

**CONSIDERATION OF STAFF
RECOMMENDATION REGARDING
THE STATE ISSUING SALES TAX
EXEMPTIONS FOR ZERO EMISSION
VEHICLES**

June 25, 2008

STAFF SUMMARY – CAEATFA

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ISSUE: As a matter of policy, should CAEATFA enter into lease arrangements that will provide Sales Tax Exemptions (“STEs”) on manufacturing equipment for new manufacturing in California for Zero Emission Vehicles (“ZEVs”)?

BACKGROUND: Under CAEATFA's authorizing statute, CAEATFA's purpose is to provide industry in California with alternative methods of financing alternative energy and advanced transportation technologies. The statute defines advanced transportation as: "emerging commercially competitive transportation-related technologies identified by the authority as capable of creating long-term, high value-added jobs for Californians while enhancing the state's commitment to energy conservation, pollution reduction, and transportation efficiency." (California Public Resources Code Section 26002.3(d))

There has been strong interest, recently, encouraging the manufacture of ZEVs and due to their benefits of reduced pollution, GHG emissions, and foreign oil dependence. According to the Air Resources Board (“ARB”), a ZEV has no tailpipe emissions, evaporative emissions, onboard emission-control systems that can deteriorate over time, and no emissions from gasoline refining or sales.

The transportation sector emits approximately 40 percent of total GHG in California. In 2005, Governor Schwarzenegger issued Executive Order S-3-05 establishing a goal to reduce GHG emissions by 80 percent below 1990 levels by 2050.¹ In 2007, Governor Schwarzenegger issued Executive Order S-01-07 establishing a goal to reduce carbon intensity of transportation fuels sold in California by 10 percent by 2020.² ARB plans to develop a Low-Carbon Fuel Standard (“LCFS”) and will adopt the standard in late 2008. Ultimately, the goal is to develop and adopt a plan to increase the use of alternative fuels without adversely affecting air or water quality, or causing negative health effects.

The California Legislature and Governor Schwarzenegger approved Assembly Bill 32, the California Global Warming Solutions Act of 2006, which requires the State to cut total GHG emissions, such as CO₂ by 25 percent by 2020, ~~and an 80 percent reduction by 2050.~~ Continuing California’s long-standing tradition of innovation on environmental issues, Assembly Bill 32 has given ARB a leadership role in working with other State agencies to forge new approaches to reduce the State’s carbon footprint. ARB will be issuing their draft scoping plan for green house emission reductions on June 26, 2008.

¹ Executive Order S-3-05, Governor Schwarzenegger, June 1, 2005

² CEC State Alternative Fuels Plan, December 2007

Due to recent advancements in battery technologies, this plan is expected to rely on expedited development of ZEVs for California's transportation sector.

In September 1990, ARB adopted a low-emission vehicle regulation the aim of which is to drastically reduce pollution from passenger cars and light-duty trucks. As part of the newly created program, the Board included a goal of requiring large auto manufacturers to commercialize vehicles with zero emissions, beginning with 1998 model year vehicles. This ZEV requirement was included to catalyze efforts to commercialize sustainable transportation. The program would ultimately have the added benefit of prompting manufacturers to develop extremely clean conventional and alternative fuel and hybrid electric vehicles.

The program has been modified five times since its inception – in 1996, 1998, 2001, 2003, and most recently in March 2008. The most recent change was made to adjust the program requirements to align with the current state of technology, based on a report provided by an independent panel of experts. In making the most recent changes, the Board affirmed its support for the program and the need for ZEVs to meet climate change goals. It also directed the ARB staff to consider strengthening the program in the future.

ZEV TECHNOLOGY STATUS: This technology status update has been obtained primarily from two sources: The ZEV Technology Report prepared by an independent panel of experts in May 2007³; and Amendments to the California ZEV Program Regulations reviewed by the staff of ARB on April 2007 and February 2008 respectively.⁴

Fuel Cell Electric Vehicles (“FCEV”): The ARB Panel found that FCEVs are considered by several manufacturers to be the ultimate solution to reducing both criteria pollutant and climate change emissions. Most major manufacturers have made significant investments in research, development, and demonstration of technology. While substantial progress has been made, durability and cost objectives continue to be a difficult challenge. In addition, the cost, weight, and volume of adequate on-vehicle hydrogen storage and availability of hydrogen production and infrastructure remain big barriers to commercialization. The Panel ultimately concluded that while these challenges are not trivial, the past rate of success and the massive intellectual and financial resources being devoted to fuel cell vehicle technology ensures that FCEVs remain a promising candidate for a future mass market true ZEV.

Battery Electric Vehicles (“BEV”): The ARB Panel found that previous efforts to commercialize BEVs prompted by the ZEV program were unsuccessful due to cost and lack of mass market customer acceptance. They also found that, in other countries where fuel prices and driving conditions provide lower barriers to commercialization, a few manufacturers are now developing smaller vehicles using lithium-based batteries. However, the Panel concluded that in California, full-sized BEVs are still not likely to be a mass market technology in the foreseeable future due to high cost of the batteries, and

³ ZEV Technology Review, CA EPA & ARB ZEV Program, May 2007

⁴ 2008 Proposed Amendments to the CA ZEV Program Regulations, CA EPA & ARB, February 2008

limited customer acceptance. The Panel concluded that city electric vehicles (“EV”) are more likely to become future mass market ZEVs in Japan and Europe than in the USA, due to performance limitations and vehicle safety requirements.

Plug-in Hybrid Electric Vehicles (“PHEV”): The ARB Panel found that PHEVs offer direct societal benefits to the consumer and are likely to become commercially available in the near future. The incremental cost of the small battery pack should be offset by the lower operating cost of the technology. The major technical issue with PHEVs is the ability of the energy battery to endure the large number of deep cycles the battery must deliver over the life of the vehicle. Also, the cost impact of greater electric range is not well understood and could have significant impact of consumer acceptance. The Panel concluded that commercialization of PHEVs will stimulate battery development and help consumers become comfortable with plugging in a vehicle. Since the Panel’s report was issued, several companies have announced plans to produce PHEVs, and multiple announcements of construction of new battery plants have occurred.

Hydrogen Internal Combustion Engines: The ARB Panel found that manufacturer interest in the use of these engines is not widespread. While developing conversions of conventional powertrains is far easier than for fuel cell vehicles, issues regarding hydrogen storage and infrastructure are the same or worse than those facing fuel cell vehicles. While the technology is not true zero emissions, prototype vehicles have demonstrated very low emissions. The technology also provides minor benefits to future mass market ZEVs by increasing demand for a refueling infrastructure and fuel supply.

Advanced Technology Partial Zero Emission Vehicles (“AT PZEVs”): The ARB Panel found that the ZEV program requirements for AT PZEVs, particularly hybrids, help to develop pure ZEV technologies by accelerating the development and deployment of ZEV technologies. In particular, key systems contained within the hybrid systems are directly comparable to key ZEV fuel cell systems. These include efficient electric drive motors, high power electronics, and computer control systems which incorporate regenerative braking. Promoting the widespread adoption of these technologies in AT PZEVs will lead to performance improvements and cost reductions that are necessary for ZEVs to become mass-market vehicles in the future.

The ARB Panel also found that the research and development work on hybrid batteries by manufacturers, battery suppliers, and material developers worldwide, continues to improve the key characteristics of batteries used in hybrid applications. This in turn will improve the batteries needed in future pure ZEV technologies, including fuel cell vehicles and battery electric vehicles. Also, the Panel found that hybrid technology appeals to the mass market customer willing to pay a premium. The Panel concluded that production of hybrid electric vehicles continues to reduce the cost of electric drive components and systems – but cost is still an issue and future market success and volume of these vehicles is largely dependent on the price of gasoline, making future growth uncertain.

