October 28, 2021

California Air Resources Board
Advanced Clean Fleets Program
1001 I Street, Sacramento, CA 95814
P.O. Box 2815, Sacramento, CA 95812
(submitted online via:
https://www.arb.ca.gov/lispub/comm2/bcsubform.php?listname=acf-comments-ws&comm_period=1)

SUBJECT: ENVIRONMENTAL DEFENSE FUND RESEARCH AND SUPPORT FOR ADOPTION OF ADVANCED CLEAN FLEETS REGULATION

Dear CARB Staff,

On behalf of Environmental Defense Fund (EDF), please accept this letter in support of the development and passage of the Advanced Clean Fleet (ACF) rule. The information provided herein is meant to provide context for our support of the rule as well as guide effective program design and implementation. It has been developed and assembled through an array of reports developed by EDF, consultants we have contracted with such as MJ Bradey, GNA (Gladstein, Neandross and Associates) and PwC, other eNGO advocacy organizations, industry participants, and others.

California faces some of the worst air quality in the country. Given the urgent need to reduce this harmful air pollution and to mitigate harms from the climate crisis, the ACF could not come soon enough. Nationally, long-haul combination truck tractors are the largest contributors to pollution in the on-road transport sector, followed by regional haul tractors and heavy-duty pickups and vans. These three market segments contribute more than three quarters of the climate and air quality impacts of medium and heavy duty (MHD) fleets nationwide. Most of the remaining emissions result from class 3-8 vocational vehicles, including buses, construction trucks, single-unit freight trucks (return to base), and vans and single-unit trucks used in the delivery of local services.[1] Given that the ACF rule will work across all of these vehicle segments to cut pollution

[1] M.J. Bradley &Associates, *Medium- & Heavy-Duty Vehicles: Market structure, Environmental Impact, and EV Readiness*, http://blogs.edf.org/climate411/files/2021/08/EDFMHDVEVFeasibilityReport22jul21.pdf, pgs 14-15

1107 9th Street
Suite 1070
Sacramento, CA 95814
T 916 492 7070
F 916 441 3142
edf.org
New York, NY / Austin, TX / Bentonville, AR / Boston, MA / Boulder, CO / Raleigh, NC
Sacramento, CA / San Francisco, CA / Washington, DC / Beijing, China / La Paz, Mexico

and promote innovation, we urge your agency to proceed with adoption of a well-designed and stringent rule without delay.

Please feel free to contact me if you have any questions with the material contained herein at lnavarro@edf.org, or by phone at (916) 492-7074.

An Overview of Market Readiness

The last few years have seen substantial improvements in the value proposition and market-readiness of MHD Zero Emissions Vehicle (ZEV) technologies. According to research conducted by M.J. Bradley and Associates and others:

- There are a large number of market segments of MHD vehicles that demonstrate strong potential for near-term ZEV uptake.

- MHD ZEV have high ratings for commercial truck availability, ease of charging, ability of many existing EV models to meet operational requirements, and cost parity between several existing EV models with current diesel and gasoline vehicles. Virtually all market segments have the potential to be fully mature by 2025, meaning that any trucks necessary for business purposes will soon be available, if they are not on the market today.[2]

- Transitioning fleets to electric vehicles will be feasible for many use cases.[3] Indeed, nearly 60% of vehicles in the MHD fleet will be able to use Home Base charging – these include heavy-duty pickups, vans, buses, some box trucks, delivery trucks, refuse haulers, dump trucks, and some regional haul tractors. (This finding is also supported by analysis conducted by EDF with the consulting group Gladstein, Neandross and Associates.[4]) The great majority of fleets - (as high as 80% of MHD fleets) will likely be able to use prevalent Level 2 chargers. While the cost of charging stations may be less of a barrier for certain fleets, the cost of connecting to the grid still presents a challenge. By making appropriate grid-side investments, subsidizing utility-side make-ready as a matter of course, and moving forward with utility make-ready programs - which California has been a leader in adopting - these fleets will be better able to meet their operational needs for electric vehicles. Smart grid-side investments and make-ready investments are even more critical for fleets that will need higher-powered chargers at their depots. As well, focus on installing public charging networks for the use cases that will need to extend their charging en route will also be critical. This is likely to include long-haul tractors, some regional-haul tractors, and some large box trucks. Box trucks and regional-haul tractors appear on both lists because a significant number, but less than a majority, are likely to require both home-base and public charging.[5]

- Electric engine and battery technology is commercially available today to replace much of the diesel and gasoline fleet today (nearly 60%) and meet all of their operational needs. Further, an even higher percentage is expected to be even more suitable for replacement with ZEVs over the next 5-7 years.[6] The requirements outlined in the Advanced Clean Fleet Rule are modest compared to this reality. For example, there are 11 market segments, representing 63% of the fleet, for which currently commercially available battery-electric models have large enough batteries to cover an average day of driving –

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[2] Id. at, pg 6
[3] Id. at, pg 6
[4] EDF, *Charging Forward, Recommendations for reducing charging infrastructure costs for heavy-duty trucks*, http://blogs.edf.org/energyexchange/files/2021/03/EDF-ChargingForward-FINAL.pdf
[5] M.J. Bradley &Associates, *Medium- & Heavy-Duty Vehicles: Market structure, Environmental Impact, and EV Readiness*, http://blogs.edf.org/climate411/files/2021/08/EDFMHDVEVFeasibilityReport22jul21.pdf, pg 18
[6] Id. at pg 20

and in most cases, go 50% farther than typical mileage needs. These are: Heavy-duty Pickup and Vans, Transit Buses, School Buses, Delivery Vans, Service Vans, Service Trucks, Refuse Haulers, Box Trucks (Class 3 - 5), Box Trucks (Class 6 – 7), Stake Trucks (Class 3– 5), and Stake Trucks (Class 6 – 7).[7] Additionally, for another 8% of the fleet, including Regional Haul Tractors, Delivery Trucks (Class 6-7) and Dump Trucks, currently commercially available vehicles have batteries large enough to cover at least 60% of their average daily miles.[8]

The above analysis demonstrates there are a large number of MHD truck types that have favorable ratings for *early* deployment of commercial ZEVs, including: Heavy-duty Pickup and Vans, Refuse Haulers, Delivery Vans, Service Vans, Transit Buses, School Buses, Service Trucks, Delivery Trucks, Dump Trucks, Box Trucks (Class 3-5), and Stake Trucks (Class 3-7). Collectively, these segments represent 66% of the fleet and account for 28% of GHGs, 30% of urban NOx and 37% of urban PM emitted by fleets.[9] It is critical to keep in mind that this national analysis is based on the current landscape, and does not take into account policies like the ACF or financial supports – which will serve to improve the value proposition and business case for fleet owners through accelerated economies of scale.[10]

Additionally, we are still building infrastructure in California. While California has made substantial progress in building out the needed charging infrastructure to support high volumes of MHD ZEVs, full buildout requires continued actions from utilities, private parties and the state. The adoption of the ACF will help focus and prioritize new rules to help bring down the cost of charging stations, shorten the interconnection timeline, and promote effective management of the impact of vehicles on the grid. California has led the way in developing solutions like creating a suite of financing options, utility programs to install charging stations, and rate design to accommodate the needs of commercial fleets. Notwithstanding this progress, the ACF is one strategy amongst many to transform the major movement of goods in this state; California will need to do significantly more work to facilitate installation of distributed energy resources as a way to manage charging, and have utilities work with fleets to streamline interconnection timelines.

Currently Commercially Available Truck Types

As discussed above, significant numbers of ZEV trucks are available or are becoming available now. A recent analysis of the marketplace by EDF, International Council on Clean Transportation, and Propulsion Quebec, found that 121 MD/HD ZEV models have been announced as being in pre-production or as currently in production. This number is increasing as more models are announced. According to this October 2020 report:

- The three out of the four Original Equipment Manufacturers (OEMs) that produce almost all Class 7 and 8 tractor truck sales, considered to be the hardest ZEV type to commercialize, have at least a prototype of a ZEV model and are moving towards production and commercialization. Several other manufacturers, both long-term and

[7]Id. at pg 19
[8] Id. at pg 20
[9] Id. at pg 24
[10]Id. at pg 25

new, are also developing prototypes, commercial projects, or have offerings, in this once difficult area.

