

4675 MacArthur Court, Suite 800
Newport Beach, California 92660 USA
949.437.1400 fax: 949.612.1894

www.CleanEnergyFuels.com

Todd R. Campbell
Vice President Public Policy & Regulatory Affairs



May 21, 2018

The Honorable Mary Nichols
Chair, California Air Resources Board
1001 I Street
Sacramento, California 95814

RE: Final Comments on California's Proposed Volkswagen Beneficiary Mitigation Plan.

Dear Chairman Nichols:

Clean Energy would like to thank the California Air Resources Board (CARB) for the opportunity to comment on the proposed Volkswagen (VW) Beneficiary Mitigation Plan that will be heard before the Governing Board on May 31, 2018.

Regrettably, **Clean Energy is not supportive of the final draft** of the VW Beneficiary Mitigation Plan as we feel public input from stakeholders who are deeply concerned about the urgent air quality mitigation needs of this state have largely been ignored. Since the initial public comment period, the proposal before you today has made minimal changes despite public input asking for more immediate nitrogen oxide (NOx) mitigation from more cost-effective strategies such as low NOx trucks. **The VW proposal, in our opinion remains: (1) overly focused on "transformational technologies" that are expensive, unreliable, unproven, and premature to directly and immediately solve heavy-duty diesel truck pollution; (2) weak in providing additional NOx mitigation opportunities above and beyond the US Environmental Protection Agency's 10,000 NOx ton mitigation target to struggling local air quality districts that need billions of dollars annually to address mobile source pollution in order to meet federal ozone attainment standards; and (3) a plan that has not evaluated the opportunity loss of providing more needed funding to more cost-effective NOx strategies versus "transformational technologies" that deliver far less NOx ton reductions at an exorbitant financial cost.**

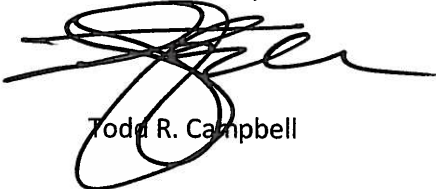
We would like to remind you that both the VW Beneficiary Mitigation Plan is a NOx mitigation fund, not a technology advancement fund to advance select state goals over public health. We would also like to remind you that California has the distinction of being the home not to one but two of the worst federal ozone non-attainment zones in the country: the South Coast Air Basin and the San Joaquin Valley. **We therefore find it unconscionable to spend the majority of these funds – roughly 70 percent – on transformational technologies that might deliver 29% of the 10,000 NOx ton requirement when CARB staff openly acknowledges that the 14 percent spent on "combustion freight" strategies will achieve roughly 71 percent of the NOx abatement required by the program.** Put another way, if the Administrative Reserve Funds remained the same and the entire program was spent on combustion freight strategies (which are significantly more cost effective), **this program has the potential of mitigating 42,600 NOx tons annually or 116.7 NOx tons per day.** Such mitigation is sorely needed now.

Perhaps more alarming is how unproven transformational technology can be given its infant stage of demonstration in the heavy-duty space. Specifically, over the weekend, the LA Times released a front page story (attached) entitled, "Stalls, stops and breakdowns: Problems plague push for electric buses." The article goes into great detail of how a certain electric bus manufacturer is currently receiving grants, subsidies and public contracts worth more than \$330 million for its battery-powered buses, forklifts, and trucks and yet the Times investigation found its buses stalled on hills, required service calls much more frequently than older buses and had unpredictable driving ranges below advertised distances, which were impaired by the heat, the cold or the way drivers braked. It also discovered that a federal testing center and transit agencies across the country logged driving ranges that were dozens of miles short of company claims, limiting the routes they can handle and requiring passengers to shuffle onto replacement buses when the batteries go low. So if the technology is falling short of expectations, how certain can CARB be about the true air quality benefits that will be achieved by heavy-duty transformational technologies with zero tailpipe emissions?

In conclusion, **we ask the board to adopt a more balanced plan**; one that supports both transformational strategies and acknowledges that deep NOx reduction needs that California needs to address right now in California's heavy-duty vehicle sectors. **We, therefore, encourage the Board of Directors at CARB to – at a minimum – split the funds in half so that cost-effective strategies can be funded at \$180 million and transformational strategies can be funded at \$180 million.** In this way, our 9 air districts that are in violation of the current federal ozone standards have a more meaningful chance to address mobile source-derived NOx emissions coming from dirty heavy-duty diesel trucks that are largely contributing to toxic and heavily polluted corridors, railyards, warehouse zones, airports and ports.

Thank you for your time and consideration. We have attached our original and more detailed comments submitted in March which appear to have been largely ignored but perhaps you will find them to be useful as you decide how these funds that were intended to mitigate dirty diesel pollution from a Volkswagen scandal should be spent.

Most sincerely,



Todd R. Campbell

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March 22, 2018

Mr. Peter Christiansen
California Air Resources Board
1011 I Street
Sacramento CA 95821

Re: Comments addressing ARB's Draft Discussion Document on California's Allocation of the Volkswagen Environmental Mitigation Trust

Dear Mr. Christiansen:

Clean Energy would like to thank ARB staff for providing us with the opportunity to comment on the draft Discussion Document concerning California's allocation of the Volkswagen Environmental Mitigation Trust.

Californians continue to live and breathe in some of the nation's worst air quality conditions and these conditions are directly caused by nitrogen oxide (NOx) emissions from both mobile and stationary sources. This is especially the case for the South Coast and San Joaquin Valley air basins given their extreme nonattainment status with tropospheric ozone. In fact, both regions desperately will need to find access to tens of billions of dollars over the next decade to reduce significant NOx emissions if they ever hope to reach attainment. Fortunately, California's large allocation of the Volkswagen Environmental Mitigation Trust (EMT) provides a genuine opportunity for air quality challenged regions a greater probability to move closer to their federal attainment goals if this money is spent without much delay and with a focus on maximum NOx reductions through cost effectiveness.

Overview of Recommendations to Immediately Maximize NOx Reductions in Non-Attainment Areas While Investing in Transformational Technologies

The following recommendations are explained in greater detail throughout this letter but are summarized here for ARB staff's convenient reference. The guiding principles used to develop these recommended changes are to:

- (1) Reduce NOx emissions quickly (avoid stretching funding over the full life of the program) and aggressively address such NOx emissions far beyond the minimum requirements of the EMT as the state possesses two extreme nonattainment zones impacted by NOx emissions;
- (2) Place greater focus on NOx emissions reductions for disadvantaged communities heavily impacted by mobile sources within non-attainment areas as these populations need meaningful NOx reductions now;
- (3) Apply cost-effectiveness principles to ensure the EMT maximizes NOx emissions from the available funding; and,

(4) Adopt a balanced approach that both support the state’s goals for transformational technologies and the advancement of the immense public health need for NOx reductions now in many parts of our state.

