



February 28, 2011

DOCKET

10-ALT-1

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EXECUTIVE SUMMARY TO COMMENTS ON
2011-2012 INVESTMENT PLAN FOR THE ALTERNATIVE AND RENEWABLE FUEL
AND VEHICLE TECHNOLOGY PROGRAM (DOCKET NUMBER: 10-ALT-1)

- I. Tesla Motors is the innovative leader in EV technology as the only manufacturer to engage in serial production of an all electric highway capable vehicle with at least 245 miles of range.
- II. Tesla Motors is leveraging the optimization of the EV powertrain (battery, motor, power electronics and software) into several new vehicles planned including:
 - Model S: a five plus two seat all electric sedan scheduled for release in mid-2012, capable of up to 300 miles of range at a base price of less than \$50,000.¹
 - Model X: a crossover vehicle scheduled for release after Model S with a range of up to 300 miles at a price to be determined.
 - Generation III: an all electric sport coupe potentially available as soon as 2015 with up to 300 miles of range and a projected base price in the range of \$30,000.
- III. Tesla acquired from NUMMI (former Toyota/GM joint venture) the production facility in Fremont, California capable of producing up to 450,000 vehicles per year.
- IV. Tesla will hire approximately 600 workers to start production of the Model S with another 600 hires planned for ramp up to full production. Eventually, the Fremont facility could employ several thousand workers producing multiple EV models.
- V. Tesla will need to expend between \$1.75 and \$2.25 million to train the initial 600 hires planned for Model S production. Such training will significantly enhance worker skills and knowledge that may be applied outside of Tesla as well.
- VI. Tesla continues to engage in aggressive research and development efforts to increase the energy density of EV power packs and reduce the overall cost; already achieving more energy in its battery packs than any other manufacturer at costs that will allow sale of Model S vehicles at less than \$50,000/vehicle.
- VII. Shifting the transportation sector to EVs is an important step in reducing greenhouse gas emissions, reducing dependence on foreign oil, ensuring national security, bolstering the domestic economy, and reducing the trade deficit.

¹ Price includes the \$7,500 tax credit currently allowed for EVs.



February 28, 2011

California Energy Commission
Dockets Office, MS-4
1516 Ninth Street
Sacramento, CA 95814-5512

RE: 2011-2012 Investment Plan for the Alternative and Renewable Fuel and Vehicle
Technology Program (Docket Number: 10-ALT-1)

To Whom It May Concern:

Tesla Motors, Inc. (Tesla or the Company) is pleased to have this opportunity to submit comments to the 2011-2012 Investment Plan for the Alternative and Renewable Fuel and Vehicle Technology Program (Docket Number 10-ALT-1). As the leading manufacturer in the development, production and sale of long range, highway capable electric vehicles (EVs), Tesla applauds California's leadership in encouraging and supporting this green technology. As outlined in greater detail below, Tesla believes these types of programs are vital to the development of a mature market for EVs that significantly reduce greenhouse gas emissions, reduce the United States' dependence on foreign oil and helps to bolster the economy of California through job creation and innovative technology development.

I. Background

Tesla is the leading manufacturer of highway capable EVs and EV powertrains. Headquartered in Palo Alto, California, the Company has research and development, manufacturing and production facilities in Palo Alto, Menlo Park and Fremont, California. The Company also has seventeen store locations throughout the U.S., Canada, Europe and Asia with the most recent store openings in Washington, D.C. and Milan Italy. The Company and its revolutionary product, the Tesla Roadster introduced in 2008, were instrumental in reviving interest in EV technology by proving that modern EVs could deliver performance, range and style in a completely emissions free vehicle. Tesla's work is directly credited by Bob Lutz, former Co-Chairman of General Motors with spurring the development of the Chevrolet Volt.¹ In fact, the new generation of EV's being introduced this year by manufacturers as diverse as Nissan, Mitsubishi, BMW, Renault and others can be credited to the ground broken by Tesla with the introduction of the Roadster in 2006.

