



**AB118**

**Training Proposal for:  
Tesla Motors, Inc.**

**Agreement Number: ET16-0803**

**Panel Meeting of:** September 25, 2015

**ETP Regional Office:** San Francisco Bay Area

**Analyst:** A. Nastari

**PROJECT PROFILE**

Contract Attributes:	AB118 (Alt Funds) Retrainee Priority Rate Job Creation Initiative HUA	Industry Sector(s):	Manufacturing Green Technology  Priority Industry: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Counties Served:	Alameda, Los Angeles, San Joaquin, Santa Clara	Repeat Contractor:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Union(s):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Number of Employees in:	CA: 10,300	U.S.:11,500	Worldwide: 14,000
<u>Turnover Rate:</u>	13%		
<u>Managers/Supervisors:</u> (% of total trainees)	5%		

**FUNDING DETAIL**

All funding will be under the Alternative and Renewable Fuel and Vehicle Technology Program created under AB118.

Program Costs	-	(Substantial Contribution)	(High Earner Reduction)	=	<b>Total ETP Funding</b>
\$468,000		\$0	\$0		\$468,000

In-Kind Contribution:	100% of Total ETP Funding Required	\$833,340
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**TRAINING PLAN TABLE**

Job No.	Job Description	Type of Training	Estimated No. of Trainees	Range of Hours		Average Cost per Trainee	Post-Retention Wage
				Class / Lab	CBT		
1	Retrainee Priority Rate Job Creation	Advanced Tech, Continuous Impr, HazMat, Manufacturing Skills, PL-Mfg Skills	975	8-200	0-12	\$480	\$15.07
				Weighted Avg: 24			

**Minimum Wage by County:** \$16.44 - Alameda & Santa Clara; \$15.97 - Los Angeles; \$15.07 - San Joaquin

**Health Benefits:**  Yes  No This is employer share of cost for healthcare premiums – medical, dental, vision.

**Used to meet the Post-Retention Wage?:**  Yes  No  Maybe

Employer may use health benefits of up to \$1.44 per hour to meet the Post-Retention Wage.

**Wage Range by Occupation**

Occupation Titles	Wage Range	Estimated # of Trainees
Administrative Staff		25
Engineers		25
Leads I		13
Leads II		12
Managers		24
Manufacturing Technicians		325
Production Associates		525
Supervisors I		13
Supervisors II		12

**INTRODUCTION**

Tesla Motors, Inc. (Tesla) [www.teslamotors.com](http://www.teslamotors.com), founded in 2003 in San Carlos, is a manufacturer of electric vehicles (EV), electric powertrains, and Superchargers sold to consumers. The Company uses proprietary technology, state-of-the-art design and manufacturing processes throughout its facilities in Fremont (Manufacturing), Palo Alto (Headquarters), Lathrop (Manufacturing), Newark (Warehouse,) and Hawthorne (Design Studio).

In 2012, Tesla began manufacturing a high quality, mass market EV – the Model S – in its Fremont factory. This vehicle, with a maximum range of 300 miles on a single charge and can accelerate from 0-60 in 4.4 seconds, has received numerous awards including Motor Trend's 2013 Car of the Year. The Company has plans to extend the range of its vehicles even more by building a network of Superchargers. These Superchargers are capable of charging the Model

S 20 times faster than most public charging stations. The Superchargers are engineered and designed by the Palo Alto and Hawthorne facilities and manufactured in Fremont.

## **AB 118**

This proposal will be funded under the AB 118 Training Program that was created in FY 2009-10. The AB 118 Program is administered by ETP in partnership with the California Energy Commission (CEC).

The overall goal of the AB 118 Program is to support a transition from petroleum-based transportation to alternative and renewable fuels and clean, low carbon vehicle technologies. There is no expenditure of Employment Training Tax funds for the AB 118 Program. Public entity employers are eligible to participate, such as city and county regional transit authorities.

Training is focused on job skills for a skilled workforce to produce and distribute new alternative fuels and design, construct, install, operate, service and maintain new fueling infrastructure and vehicles.

Alternative Fuel is defined as any fuel other than the traditional selections, gasoline and diesel from petroleum sources, used to produce energy or power. Examples of alternative fuels are: bio-diesel, ethanol, methanol, electricity, propane, compressed or liquid natural gas, and hydrogen.

## **Prior Projects**

This will be Tesla's third AB118 Agreement. The first Agreement, ET11-0804, helped the Company expand and hire staff at its manufacturing facility in Fremont. The results were dramatic as Tesla started with 75 employees at the Fremont facility and grew to 1,570 employees at the end of the contract term. Additionally, ET11-0804 also helped the Company launch its flagship Model S vehicle, the first mass market EV produced in the United States.

Tesla's second Agreement, ET13-0803, continued to support training for the Model S. The Manufacturing Skills taught in this Agreement covered the latest manufacturing and assembly technologies including powertrain, electric motor, and battery pack assembly. However, the main focus was on continuous improvement and operational efficiency. Courses consisted of quality standards, ownership of operations, constructive feedback and team building. This second Agreement improved processes which allowed Tesla to increase manufacturing from 3,000 cars in 2012 to 35,000 cars in 2014. By 2016, it expects to increase production to 100,000 cars.

## **PROJECT DETAILS**

Training under this proposal will address the Company's plan to increase production; build an expanded battery production area; implement a second auto body line with the latest in robotics; launch a new paint shop with state of the art robots, equipment and technologies; and bring a new stamping press on line. Additionally, training will include upscaling of the Model S (including new European and Asian versions of the Model S) and new product introductions of the Model X (a crossover utility vehicle currently in early production stages, with an expected launch in late 2015) and the Model III (a larger scale production EV for mass production, due to launch in 2017).

Tesla used to outsource High and Low Pressure Casting and Machining, but has brought those processes in house to its Lathrop facility. Workers must be trained on equipment operation, CNC manufacturing, production control, and testing processes.

Tesla has additional plans for the installation of new equipment at its Palo Alto, Lathrop and Newark facilities, however the specifics are being finalized. Tesla estimates \$400 million in costs for the upgrades. Occasionally, the price of the new equipment includes training. Tesla will exclude that portion of the training from the ETP funded plan.

### **Job Creation**

In support of Job Creation, the Panel is offering incentives to companies that commit to hiring new employees. Training for newly-hired employees will be reimbursed at a higher rate, and trainees will be subject to a lower post-retention wage.

In this proposal, Tesla has committed to hiring 975 new employees (Job Number 1). Tesla represents that the date-of-hire for all trainees in the Job Creation program will be within the three-month period before contract approval or within the term-of-contract. The Company also represents that these trainees will be hired into “net new jobs” as a condition of contract.

Currently, manufacturing operations are conducted at its 5.5 million square feet Fremont facility. Tesla is expecting increasing demand for its EVs. It is expanding production, purchasing new manufacturing equipment (including automation robotics, tools, and machines) and building three additional manufacturing facilities in Fremont. Workers will be placed at Tesla’s five existing facilities. However, some workers may eventually be moved to Tesla’s new facilities after construction is completed.

### **High Unemployment Area**

Trainees in San Joaquin County in Job Number 1 may work in a High Unemployment Area (HUA), exceeding the state average by at least 25%. For these trainees, the Panel may modify the ETP Minimum Wage by up to 25% if post-retention wages exceed the start-of-training wages. However, Tesla is not asking for a wage or retention modification.

### **Training Plan**

Since its last ETP funded training, Tesla designed an intensive simulated lab, specifically designed to give employees the training experience with actual assembly tools, machinery, and working conditions in a non-productive environment. The training plan consists of Tesla’s full spectrum of EV production including powertrain components (battery packs, motors, chargers, high voltage cables), plastics molding used in production, aluminum stamping (which comprises 90% of its auto body), painting, assembling, and product quality testing. Training will also include equipment maintenance, safety operational procedures, and troubleshooting.

### **CBT**

Additionally, Tesla recently developed its own Model S Certification video and Crane training simulator which will be delivered through Manufacturing Computer-Based Training (CBT). CBT is reimbursed at \$8 per hour and capped at 50% of a trainee’s total hours.

**Continuous Improvement (40%):** Training will be provided to workers across all occupations. The skills introduced will highlight Tesla’s unique operations model in manufacturing and assembly processes which includes problem solving, constructive feedback, quality standards, and team building. Managers and Supervisors may undergo additional training on communications, coaching, leadership and overall team management.

**Hazardous Materials (5%):** Training will be offered to Engineers, Leads, Managers, Manufacturing Technicians, Production Associates, and Supervisors in high voltage precautions

and electric vehicle power pack handling skills. More in-depth training will be provided to staff who work directly in hazardous situations.

**Manufacturing Skills** (40%): Training will be offered Engineers, Leads, Managers, Manufacturing Technicians, Production Associates, and Supervisors. Training will ensure that all staff are brought up to speed with the manufacture and assembly of emerging technologies (including stamping and forming raw aluminum, management of parts and materials flow, plastics molding and injection, assembly of components, and paint and body work) to ensure efficiency and quality during production. Components of training will. In addition, training will focus on powertrain assembly including electric motor, battery module and pack, circuits, and software. Although Tesla utilizes robotics throughout its manufacturing processes, vehicle assembly is conducted by hand in over 100 stations by teams of workers who transform an empty shell into a full-functioning vehicle.

### **Productive Laboratory**

Trainees may produce goods for profit as part of Productive Lab (PL) training in the courses identified under the Curriculum. The instructor must be dedicated to training delivery during all hours of training.

Following the delivery of classroom and simulated lab training, Tesla will provide PL in Manufacturing Skills for only Manufacturing Technicians and Production Associates. Although some PL requires up to 120 hours to gain competency, ETP funded PL will not exceed 40 hours per trainee. Tesla will provide the additional 80 hours at its own costs.

All PL training will occur under the direction and supervision of a devoted trainer whose time is exclusively dedicated to training the workers in a productive environment. The training plan follows specific standardized work procedures. Trainees will operate equipment under close supervision until they have been certified as competent to work independently. Trainees will be utilizing tools and equipment, including large robots. The trainer-to-trainee ratio during PL is usually 1:1. However, on occasion when training is delivered at a work station, the ratio may increase to 1:2.

### **Advanced Technology (AT)**

AT will be provided to workers whose job functions requires technical and customized courses in robotics architecture, engineering, software design and programming, and high-voltage electronics. These courses cover leading-edge technologies in electronic powertrain systems unique to Tesla, high end robotics, and software.

AT training typically requires the use of outside vendors and in-house specialists with expertise in these areas. The cost of these specialized courses will be high due to the limited pool of qualified trainers available. The Company estimates that training costs in this area will be in the range of \$200 per hour. In addition, class/lab sizes will be limited to a trainer-to-trainee ratio of 1:10 to allow in-depth coverage and personal attention from the instructor.

### **Commitment to Training**

Tesla estimates \$1,166,660 in training expenditures during the term of the Agreement, in addition to its in-kind contribution of \$833,340 in salaries paid during training. The costs include staff overseeing training, technical training writers, administrative personnel and training systems. These costs are above and beyond the investment in creating classroom space along with production-floor simulation areas and machinery used for laboratory training.

Tesla is committed to providing training to workers not included in this ETP proposal. Training is delivered in new hire orientation, supervisory, leadership, legally-mandated training, Lean Manufacturing, customer service, sales and repairs, and extensive training in safety. Tesla represents that ETP funds will not displace the existing financial commitment to training. Safety training is, and will continue to be, provided in accordance with all pertinent requirements under state and federal law.

### ➤ Training Infrastructure

Tesla has designated the Director of Organizational Learning and Development and Onsite Coordinator as the officials responsible for oversight and administration of training. They will be dedicated to enrolling trainees, verifying rosters, tracking training hours, and resolving day-to-day issues. Additionally, approximately 30 manufacturing training coordinators will ensure training is scheduled on time and conducted according to guidelines.

## **RECOMMENDATION**

Staff recommends approval of this proposal.

## **PRIOR PROJECTS**

The following table summarizes performance by Tesla under an ETP Agreement that was completed within the last five years:

Agreement No.	Location (City)	Term	Approved Amount	Payment Earned	
				\$	%
ET13-0803	Fremont	05/06/2013– 05/05/2015	\$648,000	\$648,000	(100%)
ET11-0804	Fremont	06/30/2011– 03/31/2013	\$756,000	\$647,626	(85%)

## **DEVELOPMENT SERVICES**

N/A

## **ADMINISTRATIVE SERVICES**

N/A

## **TRAINING VENDORS**

All Crane Training USA Inc. of San Leandro has been retained to provide training for a fee of \$4,000 per training session.

Lift Safe, Inc. of Danville has been retained to provide training for a fee of \$570 per student.

Other trainers will be identified for ETP record-keeping purposes, as they are retained by Tesla Motors.

## Exhibit B: Menu Curriculum

### Class/Lab Hours

8-200

Trainees may receive any of the following:

### CONTINUOUS IMPROVEMENT

- ✚ Tesla Operations Overview
- ✚ Plant Specific Operations
- ✚ New & Revised SOP
- ✚ Manufacturing Overview
- ✚ Problem Solving
- ✚ Data Collection and Recordkeeping

### HAZARDOUS MATERIALS

- ✚ High Voltage Awareness Training for Battery Packs and Systems
- ✚ Hazardous Materials Training (e.g., adhesives, solvents, chemicals, paint used in battery pack and vehicle manufacturing)
- ✚ High Voltage Training (general awareness and precautions)

### ADVANCED TECHNOLOGY (trainer to trainee ratio 1:10)

- ✚ Manufacturing Automation and Robotics Use
- ✚ Robotics Architecture and Engineering
- ✚ Robotics and Production Software Design and Programming
- ✚ Equipment Troubleshooting, Diagnostics and Repair
- ✚ Manufacturing/Assembly Process Optimization

### MANUFACTURING SKILLS

Electric Vehicle (EV):

- ✚ EV Manufacturing and Assembly Processes
- ✚ EV Powertrain Manufacturing and Assembly Processes
- ✚ Body Shop Equipment Operation, Welding Equipment Operation, Maintenance and Workspace Management
- ✚ Product Excellence, Manufacturing Fit and Finish (quality and aerodynamics)
- ✚ Manufacturing Equipment Maintenance and Servicing
- ✚ Computer Programming and Software Maintenance
- ✚ Welding Equipment Operation and Maintenance
- ✚ Aluminum and Plastics Adhesive and Riveting Applications
- ✚ Stamping Operations and Maintenance
- ✚ Paint Operations, Equipment and Maintenance
- ✚ Paint Types (e.g., water borne, low VOC) and Techniques of Application
- ✚ Paint Quality, Defects, Prevention and Repair
- ✚ Plastics Shop Equipment and Operation for Bumpers and Components
- ✚ Plastic Vehicle Components Production Processes
- ✚ Robotics Operations and Maintenance
- ✚ Aluminum Welding, Adhesive and Riveting Processes

- ✦ High/Low Pressure Die Casting Equipment Operation and Quality Control
- ✦ Tool & Die Operations and Maintenance
- ✦ Machining Operations and Maintenance
- ✦ Coatings Operations and Maintenance
- ✦ Vehicle and Component Service Training
- ✦ Prototype Vehicle Testing
- ✦ Service Training
- ✦ Simulation Lab Manufacturing Process Training, Changes and Problem Solving

**PL Hours**

0 – 40

**MANUFACTURING SKILLS (limited ratio 1:2)**

- ✦ EV Manufacturing and Assembly Processes
- ✦ EV Powertrain Manufacturing and Assembly Processes
- ✦ Body Shop Equipment Operation, Welding Equipment Operation, Maintenance and Workspace Management
- ✦ Product Excellence, Manufacturing Fit and Finish (quality and aerodynamics)
- ✦ Manufacturing Equipment Maintenance and Servicing
- ✦ Computer Programming and Software Maintenance
- ✦ Welding Equipment Operation and Maintenance
- ✦ Aluminum and Plastics Adhesive and Riveting Applications
- ✦ Stamping Operations and Maintenance
- ✦ Paint Operations, Equipment and Maintenance
- ✦ Paint Types (e.g., water borne, low VOC) and Techniques of Application
- ✦ Paint Quality, Defects, Prevention and Repair
- ✦ Plastics Shop Equipment and Operation for Bumpers and Components
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- ✦ Aluminum Welding, Adhesive and Riveting Processes
- ✦ High/low Pressure Die Casting Equipment Operation and Quality Control
- ✦ Tool & Die Operations and Maintenance
- ✦ Machining Operations and Maintenance
- ✦ Coatings Operations and Maintenance
- ✦ Vehicle and Component Service Training
- ✦ Prototype Vehicle Testing

**CBT Hours**

0 – 12

**MANUFACTURING SKILLS**

- ✦ Model S Certification (1.5 hours)
- ✦ Crane Training Simulator (4-12 hours)

Note: Reimbursement for retraining is capped at 200 total training hours per trainee, regardless of the method of delivery. CBT is capped at 50% of total training hours, per trainee. PL is capped at 40 hours per-trainee.