ETA-HTP11

Revision 1
Effective October 1, 2005

Vehicle Verification

Prepared by
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APPENDICES

1.0 Objective

The objective of this procedure is to identify a common protocol to verify mandatory requirements for vehicles participating in HEV America. Verification shall be completed prior to commencement of HEV America testing activities.

2.0 Purpose

This procedure identifies mandatory vehicle requirements contained in the HEV America Vehicle Specification which shall be verified as part of HEV America. Vehicles submitted for testing in HEV America must meet all of these requirements for inclusion of the vehicle in HEV America.

3.0 Documentation

Documentation addressed by this procedure shall be consistent, easy to understand, easy to read and readily reproducible. Basis documents are referenced where appropriate. This documentation shall contain enough information to "stand alone"; that is, be self-contained to the extent that all individuals qualified to review it could be reasonably expected to reach a common conclusion, without the need to review additional documentation. Storage and retention of records shall be completed as described in Procedure ETA-HAC01, "Control, Close-out and Storage of Documentation."

4.0 Prerequisites

4.1 Individuals assigned to complete this procedure will be knowledgeable of the HEV America Technical Requirements.

4.2 Individuals assigned to complete this activity will have received the appropriate training in accordance with ETA-HAC05, "Training and Certification of Personnel Utilizing ETA Procedures."

4.3 Prior to commencing this activity, a meeting of the involved personnel will be held to discuss the following:

- 4.3.1 Data required
- 4.3.2 Data available
- 4.3.2 Data sources
- 4.3.4 Contingencies
- 4.3.5 Safety requirements

4.4 Verification of all mandatory requirements resented herein must be completed prior to conduct of HEV America testing, unless specifically exempted herein.

4.5 All documentation required to document the activities addressed by this procedure shall be completed, approved and issued prior to commencing the testing it addresses.

5.0 Verification Requirements

The requirements in Section 5 are derived from the HEV America Vehicle Specification. Vehicles participating in HEV America shall meet these requirements. Vehicles which cannot meet the requirements defined by HEV America can be accepted for testing but only as a Prototype (non-Production) Vehicle.

Should a vehicle participate in HEV America more than once, a new check-sheet shall be completed each time it is presented. The testing authority may choose not to re-verify all items. Items not re-verified shall be documented in a Test Exception Report in accordance with ETA-HTP02, "Control of Test Conduct."

Appendix A identifies all mandatory requirements of the HEV America Vehicle Specification. Most mandatory requirements can be verified by a physical inspection or document review as described in Section 5.1. However, some mandatory requirements require measurement or dynamic test for validation. The methods for conduct of these measurements or dynamic tests are listed in Section 5.2.

5.1 Minimum Vehicle Requirements

Vehicle compliance with mandatory requirements of the HEV America Vehicle Specification listed in Appendix A which are verifiable by inspection shall be recorded in Appendix A. Any requirements not fully met shall be indicated on Appendix A by marking "no" and completing a Non-Conformance Report, Appendix B. The Non-Conformance Report shall be transmitted to the vehicle supplier within two business days of issuance. Further verification of mandatory vehicle requirements verifiable by inspection (Section 5.1) may continue while a Non-Conformance Report is unresolved. However, no testing (Section 5.2) shall proceed until all Non-Conformance Reports concerning mandatory vehicle requirements verifiable by inspection (Section 5.1) are resolved such that Appendix A can be marked "Yes" for all such requirements.

5.2 Dynamic Verification Requirements

The following tests shall be conducted to verify mandatory requirements of the HEV America Vehicle Specification listed in Appendix A which are not verifiable by inspection and require measurement or dynamic testing. The results of such measurement or testing shall be recorded in Appendix A. Any requirements not fully met shall be indicated on Appendix A by marking "No" and by completing a Non-Conformance Report, Appendix B. The Non-Conformance Report shall be transmitted to the vehicle supplier within two business days of issuance.