Neighborhood Electric Vehicles (“NEV”): Over the last several years, a limited market for NEVs appears to have had some commercial success. However, the ARB Panel concluded that the mature market potential for the technology is relatively small due to limited applicability. NEVs represent a very simple technology and have little synergy with larger battery electric vehicles. As such, NEVs provide no significant benefits to future mass market ZEVs due to simple technology and performance limitations. On the positive side, NEVs serve a particular market quite well and there are no barriers to deployment.

ZEV BATTERY TECHNOLOGY STATUS – RECENT ADVANCEMENTS:

Interest in EVs continues to grow due to technological advances in batteries used to power them, rising gasoline prices, increasing awareness over global warming trends, and a desire to lessen dependency on foreign oil.⁵ There have been many companies looking to quench this demand in all areas of the market: Tesla Motors looks to satisfy the high-end sports car market, Nissan looks to fill the middle-market by bringing EVs to the US by 2010, and AFS Trinity also looks to bring EVs to the masses by building plug-in hybrids for fleets. The success of these vehicles is tied to the continued advances in battery technology, especially lithium-ion. This type of battery offers more power and energy storage capacity than current batteries, and is expected to be in large scale production for transportation applications in the next year or two.

CAEATFA SALES & TAX EXEMPTION AUTHORITY: CAEATFA⁶ has authority to provide sales and use tax exemption for the purchase of advanced transportation manufacturing equipment.

One way to utilize these sales and use tax exemption would be for CAEATFA to facilitate the purchase of equipment to be used in manufacturing of electric vehicles. Under this type of transaction, CAEATFA would enter into a “sales-lease-back arrangement” with a company for the purchase of specified manufacturing equipment, with the net effect of exempting those purchases from sales and use tax. For example, a company that has roughly \$100 million in “tooling costs” for their manufacturing plant and enters into a sales-lease-back arrangement on this equipment could recognize a savings of roughly \$7 to \$8 million in avoided sales and use tax.

The sales-lease-back works in this way: CAEATFA would purchase the specified equipment (tangible personal property, not real property) on behalf of company X. CAEATFA finances that purchase through a bond or loan. Company X then leases the equipment from CAEATFA and the lease payments pay for the bond or loan. As envisioned, the lease would stay in existence only for a couple of weeks, from the time of purchase until the equipment is placed in use. By statute, CAEATFA does not have to pay sales tax on the equipment it purchases. The Board of Equalization (“BOE”) oversees state sales and use tax issues and would be consulted in the process. CAEATFA has consulted with legal experts who agree this structure would work and BOE legal counsel

⁵ <http://www.theautochannel.com/news/2008/05/06/086180.html>

⁶ Public Resources Code Section 26029 ~~{check/verify}~~

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has in the past reviewed similar arrangements and agreed they would be exempt from sales and use tax.

PROS: Encouraging ZEV manufacturing in California by offering STEs for manufacturing equipment will help stimulate the state’s green industry and create green manufacturing jobs. CAEATFA’s statute envisions creating long-term, high-value-added jobs that reduce pollution in California. To date, ZEVs are the most advanced modes of transportation in the market which decrease GHG emissions, increase transportation dependency, and reduce our foreign oil dependence. Some argue that there is a net benefit to state and local treasuries from a sales and use tax exemption due to the increased employment and other benefits that result from new green manufacturing.

CONS: The availability of a sales and use tax exemption leads to the risk that many companies could come forward demanding sales tax exemptions. Some may argue that a sales tax exemption will lead to a loss in local and state government treasuries.

STAFF RECOMMENDATION: Staff finds that there is clear evidence that ZEV manufacturing in California would provide significant green house gas reductions, green jobs, economic expansion, and reduce the state’s dependency on foreign oil. Therefore, staff recommends that the Authority direct staff to consider projects granting STEs for the manufacturing of ZEVs and to evaluate each application on its individual merits. Applications for ZEV projects will be evaluated on an individual basis on how they help in creating long-term, high value-added jobs for Californians while enhancing the state's commitment to energy conservation, pollution reduction, and transportation efficiency.