II. Progress to Date

Tesla is not, however, resting on its success with the Roadster. Instead, the Company continues its relentless drive towards improving EV technology and significantly lowering costs – twin goals that keep Tesla on the cutting edge of EV technology. Tesla's next vehicle, the Model S, will be released in mid-2012. The first ever EV to be designed from the ground up to take maximum advantage of the EV powertrain, Tesla will build the Model S at the recently acquired

¹ See Newsweek article: "Bob Lutz: The Man Who Revived the Electric Car" December 22, 2007 (available at <http://www.newsweek.com/2007/12/22/bob-lutz-the-man-who-revived-the-electric-car.html>).

former NUMMI facility in Fremont, California. The price point for this vehicle will be less than \$50,000.² The first several Model S alpha builds were completed on schedule at the Palo Alto headquarters and are currently undergoing on-road testing. The beta builds will be completed later this year and production versions are scheduled for mid-2012. Tesla showcased its advanced vehicle engineering capabilities by displaying a unique expanded view of one of the Model S Alpha builds at the January 2011 North American International Auto Show in Detroit. Plans are already underway for a cross over utility vehicle based on the Model S – the Model X – to be introduced sometime after production on Model S completes ramp up and enters steady production. Tesla is also developing its third generation platform – the Gen III – a small four door sport coupe to be available as early as 2015. The Gen III vehicle will have a price point in the \$30,000 range and be a mass-produced vehicle.

In May of 2010, Tesla acquired the former NUMMI facility located in Fremont, California. This former General Motors/Toyota joint venture was forced to shut down production and lay off approximately 4,500 workers due to the downturn in the domestic auto industry and the economy as a whole. As the only remaining partner after GM's declaration of bankruptcy, Toyota had plans to permanently shut down and decommission the Fremont facility. Tesla took ownership of Fremont in late 2010. In addition to the 5.5 million square foot facility, Tesla was also able to purchase manufacturing equipment and spare parts for that equipment from NUMMI and Toyota at liquidation prices. Tesla also has been able to leverage favorable equipment purchases outside of Fremont due to the downturn of the domestic automobile industry in Michigan – recently acquiring the largest hydraulic press in North America from manufacturing facility near Detroit.

In order to meet the ambitious goals established by Tesla, the Company has developed a multi-faceted plan that includes: bringing up the Fremont facility to Tesla standards of quality and environmentally-friendly manufacturing; plans to hire, train and retain a highly skilled workforce; and other plans necessary to produce, deliver and encourage the sale of true zero emission vehicles. Tesla has been able to meet numerous milestones to date with the help of various incentive programs and tools made available to innovative manufacturers and technology leaders. For example, last year, Tesla closed on the \$465 million loan from the U.S. Department of Energy under the Advanced Technology Vehicle Manufacturing (ATVM) loan program. This loan program, along with a prior \$50 million investment from Daimler AG spurred further private sector investment into the Company. Along with the technology proof of concept embodied in the Roadster sold since 2008 to rave reviews, the Daimler investment and DOE loan was followed by the successful \$226 million IPO and further additional investment from companies such as Toyota (\$50 million) and Panasonic (\$30 million).

Incentives for EV purchases such as the \$7,500 tax credit and other state incentives have helped grow the EV market (including California incentives such as HOV access and local parking and charger incentives). This public/private investment has allowed Tesla to grow rapidly with production of Roadster components, powertrains for Daimler and Toyota at the Palo Alto, California location, as well as allowing acquisition of the Fremont facility. Much remains to be done, however, and the EV market as a whole will require continued investment from both the private and public sector in order to encourage this developing new technology.

² Based MSRP will be \$57,400. Less the \$7,500 federal tax credit for EVs and final retail price will be \$49,900.

III. Future Production and R&D

The Fremont facility and all of the acquired equipment will be used for future production of Tesla EVs. Not only will the Fremont facility produce emission-free cars, the facility itself will be state of the art in terms of green production. For example, since Tesla will only produce EVs and EV powertrains, the Fremont facility will not need to store or utilize large amounts of gasoline, petroleum or other liquids typically associated with the production of internal combustion engine (ICE) based vehicles. Processes within the facility are also being revised to be more environmentally friendly – specifically, by switching the bulk of painting operations from an solvent-based paint to a water-based paint, Tesla will be able to eliminate hundreds of tons of volatile organic compound emissions that would have otherwise resulted.