5.2.1 Verify the compliance of the vehicle to the requirements of the FMVSS applicable on the date of manufacture by conducting the following:

5.2.1.1 Locate the FMVSS Certification Label(s) on the vehicle

5.2.1.2 Verify that the label(s) indicates the vehicle is fully certified

5.2.1.3 If the vehicle is a conversion, verify that both the OEM FMVSS label and the Converter's FMVSS label are present. The Converter's FMVSS label SHALL NOT be installed in a manner that precludes full view of the OEM label.

5.2.2 Verify compliance with the FCC requirements for unintentional emitted electromagnetic radiation, as identified in 47 CFR 25, Subpart B, "Unintentional Radiators" by conducting ETA-HTP10, "Measurement and Evaluation of Electromagnetic Fields (EMF) and Electromagnetic Radiation (EMI) Generated by Hybrid Electric Vehicles", Section 6.6.

5.2.3 Verify the payload capability of at least 400 pounds as follows:

5.2.3.1 Upon receipt, the vehicle shall be weighed to determine the vehicle's standard (as-delivered condition) curb weight.

5.2.3.2 Obtain the GVWR rating from the FMVSS label affixed to the vehicle.

5.2.3.3 Subtract the curb weight determined in Step 5.2.3.1 from the GVWR determined in 5.2.3.2.

5.2.3.4 The calculated difference shall be considered the vehicle's payload capability. Record this value.

5.2.4 If the vehicle is a conversion, it shall not have a GVWR or GAWR greater than the OEM specified values. This shall be verified as follows:

5.2.4.1 Locate the OEM FMVSS label. Note the GVWR and GAWRs. Record these values.

5.2.4.2 Locate the Converter's FMVSS label. Note the GVWR and the GAWRs. Record these values.

5.2.4.3 Compare the two GVWRs and verify that the GVWR listed on the Converter's FMVSS label is not greater than that listed by the OEM.

5.2.4.4 Compare the two GAWRs and verify that the GAWRs listed on the Converter's FMVSS label are not greater than the OEM's listed GAWRs.

5.2.5 Verify that the tires supplied with the vehicle being inspected are commercially available by conducting the following:

5.2.5.1 Identify the manufacturer, type and size of the tire.

5.2.5.2 Obtain the phone number of three dealers that are authorized dealers for the tire in question.

5.2.5.3 Call those dealers and verify that the tires are available for purchase. Make this verification for quantities of one, four and 20 tires. If available, attempt to obtain the price of the tire, excluding amounts for taxes, mounting, balancing, road hazard insurance and all other fees and costs.

5.2.6 Verify that the passenger space is not intruded upon by the Rechargeable Energy Storage System or other conversion materials, as follows:

5.2.6.1 The RESS cannot be accessed by a vehicle occupant.

5.2.6.2 The RESS enclosure cannot be opened from inside the passenger compartment.

5.2.6.3 The RESS enclosure does not intrude into the space normally occupied by an individual while that individual is occupying a seat formally defined as such.

5.2.6.4 Conversion materials do not intrude into the space normally occupied by an individual while that individual is occupying a seat formally defined as such.

5.2.7 Verify that maximum RESS discharge is controlled for vehicles capable of operation in "RESS only mode" in accordance with ETA-HTP04, "Electric Vehicles Constant Speed Range Test", Section, 5.1. Verify that maximum RESS discharge is controlled for vehicles capable of operation only in the "normal operation mode" shall be verified in accordance with ETA-HTP12, "Evaluation of Hybrid Vehicle Energy Management System".

5.2.8 Verify successful completion of ETA-HTP05, "Hybrid Electric Vehicle Rough Road Course Test" without damage to or failure of the vehicle or its systems

5.2.9 Verify vehicle temperature durability in accordance with ETA-HTP05, "Hybrid Electric Vehicle Rough Road Course Test"

5.2.10 Verify vehicle repair time shall requirement in accordance with ETA-HAC02, "Conduct of Test", Section 6.1.

5.2.11 Verify with the vehicle operator's manual that the vehicle is not designed to auto start with the key in the off position (or the vehicle in a de-energized state for "keyless" ignitions). Additionally, vehicles shall be observed throughout the testing pogram to verify that there are no auto start operations with the key in the off position (or the vehicle in a de-energized state for "keyless" ignitions).

5.2.12 A Test Engineer qualified in accordance with ETA-HAC05, "Training and Certification of Personnel Utilizing ETA Procedures" to review UL 2202 and UL 2231 shall verify conformance with NEC625-29(c) or (d).

5.2.13 Verification that vehicles do not contain exposed conductors, terminals, contact blocks or devices of any type that create the potential for personnel to be exposed to low voltage and high voltage, as specified in SAE J1127, J1128, et al.) shall be conducted as follows:

5.2.13.1 Each exposed conductor, terminal contact block and device shall have its potential to ground measured with a voltmeter

(digital or analog) verifying that voltage present at the exposed area is less than 60 volts.

5.2.12.2 Any device exhibiting a non-compliance (a voltage of 60V or greater) shall be clearly identified on a comment sheet and by a "NO" on Appendix A.

5.2.14 Verify that access to high-voltage components requires the removal of at least one bolt, screw, or latch as follows:

5.2.14.1 Locate all high-voltage components using the maintenance manual.

5.2.14.2 Verify that each of these components is fully enclosed and requires the removal of at least one bolt, screw, or latch for access to high voltage.

5.2.14.3 Verify that each of these components is clearly marked as "HIGH VOLTAGE" at any point that it can be accessed.

5.2.15 Verify that cable and wire marking consist of orange wire and/or orange sleeves as identified in SAE-J1127 as follows:

5.2.15.1 Locate all high-voltage cable using the maintenance manual.

5.2.15.2 Verify that each of these cables has an orange jacket or is marked with an orange tracer.

5.2.16 Isolation of the RESS from the vehicle chassis such that leakage current is less than 0.5 MIU shall be verified in accordance with ETA-HTP05, "Hybrid Electric Vehicle Rough Road Course Test", Section 5.4.7.1.

5.2.17 Isolation of the RESS charger from the vehicle chassis such that charger leakage current is less than 0.5 MIU shall be verified in accordance with ETA-HTP05, "Hybrid Electric Vehicle Rough Road Course Test", Section 5.4.7.2.

CAUTION

Verification of Section 5.2.18 may result in movement of the vehicle. Personnel must anticipate inadvertent vehicle movement and exercise extreme caution when performing the tasks required by Section 5.2.18.

5.2.18 Verify the "NEUTRAL" and "PARK" lockout as follows:

5.2.18.1 Place the vehicle transmission in a position other than "PARK" or "NEUTRAL".

5.2.18.2 Energize the vehicle.

5.2.18.3 Attempt to move the vehicle by depressing the accelerator.

5.2.18.4 If the vehicle moves under power, complete a Non-Conformance Report and notify the Supplier in accordance with Section 5.2.

5.2.19 Verify that the start key is removable only in the "OFF" position with the drive selector in "PARK" as follows:

5.2.19.1 With the drive selector in the "PARK" position, verify that the key can be inserted and removed without problem.

5.2.19.2 Turn the key to the "ON" position. Attempt to remove the key. If the key can be removed, complete a Non-Conformance Report and notify the Supplier in accordance with Section 5.2.

5.2.19.3 Repeat this for each available key position. If the key can be removed in any position other than "OFF", complete a Non-Conformance Report and notify the Supplier in accordance with Section 5.2.

5.2.19.4 If the key cannot be removed except when in the "OFF" position, circle "Yes" on Appendix A for section 5.2.19.

CAUTION

Verification of Step 5.2.20 may result in movement of the vehicle. Personnel must anticipate inadvertent vehicle movement and exercise extreme caution when performing the tasks required by Section 5.2.20.

5.2.20 Verify the pre-existing accelerator input lockout as follows:

5.2.20.1 Place the vehicle drive selector in the "PARK" position.

5.2.20.2 Verify the vehicle is not energized.

5.2.20.3 Depress the accelerator.

5.2.20.4 Energize the vehicle. If the vehicle moves under power, complete a Non-Conformance Report and notify the Supplier in accordance with Section 5.2.