California’s Allocation of Volkswagen Environmental Mitigation Trust Should Maximize the Mitigation of Nitrous Oxides and Diesel Exhaust from Mobile Sources

California is home to over 39 million people and over half of this population lives in air quality identified by the U.S. Environmental Protection Agency as being in extreme non-attainment of the federal ozone standards. In addition to these very high and unhealthful levels of smog, both the South Coast and San Joaquin Valley are heavily impacted by high levels of air toxics that mostly come from diesel exhaust. In fact, diesel exhaust particulate is listed as a toxic air contaminant by the Office of Environmental Health Hazard Assessment and diesel exhaust itself has been classified as carcinogenic by the World Health Organization. It is therefore not surprising to observe high levels of air toxicity around ports, airports, warehouses, freeways and major trade corridors. In fact, the highest level of diesel driven air toxics within the South Coast Air Basin, thanks to the South Coast Air Quality Management District’s Multiple Air Toxics Studies, is found at the San Pedro Bay Port Complex. In other words, our nation’s two largest ports possess the highest levels of air toxicity in the basin despite being in a location that would otherwise benefit from offshore breezes. Hence the reason why many local residents engaged in Port planning call the area the “diesel death zone”.

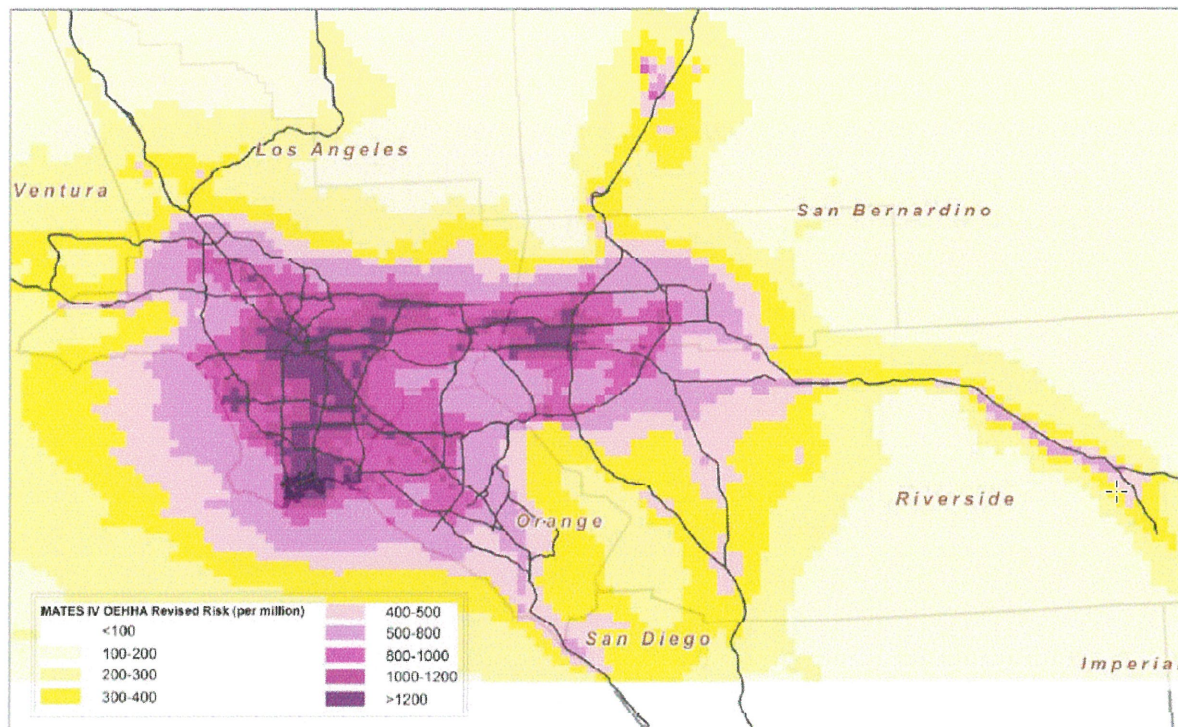


Figure ES-7
MATES IV Modeled Air Toxics Risks Estimates Using Updated OEHA Methodology

Additionally, the EMT was established due to Volkswagen’s intentional actions to modify its diesel engines to outsmart both the US Environmental Protection Agency’s and the California Air Resources Board’s emissions tests for certification. In other words, the EMT was specifically designed to mitigate the real harms borne by the general public caused by Volkswagen’s manipulation of diesel vehicles. Such actions

have placed a significant burden upon local air districts who have little to no authority over mobile sources. This is particularly bad news for the South Coast and San Joaquin Valley air districts as they struggle the most from mobile source pollution, have insufficient authority over such sources, and already possess a substantial diesel pollution problem that is well documented.

It is for all of these reasons Clean Energy believes that the majority of the Volkswagen EMT should focus on mitigating on-road mobile source pollution as quickly as possible. More specifically, given that class 8 heavy-duty trucks make up less than 2% of the vehicles on the road but are the highest source category of NOx emissions for both of California's extreme non-attainment zones based on their own inventories, it makes the most sense for ARB staff to focus these one-time funds on reducing these emissions to the greatest extent feasible. **We therefore support ARB staff's proposal to focus most of these funds on both freight and heavy-duty Class 8 truck emissions categories but would recommend:**

(1) Increasing the allocation of funding toward these two categories from 52 percent to a minimum of 70 percent of the total dollars received;

(2) Placing funding for class 8 heavy-duty trucks for both zero and near zero strategies under one category;

(3) Applying the same percentage of incentive dollars to both zero and near zero class 8 heavy-duty truck strategies (i.e., up to 100% of the total vehicle cost for government fleets and up to 75% of the total vehicle cost for private fleets);

(4) Taking into consideration a cost-effective approach for at least 50% of the class 8 truck funding; and,

(5) Expend the Volkswagen EMT within the first five (5) years of the program versus dragging out the expenditure over the full ten (10) years to help our regional air districts meet pressing non-attainment deadlines that threaten public health, federal transportation dollars, and local control.

In this way, ARB would create a program that has the potential to deliver a more optimal and cost-effective use of these one-time mitigation funds by tackling the largest source of NOx emissions – diesel trucks – and still provide a clear preference for ZEV strategies as these vehicles are expected to be much more expensive than their near zero counterparts.

Cost-Effective Spending of the Volkswagen Environmental Mitigation Trust Monies would Ensure Significant and Much Needed NOx Mitigation for Extreme Non-Attainment Zones and Statewide

Given the urgent need to immediately reduce hundreds of tons of harmful NOx emissions per day in California's non-attainment areas and that ARB already has other incentive programs designed specifically to accelerate zero tailpipe emission strategies like HVIP, it seems more appropriate to focus this specific set of one-time funds toward projects that can make an immediate, significant and lasting reduction in NOx emissions statewide but most importantly in areas designated as disadvantaged communities.

