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Anastasia Palivos
Acting Commissioner
Illinois Commerce Commission
527 East Capitol Ave
Springfield, IL 62701

Submitted to: ICC.EVNOI@illinois.gov

Subject: Illinois Commerce Commission Initiates Notice of Inquiry to Evaluate Electric Vehicles

Dear Acting Commissioner Palivos:

Today's battery electric vehicles capture the imagination, as an improving and exciting technology that is said to hold great promise. Despite this interest, the meager results produced by the substantial resources that many states have already allocated to the promotion of electric vehicles should serve as a cautionary tale: Judging by low sales volumes, this technology has been consistently ignored or rejected in the marketplace by the vast majority of your constituents and it largely serves the highest income earners. When making policies that cover electric vehicles, Illinois should consider all of the environmental and economic consequences that come from that vehicle due to its raw materials, manufacture, use, and ultimate disposal.

Consumers and taxpayers should not be forced to pay more in taxes, fees and/or electric utility rates so that someone else can purchase and operate an expensive electric vehicle. The energy policies of Illinois should provide for consumer choice and allow a free market to determine the mix of energy sources required to meet societal needs. Such policies should not include subsidies meant to accelerate the adoption of EVs and the charging infrastructure necessary to support such vehicle operation in Illinois, particularly through the use of tax credits, rebates, utility rate increases, and other financial incentives. Nor should they include mandates or arbitrary targets (e.g., so many electric vehicles sold by such and such date). Rather, these policies should demonstrate an awareness of the time involved in making successful energy transitions at the societal level. For despite the assumptions that there will be millions of electric vehicles on the U.S. roads by 2025, it will likely be decades, not years, before we can determine the extent to which EVs provide a viable substitute for those vehicles powered by internal combustion engines in Illinois.

The EV charging infrastructure is currently only used by a small fraction of drivers, many of whom are wealthy enough to afford these more expensive vehicles. To allow utilities to invest in EV charging infrastructure and to then recover the costs of those investments through charges to all of their ratepayers will result in an unfair shifting of costs onto those who have not opted for this technology. In a recent statement in Maryland where they are considering similar policies, the Maryland Energy Administration (MEA) stated[1] that:

> [L]ower-income households could be subsidizing upper-income households without receiving direct benefits, which presents a serious issue of equity for Maryland ratepayers. Public transfers for private use should be given very careful consideration by the Commission.
>
> …If charging stations are rate-based, this would allow utility companies to greatly expand their market share at the expense of myriad private sector firms that are active in this space, resulting in contradictory outcomes from Petition objectives. Ultimately this approach could stifle sustainable and competitive growth in the sector…]

The concern raised in Maryland is readily applicable to Illinois. Additionally, we are concerned that any charging station pilot demonstration programs will expand into an ongoing rate-base opportunity for electric utilities by allowing them to build charging stations in remote locations, resulting in unnecessary transmission and distribution infrastructure permanently embedded into their rate bases. The costs for building electric vehicle charging stations should <u>not</u> be paid for by the government. Such infrastructure should be paid for by individual companies in the same way that gasoline stations and truck-stops operate now.

It is also critical to recognize that, "[t]oday's power facilities can accommodate tomorrow's significant rise in the number of EVs, <u>as long as</u> the vehicles are charged off peak. Faster charging during peak demand, however, will indeed have an impact. In fact, peak demand from a single EV using a top-of-the-range fast charger is 80 times higher than the expected peak demand of a single typical household."[2] How might this impact the existing grid?