- Classes 4-6 have seen a significant amount of attention from manufacturers as use case scenarios such as localized delivery are primed for electrification. A diverse array of ZEV models have been announced with all of the ZEV powertrain suppliers offering models.
- In the Class 2 space, new announcements have been made regarding electric models of Ford, Tesla and GM light-duty pickups. Ford plans to offer a battery-electric variant of its Transit van, while GM has announced plans for release of an electric Silverado and Hummer. SEA Electric is also bringing Class 2B and 3 trucks to market.
- There are considerable options for school and transit buses.[11]

A 2021 MJ Bradley report clarifies the availability as:

> …there is growing and accelerating interest from the 12 major OEMs …which account for 90% of the current in-use fleet. Most of these manufacturers have prototype EV models under development or have in-use pilot or demonstration fleets under test. Several have announced they will begin limited production or full commercial introduction of one or more electric models in 2021 or 2022. The announced model introductions from major OEMs include vehicles across the MHD spectrum, from Class 3 vans to Class 6 box and work trucks, to Class 8 tractors. There are also a number of well-funded start-up companies entering the market specifically to produce electric trucks – primarily for short- and long-haul freight deliveries.
>
> Several major manufacturers have recently announced plans to introduce light-duty (<8,500 lb GVWR) electric delivery vans, and two major OEMs and four start-up companies have announced the launch of light-duty electric pickups in the next three years. No companies have yet announced any plans for electrification of heavy-duty vehicles in this segment (Class 2b-3), though the announcements from manufacturers like Ford and Rivian in the light duty truck space may pave the way for manufacturing opportunities in the heavier duty truck space in the next few years.[12]

The tables following, "Figure 10: Announced and Available M/HD Electric Vehicles" and "Model Announcements - Medium and Heavy Duty Vehicles," from a 2021 MJ Bradley report,[13] outline these findings.

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[11] International Council on Clean Transportation, Race to Zero, 2020, https://www.edf.org/sites/default/files/documents/Race%20to%20Zero-ICCT_EDF_PQ-FINAL.pdf, pages 12-15.
[12] M.J. Bradley &Associates, *Medium- & Heavy-Duty Vehicles: Market structure, Environmental Impact, and EV Readiness*, 2021, http://blogs.edf.org/climate411/files/2021/08/EDFMHDVEVFeasibilityReport22jul21.pdf, pg 20
[13] Id. pg 22, and *Electric Vehicle Market Status Update: Manufacturer Commitments to Future Electric Mobility in the US and Worldwide*, https://www.mjbradley.com/sites/default/files/EDF_EV_Market_Report_April_2021_Update.pdf

Figure 10 Announced and Available M/HD Electric Vehicles

Vehicle Type	Regulatory Category (Vehicle, Engine)	Company Type*	Number of Companies with at least one ZEV Model		
			Production	Pre-production	Concept
Transit Bus	Vocational Urban, Heavy Heavy-Duty Engine	Major OEM	4		
		EV Manufacturer	4		2
		EV Retrofit	3		
School Bus	Vocational Urban, Medium Heavy-Duty Engine	Major OEM	2		
		EV Manufacturer	2		
		EV Retrofit	2		
Coach Bus	Vocational Urban, Heavy Heavy-Duty Engine	Major OEM			
		EV Manufacturer	3		
		EV Retrofit	1		
Shuttle Bus	Vocational Urban, Light Heavy-Duty Engine	Major OEM		5	
		EV Manufacturer	2		
		EV Retrofit	6		
Class 2b-3	Heavy Duty Pick-up and Van/ Vocational Trucks, Light Heavy-Duty Engine	Major OEM	3		
		EV Manufacturer	11		
		EV Retrofit	4		
Class 4	Vocational Trucks, Light Heavy-Duty Engine	Major OEM	1		
		EV Manufacturer	2		4
		EV Retrofit	6		
Class 5-6	Vocational Trucks, Light Heavy-Duty /Medium Heavy-Duty Engines	Major OEM		3	
		EV Manufacturer	7		
		EV Retrofit	7		
Class 7-8 Single Unit	Combination Trucks, Medium Heavy Duty Engine	Major OEM		6	
		EV Manufacturer	7		2
		EV Retrofit	1		
Class 7-8 Tractor	Combination Trucks, Medium Heavy Duty/ Heavy Heavy-Duty Engine	Major OEM		9	
		EV Manufacturer	3		2
		EV Retrofit			
Terminal Tractor	Combination Trucks, Medium Heavy Duty/ Heavy Heavy-Duty Engine	Major OEM			
		EV Only	5		
		EV Retrofit			

Model Announcements – Medium- and Heavy-Duty Vehicles

This table includes only models with an announced model name and model year introduction date. Other data is included if available; blank cells indicate that the data is not available from the manufacturer. New additions are bolded.