More specifically, unlike incentive programs like HVIP or AB 118 funds that have a technology or advanced fuels focus, the Volkswagen EMT was designed specifically to address NOx emission impacts that have already occurred and will continue to occur in our state from faulty VW diesel vehicles that were intentionally designed to circumvent U.S. EPA's and ARB's stringent engine emission standards. While we realize that ARB staff possesses a strong desire to accelerate zero tailpipe emission strategies as soon as

possible, we do not believe pursuing demonstration projects that may not work or take many more years to commercialize is an appropriate expenditure of this funding. The primary goal of these funds should rather mitigate human health impacts caused by excessive NOx driven smog not just from VW defeat devices but from mobile sources in general. To overly focus and spend these one-time mitigation funds on strategies that are far less cost-effective and are potentially years out from commercialization is inefficient and will deny Californians who are currently in harm's way of improved public health.

Specifically, many air quality management districts favor projects under \$50,000 per ton to maximize finite dollars to achieve healthful air quality goals, especially when it comes to NOx mitigation. Further, ARB has a history of using cost-effectiveness for NOx mitigation and yet, based on the draft *Discussion Document*, it seems that staff is now foregoing this prudent approach with the hope that these funds could advance transformational technologies to commercialization.

ARB staff's justification of pursuing a heavy-weighted zero-tailpipe strategy is that it supports the state's goals for climate, air pollution, petroleum displacement, zero tailpipe emission vehicle deployment and disadvantaged community policies. Such strategies, however, do not directly advance the state's short-term climate pollutant goals and overlooks the fact that near-zero emission technologies also can advance these same goals that ARB hopes to achieve with the added bonus of bringing us closer to attainment faster and at a far lower cost. In fact, we would argue that allocating so many resources toward zero-emission strategies actually jeopardizes many of the state's goals because it is highly unlikely that the Volkswagen EMT monies will measurably commercialize these strategies or result in any significant penetration of the market given their per unit price.

To make this case, ARB staff estimates the cost-effectiveness for each category. For Class 8 Freight and Port Drayage Trucks, ARB is proposing to spend \$90 million on zero emission class 8 trucks with an estimated cost-effectiveness of \$80,000 to \$95,000 per ton, achieving 100-150 tons per year. Highlighting the significant NOx reduction objectives, this is what the South Coast Air Basin needs in one day alone.

Assuming this category is fully subscribed, and the average subsidy per zero emission truck is \$200,000 based on ARB's proposal or \$280,000 based on a recent CEC grant that funded 5 electric yard hostlers at \$375,000/unit, this would put roughly 321-450 trucks on California's roads. However, if near zero emission trucks were given the same level of incentive based on the CEC grant of \$168,150/unit, one could put approximately 713 trucks on the road with a \$126,000 incentive per vehicle. Such an action would practically result in nearly a doubling of much needed NOx reductions and whether or not these figures are accurate (there is little data available to validate the actual cost of future battery-electric trucks)

At a minimum we strongly urge ARB staff to run at least two scenarios to allow the public to understand the very real trade-offs of over-emphasizing transformational technologies over commercially ready zero-equivalent strategies for NOx and GHGs when using a lifecycle lens:

- (1) A scenario that maximizes NOx emission reductions with these funds over the next four years;
and
- (2) A scenario that uses all of the funding that ARB staff proposed for Class 8 Freight and Port Drayage Trucks category plus the "combustion freight" funding proposed for ultra-low NOx (0.02g) Class 7-8 trucks to demonstrate the total NOx reductions that can be achieved over the next 4 years.

This is not to say that we are recommending that ARB not spend any money on transformational technology with VW funds, but the public deserves to know how many NOx emission ton reductions we are foregoing by investing over \$90mm of VW funds on transformational technologies that are nowhere close to being commercially and operationally viable.

ARB Should Streamline Categories and Allocate Volkswagen Environmental Mitigation Trust Monies to Each District based on Population to better address regional NOx mitigation Needs

While ARB staff's draft *Discussion Document* bases its funding design on certain state goals and a list of "guiding principles," it is the first guiding principle that should matter most:

"...fund actions that offset the Volkswagen NOx impacts as well as reduce risk to children and other sensitive populations, including dedicating at least 35 percent of the funds for investment in or benefiting disadvantaged or low-income communities."

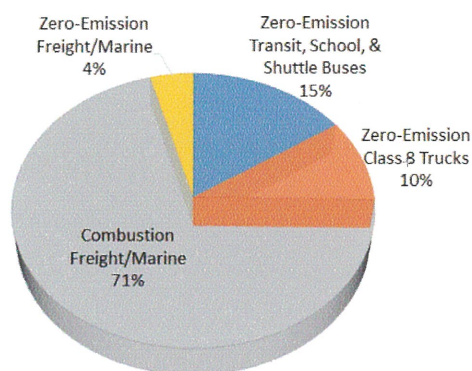
That said, we do not think ARB staff goes far enough on the NOx mitigation front. Specifically, we think the Volkswagen EMT monies should be used to help local air districts reach attainment by focusing these dollars on projects that can maximize NOx emission reductions in our communities well beyond ARB staff's most conservative estimate of 10,000 NOx tons, especially since these estimates are based on assumptions, risks, and other elements of uncertainty. In fact, we would argue that it is imperative that a more balanced mix that focuses more on immediate NOx mitigation and less on transformational technologies is more appropriate given that California has two extreme non-attainment zones that are dangerously close to failing federal ozone attainment by 2023.

We recommend that staff therefore consider the following set of recommendations:

- (1) Re-draft the funding categories to prioritize NOx mitigation by establishing the following:
 - One Class 8 Truck category that supports both zero and near zero emission strategies on an equal footing. Add an additional constraint that at least half of these funds must prioritize cost-effective NOx reductions to maximize the immediate health benefits generated by the Volkswagen settlement funds not to exceed \$50,000/ton.
 - One Freight/Marine category that supports both zero and near zero strategies on an equal footing for non-road applications (i.e., LNG locomotives, yard hostlers, harbor craft). Add an additional constraint that at least half of these funds must prioritize cost-effective NOx reductions to maximize the immediate health benefits generated by the Volkswagen settlement funds not to exceed \$50,000/ton.
 - One Transit Bus, School and Shuttle Bus category that supports both zero and near zero strategies on an equal footing. Add an additional constraint that at least half of these funds must prioritize cost-effective NOx reductions not to exceed \$50,000/ton.
- (2) Allocate these funds to the local air districts based on population and non-attainment status. This will insure that local air districts who know firsthand what the pressing needs are of their respective region can channel these funds toward projects that will deliver the highest results of NOx mitigation.
- (3) Share the Administrative Reserve funds with the local air districts to help cover their program administration costs.

