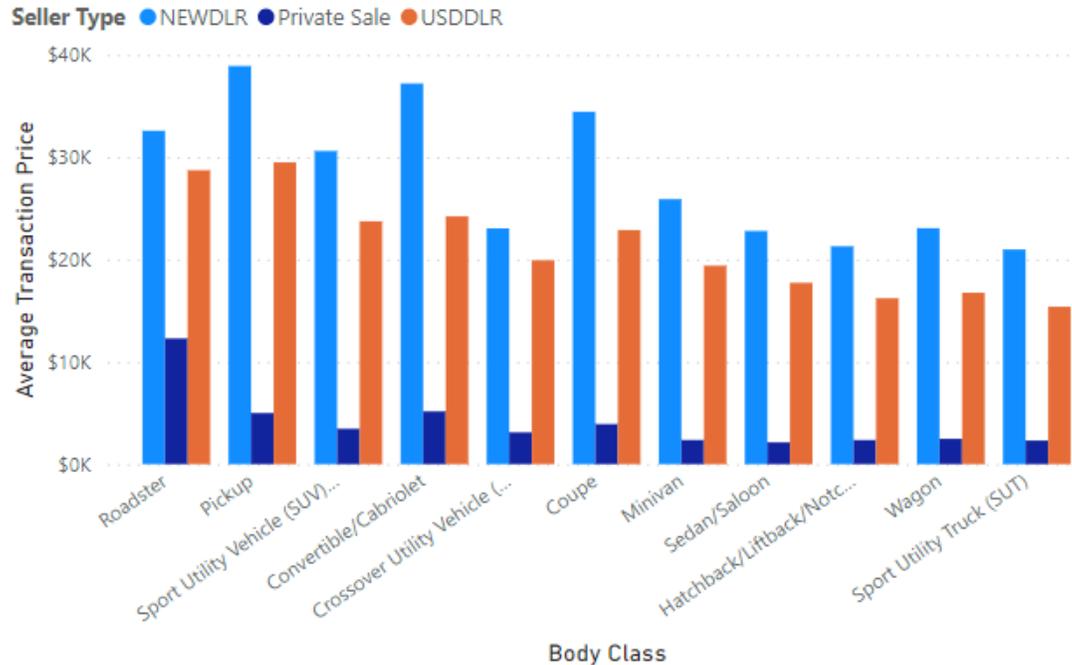
State-wide Transactions by Body Class and Sale Type



- Over 40% of all pre-owned LDV sales were between private parties
- Vehicles sold at Maryland dealers made up most of the remaining sales. Out of state dealers only accounted for 0.43% of used vehicle sales in the state.
- The sedan and SUV body styles made up most of the pre-owned vehicle sales
  - Interestingly, private parties accounted for the largest number of transactions for all body types except SUVs and CUVs
  - The new vehicle dealers might be more incentivized to sell SUVs and CUVs because they generally have greater demand and larger profit margins

# Low-Income ZEV Purchase Program Design – Maryland Used Vehicle Market Analysis

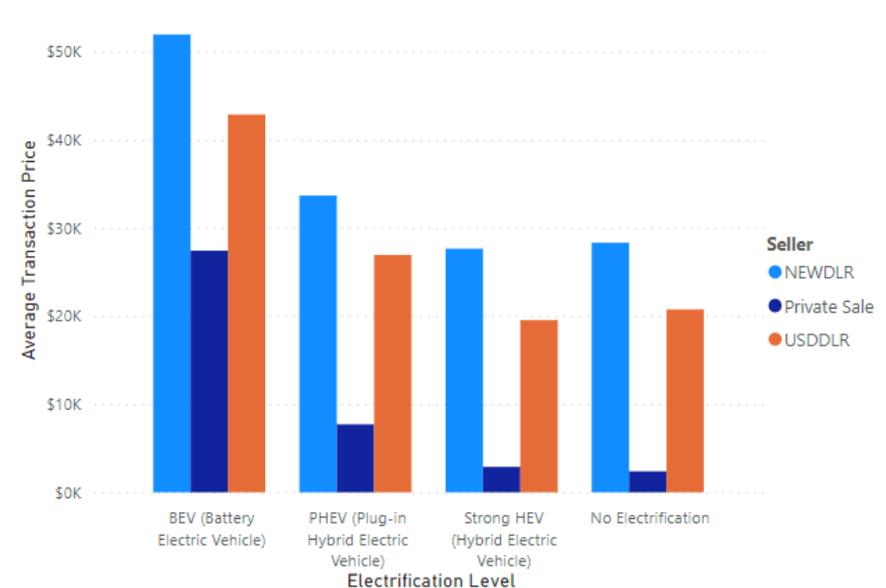
Average Transaction Price by Body Class and Seller Type



- As expected, BEVs had the highest transaction amounts for both dealer and private party sales.
  - The average BEV cost \$22,000 more than the average conventional internal combustion engine (ICE) vehicle.
- Interestingly, there were only minor differences in costs between (conventional) hybrid electric vehicles (HEVs) and ICE vehicles for all three seller types

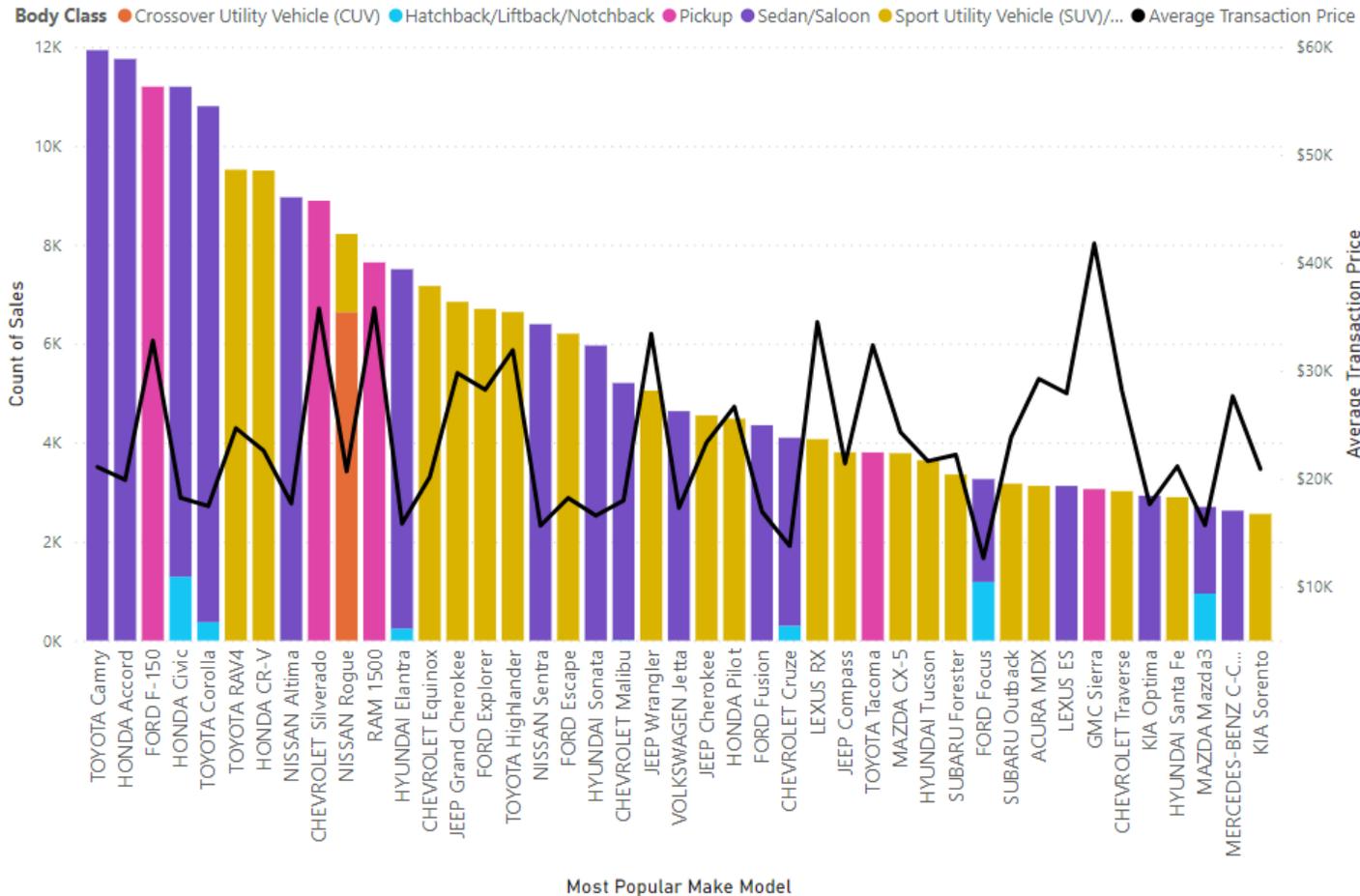
- There is a very large difference in transaction prices between dealers and private-party sales
  - \*\* The average pickup truck at a new dealer costs \$34,000 more than the average pickup truck sold by a private party. The difference is both from the dealer price impact and older average vehicles in private-party sales.
- Excluding recreational body styles, pickup trucks, SUVs, and CUVs commanded the highest transaction prices at new and used car dealers.
  - The average SUV costs \$7,000 more than the average sedan at a new vehicle dealer