Nine states have adopted the California zero emission vehicle (ZEV) mandate made possible through the exemption granted to California by the U.S. Clean Air Act. That mandate allowed the automobile manufacturers to focus early electric vehicle deployment in California and delay efforts in other ZEV states by applying a certain amount of ZEV credits for each automobile sale in California towards their quota in other states. This double-counting flexibility ended starting with model year 2018 (except for fuel cell vehicles), and this should provide incentive to the auto manufacturers to offer increasing numbers of electric vehicles for sale in ZEV states outside of California. While this flexibility was designed to give ZEV technology a helpful runway in

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[1] Letter to Terry Romine, Executive Secretary PSC, from Ankush Nayar, Assistant AG, Maryland Energy Administration, "Second Set of MEA Comments for Case No. 9478 – In the Matter of the Petition of the Electric Vehicle Work Group for Implementation of a Statewide Electric Vehicle Portfolio," August 31, 2018

[2] McKinsey Quarterly - May 2018, "Three surprising resource implications from the rise of electric vehicles," Russell Hensley, Stefan Knupfer, and Dickon Pinner (emphasis added)

California to ultimately gain commercial viability and consumer acceptance in other states, this has not happened. This should be a harbinger of the negative issues associated with government policies that attempt to override market forces and consumer choice.

California's actions are a classic example of a technology-forcing regulatory environment with a history of aspirational targets and failed outcomes, and a reminder that consumer preferences and demand should not be trivialized. The original California Low Emitting Vehicle rule adopted in the early 1990's required 10% EVs by 2003. This policy requirement significantly missed the mark. California had to adjust, modify and relax the program requirements several times (including a change to allow the certification of partial zero emission vehicles (PZEV). Yet today, after spending $449 Million on vehicle rebates alone[3], California ZEVs only account for 4.8% of light-duty vehicle sales and about 1.2% of the cars on the road in the state.[4, 5] Significant subsidies are also offered by Massachusetts, Maryland, and New York in addition to the federal subsidy (up to $7,500), yet those states have only achieved ZEV sales of 1.3%, 1% and 1%, respectively.[6, 7]

Not only have electric vehicle tax credits failed to generate substantial increases in sales, they are demonstrably regressive in terms of consumer impact. According to a study by University of California Berkeley faculty, federal clean energy "tax expenditures have gone predominantly to higher-income Americans… The most extreme is the program aimed at electric vehicles, where we find that the top income quintile has received about 90% of all credits." Ironically, automobile manufacturers have asked for subsidies for the purchase of their battery-powered cars by those who can most afford them while making greater investments in the more lucrative non-EV market. For example, an automobile manufacturer has announced that it was discontinuing most of its North American car production in favor of trucks, SUV's and cross-overs. As you contemplate a policy to create subsidies for electric vehicles and seek to be a "leader" in this space, consider that other states have been chasing this aspirational goal for a longtime and yet they have not made any meaningful headway in advancing the EV marketplace. Further consider what other state services you may have to sacrifice. Schools, emergency response, road repairs, and public safety all compete for limited state funds. Electric vehicles are generally very expensive and subsidies to purchase them have gone mostly to higher-income Americans. Creating subsidies for higher-income Americans is not fair to everyone else. So which cuts do you recommend to increase payouts to mostly wealthy consumers who want to purchase EVs as a second or third car?

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[3] Mitchel, Russ, LA Times, "Should California spend $3 billion to help people buy electric cars?", Aug 26, 2017, http://www.latimes.com/business/la-fi-hy-electric-vehicle-subsidies-20170828-htmlstory.html

[4] https://www.gov.ca.gov/2018/01/26/governor-brown-takes-action-to-increase-zero-emission-vehicles-fund-new-climate-investments/

[5] http://www.energy.ca.gov/almanac/transportation_data/summary.html

[6] Mitsubishi Outlander PHEV "Calculate your savings", https://www.mitsubishicars.com/outlander-phev/2018?cid=partner_web_link_zev_website_PHEV_MY18_prospecting_001#vehicle-hero-area

[7] Auto Alliance letters dated, May 31, 2018, to Governors Baker, Hogan and Cuomo

Regardless of existing subsidies and incentives, consumers still are not purchasing significant numbers of ZEVs. While the NOI suggests that EVs have high upfront costs but low maintenance costs, this approach does not recognize the total cost of ownership of the vehicle. According to recent studies, the cost of ownership of a battery electric vehicle (BEV) representative of current technology is between 50% and 400% more expensive than a conventional vehicle equipped with an internal combustion engine (ICEV).[8, 9] Further, though the cost is higher it doesn't account for the fact that "zero emission vehicles" are better described as "emissions displacement" vehicles. As data available on the DOE/EPA website[10], readily demonstrate, the CO2 emitted when generating and providing electricity to a battery electric vehicle is equivalent to 20-66% of that from a gasoline-fueled vehicle. (The range represents the difference between recharging an EV with electricity generated from clean fuels versus electricity generated primarily from coal.) These emissions do not count the energy required to build the vehicle and battery systems (above that needed for an internal combustion engine vehicle). A tremendous amount of energy is needed to manufacture an electric car battery and if a battery is made in China or Germany where coal is the primary fuel source for electricity generation, then the lifecycle CO2 emissions can be quite high. One study indicates that, you could need to drive a gasoline/diesel car for nearly 6 to 8 years (depending on where it's plugged in) before it released as much CO2 as the manufacturing process for a large kWh battery.[11,12] The CO2 emissions savings are therefore not nearly as consequential as is often portrayed. Finally, the environmental cost of battery disposal is frequently not accounted for. According to a recent article less than 3% of lithium-ion batteries in the world are recycled.[13] What will be done with the batteries used to power electric vehicles?

Consumers purchased nearly 17 million ICEVs. ICEVs are the backbone of the U.S. transportation system, that is supported by about 150,000 gasoline stations, 135 refineries, 212,000 miles of liquid petroleum pipelines, and 1,283 terminals[14] that supply the U.S. its transportation fuels. This fuel supply chain annually distributes more than 140 billion gallons of gasoline and 60 billion gallons of diesel, jet fuel and home heating oil from refinery gates to consumers. The fuel infrastructure and the transportation sectors are highly integrated as consumers purchase roughly 17 million new light-duty vehicles annually in the U.S.[15] and

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[8] A. Elgowainy, et al, Argonne National Laboratory, 2016, "Cradle-to-Grave Lifecycle Analysis of U.S. Light-Duty Vehicle-Fuel Pathways: A Greenhouse Gas Emissions and Economic Assessment of Current (2015) and Future (2025-2030) Technologies", https://greet.es.anl.gov/publication-c2g-2016-report

[9] John W. Brennan and Timothy E. Barder, Ph.D, "Battery Electric Vehicles vs. Internal Combustion Engine Vehicles," Arthur D. Little, 2016, http://www.ehcar.net/library/rapport/rapport201.pdf

[10] www.fueleconomy.gov

[11] https://www.thegwpf.com/new-study-large-co2-emissions-from-batteries-of-electric-cars/#_blank

[12] The Life Cycle Energy Consumption and Greenhouse Gas Emissions from Lithium-Ion Batteries: A Study with Focus on Current Technology and Batteries for light-duty vehicles, by Mia Romare, Lisbeth Dahllöf, **ISBN** 978-91-88319-60-9, 2017

[13] http://www.latimes.com/business/technology/la-fi-lithium-ion-battery-recycling-20180316-story.html

[14] https://www.irs.gov/businesses/small-businesses-self-employed/terminal-control-number-tcn-terminal-locations-directory

[15] "17 million" is an estimate based on roughly 16.9 to 17.8 million new light-duty vehicles purchased annually in the U.S. https://ihsmarkit.com/research-analysis/US-light-vehicle-sales-rise.html

sustain a total domestic fleet of approximately 250 million light-duty vehicles[16], which rely on petroleum fuel. Recent data shows that the average age of the vehicle fleet is increasing, which suggests that Americans are maintaining their vehicles longer,[17,18] underscoring the need to recognize the long-term implications of changes to transportation systems.

U.S. refineries have made significant progress in upgrading their operations to produce cleaner fuels and meet federal and state fuel standards. Operational and capital expenditures are aimed at improving the performance of the oil and gas industries' products, facilities, and operations. Upgrades, costing billions of dollars, include environmental expenditures for activities to protect our air and water, to decrease waste, and meet federal and state regulations and specifications. For example, environmental expenditures[19] in the refining sector between 1990 and 2016 reached $166.1 billion.

It is also important to note the substantial air quality benefits that have occurred as a result of the investments in cleaner fuels that have enabled lower vehicle emissions. According to the EPA, new cars, trucks, SUVs and heavy-duty trucks and buses run about 99 percent cleaner than models produced in 1970. This progress has helped reduce U.S. air pollution by 73 percent between 1970 and 2016, even as vehicle miles traveled nearly tripled and the economy grew by 253 percent.[20] Going forward, notable gains in air quality and fuel efficiency will continue as cleaner vehicles enabled by lower sulfur fuels penetrate the fleet, and with the introduction of new aerodynamic car designs, lighter vehicles constructed with new, safer materials, and increased engine efficiency. [21, 22, 23] For example, by 2025 ICEV efficiency could improve by 30%[24] and by 2050 "…the fuel economy of some of ICE vehicles could double…"[25]

API supports the adoption of policies that focus on the consumer, strengthen our energy security, improve our standard of living and protect our environment. Transportation policies should acknowledge that consumers are purchasing internal combustion engine vehicles today, and those vehicles are staying on the road longer[26] and are going farther on a gallon of cleaner Tier 3 gasoline. Transportation policies that conflict with the will of the consumer and attempt to force

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[16] U.S. Department of Transportation, Federal Highway Administration, Highway Statistics 2016, Table VM-1, December 2017
[17] EIA, Today in Energy, August 21, 2018, "U.S. households are holding on to their vehicles longer."
[18] IHS Automotive/R. L. Polk Annual Press Releases. Release November 22, 2016.
[19] http://www.api.org/~/media/Files/Publications/Environmental-Expenditures-2018.pdf
[20] US Environmental Protection Agency, "National Air Quality: Status and Trends of Key Air Pollutants" https://www.epa.gov/air-trends
[21] A. Elgowainy, , "Cradle-to-Grave…"
[22] Massachusetts Institute of Technology, "On the Road Toward 2050: Potential for Substantial Reduction in Light-Duty Vehicle Energy Use and Greenhouse Gas Emissions," 2015 http://web.mit.edu/sloan-auto-lab/research/beforeh2/files/On-the-Road-toward-2050.pdf
[23] US Environmental Protection Agency,2014, "Final Rule for Control of Air Pollution from Motor Vehicles: Tier 3 Motor Vehicle Emission and Fuel Standards," https://www.epa.gov/regulations-emissions-vehicles-and-engines/final-rule-control-air-pollution-motor-vehicles-tier-3
[24] A. Elgowainy, "Cradle to Grave…"
[25] Massachusetts Institute of Technology, "*Road Towards 2050:…"*
[26] IHS Automotive/R. L. Polk Annual Press Releases. Release *November 22, 2016*

changes in behavior should be considered with caution as they may impose undue costs on consumers and taxpayers with diminishing environmental benefits and unintended consequences.

We encourage you to evaluate and prioritize the full range of automotive technologies and fuels available for cost-effectively meeting the states' energy and environmental objectives. While your state is considering the deployment and widespread adoption of "zero-emission" and near-zero emission vehicles and engines, we encourage you to examine whether allowing your citizens to choose their mode of transportation (such as using newer vehicles with today's clean fuels) offers equal or more beneficial approaches to achieving your state's energy and environmental goals.

If you have any questions or would like to further discuss these issues, please contact Jim Watson, 217-544-7404.

Sincerely,

James R. Watson

Executive Director, API- Illinois Petroleum Council