By designing the Volkswagen EMT monies in this way, ARB will be in a better position to support state goals, accelerate transformation technologies and advance near zero technologies in a balanced way to promote healthy competition while assisting local air quality agencies that are dealing with both looming and overwhelming federal ozone attainment deadlines. As the program is designed now, it is abundantly clear that the \$60 million “Combustion Freight/Marine” category will provide over 70% of benefits in very concentrated areas of the state whereas the remaining \$300 million allocated to transformational strategies (not including the Administrative Reserve Funds) may ultimately produce very little mitigation to a state struggling to reach clean air.

Figure 2: Estimated NOx Reduction Distribution by Recommended Project Category



Near Zero Incentive Funding Insufficient in both Allocation and Amount

As we have stated in other incentive discussions with other programs, we are very concerned that the incentive value offered to purchase a near zero class 8 truck is insufficient to draw a meaningful number of applications when the goal for each program should be to fully allocate these funds as quickly and cost effectively as possible. Unfortunately, not only is it unclear as to how much of the \$60 million will flow to near zero class 8 truck grants under the proposed Combustion Freight/Marine category (which is why we would like to have one class 8 category benefiting both zero and near zero emission technologies) but also the \$60,000 incentive amount for a 12L truck is once again too low, especially when the applicant must scrap a qualifying engine.

For example, we believe the Prop. 1B funds and the Carl Moyer program funds provide a greater incentive by offering up to \$100,000 per applicant for scrapping a qualifying engine. For VW, ARB could provide up to 100% of the cost associated with a near zero truck for public fleets and up to 75% of the cost for private fleets much like it appears ARB is proposing for zero emission trucks. We would like to have the same opportunity with at least half of the funds that are being made available to trucks and buses, bringing a private fleet incentive up to approximately \$124,000. Comparatively, we have seen incentives for zero emission buses upwards of \$300,000 per unit demonstrating ARB’s desire of preference for transformational technologies.

Finally, we reject the argument that there are other programs administered by ARB that are better suited to support near zero truck purchases like Prop. 1B and Carl Moyer. This argument was used most recently during the December 2017 ARB Governing Board hearing covering the HVIP program to justify why ARB staff did not provide an adequate level of funding for the 8.9L near zero natural gas engine. While on its

face this argument sounds reasonable, all of the programs referenced by ARB staff also provide very generous incentive allocations to both electric and fuel cell platforms. Unfortunately, this argument also ignores the fact that older truck engines on California's roads are difficult to locate and typically owned by smaller fleets or independent owner operators that may not be able to justify a clean truck purchase or operate in a location that supports one whereas the HVIP program allowed for any California-based applicant within the state to purchase a truck without any engine scrapping requirements.

This brings us to our final point that the incentive amount must be enough to attract applicants. Our Industry has most recently provided a letter with a number of OEM truck providers requesting that the incentive level provided for the 11.9 liter truck under the HVIP program be raised to \$80,000/truck which does not have an engine scrapping requirement. For the Volkswagen EMT monies – a program that is designed specifically to directly address NOx emissions and requires the scrapping of an engine – we would like to see, at a minimum, the identical percentage of incentive funding applied to near zero class 8 truck applicants as zero emission platforms under the ARB staff proposal. Applying the same percentage of incentive funds for zero and near zero emission class 8 trucks still shows a preference for zero emission strategies because they cost more than near zero trucks and therefore will receive more Volkswagen grant money per unit. That said, it is critical that ARB staff dedicate at least half of this program toward the deployment of ultra-low NOx class 8 trucks which would require the Volkswagen program to provide a comparable and equivalent incentive recommended for zero emissions strategies. Anything less than that we feel will result once again, in yet another program, the perception that the Volkswagen EMT monies could fund a near zero emission class 8 truck but in reality the funds are insufficient to attract applicants when this is not the case for zero emission truck platforms.

Not only would an outcome that artificially fails to incentivize the market for near zero emission class 8 trucks mislead the public on the need and viability for this technology to be placed on California's roads, but also it would further jeopardize the Volkswagen EMT's ability to provide the necessary NOx emission reductions required by the program and do little to help the South Coast, San Joaquin Valley, and other local air quality management districts from reaching meaningful and timely attainment.

Thank you for your time and consideration of Clean Energy's comments on ARB staff's *Discussion Draft* on California's Allocation of the Volkswagen Environmental Mitigation Trust.

Sincerely,

A handwritten signature in black ink, appearing to read 'Todd R. Campbell', with a stylized, cursive script.

Todd R. Campbell

Stalls, stops and breakdowns: Problems plague push for electric buses

By Paige St. John
MAY 20, 2018 | 5:00 AM



BYD in 2017 doubled the size of its production facility in Lancaster. Metro evaluators criticized production in the original facility as "disorganized." (Mel Melcon / Los Angeles Times)

When Chinese battery maker BYD Ltd. approached Southern California officials in 2008 touting ambitious plans to build electric cars, local politicians jumped at the promise of thousands of jobs and cleaner air.

In the nine years since, agencies have awarded BYD grants, subsidies and public contracts worth more than \$330 million for its battery-powered buses, forklifts and trucks. The company is positioned to be a prime supplier of electric buses to the nation's second-largest system, as Los Angeles' Metro sets a 12-year deadline to abandon fossil fuels.

But largely unbeknownst to the public, BYD's electric buses are contending with a record of poor performance and mechanical problems.

A Times investigation found its buses stalled on hills, required service calls much more frequently than older buses and had unpredictable driving ranges below advertised distances, which were impaired by the heat, the cold or the way drivers braked.

A federal testing center and transit agencies across the country logged driving ranges that were dozens of miles short of company claims, limiting the routes they can handle and requiring passengers to shuffle onto replacement buses when the batteries go low.

The first five buses BYD sent to Los Angeles Metro were pulled off the road after less than five months of service. Internal emails and other agency records show that agency staff called them "unsuitable," poorly made and unreliable for more than 100 miles. Despite strong concerns from its own staff about the quality and reliability of the company's vehicles, the transit agency awarded BYD tens of millions of dollars more in public contracts.

BYD's expansion underscores a major shift at public transit agencies in California and around the country as officials try to reduce pollution and comply with climate change goals by investing taxpayer dollars into electric vehicle technology even as it develops. BYD has won passionate support from some of the region's most powerful politicians.

Thousands of pages of public records and interviews with those dealing directly with the company show BYD to be a skilled political operator. The company's business model involves hiring lobbyists and grant writers to secure no-bid purchases by public agencies, and it has invited public officials on foreign junkets and employed their close associates. Those officials then repeatedly came to the company's defense as concerns about the buses heightened.

BYD's backers hail electric buses as a clean-burning answer to the belching municipal rigs of the past and the natural gas models that followed. In the onset of this conversion, BYD — and, to an extent, the rest of the electric bus industry — has struggled to make buses that run as reliably and cheaply as the fleets they seek to replace.