5.2.20.5 Place the vehicle drive selector in the "NEUTRAL" position.

5.2.20.6 Verify the vehicle is not energized.

5.2.20.7 Depress the accelerator.

5.2.20.8 Energize the vehicle. If the vehicle moves under power, complete a Non-Conformance Report and notify the Supplier in accordance with Section 5.2.

5.2.20.9 Place the vehicle drive selector in the "DRIVE" position.

5.2.20.10 Verify the vehicle is not energized.

5.2.20.11 Depress the accelerator.

5.2.20.12 Energize the vehicle. If the vehicle moves under power, complete a Non-Conformance Report and notify the Supplier in accordance with Section 5.2.

5.2.20.13 Place the drive selector in the "REVERSE" position.

5.2.20.14 Verify the vehicle is not energized.

5.2.20.15 Depress the accelerator.

5.2.20.16 Energize the vehicle. If the vehicle moves under power, complete a Non-Conformance Report and notify the Supplier in accordance with Section 5.2.

5.2.20.17 If the vehicle did not move in any of Section 5.2.20.1 through 5.2.20.16, circle "Yes" in Appendix A for Section 5.2.20.

5.2.21 Verify charge cord interlock as follows:

5.2.21.1 With the charge cord inserted and the drive selector in the "PARK" position, attempt to energize the vehicle, select "DRIVE" and move the vehicle under power.

5.2.21.2 If the vehicle moves under power, complete a Non-Conformance Report and notify the Supplier in accordance with Section 5.2.

5.2.21.3 Repeat Section 5.2.21.1 selecting "REVERSE" and attempting to move the vehicle under power.

5.2.21.4 If the vehicle moves under power, complete a Non-Conformance Report and notify the Supplier in accordance with Section 5.2.

5.2.21.5 If the vehicle did not move in any of Sections 5.2.21.1 through 5.2.21.4, circle "Yes" in Appendix A for Section 5.2.21.

5.2.22 Verify the RESS charger is capable of recharging the RESS to a state of full charge from any possible state of discharge in less than 12 hours by completing ETA-HTP010, "Measurement and Evaluation of Hybrid Electric Vehicle RESS Charge Performance", Section 6. Testing shall be initiated following completion of a 45 mph Constant Speed Range Test conducted in accordance with ETA-HTP004, "Electric Vehicle Constant Speed Range Tests".

5.2.23 Verify automatic charger termination in accordance with ETA-HTP10, "Measurement and Evaluation of Hybrid Electric Vehicle RESS Charger Performance", Section 5.5.

5.2.24 Verify charger input parameters in accordance with ETA-HTP10, "Measurement and Evaluation of Hybrid Electric Vehicle RESS Charger Performance".

5.2.25 A Test Engineer qualified in accordance with ETA-HAC05, "Training and Certification of Personnel Utilizing ETA Procedures" to review UL 2202 and UL2231 shall review the charger and charger data submittal to determine conformance with the personnel protection requirement.

5.2.26 Verify charger power quality in accordance with ETA-HTP10, "Measurement and Evaluation of Hybrid Electric Vehicle RESS Charger Performance".

5.2.27 Confirm compliance with 49 CFR 571.105.S5.2.1 or .2 by placing the vehicle in neutral and engaging the parking brake on a 30% grade for at least 5 minutes and ensuring that the vehicle does not move. The vehicle shall be loaded to GVWR including the driver. Perform this test with vehicle facing forward on the slope and repeat the test with the vehicle facing backward on the slope.

6.0 Glossary

6.1 Effective Date - The date, after which a procedure has been reviewed and approved, that the procedure can be utilized in the field for official testing.

6.2 Program Manager - As used in this procedure, the individual within Electric Transportation Applications responsible for oversight of the HEV America Performance Test Program. [Subcontract organizations may have similarly titled individuals, but they are not addressed by this procedure.]

6.3 Rechargeable Energy Storage System (RESS) – A component or system of components that stores energy and for which its supply of energy is rechargeable by an electric motor-generator system, an off-vehicle energy source, or both. Examples of RESSs for HEVs include batteries, capacitors and electromechanical flywheels.

6.4 Shall - Items which require adherence without deviation. Shall statements identify binding requirements. A go, no-go criterion.

6.5 Should - Items which require adherence if at all possible. Should statements identify preferred conditions.

6.6 Test Director - The individual within Electric Transportation Applications responsible for all testing activities associated with the HEV America Performance Test Program.

6.7 Test Director's Log - A daily diary kept by the Test Director, Program Manager, Test Manager or Test Engineer to document major activities and decisions that occur during the conduct of a Performance Test Evaluation Program. This log is normally a running commentary, utilizing timed and dated entries to document the days activities. This log is edited to develop the Daily Test Log published with the final report for each vehicle.

6.8 Test Engineer - The individual(s) assigned responsibility for the conduct of any given test. [Each contractor/subcontractor should have at least one individual filling this position. If so, they shall be responsible for adhering to the requirements of this procedure.]

6.9 Test Manager - The individual within Electric Transportation Applications responsible for the implementation of the test program for any given vehicle(s) being evaluated to the requirements of the HEV America Performance Test Program. [Subcontract organizations may have similarly titled individuals, but they are not addressed by this procedure.]

7.0 References

7.1 HEV America Technical Specifications

7.2 ETA-HAC001 - "Control, Close-out and Storage of Documentation"

7.3 ETA-HAC002 - “Control of Test Conduct.”

7.4 ETA-HAC004 - “Review of Test Results”

7.5 ETA-HAC005 - "Training and Certification of Personnel Utilizing ETA Procedures"

7.6 ETA-HAC006 - “Receipt Inspection”

7.7 ETA-HAC007 - “Control of Measuring and Test Equipment”

7.8 ETA-HTP004 - “Constant Speed Range Test”

7.9 ETA-HTP10 - “Measurement and Evaluation of Electric Vehicle Charger Performance.”

7.10 ANSI Standard C101.1, 1986

7.11 Proposed UL Standard 2202, Electric Vehicle Charging System Equipment”

7.12 UL Standard 2231, “Outline of Investigation for Personnel Protection Systems For Electric Vehicle (EV) Supply Circuits, Parts 1 & 2

APPENDIX-A
Vehicle Minimum Requirements
Review Check List (Page 1 of 8)

VIN Number: _____

HTP011 Ref:	T/S Ref:	Requirement:	Requirement Met:			Initials:	Date:
5.2.1	1.1	Vehicle shall comply with Federal Motor Vehicle Safety Standards applicable on the date of manufacture. Such compliance shall be certified by the Supplier in accordance with 49 CFR 567.	Yes	No	N/A		
5.1	1.1	Suppliers shall provide a completed copy of Appendix A and Appendix B with their proposal, providing vehicle specifications and the method of compliance with each required section of 49 CFR 571.	Yes	No	N/A		
5.1	1.4	Suppliers shall supply Material Safety Data Sheets (MSDS) for all unique hazardous materials supplied with the vehicle	Yes	No	N/A		
5.1	1.5	Suppliers shall provide recycling plans for batteries and other vehicle hazardous materials including how the plan has been implemented.	Yes	No	N/A		
5.2.2	1.6	All vehicles shall comply with the FCC requirements for unintentional emitted electromagnetic radiation, as identified in 47 CFR 15, Subpart B, "Unintentional Radiators."	Yes	No	N/A		
5.2.3	2.1	Vehicle shall have a minimum payload of 400 pounds.	Yes	No	N/A		
5.1 5.2.4	2.2	Suppliers shall provide the gross vehicle weight rating (GVWR), curb weight and rated payloads of their vehicles For conversion vehicles, Suppliers shall specify the OEMs gross vehicle weight rating (GVWR). For conversions, OEM GVWR shall not be increased.	Yes	No	N/A		
5.1 5.2.4	2.3	Suppliers shall provide Gross Vehicle Axle Weight Ratings (GAWR) and axle weights for the vehicle as delivered, and at full rated payload For conversions, OEM GAWR shall not be increased	Yes Yes	No No	N/A N/A		