Medium-Duty Vehicles

Manufacturer	Model	Weight Class	Availability	Battery (kWh)	Range (mi)
Electric Last Mile Services	**Elms EV Urban Delivery Van**	**Class 1**	**2021**		**150**
Arrival	**The Arrival Van**	**Class 2b-3**	**2022**	**44-133**	**112-211**
Atlis Motor Vehicles	**XP Platform (Chassis)**	**Class 2b-3**	**2022**		
Bollinger	B2 Chass-e Cab	Class 2b-3	2022	105, 140	200
Bollinger	**Chass-E (Chassis)**	**Class 2b-3**	**2022**	**105, 140**	**200**
CityFreighter	CF1	Class 2b-3	2022		
EVT Motors	Urban Truck	Class 2b-3	2021	92.5	173
EVT Motors	Van	Class 2b-3	2021	106.2	109-173
Ford	E-Transit	Class 2b-3	2021	43-86	60-126
General Motors (BrightDrop)	EV600	Class 2b-3	2021		250
Lightning eMotors	Transit Cargo Van	Class 2b-3	2021	86, 105	140, 170
Rivian	Cargo Van	Class 2b-3	2021 (Amazon Only)		
SEA Electric	Ford Transit EV	Class 2b-3	2021	88	190
Workhorse	C 650	Class 2b-3	2021	35, 70	100, 160
Workhorse	C 1000	Class 2b-3	2021	35, 70	100, 160
Canoo	MPDV2	Class 4	2022		
Dana Nordesa	W4	Class 4	2021	80, 160	75, 150
Dana Nordesa	T4	Class 4	2021	80, 160	75, 150
Greenpower	**EV Star Cargo+**	**Class 4**	**2021**	**118**	**150**
Greenpower	**EV Star Cargo**	**Class 4**	**2021**	**118**	**150**
Greenpower	EV Star CC	Class 4	2021	118	150
Lightning eMotors	E-450 Cutaway	Class 4	2021	86, 129	80,120
Motiv	Epic E450	Class 4	2021	127	105
Pheonix Motors	Zeus 500	Class 4	2021	70-150	80, 115, 150
SEA Electric	Isuzu NPR	Class 4	2021	100	170
BYD	6F	Class 5-6	2021	221	125
BYD	6R	Class 5-6	2021		85
BYD	6D	Class 5-6	2021	221	120
Chanje	V8100	Class 5-6	2021	100	150
Daimler	Freightliner MT50e (Chassis)	Class 5-6	2021	226	125

Manufacturer	Model	Weight Class	Availability	Battery (kWh)	Range (mi)
Dana Nordesa	T5	Class 5-6	2021	80, 160	60, 120
Dana Nordesa	T6	Class 5-6	2021	160	120
EVT Motors	**Electric Van Cuttaway**	**Class 5-6**	**2021**	**106**	**173**
Kenworth	K270E	Class 5-6	2021	141	100, 200
Lightning eMotors	F-59 Cargo Van and Food Truck	Class 5-6	2021	128, 160, 192	110, 140, 170
Lightning eMotors	6500XD Cab Forward Truck	Class 5-6	2021	122, 153, 184	88, 110, 130
Lion Electric	Lion6	Class 5-6	2021	252	180
Motiv	Epic F-59	Class 5-6	2021	127	105
Navistar	International Trucks eMV	Class 5-6	2021	321	250
Peterbilt	220EV	Class 5-6	2021	140-348	200
Rousch CleanTech	Ford F-650	Class 5-6	2021	138	100
SEA Electric	Ford F-59	Class 5-6	2021	138	200
SEA Electric	Ford F-650	Class 5-6	2021	138	200
SEA Electric	Hino 195	Class 5-6	2021	138	200
SEA Electric	Isuzu NRR	Class 5-6	2021	138	200
SEA Electric	Isuzu NQR	Class 5-6	2021	138	200
XOS	X-Platform (Chassis)	Class 5-6	2021		200
Zenith Motors	Electric Step-Van	Class 5-6	2021		90
Hino	**L6 and L7**	**Class 6-7 Tractor**	**2021**		

Heavy-Duty Vehicles

Manufacturer	Model	Weight Class	Availability	Battery (kWh)	Range (mi)
BYD	8R	Class 7-8 Rigid	2021		75
Daimler	Freightliner eM2	Class 7-8 Rigid	2021	325	230
Dennis Eagle	**eCollect**	**Class 7-8 Rigid**	**2021**	**300**	
Enride	**Pod**	**Class 7-8 Rigid**	**2022/2023**		**112**
Kenworth	K370E	Class 7-8 Rigid	2021	282	100, 200
Lion Electric	Lion8 Tandem	Class 7-8 Rigid	2021	336	170
Lion Electric	Lion8 Refuse	Class 7-8 Rigid	2021	336	130
Lion Electric	Lion8 Bucket	Class 7-8 Rigid	2021	336	
Nikola	Refuse	Class 7-8 Rigid	2023		150
Peterbilt	520EV (Refuse)	Class 7-8 Rigid	2021	308-420	60-90
SEA Electric	Ford F-750	Class 7-8 Rigid	2021	138	170
SEA Electric	Isuzu FTR	Class 7-8 Rigid	2021	138	200
SEA Electric	Refuse	Class 7-8 Rigid	2021	138, 220	
Volvo	VNR Electric Straight Truck	Class 7-8 Rigid	2021	264	150
Volvo Group	Mack Trucks LR Electric	Class 7-8 Rigid	2021		
BYD	8TT	Class 7-8 Tractor	2021	409	175
Daimler	Freightliner eCascadia	Class 7-8 Tractor	2022	550	250
Hino	**XL Series**	**Class 7-8 Tractor**	**2022**		

Sources: M.J. Bradley &Associates, *Medium- & Heavy-Duty Vehicles: Market structure, Environmental Impact, and EV Readiness, http://blogs.edf.org/climate411/files/2021/08/EDFMHDVEVFeasibilityReport22jul21.pdf, pg 22,*

and *Electric Vehicle Market Status Update: Manufacturer Commitments to Future Electric Mobility in the US and Worldwide, https://www.mjbradley.com/sites/default/files/EDF_EV_Market_Report_April_2021_Update.pdf, pages 37-38*

As indicated, the MHD ZEV space is ready for expanded policy attention. Policies like the ACF, as well as the ever-decreasing costs of ZEV ownership - provided there is sufficient public and private investment and availability of refueling infrastructure - will provide a pathway for MHD ZEVs to increasingly replace diesel MHDVs over the next two decades.[14] Indeed, CARB has found that the increase in manufacturers announcing MHD ZEVs warranted an increase in the sales requirement.[15]

Battery Costs Are Plummeting

In addition to substantial model availability and reduced fuel costs compared to fossil fuels, battery costs are also lowering the costs of MHD ZEV vehicles overall, increasing the financial attractiveness of these vehicles.

Recognizing that leading cost assessments are now outdated and overly conservative as ZEV technologies have advanced rapidly and battery prices have fallen dramatically, EDF has contracted with Roush Industries to conduct an evaluation of the cost of electrifying several MHD market segments to develop incremental costs and total cost of ownership (TCO) for battery electric vehicles (BEVs) in the 2027-2030 timeframe. Segments evaluated include transit buses (class 8), refuse haulers (class 8), school buses (class 7), and shuttle buses (class 3-5), as well as class 3-7 trucks and vans in key segments.

Roush's incremental cost assessment includes a ground-up technology review of both ICE and EV components. The TCO assessment focuses on direct financial costs related to vehicle ownership, comparing BEV costs to comparable ICE vehicles to project the approximate timeframe for cost parity with those ICE counterparts.

Roush's report is expected to be published in the coming weeks and we will share it with CARB when it is ready.