Average Transaction Price by Electrification Level and Seller



# Low-Income ZEV Purchase Program Design – Maryland Used Vehicle Market Analysis

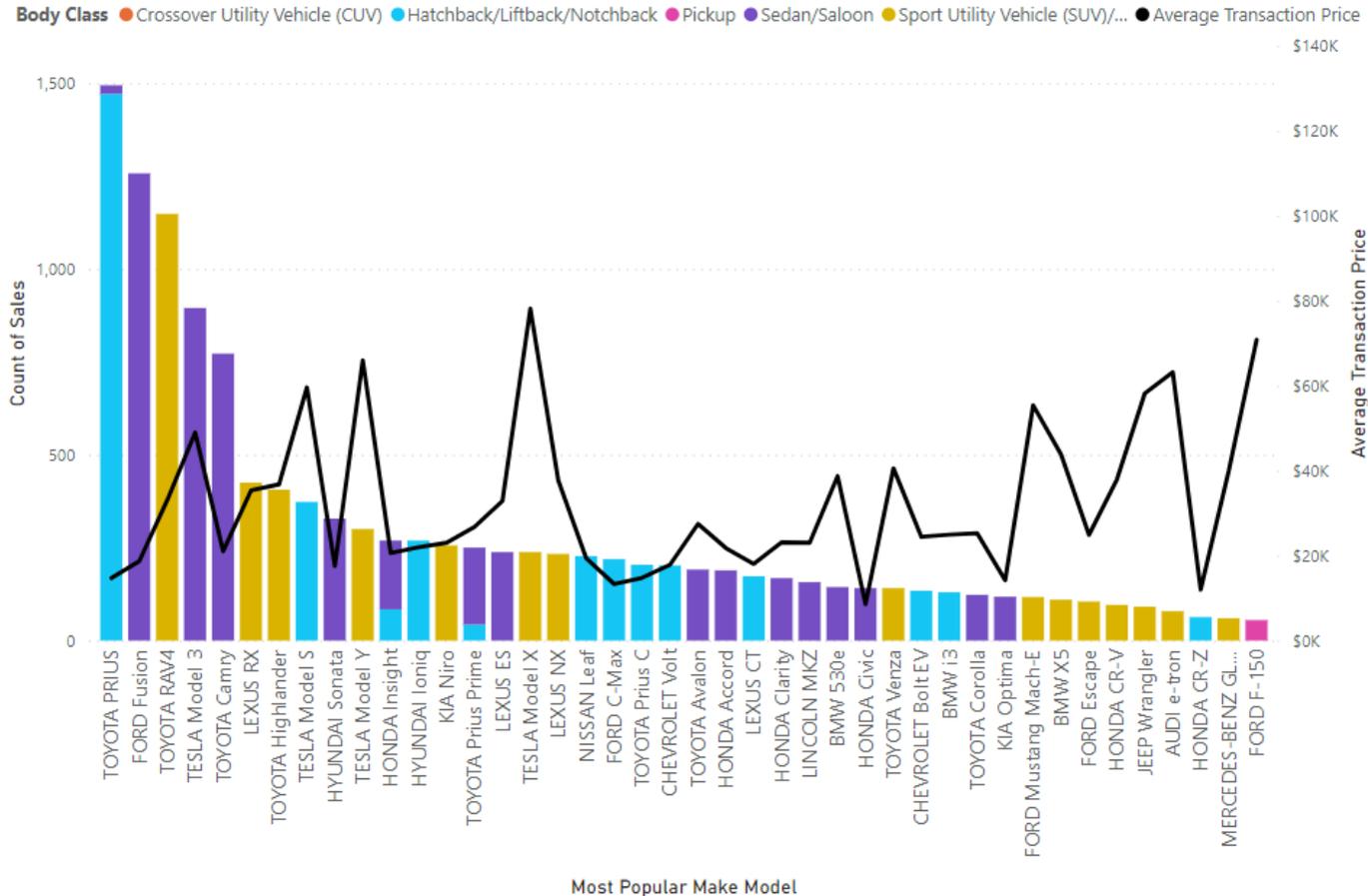
Total Sales and Average Transaction Price for Most Popular Non Electrified Vehicles at MD Dealers



- This chart shows the most popular ICE vehicles sold by Maryland dealers along with the average price paid by customers
- Midsize sedans and compact sedans from Toyota and Honda make up most of the top 5 spots with an average transaction price of around \$20,000.
- Domestic light-duty pickup trucks like the Ford F-150 and Chevrolet Silverado are also popular with buyers and have some of the highest average purchase costs

# Low-Income ZEV Purchase Program Design – Maryland Used Vehicle Market Analysis

Total Sales and Average Transaction Price for Most Popular Electrified Vehicles at MD Dealers



- The Toyota Prius is the most popular electrified pre-owned vehicle sold by Maryland auto dealers. The Prius was one of the first electrified vehicles to hit the market and likely has the most robust used vehicle inventory. This model also has one of the lowest average transaction prices of all electrified vehicles.
- The Tesla Model 3 was the most popular BEV and had an average transaction price of \$42,000
- The Model 3 and Chevy Bolt EV were the first relatively affordable BEVs with sufficient range to reach the market
  - Interestingly, the Chevy Bolt EV is nowhere near as popular as the Tesla Model 3 even though it offers similar range for a lower price.

# Low-Income ZEV Purchase Program Design – Maryland Used Vehicle Market Analysis

## Most Popular Vehicles Sold By Dealers in Low Income Zip Codes

Make Model	Body Class	Count of Vehicles Sold	Average of Price	Average of Model Year	Average of Odometer
HONDA Accord	Sedan/Saloon	2139	\$19,722.79	2015.34	51089.93
NISSAN Altima	Sedan/Saloon	1610	\$17,459.99	2016.60	51256.51
FORD F-150	Pickup	1411	\$31,184.88	2015.54	55904.10
CHEVROLET Equinox	Sport Utility Vehicle (SUV)/Multi-Purpose Vehicle (MPV)	1398	\$19,985.07	2016.85	46514.94
TOYOTA Camry	Sedan/Saloon	1389	\$20,292.02	2015.92	50231.73
HYUNDAI Elantra	Sedan/Saloon	1258	\$16,066.68	2016.70	44127.37
CHEVROLET Silverado	Pickup	1249	\$33,450.62	2015.78	53156.12
HONDA Civic	Sedan/Saloon	1211	\$17,386.50	2015.56	47743.94
TOYOTA Corolla	Sedan/Saloon	1190	\$17,359.17	2016.43	45683.52
NISSAN Rogue	Crossover Utility Vehicle	1149	\$19,751.15	2016.68	46607.82

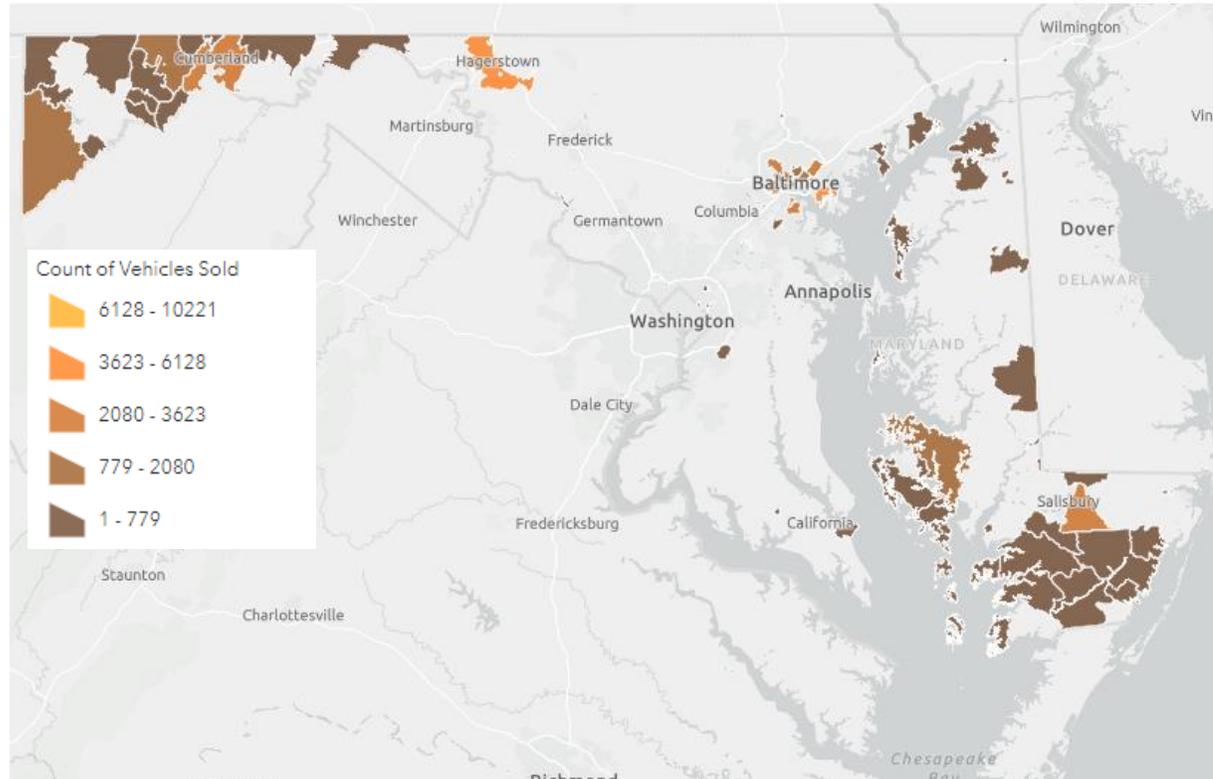
## Most Popular Vehicles Sold in Private Sales in Low Income Zip Codes

Make Model	Body Class	Count of Vehicles Sold	Average of Price	Average of Model Year	Average of Odometer
HONDA Accord	Sedan/Saloon	1890	\$1,147.72	2005.34	94894.50
FORD F-150	Pickup	1690	\$2,323.18	2003.03	103336.33
HONDA Civic	Sedan/Saloon	1192	\$1,467.75	2006.34	94035.41
TOYOTA Camry	Sedan/Saloon	1167	\$1,522.37	2005.43	103131.24
CHEVROLET Silverado	Pickup	1056	\$3,589.26	2006.00	103396.46
DODGE Ram	Pickup	1004	\$2,182.38	2002.65	108661.77
NISSAN Altima	Sedan/Saloon	938	\$1,198.02	2008.64	91025.46
HONDA Odyssey	Minivan	866	\$1,385.06	2006.31	107675.38
ACURA TL	Sedan/Saloon	782	\$899.61	2006.16	83212.60
TOYOTA Corolla	Sedan/Saloon	762	\$1,616.88	2006.71	98399.76
FORD F-250	Pickup	652	\$4,245.51	2003.38	110311.39
HONDA Accord	Coupe	646	\$951.23	2006.91	82037.05