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VIN Number:_____

TP011 Ref:	T/S Ref:	Requirement:	Requirement Met:			Initials:	Date:
5.2.5	2.6	Tires shall be subject to the following requirements:					
		• Tires provided with the vehicle shall be the standard tire offered by the HEV Supplier for the vehicle being proposed.	Yes	No	N/A		
		• Tires shall correspond to the requirements of the placard installed in accordance with 49 CFR 571.109, 110, 119 and 120, as applicable.	Yes	No	N/A		
		• Suppliers shall specify manufacturer, model and size of the standard tire.	Yes	No	N/A		
		• Tires sizes and inflation pressures shall be in accordance with the requirements of the placard.	Yes	No	N/A		
		• At no time shall the tire's inflation pressure exceed the maximum pressure imprinted upon that tire's sidewall.	Yes	No	N/A		
		• The tire shall be operable across the entire operation/load range of that vehicle.	Yes	No	N/A		
		• Replacement tires shall be commercially available to the end user in sufficient quantities to support the purchaser's needs.	Yes	No	N/A		
		• Tires provided as original equipment by the HEV manufacturer shall not have warranty restrictions in excess of those of the tire's manufacturer, unless the Supplier is the sole warrantor for the tires.	Yes	No	N/A		
		• If the vehicle may be equipped with more than one standard tire, this information shall be provided for each type/manufacturer of each standard tire.	Yes	No	N/A		
		• Tires provided as original equipment by the HEV Supplier shall not have warranty restrictions in excess of those of the tire's manufacturer, unless the Supplier is the sole warrantor for the tires.					

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VIN Number:_____

TP011 Ref:	T/S Ref:	Requirement:	Requirement Met:			Initials:	Date:
5.1	3.1	Seating capacity shall be a minimum of 1 driver and 1 passenger. Suppliers shall specify seating capacity (available seat belt positions) for their vehicle.	Yes	No	N/A		
5.1	3.1	For conversion vehicles, if the vehicle's seating capacity is changed from that specified by the OEM on their FMVSS placard, the seat(s) being added or abandoned shall be modified as required by 49 CFR 571.207, et al, and a new FMVSS placard installed as required by 49 CFR 567, 568 or 571, as applicable.	Yes	No	N/A		
5.2.6	3.2	For conversion vehicles, the OEM passenger space shall not be intruded upon by the Rechargeable Energy Storage System (RESS) or other conversion materials.	Yes	No	N/A		
5.2.7	4.4	The RESS discharge voltage shall be limited to prevent degradation of RESS life.	Yes	No	N/A		
5.2.27	4.6	Vehicles shall comply with the requirements of 49 CFR 571.105.S5.2.1, or alternatively, 49 CFR 571.105.S5.2.2 for parking mechanisms.	Yes	No	N/A		
5.2.8	5.5	Vehicles shall be capable of completing the HEV America Performance Test Procedure ETA-HTP05, "Hybrid Electric Vehicle Rough Road Course Test." without damage to or failure of the vehicle or its systems	Yes	No	N/A		
5.2.9	5.5	Vehicles shall be capable of standing for extended periods in extreme temperatures without damage to or failure of the vehicle or its systems.	Yes	No	N/A		
5.2.10	5.5	Vehicles shall be capable of completing all HEV America tests without repairs exceeding a cumulative total of 72 hours.	Yes	No	N/A		
5.1	6.2	Batteries shall comply with the requirements of SAE J1718	Yes	No	N/A		

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Vehicle Minimum Requirements
Review Check List (Page 4 of 8)