Fleets Believe in ZEVs

Because of cost savings and sustainability reasons, fleets with the ability to do so, like Amazon, PepsiCo, Walmart, DHL, UPS, Pride Group, and FedEx, have ordered trucks of various classes. Fleet ZEV commitments can be seen in EDF's periodically updated Electric Fleet Deployment &

[14] *See* International Council on Clean Transportation, Race to Zero, 2020, https://www.edf.org/sites/default/files/documents/Race%20to%20Zero-ICCT_EDF_PQ-FINAL.pdf, pg. 16
[15] California Air Resources Board, "Attachment B: Updated Analysis Regarding Increased Manufacturer Zero-Emission Vehicles Sales Requirements, https://ww2.arb.ca.gov/sites/default/files/classic/regact/2019/act2019/30dayattb.pdf

Commitment List[16] and in part of the table "Sample of Fleet Electrification Commitments" from M.J. Bradley, reproduced below.[17]

Table 1 Sample of Fleet Electrification Commitments

Sector	Company	Electric Fleet Plans
Retail	Ikea Group*	2020: Electrify deliveries in Amsterdam, Los Angeles, New York, Paris, and Shanghai (25% global of deliveries) 2025: 100% EV or other zero-emissions solutions for deliveries and services through suppliers
	Amazon	2022: 10,000 electric delivery vans (short-term goal) 2030: 100,000 electric delivery vans total (long-term goal)
	Clif Bar & Company*	2030: 100% fleet electrification
	Unilever	2030: 100% fleet electrification (11,000 vehicles)
	Walmart	2040: Zero emission vehicle fleet, including long-haul (6,000 trucks)
Power	Schneider Electric*	2030: 100% electric fleet (14,000 vehicles)
	Edison Electric Institute (EEI) Member Companies (investor-owned utilities)	2030: More than 70 percent of EEI member companies will collectively electrify more than one-third of their total fleet vehicles, including two-thirds of passenger vehicles in fleets. Examples include: • Xcel Energy: 2023: 100% electric sedan portion of fleet; 2030: 100% electric light-duty fleet; 30% M/HD vehicles • Consumers Energy: 2025: Buy or lease 100% of EVs for fleet • Southern California Edison: 2030: 100% electric passenger car and small-to-midsize SUV, 30% medium-duty vehicles and pickup trucks, 8% heavy-duty trucks, 60% forklifts
Transportation	Lyft**	2026: 100% new vehicles for Express Drive (driver rental program) are electric 2030: 100% EVs on platform
	King County Metro (WA)	2030: 100% zero-emissions fleet
	Lime*	2030: 100% conversion of operations fleet
	Uber**	2030: 100% of rides take place in EVs in U.S., Canadian, and European cities 2040: 100% of rides take place in ZEVs, on public transit or with micromobility
Delivery	DHL	2025: 70% of first- and last-mile delivery services with clean transport modes 2050: Reduce logistics-related emissions to zero
	FedEx	2025: 50% of Express global parcel pickup and delivery (PUD) fleet purchases electric 2030: 100% PUD fleet purchases electric 2040: 100% ZEV PUD fleet

Source: *https://www.mjbradley.com/sites/default/files/EDF_EV_Market_Report_April_2021_Update.pdf (reproduction of part of the table).*

ZEVs Bring Economic Opportunity to California Broadly

In addition to cutting pollution from the transport sector, the ACF rule also serves as an opportunity to support economic investment and growth in California. As demonstrated by a

[16] EDF's fleet deployment chart can be found here: https://blogs.edf.org/energyexchange/2021/07/28/edf-analysis-finds-american-fleets-are-embracing-electric-trucks/#more-21223?utm_source=mailchimp&utm_campaign=energyex_none_upd_engy&utm_medium=email&utm_id=1627486371

[17] EDF, EDF analysis finds American fleets are embracing electric trucks, 2021, https://blogs.edf.org/energyexchange/2021/07/28/edf-analysis-finds-american-fleets-are-embracing-electric-trucks/#more-21223?utm_source=mailchimp&utm_campaign=energyex_none_upd_engy&utm_medium=email&utm_id=1627486371 and *Electric Vehicle Market Status Update: Manufacturer Commitments to Future Electric Mobility in the US and Worldwide*, https://www.mjbradley.com/sites/default/files/EDF_EV_Market_Report_April_2021_Update.pdf, pages 23 and 24.

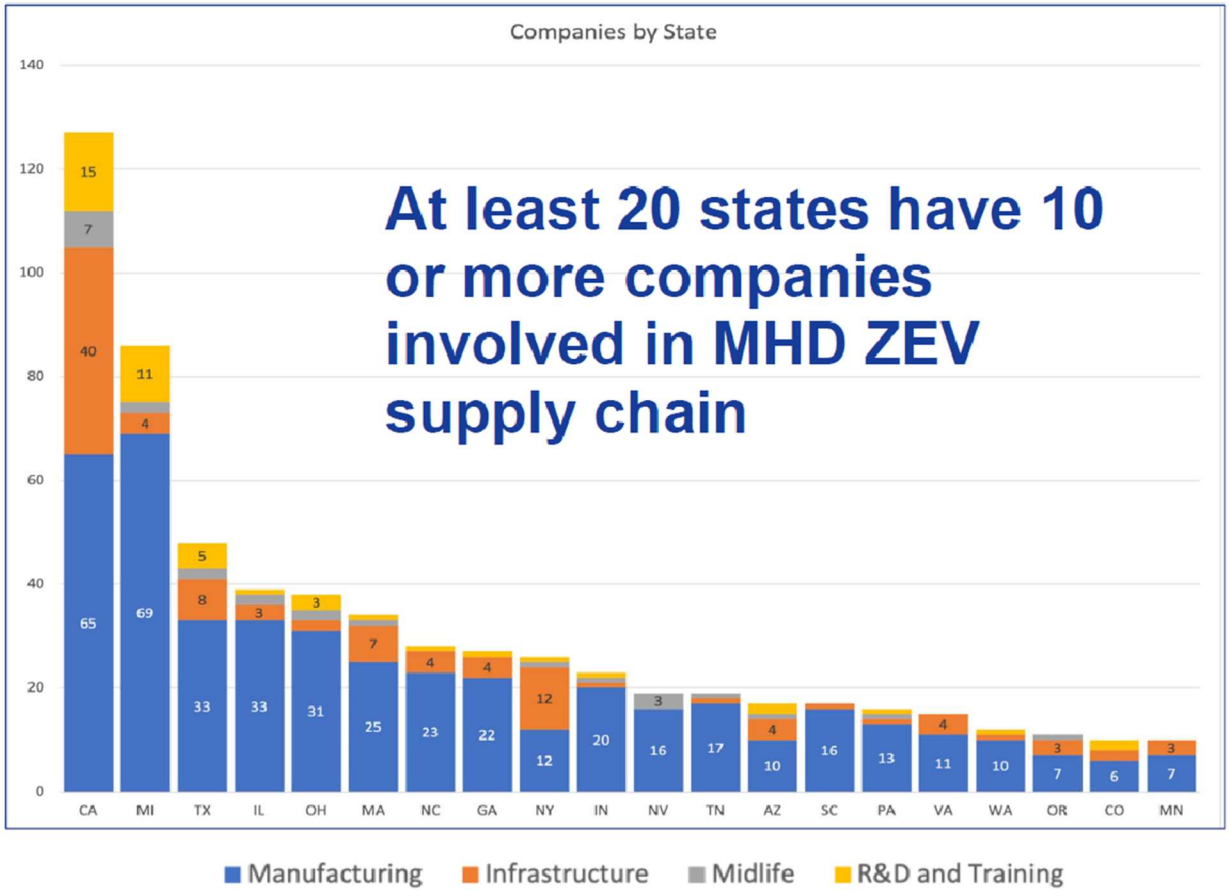
recent report by EDF with data by Strategy&, a professional consulting firm that is a member of the PwC network, California is well positioned to capitalize on the expanding ZEV supply chain and to build upon its existing industry through the adoption of the ACF rule. In this study, several components of market growth and presence were evaluated, including employment and announced corporate investments.

According to the study:

- The MHD ZEV supply chain study shows a robust and rapidly growing industry.
- As of September 2021, California leads the nation with 128 companies across the MHD ZEV supply chain, in 181 locations across the state.
- Of these companies, 86 are headquartered in California.
- Companies in California in the MHD ZEV supply chain collectively employ more than 44,000 people — which is the second highest employment behind Michigan – and have announced over $3.8 billion in new EV-related investments since 2014.
- The majority of business locations in the supply chain in California are associated with manufacturing – 101 of 181, followed by infrastructure installation.
- The majority of California employees in the supply chain are associated with vehicle assembly and infrastructure installation.
- California is one of 22 states with over $100 million in announced corporate investments in the industry.
- In California, nearly $2 billion of the state's total $3.8 billion of announced investments is attributable to infrastructure installation, primarily through the expenditure of money by the state's three investor-owned utilities to support infrastructure rollout, followed by $1.5 billion invested in vehicle manufacturing, primarily focused in the vehicle assembly sub-sector.[18] [19]

California's ZEV-friendly policies, like the already adopted Advanced Clean Truck (ACT) rule and this proposed ACF, make it a powerhouse for new innovations and startups and continued policy support for the industry and financial support for fleets will continue this trend.

[18] EDF, New study: 4 signs of a growing U.S. supply chain for zero-emission trucks and buses, 2021, http://blogs.edf.org/energyexchange/2021/07/21/new-study-4-signs-of-a-growing-u-s-supply-chain-for-zero-emission-trucks-and-buses/
[19] EDF, Medium and Heavy Duty Zero Emissions Vehicle Supply Chain Analysis, 2021, https://business.edf.org/files/National-Profile-6.29.pdf



Source: *EDF https://business.edf.org/files/National-Profile-6.29.pdf*

Funding Exists to Support the Transition

Existing Funding in California

In partnership with the favorable economics of ZEV, California has a significant amount of funding dedicated to cleaning up the trucks that are polluting our roadways. In particular, 2021 witnessed an increase in funding just when it is needed most – before these regulations go into effect. California's ongoing truck and infrastructure financing programs include: HVIP[20], AB 617 Funding[21], VW Mitigation Funds[22], Goods Movement (Prop 1B)[23], Carl Moyer[24], FARMER

[20] California HVIP, Tractor webpage, https://californiahvip.org/vehicle-category/heavy-duty/
[21] California Air Resources Board, Community Air Protection Incentives 2019 Guidelines, 2019, https://ww2.arb.ca.gov/sites/default/files/2020-10/cap_incentives_2019_guidelines_final_rev_10_14_2020_0.pdf
[22] California Air Resources Board, Volkswagen Environmental Mitigation Trust for California webpage, https://ww2.arb.ca.gov/our-work/programs/volkswagen-environmental-mitigation-trust-california
[23] Administered at the local level: https://ww2.arb.ca.gov/prop-1b-local-agency-contact-and-solicitation-information
[24] Bay Area Air Quality Management District, Carl Moyer Program webpage, https://www.baaqmd.gov/funding-and-incentives/funding-sources/carl-moyer-program

(for agricultural trucks)[25], EnergIIZE (for infrastructure)[26], and Investor Owned Utility infrastructure investments. In-depth descriptions of many of these funds can be found on the CARB website here: https://www.arb.ca.gov/msprog/truckstop/azregs/fa_resources.htm. There are also local and federal ZEV funding sources. While these programs provide money for a transition to ZEVs, the time is ripe for the state to dedicate more process into innovative funding for these vehicles, to bring in more private market capital where it makes sense.

Next Steps in State Financing Availability

The state is showing the leadership necessary to advance the aforementioned innovative financing solutions. The legislature gave CARB several important tools this year: large budget requests and bills like SB 372 (Leyva). SB 372 is designed to increase the amount of money coming from the private market for ZEVs, by expanding the scope, reach and impact of the state's financing programs. SB 372, in being implemented, reserves 75% of its funding for underserved communities and will give more direction to CARB to provide a broader array of programs designed to meet the financing considerations of different types of fleets, helping fleets of all sizes to transition to ZEV.

Conclusion

EDF strongly encourages CARB staff to propose a concrete final ACF rule for Board consideration as expeditiously as possible. Simply put, the numbers add up. Manufacturers and fleets are ready to move forward with ZEVs. With additional supportive policies coming from CARB, California can continue its role as an important manufacturer of MHD ZEV, a boon for local jobs and the state's overall economy. The ACF rule will help push the state to deploy the needed infrastructure required to decarbonize the transport of goods and services. CARB also now has the legal tools to create key financing programs to increase the amount and specialization of financing available for fleets. Everything is lined up to move towards robust - and at the same time thoughtful - ZEV requirements for MHD fleets without delay.

Sincerely,

Lauren Navarro
Senior Manager
Environmental Defense Fund

[25] California Air Resources Board, FARMER Program webpage, https://ww2.arb.ca.gov/our-work/programs/farmer-program
[26] California Energy Commission, Energy Commission Announces Nation's First Incentive Project for Zero-Emission Truck and Bus Infrastructure, 2021, https://www.energy.ca.gov/news/2021-04/energy-commission-announces-nations-first-incentive-project-zero-emission-truck