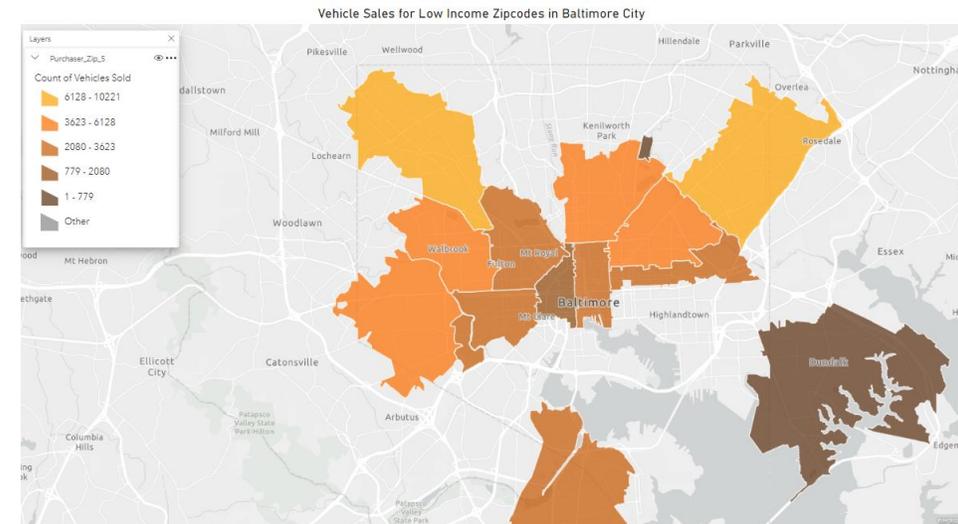
- These tables are intended to provide a better picture of the vehicles that are purchased in zip codes that have a median income of \$50,000 or less.
- The vehicles sold by dealers in these areas tend to be much newer and have far fewer miles than the vehicles sold by private parties. But the average transaction prices for the private party sales are a fraction of average transaction prices at dealerships.

# Low-Income ZEV Purchase Program Design – Maryland Used Vehicle Market Analysis

VEHICLE SALES IN LOW INCOME ZIPCODES



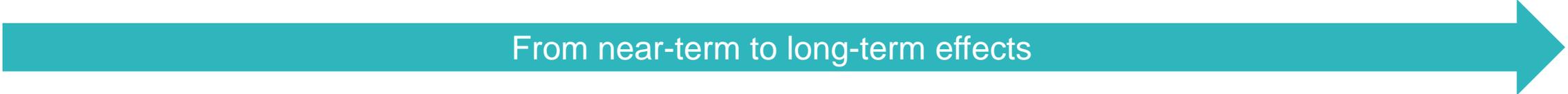
- This map vehicle sales in zip codes with median household income of \$50,000 or less
- Many of these zip codes are concentrated in the most rural parts of the state
  - Baltimore City is the exception to this trend with many of the city's zip codes having a median income of less than \$50,000
- Of these low income zip codes, those in Baltimore City and Hagerstown had the largest number of vehicle transactions



# Low-Income ZEV Purchase Program Design – Program Objectives

A ZEVs incentive program will **provide Marylanders with limited financial resources greater access to clean and affordable vehicles**. Direct benefits include lower operating costs, reduced exposure to emissions and access to more reliable vehicles.

From near-term to long-term effects



Shift attitudes and market access to normalize ZEV usage among households with limited financial resources (over gas vehicles)

Increase proportion of ZEV drivers who have limited financial resources

Increase affordable, healthy mobility for households who are necessarily car-dependent and living with limited financial resources

Ensure more equitable distribution of the benefits of ZEVs

# Low-Income ZEV Purchase Program Design – Barriers for ZEVs Purchase

## Barriers to car ownership

- Lower credit score resulting in higher interest rates or lack of access to financing
- Lack of financing capacity combined with customer targeted vehicles not eligible for financing
- Potential distrust toward financial institutions and financial incentives
- Higher insurance costs
- Lack of reliable, safe, and/or affordable parking

## Barriers specific to ZEVs

- Higher upfront purchase cost combined with hesitation to finance
  - Perception of lease might be different, but credit score remains a factor in lease monthly payments
- High transportation expenses associated with existing vehicles and negative feedback cycle of ICE vehicle repairs as observed in New York State make it even more difficult to save funds needed to access more expensive ZEVs
- Lack of charging infrastructure in underserved communities
- Added barriers for renters in multifamily housing. Need access to on-property or convenient nearby off-property charging
- Need for electrical upgrade for at-home AC Level 2 charging (for single-family homes)
- Households with limited financial resources tend to have only one vehicle that needs to “do it all”
  - Increased concerns over reliability as a transportation crisis can quickly lead to dramatic consequences

# Low-Income ZEV Purchase Program Design – Marylanders to Benefit from the Incentive Program

The program will make ZEVs more affordable to all Maryland households with limited and moderate incomes.

At the same time, the intent of a ZEV incentive program is to complement other clean transportation policy initiatives, including policies that aim to promote modal shift toward public transportation.

Stakeholder engagement and outreach activities should be designed with the following segments in mind:

- Marylanders living in rural areas
  - Per [APPRISE \(Applied Public Policy Research Institute for Study and Evaluation\)](#), rural areas correlate with higher-concentrations of limited-income areas
  - These households are more likely to be car-dependent and drive long distances for work (e.g., commute from Charles County to the Washington D.C metro area or commute from the eastern shore to Baltimore City).
  - Providing a comprehensive suite of charging options will be critical for this segment
- Marylanders in urban and suburban areas that are highly car dependent, for example
  - Rideshare drivers who are likely to fit within the scope of an income-based definition
  - Workers who cannot access or maintain employment without a personal vehicle, for example because their workplace is not served by public transportation

# Low-Income ZEV Purchase Program Design – High Concentration of Limited-Income Areas in Maryland

[APPRISE \(Applied Public Policy Research Institute for Study and Evaluation\)](#) identified “high concentration of limited-income areas” in its Maryland Energy Affordability Study publish in December 2022. This study was filed before the Maryland Public Service Commission and is available via the [EmPOWER Maryland docket](#) (ML300518).

High concentration of limited-income areas in Maryland	Main characteristics
D.C Metro (urban/suburban)	<ul style="list-style-type: none"> <li>• Mostly found in Prince George’s County (e.g., New Carrollton, Hyattsville) and parts of Montgomery County (e.g., Gaithersburg)</li> <li>• Public transportation is more prevalent in that part of the State</li> </ul>
Baltimore Metro (urban/suburban)	<ul style="list-style-type: none"> <li>• Mostly found in Baltimore City and some areas of surrounding counties (e.g., Dundalk, Essex)</li> <li>• Public transportation system exists but is not as dense as in the D.C area.</li> </ul>
Rural	<ul style="list-style-type: none"> <li>• Mostly found in Western Maryland (e.g., Cumberland City and Hagerstown City), Southern Maryland (St. Mary’s and Calvert Counties) and the Eastern Shore (e.g., Salisbury City).</li> <li>• Workers more likely to commute to the following urban centers for work: D.C, Baltimore City and the City of Frederick</li> </ul>

# Low-Income ZEV Purchase Program Design – Maryland Workers and Car Dependency

Available census data shows that in Maryland, 75% of workers living below 150% of the Federal Poverty Line (FPL) are car-dependent, and 62% drive alone to work (averages based on data available only for the counties listed below)

This percentage is higher in suburban and rural areas.

	Total below 150% FPL	Car, truck, van - drive alone		Car, truck, van - carpool		Total car dependent for work	
	Count	Count	Percentage	Count	Percentage	Count	Percentage
<b>Total</b>	<b>217,882</b>	<b>135,170</b>	<b>62%</b>	<b>27,450</b>	<b>13%</b>	<b>162,620</b>	<b>75%</b>
Anne Arundel Co.	18,084	12,433	69%	2,520	14%	14,953	83%
Baltimore Co.	31,614	20,047	63%	3,460	11%	23,507	74%
Frederick Co.	7,082	4,842	68%	645	9%	5,487	77%
Harford Co.	6,894	3,632	53%	1,124	16%	4,756	69%
Howard Co.	8,893	5,680	64%	1,407	16%	7,087	80%
Montgomery Co.	34,579	18,351	53%	4,706	14%	23,057	67%
Prince George's Co.	32,254	19,132	59%	3,542	11%	22,674	70%
Washington Co.	8,381	5,942	71%	1,466	17%	7,408	88%
Baltimore City	35,880	19,395	54%	4,577	13%	23,972	67%

Source: [American Community Survey, 2021 data](#)

# Low-Income ZEV Purchase Program Design – Income-Based Definitions

To avoid creating barriers to program access, income-based definitions should be set in conjunction with the income-verification process. The program will rely on self-certification of income. Enforcement will be made possible through spot checking audits. Self-certification of income is critical for the success of this program as it expands the size of the eligible market segments and reduce unnecessary barriers to access.

- *Example from outside of Maryland: [State of Vermont](#)*

## Low-income definition

Without self-certification the program would need to align with other Maryland State's program definition to minimize barriers to access. In that instance the program could align with the Supplemental Nutrition Assistance Program's (SNAP) income guidelines for Maryland (up to 200% FPL) to allow SNAP eligibility to automatically qualify households with low-income to the EV incentive program. For this ZEV incentive program, self-certification allows to increase the size of the market segment eligible by **setting the income threshold at 60% of the area median income**. **In 2023, this equates to an income of \$70,500 for a 4-person household.**

## Moderate-income definition

Moderate-income households' eligibility may include households who earn less than **80% of the area median income**. Participants will self-attest based on their adjusted gross income (AGI). **In 2023, this equates to an income of \$89,400 for a 4-person household.**

As a guide to translating percentage of area median income into fixed dollar amount a program administrator can leverage [income limits published by the Department of Housing and Community Development](#).

# Low-Income ZEV Purchase Program Design – Number of Income-Eligible Households

28% of Maryland families would be eligible for a State lower income incentive when combining “moderate-income” households who earn less than 80% AMI with “low-income” households who earn less than 60% AMI

	200% Federal Poverty Line (FPL)	60% AMI (Statewide)	300% FPL	80% AMI (statewide)
Corresponding income level for a 4-person household	\$60,000	\$70,500	\$90,000	\$89,400
Number of Maryland families below poverty ratio	259,047		426,200	
Percentage of Maryland families	17%		28%	

Source: American Community Survey, 2021 data and Department of Housing and Community Development

# Low-Income ZEV Purchase Program Design – Assessing Income Eligibility

## Figuring out if one is eligible or not must be extremely clear to beneficiaries and car dealers alike

- The program will publish income guidelines based on a household annual AGI to translate percentage of AMI into fixed dollar amounts.
- Income eligibility can be a sensitive conversation for car dealers. Program administrators and outreach partners should provide self-certification forms for customers to bring with them when visiting a car dealer.
- To support prospective beneficiaries in understanding eligibility to a low-income incentive adder the program can use a list of Maryland income-based programs as a proxy
  - As mentioned, SNAP already leverages categorical eligibility
  - List of other Maryland programs aligning with a 200% FPL threshold should be established and made easily available. Documentation should be distributed to car dealers and include easy to read and understand fact sheet they can share with customers.

Programs	Income threshold
Supplemental Nutrition Assistance Program (SNAP)	200% FPL
Office of Home Energy Assistance Programs (OHEP)	175% FPL
Women Infant and Children Benefit (WIC)	185% FPL
Maryland Children’s Health Insurance Program	200% FPL (300% with a premium)

# Low-Income ZEV Purchase Program Design – Key Strategies for Success

## Incentive program structure

- Stack incentives, i.e., combine sales tax exemption, federal tax credit, and state incentive(s)
- Address financing need and barriers
- Ensure incentives and financing products are compatible with a leasing financing model, which might be preferred over financing, for example because it allows drivers to make a shorter-term commitment to a new vehicle technology.

## Partnerships

- Strengthen programmatic synergies across state agencies, social service providers, non-profits and local governments
- Integrate and-or coordinate with wrap-around social services (e.g., financial coaching, workforce development, ...)
- Develop implementation plan with the input of a large set of stakeholders
- Explore opportunities for corporate partnerships with rideshare companies

## Outreach

- Strengthen understanding of attitudes and perceptions toward ZEVs; ground program design in qualitative research
- Prioritize partnerships with community-based organizations
- Leverage marketing approach tailored to the specifics of the low-to-moderate income (LMI) segment; at the same time ensure marketing and outreach account for the diversity of this segment.

# Low-Income ZEV Purchase Program Design – Integration with Charging Initiatives

## From a customer’s perspective ZEV and charging are intrinsically linked

- Coordinate education and outreach between ZEV incentive program and charging initiatives. EV charging information and concerns should be addressed with equal emphasis as vehicles.
- Barriers for charging in multifamily building and [environmental justice communities](#) must be addressed for an income-based ZEV incentive program to be successful.
- Consider “all you can charge” subscription to access public charging infrastructure
- Coordinate on workplace and public charging for rural commuters going long distance to work, in conjunction with setting up EVSE programs and siting charging through the [Maryland State Plan for National Electric Vehicle Infrastructure \(NEVI\)](#) formula funding deployment.
  - See [Bipartisan Infrastructure Law - Electric Vehicles | Federal Highway Administration \(dot.gov\)](#) for more information on funding opportunities following passage of the Bipartisan Infrastructure Law
- Explore need for coordination with the Department of Housing and Community Development (DHCD) on the need for electrical upgrade for at-home AC L2 charging
- Consider ways to streamline permitting or other installation requirements, develop trusted contractor list

# Low-Income ZEV Purchase Program Design – Integration with Charging Initiatives

## Coordinate with EVSE state rebate program

- A ZEV incentive program should be launched when there is certainty and continuity in funding for ZEV charging. As of May 16, 2023 Maryland Energy Administration funding for the Fiscal Year 2023 EVSE rebate program was fully exhausted ([source](#)).
- Consider establishing a “low-and-moderate income” carveout or adding an income-eligibility criteria

## Coordinate with the deployment of the EVSE federal tax credit

- This credit is limited to property located in qualifying census tracts in low-income communities under the New Markets Tax Credit or non-urban areas.
- Residential individual consumer credit is capped at up to \$1,000
- Credit for businesses and other organizations (e.g., multifamily authority) is capped at \$100,000. Tax exempt entities can take advantage of this credit through an elective payment process ([source](#)).
- Explore need and opportunity to complement federal tax credit with State funding, for example via EVSE incentives dedicated to multifamily properties already eligible to energy efficiency funding through DHCD.

# Low-Income ZEV Purchase Program Design – Integration with a “Scrap and Replace” Incentive Program

- Low-and-moderate income households are more likely to own one single vehicle, which tend to be older and higher-polluting.
- Stacking the federal tax credit with a ZEV state incentive and a “scrap and replace” program can make a new ZEV vehicle within reach of Marylanders with limited financial resources while removing the most polluting vehicles from the road.
- If exploring a “scrap and replace” incentive program, the State of Maryland may set specific criteria:
  - On income-eligibility to align with thresholds used for a State ZEV incentive program.
  - On new vehicle eligibility to allow a scraped vehicle to be replaced only by a new vehicle eligible to the State incentive program.
  - On scraped vehicle eligibility by requiring a minimum age and/or maximum fuel economy
- From a public policy perspective, evaluating equity impacts of such programs is in the early stages. For example, this type of program can have an impact on the used vehicle market by reducing availability of older, more affordable vehicles.

## *Example from outside of Maryland*

- California [Replace your Ride program](#) offers up to \$9,500 to replace eligible vehicles. Most recent summary report is available here [EFMP Retire and Replace Program Statistics \(ca.gov\)](#)
- Vermont [“Replace your Ride program”](#) offer \$3,000 for each eligible scrapped ICE vehicle.

# Low-Income ZEV Purchase Program Design – Coordination with Federal Incentives and Other Funding Opportunities

## Federal Tax credit

- To receive a federal tax credit a household's AGI may not exceed \$300,000 for a married couple filing jointly.
- The federal government also requires eligible vehicle to have their final assembly in the US.
  - Requirement does not apply to leasing as of June 2023 as a result of being categorized as commercial business.

For new vehicles (source: <a href="#">IRS</a> )	For used vehicles (source: <a href="#">IRS</a> )
<ul style="list-style-type: none"><li>• \$3,750 if vehicle meets critical mineral requirement only</li><li>• \$3,750 if vehicle meets battery components requirement only</li><li>• \$7,500 if vehicle meets both criteria</li><li>• List of qualified vehicles (<a href="#">here</a>)</li></ul>	<ul style="list-style-type: none"><li>• Up to 30% - \$4,000 – toward a used EV priced at \$25,000 or less</li><li>• Must be bought via a dealer</li><li>• First transfer vehicle, at least 2-year-old</li><li>• List of qualified vehicles <a href="#">here</a></li></ul>

## Other initiatives resulting from the deployment the Inflation Reduction Act (IRA)

- White House [EV Acceleration Challenge](#) and new private and public sector investments for affordable electric vehicles [announced in April 2023](#).
- \$6B federal [Clean Communities Investment Accelerator](#) program will fund 2-7 hub nonprofits with the plans and capabilities to rapidly build the capacity of specific networks of public, quasi-public, and non-profit community lenders (such as [Community Development Financial Institutions](#), credit unions, green banks, and housing finance agencies) to ensure that low-income and disadvantaged communities have access to financing for cost-saving and pollution-reducing clean technology projects.

# Low-Income ZEV Purchase Program Design – Coordination with Rideshare Companies' ZEV Incentives for Drivers

Transportation Network Companies (TNCs), or ridesharing companies, like [Uber](#) and [Lyft](#) have made commitments to transition to 100% zero-emission mobility platforms in the U.S. by 2030. To accomplish this goal, these companies offer drivers incentives on the platform or via partnerships to encourage EV adoption.

Given Lyft and other smaller rideshare companies may need further support to rapidly expand EV incentives to Maryland, it may be best to look for opportunities to support this expansion. Alternatively, with Uber already offering these incentives in-state, there may be more of an appetite to develop a corporate partnership. The state should reach out to all TNCs to better understand the landscape and opportunities to support LMI drivers' transition to EV.

Uber offers multiple EV incentives nation-wide.

- Vehicles - EV drivers eligible for Zero Emissions incentive, which lets them earn an extra \$1 on every Uber rides trip (up to \$4,000 per calendar year). The incentive is available only in the U.S. and Canada.
- Charging - Up to 45% savings on EVGo fast-charging rates. Up to \$200 in savings on Wallbox chargers and installation.
- Rentals - Weekly rentals from Hertz include Tesla rentals for qualified drivers, as well as other EV rental options. Basic maintenance and unlimited mileage are included, and the cars are ready for use on the Uber platform. Uber says it has a plan for 50,000 Tesla's on the road via a partnership with Hertz.

# Low-Income ZEV Purchase Program Design – Coordination with Rideshare Companies' ZEV Incentives for Drivers

[Lyft](#) is testing [new EV incentives in California](#)

- Vehicles - Registered EV drivers earn an extra \$150 every week if they give 50 rides in their vehicles until the end of 2024. (The program has a cap of \$8,100.)
- Charging - Drivers can access charging discounts at charging network EVgo stations if they link their account with Lyft. Those who invest in at-home chargers can receive \$140 off certain home charger hardware by Wallbox. Drivers can also get pre-negotiated rates for AC L2 residential home charging installation with Coil, another third-party partner.
- Rentals - Lyft additionally plans to add “thousands” of new EVs from a range of partners, including Polestar, Hyundai, Kia, and Ford to its driver rental program. A new educational website is also available for drivers interested in making the switch to electric.

# Low-Income ZEV Purchase Program Design – Integration with Equity-Focused ZEV Carsharing Programs

- Local governments have launched equity-focused ZEV carsharing programs to offer users affordable access to ZEV
- These programs are oftentimes piloted with state agency grant funding and can be an effective alternative to ZEV car ownership or leasing, for example by structuring income-specific rates.
  - The State should follow-up with Montgomery County and other Maryland local governments to explore further opportunities to pilot such initiatives in conjunction with fleet electrification efforts

## BlueLA (Los Angeles, CA, rural/suburban)

- Operations: Fully electric vehicles stationed at 40 pickup/drop off locations
- Funding: \$4.6M in total grants from California Air Resources Board, recently acquired by Blink Mobility
- Equity approach: Income-qualified membership rate, vehicles located in historically disadvantaged communities

## Good2Go (Boston, MA, rural/suburban)

- Operations: Fully electric vehicles stationed in 5 locations in low-income and minority communities
- Funding: Grant funding from MassCEC, incubated and funded by local non-profit E4TheFuture
- Equity approach: Reduced rate membership available based on household belonging to approved list of economic assistance programs (e.g., Federal Public Housing Assistance) or certain income bracket

## GoForth (Oregon, Washington, rural)

- Operations: Fully electric vehicles stationed at 11 locations across Oregon and Southern Washington
- Funding: Primarily funded through grants from the American Public Power Association and local utilities
- Equity approach: Vehicles free to use for first four hours, recurring rides \$4 per hour. Vehicles primarily stationed in low-to-moderate income rural areas.