Some transit officials say problems are to be expected as new technology makes its debut on busy city routes, and that environmental benefits are worth the gamble. But critics, including some within the Metro staff, are alarmed by BYD's track record and have questioned further massive public investment in the company.

BYD executives rebutted reports of poor performance and recurring mechanical problems, contending the company has received overwhelmingly positive feedback from transit districts. However, government emails and bus inspection records show that multiple agencies have confronted the company on quality and range issues. BYD executives blamed those issues on outside forces, including drivers braking too hard, a negative publicity campaign by labor activists pushing to unionize BYD employees and transit managers they say are insufficiently committed to switching to electric. They maintained that the company should be lauded for providing an important public service.

"If you want to find the problem for the new technology, you always can try to," said Stella Li, president of U.S.-based BYD Motors Inc. "If you want success," she said, "everything is positive."



BYD Motors President Stella Li sits between Lancaster Mayor Rex Parris, left, and then-County Supervisor Mike Antonovich in 2013. Antonovich's county staff helped scout locations for BYD and his wife counseled the company while he owned BYD stock. (Francine Orr / Los Angeles Times)

Born of necessity and political connections

The deep bond between Los Angeles and BYD, built on the promise of jobs, began at a cocktail reception in Tianjin, China, in September 2008.

Christine Antonovich, wife of then-Los Angeles County Supervisor Mike Antonovich, accompanied a Los Angeles delegation to a business forum where her husband was a guest speaker. It was there that regional business promoter Bill Allen said Christine Antonovich pulled him aside to meet an executive from a Chinese company looking to invest in the U.S.

BYD was then a cellphone battery supplier with an automotive branch churning out cheap gas cars. Its chairman boasted of plans to dominate world auto sales by 2025, a claim made more credible by the news that came days before that billionaire investor Warren Buffett bought a 10% stake in the Chinese company. Buffett, still a major stockholder, said publicly the draw was BYD's electric vehicle plans.

Following the meeting, Allen's nonprofit Los Angeles County Economic Development Corp. began to woo what business development pitches described as a 2,000-worker car assembly plant for BYD.

The Antonovich team would prove key to BYD's decision to narrow its choice to Los Angeles County, opening headquarters in downtown L.A. in exchange for an \$8-million

incentive package and an assembly plant in Lancaster in return for the desert town's \$1.45-million enticement.

Christine Antonovich, a former Chinese actress who sidelined as a business consultant, shepherded Lancaster officials through private dinners and trips to China to meet with BYD executives. She declined repeated requests to discuss her role with BYD, but her husband said she received no compensation for her work on the company's behalf.

Mike Antonovich was chairman of Metro, the nation's second-largest bus transit system. He presided on a government board steering Metro's use of electric buses and sat on the regional air quality board that doled out state grants for which BYD would apply.

State ethics filings show that in 2009 and 2010, Mike Antonovich held BYD stock valued at less than \$10,000. At the same time, Christine Antonovich counseled BYD, and city emails show that her husband's county staff scouted business locations for the company. The stock no longer appeared on his financial disclosure form the next year when Antonovich and then-Los Angeles Mayor Antonio Villaraigosa co-sponsored a \$30-million Metro project to test new bus technology. Almost all of that money would be awarded to BYD.



BYD and then-Supervisor Mike Antonovich, third from left, unveil the first five electric buses delivered to Metro in 2015. Instead of going into service, the buses were sent back to BYD for "extensive" reworking. (Barbara Davidson / Los Angeles Times)

Over the next five years, Antonovich introduced or voted on multiple public initiatives that benefited BYD, including a \$1.9-million grant for Lancaster's bus agency to buy BYD buses, Metro contracts with the company and policies to convert the entire fleet to electric. In 2015, BYD and its executives made the first of what would be \$13,500 in political contributions to Antonovich or his officeholder account. Antonovich has since retired from the board.

The Times found a single instance in which Antonovich declared a conflict of interest — sitting out a vote by the regional air pollution board on an \$8-million grant for BYD electric trucks.

Antonovich denied having a conflict of interest otherwise. "When I voted, I was advised that it was proper to vote," he said during a brief interview at a BYD reception before two of the company's employees whisked him away to a back room. He refused to say who gave him that advice and did not respond to subsequent attempts to contact him.

To avoid conflicts, Metro provides directors with a list of companies affected by scheduled votes before meetings so they can check against past campaign contributions. The list for meetings on which Antonovich voted included BYD, according to copies provided to The Times. Since 1997, the state has also prohibited Metro directors from accepting more than \$10 from entities doing business with the public agency.

Metro Inspector General Karen Gorman would not comment on the propriety of those donations. Through an agency spokesman, she said it was not within Metro's jurisdiction to enforce the state contribution restriction, and that Antonovich "was no longer on the Metro board when we became aware of the contributions question."

BYD now employs more than 700 workers in Lancaster, and the Antelope Valley Transit Authority is converting its entire fleet to BYD buses.

"When we support our local community, we're supporting it. I don't care how much they cost," Lancaster Vice Mayor Marvin Crist said at a 2014 transit board meeting to buy eight electric buses, arguing BYD's higher cost was offset by the boost to the local economy.

The purchase was thrown out a month later after objections that the decision violated state law, as it was not posted on a public agenda. Two years later, the transit agency gave a \$72-million contract to electrify its entire fleet to BYD, the only company to bid.

BYD paid for Antelope Valley's transit manager, Len Engel, to spend a week in 2016 visiting its facilities in China, on what officially was a plant inspection. Engel said he did not complete a written report from his trip, nor was he able to provide a copy of the itinerary or other documents detailing how his time was spent there. He was accompanied by six U.S. transit officials whose travel expenses also were covered by BYD. The gift was not reported as required by California ethics laws, until after The Times raised questions.

Six months after the China trip, BYD sent Engel to Ecuador for nearly a week and he gave a 15-minute speech at a three-day conference on urban development and housing. At his recommendation, BYD hired his sister-in-law to an administrative post. Engel said the relative's hiring bought BYD no favors and that she was "absolutely qualified."



With visions of electric car sales, Los Angeles city leaders in 2010 fast-tracked an \$8-million incentive package to secure BYD's downtown headquarters. By 2016 the showroom remained nearly empty. (Rick Loomis / Los Angeles Times)

The city of Los Angeles also chased BYD's jobs. Term sheets in city files show promises from Austin Beutner, then-Mayor Villaraigosa's deputy in charge of business development, that went beyond leases and fleet sales to include marketing assistance from the mayor's office and business leads for a \$450-million city solar project.

Beutner, recently appointed superintendent of the Los Angeles Unified School District, did not respond to repeated interview requests concerning BYD. Villaraigosa sidestepped questions at a BYD function last fall about whether the company delivered on its promises and focused instead on what he called "the revolution."

"Electric vehicles are the future," Villaraigosa said.

In response to the city's overtures, BYD laid out a five-year business plan to import more than 55,000 electric cars. It was enough to put the Chinese company at the forefront of the U.S. market. BYD later abandoned the plan as gas prices fell and consumer appetite waned. The public market for electric buses, however, only grew.



In 2010, BYD's California venture focused on electric cars, including the e6. BYD Chairman Wang Chuanfu presents then-Los Angeles Mayor Antonio Villaraigosa a gift depicting the car, which was never marketed to U.S. consumers. (Al Seib / Los Angeles Times)

Problems from the start

On a sunny morning in spring 2015, BYD rolled out its first five buses for an Earth Day ceremony outside the Los Angeles County Metropolitan Transportation Authority headquarters.

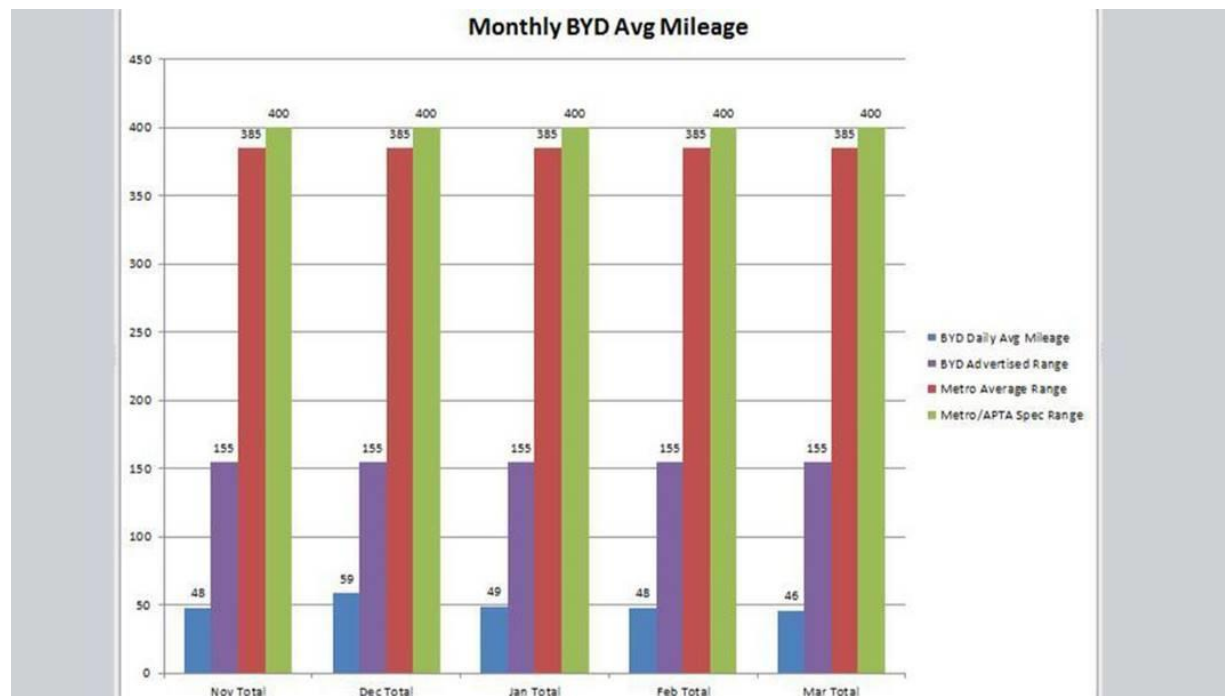
Then the buses were quietly sent back to the factory.

Internal Metro reports show the buses required an "extensive campaign of retrofits, modifications and upgrades to correct irregularities."

More problems arose when they returned months later to carry paying passengers for the first time, daily Metro logs show.

White smoke issued from the rear wheel of #1005. Bus #1004 wouldn't start its second run of the day and on its next run needed a jump-start. Bus #1001 limped back to the depot when its battery dropped to 15% charge after just 68 miles, failing to complete its route. Then, logs show, #1005 stalled on the road.

That was the first 10 days.



BYD's first five buses came with the promised range of 155 miles, but in practice Metro drivers realized less than 59 miles a day, according to this transit agency chart. Problems included low batteries but also frequent service interruptions and stalling on hills. (Public records provided by Los Angeles County Metropolitan Transportation Authority)

In the following months, transit logs show the buses repeatedly stalled on city hills, including a downtown incline a little more than a mile from BYD's Los Angeles headquarters. Once, the driver radioed that the bus was unsafe, rolling backward.

Though Metro was promised a range of 155 miles per charge, Metro records show the buses never went farther than 133 miles, and were forced back to the garage to recharge in as little as 78 miles. Factoring in breakdowns and other service interruptions, Metro reports show drivers realized no better than an average of 59 miles between charges. Most months, according to Metro records, the buses managed fewer than 400 miles between road calls, requiring emergency service or a return to the garage 10 times worse than the rest of the fleet.

According to internal Metro records, staff decided after only four months the buses were "unsuitable." BYD offered to take them back.

BYD Senior Vice President Macy Neshati said he initiated the recall because Metro had "an obvious reticence" toward the electric buses. He rejected claims in Metro records that BYD's buses were prone to poor quality and fell far short of the promised driving range. Instead, he said, Metro drove BYD's buses on hills that were too steep, and drivers made unnecessary road calls. "I said I want to buy the buses back," Neshati said. "You guys don't want to operate them."

Internal Metro agency records detail not just broken buses but delays for parts and staff frustration with responsiveness. In interviews with The Times and at public meetings, Metro administrators speak positively of BYD's track record, praising the company as a "partner" and the \$5-million purchase as a pilot that was never intended to remain long on the road.

The manager of Metro's electric bus project, Steve Schupak, attributed BYD's poor road performance to "about the most taxing of a service environment you can put a vehicle through," a 13-mile Koreatown-to-Montebello run. "It's a real heavy urban, stop and go, heavy-duty line," he said.

The problems in Los Angeles were not unique.

In Anaheim, daily logs for the bus system serving Disney resorts reported repeated door and air system failures that forced the district to pick up passengers with replacement buses.

In Denver, a transit spokesman said, BYD buses arrived with doors that would not open and close — a problem that persisted.

The BYD buses returned by Los Angeles went to Columbia, Mo., where transit logs show the mechanical problems continued and extended to new buses from BYD. One morning last May, passengers on a new bus with a history of issues were jolted by an

explosion and a wheel fire. BYD's Neshati blamed the explosion on heat buildup from stuck brake calipers, an issue he said is common on any bus.

