November 17, 2010

MEMORANDUM FOR NEPA FILE

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SUBJECT: Supplement Analysis for a Loan and Grant to A123 Systems for Vertically Integrated Mass Production of Automotive-Class Lithium-Ion Batteries (DOE/EA-1690)

New Information: Proposed Modification to A123 Systems Project

Location: Hopkinton, Massachusetts

Proposer: A123 Systems

1. Introduction

In April 2010, the Department of Energy (DOE) issued DOE/EA-1690, *Final Environmental Assessment For a Loan and Grant to A123 Systems, Inc., for Vertically Integrated Mass Production of Automotive-Class Lithium-Ion Batteries*. On April 20, 2010, a Finding of No Significant Impact (FONSI) was issued by DOE based on the Final Environmental Assessment (EA). DOE's proposed action consisted of providing loan and grant funding to A123 Systems, Inc. (A123), to retrofit existing facilities and construct and equip a new facility to support lithium-ion phosphate battery manufacturing operations for hybrid electric vehicles and plug-in hybrid electric vehicles in the Detroit metropolitan area.

The goal of the A123 project is to produce lithium-ion batteries for approximately 500,000 electric vehicles per year in manufacturing facilities located at three sites in the Detroit metropolitan area (as originally proposed): Livonia, Romulus, and Brownstown Township. Assuming that the batteries would be evenly dispersed between hybrid electric vehicles and plug-in hybrid electric vehicles over a 20-year period, the average annual gasoline consumption for vehicles equipped with lithium-ion batteries manufactured at the A123 facilities would be 239 gallons per year. When compared with 500,000 conventional vehicles produced annually over a 20-year period, the lithium-ion batteries produced by A123's facilities would save approximately 2.5 billion gallons of gasoline.

The original proposed project, as analyzed in DOE/EA-1690, would establish a vertically integrated manufacturing system encompassing the full production processes necessary to produce the lithium-ion phosphate batteries. These processes would be broken into the following four modular components, referred to as Manufacturing Blocks:

- Proprietary cathode powder manufacture (Powder Block)
- Cathode and anode manufacture (Coating Block)
- Cell fabrication (Cell Assembly Block)
- Module assembly and battery systems completion for vehicle integration (Module and Pack Block)

The proposed project modifications involve using an additional, existing A123 site to perform activities associated with the final Manufacturing Block, battery systems testing. A123 would install and operate equipment originally proposed for installation and use in A123's Livonia, Michigan site, at an existing A123 site with established operations in performing battery testing activities in Hopkinton, Massachusetts.

2. NEPA Analysis to Date

DOE completed its environmental review for A123 with the issuance of a Final EA (DOE/EA-1690) in April 2010, followed by the issuance of a FONSI on April 20, 2010. The EA was prepared in accordance with the Council on Environmental Quality's *National Environmental Policy Act* (NEPA) regulations (40 CFR Parts 1500 to 1508) and DOE NEPA implementing regulations (10 CFR Part 1021).

The EA analyzed the potential environmental impacts of providing loan and grant funding to retrofit several existing facilities and construct and equip a new facility to support lithium-ion phosphate battery manufacturing operations for hybrid electric vehicles and plug-in hybrid electric vehicles.

DOE examined potential impacts on the following resources and found none to be significant: land use; visual resources; air quality; noise; geology and soils; water resources; biological resources; cultural resources; socioeconomics and environmental justice; utilities; transportation; waste management; public and occupational health and safety, including intentionally destructive acts; and cumulative effects, including global climate change.

3. Description of Proposed Project Changes

As originally proposed, A123 would have used three sites in the Detroit metropolitan area for all of the planned manufacturing and testing activities. However, space limitations within A123's Livonia facility require the relocation of some project equipment as well as the associated operations to another A123 site in Hopkinton, Massachusetts.

A123 has leased the Hopkinton Cell Device Validation and Performance Reliability (DVPR) facility for the past three years and would continue to lease it through 2016. The facility is part of a larger industrial park complex located off of South Street in Hopkinton. The building comprises Units 8-18 Avenue E, a 60,000 square foot building subdivided for mixed tenant use. The A123 portion of the building consists of Units 8 and 10, which total 20,000 square feet of space on two levels. The upper level consists of 5,000 square feet of office space. The lower level consists of 15,000 square feet of mostly high-bay space.

Planned operations at the Hopkinton facility include Cell DVPR testing. This testing verifies that the batteries would meet customers' lifetime specifications through repetitive cycling of cells over time at various temperatures. This Cell DVPR testing is conducted using thermal

chambers where the sample cells are electrically connected to cycle testers that are computer controlled to specific test protocols.

To achieve this, the interior of the existing facility would be retrofitted for installation of manufacturing equipment and other operations. A123 plans to install four to five Cell DVPR modules in the Hopkinton location. Each module consists of thermal chambers, cyclers, and enclosures to contain the equipment. The enclosures are supplied with HVAC (heating, ventilation, and air conditioning), power, air, and other facilities required to operate the equipment.

The relocation of select equipment and operations to A123's Hopkinton facility would require no new construction of any buildings at the Massachusetts site, and all retrofit activities would occur within its existing facility. In addition, this change would reduce total project costs and overhead costs associated with the operation.

4. Analysis

- The EA analyzed potential environmental impacts associated with the A123 battery manufacturing operations for hybrid electric vehicles and plug-in hybrid electric vehicles. The analysis did not identify adverse impacts to land use (zoned use), visual resources, water resources, biological resources, cultural resources, noise, or public health and safety.
- The proposed relocation of a small portion of the project's equipment and operations from the Livonia, Michigan site to an existing, operational A123 facility in an industrial park in Hopkinton, Massachusetts would result in no change to the assessment of environmental impacts. No new adverse impacts would be anticipated.
- The Hopkinton, Massachusetts site location is an existing facility already performing the work described in the EA.
- All necessary retrofit activities would occur inside the existing A123 facility in Hopkinton, Massachusetts. No new construction would be necessary.
- The proposed relocation of project equipment to A123's existing operations in Hopkinton would not contribute any significant new adverse impacts to air quality or traffic, as were similarly identified in the EA.

5. Findings

The changes proposed by A123 would occur within an existing facility that conducts similar operations and would not significantly change the analysis of impacts of any of the resource areas evaluated in the EA. DOE has therefore determined that the proposed changes fall within the scope of the analyses documented in the EA completed in April 2010. DOE has further determined that the potential impacts that may be associated with A123's proposed project, as well as the proposed minor changes to that project, have been adequately evaluated by the EA and the FONSI issued in April 2010 remains valid. Therefore, a supplement to the EA, or other additional NEPA analysis, is not needed at this time.