# Low-Income ZEV Purchase Program Design – State Incentive: Key Design Features

## Eligible vehicles

- Align with eligibility criteria in place for the [federal tax credit](#)
  - Starting in 2024 federal tax credits will be transferable to dealers at the point-of-sale so that it can directly reduce the purchase price and benefit households with limited to no tax liability ([source](#))
  - Used vehicles should be eligible
  - Plug-in hybrid are more affordable than all-electric vehicles and should be eligible. As with the federal tax credits, plug-in hybrid should be eligible to the same incentive amount than full electric vehicles
  - MSRP for used vehicles is \$80,000 for “vans, sport utility vehicles and pickup trucks” and \$55,000 for other vehicles

## Incentive delivery

- “Downstream” incentive model, i.e., delivered at point-of-sale through participating car dealers
  - Guarantee dealer reimbursement in a minimum time period (e.g., inferior to 30 days)
- Require minimal necessary paperwork for buyer/leaser and dealer
- Address potential barriers to access such as language
- Ensure incentive is not taxable income and able to be directly passed to the end-user, including via a leasing model
- Designed to work in tandem with a sales tax exemption as both apply at the point-of-sale

# Low-Income ZEV Purchase Program Design – State Incentive: Key Design Features

## Duration of the program

Certainty on the availability of financial incentives is key to the success of such program. This implies:

- Program administrators should anticipate the risk of incentives running out and the negative impact of this “stop-and-go” effect on market transformation initiatives
- The need for a stable source of funding and to avoid linking the program with the annual budget process for approval and continuation
- Best practice is to set a market transformation program to operate for at least 4 years. Budget should be sufficient and determined based on (a) expected demand for incentives and (b) incentive amount required to avoid “stop-and-go” effects

## Incentive amount

A State incentive amount should be set at a level that (a) account for other available incentives (b) allows to bring the cost of eligible vehicle within an “affordable” range

	60% AMI	80% AMI
Annual income for a 4-person household	\$70,500	\$89,400
“Affordable” total transportation costs (10% of annual income)	\$588	\$754
Monthly payment capacity (loan or lease) after deducing fuel, maintenance, repair and insurance for a Chevrolet Bolt (BEV)	\$194	\$351

# Low-Income ZEV Purchase Program Design – State Incentive(s) Amount

The proposed model combines a sales tax exemption with federal and state incentives to reduce the cost of a ZEV and bring these vehicles within an affordable range for income-eligible households

- First, a “base” incentive provides the same dollar amount, regardless of the type and age of eligible ZEVs
  - A “low-income adder” allows to provide greater incentive amount to households who earn less than 60% AMI

State “base” incentive	All vehicles (EV or PHEV; used or new)
Moderate-income households (up to 80% AMI)	\$3,000
Low-income households (up to 60% AMI)	\$6,000

- Second, an additional incentive support for the replacement of old ICE vehicles by new ZEVs. This could take the form of a “new vehicle” adder or be provided via a “scrap and replace” or “replace-your-ride” program.

State incentive for a new ZEV	New vehicles (EV or PHEV)	Used vehicles (EV or PHEV)
Moderate-income households (up to 80% AMI)	\$4,000	\$0
Low-income households (up to 60% AMI)	\$5,500	\$0

# Low-Income ZEV Purchase Program Design – Example of Incentive and Financing Stacking

	For new BEV (e.g., Chevrolet Bolt)		For a used PHEV (e.g., Prius Prime)	
	Low-income household	Moderate-income household	Low-income household	Moderate-income household
Vehicle acquisition cost	\$30,000	\$30,000	\$15,000	\$15,000
Federal tax credit	\$7,500	\$7,500	\$4,000	\$4,000
State “base” incentive	\$6,000	\$3,000	\$6,000	\$3,000
Additional state incentive for a new vehicle	\$5,500	\$4,000		
<b>Total State incentives</b>	<b>\$11,500</b>	<b>\$7,000</b>	<b>\$6,000</b>	<b>\$3,000</b>
<b>Remaining cost</b>	<b>\$11,000</b>	<b>\$15,500</b>	<b>\$5,000</b>	<b>\$8,000</b>
<b>Monthly payment (if financing at 11%)</b>	<b>\$240</b>	<b>\$337</b>	<b>\$108</b>	<b>\$74</b>
Monthly payment (if financing at 3%)	\$198	\$278	\$90	\$143

# Low-Income ZEV Purchase Program Design – Incentive and Financing Stacking: Impact on Affordability

The estimations below are given for 20,000 miles per year. Differences in monthly savings are not statistically significant and based on cost data averaged using cost estimators such as [AAA Estimate Vehicle Ownership Costs](#) and [Alternative Fuels Data Center: Vehicle Cost Calculator \(energy.gov\)](#).

	For new EV (e.g., Chevrolet Bolt)		For a used PHEV (e.g., Prius Prime)	
	Low-income household	Moderate-income household	Low-income household	Moderate-income household
<b>Monthly payment (if financing at 11%) after incentives</b>	<b>\$240</b>	<b>\$315</b>	<b>\$108</b>	<b>\$152</b>
Total transportation cost per month (adding fuel, maintenance and repair, insurance to monthly payment)	\$634	\$709	\$556	\$600
Total transportation cost per month for a \$8,000 gas vehicle (financed at 11%)	\$729	\$729	\$729	\$729
<b>Monthly savings ZEV compared to gas</b>	<b>\$95</b>	<b>\$0</b>	<b>\$173</b>	<b>\$107</b>

# Low-Income ZEV Purchase Program Design – Incentive Budget

The following tables provide an estimated budget incentive for two scenarios described during Phase I of this project:

- **1B – Reference (updated)** – Reference Scenario 1A was updated with 2018-2022 sales numbers (lower than projected) from [Maryland’s State Plan for National Electric Vehicle Infrastructure \(NEVI\) Formula Funding Deployment Plan](#).
- **5 – ACC II – 80% BEV + 20% PHEV** – Same as Scenario 4, except 80% BEV/20% PHEV sales 2026+. The number of ZEVs is the same as Scenario 4; fleet makeup is different – \*\*Most relevant since Maryland adopted the ACC II requirements.

In both instances we used an adoption rate of 20% to calculate the cost of providing an additional incentive for new vehicles (i.e., we formulated the hypothesis that 20% of income-eligible beneficiaries would buy or lease a new ZEV while 80% of income-eligible beneficiaries would buy or lease a used ZEV). This number is not informed by a dedicated analysis. For a more robust incentive budget this number should be informed by:

- Further study of the current low-and-moderate income market
- Programmatic goals and objectives should the State pursue a “cash for clunker” or “replace your ride” initiative

# Low-Income ZEV Purchase Program Design – Incentive Budget – Scenario 1B Reference (Updated)

Year	Total annual ZEVs sales (new vehicle only)	Sales eligible to state incentives (Low-and-moderate income)	Sales eligible to "low-income" adder	"Base incentive" budget	"New ZEV incentive" budget	Total "base incentive" & "New ZEV incentive"
2024	21,617	6,053	3,675	\$29,182,600	\$5,944,604	\$35,127,204
2025	33,927	9,499	5,768	\$45,801,119	\$9,329,858	\$55,130,977
2026	31,505	8,821	5,356	\$42,531,594	\$8,663,843	\$51,195,438
2027	37,251	10,430	6,333	\$50,288,334	\$10,243,920	\$60,532,254
<b>Total</b>	<b>124,299</b>	<b>34,804</b>	<b>21,131</b>	<b>\$167,803,648</b>	<b>\$34,182,224.54</b>	<b>\$201,985,872</b>

# Low-Income ZEV Purchase Program Design – Incentive budget – Scenario 5 ACC II – 80% BEV + 20% PHEV

Year	Total annual ZEVs sales (new vehicle only)	Sales eligible to state incentives (Low-and-moderate income)	Sales eligible to "low-income" adder	"Base incentive" budget	"New ZEV incentive" budget	Total "base incentive" & "New ZEV incentive"
2024	56,229	15,744	9,559	\$75,908,923	\$15,462,929	\$91,371,852
2025	83,366	23,342	14,172	\$112,543,763	\$22,925,581	\$135,469,344
2026	111,758	31,292	18,999	\$150,872,920	\$30,733,373	\$181,606,292
2027	134,352	37,619	22,840	\$181,375,714	\$36,946,905	\$218,322,619
<b>Total</b>	<b>385,705</b>	<b>107,997</b>	<b>65,570</b>	<b>\$520,701,320</b>	<b>\$106,068,787</b>	<b>\$626,770,107</b>

# Low-Income ZEV Purchase Program Design – Modifications to the Existing Sales Tax Exemption

## Maryland currently offers Sales Tax Exemption for New ZEV purchases for

- Plug-in vehicles with manufacturer suggested retail price (MSRP) <\$50,000 qualify for exemption from sales tax of 6%
  - Maximum value of exemption is therefore \$3,000
  - However common BEVs such as the Nissan Leaf or Chevy Bolt would receive approximately \$1,700-\$1,800

Used vehicles and pickup trucks do not currently qualify for any sales tax exemption

## The following modification to the existing sales tax exemption could support equitable ZEV adoption

- Allow used vehicles to qualify for sales tax exemption, in conjunction with criteria set for a state income-based incentive.
- The sales tax exemption is very funding constrained. The Fiscal Year 2024 budget (\$8.25 M) might provide approximately 4,000 incentives – and be gone in 2-3 months. As mentioned, this kind of start-stop of incentive greatly diminishes impact on the market and tend to first benefit wealthy households.
  - If the tax exemption budget remains constant and insufficient to cover all ZEVs expected car sales, a sales tax exemption should be available only to income-eligible households, in line with a State incentive program (28% of Maryland households).
  - If the sales tax exemption will continue to be offered to upper income households a dedicated carveout for income-eligible households would address this equity issue. This carveout should be structured based on the targeted number of low-and-moderate income incentives.

# Low-Income ZEV Purchase Program Design – Opportunities for Guaranteed or Subsidized Financing for Low-Income Households

## Financing can play two important roles

- Lowering cost of capital to make ZEVs more accessible
- “De-risking” income-eligible Marylanders with a credit score lower than 640

Low credit score and income levels are not always correlated. A dedicated market study is needed to further understand the proportion of income-eligible Marylanders in need of “de-risking” to access a car loan or lease.

## Car leases as a financing instrument

A lease is a financing model that involves the following transactions:

- The car dealer sells the vehicle to a financing company
- The financing company becomes the lessor, and the owner of the vehicle.
- The end-user is the buyer or lessee.

As a result, the risk associated with lease monthly payment default is borne by the lessor. For a lease, most dealers and their financing partners may still require a credit score of at least 650.

## Financial products to complete income-eligible incentives

This report recommends features to consider when developing a financial product meant to serve income-eligible households. The Maryland Clean Energy Center has expressed an interest in further exploring how to best leverage financing to support ZEVs adoption for income-eligible Marylanders.

# Low-Income ZEV Purchase Program Design – Opportunities for Guaranteed or Subsidized Financing for Low-Income Households

## Key features to explore further for a financing product

- Loans or leases benefitting from a publicly funded guarantee, should apply interest rates comparable to at least what a customer with a high credit score would be offered. Further study of rates currently offered via car dealerships and commercial lenders will be needed.
- The financial product should be structured to be compatible with a leasing model, including for used ZEVs.
- To maximize the leverage effect of public funding, a dedicated financial product should focus on underwriting the risk associated with a customer's default on their loan or lease monthly payments.
  - As with any “first loss” model, such product would cover only a limited amount of debt service (for example 6 months of lease payment or principal and interest payments for a loan) to account for what would be a reasonable amount of time needed to repossess the asset.
  - Further analysis will be required to account for the residual value of the collateral (recovered vehicle) vis a vis outstanding debt obligations and potential credit enhancements needed to cover this “residual value risk”.
  - Another application would be a financial product intended to provide liquidity to mitigate the risk of late payments: households with limited financial resources might report temporary delays on their monthly payment and could need flexibility to prioritize between housing, energy, medical and transportation costs.

# Low-Income ZEV Purchase Program Design – Outreach and Marketing Practices

## Main objectives of an outreach and marketing campaign

- Stimulate interest and change attitudes toward ZEVs (education)
- Ensure eligible and interested households are aware of the program's availability and existence (promotion)
- Ensure eligible and interested households who are aware of the program's existence can easily benefit from it (program access)

## Strategy 1 - Link with existing initiatives

- Design customer campaign and dealer engagement program in tandem
  - Develop documentation that clearly outlines how the incentive program works and promote participating dealers
- Build on existing programs seeking to address the transportation crisis (case management approach)
  - As an example, non-profits such as Civic Works and some Maryland Community Action Agencies support access to transportation with a focus on workforce development
- Coordinate with and leverage state agencies outreach programs
  - For example, the California Air Resource Board Enhanced Fleet Modernization Program (EFMP) ([link](#)) leverage Tune In & Tune Up events to promote a ZEV program. This can be an effective strategy to capture residents who need to address smog issues affecting their vehicle registration status.

# Low-Income ZEV Purchase Program Design – Outreach and Marketing Practices

- Partner and coordinate with other energy programs and initiatives aimed at addressing home energy affordability gap for households with limited financial resources
  - Examples include and are not limited to Civic Works and Grid Alternative’s solar programs, DHCD-run energy efficiency programs, projects funded via MEA Low-to-Moderate Income Energy Efficiency Grant program

## Strategy 2 - Build a network of trusted messengers and prioritize community-based outreach

Community-based organizations (e.g., faith-based organizations, nonprofits providing social services (see [example for SNAP](#)), other organizations driven by community residents [“in all aspect of their existence”](#)) are important partners:

- As trusted messengers, they are more effective at addressing fears and misconceptions associated with new technology
- They can also address skepticism about “incentives” and the perception of an incentive program being “to good to be true”, which may result from a history of predatory practices in the Maryland energy sector.
- They are effective at reaching targeted audience “where they are”. As potential “one-stop-shop” they are also a good fit to integrate access to ZEVs within a holistic approach aiming to address access to transportation issues.

### *Example from outside of Maryland*

[Grid Alternative’s Access to Clean Mobility Program](#) is pairing clean mobility options with its access to solar program and is partnering with the California Air Resources Board to administer a “one-stop-shop” pilot to “simplify the pathway to clean transportation funding and other benefits”

# Low-Income ZEV Purchase Program Design – Outreach and Marketing Practices

## Strategy 3 – Focus outreach and education efforts on Maryland areas

- Program administrator should leverage [MDE Environmental Justice tool](#) to identify where to prioritize stakeholder engagement and partnership building with community-based organization and other outreach related activities
  - The used vehicle market analysis found in this report also provides valuable insights on where to prioritize engagement

## Strategy 4 - Ensure marketing materials are adapted to the targeted audience

- Community partners are key to understand attitudes and perceptions that need to be factored in the development of educational and outreach campaigns.
  - These organizations are also best positioned to provide qualitative input on transportation needs and trends (e.g., reasons leading to car-dependency, barrier to modal shift toward public transportation, commute distance and frequency, and type of occupation and opportunities to charging at work)
- Community partners can support developing a “marketing playbook” that account for the diversity of the low-and-moderate income segment
- Educational and marketing document to be provided in other languages than English should be specifically develop for non-native speakers rather than translated from an English version

# Low-Income ZEV Purchase Program Design – Recommendation for Future Consultation

## Stakeholder engagement requires time and intentionality to build effective and long-lasting relationships

- A robust stakeholder engagement strategy will ensure program decisions are informed by the experience and expertise of community-based organizations, service providers, dealers and if possible, end-users
- Procedural equity best practices should also be followed to ensure inclusive and accessible processes are in place for developing and implementing an equity-focused program

## Build on stakeholder engagement efforts undertaken during the project

- Follow-up individually with project contributors to share outcome and output
- Follow-up on interest for partnering in program design and implementation expressed via one-on-one interviews
- Inquiry about and explore potential for program synergies

## Build stakeholder engagement strategy with key partners beyond the MCCC

- Continue mapping of community-based organizations and other stakeholders
- Engage with the Maryland Commission on Environmental Justice and Sustainable communities

## Address key barriers to stakeholders' participation in program design

- Community-based organizations and social services providers hold the key to successful program design
- At the same time have limited financial resources and should be financially compensated for their contributions
  - As an example, NYSERDA has developed mechanisms to compensate stakeholders from environmental justice communities for their input into NYSERDA policy and program planning, to include a [Disadvantaged Communities \(DAC\) Stakeholder Service Pool](#)

# Fleet Electrification Technical Support Program Design – Scope of Work Summary

- Stakeholder interviews with vehicle fleet-focused trade associations and/or Maryland fleet managers and *(if needed)* with a Maryland electric utility to gather perspectives
- Research of similar programs in operation/in development (utilities, states). Develop recommendations for technical support program to meet gaps in ZEV transition needs among fleets.
- Develop recommendations for technical support program to meet gaps in ZEV transition needs among fleets

# Fleet Electrification Technical Support Program Design – Research Summary

## Fleet Management Professional Interview Insights

- Interviewed
  - David Hayward, CAFM; Global Fleet Manager, ABM Industries and board director and Vice President at NAFA, Fleet Management Association
  - Maria Neve, VP Electrification and Sustainability, Wheels and Senior VP/Board of Directors at NAFA, Fleet Management Association
- Fleets are not concerned as much about range anxiety → Now concerned with product anxiety; vehicles that meets the needs & are available. Improving situation.
- What fleets that need the most help to figure out electrification?
  - Smaller fleets (10-199 vehicles): 1) tend to not have a dedicated Fleet Manager/consultant to understand/evaluate the fleet, but rather the Accountant(s) handle the fleet, 2) do not typically plan their fleet replacement cycles, often drive vehicles into the ground, 3) least likely to be involved with NAFA, but would benefit from the most
  - Rough estimate that 70% of fleet vehicles are in small fleets

# Fleet Electrification Technical Support Program Design – Research Summary

## Fleet Management Professional Interview Insights

- How to connect to smaller fleets?
  - Since not a NAFA member, no single central organization for Maryland to connect with.
  - Instead, industry-specific marketing needed to reach these fleets. For example, plumbing and HVAC associations/unions, accounting groups ([Maryland Association of CPAs](#)), supply houses (Grainger, Home Depot, etc.), and potentially dealerships
- Early targets could focus on fleets that have a higher percentage of sedans/small SUVs due to availability – Examples: sales and pharma fleets
  - Use program successes to market for next round push into pickups/vans

# Fleet Electrification Technical Support Program Design – Research Summary

## **Fleet technical assistance programs that are implemented or under development**

- Currently operating programs are concentrated in the northeast and California
- Most are led by utility companies, driven by state legislatures or public utility commissions
- Directly state-run programs are relatively rare and are narrower in scope, either complimenting utility-run programs or focusing on public fleets exclusively

## **Extant fleet advisory programs vary widely in funding and scope**

- Most help fleets assess current operations, identify suitable zero-emission vehicles, and plan charging infrastructure needs
- More expansive programs help identify funding opportunities, estimate O&M costs, and conduct environmental impact analyses
- Use the many current utility and state programs' learnings should be used to guide the development of a Maryland program

# Fleet Electrification Technical Support Program Design – Research Summary

## Common fleet electrification technical support program elements

- Applicant cost share – 0-20%, sometimes a fixed \$. Buy-in limits applicants to fleets that are serious about transitioning to electric.
- Per fleet assessment cost – \$12k-\$25k (many programs)
- Fleet type targets – frequently limited/targeted at certain fleet types; e.g., commercial fleets with 5+ vehicles, MD/HD fleets, local municipalities, state fleets
- Number of studies (limited by funding) – 10-100
- Some programs have a set aside percentage for fleets operating in disadvantaged communities (DACs)
- Program timeframe – 2-4 years was the typical range (though program extensions could be possible)
- Programs act as a feeder for other incentive programs (vehicle and charging infrastructure acquisition) to support fleets
- Programs have not required fleet meet a VMT or other high usage targeting requirement

# Fleet Electrification Technical Support Program Design – Example Programs

## Utility-Run Program: Exelon Utilities (BGE and PHI [incl. Pepco and Delmarva Power Maryland]) (Maryland) – EV for Business

- Commercial fleet customers (operate 5+ vehicles)
- \$25k per customer fleet assessments; 100 studies each (BGE and PHI)
- Broader program also includes
  - Revised line-side extension costs
  - Incentives for load side EVSE equipment purchase and installation

# Fleet Electrification Technical Support Program Design – Example Programs

## Utility-Run Program: National Grid (Massachusetts) – Phase 2 EV program: Fleet advisory services

- Free program for publicly-owned fleets, including municipal vehicles, school buses, transit organizations, and government fleets
- Support includes an online savings calculator, expert guided fleet electrification planning, and a total cost of ownership assessment
- Targeting 100 fleets by 2024 with \$2.2 million allocated, with priority given to fleets operating in environmental justice communities

# Fleet Electrification Technical Support Program Design – Example Programs

## State-Run Program: MassCEC (Massachusetts) – Mass Fleet Advisor

- Targeted program focused on support for medium-duty vehicles (MDV) and heavy-duty vehicles (HDV) vehicles (3+ total, at least 1 MDV/HDV)
  - Virtual/then in-person site assessment → detailed modeling of financial and emissions savings → vehicle and charging equipment procurement plans → recommendations for next steps
  - Program focuses on MDV/HDVs due to greater variety of MDV/HDV applications, complexity/expense of MDV/HDV ZEVs and EVSE/infrastructure, and less mature MDV/HDV ZEV market offerings, relative to LDV fleets/EVSE

# Fleet Electrification Technical Support Program Design – Example Programs

## State-Run Program: MassCEC (Massachusetts) – Mass Fleet Advisor

- Pilot program
  - Class 2b-8 - Lots of interest in lower end
  - Expansion likely. Will continue to be MDV/HDVs + in EJ communities
- Program acts as a funnel to support the MOR EV truck incentive funding program
- Tiered support structure – All fleets start with the Tier 1 basic analysis. Some are then invited to advance to the Tier 2 more detailed analysis. A small subset of those fleets will receive the Tier 3 procurement support.
  - Tier 1 – Basic analysis (65 fleets)
  - Tier 2 – Detailed analysis (15 fleets)
  - Tier 3 – Procurement support (5 fleets)

# Fleet Electrification Technical Support Program Design – Example Program Summary

Entity Type	Entity Name	Program Name	Target Customers	Customer Commitments	Scope	Budget	Number of planned assessments
State Agency	Colorado	Fleet Zero-Emission Resource Opportunity (Fleet-ZERO)	<ul style="list-style-type: none"> <li>Light-, medium-, and heavy-duty fleets (private, public, and non-profit); independent owner-operators; charging as-a-service providers; property owners, developers, and managers</li> </ul>	<ul style="list-style-type: none"> <li>Minimum 20% match required up to program maximums; reduced to a minimum 10% match for Qualifying Entities</li> </ul>	<ul style="list-style-type: none"> <li>Grants can cover costs directly associated with the purchase and installation of EV charging equipment and infrastructure for fleets, as well as costs associated with the 5-year networking and 5-year warranty requirements for the program</li> </ul>	\$50k per project maximum.	
State Agency	Energize Delaware	Grants for Local Government EV Fleet	<ul style="list-style-type: none"> <li>Local Municipalities</li> </ul>	<ul style="list-style-type: none"> <li>Evidence of Sustainability Practices</li> <li>Local Government will be required to report usage on an annual basis in a format provided by Energize Delaware</li> </ul>	<ul style="list-style-type: none"> <li>Program provides funding for EVs, EVSE, and electrification feasibility studies.</li> </ul>	<ul style="list-style-type: none"> <li>\$5M in total program funding (including infrastructure upgrades/EVSE rebates) for FY 2022</li> </ul>	<ul style="list-style-type: none"> <li>10 total grants</li> </ul>
State Agency	Massachusetts	Fleet EV Charging Deployment Grant Program	<ul style="list-style-type: none"> <li>State entities</li> </ul>		<ul style="list-style-type: none"> <li>Serves to support EVSE availability at state facilities in preparation for the anticipated transition of the state fleet to electric vehicles, particularly since new fleet EV acquisition requirements went into effect on July 1, 2022, in accordance with EO 594</li> </ul>		
State Agency	MassCEC (Massachusetts)	Mass Fleet Advisor	<ul style="list-style-type: none"> <li>MD/HD fleets (at least 3 vehicles)</li> </ul>	<ul style="list-style-type: none"> <li>Free to eligible customers</li> <li>Must pursue incentives for &gt;1 truck through MOR-EV Trucks</li> </ul>	<ul style="list-style-type: none"> <li>In-person site assessment</li> <li>Detailed modeling of financial and emissions savings</li> <li>Vehicle and charging equipment procurement plans</li> <li>Recommendations for next steps</li> </ul>		<ul style="list-style-type: none"> <li>65 MD/HD fleets</li> </ul>

# Fleet Electrification Technical Support Program Design – Example Program Summary

Entity Type	Entity Name	Program Name	Target Customers	Customer Commitments	Scope	Budget	Number of planned assessments
State Agency	Oregon	Zero-Emission Fueling Infrastructure Grant	<ul style="list-style-type: none"> <li>MD/HD Fleet Customers</li> </ul>		<ul style="list-style-type: none"> <li>to support grants to public or private entities for capital improvements and technical assistance to support the installation of charging infrastructure for zero-emission medium- and heavy-duty vehicles</li> </ul>	\$15M total program budget (includes rebates for infrastructure upgrades and EVSE rebates)	
State Agency	Washington	Electrification of Transportation Systems Program	<ul style="list-style-type: none"> <li>Washington local governments, Tribal Governments, and retail electric utilities.</li> </ul>			\$970k	5
Utility	BGE, Pepco, and Delmarva (Maryland)	EV for Business	<ul style="list-style-type: none"> <li>Commercial fleet customers (operate 5 or more vehicles)</li> </ul>	<ul style="list-style-type: none"> <li>Refundable \$2.5k customer buy-in</li> </ul>	<ul style="list-style-type: none"> <li>Online GHG and Cost savings calculator</li> <li>Fleet Assessments</li> <li>Revised line-side extension costs</li> <li>Incentives for load side EVSE equipment purchase and installation</li> </ul>	<ul style="list-style-type: none"> <li>\$2.5M (\$25k per customer) for fleet assessments.</li> <li>\$1.2M (\$15k max per location) for line-side upgrades.</li> <li>50% up to \$5k per L2 port and up to \$15k per DCFC, with a site maximum of \$30k for EVSE purchase and installation.</li> </ul>	<ul style="list-style-type: none"> <li>100 for each utility (BGE and PHI)</li> </ul>

# Fleet Electrification Technical Support Program Design – Example Program Summary

Entity Type	Entity Name	Program Name	Target Customers	Customer Commitments	Scope	Budget	Number of planned assessments
Utility	Consumers Energy (Michigan)	PowerMIFleet	Fleet Owners	Be a Consumers Energy Electric Customer. Customers who purchase electricity through an Alternate Electric Supplier (“Retail Open Access”) are not eligible to participate. Own or Lease the Property. Must have authority to install charging infrastructure at your site. Own and Use at Least One EV Your business or organization must acquire and deploy a minimum of one light, medium, or heavy-duty electric fleet vehicles. Provide Data Related to Charger Use. Once the chargers are installed and operational, your organization must agree to share charger use data with Consumers Energy for the duration of the PowerMIFleet pilot program	Customized electrification assessment, including vehicle and charging station recommendations, cost savings, and environmental benefits. Charging station Rebates Make Ready Upgrades		
Utility	DTE Energy (Michigan)	Charging Forward eFleets			<ul style="list-style-type: none"> <li>Operational Assessment</li> <li>EV Recommendation</li> <li>eFleet Fueling Requirements</li> <li>Charging and Facility Needs</li> <li>Financial Analysis</li> </ul>	\$13.4M total program budget including rebates for EVSE	

# Fleet Electrification Technical Support Program Design – Example Program Summary

Entity Type	Entity Name	Program Name	Target Customers	Customer Commitments	Scope	Budget	Number of planned assessments
Utility	Duke Energy (Indiana)	EV Complete: Fleet Electrification Advisory Service	• Commercial Fleet Customers		<ul style="list-style-type: none"> <li>• Establish a customer roadmap for fleet electrification</li> <li>• selecting appropriate vehicles and evaluating total cost of ownership.</li> <li>• performing existing site capacity studies for potential charging needs.</li> <li>• planning support for charging infrastructure.</li> <li>• providing OEM vehicle and hardware insights.</li> </ul>	• \$540k (\$12k per project)	• 45
Utility	Duquesne Light (Pennsylvania)	Electric Fleet Advisory Service	<ul style="list-style-type: none"> <li>• Commercial fleet customers that operate 10 or more vehicles.</li> <li>• Non-profit customers that operate 6 or more vehicles.</li> </ul>		<ul style="list-style-type: none"> <li>• EV acquisition recommendations for up to 10 years.</li> <li>• Capital, O&amp;M, and Total Cost of Ownership comparisons.</li> <li>• EV charging infrastructure requirements.</li> <li>• Available financial incentives.</li> <li>• Environmental impact analysis.</li> </ul>	• Yearly budget of \$292k including program administration costs.	
Utility	National Grid (Massachusetts)	Phase 2 EV program: Fleet advisory services	• Public entities (transit agencies, school buses, municipalities, etc.)	• Free to eligible customers	<ul style="list-style-type: none"> <li>• Free expert analysis to help 100 public fleet operators understand how shifting vehicle fleets to electric power sources can benefit their organization and community.</li> <li>• Deliverables include customized report to highlight impact of electrification, personalized EV recommendations , and identification of eligible financial assistance programs.</li> </ul>	• \$2.2M	"a total of 100 fleet operators in its service territory"

# Fleet Electrification Technical Support Program Design – Example Program Summary

Entity Type	Entity Name	Program Name	Target Customers	Customer Commitments	Scope	Budget	Number of planned assessments
Utility	Peninsula Clean Energy	Public EV Fleets Program	Public Fleets (local agencies and schools)	<p>All public agencies located within Peninsula Clean Energy's service territory can apply, and all vehicle classes are eligible.</p> <p>Public agency fleets must commit to replace at least five vehicles or install at least five EV chargers within 12 months and agree to share ongoing charging data with Peninsula Clean Energy. A full list of requirements is available in the Fleet Customer Participation Agreement (PDF).  <a href="https://www.peninsulacleanenergy.com/wp-content/uploads/2022/11/PCE-Public-Fleet-Participation-Agreement.pdf">https://www.peninsulacleanenergy.com/wp-content/uploads/2022/11/PCE-Public-Fleet-Participation-Agreement.pdf</a></p>	<p>Our public EV Fleets program provides comprehensive planning (at no cost to your agency) and funding to guide your fleet transition to EVs and EV charging infrastructure, including:</p> <p>EV fleet replacement plan                      Fleet EV charging needs assessment                      Charging installation plans                      Permit-ready plans (if needed)                      Funding overview                      Energy optimization plan                      Energy management services (optional)</p>		
Utility	PG&E (California)	EV Fleet	• MD/HD Fleet Customers	• operate at least 2 medium or heavy-duty electric vehicles (for each installed charger)	• EV Fleet Program offers dedicated electrical infrastructure design and construction services, significant cost offsets and additional EV charger rebates for eligible equipment	• \$236M total program budget (includes infrastructure upgrades and EVSE rebates)	• 700+

# Fleet Electrification Technical Support Program Design – Example Program Summary

Entity Type	Entity Name	Program Name	Target Customers	Customer Commitments	Scope	Budget	Number of planned assessments
Utility	Salt River Project (Arizona)	Fleet Advisory Services and EQSP Program	• Commercial fleet customers operating 5 or more vehicles		<ul style="list-style-type: none"> <li>• Total cost of ownership models for the current and proposed electrification solution(s)</li> <li>• Simple payback calculations</li> <li>• Estimated emissions impact of the proposed electrification solution(s)</li> <li>• Estimated SRP incentives the customer may be eligible for</li> <li>• Additional funding information the customer may be eligible for (This includes VW funding, DERA, VALE, or other federal or state funding sources that may be applicable.)</li> </ul>	Up to \$20k per assessment.	
Utility	Seattle City Light (Washington)	Fleet Electrification Program			<ul style="list-style-type: none"> <li>• customized analysis with estimated cost savings and greenhouse gas reductions.</li> <li>• personalized recommendations on electric vehicles (EVs) to improve your bottom line, the community, and the environment.</li> <li>• help with incentives and grants to reduce electrification costs.</li> </ul>		

# Fleet Electrification Technical Support Program Design – Example Program Summary

Entity Type	Entity Name	Program Name	Target Customers	Customer Commitments	Scope	Budget	Number of planned assessments
Utility	Southern California Edison (California)	Charge Ready Transport Program: TE Advisory Services	• MD/HD Fleet Customers	<ul style="list-style-type: none"> <li>• Lease, purchase, or convert at least two medium- or heavy-duty battery-powered EVs.</li> <li>• Own or lease the property where chargers are installed and operate and maintain chargers for a minimum of 10 years.</li> <li>• Provide data related to charging equipment usage for a minimum of five years (on-road vehicles only).</li> </ul>	<ul style="list-style-type: none"> <li>• Educational Events</li> <li>• Fleet assessments</li> <li>• Site feasibility assessments.</li> </ul>	•\$4.8M	
Utility	Xcel Energy (Colorado, Minnesota, Wisconsin, New Mexico)	Fleet Electrification Advisory Program (FEAP)	• Commercial fleet customers (operate 5 or more vehicles)	<ul style="list-style-type: none"> <li>• Participants must have plans to procure EVs and install charging infrastructure within the next year.</li> <li>• Participants agree to install telematics equipment and share assessment data for collaboration with Xcel Energy's team.</li> </ul>	<ul style="list-style-type: none"> <li>• provides fleets with suitability assessment, data analysis, and advisory services for free as the first step to fleet electrification</li> </ul>	• \$15M total program budget including incentives for EVSE	

# Fleet Electrification Technical Support Program Design Recommendations – Concepts

## Maryland Energy Administration (MEA) should stand up a fleet advisory services program

- MEA already has a program in place to provide EVSE rebates to various entities
- Could manage centrally and contract with 1+ 3<sup>rd</sup> party consultant(s) to execute
- Or contract with a 3<sup>rd</sup> party consultant team to manage and execute
- Supplement separate similar utilities' programs
- Guide study results to relevant incentives for vehicles and charging infrastructure
- Major electric utilities in Maryland already provide EVSE purchase/install incentives

## Fleet advisory service structure

- Focus bulk of technical assistance on smaller fleets, as they are the least likely to have the resources to proactively consider and pursue electrification opportunities
- However, suggest reserving a portion of spots for large fleets, as engagement with them could potentially yield greater conversions per unit effort expended

# Fleet Electrification Technical Support Program Design Recommendations – Concepts

## Consider phased approach for support

- Phase 1 – Initial ZEV Deployments: Fleets with no ZEVs and want to start by deploying a low number of ZEV (less than 10% of fleet) in the near-term (1-2 years). Recommended ZEVs likely to be successful operationally, creating buy-in among operators for scaling-up in the future.
- Phase 2 – Larger-Scale ZEV Deployments: Larger scale (40-50% of fleet), medium- to longer-term ZEV deployment – Focus technical resources on fewer fleets with larger GHG savings potential with higher level of support
  - For fleets that have either completed Phase 1 and begun ZEV deployment, or for fleets that already have some ZEV and are ready to plan for larger-scale ZEV deployment
- For both, include equity components, such as targeting 50% of funding in EJ communities

# Fleet Electrification Technical Support Program Design Recommendations – Concepts

## How to design program to maximize impact

- Maximize GHG reduction by tailoring support to LDV fleet applications with market-ready electric substitutes (sedans, SUVs, pickups, vans). Adjusting over time as vehicle market availability changes.
- Devote substantial resources to outreach/promotion, as our research has shown current programs are hampered by low participation driven by lack of awareness
  - In addition to email marketing and direct outreach (cold calls), a coordinated marketing campaign including advertisements on radio, social media, billboards, and promotion at fleet and trade shows should help increase awareness and participation.
  - Include relevant trade associations/unions, accounting groups ([Maryland Association of CPAs](#)), supply houses (Grainger, Home Depot, etc.), and potentially dealerships where target fleets are likely to use/be during their normal business.
  - Consider modest referral incentive to encourage participating fleets to promote program to their peers
  - Use testimonial from completed studies for recruiting

# Fleet Electrification Technical Support Program Design Recommendations – Concepts

## How to design program to maximize impact (cont.)

- Consider including MHDVs in fleet advisory program in addition to LDV
  - Compared to LDVs, MHDVs have greater variety of fleet applications, MHDZEVs are more complex and expensive, are likely to require more electrical charging power/capacity, resulting in more complex and expensive EVSE and electrical infrastructure requirements, current funding opportunities are typically less comprehensive and may require stacking, and the MHDZEV market is less mature (through rapidly growing)
  - MHDVs also consume more fuel and produce significantly more GHG emissions on a per-vehicle basis than LDVs, so targeting them will help maximize GHG reductions ([source](#))
  - Consider focusing on market-ready MHDZEV applications that currently offer acceptable total cost of ownership and operational capabilities – specifically electric terminal tractors, step/cargo vans, HD regional haul tractors, and MD box trucks ([source](#))

# Fleet Electrification Technical Support Program Design Recommendations – Concepts

## Recommended technical support activities

- Establish a customer roadmap for near- or medium-term fleet electrification, based on customer phase (Phase 1 or Phase 2)
  - Phase 1: Recommend current fleet vehicles that are best near-term financial and operational candidates for replacement with ZEV
  - Phase 2: Develop detailed fleet electrification plan to transition fleet to 40-50% ZEV over medium-term
- Include:
  - Fleet-required to provide fleet and facility information data in standardized form and format
  - Review and assess existing fleet vehicles, operations, facility, and organizational support for (and/or concerns regarding) fleet electrification
  - Integrate relevant State and utility incentive programs to streamline results, improve economics, and remove customer barriers to continue

# Fleet Electrification Technical Support Program Design Recommendations – Concepts (cont.)

- Complete detailed modeling of financial (simple total cost of ownership) and emissions savings of recommended ZEV replacements and charging infrastructure, including any eligible incentives (vehicle, charging) and/or savings opportunities (ex. cooperative purchasing)
- Provide OEM vehicle and charging hardware guidance and considerations. Recommend specific ZEV and charging station make/model selections where appropriate.
- Develop implementation plan, charging plan, and next steps
- Post-deliverable follow up to check in on implementation status and troubleshoot barriers

## Examples of publicly available analytical tools to support this work

- Argonne National Laboratory – [Alternative Fuel Life-Cycle Environmental and Economic Transportation \(AFLEET\) Tool](#)
- Electrification Coalition/Atlas EV Hub – [Dashboard for Rapid Vehicle Electrification \(DRVE\)](#)
- U.S. Department of Energy Alternative Fuels Data Center – [Vehicle Cost Calculator](#)

# Fleet Electrification Technical Support Program Design Recommendations – Concepts (cont.)

## Funding Level

- Suggest maximum of \$20k per fleet. Amount should scaled down based on fleet's size and complexity (vehicle diversity and number of facilities). For example, simpler operations (e.g., single location with a few vehicles) could be done for much less to maximize the funding utility and extend the funds.
- Suggest a 10% cost share upfront that is refunded if the fleet moves forward purchasing 1+ ZEV within 12 months of the assessment
- Suggest 100 fleets, assumed at top level, for \$2,000,000. Likely >100 fleets will be supported since not all studies will be large/complex.

## Timeframe

- Suggest 4-year initial program (2024-2027)
- Review results and participant feedback during program to improve/adjust.
- Reevaluate program success and status of need to determine how much longer to extend