In addition to vehicle production, Tesla also manufactures EV powertrains for other manufacturers. Daimler AG, a customer that purchases Tesla battery packs and chargers for the Smart EV, recently increased its orders for battery packs and chargers from 1,500 sets to 1,800 sets. Having completed the development of the battery pack and charger for the Mercedes-Benz A-Class sold in Europe, Tesla is now producing and delivering those packs and chargers to Daimler as well. Work also has been recently completed on the final specifications for the full powertrain system, including battery, power electronics, motor, gear box and software, to be installed in the 2012 Toyota RAV4 EV. Tesla also continues to work on projects with other manufacturers and is in discussions with potential future partners.

Incentives supporting further research and development, as well as funding for workforce training and other new market expenses would further efforts to develop advanced technology, reduce greenhouse gas emissions and improve the California economy through job creation. For example, with respect to the latter, in order to hire and train the estimated 600 new workers needed this year alone for the Fremont facility, Tesla must identify qualified candidates and develop and implement training programs for these workers. Unlike the prior NUMMI operations, production of the Model S will involve the most sophisticated technology ever seen at the Fremont site. As a result, considerable “up-skilling” of the work force will be required. For example, while some aspects of assembly will mirror traditional ICE equipped vehicles, workers will need to be trained in the unique assembly requirements of EVs and EV powertrains. Moreover, because the Model S will be the first aluminum intensive vehicle built in North America with almost the entire body structure composed of stamped, extruded or cast aluminum, special training in working with this unique, lightweight metal will be needed.³ The value of these jobs goes beyond Tesla itself. Specifically, Fremont facility workers will benefit from job skills training and experience in the clean technology sector. Such skills and experience will make those workers highly marketable should they decide to seek employment elsewhere in California.

Tesla has already begun developing the areas, curriculum, timeline and other plans for conducting the training required in house. For example, Tesla has developed extensive 18 page training plan that takes into account several aspects of training including: knowledge (i.e., what workers need to know), process (i.e., how to perform the job), and culture (i.e., unique aspects of working at Tesla). Such worker training will take several weeks depending on worker

³ Currently, only two other automobile manufacturers utilize aluminum intense vehicle bodies similar to the Model S – Audi and Jaguar. Both of these manufacturers perform this assembly in Europe.

qualifications and the position involved. The Company has already assembled a team of experts to address core areas of training including paint, body, plastics, stamping, assembly, plant operations, materials (i.e., parts flow), and quality control. As each of these areas covers a critical process required for overall plant operation, all of these areas of training will occur simultaneously starting sometime in the third quarter of this year with completion of the first round by early fourth quarter. Tesla envisions conducting such training at the Fremont site itself with overall costs to hire and train 600 workers in the range of \$1.75 million to \$2.25 million. As Model S production ramps up to the full 20,000 units/year, Tesla expects to hire approximately 600 additional workers in 2013 with similar training costs. With the Model X and the Gen III vehicle also planned, Tesla will be hiring additional workers as those vehicles move towards production somewhere in the 2015 timeframe. At full production capacity, the Tesla Fremont facility has the potential to generate more jobs in the clean tech sector at this facility than ever existed from traditional technology. This number does not include the nearly 800 employees currently employed at Tesla's Palo Alto headquarters where corporate, research and development, and powertrain manufacturing are currently housed.

As noted earlier, Tesla continues to be on the leading edge of EV technology. With the Model S, the Company is already on third generation battery packs succeeding in achieving greater and greater power storage capacity in a smaller, more efficient pack. Model S will have the longest range of any pure plug-in EV in its class. In addition to power density, Tesla has also made significant strides in lowering cost. With the pack, Tesla has met projections to lower costs enough to allow sale of the Model S at a base price of under \$50,000 (i.e., \$49,900 after the \$7,500 federal tax credit is included). Tesla is not content, however, to simply rest on its accomplishments. The Company continues to push aggressively in increasing battery density and lowering cost. For example, Tesla recently entered into a partnership with Panasonic to conduct research into cell chemistry in order to develop higher density 18650 cells – the base unit of electricity storage in the innovative Tesla battery packs. The results of this research and development will not only be utilized in Tesla branded vehicles but in other potential light and medium duty application as well (e.g., Tesla is currently working with FedEx and Freightliner Custom Chassis to develop an all EV delivery truck). Additional incentives and funding can help accelerate the research and development into more powerful and less costly cell technology with direct application to light and medium duty EVs.