VIN Number:_____

TP011 Ref:	T/S Ref:	Requirement:	Requirement Met:			Initials:	Date:
5.2.11	6.2	Vehicles shall not auto-start the engine to charge the batteries while the vehicle is parked and the key switch is in the OFF position.	Yes	No	N/A		
5.1	6.2	For vehicles capable of off-vehicle charging (OVC), RESS batteries shall meet the requirements of NEC 625-29(c) or (d) for charging in enclosed spaces without a vent fan. The vehicle shall be labeled as not requiring ventilation for charging (or have the appropriate classification label from a UL-recognized Testing Laboratory).	Yes	No	N/A		
5.1	6.5	For vehicles with RESS system voltages of 48 volts and higher, batteries or capacitors and their enclosures shall be designed and constructed in a manner that complies with 49 CFR571.305. For vehicles with RESS system voltages below 48VDC, batteries or capacitors, and their enclosures, shall be designed and constructed in accordance with the requirements of SAE J1766. Further, irrespective of RESS system voltage, batteries or capacitors, and electrolyte will not intrude into the passenger compartment during or following FMVSS frontal barrier, rear barrier and side impact collisions, and rollover requirements of 49 CFR 571.301. Suppliers shall provide verification of conformance to this requirement.	Yes	No	N/A		
5.1	6.6	Concentrations of explosive gases in the battery box shall not be allowed to exceed 25% of the LEL (Lower Explosive Limit). Suppliers shall describe how battery boxes will be vented, to allow any battery gases to escape safely to atmosphere during and following normal or abnormal charging and operation of the vehicle. Battery gases shall not be allowed to enter the occupant compartment.	Yes	No	N/A		
5.2.12	6.6	Vehicles shall meet the requirements of NEC 625-29(c) or (d) for charging in enclosed spaces without a vent fan.	Yes	No	N/A		

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VIN Number:_____

TP011 Ref:	T/S Ref:	Requirement:	Requirement Met:			Initials:	Date:
5.1	6.7	If a Supplier provides a vehicle with parallel battery packs, the Supplier shall provide detailed information on the equipment and charging algorithms required to prevent the parallel strings from becoming unbalanced.	Yes	No	N/A		
5.1	6.9	For vehicles using a flywheel based RESS, flywheels and their enclosures shall be designed and constructed such that there is complete containment of the flywheel energy storage system during all modes of operation. Additionally, flywheels and their enclosures shall be designed and constructed such that there is complete containment of the flywheel energy storage system during or following frontal barrier, rear barrier and side impact collisions, and rollover requirements of 49 CFR 571.301. Suppliers shall provide verification of conformance to this requirement.	Yes	No	N/A		
5.1	6.14	Rechargeable Energy Storage Systems (RESS) shall be battery, capacitor, or electromechanical flywheel technology-based as defined in SAE J1711.	Yes	No	N/A		
5.2.13	7.1	Vehicles shall not contain exposed conductors, terminals, contact blocks or devices of any type that create the potential for personnel to be exposed to 60 volts or greater (the distinction between low-voltage and high voltage, as specified in SAE J1127, J1128, et al.).	Yes	No	N/A		
5.2.14		Access to any high voltage components shall require the removal of at least one bolt, screw, or latch.	Yes	No	N/A		
5.2.14		Devices considered to be high voltage components shall be clearly marked as HIGH VOLTAGE. These markings should be installed at any point the voltage can be accessed by the end user.	Yes	No	N/A		
5.2.15		Cable and wire marking shall consist of orange wire and/or orange sleeving as identified in SAE-J1127.	Yes	No	N/A		

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VIN Number:_____

TP011 Ref:	T/S Ref:	Requirement:	Requirement Met:			Initials:	Date:
5.2.16	7.2	For RESS voltages greater than or equal to 48VDC, the RESS shall be isolated from the vehicle chassis such that leakage current does not exceed 0.5 MIU, per UL Standard 2202.	Yes	No	N/A		
5.2.17	7.2	Charging circuits for RESS battery systems with voltages greater than or equal to 48VDC shall be isolated from the vehicle chassis such that ground current from the grounded chassis does not exceed 5 mA at any time the vehicle is connected to an off-board power supply.	Yes	No	N/A		
5.2.18	7.4	The Following interlocks shall be present:					
5.2.18		• The controller shall not initially energize to move the vehicle with the gear selector in any position other than "PARK" or "NEUTRAL;"	Yes	No	N/A		
5.2.18		• The start key shall be removable only when the "ignition switch" is in the "OFF" position, with the drive selector in "PARK;"	Yes	No	N/A		
5.2.18		• With a pre-existing accelerator input, the controller shall not energize or excite such that the vehicle can move under its own power from this condition.	Yes	No	N/A		
5.2.21		• Vehicles capable of grid connection shall be prevented from being driven with the key turned on and the drive selector in the drive or reverse position while the vehicle's charge cord is attached	Yes	No	N/A		
5.2.22	8.1	If the vehicle is capable of off-board recharging of the RESS, the charger shall be capable of recharging the RESS to a state of full charge from any possible state of discharge in less than 12 hours, at temperatures noted in Section 5.5, as applicable.	Yes	No	N/A		
5.2.23	8.1	The charger shall be fully automatic, determining when "end of charge" conditions are met and transitioning into a mode that maintains the main propulsion battery at a full state of charge while not overcharging it, if continuously left on charge.	Yes	No	N/A		

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VIN Number:_____

TP011 Ref:	T/S Ref:	Requirement:	Requirement Met:			Initials:	Date:
5.2.24	8.2	If the vehicle is capable of off-board recharging of the RESS, the chargers shall use 120V or 208/240V single-phase 60-Hertz alternating current service, with an input voltage tolerance of 10% of rated voltage. Input current for chargers operating at 208V and 240V shall be compatible with 40-ampere circuit breakers.	Yes	No	N/A		
5.2.25	8.2	Personnel protection systems shall be in accordance with the requirements of UL Standard 2202 and shall be determined based upon RESS system voltages. All personnel protection systems shall meet the requirements specified in the applicable sections of UL2231-1 and 2231-2.	Yes	No	N/A		
5.2.26	8.3	If the vehicle is capable of off-board recharging of the RESS using a 208/240V charger, chargers shall have a true power factor of .95 or greater and a harmonic distortion rated at 20% (current at rated load).	Yes	No	N/A		
5.1	8.4	Regardless of the charger type used, the charger shall conform to the requirements of UL Proposed Standard 2202. Suppliers shall provide a UL file number for such compliance.	Yes	No	N/A		
5.1	9.0	Suppliers shall specify all optional equipment required to meet the requirements of the HEV America Vehicle Specification.	Yes	No	N/A		
5.1	10.1	Vehicles shall be accompanied by non-proprietary manuals for parts, service, operation and maintenance, interconnection wiring diagrams and schematics.	Yes	No	N/A		

APPENDIX-A
Vehicle Minimum Requirements
Review Check List (Page 8 of 8)

VIN Number:_____

General Comments (initials/date):

Completed By:	(Printed Name)	(Signature)	(Date)
Reviewed By:	(Printed Name)	(Signature)	(Date)
Approved By:	(Printed Name)	(Signature)	(Date)

APPENDIX-B
Vehicle Non-Conformance Form
(Page 1 of 1)

HEV America

VEHICLE NON-CONFORMANCE REPORT

(PLEASE PRINT USING A PEN OR TYPEWRITER)

NCR Number:

DESCRIPTION OF NONCOMPLIANCE:

_____
_____
_____
_____
_____
_____
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_____
_____
_____

REFERENCES:	STEP DISCOVERED IN NONCOMPLIANCE:

DISCOVERY DATE:	TIME:	Vehicle VIN:

ORIGINATOR'S NAME: (Printed) (Signature)	DATE:	TIME:
TEST MANAGER'S NAME: (Printed) (Signature)	DATE:	TIME:
MANUFACTURER'S REPRESENTATIVE'S NAME: (Printed) (Signature)	DATE:	TIME:

DISPOSITION

DESCRIPTION OF RESOLUTION (INCLUDE THE ACTIONS TAKEN TO BRING THE VEHICLE INTO PROGRAM REQUIREMENTS):

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MANUFACTURER'S REPRESENTATIVE'S NAME: (Printed) (Signature)	DATE:	TIME:
TEST MANAGER'S NAME: (Printed) (Signature)	DATE:	TIME: