

## AERIAL BOOM VEHICLE WITH ePTO ELIGIBILITY APPLICATION

### Part I: Original Manufacturer Information

Company Name/Organization Name/Individual Name:		
Contact Name and Title:		
Business Mailing Address:		
City:	State:	Zip Code:
Phone:	E-mail:	

### Part II: Vehicle Description

Please identify the vehicle and its applicable ePTO system proposed for HVIP eligibility in Tables 1 and 2, respectively.

**Table 1: Aerial Boom Vehicle Information**

Vehicle Model Year:	
Vehicle Make and Model:	
Engine Make and Model:	
Boom Maximum Working Height (ft):	
Gross Vehicle Weight Range (lbs.) including ePTO system:	

**Table 2: ePTO Information**

Battery Manufacturer:	
Battery Chemistry:	
Battery Capacity (kWh):	
Battery Manufacturer Recommended Minimum State-of-Charge (SOC):	
ePTO Make and Model:	
Regenerative Braking:	<input type="checkbox"/> Yes <input type="checkbox"/> No
Alternator Charging:	<input type="checkbox"/> Yes <input type="checkbox"/> No
Battery SOC at Engine Auto-Start:	

1) What is the typical California pre-tax cost with normal dealer profit of the truck identified in Table 1 with traditionally powered PTO (i.e. vehicle engine idles to power bucket)?

\$ \_\_\_\_\_

2) What is the typical California pre-tax cost with normal dealer profit of the bucket truck identified in Table 1 when equipped with the ePTO system identified in Table 2?

\$ \_\_\_\_\_

3) Make and model of vehicle telematics system:

\_\_\_\_\_

Potential Voucher Enhancements (Please check Yes or No)

- 1) Manufacturer requests approval of exportable power option (per Section D(5)(f) of the HVIP and Low NOx Engine Incentives administered through HVIP Implementation Manual).  Yes  No
- 2) Manufacturer requests approval of extended warranty option (per Section D(5)(g) of the HVIP and Low NOx Engine Incentives administered through HVIP Implementation Manual).  Yes  No

### **Part III: Self-Certification of Vehicle, Engine and ePTO Parameters**

Please check the box next to each statement if the statement is correct. **Do not check the box if the statement is not correct.**

- The vehicle complies with applicable air quality provisions of California and federal law.
- The vehicle complies with motor vehicle safety provisions of 49 USC Sections 30101 through 30169.
- The vehicle meets the original engine manufacturer's build requirements.
- No modifications have been made to the engine hardware or after-treatment device(s).
- No modifications have been made to the engine's original software calibrations.
- The vehicle meets HVIP minimum three-year warranty requirements, as described in Section C(1)(a) of the HVIP and Low NOx Engine Incentives administered through HVIP Implementation Manual.
- The vehicle manufacturer agrees to the telematics requirement as stated in Sections C(1)(k) and C(6)(h) of the HVIP and Low NOx Engine Incentives administered through HVIP Implementation Manual.
- The ePTO battery is capable of recharging from the manufacturer specified battery cut-off voltage to full charge within 12 hours.
- The battery manufacturer recommended minimum SOC for the ePTO make/model identified in this application equals that in the aerial boom vehicle provided for consumer purchase and intended for the vehicle in-use for a minimum of three years from date of voucher redemption.
- There is at least one service provider for the vehicle in California. Please provide name and city of primary service provider: \_\_\_\_\_
- The vehicle and ePTO system meet all the requirements of the HVIP, including those identified in this application and the HVIP Implementation Manual.

#### **Part IV: Application Attachments to be Provided by Original Vehicle Manufacturer**

- Warranty provisions.
- After sales service provisions.
- MSRP price sheets.
- Manufacturer's vehicle marketing flyer, including vehicle and exportable power specifications and justification for export power usage in proposed vehicle vocation (if requesting HVIP approval of exportable power option).
- If requesting HVIP approval of exportable power option, manufacturer's vehicle marketing flyer, including vehicle and exportable power specifications and justification for export power usage in proposed vehicle vocation.
- If any of the statements in Part III are not true and correct (i.e. if any of the boxes above are not checked), please attach a narrative explaining why.
- Briefly describe what information is provided to hybrid vehicle dealers/purchasers regarding proper disposal of the ePTO battery and how this information is conveyed.