IV. Importance of EV Technology

The importance of the effort to put more and more efficient EVs on the roads cannot be overstated. By shifting the transportation sector to electricity, the United States can significantly reduce greenhouse gases. In fact, the U.S. has committed to reducing emissions of greenhouse gases by 28% by 2020. Displacing traditional ICEs with EVs can assist significantly in meeting this goal. EVs such as the Tesla Roadster, the Model S, as well as future Tesla models, generate zero greenhouse gases. Thanks to the over 1,500 all electric Roadsters in 31 countries on the roads today, Tesla customers have accumulated almost 9.5 million pure EV miles displacing the need to utilize nearly 25,000 barrels of oil. Even when taking into consideration the source of the electricity stored on the vehicles, the greenhouse gas emissions profile of EVs is lower than their ICE counterparts. A study by the Natural Resources Defense Council (NRDC) and the Electric Power Research Institute (EPRI) demonstrated that on a well-to-wheels comparison, use of plug-in hybrid electric vehicles (PHEVs) would result in reductions of anywhere from 3.4 to 10.3 billion metric

tons of greenhouse gases from 2010 to 2050 depending on the penetration level of PHEVs.⁴ With EVs that utilize no gasoline whatsoever, this reduction should even be higher. With the impacts of climate change caused by excessive greenhouse gases being recorded and felt already in the state of California, switching away from traditional ICE equipped vehicles is an imperative. California's leadership in this area can certainly help facilitate this transition.

In addition to the environmental benefits, there are other compelling justifications for moving away from oil dependent modes of transportation. Currently, over 66% of the oil consumed in the United States is imported – primarily from countries less-than-friendly to the U.S. Up to 95% of the oil consumed in the U.S. is used in the transportation sector.⁵ As a result, reducing our dependence on foreign oil is a matter of economic and national security. By being dependent on foreign sources of oil from volatile regions of the world, the U.S. must spend more and more of its military budget on assisting in stabilizing these regions of the world resulting in larger expenditures by the federal government. Such spending can and does contribute to the national deficit. More importantly, this puts America's young men and women serving in the military in harm's way to feed this dependence. As well, with a trade deficit of nearly \$500 billion for 2010, eliminating our dependence of foreign oil could cut that deficit nearly in half.⁶ These economic benefits are in addition to the large number of jobs created by moving to clean technology vehicles like Tesla EVs. Accordingly, not only would the United States achieve environmental benefits for a transition to EV transportation, but economic and security benefits as well.

V. Conclusion

As the largest manufacturer of EVs in the state of California and a commitment to continue to invest and grow in the state, Tesla's efforts will benefit the state environmentally and economically. Not only will Tesla be one of the largest clean tech manufacturing employers in Northern California, its operations will have collateral benefits to the state through vendor purchases, supplier contracts (including potential co-location of suppliers from out of state) and other opportunities. Tesla's efforts on EV research and development will continue to set the bar higher and higher striking a competitive response from other manufacturers. California built EVs will also help reduce greenhouse gas emissions in California and reduce the United States' dependence on foreign oil. In sum, with 5.5 million square feet of manufacturing space in Fremont, an established headquarters in Palo Alto, and a worldwide retail presence in North America, Europe, and Asia, Tesla is poised to drive EV technology from California to the rest of the world.

⁴ See NRDC/EPRI study entitled: *Environmental Assessment of Plug-In Hybrid Electric Vehicles* (2007)

⁵ Values of oil imported to the United States and transportation use were obtained from the United States Department of Energy's Energy Information Agency available at: http://www.eia.doe.gov/pub/oil_gas/petroleum/analysis_publications/oil_market_basics/demand_text.htm.

⁶ See <http://www.oilandgaschronicle.com/the-untold-story-of-the-us-trade-deficit-rising-exports> (February 17, 2011).

Tesla again thanks California for this opportunity to submit these comments in support of AB118 and the 2011-2012 Investment Plan for the Alternative and Renewable Fuel and Vehicle Technology Program. If you have any questions or comments regarding this submission, please feel free to contact me (202.549.9819 or james@teslamotors.com).

Sincerely,

A handwritten signature in blue ink that reads "James C. Chen". The signature is fluid and cursive, with a long horizontal stroke at the end.

James C. Chen, Director of Policy and
Associate General Counsel for Regulatory Affairs