- Range selector Buttons get stuck
- CS Center Axle Rear Air Bag Leaking from hose
- Door Behind Rear Axle Damaged
- SS Axle Seal Leaking oil
- NO Rear Axle mud flaps.
- front Axle mounting Bolts not Torqued and Pain
- NO static straps
- front wheel spindles Both Rusty
- NO CURB feeler.
- Air Box Loose

Part of a three-page list of defects found in one of BYD's new buses delivered to Albuquerque. (City of Albuquerque)

Public officials in Albuquerque were so alarmed by production problems and severe range shortfalls on BYD's newest product, a \$1-million 60-foot articulated bus, that they raised concerns about its \$23-million contract. Mayor Tim Keller said a nearly 100-mile gap in driving range could force the city to spend millions of dollars more on buses. "The whole thing is a bit of a lemon," Keller said, "and now we've got to learn to make lemonade."

Neshati said the Albuquerque buses are being fixed and can go the promised distance. But emails between the company and public transit agencies show cracks appeared in the bus frame during federal endurance testing last year, and BYD must now retrofit the buses it has delivered.

Would-be buyers, including L.A. Metro, Antelope Valley and Indianapolis, cannot use federal funds to pay for the buses they have ordered until it passes.

BYD regularly promotes its 40-foot buses as capable of running 155 to 180 miles on a charge, and in bid documents it told Metro that its bus "yields" 230 miles in Gardena and "is getting 250 miles" in Antelope Valley. Such performance is key to delivering the energy savings and pollution reductions BYD claims, and necessary if its buses are to replace conventional models that in Los Angeles run 385 miles between fuel stops.

Road tests and driving logs in nine cities show variability in bus range, and averages below what the company claims. Antelope Valley managers travel to transit conferences across the country touting a 180-mile range on its BYD buses, but internal logs show the initial average three years ago was 170 miles, and since December has fallen to

130. Some drivers muster less than 100 miles. In Gardena, where the district has limited further purchases, the average was below 140 miles.

Operators and consultants at Stanford University, a federal test track in Pennsylvania, and the cities of Phoenix and Long Beach also documented ranges dozens of miles below BYD's claims. And in Long Beach, consultants said bus range dropped to 108 miles when air conditioning was used in mild weather. They warned performance could be worse in bad weather, and the bus would lose more range as its batteries degrade as much as 30%.

Experts said these issues are common to electric vehicles, and other manufacturers have contended with insurmountable hills and quality control issues at new plants. The loss of battery power over time is also inherent with the technology, as are power drains. Heaters and air conditioners can sap 20% to 50% of the power, said Rajit Gadh, director of the Smart Grid Energy Research Center at UCLA.

Battery-powered buses also require special handling by drivers and careful selection of the routes they are put on, industry experts said. Bus manufacturers are prone to touting ranges that exist only in theory, said Michael Lewis at the University of Texas at Austin's Center of Electromechanics.

Both experts said the buses can't be swapped for current conventional vehicles without careful planning to reduce distances, speeds and hills.

That constraint is evident in Solano County, where transit officials limited BYD's buses to routes of 80 miles or less. After watching BYD's bus crawl slowly up a hill, they decided to keep it off steep grades.

Soltrans operations manager Michael Abegg said his expectation is that by the time Solano's diesel fleet is ready to retire, "the electric technology will have caught up."



BYD assembly plant worker Jesus Martin applies glue before an aluminum skin is placed on the exterior of an electric bus at the BYD production facility in Lancaster. (Mel Melcon / Los Angeles Times)

BYD flatly rejects the idea that its buses can't simply be swapped one-for-one with diesel or natural gas. BYD's Neshati said that objective is "what our buses need to prove, and we're proving that in cities across the country."

Neshati said reported mechanical problems, from doors that won't close to buses that spontaneously kneel, are the kind of glitches common to any new delivery. He took issue with Metro transit logs showing aborted bus runs, saying transit drivers returned to their garages with power to spare.

The company provided its own analysis of Metro's logs to calculate a theoretical range of 147 miles, less than the promised 155 but in the opinion of BYD, not significantly. To arrive at that range, though, the buses would have to be driven until their batteries were dead — a practice that would severely shorten battery life and strand buses along their routes. BYD recommends operating buses at charge levels from 85% to 15% to preserve battery life, according to a Metro contract evaluation.

Contracting documents show BYD is now conceding shorter ranges. Its most recent bid for a Metro contract still boasted extended ranges but included charging stations along bus routes to top off battery packs.



Workers install batteries on top of a bus destined for UC Irvine. BYD's business began with production of cellphone batteries. (Mel Melcon / Los Angeles Times)

Politics and contracts

A 2016 expert report commissioned by Metro as the agency sought to ward off a state mandate for zero-emission buses concluded it will be years until battery technology is robust enough to replace conventional fleets, while currently available technology can cut most of the pollution at a tenth the cost.

BYD turned to Los Angeles Mayor Eric Garcetti's office for help. Garcetti, chairman of Metro's board, is an avid proponent of smog-reducing electric vehicles. The mayor and his administration invited BYD to test new product lines within city agencies, arranged for city administrators to visit the company's factory and pushed its elevated monorail in public appearances and to Metro's technology board.

City records show two city departments sought to give BYD contracts without competitive bidding. In both cases when the projects hit snags, agency emails show, managers told the staff that the purchases were "political," and in one case to work around problems with the bus. The sanitation department was awaiting approval to buy an electric shuttle bus from BYD in May 2017 when The Times sought records on the purchase. The sale immediately stalled and has remained pending for nearly a year. City airport administrators last year sought to expedite a contract to BYD as the sole supplier of airfield buses, until a competitor forced public bidding. Last month the agency awarded a \$23-million contract to BYD, declaring the company alone met city specifications.

The mayor's office encouraged city departments to do business with BYD, suggesting that the airport and Metro consider a joint contract with BYD, and giving agency referrals and support to BYD sales staff. In one case, BYD included in a grant proposal it wrote for the city a commitment for Los Angeles to buy \$10 million in electric garbage trucks. Agency emails show sanitation managers balked at the idea of agreeing to buy something they had not yet tested, but the promise was included anyway in the grant application the city filed with the regional air board.

Garcetti would not agree to an interview on the access and support BYD has received from his administration. In a written statement, his press office noted that though BYD representatives had more meetings with the mayor's office than other companies, Garcetti had still at times voted to award Metro contracts to its competitors. "To be clear, access in the form of meetings and conversations does not equal business," the statement said.

The statement also characterized Garcetti's promotion of a BYD monorail system to carry commuters over the congested 405 Freeway as only an exploration of the concept. "Any firm is free, at any time, to submit an idea" to Metro, the statement said.

strange roads

1 message

Shaun Kadlec <[REDACTED]>
To: Eric Garcetti <[REDACTED]>, EM Garcetti <[REDACTED]> Mon, Jun 12, 20

Hey Eric,

So many changes in the last few months. Hope all is well with you. I'm adjusting pretty well. Had dinner with Rick over weekend--first time we've met up since we separated--and that was really nice. I was happy to hear that you guys are of good work together. The Accelerator sounds awesome.

I am, bizarrely, working at BYD as their marketing director right now. It's actually a lot of fun, and the stability came at time. They have been good to me, which I appreciate. Stella asked me if I would let you know about a bid they just lost Metro. I said that you and I don't have a political relationship and that it feels a little weird. She said that she would not do anything like this again. So I said I would give you a shout about it, this one time. I don't believe she will ever ask again. I will most certainly say no when she does.

The basic deal is that BYD was competing against New Flyer to build a bunch of 60' electric buses for LA Metro. BYD was cheaper and will create like 500 local jobs (compared to 0 with New Flyer), and they think the scoring that the Metro used was unfairly based on old data. They want the transportation board to reevaluate the bids. Stella is especially sad since it's her hometown/high profile etc. I've looked at the data, and it's true that BYD only lost by 30 points out of 1000. I think they have a pretty good argument. So anyway. Please ignore all of this if it feels best! And as always, more info is available.

Big hug,
Shaun

After Metro staff recommended a \$60-million contract for 60-foot buses go to a competitor, BYD did not file a bid protest. Instead, its lobbyists and employees asked Metro directors, including Mayor Eric Garcetti, to hand the company the contract. (California Public Records Act response by Los Angeles mayor's office)

Garcetti's staff has led the campaign for Metro to convert its 2,200-bus fleet to electric despite the poor results with BYD, authoring policy motions and setting up a private meeting between Metro executives and environmental lobbyists and pro-BYD labor unions, interviews and city records and emails show.

The board voted unanimously in support of Garcetti's motion to electrify the fleet by 2030. However, in an email to Garcetti's staff obtained via a public records request, an aide to Metro director John Fasana questioned the wisdom of undertaking that project "without knowing the success of the demo, the total impact or net clean air gain."

Garcetti's office told The Times the support is justified and that BYD has "demonstrated an improvement in the quality of their electric buses."


Under Garcetti's policies, Metro decided to electrify two bus routes and last year sought bids for 40-foot and 60-foot buses potentially worth more than \$200 million. Staff evaluations released to The Times show that while technical issues were raised for all of the bidders, BYD's evaluations alone included harsh criticism and skepticism that the company could follow through on its promises of improved quality and performance. The scoring sheets contained comments that BYD was "unable to clearly articulate" how it could meet Metro's needs and that it posed the "highest risk" of failure among its competitors.

They cited "inaccurate and misleading" claims concerning BYD's workload and "exceptionally inaccurate or unrealistic" claims of the speed in which it could build a pilot bus, and noted the company's lack of performance data despite having delivered 39,000 electric buses, mostly in China. Some evaluators deemed major parts of BYD's bus, including its electrical system and doors, "marginal."

All of the evaluators ranked BYD as "unqualified" or "marginal" to meet quality and reliability requirements.

CONFIDENTIAL RFP NO: OP28367 -40' AND 60' CNG/ZE BUS PROCUREMENT

Overall Evaluation: This entire section is deficient. BAFO-NON RESPONSIVE. THE PROPOSER HAS NOT PROVEN THAT TH THAT WILL MEET THE RANGE CLAIMED. OUR PAST EXPERIENCE WITH THEIR INITIAL COACHES SUGGESTED A POORLY CREDIBILITY OF THIS PROPOSER IS QUESTIONED.

Signature:  Date: 9/15/17

BYD in 2017 won a \$47-million contract with Metro for 40-foot electric buses despite critical remarks by four senior-level Metro employees evaluating BYD's bid. One evaluator called the company's buses "poorly crafted." (Los Angeles County Metropolitan Transportation Authority)

When the low scores on its 60-foot bus caused BYD to lose that \$60 million sale to competitor New Flyer, BYD launched a lobbying blitz. Emails show BYD turned to Garcetti's office for support, obtaining private meetings and tapping personal ties to the mayor. Labor leaders aligned with BYD launched attacks on its nonunion competitors. And BYD's lobbyist focused on Metro director Ara Najarian, sending the former Glendale mayor scripted remarks urging that the contract be given to BYD, his emails show.

In a recent interview, Najarian said he led a failed effort to give the company the contract despite its poor marks due to the jobs BYD promised in Lancaster, not because of the efforts of BYD's lobbyist, a longtime friend. Najarian said he believes BYD can overcome its production and performance problems, and that its economic engine is a valuable regional asset. It was a conviction he also expressed at a Metro board meeting in 2016, when he argued for a tempered response to the poor performance of BYD's buses.

"What we don't want to happen is BYD to feel that they are losing support of this agency or this county," Najarian said at the time.

wasn't worth it for this "small" order.

That doesn't sit well with me.

- BYD committed to creating 110 good paying local Union jobs as well as the 440 indirect jobs, and an overall commitment of \$13.7 million in Los Angeles County. This is above and beyond the company's current 400,000 sq ft facility expansion project in Lancaster and over 600 Los Angeles County current employees.

I am having a problem with saying that New Flyer is a "better value" over BYD to Metro for 60' ZEBs. New Flyer costs \$10M more with NO local jobs commitment.

That's a real dilemma for me. While I understand staff is familiar with New Flyer and they provide a solid bus product that carries our riders everyday, I can't say its Best Value to spend more for a bus and have NO local job investment on this specific contract.

As board members, we went to LA County voters and asked them to trust us, we would be good stewards of their tax dollars to improve transportation in LA County. We told voters that we would also provide good local jobs with their tax

Faced with losing a \$60-million contract, BYD lobbied Metro directors, including sending a script to director Ara Najarian for the public contract vote. Najarian did not use the words but did lead an effort to give the contract to BYD. The vote failed. (California Public Records Act response by Los Angeles County Metropolitan Transportation Authority)

BYD came close to also losing the 40-foot contract because its initial bus design didn't meet requirements, but Metro extended bid deadlines to allow BYD to submit a redesigned model, packing more power and with a promise that it can climb Los Angeles hills. After vowing to create 68 jobs, BYD won the \$47-million contract.

None of the 65 buses Metro has ordered from BYD are yet on the road. Metro and BYD are currently designing a strategy to use bus route chargers to extend the range of the 40-foot buses approved in July. The replacement buses Metro ordered in exchange for the ones the agency returned in 2016 have yet to pass federal durability testing. There is no plan yet on how Metro will meet its self-imposed deadline to electrify the entire fleet.

Before stepping down in September as director of vehicle technology, John Drayton told directors that converting the entire fleet hinges on something yet elusive — "a bus with an honest 250-mile range."

BYD in March told Metro's technology board it will make that bus by the end of the year.

Times staff writer Emily Alpert Reyes contributed to this report.

paige.stjohn@latimes.com

Twitter: [@paigestjohn](https://twitter.com/@paigestjohn)