#### **Part V: Demonstration of ePTO System**

The intent of the ePTO system demonstration is to verify that the ePTO will function entirely on battery power over the course of a typical work day.

The applicant shall provide an in-person demonstration for the CARB Project Liaison or his designee that the vehicle completes the approved duty cycle without need for the engine to recharge the battery (i.e. the battery manufacturer recommended minimum SOC is not reached). The demonstration must be conducted within a 100-mile radius of CARB headquarters in Sacramento, California unless an alternate location is preapproved by the CARB Project Liaison. The CARB Project Liaison may forgo in-person duty cycle verification on a case-by-case basis for applicants for which ePTO duty cycles have previously been demonstrated in person. In these cases, the applicant would detail and confirm in writing completion of the approved duty cycle.

The CARB Project Liaison is: Patrick Chen  
[Patrick.Chen@arb.ca.gov](mailto:Patrick.Chen@arb.ca.gov)

#### **Demonstration of ePTO Systems on Aerial Vehicles with GVWR 26,001+ lbs.**

The ePTO demonstration consists of three steps:

- 1) The CARB Project Liaison or his designee approves in writing a vehicle and ePTO duty cycle that reflects a typical work day. The duty cycle must include the following parameters:
  - a. At least 45 minutes of total boom movement with at least 175 lbs. in the bucket, including a minimum of 22.5 minutes of vertical boom movement and

- 22.5 minutes of horizontal boom movement. Each boom movement must extend to maximum achievable boom left/right and up/down positions.
- b. At least five minutes of air conditioning, running at maximum capacity with the cab windows closed.
  - c. Vehicles with a battery charge while driving feature may include up to one hour of driving as part of the duty cycle. Drive cycles will be considered by the CARB Project Liaison on a case-by-case basis, and must reflect a suburban driving environment (i.e. moderate speeds and number of stops).

### Demonstration of ePTO Systems on Aerial Vehicles with 16,001-26,000 lbs. GVWR

Due to differing duty cycles of Class 5 and Class 6 aerial vehicles, the following demonstration is required for ePTO installed on aerial vehicles with GVWR between 16,001-26,000 lbs.

The work cycle is defined as 6 job sites with 10 miles between each job site. At each job site, the vehicle will perform one aerial boom cycle as defined below.

- 1) An aerial boom cycle consists of taking the aerial device from the stowed position, to a defined working position, and returning to the stowed position.
- 2) From stowed to the working position: activate upper and lower boom simultaneously until upper boom reaches 45 degree above horizontal and lower boom is completely unfolded or vertical. Rotate machine 90 degrees. Extend upper boom if unit is equipped with a telescopic boom section.
- 3) From working position to the stowed position: stow the unit fully in the reverse order, retracting telescopic boom sections, rotating, and lower the upper and lower boom simultaneously. A cycle is considered completed once the aerial device has returned to the stowed position.

ePTO systems must be able to perform the below defined demonstration without fully depleting the ePTO battery and without engine auto-start in order to be eligible for funding. During the ePTO demonstration, the battery SOC must be recorded for each of the steps below. The ePTO demonstration consists of the following:

- 1) Park the test vehicle at the test site and conduct pre-operational safety procedures, as applicable.
- 2) Place the vehicle into ePTO mode and set the outriggers, if applicable.
- 3) Engage the aerial device controls and perform one aerial boom cycle (as described above).
- 4) Return aerial boom to the stowed position and operate at least five minutes of air conditioning, running at maximum capacity with the cab windows closed.
- 5) Drive vehicle for a total of 10 miles and return to test site.
- 6) Repeat steps 1-5 to simulate a second jobsite.
- 7) Repeat steps 1-5 to simulate a third jobsite.
- 8) Repeat steps 1-5 to simulate a fourth jobsite.
- 9) Repeat steps 1-5 to simulate a fifth jobsite.

- 10) Repeat steps 1-5 to simulate a sixth jobsite.
- 11) Record final battery SOC.

The CARB Project Liaison or his designee may approve in writing modifications to the ePTO demonstration above.

**Part VI: Applicant Signature**

I certify under penalty of perjury that all information provided in this application and any attachments are true and correct.

Printed Name of Responsible Party:	Title:
Signature of Responsible Party:	Date:
City:	State: