DOE/EA-1718

# Environmental Assessment

# For EnerG2, Inc.

## Electric Drive Vehicle Battery and Component Manufacturing Initiative Project Albany, OR

April 2010

**Prepared for:**
Department of Energy
National Energy Technology Laboratory

**National Environmental Policy Act (NEPA) Compliance**
**Cover Sheet**

**Proposed Action:**

The U.S. Department of Energy (DOE) proposes, through a cooperative agreement with EnerG2, Inc. (EnerG2) to partially fund the establishment of a commercial-size manufacturing plant that would produce nanostructured carbon powder that could be used in manufacturing ultra-capacitors and battery anodes. The plant would be setup in Albany, Oregon and would support the anticipated growth in the electric drive vehicle (EDV) industry and hybrid-electric vehicle (HEV) industry. If approved, DOE would provide approximately 75 percent of the funding for the project.

**Type of Statement:** Draft Environmental Assessment

**Lead Agency:** U.S. Department of Energy; National Energy Technology Laboratory

**DOE Contacts:**

NEPA Information:
William Gwilliam
NEPA Document Manager
U.S. Department of Energy
National Energy Technology Laboratory
3610 Collins Ferry Road, P.O. Box 880
Morgantown, WV 26507-0880
304-285-4401; 304-285-4403 (fax)
William.gwilliam@netl.doe.gov

Project Information:
John Tabacchi
DOE/NETL Project Manager
U.S. Department of Energy
National Energy Technology Laboratory
626 Cochrans Mill Road, P.O. Box 10940
Pittsburgh, PA 15236-0940
412-386-7298; 412-386-4604 (fax)
john.tabacchi@netl.doe.gov

**Abstract:**

DOE prepared this Environmental Assessment (EA) to review the potential for impacts to the human and natural environment of its Proposed Action-providing financial assistance to EnerG2 under a cooperative agreement. DOE's objective is to support the development of the EDV industry in an effort to substantially reduce the United States' consumption of petroleum, in addition to stimulating the United States' economy. More specifically, DOE's objective is to accelerate the development and production of various EDV systems by building or increasing domestic manufacturing capacity for advanced automotive batteries, their components, recycling facilities, and EDV components. DOE's program will enable market introduction of various electric vehicle technologies by lowering the cost of battery packs, batteries, and electric propulsion systems for EDVs through high-volume manufacturing.

Under the terms of this cooperative agreement, DOE would provide approximately 75 percent of the funding for EnerG2 to establish a commercial-size manufacturing plant for fine-grained carbon powder (also known as electrode carbon) having a high degree of purity, a high surface area per unit mass, and an improved pore structure. The plant would be setup inside an existing warehouse currently owned by Oregon Freeze Dry, Inc. and located in Albany, Oregon. If successful, the plant would help meet the growing needs of domestic and global producers of EDVs and HEVs. The production capacity would be enough to support building at least 60,000 EDVs per year. Additionally, the project would create approximately 50 temporary construction jobs and approximately 35 permanent jobs.

The environmental analysis identified that the most notable changes, although minor, to result from EnerG2's Proposed Project would occur in the following areas: air quality and greenhouse gas, noise, geology and soils, vegetation and wildlife, solid and hazardous wastes, utilities, transportation and traffic, and human health and

safety. No significant environmental effects were identified in analyzing the potential consequences of these changes.

**Public Participation:**

DOE encourages public participation in the NEPA process. The Draft EA was released for public review and comment on January 24, 2010. The public was invited to provide oral, written, or e-mail comments on the Draft EA to DOE by the close of the comment period on February 24, 2010. Copies of the Draft EA were also distributed to cognizant Federal and State agencies. Comments received by the close of the comment period will be considered in preparing this Final EA for the proposed DOE action. Thie EA is available on the DOE website: http://www.netl.doe.gov/nepa/EA-1718.pdf.

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## ACRONYMS

| Acronym | Definition |
|---|---|
| **µg** | Microgram |
| **AAQS** | Ambient Air Quality Standards |
| **ACDP** | Air Contaminant Discharge Permit |
| **AQRV** | air quality related values |
| **AST** | aboveground storage tank |
| **C** | candidate (Federal) |
| **CAA** | Clean Air Act |
| **CE** | categorically excluded |
| **CEQ** | Council on Environmental Quality |
| **CFR** | Code of Federal regulations |
| **$CH_4$** | methane |
| **CO** | carbon monoxide |
| **$CO_2$** | carbon dioxide |
| **DAQ** | Division of Air Quality |
| **dBA** | decibels |
| **DEQ** | Department of Environmental Quality |
| **DOE** | Department of Energy |
| **E** | east |
| **EA** | Environmental Assessment |
| **EDV** | electric drive vehicle |
| **EERE** | Energy Efficiency and Renewable Energy |
| **EIS** | Environmental Impact Statement |
| **EPA** | United States Environmental Protection Agency |
| **EnerG2** | EnerG2, Incorporated |
| **FEMA** | Federal Emergency Management Agency |
| **FIRM** | Flood Rate Insurance Map |
| **FONSI** | Finding of No Significant Impact |
| **GHG** | greenhouse gases |
| **gpd** | gallons per day |
| **HAP** | hazardous air pollutants |
| **LE** | legally endangered (Federal) |
| **LT** | listed threatened (Federal) |
| **m** | meter |
| **mg** | milligram |
| **mgd** | million gallons per day |
| **$MMtCO_2e$** | million metric tons of carbon-dioxide equivalent |
| **mtpy** | metric tons per year |
| **NAAQS** | National Ambient Air Quality Standards |

| Acronym | Definition |
|---|---|
| **NEPA** | National Environmental Policy Act |
| **NETL** | National Energy Technology Laboratory |
| **No.** | number |
| **$NO_2$** | nitrogen dioxide |
| **$NO_x$** | nitrogen oxides |
| **NPDES** | National Pollutant Discharge Elimination System |
| **NR** | not ranked |
| **NWI** | National Wetlands Inventory |
| **$O_3$** | ozone |
| **OAR** | Oregon Administrative Rules |
| **OSHA** | Occupational Safety and Health Administration |
| **Pb** | lead |
| **PM** | particulate matter |
| **$PM_{10}$** | particulate matter 10 microns or less |
| **$PM_{2.5}$** | particulate matter 2.5 microns or less |
| **ppm** | parts per million |
| **PSD** | Prevention of Significant Deterioration |
| **PSEL** | Plant Site Emission Limits |
| **Recovery Act** | American Recovery and Reinvestment Act of 2009, Public Law 111-5 |
| **ROD** | Record of Decision |
| **SC** | sensitive-critical (State) |
| **SE** | southeast |
| **SIP** | State Implementation Plan |
| **$SO_2$** | sulfur dioxide |
| **SOC** | species of concern (Federal) |
| **std** | standard |
| **SV** | sensitive-vulnerable of concern (State) |
| **SW** | southwest |
| **SWPPP** | Storm Water Pollution Prevention Plan |
| **tpy** | tons per year |
| **U.S.** | United States |
| **U.S.C.** | United States Code |
| **USFWS** | United States Fish and Wildlife Service |
| **VOC** | volatile organic compound |
| **VT** | Vehicle Technologies |

# 1.0 PURPOSE AND NEED

## 1.1 Background

The Department of Energy's (DOE's) National Energy Technology Laboratory (NETL) manages the research and development portfolio of the Vehicle Technologies (VT) Program for the Office of Energy Efficiency and Renewable Energy (EERE). A key objective of the VT program is accelerating the development and production of electric drive vehicle (EDV) systems to substantially reduce the United States' consumption of petroleum. Another of its goals is the development of production-ready batteries, power electronics, and electric machines that can be produced in volume economically to increase the use of EDVs.

Congress appropriated significant funding for the VT program in the American Recovery and Reinvestment Act of 2009, Public Law 111-5 (Recovery Act), to stimulate the economy and reduce unemployment in addition to furthering the existing objectives of the VT program. DOE solicited applications for this funding by issuing a competitive Funding Opportunity Announcement (DE-FOA-0000026), Recovery Act - Electric Drive Vehicle Battery and Component Manufacturing Initiative, on March 19, 2009. The announcement invited applications in seven areas of interest:

- Area of Interest 1 – Projects that would build or increase production capacity and validate production capability of advanced automotive battery manufacturing plants in the United States.
- Area of Interest 2 – Projects that would build or increase production capacity and validate production capability of anode and cathode active materials, components (e.g., separator, packaging material, electrolytes and salts), and processing equipment in domestic manufacturing plants.
- Area of Interest 3 – Projects that combine aspects of Areas of Interest 1 and 2.
- Area of Interest 4 – Projects that would build or increase production capacity and validate capability of domestic recycling or refurbishment plants for lithium ion batteries.
- Area of Interest 5 – Projects that would build or increase production capacity and validate production capability of advanced automotive electric drive components in domestic manufacturing plants.
- Area of Interest 6 – Projects that would build or increase production capacity and validate production capability of electric drive subcomponent suppliers in domestic manufacturing plants.
- Area of Interest 7 – Projects that combine aspects of Areas of Interest 5 and 6.

The application period closed on May 19, 2009, and DOE received 119 proposals across the seven areas of interest. DOE selected 30 projects based on the evaluation criteria set forth in the funding opportunity announcement; special consideration was given to projects that promoted the objectives of the Recovery Act – job preservation or creation and economic recovery – in an expeditious manner.

This project, EnerG2, Incorporated (EnerG2), was one of the 30 projects that DOE selected for funding. DOE's Proposed Action is to provide $21 million in financial assistance in a cost-sharing arrangement with the project proponent, EnerG2. The total cost of the project is estimated at $28 million.

## 1.2 Purpose and Need for Department of Energy Action

The overall purpose and need for DOE action pursuant to the VT program and the funding opportunity under the Recovery Act is to accelerate the development and production of various EDV systems by building or increasing domestic manufacturing capacity for advanced automotive batteries, recycling facilities, and EDV components, in addition to stimulating the United States' economy. This work will enable market introduction of various electric VTs by lowering the cost of battery packs, batteries, and electric propulsion systems for EDVs through high-volume manufacturing. DOE intends to further this purpose and satisfy this need by providing financial assistance under cost-sharing arrangements to this and the other 29 projects selected under this funding opportunity announcement.

This and the other selected projects are needed to reduce the United States' petroleum consumption by investing in alternative VTs. Successful commercialization of EDVs would support the DOE's Energy Strategic Goal of "protect[ing] our national and economic security by promoting a diverse supply and delivery of reliable, affordable, and environmentally sound energy." This project will also meaningfully assist in the nation's economic recovery by creating manufacturing jobs in the United States in accordance with the objectives of the Recovery Act.

### 1.3 National Environmental Policy Act and Related Procedures

This Environmental Assessment (EA) is prepared in accordance with the National Environmental Policy Act (NEPA), as amended (42 U.S.C 4321), the President's Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 Code of Federal Regulations [CFR] 1500-1508), and DOE's implementing procedures for compliance with NEPA (10 CFR 1021). This statute and the implementing regulations require that DOE, as a Federal agency:

- Assess the environmental impacts of any Proposed Action;
- Identify adverse environmental effects that cannot be avoided, should the Proposed Action be implemented;
- Evaluate alternatives to the Proposed Action, including a No Action Alternative; and
- Describe the cumulative impacts of the Proposed Action together with other past, present, and reasonably foreseeable future actions.

These provisions must be addressed before a final decision is made to proceed with any proposed Federal action that has the potential to cause impacts to the human environment, including providing Federal funding to a project. This EA evaluates the potential individual and cumulative effects of the Proposed Project and the No Action Alternative on the physical, human, and natural environment. The EA is intended to meet DOE's regulatory requirements under NEPA and provide DOE with the information needed to make an informed decision about providing financial assistance.

NEPA requires Federal agencies to take into account the potential consequences of their actions on both the natural and human environments as part of their planning and decision-making processes. To facilitate these considerations, a number of typical actions that have been determined to have little or no potential for adverse impacts are "categorically excluded" (CE) from the detailed NEPA assessment process. Thus, the first step in determining if an action would have an adverse effect on the environment is to assess whether it fits into a defined category for which a CE is applicable. If a CE is applied, the agency prepares a Record of Categorical Exclusion to document the decision and proceeds with the action.

For actions that are not subject to a CE, the agency prepares an EA to determine the potential for significant impacts. If through the evaluation and analysis conducted for the EA process, it is determined that no significant impacts would occur as a result of the action, then the determination would result in a Finding of No Significant Impact (FONSI). The Federal agency would then publish an EA and the FONSI. The NEPA process is complete when the FONSI is executed.

If significant adverse impacts to the natural or human environment are indicated or other intervening circumstances either exist at the onset of a project or are determined through the EA process, an Environmental Impact Statement (EIS) may be prepared. An EIS is a more intensive study of the effects of the Proposed Action, and requires more rigorous public involvement. The agency formalizes its decisions relating to an action for which an EIS is prepared in a Record of Decision (ROD). Following a 30-day waiting period after publication of the Final EIS, the Agency may issue a ROD and then the NEPA process is complete.

## 1.4 Agency Consultation

DOE initiated consultations with the U.S. Fish and Wildlife Service (USFWS), the National Heritage Program, and the State Historic Preservation Office per requirements of Section 7 of the Endangered Species Act, and Section 106 of the National Historic Preservation Act, respectively. Copies of the agency response letters are included in Appendix A of this EA.

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# 2.0 PROPOSED ACTION AND ALTERNATIVES

## 2.1 Department of Energy's Proposed Action

DOE proposes, through a cooperative agreement with EnerG2, Inc. (EnerG2) to partially fund the establishment of a commercial-size manufacturing plant that would produce nano-structured carbon powder that could be used in manufacturing ultra-capacitors and battery anodes. The plant would be setup in Albany, Oregon and would support the anticipated growth in the EDV industry and hybrid-electric vehicle industry. If approved, DOE would provide approximately 75 percent of the funding for the project.

## 2.2 EnerG2's Proposed Project

EnerG2 proposes to reconfigure an existing warehouse into a manufacturing facility for nano-structured carbon. The 72,000 square foot steel warehouse is owned and operated by Oregon Freeze Dry, Inc. The construction phase of this project would partition 36,000 square feet of the warehouse to be used for the intermediate production of ultracapacitor energy storage media. Construction would involve installation of process equipment, including a 24 ton carbon dioxide tank and an 11,000 gallon inert compressed gas aboveground storage tank (AST), concrete pads, and some paving. Raw material would be delivered to and freeze-dried in the new facility. Two kilns, which would operate either on electricity or natural gas, would be located in the new facility where the material would be pyrolyzed and activated (2009a).

The process converts a solid, polymerized resin to a fine carbon powder with exceptional surface area and specific nanostructure. The plant would also contain related material transport capabilities, utility interconnects, pollution control devices, a packaging line, and finished product handling facilities.

The proposed EnerG2 project would be the only plant dedicated solely to the commercial scale production of synthetic, high-performance carbon electrode material and the only United States facility to manufacture electrode materials for ultracapacitors (a market currently dominated by Japanese suppliers). EnerG2 NC-Series Electrode Carbon would result in a new generation ultracapacitor with significantly higher power density and much lower cost per kilowatt. With this new product, ultracapacitors could be combined with batteries in EDVs to reduce capital and battery replacement costs as well as improve mileage efficiency and vehicle performance. The new plant would produce enough NC-Series electrode carbon to supply production of 60,000 EDVs annually.

## 2.3 General Description and Location

The proposed project would be located in Albany, Linn County, Oregon, on property currently owned by Oregon Freeze Dry (Figure 2.2-1). The property is situated in an industrial park located at 3000 SW Calapooia Street; approximately 0.2 miles north of the intersection of Calapooia Street and 34$^{th}$ Avenue SW (see Figure 2.2-2). Oregon Freeze Dry currently operates the site as a distribution center. Oregon Freeze Dry is a research and development partner with EnerG2.

The site has a 72,000 square foot warehouse, a partially paved access drive, loading docks, and a parking lot. The warehouse is primarily open space, but it includes 2,000 square feet of office space. The existing warehouse, access road, and parking area occupy a land parcel of approximately 5.4 acres, which is proposed to be split from a larger parcel that is owned by Oregon Freeze Dry.

The site and surrounding industrial park is zoned for heavy industrial use. According to the site owner, prior to construction of the warehouse in 1990, the site and surrounding land were agricultural farmland. The site is bounded by the following properties:

- North: vacant mowed lot owned by Oregon Freeze Dry. Further north is the Oregon Freeze Dry headquarters offices, Oregon Freeze Dry Plant (Number) No. 2, and Oregon Freeze Dry Plant No.3.

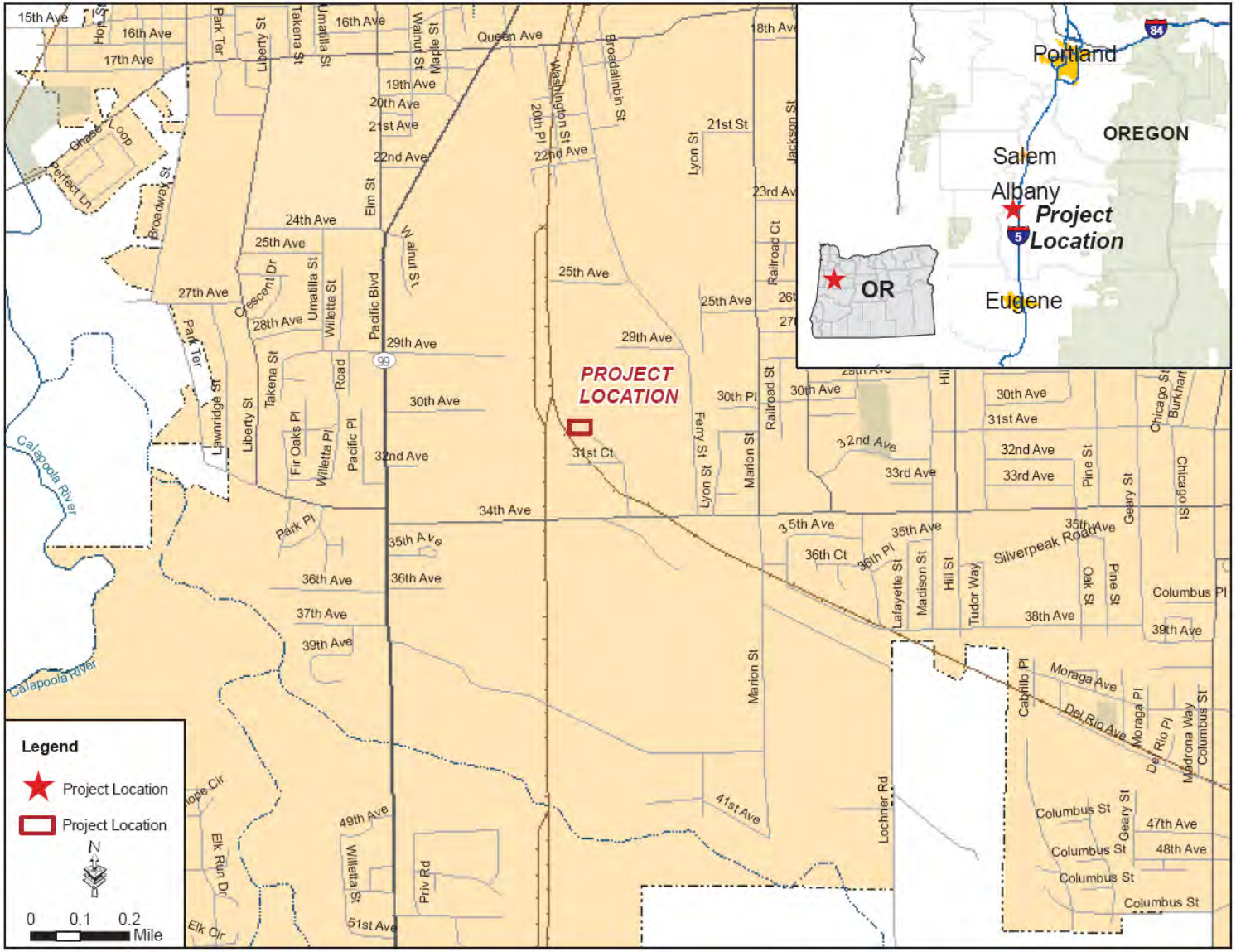


**Figure 2.2-1. Regional Site Location Map**

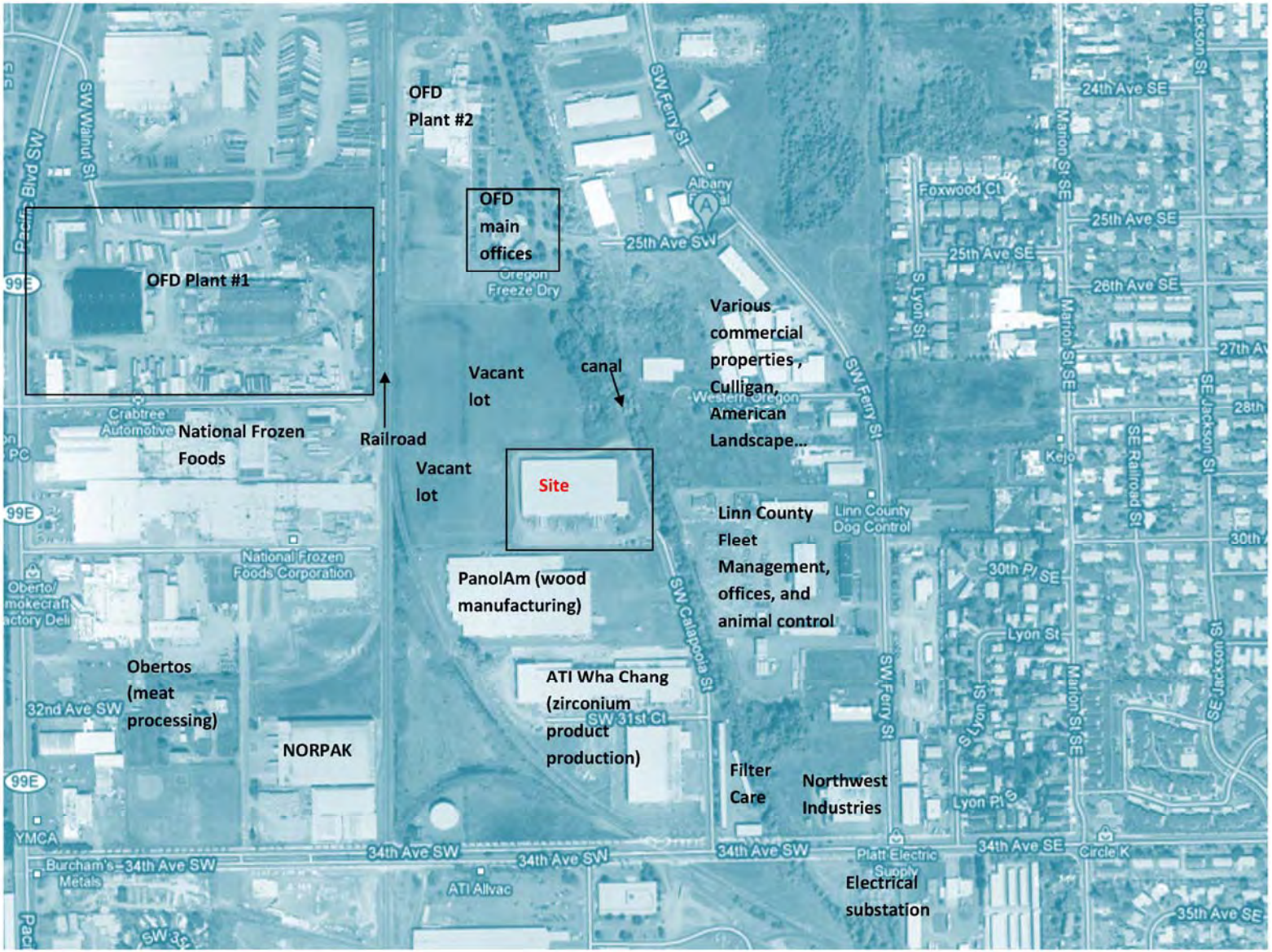


**Figure 2.2-2. Site Map**

- Northeast: commercial properties operated by Culligan (water treatment), American Landscape (commercial and residential landscape), Crane Storage Company, and Electrical Supply Company.
- South: industrial property operated by PanolAm (wood manufacturing).
- Southeast: industrial property operated by Alleghany Technologies, Inc (titanium processing).
- Southwest: industrial property operated by National Frozen Foods (frozen foods).
- East: water-filled canal. Further east is a commercial property operated by Linn County (fleet fueling, animal control).
- West: vacant mowed lot owned by Oregon Freeze Dry, bounded by the Union Pacific rail line. Further west are industrial properties operated by National Frozen Foods (frozen foods), Obertos (meat processing), and Oregon Freeze Dry Plant No.1.

The distribution center building is connected to municipal sewer, water, and electricity services; backup power is not currently provided. Municipal sewer connections are through two onsite restrooms; no other floor drains or municipal connections were observed. The parking lot and surrounding vacant lots are connected to the municipal sewer system. According to the current owners, the municipality operates a combined wastewater and sewer treatment plant. An AST located on the northeast side of the site is used to fuel warehouse forklifts with propane.

## 2.4 Alternatives

DOE's alternatives to this project consist of the 45 technically acceptable applications received in response to the Funding Opportunity Announcement, Recovery Act - Electric Drive Vehicle Battery and Component Manufacturing Initiative. Prior to selection, DOE made preliminary determinations regarding the level of review required by NEPA based on potentially significant impacts identified in reviews of acceptable applications. A variance to certain requirements in 10 CFR 1021.216 was granted by the DOE's General Counsel. These preliminary NEPA determinations and reviews were provided to the selecting official, who considered them during the selection process.

Because DOE's Proposed Action is limited to providing financial assistance in cost-sharing arrangements to projects submitted by applicants in response to a competitive funding opportunity, DOE's decision is limited to either accepting or rejecting the project as proposed by the proponent, including its proposed technology and selected sites. DOE's consideration of reasonable alternatives is therefore limited to the technically acceptable applications and a no-action alternative for each selected project.

## 2.5 No Action Alternative

Under the No Action Alternative, DOE would not provide funds to this proposed project. As a result, this project would be delayed while the applicant seeks other funding sources. Alternatively, the applicant would abandon this project if other funding sources are not obtained. Furthermore, acceleration of the development and production of various EDV systems would not occur or would be delayed. DOE's ability to achieve its objectives under the VT program and the Recovery Act would be reduced.

Although this and other selected projects might proceed if DOE decided not to provide financial assistance, DOE assumes for purposes of this environmental analysis that the project would not proceed without DOE assistance. If projects did proceed without DOE's financial assistance, the potential impacts would be essentially identical to those under DOE's action alternative (i.e., providing financial assistance that allows the project to proceed). In order to allow a comparison between the potential impacts of a project as implemented and the impacts of not proceeding with a project, DOE assumes that if it were to decide to withhold assistance from a project, the project would not proceed.

## 2.6 Alternatives Considered by EnerG2

Originally, the initial alternative was to construct a new building adjacent to a selected warehouse on the Oregon Freeze Dry site. However, due to the amount of time it would take to construct a new building, the project plan was revised to retrofit an existing warehouse and thereby compress the project schedule. Therefore, construction of a new building was dismissed from further consideration in this EA.

## 2.7 Summary of Environmental Consequences

Table 2.6-1 provides a summary of the environmental, cultural, and socioeconomic impacts of the No Action Alternative and the Proposed Project.

**Table 2.6-1 Summary of Environmental, Cultural, and Socioeconomic Impacts**

| Impact Area | No Action Alternative | | Proposed Project | |
|---|---|---|---|---|
| | Construction | Operations | Construction | Operations |
| Land Use | Negligible | Negligible | Negligible | Negligible |
| Meteorology | Negligible | Negligible | Negligible | Negligible |
| Socioeconomics (Population and Housing) | Negligible | Negligible | Negligible | Negligible |
| Socioeconomics (Taxes, Revenue, Economy, Employment) | Negligible | Negligible | Minor Beneficial | Minor Beneficial |
| Environmental Justice | Negligible | Negligible | Negligible | Negligible |
| Visual Resources | Negligible | Negligible | Negligible | Negligible |
| Surface Water and Groundwater | Negligible | Negligible | Negligible | Negligible |
| Wetlands and Floodplains | Negligible | Negligible | Negligible | Negligible |
| Cultural Resources | Negligible | Negligible | Negligible | Negligible |
| Energy Use | Negligible | Negligible | Negligible | Negligible |
| Air Quality | Negligible | Negligible | Minor | Minor |
| Greenhouse Gases | Negligible | Moderate | Minor | Beneficial |
| Noise | Negligible | Negligible | Minor | Minor |
| Geology and Soils | Negligible/Negligible | Negligible/Negligible | Negligible/Minor | Negligible/Negligible |
| Vegetation and Wildlife | Negligible | Negligible | Minor | Minor |
| Solid and Hazardous Wastes | Negligible | Negligible | Minor | Minor |
| Utilities | Negligible | Negligible | Negligible | Minor |
| Transportation and Traffic | Negligible | Negligible | Minor | Minor/Minor Beneficial |
| Human Health and Safety | Negligible | Negligible | Minor | Minor |

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## 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Chapter 3 provides a description of the affected environment (existing conditions) at the project site and a discussion of the environmental consequences of the No Action Alternative and the Proposed Project. Additionally, cumulative impacts and mitigation measures are discussed where appropriate. The methodology used to identify existing conditions and to evaluate potential impacts on the physical and human environment involved the following: review of the Environmental Questionnaire and the Project Narrative prepared by EnerG2; review of other documentation provided by EnerG2; searches of various environmental databases; agency consultations; and a site visit conducted on November 16, 2009.

### 3.1 Resource Areas Dismissed from Further Consideration

DOE has determined that various resources would either not be affected or would sustain negligible impacts from the EnerG2's Proposed Project and do not require further evaluation. They include land use, meteorology, socioeconomics, environmental justice, visual resources, surface water, groundwater, wetlands, floodplains, cultural resources, and energy use; therefore, these resource areas are briefly discussed in this section of the EA and will not be evaluated further.

***Land Use:*** At the EnerG2 site, the Proposed Project would not result in direct impacts to land use. According to the Linn County Oregon Planning Department, the site is zoned as heavy industrial (Linn County, 2009). No change in zoning would be required under the EnerG2's Proposed Project.

***Meteorology:*** Linn County lies along the middle part of the Willamette Valley. The climate of the Valley is relatively mild throughout the year, characterized by cool, wet winters and warm, dry summers. The climatic conditions closely resemble the Mediterranean climates, which occur in California, although Oregon's winters are somewhat wetter and cooler. Growing seasons in the Willamette Valley are long, and moisture is abundant during most of the year (although summer irrigation is common). The Valley has a predominant winter rainfall climate. Rainfall tends to vary inversely with temperatures—the cooler months are the wettest, the warm summer months the driest. There is considerable variation in precipitation in the Valley, ranging from annual totals below 40 inches in the Portland area to upwards of 80 inches in the Cascade and Coast Range foothills. Extreme temperatures in the Valley are rare. Days with maximum temperature above 90 degrees Fahrenheit occur only 5-15 times per year on average, and below zero temperatures occur only about once every 25 years. Mean high temperatures range from the low 80's in the summer to about 40 degrees Fahrenheit in the coldest months, while average lows are generally in the low 50s in summer and low 30s in winter (OCS, 2009). Due to the geographical location, operations would not be affected by severe weather events, such as hurricanes or tornadoes, because they are not likely to occur and therefore would have no impact on the facility operations.

***Socioeconomics:*** A relatively small number of employees (approximately 35 permanent jobs) are expected to be hired as a result of the Proposed Project. It is assumed that the majority of the workforce would be drawn from local candidates; therefore, no increase in population or need for housing is anticipated. Negligible impacts to housing and population are anticipated.

Under EnerG2's Proposed Project, taxes would continue to be paid on the property and no adverse impacts would occur. Construction workers employed (approximately 50) for the construction period is assumed to be currently employed, and residing and paying taxes in the Linn County area. Increased sales transactions for the purchase of materials and supplies would generate some additional revenues for local and state governments, which would have a minor beneficial impact on taxes and revenue.

Secondary jobs related to the increased economic activity stimulated by the Proposed Project may be created. Additional retail services and business employment may result from the Proposed Project through a multiplier effect, yielding additional sales and income tax revenues for local and state governments. Secondary jobs would have a minor beneficial impact.

In addition, construction would not affect the school systems or emergency services of Linn County because significant numbers of employees are not anticipated to relocate as a result of the Proposed Project. Therefore, negligible impacts to community facilities or services are anticipated.

***Environmental Justice:*** The Proposed Project was evaluated in accordance with Executive Order 12898, *Federal Actions Address Environmental Justice in Minority Populations and Low-Income Populations*. While there are minority and low-income populations in the study area, the Proposed Project would not have a disproportionately adverse impact on these groups.

***Visual Resources:*** The site has a 72,000 square foot warehouse, a partially paved access drive, loading docks, and a parking lot. North of the site is a vacant mowed lot; south of the site is an industrial property operated by PanolAm (wood manufacturing); east of the site is a water-filled canal; and to the west is a vacant mowed lot. Impacts to identified views and vistas were considered, given the existing quality of the landscape views, the sensitivity of the view, and the anticipated relationship of the proposed changes to the existing visual environment. New buildings would not be constructed, and changes outside the existing warehouse (including the installation of one or more ASTs) would be negligible. It is concluded that the existing viewscape would not change.

***Surface Water:*** The Oregon Freeze Dry property is within the drainage basin of the Willamette River. The Calapooia River, a tributary of the Willamette River, is located approximately 1 mile away. Both the Calapooia and Willamette Rivers are listed as impaired waters under Section 303(d) of the Clean Water Act. The closest surface water is the Santiam-Albany Canal, which borders the property to the east and joins the Calapooia River approximately 1.25 miles to the north. However, a continuous berm along the canal prevents surface water runoff from entering the canal. The facility does not withdraw any surface water directly for use in its processes or for human consumption; nor does the facility directly discharge any process or sanitary wastewaters to surface waters.

Oregon Freeze Dry is subject to a National Pollutant Discharge Elimination System (NPDES) Storm Water Permit 1200-Z and maintains a Storm Water Pollution Prevention Plan (SWPPP) applicable to Plants Nos. 2 and 3, and the Distribution Center. Stormwater from the property is collected in a storm sewer connected to the City of Albany storm drainage system and discharged to Oak Creek, a tributary of the Calapooia River. The SWPPP addresses monitoring requirements, spill management and prevention, spill response and notifications, preventive maintenance, and employee awareness (Villman, 2007).

The proposed EnerG2 facility would be assembled within part of a retrofitted 72,000 square foot existing building of prefabricated steel (EnerG2, 2009b). Minimal land disturbance would occur for new external features. Impacts from construction would be minimized through implementation of erosion and sediment control measures where ground disturbance would occur.

The proposed facility would neither withdraw water from nor discharge wastewater directly to surface waters. However, EnerG2 proposes to discharge non-contact cooling water to the storm drainage system of the City of Albany, which would require a separate NPDES Storm Water Permit 1200-Z. EnerG2 would also be required to prepare and implement an updated SWPPP for the facility (EnerG2, 2009b). Materials and wastes would otherwise be stored indoors or include secondary containment to prevent contamination of surface waters. Therefore, with the implementation of a SWPPP and compliance with the permit requirements, the potential impacts on surface waters during operation of the facility would be negligible.

***Groundwater*:** There are no groundwater wells on the property. Oregon Freeze Dry does not withdraw water directly from any groundwater source, nor does the facility conduct any underground injection of wastewater. Potential contamination of groundwater is avoided through implementation of the SWPPP.

The proposed facility would neither withdraw water from nor inject wastewater directly to groundwater sources (EnerG2, 2009b). Materials and wastes would otherwise be stored indoors or include secondary containment to prevent contamination of groundwater. Therefore, with the implementation of a SWPPP and compliance with storm water permit requirements, the potential impacts on groundwater during operation of the facility would be negligible.

***Wetlands***: National Wetlands Inventory (NWI) mapping does not indicate the presence of wetlands within or adjacent to the study area. Although the Linn County Soil Survey indicates the presence of hydric soils within the study area, the November 16th site visit verified wetlands are not located within or directly adjacent to the study area. Therefore, no direct adverse impacts would be anticipated for wetland resources from either construction or operations of the Proposed Project.

***Floodplains:*** The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), Map No. 4101370005F, indicates the study area is within Flood Zone X of the Santiam-Albany Canal. This flood zone area is defined by FEMA as minimal flood risk hazard area determined to be outside the 500-year flood and protected by levee from 100-year flood; therefore, no adverse impacts would be anticipated for floodplain resources from construction or operations of the Proposed Project.

***Cultural Resources:*** Under EnerG2's Proposed Project, a majority of the facility construction would occur within an existing building, minimizing adverse impacts to surrounding soils. During the November 16th, 2009, site visit it was confirmed that the study area is relatively flat and consists of primarily land disturbed by past construction activities (i.e., facilities and roadways). As most of the project would occur within the existing structure and is surrounded by industrial buildings (all less than 50 years old) on all sides, it has been determined that the Area of Potential Effects for architectural resources is 300 feet beyond the limits of the present building.

There are no historic structures within the project Area of Potential Effects. In addition, due to the minimal nature of soil disturbances anticipated and the extent of previous soil disturbance, DOE anticipates that there are no archeological resources within the limits of disturbance for the proposed project. Therefore, DOE has made a finding of no adverse effects for this undertaking. According to February 5, 11, and 16, 2010 letters, the Oregon State Historic Preservation Office concurs with these findings.

***Energy Use:*** The City of Albany is located within the service area of Pacific Power, which includes 136,000 square miles spanning portions of six states. The company operates 68 generating plants and has a net generating capacity of 9,140 megawatts (Pacific Power, 2009). The EnerG2 facility would have an estimated power consumption of approximately 700,000 kilowatt hours per month with a demand of approximately 1 megawatt. (EnerG2, 2009b). The City of Albany has no capacity concerns regarding the extra demand on the electrical distribution system serving the Oregon Freeze Dry property. This demand would represent a very small fraction of the generating capacity of Pacific Power. Therefore, the impacts on electrical utilities would be negligible.

Two kilns would be located in the new facility in which material would be pyrolyzed and activated. At this time it is not known whether they would operate on electricity or natural gas. If electric, the kiln system (including thermal oxidizer) would demand less than 250,000 kilowatt hours per month at peak capacity (included in the 700,000 kilowatt hour per month estimate above). If fueled by natural gas, the kiln system would use approximately 11.6 therms of natural gas per hour (equivalent to 280 per day; 8,400 per month; 100,000 per year). By comparison, the freeze dryers and boiler are expected to consume approximately 16,000 therms per month. Oregon Freeze Dry originally approached the supplier with a 30,000 therms per month estimate to conservatively account for potential additional capacity in the future. The utility indicated that there were no issues with those consumption levels. Additional gas supply would need to be brought to the site from the street, regardless of whether the kilns are gas-fired or electric.

## 3.2 Resource Areas Consider Further

Environmental resource areas carried through for further consideration of the potential impact of EnerG2's Proposed Project include air quality, greenhouse gas (GHG), noise, geology and soils, vegetation and wildlife, solid and hazardous wastes, utilities, transportation and traffic, and human health and safety.

### 3.2.1 Air Quality and Greenhouse Gas

***Air Quality Management***

The purpose of the air quality analysis is to determine whether emissions from a proposed new or modified source of air pollution, in conjunction with emissions from existing sources, would cause or contribute to the deterioration of the air quality in the area. The Clean Air Act (CAA) requires the U.S. Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. NAAQS include two types of air quality standards (40 CFR 50.1(e)). Primary standards protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings. EPA has established NAAQS for six principal pollutants, which are called "criteria pollutants": ozone ($O_3$), carbon monoxide (CO), nitrogen dioxide ($NO_2$), particulate matter (PM), particulate matter 10 microns or less ($PM_{10}$), particulate matter 2.5 microns or less ($PM_{2.5}$), sulfur dioxide ($SO_2$) and lead (Pb). A State's air-quality regulations may further regulate concentrations of the criteria pollutants. Table 3.2.1-1 lists the NAAQS and Oregon AAQS.

**Table 3.2.1-1. National and Oregon Ambient Air Quality Standards**

| Pollutant | Standard | Averaging Time | Standard Type |
|---|---|---|---|
| Carbon Monoxide | 35 ppm (40 mg/m$^3$) | 1-hour | Primary |
| | 9 ppm (10 mg/m$^3$) | 8-hour | |
| Lead | 0.15 µg/m$^3$ | Rolling 3-Month Average(1) | Primary and Secondary |
| | 1.5 µg/m3 | Quarterly Average | |
| Nitrogen Dioxide | 0.053 ppm (100 µg/m$^3$) | Annual (Arithmetic Mean) | Primary and Secondary |
| $PM_{2.5}$ | 35 µg/m$^3$ | 24-hour | Primary and Secondary |
| | 15.0 µg/m$^3$ | Annual (Arithmetic Mean) | |
| $PM_{10}$ | 150 µg/m$^3$ | 24-hour | Primary and Secondary |
| Sulfur Dioxide | 0.5 ppm (1300 µg/m$^3$) | 3-hour | Secondary |
| | 0.14 ppm | 24-hour | Primary |
| | 0.10 ppm(2) | 24-hour | |
| | 0.03 ppm | Annual (Arithmetic Mean) | |
| | 0.02 ppm(2) | Annual (Arithmetic Mean) | |
| Ozone | 0.12 ppm | 1-hour(3) | Primary and Secondary |
| | 0.075 ppm (2008 std) | 8-hour | |
| | 0.08 ppm (1997 std) | 8-hour(4) | |

(1) Final rule signed October 15, 2008. Oregon regulations do not have a Rolling 3-Month Average Lead standard.
(2) This is an Oregon standard.
(3) As of June 15, 2005. 1-hour $O_3$ was revoked in all areas except 14 8-hour $O_3$ nonattainment Early Action Compact Areas. Linn County is not an Early Action Compact Areas.
(4) The 1997 standard and its implementation rules would remain in place as EPA undertakes rulemaking to address the transition to the 2008 standard.
µg/m$^3$ – microgram/per cubic meter; mg/m$^3$ – milligram/per cubic meter; ppm – parts per million; std – standard.
Source: EPA, 2009a and Oregon DEQ, 2009

To determine compliance with the NAAQS, emissions of criteria pollutants from a new or modified source(s) are modeled to determine their air dispersion concentrations. In addition to the six criteria pollutants outlined in the

CAA, several other substances raise concerns with regard to air quality and are regulated through the CAA Amendments of 1990. These substances include hazardous air pollutants (HAPs) and toxic air pollutants (such as metals, nitrogen oxides ($NO_X$)), and volatile organic compounds (VOCs). $NO_X$ and VOCs are precursors for $O_3$.

Areas that meet the air quality standard for the criteria pollutants are designated as being in attainment. Areas that do not meet the air quality standard for one or more of the criteria pollutants are designated as being in nonattainment for that standard. The CAA requires nonattainment states to submit to the EPA a State Implementation Plan (SIP) for attainment of the NAAQS (40 CFR 51.166, 40 CFR 93). Maintenance areas are those that at one point had not met the NAAQS but are currently maintaining the standards through the requirements in the SIP.

The 1990 Amendments to the CAA require Federal actions to show conformance with the SIP. Federal actions are those projects that are funded by Federal agencies and include the review and approval of a Proposed Action through the NEPA process. Conformance with the SIP means conformity to the approved SIP's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards (40 CFR, 51 and 93). The need to demonstrate conformity is applicable only to nonattainment and maintenance areas.

***Class I Areas and Sensitive Receptors***

For areas that are already in compliance with the NAAQS, the Prevention of Significant Deterioration (PSD) requirements provide maximum allowable increases in concentrations of pollutants, which are expressed as increments (40 CFR 52.21). Allowable PSD increments currently exist for three pollutants: $SO_2$, $NO_2$, and $PM_{10}$ (Table 3.2.1-2).

**Table 3.2.1-2. Allowable Prevention of Significant Deterioration Increments (µg/m$^3$)**

| Pollutant-- Averaging Period | Class I Area | Class II Area |
|---|---|---|
| $SO_2$--3-Hour | 25 | 512 |
| --24-Hour | 5 | 91 |
| --Annual | 2 | 20 |
| $NO_2$--Annual | 2.5 | 25 |
| $PM_{10}$--24-Hour | 8 | 30 |
| --Annual | 4 | 17 |

Source: 40 CFR 52.21(c)

One set of allowable increments exists for Class II areas, which covers most of the United States and another set of more stringent allowable increments exists for Class I areas. Because of their pristine environment, Class I areas require more rigorous safeguards to prevent deterioration of their air quality. For the purposes of PSD review, the Federal government has identified mandatory Class I areas, which as defined in the CAA, are the following that were in existence as of August 7, 1977: national parks over 6,000 acres, national wilderness areas and national memorial parks over 5,000 acres, and international parks (NPS, 2009a). In general, proposed projects that are within 62 miles (100 kilometers) of Class I areas must evaluate impacts of the project on air quality related values (AQRVs) such as visibility, flora/fauna, water quality, soils, odor, and any other resources specified by the Federal Land Manager (NPS, 2009b).

Areas that are not in attainment with NAAQS are subject to the Nonattainment New Source Review. Overall, for the purposes of air quality analysis, any area to which the general public has access is considered a sensitive receptor site, and includes residences, day care centers, educational and health facilities, places of worship, parks, and playgrounds.

***Greenhouse Gases***
GHGs are pollutants of concern for air quality and climate change. GHGs include water vapor, carbon dioxide ($CO_2$), methane ($CH_4$), $NO_X$, $O_3$, and several chlorofluorocarbons. Water vapor is a naturally occurring GHG and accounts for the largest percentage of the greenhouse effect. Next to water vapor, $CO_2$ is the second-most abundant GHG and is typically produced from human-related activities. The largest source of $CO_2$ emissions globally is the combustion of fossil fuels such as coal, oil, and gas in power plants, automobiles, industrial facilities and other sources. Additionally, a number of specialized industrial production processes and product uses such as mineral production, metal production and the use of petroleum-based products can also lead to $CO_2$ emissions. The manufacturing of electrode materials for ultracapacitors can produce $CO_2$ emissions. (See Appendix B for additional information on $CO_2$ emissions.)

Although regulatory agencies are taking actions to address GHG effects, there are currently no state or Federal standards or regulations limiting $CO_2$ emissions and concentrations in the ambient air. In response to the *FY2008 Consolidated Appropriations Act* (H.R. 2764; Public Law 110–161), EPA issued the *Final Mandatory Reporting of Greenhouse Gases Rule* (GHG Reporting Rule), which became effective on January 1, 2010. The GHG Reporting Rule requires annual reporting of GHG emissions to EPA from large sources and suppliers in the United States, including suppliers of fossil fuels or industrial GHGs; manufacturers of vehicles and engines; and facilities that emit greater than 25,000 metric tons per year (mtpy) (27,558 tons per year [tpy]) each of $CO_2$ and other GHGs. The intent of the rule is to collect accurate and timely emissions data to inform future policy decisions and programs to reduce emissions, as well as fight against the effects of climate change.

Additionally, on September 30, 2009, EPA proposed, under the CAA, new thresholds for GHG that would require that facilities subjected to the New Source Review and Title V operating permit programs to obtain permits and would cover nearly 70 percent of the nation's largest stationary source GHG emitters—including power plants, refineries, and cement production facilities, while shielding small businesses and farms from permitting requirements. The proposed thresholds are currently being reviewed by Congress.

In 2008, the Oregon's Environmental Quality Commission approved the GHG mandatory reporting rules. The rules are needed to gain a better understanding of the sources of GHG emissions in Oregon, and to track progress toward meeting GHG emission reduction goals. Beginning in 2010 and 2011, certain facilities, including those that have an Air Contaminant Discharge Permit (ACDP) or a Title V permit and emit 25,000 metric tons of CO2 equivalent (27,577 tpy) of combined GHG per year will be required to track their emissions and provide an emissions report to Oregon Department of Environmental Quality (DEQ).

#### 3.2.1.1 Affected Environment

***Air Quality***
The Oregon DEQ, Division of Air Quality (DAQ), which is responsible for monitoring air quality for each of the criteria pollutants and assessing compliance, has also promulgated rules governing ambient air quality in the State of Oregon. These rules are codified in Oregon Administrative Rules (OAR), Chapter 340, Division 200 to 268 (OAR 340-200 to 340-268). Linn County is in attainment for all criteria air pollutants, including the new 8-hour ozone standard (EPA, 2009b, and 2009c); therefore, DOE does not need to demonstrate conformity with the state's SIP for this project.

There are 12 Federal mandatory Class I areas in Oregon, including Crater Lake National Park and 11 wilderness areas, for which the Oregon DEQ requires a PSD, review to determine potential impact. Two of the twelve Class I areas, Mount Jefferson Wilderness area and Mount Washington Wilderness area are less than 62 miles (100 kilometers) from the proposed project site. However, a PSD increment and air quality related values analysis for Class I areas would not be required because the proposed project would not be considered a major source of air pollutants (see Table 3.2.1- 3). A major source is a facility that has the potential to emit more than 100 tpy of any of the six criteria pollutants, or more than 10 tpy of any single HAP or more than 25 tpy of any combination of HAPs. A sensitive receptor that is within 1 mile of the EnerG2 site is a residential area to the east of the facility.

***Current Emissions***
Oregon Freeze Dry currently operates a distribution center at the proposed EnerG2 site. There are no emissions and no air quality permit is required to operate the facility.

### 3.2.1.2 Environmental Consequences

#### 3.2.1.2.1 No Action Alternative

The No Action Alternative is treated in this EA as the "No-Build" Alternative. That is, under the No Action Alternative, DOE would not provide funding for the project, and EnerG2 would not build a facility for the commercial scale production of synthetic, high-performance carbon electrode material. Current emissions would continue unchanged.

With the No Action Alternative, DOE would not fully meet its goal of supporting United States-based manufacturing to produce advanced EDV batteries and components. With reduced DOE funding, industries may be less willing to invest in the advanced technology that would help increase production of these batteries, especially the lithium ion batteries and their components. Without alternative fuel sources for automobiles, the United States would continue its dependence on and consumption of petroleum and other fossil fuels. Consequently, the current trends of increased $CO_2$ concentrations in the Earth's atmosphere will continue, increasing the effect on climate change.

#### 3.2.1.2.2 Proposed Project

***Construction***
Because there would be no new construction for the proposed project, except for installation of the concrete pads, an AST, and paving, fugitive dust emissions would be temporary in duration. Any grading or soil disturbance to install an AST, concrete pads, and conduct paving would generate negligible fugitive emission that would also be short-term and minor to negligible. Overall, there would be no impacts from construction of the proposed project.

***Operations***
The new manufacturing operations would require modification of the facility's Simple ACDP. In addition to the boiler, the proposed facility would operate two new kilns, which either would be electric or fired with natural gas. Table 3.2.1-3 below provides the expected air emissions from the operations of the proposed facility. Emissions are estimated based on the planned capacity for production of carbon electrode material and a 95 percent efficiency of the process control devices.

**Table 3.2.1-3. Proposed Emissions (tpy) from EnerG2**

| Pollutant | Proposed Operations Potential Emissions Rate | Plant Site Emission Limits |
|---|---|---|
| CO | 49.6 | 99 |
| $NO_2$ | 6.7 | 39 |
| $SO_2$[(1)] | 4.4 | 39 |
| VOC | NR[(2)] | 39 |
| $PM_{2.5}$ | NR[(2)] | 10 |
| $PM_{10}$ | NR[(2)] | 10 |
| PM | NR[(2)] | 24 |
| $CO_2$ | 1,466.1 | 27,557[(3)] |

(1) Potential $SO_2$ emissions are from combustion of diesel fuel.
(2) VOC and particulate matter are not reported as potential pollutants from the proposed facility.
(3) $CO_2$ Plant Site Emission Limits is based on the Oregon DEQ mandatory GHG reporting rule. See *Greenhouse Gas* section discussion.
Source: EnerG2, 2009a

As indicted in Table 3.2.1-3, the proposed facility would be a minor source of air pollutants. If potential emissions would be greater than the Plant Site Emission Limits (PSEL), EnerG2 would require a Standard ACDP; however, the potential emissions of regulated air pollutants from the proposed facility are expected to be well below PSEL, and therefore the facility would require a modification of its current Simple ACDP permit to add the increased emissions from the proposed project.

In addition to the criteria pollutants listed in Table 3.2.1-3, the proposed project would emit trace levels of the following HAPs: formaldehyde, methanol, and methyl acetate.

DOE does not need to demonstrate SIP conformity because the proposed facility is a minor source in an area that is meeting all NAAQS (40 CFR 93.153(d) (1)). Additionally, because the proposed facility would be a minor source of air pollutants, it would not be required to complete a PSD analysis. Although there are sensitive receptors nearby, a majority of the manufacturing process at the facility would be enclosed indoors with control devices to limit the amount of pollutants emitted into the atmosphere.

Overall, the EnerG2 facility would have a minor adverse impact on air quality as a result of the proposed project. Although air emissions from the facility are measurable, they would result in minimal consequences because of the facility's operating control devices that would be used to limit emissions, and emissions would remain under the PSEL.

***Carbon Footprint***

In 2000, Oregon's GHG emissions were 67.7 million metric tons of $CO_2$ equivalent ($MMtCO_2e$) (Oregon, 2009). That was about one percent of United States' GHG emissions, which exceeded 7 billion metric tons $CO_2$ equivalent. By 2000, there was a 15 percent increase over Oregon's 1990 GHG emissions of 58.7 $MMtCO_2e$. According to its worst-case forecast, the DOE estimates that GHG emissions from Oregon would be 61 percent higher by 2025.

Of the GHG emissions from Oregon in 2000, 84 percent was $CO_2$. The primary source of $CO_2$ pollution was the burning of fossil fuels, such as coal (at power plants serving the state), gasoline, diesel, and natural gas. There were also emissions from industrial processes, such as the manufacture of cement and from combustion of fossil-fuel derived products when burning municipal and industrial wastes (Oregon, 2009).

$CO_2$ emissions at the EnerG2 facility are expected to be low. The *Final Mandatory Reporting of Greenhouse Gases Rule* and the Oregon GHG reporting rule would not be applicable to the EnerG2 facility because it would emit less than 25,000 mtpy of $CO_2$.

The manufacture of EDV batteries and components would increase production of EDVs in the United States. EDVs emit no tailpipe pollutants. Therefore, they potentially can provide significant air quality benefits to targeted regions (DOE, 1999). Overall, there would be beneficial impacts on climate change as EnerG2's Proposed Project would help the viability of the commercial market for EDVs, thereby reducing the carbon footprint of the transportation sector.

#### 3.2.1.3 Cumulative Impacts

Other than the proposed EnerG2 facilities, no other projects are planned. No reasonably foreseeable actions have been identified that would interact with the Proposed Action to generate cumulative adverse impact to air quality.

#### 3.2.1.4 Proposed Mitigation Measures

Since there are no new construction activities (except for the installation of a concrete pad, an AST, and paving), no mitigation measures for construction would be required.

During operations at the EnerG2 facility, State regulatory authority over air emissions would ensure that the facility continues to meet the requirements of its air operating permit. Because of the control devices used on the equipment and best management practices employed at the facility, actual emissions are to be held well below permitted limits.

### 3.2.2 Noise

#### 3.2.2.1 Affected Environment

The property is located in an industrial park bordered by Union Pacific rail line on the west and industrial buildings to the north, south, and near east. The closest sensitive receptors are the homes of the residential community located approximately 350 yards to the east of the existing warehouse building and a residential community approximately 650 yards to the west. There are two schools located approximately 1,000 yards to the east and two schools approximately 1,200 yards to the northwest. Bowman's Rock State Park is located about 2 miles to the northwest, and Linn-Benton Community College is about 1.5 miles to the south.

The existing facility is currently used as a distribution warehouse center that adds to local noise levels due to its truck and vehicle traffic. There are approximately 50 trucks visiting the site per day Monday through Friday. On Saturday and Sunday, there are approximately eight inter-plant truck trips per day between Plant No. 1 and Plant No. 2 and the warehouse, resulting in over 265 trips per week. The majority of the truck traffic enters from Highway 99E, east onto 34th Avenue, then north onto Calapooia Street (Figure 2.2-2). Approximately four truck trips per day use Ferry Street to access 34th Avenue for inter-plant transfers.

The site is located within the vicinity of various existing noise sources that contribute to the baseline noise level, including the railroad, Highway 99E approximately 600 yards to the west, Interstate Highway 5 about 2 miles to the east, the other industrial facilities in the area, and the Albany Municipal Airport located approximately 2.5 miles to the northeast.

#### 3.2.2.2 Environmental Consequences

##### 3.2.2.2.1 No Action Alternative

Under the No Action Alternative, construction and operations would not occur; therefore, no changes in noise emissions would occur to noise.

##### 3.2.2.2.2 Proposed Project

***Construction***
The construction phase of this project would involve the interior reconfiguration of an existing 72,000 square foot steel-building warehouse such that 36,000 square feet would be partitioned to be used for the intermediate production of ultracapacitor energy storage media. New construction would involve the construction and installation of process equipment inside the building as well as some equipment on the outside. The new construction would include various external storage tanks, stacks and vents, condensers, and a wastewater house.

During the construction phase, noise levels would be localized, intermittent, and temporary. Increases in noise levels during construction would mainly result from the use of heavy construction equipment and delivery trucks. The typical noise levels at any construction site would be expected to be within the range of 75 to 90 decibels (dBA). Construction noise levels onsite would primarily be limited to the immediate vicinity of the project site. The construction is expected to last for 18 months with most of the work occurring between months 4 and 15. Short-term but measurable adverse impacts are expected during construction.

***Operations***
The main sources of noise during operations would be from truck and employee-vehicle traffic and from the new mechanical equipment. Most of the new process equipment that generate noise would be located indoors;

however, the ammonia condenser and recycled cooling water condenser would be located outside and would produce noise. A noise study from Oregon Freeze Dry's Plant No. 2, which operates similar equipment to the Proposed Project, indicates a reading of 79 dBA at the base of the condensing unit, outside at ground level.

Using the sound attenuation calculation for point sources (i.e., sound level decreases by 6 dBA for each doubling in distance from the source), and assuming the measurement was taken at approximately 5 feet away from the source, the estimated noise level from the condensers at approximately 50 yards away would be below 50 dBA, which is the threshold limit for nighttime noise levels (between 10 pm – 7 am) for industrial and commercial noise sources under the Albany municipal noise ordinance (the daytime threshold is 55 dBA) (Albany Municipal Code, 2009). Because the closest resident is located over 350 yards from the property, it is expected that noise from the condensers would be negligible at any residential area. Furthermore, due to improvements in technology and the smaller size of the required equipment, noise at the proposed plant is expected to be less than that measured at Plant No. 2, which was constructed in 1980. Under the Proposed Project, the Oregon Freeze Dry distribution warehouse would lose 50 percent of its usable storage space, thereby reducing the current truck traffic associated with the warehouse by half. The EnerG2 manufacturing operation would utilize approximately one truck trip per day for delivery and pickup of raw material and finished goods. Therefore, the net effect of the Proposed Project would be a reduction of over 100 truckloads per week to the Calapooia Street site, thereby creating an overall decrease in truck-related noise in the vicinity. However, Oregon Freeze Dry would continue its existing distribution operations by shifting portions of its warehouse activities to its Plant No. 1 and Plant No. 2, resulting in minor long-term increases in truck traffic noise in areas surrounding those Plants. Oregon Freeze Dry has not yet determined the exact locations or proportions of warehouse storage to be utilized at their other plants; however, both Plants Nos. 1 and 2 are located nearby in the highly-industrial area that currently experiences truck traffic noise. Plant No. 1 is located approximately 500 yards to the northwest of the proposed project, currently surrounded by industries, and separated from the nearest residences (approximately 250 yards to the west) by the major Highway 99E, which currently experiences heavy truck traffic. Plant No. 2 is located approximately 350 yards north of the proposed site and is approximately 500 yards from the nearest residences. If warehouse activities were moved to Plant No. 2, the nearby neighborhood would experience increased traffic noise, though the impact would be minor as the road currently serves numerous industries.

The 2,000 square feet of office space in the existing warehouse would continue to be used in its current capacity for Oregon Freeze Dry and would continue to house the existing personnel. The Proposed Project would generate a minor long-term increase in personal-vehicle traffic due to the hiring of approximately 35 additional permanent employees for the EnerG2 operations, thus creating a minor impact on local noise levels.

Because the Proposed Project would occur at an existing industrial area that currently has operating industrial facilities and truck and personal-vehicle traffic, any increase in ambient noise levels resulting from operations of the Proposed Project would be minor. Furthermore, there are other existing comparable noise sources in the vicinity, including the railroad, highways, and a nearby airport.

#### 3.2.2.3 Cumulative Impacts

The proposed EnerG2 project would generate minor impacts that would contribute to the cumulative impacts associated with the historical trend of past, present, and reasonable foreseeable future activities.

#### 3.2.2.4 Proposed Mitigation Measures

No mitigation measures would be required for noise.

### 3.2.3 Geology and Soils

#### 3.2.3.1 Affected Environment

The Linn County Soil Survey (NRCS, 2009) indicates two soil types within proximity to the study area that include Amity silt loam (3) and Concord silt loam (27). Table 3.2.3-1 contains the properties of each soil unit and their respective geological landform.

**Table 3.2.3-1. Study Area Soils**

| Soil Unit | Flooding Frequency | Hydric Rating | Commercial Building Construction |
|---|---|---|---|
| 3 | None | Partially hydric | Very limited |
| 27 | None | Hydric | Very limited |

As shown in Table 3.2.3-1 soils within the study area are not prone to flooding. A “none” frequency rating means that flooding is not probable; the chance of flooding is nearly 0 percent in any year and flooding occurs less than once in 500 years (also refer to Section 3.1 for discussion of floodplains). Overall, soils within the study area are very limited (primarily due to depth to saturated zone) for commercial building construction (e.g., structures typically less than three stories high and lacking basements). The construction ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs (i.e., depth to a water table, ponding, flooding, subsidence, shrink-swell potential, and compressibility). "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

The Soil Unit 3 series is rated as hydric and the Soil Unit 27 series is rated as partially hydric. Hydric soils are defined by the National Technical Committee for Hydric Soils as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part, and under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation. Hydric soils can pose limitations to construction; however, they can also be indicative of wetlands (see Section 3.1). A "Partially hydric" rating indicates that at least one component of the map unit is rated as hydric, and at least one component is rated as not hydric.

The November 16th site visit confirmed that the study area is relatively flat and primarily consists of existing disturbed land from past construction activities (i.e., facilities and roadways). Undisturbed areas immediately adjacent to the study area include periodically maintained grassy areas. Section 3.2.4 discusses current herbaceous cover.

#### 3.2.3.2 Environmental Consequences

##### 3.2.3.2.1 No Action Alternative

Under the No Action Alternative, construction and operations would not occur; therefore, no changes would occur to existing geology and soil resources.

##### 3.2.3.2.2 Proposed Project

***Construction***

Under EnerG2’s Proposed Project, a majority of the proposed facility construction would occur within an existing building, minimizing adverse impacts to soils. Depending on final site design, localized soil disturbance may occur from the construction of support structures outside of the existing building (e.g., concrete pads, AST, and paving). These areas would experience localized and permanent minor adverse impacts to soils if they are sited in undisturbed areas adjacent to the facility due to grading and placement of impervious surface for supporting these

structures. Potential staging areas for construction equipment and materials would not likely cause adverse impacts to soils as staging areas would occur on existing areas of impervious surface (i.e., parking lots). Construction would not result in adverse impacts to geology.

***Operations***
Operations of the site would have no impacts to geology or soil resources.

#### 3.2.3.3 Cumulative Impacts

Historically (pre-1990), the site and surrounding land were agricultural farmland. Starting in the 1990s, changes in land use zoning from rural/agricultural to industrial have caused permanent, localized, and adverse disturbances to soils that are characteristic of lands within and adjacent to the study area. Portions of the lands adjacent to the study area remain undeveloped but were disturbed by past agricultural activities. The proposed EnerG2 project would generate minor impacts that would contribute to the cumulative impacts associated with the historical trend of past, present, and reasonable foreseeable future activities.

#### 3.2.3.4 Proposed Mitigation Measures

No mitigation measures would be required for geology and soil resources.

### 3.2.4 Vegetation and Wildlife

#### 3.2.4.1 Affected Environment

***Vegetation***
The November 16th, 2009, site visit of the study area verified the majority of the site is existing disturbed land from past construction activities (i.e., facilities and roadways). Areas directly adjacent to these disturbed areas are periodically maintained meadow. Dominant vegetation composition is a combination of grasses along with a few shrubby species such as blackberry (*Rubus sp.).*

***Wildlife***
No wildlife species were observed within the study area during the November 16, 2009, site visit. Common wildlife species within the region that utilize the periodically maintained open meadow habitat adjacent to the study area include raccoons (*Procyon lotor*), cottontail rabbits (*Sylvilagus floridanus)*, squirrels (*Sciurus niger*), and various other small mammal species such as white-footed mice (*Peromyscus Leucopus*) and shrews (*Sorex sp.)*. Site staff also reported that nutria (*Myocastor coypus*) inhabit the canal located to the east of the study area and are periodically observed within the grassy areas adjacent to the study area. Nutria is an invasive and semiaquatic rodent.

#### 3.2.4.2 Environmental Consequences

##### 3.2.4.2.1 No Action Alternative

Under the No Action Alternative, construction and operation would not occur; therefore, no changes would occur to vegetation or wildlife resources.

##### 3.2.4.2.2 Proposed Project

Informal coordination letters have been sent to both the USFWS and the Oregon Natural Heritage Information Center to verify the project would have no impact on any Federally- or state-listed threatened, endangered, or candidate species, or critical habitat within the vicinity of the Proposed Project. A response letter was received from the Oregon Natural Heritage Information Center on November 10th, 2009, and is included in Appendix A. Table 3.2.4-1 summarizes the observation data of rare species identified by the Oregon Natural Heritage Information Center within a 2-mile radius of the study area and the likelihood of the species occurring within the study area. The USFWS provided a list of Federally-listed, proposed, candidate species and species of concern

under jurisdiction of the USFWS which may occur within Linn County Oregon (see Appendix A). Table 3.2.4-2 summarizes the list of species provided by the USFWS, which have the potential to occur at the project site due to project site habitat characteristics and the likelihood of the species occurring within the project site. Appendix A contains the full list of USFWS listed species in Linn County and their respective habitats.

**Table 3.2.4-1. Rare Species (2-Mile Radius of the Study Area)**

| Common Name | Latin Name | Federal/ State Status | Number of Occurrences | Last Observation | Habitat | Study Area Characteristics and Likelihood of Occurrence |
|---|---|---|---|---|---|---|
| **Plants** | | | | | | |
| Willamette Valley daisy | *Erigeron decumbens* | LE | 1 | 1894 | Heavy soils in seasonally wet native or dry upland prairie grasslands.[1] | Due to sites past agricultural and industrial disturbance and periodic maintenance and date of last observation within the area, presence of species is highly unlikely. |
| Thin-leaved peavine | *Lathyrus holochlorus* | SOC | 3 | 1979 | Prairie-oak woodland ecotone, which has historically been maintained by fire.[2] | Due to site's past agricultural and industrial disturbance, lack of habitat, periodic maintenance, and date of last observation within the area, presence of species is highly unlikely. |
| Three-colored monkeyflower | *Mimulus tricolor* | NR; globally rare | 1 | 1988 | Moist flats; wet clay soils; vernal pools.[3] | Habitat not present within study area. |
| **Invertebrates** | | | | | | |
| Olympia pebblesnail | *Fluminicola virens* | NR; globally rare | 1 | 1996 | Aquatic | Habitat not present within study area. |
| Western pearlshell | *Margaritifera falcata* | NR; globally rare | 1 | 1964 | Aquatic | Habitat not present within study area. |
| **Reptiles/Amphibians** | | | | | | |
| Northern Pacific pond turtle | *Actinemys marmorata marmorata* | SOC;SC | 3 | 2002 | Aquatic and adjacent woodland, forest, and grassland.[4] | Aquatic habitat component not present within proximity to study area. |
| Painted turtle | *Chrysemys picta* | SC | 1 | 1941 | Aquatic and adjacent woodland, forest, and grassland.[5] | Aquatic habitat component not present within proximity to study area. |
| Oregon spotted frog | *Rana pretiosa* | C; SC | 1 | 1909 | Aquatic/marsh and streambanks.[6] | Habitat not present within study area. |

**Table 3.2.4-1. Rare Species (2-Mile Radius of the Study Area) (continued)**

| Common Name | Latin Name | Federal/ State Status | Number of Occurrences | Last Observation | Habitat | Study Area Characteristics and Likelihood of Occurrence |
|---|---|---|---|---|---|---|
| **Fish** | | | | | | |
| Steelhead | *Oncorhynchus mykiss* | LT; SV | 2 | 2009 | Aquatic | Habitat not present within study area. |
| Chinook salmon | *Oncorhynchus tshawytscha* | LT; SC | 1 | 2009 | Aquatic | Habitat not present within study area. |
| Oregon chub | *Oregonichthys crameri* | LE; SC | 1 | 1894 | Aquatic | Habitat not present within study area. |

[1]CPC. 2009; [2]WDNR, et. al. 2003. [3]Oregon Department of Forestry. 1995; [4]Californiaherps.com. 2009a; [5]Cohen, Mary. 1992; [6]Californiaherps.com. 2009b
C=candidate (Federal); LE= legally endangered (Federal); LT= listed threatened (Federal); NR=not ranked; SOC=species of concern (Federal); SC=sensitive-critical (State); SV=sensitive-vulnerable of concern (State).

**Table 3.2.4-2. Linn County Federally-Protected Species**

| Common Name | Latin Name | Federal Status | Habitat | Study Area Characteristics and Likelihood of Occurrence |
|---|---|---|---|---|
| **Plants** | | | | |
| Golden paintbrush | *Castilleja levisecta* | Threatened | Found in open grasslands often on glacially derived soils: specifically, gravelly glacial outwash or on clayey glacio-lacustrine sediments in outcrops.[1] | Due to site's past agricultural and industrial disturbance, lack of habitat, and periodic maintenance, presence of species is highly unlikely. |
| Willamette daisy | *Erigeron decumbens var. decumbens* | Endangered | Heavy soils in seasonally wet native or dry upland prairie grasslands.[2] | Due to the sites past agricultural and industrial disturbance and periodic maintenance within the area, presence of species is highly unlikely. |
| Bradshaw's desert parsley | *Lomatium bradshawii* | Endangered | Moist meadows and remnant prairie patches at low elevations.[3] | Habitat not present within study area. |
| Kincaid's lupine | *Lupinus sulphureus ssp. kincaidii* | Threatened | Native upland prairies as well as open oak woodlands.[4] | Habitat not present within study area. |
| Nelson's checker-mallow | *Sidalcea nelsoniana* | Threatened | Seasonally wet soils in a wide variety of habitats including the prairie/woodland border, grassy meadows, drier sedge meadows, and disturbed areas.[5] | Due to the sites past agricultural and industrial disturbance and periodic maintenance within the area, presence of species is highly unlikely. |
| Willamette Valley larkspur | *Delphinium oreganum* | Species of Concern | Well drained areas of native prairie, especially roadsides that have escaped development.[6] | Due to sites past agricultural and industrial disturbance and periodic maintenance within the area, presence of species is highly unlikely. |

**Table 3.2.4-2. Linn County Federally-protected Species (continued)**

| Common Name | Latin Name | Federal Status | Habitat | Study Area Characteristics and Likelihood of Occurrence |
|---|---|---|---|---|
| Shaggy horkelia | *Horkelia congesta ssp. congesta* | Species of Concern | Meadows and open woods at low elevations.[7] | Due to the sites past agricultural and industrial disturbance and periodic maintenance within the area, presence of species is highly unlikely. |
| Thin leaved peavine | *Lathyrus holochlorus* | Species of Concern | Prairie-oak woodland ecotone, which has historically been maintained by fire.[8] | Due to site's past agricultural and industrial disturbance, lack of habitat and periodic maintenance within the area, presence of species is highly unlikely. |
| Whitetop aster | *Sericocarpus rigidus* | Species of Concern | Open grasslands surrounded by Douglas fir trees (Pseudotsuga menziesii). The grasslands are typically moist most of the year, but dry, or moisture-stressed, during late summer.[9] | Habitat not present within study area. |
| **Insects** | | | | |
| Fender's blue butterfly | *Icaricia icarioides fenderi* | Endangered | Endemic to the native upland prairies of the Willamette Valley in Oregon.[10] | Habitat not present within study area. |
| **Birds** | | | | |
| Streaked horned lark | *Eremophila alpestris strigata* | Candidate | Found in short-grass habitats and areas with bare ground, including spits, estuaries, sand dunes and Garry oak meadows, as well as some modified areas such as pastures, playing fields, airports and roadsides. Nests are generally built in open, barren areas that are sparsely vegetated or have very short vegetation.[11] | Due to site's industrial use, lack of habitat, and periodic maintenance, presence of species is highly unlikely. |
| Western burrowing owl | *Athene cunicularia hypugaea* | Species of Concern | Optimum habitat typified by short vegetation and presence of fresh small mammal burrows. Found in open grasslands, especially prairie, plains, and savanna.[12] | Due to site's industrial use, lack of habitat, and periodic maintenance, presence of species is highly unlikely. |
| Oregon vesper sparrow | *Pooecetes gramineus affinis* | Species of Concern | Dry, open grasslands; uniformly structured grassy areas such as pastures and hayfields appear to be avoided.[13] | Due to site's industrial use, lack of habitat, and periodic maintenance, presence of species is highly unlikely. |
| Purple martin | *Progne subis* | Species of Concern | Open water, grassy fields, and recent clearcuts and burns with brush and young trees.[14] | Due to site's industrial use, lack of habitat, and periodic maintenance, presence of species is highly unlikely. |

**Table 3.2.4-2. Linn County Federally-protected Species (continued)**

| Common Name | Latin Name | Federal Status | Habitat | Study Area Characteristics and Likelihood of Occurrence |
|---|---|---|---|---|
| **Mammals** | | | | |
| Camas pocket gopher | *Thomomys bulbivorus* | Species of Concern | Rich soil of the Willamette Valley in central Oregon.[15] | Due to site's industrial use, and periodic maintenance, presence of species is highly unlikely. |

[1] CPC. 2009a; [2]CPC. 2009b; [3]CPC. 2009c [4]WDNR, 1998. [5]CPC. 2009d; 6CPC. 2009e; [7]Oregon Flora Project. 2002; [8]WDNR, et. al. 2003; [8]CPC. 2009f, [10]BCFI. 2009; [11]Garry Oak Ecosystems Recovery Team. 2003a; 12NatureServ Explorer. 2009; [13]Garry Oak Ecosystems Recovery Team. 2003b; [14]Hovarth. 2009; 15 Stole. 1999.

***Vegetation***

***Construction***

Under EnerG2's Proposed Project, a majority of the proposed facility construction would occur within an existing building, minimizing adverse impacts to vegetation. Depending on final site design, localized vegetation disturbance may occur from the construction of support structures outside of the existing building (e.g., concrete pads, ASTs, and paving). These areas would experience localized and permanent minor adverse impacts to vegetation if they are sited in undisturbed areas adjacent to the facility due to grading and permanent removal of vegetation to accommodate these structures. Potential staging areas for construction equipment and materials would not likely cause adverse impacts to vegetation as staging areas would occur on existing areas of impervious surface (i.e., parking lots).

***Operations***

Operations of the site would have no impacts to vegetation resources.

***Wildlife***

***Construction***

Under the Proposed Project, a majority of the proposed facility construction would occur within an existing building, minimizing adverse impacts to wildlife and habitat. As previously stated, some of vegetation could be lost due to construction of supporting structures. This impact would result in a direct, localized and permanent adverse impact to habitat. Construction activities (e.g., concrete pads, AST, and paving could destroy small mammal burrows (if present) within the construction footprint. These animals would likely move to similar habitat available adjacent to the site. Noise from construction activities (see Section 3.2.2) would have the potential to disturb wildlife species within proximity to the study area. Overall adverse impacts, however, would be minor as the area already contains disturbance to habitat within the study area from periodic maintenance (mowing) and the site is adjacent to an existing industrial activity that contains human activity and existing associated disturbances.

***Operations***

Operations of the facility are not anticipated to create additional disturbance to wildlife.

### 3.2.4.3 Cumulative Impacts

Historically (pre-1990), the site and surrounding land were agricultural farmland. Starting in the 1990s, changes in land use zoning from rural/agricultural to industrial have caused permanent, localized, and adverse disturbances to vegetation and wildlife through the loss of vegetation resources and habitat for wildlife. Portions of the lands adjacent to the study area remain undeveloped and continue to provide patches of vegetation and wildlife habitat within the industrial complex. The proposed EnerG2 project would generate minor impacts that would contribute to the cumulative impacts associated with the historical trend of past, present, and reasonable foreseeable future activities.

#### 3.2.4.4 Proposed Mitigation Measures

No mitigation measures would be required for biological resources.

### 3.2.5 Solid and Hazardous Wastes

#### 3.2.5.1 Affected Environment

The property is currently operated as a distribution center by Oregon Freeze Dry. Materials are stored indoors other than one aboveground propane tank (approximately 200 gallons) that is located outdoors. Based on available information, the existing facility does not generate hazardous waste and does not have an EPA Identification Number as a hazardous waste generator. Minor amounts of municipal solid waste are generated and sent to an off-site landfill. The facility does not store or manufacture materials in quantities that require reporting under Emergency Planning and Community Right-To-Know Act, also known as Superfund Amendments and Reauthorization Act, Title III Toxic Chemical Release Inventory Reporting. There is no underground storage tanks located at the facility. The existing facility was built in 1990; therefore, no asbestos containing material or lead-based paint is expected to be present.

No known site contamination is present at the property or at properties immediately adjacent. The site is not listed on the EPA's National Priorities List, which designates high-priority cleanup sites under the Comprehensive Environmental Response Compensation and Liability Act, more commonly known as the Superfund Program. No areas of contamination are known to exist at adjacent properties. There are no Superfund sites immediately adjacent to the facility (EPA, 2009e).

#### 3.2.5.2 Environmental Consequences

##### 3.2.5.2.1 No Action Alternative

Under the No Action Alternative, construction and operation of the proposed project would not occur. Therefore, the facility would continue its current operations and would generate the same type and quantity of non-hazardous waste. Wastes would continue to be collected and transported for offsite disposal or recycling in accordance with Federal, state and local regulations.

##### 3.2.5.2.2 Proposed Project

***Construction***

The proposed EnerG2 facility would be constructed within part of a retrofitted 72,000 square foot existing building of prefabricated steel construction. New construction would include a new 24-ton carbon dioxide AST and an 11,000-gallon inert compressed gas AST (EnerG2, Oregon Freeze Dry, 2009). The major raw material would be carbon feedstocks derived from resins that would be stored indoors in totes. The facility would also have used oil drums (for vacuum pumps), a diesel fuel AST (for a backup power generator), a propane AST (for refueling forklifts), and ASTs for water treatment chemicals (acid, base) (Norris, J. 2009). Retrofitting the existing building would generate minor amounts of solid waste such as building materials (e.g., electrical wiring and piping). Solid waste and sanitary waste generated during construction activities would be limited to common construction-related waste streams. In-state or out-of-state landfills or recycling facilities would have the capability and capacity to accept these wastes, and therefore, there would be no impact associated with the disposal of these materials. In addition, EnerG2 would implement best management practices to minimize the quantity of non-hazardous solid waste generated, as appropriate, during construction and to ensure proper handling of all materials.

***Operations***

Under EnerG2's Proposed Project, the facility would likely generate hazardous waste and would require an EPA Identification No. Potential hazardous wastes include used oil (from the refrigeration system and from vacuum pumps) that would be recycled, used aerosol cans, used batteries (alkaline, nickel cadmium) and possibly waste

ink from product labeling (Norris, J., 2009). The quantity of these hazardous wastes generated would not be known until the facility is operational. The process would not generate nano-fibers or nano-tubes, which could present a hazardous waste.

The facility would have to submit a Site Identification Form to the Oregon DEQ to notify the DEQ of the quantity and type of hazardous waste the facility would generate on a monthly basis. DEQ is authorized by the EPA to regulate hazardous waste in Oregon. Oregon has adopted all Federal hazardous waste regulations pursuant to OAR 340-100-120. As a generator of hazardous waste, the facility would have to adhere to Oregon DEQ's regulations as well as applicable Federal regulations under 40 CFR 260-268, 273, and 279 and 29 CFR 1910. The quantity of hazardous waste generated at the facility would determine its generator status and the applicable Federal and state regulations to which the facility must adhere.

The Proposed Project would generate small amounts of hazardous waste that would require offsite treatment and disposal. Under the Proposed Project, the facility's operations would include the handling of synthetic carbon resin that contains formaldehyde. The formaldehyde would be contained within the facility's operations and no waste formaldehyde would be expected. Oregon Freeze Dry has an established business in freeze dry processing of foods and pharmaceuticals and performed employee monitoring for exposure to formaldehyde in Oregon Freeze Dry's products in 2008, which is discussed in Section 3.2.8.

Non-hazardous waste would be generated in quantities above what are currently generated. An estimated 34,000 pounds of municipal solid waste per year would be generated annually and would include baghouse fines, small accumulations in wastewater strainers, cleaning of the kilns, and general packaging and office trash. These non-hazardous solid wastes would be sent to an offsite landfill for disposal (EnerG2, Oregon Freeze Dry, 2009). This would have a minor impact based on the quantity of solid waste generated and landfilled offsite. Waste electrode carbon dust and off-specification product would have market value and would likely be sold for suitable uses.

#### 3.2.5.3 Cumulative Impacts

The proposed EnerG2 project would generate minor impacts that would contribute to the cumulative impacts associated with the historical trend of past, present, and reasonable foreseeable future activities.

#### 3.2.5.4 Proposed Mitigation Measures

Waste materials would be sent offsite for recycling, or treated and disposed of at a hazardous waste disposal facility or landfill. As a generator of hazardous waste, the facility would be required to manage its hazardous waste in accordance with Federal and state regulations to ensure proper storage and disposal of hazardous waste and to ensure a release to the environment does not occur.

During construction, preventative measures such as providing fencing around the construction site, establishing contained storage areas, and controlling the flow of construction equipment and personnel would reduce the potential for a release to occur. In the event that a release occurs, immediate action would be taken to contain and clean up a release in accordance with Federal, state, and local regulations.

### 3.2.6 Utilities

#### 3.2.6.1 Affected Environment

The Oregon Freeze Dry property is located within the service areas of the Albany Water System and the Albany-Millersburg Water Reclamation Facility. The Albany Water System takes its supply from the Santiam-Albany Canal and has a capacity to supply up to 20 million gallons per day (mgd) of potable water. The water distribution system includes five storage reservoirs and approximately 190 miles of pipelines. The Albany-Millersburg Water Reclamation Facility began operations in February 2009 replacing an outdated and undersized

wastewater treatment plant. The new facility has a peak capacity of 68 mgd and an average capacity of 12.3 mgd (Albany Public Works Department, 2009).

#### 3.2.6.2 Environmental Consequences

##### 3.2.6.2.1 No Action Alternative

Under the No Action Alternative, construction and operations would not occur; therefore, no changes would occur to utilities.

##### 3.2.6.2.2 Proposed Project

***Construction***
During construction for the Proposed Project, utilities would be supplied by existing services at the Oregon Freeze Dry facility, which would not be adversely impacted by the small increases in temporary demand.

***Operations***
During operations, the proposed EnerG2 facility would consume less than 10,000 gallons per day (gpd) of water for process use and human consumption (EnerG2, 2009b). This demand would represent less than 0.1 percent of the capacity of the Albany Water System. Although the Public Works Department is studying the need for a new water treatment system under the Albany-Millersburg Joint Water Project (Albany Public Works Department, 2009), the city has indicated that the demands of EnerG2 can be met by the existing water system. Therefore, the impacts on water utilities would be minor.

The proposed facility would discharge less than 10,000 gpd of process wastewater to the Albany-Millersburg Water Reclamation Facility (EnerG2, 2009b), which would represent less than 0.1 percent of the average daily capacity of the plant. The EnerG2 facility would be subject to pretreatment requirements of the Albany Public Works Department for industrial discharges. Therefore, the impacts on wastewater utilities would be minor.

#### 3.2.6.3 Cumulative Impacts

Other than the proposed EnerG2 facilities, no other projects are planned. No reasonably foreseeable action have been identified that would interact with the Proposed Project to generate cumulative adverse impact to utilities.

#### 3.2.6.4 Proposed Mitigation Measures

No mitigation measures would be required for utilities.

### 3.2.7 Transportation and Traffic

#### 3.2.7.1 Affected Environment

The proposed project site is located in Albany, Oregon, in Linn County. The property is accessed from Calapooia Street, which is a 0.2-mile two-lane dedicated cul-de-sac extending north from 34$^{th}$ Avenue SW. Thirty-fourth Avenue SW is a four-lane divided access route that intersects Highway 99E (Pacific Boulevard SW) 0.5 miles to the west of the Calapooia Street intersection; and intersects Ferry Street SW and Marion Street SE at 0.1 and 0.2 miles to the east of the Calapooia Street intersection, respectively (Figure 2.2-2). Interstate 5 (Pacific Highway) is the major north-south arterial in the region, located approximately 2 miles to the east of the property. The east-west aligned arterials in the near proximity are Highway 20 (Pacific Boulevard SE) located approximately 1 mile north of the site, and Highway 34 (Corvallis-Lebanon Highway) located approximately 3.5 miles south of the site.

The existing facility is currently used as a distribution warehouse center. There are approximately 50 trucks visiting the site per day Monday through Friday. On Saturday and Sunday, there are approximately eight inter-plant truck trips per day between Plant Nos. 1 and 2 and the warehouse, resulting in over 265 trips per week. The majority of the truck traffic enters from Highway 99E, east onto 34$^{th}$ Avenue, then north onto Calapooia Street.

Approximately four truck trips per day use Ferry Street to access 34th Avenue for inter-plant transfers. The local roadway network can easily accommodate the current truck and personnel traffic.

#### 3.2.7.2 Environmental Consequences

##### 3.2.7.2.1 No Action Alternative

Under the No Action Alternative, construction and operations would not occur; therefore, no changes would occur in the transportation and traffic.

##### 3.2.7.2.2 Proposed Project

***Construction***
Short-term but measurable adverse impacts to traffic are expected during the construction phase of the proposed facility involving interior reconstruction of the warehouse and the installation of the manufacturing equipment. Approximately 50 construction jobs would be created to complete the construction of the facility. Construction vehicles and workers' personal vehicles would add to existing local traffic and would potentially cause minor congestion, higher traffic noise, and increased vehicle emissions along the routes. Construction worker traffic would occur primarily at the beginning and ending of the workday. Construction truck traffic would be sporadic throughout the day, with occasional truckloads arriving with specialty equipment or materials likely less than five per week during the course of the project. The roads most impacted would be 34th Avenue SW and Highway 99E. Additional traffic on Calapooia Street would only affect the few other industries on the dedicated cul-de-sac. Construction impacts to existing transportation resources would be minor, temporary and localized (i.e., limited to proximity of the project site), and can be accommodated through the existing road network. The construction would be expected to last for approximately 18 months, with most of the work occurring between months 4 through 15.

***Operations***
The Proposed Project would be expected to result in an overall decrease in the amount of trucks entering and leaving the Calapooia Street site, compared to the current Oregon Freeze Dry warehouse activities. Currently the warehouse receives approximately 265 truck trips per week. With the Proposed Project, the Oregon Freeze Dry distribution warehouse would lose 50 percent of its usable storage space, thereby reducing the current truck traffic associated with the warehouse by half. The EnerG2 manufacturing operation would utilize approximately one truck trip per day for delivery and pickup of raw material and finished goods. Therefore, the net effect of the Proposed Project would be a reduction of over 100 truckloads per week to the Calapooia Street site. However, Oregon Freeze Dry would continue its existing distribution operations by shifting portions of its warehouse activities to other locations on its properties located to the north and northwest of the proposed site. These reconfigurations would shift the estimated 100 truckloads per week to the roads leading to the other Oregon Freeze Dry buildings, in particular Highway 99E (Pacific Boulevard SW) accessing the property to the northwest (supporting Oregon Freeze Dry Plant No. 1), and Ferry Street SW and 25th Avenue SW accessing the property to the north of the proposed site (supporting Plant No. 2). Highway 99E is a major arterial road in a highly industrial area, easily accommodating truck traffic. Ferry Street SW and 25th Avenue are similarly located in a highly industrial area used for truck traffic.

The trucks accessing the proposed project would use the established truck routes currently in place. During preliminary meetings between the Oregon Freeze Dry and the Oregon Department of Transportation, truck traffic changes were not a concern.

The 2,000 square feet of office space in the existing warehouse configuration would continue to be used in its current capacity for Oregon Freeze Dry. The Proposed Project would generate a minor long-term increase in personal-vehicle traffic due to the hiring of approximately 35 additional permanent employees for the EnerG2 operations. The additional employee vehicles would be easily accommodated within the existing roadway and intersection network. Because this Proposed Project is an addition to an existing industrial facility and

surrounded by other industries that currently have existing truck and personal-vehicle traffic, this small increase in personal-vehicle traffic would have only a minor adverse impact to the surrounding community, and the decrease in truck traffic would have a minor beneficial impact to the immediate vicinity of the Calapooia Street site; however, the diversion of the trucks to other plants nearby would result in an overall minor increase in impact to other areas of the region.

#### 3.2.7.3 Cumulative Impacts

Other than the proposed EnerG2 facilities, no other projects are planned. No reasonably foreseeable action have been identified that would interact with the Proposed Project to generate cumulative adverse impact to transportation and traffic.

#### 3.2.7.4 Proposed Mitigation Measures

No mitigation measures would be required for transportation and traffic.

### 3.2.8 Human Health and Safety

#### 3.2.8.1 Affected Environment

Oregon Freeze Dry, which owns and controls the warehouse, has an established business in freeze dry processing of foods and pharmaceuticals. They have trained employees, personal protective equipment, and handling procedures in place to ensure the health and safety of its employees and to protect the surrounding community from accidental releases. The SWPC Plan addresses the prevention and response to spills (EnerG2, 2009b).

#### 3.2.8.2 Environmental Consequences

##### 3.2.8.2.1 No Action Alternative

Under the No Action Alternative, construction would not occur; therefore, no impacts would occur to human health and safety within the study area.

##### 3.2.8.2.2 Proposed Project

***Construction***
As proposed, the project would involve renovating the existing facility; no new construction would be required, except for concrete pads, an AST, and paving. During renovation of the existing building there is a potential for workers to come into contact with asbestos-containing material and lead-based paint, if present.

***Operations***
Oregon Freeze Dry would be a key contributor to the operational procedures, including procedures for the health and safety services that would be developed for the proposed plant. As an established operation for similar types of work, Oregon Freeze Dry has experienced personnel who would support the project, thereby reducing the chance of accidents, spills, and leaks.

Materials to be used and stored at the facility, as described in the Section 3.2.5 would include pressurized ASTs for compressed gases, as well as resins to be used as carbon feedstock. Potential hazardous materials and wastes are expected to include used oil, aerosol cans, used batteries, and waste ink. Because these materials and resulting wastes would be stored on site, the potential risk of exposure would be greatest for EnerG2 and Oregon Freeze Dry employees, who are and would be trained in proper safety procedures. The risk of exposure to hazardous materials by the general population would be negligible and would only occur if a release to the environment occurred beyond the site property (e.g., a spill of a liquid) or possibly through dust emissions if air emission control equipment should malfunction.

The process would generate dusts at several steps. These dusts would be controlled through the use of vacuum systems and air pressure-control systems. Personal protective equipment would be required for employees in areas where engineering controls alone are insufficient to eliminate inhalation hazards. The product would consist of powdered, activated carbon, similar to that used in filtration devices. The particle sizes would mostly be in the visible range (particle diameters are mostly greater than about 1 µm). These particles can be effectively filtered by appropriate masks to protect workers, as necessary. Particle shapes are mostly irregular to semi-spherical, and the particles are porous. The process does not produce fiber-shaped or rod-shaped particles that would present a greater inhalation hazard. Nano-fibers and nano-tubes would not be produced.

Preliminary testing by EnerG2 for Occupational Safety and Health Administration (OSHA) compliance indicated that a 2.5 to 3.0 ppm exposure to formaldehyde vapors during freeze-dried product dumping would occur in half-hour increments for a total of four hours for two people spaced over two shifts. The company intends to require appropriate positive pressure breathing apparatus for workers during this processing step as well as use of a vacuum transport system with filter house and scrubber to further collect and limit dusting vapors. EnerG2 and Oregon Freeze Dry are examining a new product formulation to be tested in the current Oregon Freeze Dry plant. A result of that work would be a new analysis of formaldehyde exposure (EnerG2, 2009b). With appropriate implementation of safety procedures and equipment, the impacts on human health and safety are expected to be within OSHA tolerance levels for plant workers and would involve no exposure by the general public.

Because critical hourly or daily functions of strategic importance to the national economy are not reliant on plant operations, the EnerG2 facility is not considered a potential target for intentional destructive acts. Furthermore, the facility would not maintain sufficient quantities of materials that could threaten public health and safety in the surrounding population if released catastrophically. Although the supply of carbon electrode material could be interrupted temporarily by a destructive act, the interruption would be relatively brief and would not be expected to have lasting effects on the economy. The potential for impacts of an intentional destructive act on human health and safety would be reduced through implementation of emergency procedures to be developed by EnerG2.

#### 3.2.8.3 Cumulative Impacts

Other than the proposed EnerG2 facilities, no other projects are planned. No reasonably foreseeable action have been identified that would interact with the Proposed Project to generate cumulative adverse impact to human health and safety.

#### 3.2.8.4 Proposed Mitigation Measures

During construction, safety measures such as providing fencing around the construction site, establishing contained storage areas, and controlling the movement of construction equipment and personnel would reduce the potential for an accident to occur. In addition, if asbestos-containing material or lead-based paint is present, personal protective equipment would likely be used during construction to protect workers from exposure to these materials.

No additional mitigation measures would be required for human health and safety.

## 4.0 REFERENCES

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40 CFR 51.166. Requirements for Preparation, Adoption and Submittal of Implementation Plans: Prevention of Significant Deterioration of Air Quality. U.S. Environmental Protection Agency, Code of w Regulations.

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## 5.0 LIST OF PREPARERS

| **Department of Energy** | | |
|---|---|---|
| John Tabacchi | Project Manager | |
| Mark McKoy | NEPA Document Manager | |
| William Gwilliam | NEPA Document Manager | |
| **EnerG2, Incorporated and Oregon Freeze Dry, Incorporated** | | |
| Chris Wheaton | Chief Operating Officer, EnerG2 | |
| Keith Pund | Operations and Finance Manager, EnerG2 | |
| Gray Johnson | Manager, Project Engineering - Advanced & Specialty Products, Oregon Freeze Dry | |
| Fred Vetter | VP Manufacturing - Advanced & Specialty Products, Oregon Freeze Dry | |
| **PHE** | | |
| **Analyst** | **Responsibilites** | **Degrees and Experience** |
| David Berg | Historic Preservation Specialist | M.A., United States History<br>M.A.C., Historic Preservation<br>20 years experience, 14 years NEPA experience |
| Frederick Carey, P.E. | Senior Engineer, QA/QC | M.S., Environmental Engineering<br>B.S., Civil Engineering<br>17 years experience, 17 years NEPA experience |
| Austina Casey | Technical Writer: Air Quality and Climate | M.S., Environmental Science and Policy<br>B.S., Chemistry<br>18 years experience, 6 years NEPA experience |
| Angela Drum | Senior Word Processor | 10 years experience, 5 years NEPA experience |
| Joseph Grieshaber | Technical Writer: Hydrology and Water Quality, Utilities and Energy Use, Human Health and Safety | M.B.A., Finance<br>M.S., Biology<br>B.S., Biology<br>34 years experience, 21 years NEPA experience |
| Robin Griffin | Assistant Project Manager,<br>Technical Writer: Socioeconomics, Environmental Justice, Cultural | M.S., Environmental Management<br>B.A., English Composition<br>17 years experience, 15 years NEPA experience |
| Jamie Martin-McNaughton | Sharepoint Administrator, QA/QC | B.S., Geology-Biology<br>7 years experience, 5 years NEPA experience |
| Robert Naumann | Technical Writer: Natural Resources and Geology and Soils | B.S., Natural Resources<br>M.S, Environmental Science<br>11 years experience, 11 years NEPA experience |
| Deborah Shinkle | GIS Specialist | B.A., Environmental Studies<br>6 years experience, 5 years NEPA experience |
| Rachel Spangenberg | Technical Writer: Materials and Waste Management | B.S., Biology<br>20 years experience, 15 years NEPA experience |
| Debra Walker | Project Manager | B.S., Biology<br>33 years experience, 20 years NEPA experience |
| Andrea Wilkes | Technical Writer: Noise and Transportation and Traffic | M.A., Science Writing<br>B.S., Civil and Environmental Engineering<br>B.S., English Literature<br>24 years experience, 2 years NEPA experience |

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## 6.0 DISTRIBUTION LIST

R. Foster
tweet37@juno.com

Mr. Ed Gallagher
Library Director
Albany City Library
2450 14th Avenue SE
Albany, OR 97322-6880

Mr. Dennis Griffin, Ph.D, RPA
State Archaeologist
Parks and Recreation Department
State Historic Preservation Office
725 Summer Street, NE
Salem, OR 97301-1266

Ms. Patricia Hamman
Air Permit Coordinator
750 Front Street NE, #120
Salem, OR 97301-1039

Mr. Wes Hare
City Manager
City of Albany
333 Broadalbin Street SW
Albany, OR 97321

Honorable Ted Kulongoski
Governor of Oregon
160 State Capitol
900 Court Street
Salem, OR 97301-4047

Ms. Lindsey Koepke
Assistant Information Manager
Oregon Natural Heritage Information Center
1322 SE Morrison Street
Portland, OR 97214-2423

Plant Manager
Albany-Millersburg Water Treatment Plant
33883 Berry Drive NE
Albany, OR 97322

Dr. Stephen Poyser
Review & Compliance Specialist
Oregon State Historic Preservation Office
725 Summer Street NE, Suite C
Salem, OR 97301-1266

Mr. Eric Peterson, ETPA-088
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Suite 900
Seattle, WA 98101-1127

Ms. Teena Reichgott, ETPA-088
Manager, Environment Review and Sediment Mgmt.
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue
Seattle, WA 98101-1127

Mr. Kevin J. Maurice
Wildlife Biologist
USFWS Oregon State Office
2600 S.E. 98th Avenue, Suite 100
Portland, OR 97266

Mr. Bob Warren
OR ECD Business Development
1401 Willamette Street
Second Floor
Eugene, OR 97401

Water Quality Permit Coordinator
750 Front Street NE, #120
Salem, OR 97301-1039
Albany, OR 97322-6880

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# Appendix A

# Agency Consultation

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# Appendix B

## Public Comments on the Draft Environmental Assessment and Responses from the Department of Energy and EnerG2, Inc.

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**From:** Mark McKoy [mailto:Mark.McKoy@NETL.DOE.GOV]
**Sent:** Saturday, December 05, 2009 10:57 AM
**To:** Debra Walker; Robin Griffin
**Cc:** William Gwilliam
**Subject:** Fwd: Re: Albany, OR species list (EnerG2)

Here is a consultation response to go into the Draft EA and the Admin. Record.

>>> <Kevin_Maurice@fws.gov> 12/4/2009 4:01 PM >>>

http://www.fws.gov/oregonfwo/Species/Lists/RequestList.asp

(See attached file: LINN COUNTY.doc)

Kevin J. Maurice
Wildlife Biologist
USFWS Oregon State Office
2600 SE 98th Ave., Suite 100
Portland, OR 97266
(503) 231-6179
(503) 231-6195 (fax)
Kevin_Maurice@FWS.Gov

"Pierina Fayish" <Pierina.Fayish@NETL.DOE.GOV> 12/04/2009 12:42 PM

To: kevin_maurice@fws.gov
cc: "Mark McKoy" <Mark.McKoy@NETL.DOE.GOV>
Subject: Albany, OR species list (EnerG2)

Kevin--
Thank you for the phone call in response to our letter. Please send the link you mentioned.
Thanks,
Pieri

**FEDERALLY LISTED, PROPOSED, CANDIDATE SPECIES**
**AND SPECIES OF CONCERN**
**UNDER THE JURISDICTION OF THE FISH AND WILDLIFE SERVICE**
**WHICH MAY OCCUR WITHIN LINN COUNTY, OREGON**

# LISTED SPECIES

### Birds

| | | |
|---|---|---|
| Northern spotted owl | *Strix occidentalis caurina* | CH T |

### Fish

***Inland:***

| | | |
|---|---|---|
| Oregon chub | *Oregonichthys crameri* | PCH E |
| Bull trout | *Salvelinus confluentus* | CH T |

### Invertebrates

***Insects:***

| | | |
|---|---|---|
| Fender's blue butterfly | *Icaricia icarioides fenderi* | CH E |

### Plants

| | | |
|---|---|---|
| Golden paintbrush | *Castilleja levisecta* | T |
| Willamette daisy | *Erigeron decumbens var. decumbens* | CH E |
| Bradshaw's desert parsley | *Lomatium bradshawii* | E |
| Kincaid's lupine | *Lupinus sulphureus ssp. kincaidii* | CH T |
| Nelson's checker-mallow | *Sidalcea nelsoniana* | T |

# PROPOSED SPECIES

### None

| | |
|---|---|
| No Proposed Endangered Species | PE |
| No Proposed Threatened Species | PT |

# CANDIDATE SPECIES

### Birds

| | |
|---|---|
| Streaked horned lark | *Eremophila alpestris strigata* |

# SPECIES OF CONCERN

### Mammals

| | |
|---|---|
| White-footed vole | *Arborimus albipes* |
| Red tree vole | *Arborimus longicaudus* |
| California wolverine | *Gulo gulo luteus* |
| Silver-haired bat | *Lasionycteris noctivagans* |
| Long-eared myotis bat | *Myotis evotis* |
| Long-legged myotis bat | *Myotis volans* |
| Yuma myotis bat | *Myotis yumanensis* |
| Camas pocket gopher | *Thomomys bulbivorus* |

### Birds

| | |
|---|---|
| Northern goshawk | *Accipiter gentilis* |
| Western burrowing owl | *Athene cunicularia hypugaea* |
| Black tern | *Chlidonias niger* |
| Olive-sided flycatcher | *Contopus cooperi* |
| Harlequin duck | *Histrionicus histrionicus* |
| Yellow-breasted chat | *Icteria virens* |
| Acorn woodpecker | *Melanerpes formicivorus* |
| Lewis' woodpecker | *Melanerpes lewis* |
| Mountain quail | *Oreortyx pictus* |
| Band-tailed pigeon | *Patagioenas fasciata* |
| Oregon vesper sparrow | *Pooecetes gramineus affinis* |
| Purple martin | *Progne subis* |

## Reptiles and Amphibians

| | |
|---|---|
| Northern Pacific pond turtle | *Actinemys marmorata marmorata* |
| Coastal tailed frog | *Ascaphus truei* |
| Oregon slender salamander | *Batrachoseps wrighti* |
| Northern red-legged frog | *Rana aurora aurora* |
| Foothill yellow-legged frog | *Rana boylii* |
| Cascades frog | *Rana cascadae* |

## Fish

| | |
|---|---|
| Malheur mottled sculpin | *Cottus bairdi ssp.* |
| Pacific lamprey | *Lampetra tridentata* |
| Coastal cutthroat trout | *Oncorhynchus clarki ssp* |

## Invertebrates

***Insects:***

| | |
|---|---|
| Cascades apatanian caddisfly | *Apatania tavala* |
| Mt. Hood primitive brachycentrid caddisfly | *Eobrachycentrus gelidae* |
| Tombstone Prairie farulan caddisfly | *Farula reaperi* |
| Tombstone Prairie oligophlebodes caddisfly | *Oligophlebodes mostbento* |

***Clams:***

| | |
|---|---|
| California floater mussel | *Anodonta californiensis* |

## Plants

| | |
|---|---|
| Pink sand-verbena | *Abronia umbellata ssp. breviflora* |
| Howell's bentgrass | *Agrostis howellii* |
| Bog anemone | *Anemone oregana var. felix* |
| Hell's Canyon rock-cress | *Arabis hastatula* |
| Mountain grape fern | *Botrychium montanum* |
| Cliff paintbrush | *Castilleja rupicola* |
| Cold-water corydalis | *Corydalis aquae-gelidae* |
| Willamette Valley larkspur | *Delphinium oreganum* |
| Wayside aster | *Eucephalus vialis* |
| Shaggy horkelia | *Horkelia congesta ssp. congesta* |
| Thin leaved peavine | *Lathyrus holochlorus* |
| Whitetop aster | *Sericocarpus rigidus* |

# DELISTED SPECIES

# FEDERALLY LISTED, PROPOSED, CANDIDATE SPECIES AND SPECIES OF CONCERN UNDER THE JURISDICTION OF THE FISH AND WILDLIFE SERVICE WHICH MAY OCCUR WITHIN LINN COUNTY, OREGON

## Birds

| | |
|---|---|
| American Peregrine falcon | *Falco peregrinus anatum* |
| Bald eagle | *Haliaeetus leucocephalus* |

## Definitions:

Listed Species: An endangered species is one that is in danger of extinction throughout all or a significant portion of its range. A threatened species is one that is likely to become endangered in the foreseeable future.

Proposed Species: Taxa for which the Fish and Wildlife Service or National Marine Fisheries Service has published a proposal to list as endangered or threatened in the Federal Register.

Candidate Species: Taxa for which the Fish and Wildlife Service has sufficient biological information to support a proposal to list as endangered or threatened.

Species of Concern: Taxa whose conservation status is of concern to the U.S. Fish and Wildlife Service (many previously known as Category 2 candidates), but for which further information is still needed. Such species receive no legal protection and use of the term does not necessarily imply that a species will eventually be proposed for listing.

Delisted Species: A species that has been removed from the Federal list of endangered and threatened wildlife and plants.

## Key:

| | |
|---|---|
| E | Endangered |
| T | Threatened |
| CH | Critical Habitat has been designated for this species |
| PE | Proposed Endangered |
| PT | Proposed Threatened |
| PCH | Critical Habitat has been proposed for this species |

## Notes:

Marine & Anadromous Species: Please consult the National Marine Fisheries Service (NMFS) (http://www.nmfs.noaa.gov/pr/species/) for marine and anadromous species. The National Marine Fisheries Service (NMFS) manages mostly marine and anadromous species, while the U.S. Fish and Wildlife Service manages the remainder of the listed species, mostly terrestrial and freshwater species.

Table A-1 summarizes the list of species provided by the USFWS which may occur in Linn County, their typical habitat requirements, and the likelihood of the species occurring within the project site.

**Table A-1. Linn County Federally-protected Species**

| Common Name | Latin Name | Federal Status | Habitat | Study Area Characteristics and Likelihood of Occurrence |
|---|---|---|---|---|
| **Plants** | | | | |
| Golden paintbrush | *Castilleja levisecta* | Threatened | Found in open grasslands often on glacially derived soils: specifically, gravelly glacial outwash or on clayey glacio-lacustrine sediments in outcrops. | Due to sites past agricultural and industrial disturbance, lack of habitat, and periodic maintenance; presence of species is highly unlikely. |
| Willamette daisy | *Erigeron decumbens var. decumbens* | Endangered | Heavy soils in seasonally wet native or dry upland prairie grasslands | Due to sites past agricultural and industrial disturbance and periodic maintenance within the area; presence of species is highly unlikely. |
| Bradshaw's desert parsley | *Lomatium bradshawii* | Endangered | Moist meadows and remnant prairie patches at low elevations. | Habitat not present within study area |
| Kincaid's lupine | *Lupinus sulphureus ssp. kincaidii* | Threatened | Native upland prairies as well as open oak woodlands. | Habitat not present within study area |
| Nelson's checker-mallow | *Sidalcea nelsoniana* | Threatened | Found growing in seasonally wet soils in a wide variety of habitats including the prairie/woodland border, grass meadows, drier sedge meadows, and disturbed areas. | Due to sites past agricultural and industrial disturbance and periodic maintenance within the area; presence of species is highly unlikely. |
| Pink sand-verbena | *Abronia umbellata ssp. breviflora* | Species of Concern | Pink sandverbena inhabits open sandy beaches, typically at or below the zone of driftwood accumulation and away from sand dominated by introduced European beachgrass. | Habitat not present within study area |
| Howell's bentgrass | *Agrostis howellii* | Species of Concern | Moist, shady cliffs, canyon walls and talus, often in waterfall spray zones. | Habitat not present within study area |
| Bog anemone | *Anemone oregana var. felix* | Species of Concern | Moist, open woods, moderate to mid-elevations in the | Habitat not present within study area |

| Common Name | Latin Name | Federal Status | Habitat | Study Area Characteristics and Likelihood of Occurrence |
|---|---|---|---|---|
| | | | mountains.[8] | |
| Hell's Canyon rock-cress | *Arabis hastatula* | Species of Concern | Rocky outcrops and mountain ridges. | Habitat not present within study area |
| Mountain grape fern | *Botrychium montanum* | Species of Concern | Dark coniferous forests, usually near swamps and streams. | Habitat not present within study area |
| Cliff paintbrush | *Castilleja rupicola* | Species of Concern | Rock crevices and rocky slopes, usually above timberline. | Habitat not present within study area |
| Cold-water corydalis | *Corydalis aquae-gelidae* | Species of Concern | Found growing in or near cold flowing water, including seeps and small streams, often occurring within the stream channel itself. | Habitat not present within study area |
| Willamette Valley larkspur | *Delphinium oreganum* | Species of Concern | Well drained areas of native prairie, especially roadsides that have escaped development.[13] | Due to sites past agricultural and industrial disturbance and periodic maintenance within the area; presence of species is highly unlikely. |
| Wayside aster | *Eucephalus vialis* | Species of Concern | Coniferous forests. | Habitat not present within study area |
| Shaggy horkelia | *Horkelia congesta ssp. congesta* | Species of Concern | Meadows and open woods at low elevations. | Due to sites past agricultural and industrial disturbance and periodic maintenance within the area; presence of species is highly unlikely. |
| Thin leaved peavine | *Lathyrus holochlorus* | Species of Concern | Prairie-oak woodland ecotone, which has historically been maintained by fire. | Due to sites past agricultural and industrial disturbance, lack of habitat and periodic maintenance within the area; presence of species is highly unlikely. |
| Whitetop aster | *Sericocarpus rigidus* | Species of Concern | Open grasslands surrounded by Douglas fir trees (Pseudotsuga menziesii). The grasslands are typically moist most of the year, but dry, or moisture-stressed, during late summer. | Habitat not present within study area |
| **Insects** | | | | |
| Fender's blue butterfly | *Icaricia icarioides fenderi* | Endangered | Endemic to the native upland prairies of the Willamette Valley in Oregon. | Habitat not present within study area |

| Common Name | Latin Name | Federal Status | Habitat | Study Area Characteristics and Likelihood of Occurrence |
|---|---|---|---|---|
| Cascades apatanian caddisfly | *Apatania tavala* | Species of Concern | Aquatic | Habitat not present within study area |
| Mt. Hood primitive brachycentrid caddisfly | *Eobrachycentrus gelidae* | Species of Concern | Aquatic | Habitat not present within study area |
| Tombstone Prairie farulan caddisfly | *Farula reaperi* | Species of Concern | Aquatic | Habitat not present within study area |
| Tombstone Prairie oligophlebodes caddisfly | *Oligophlebodes mostbento* | Species of Concern | Aquatic | Habitat not present within study area |
| **Invertebrates** | | | | |
| California floater mussel | *Anodonta californiensis* | Species of Concern | Aquatic | Habitat not present within study area |
| **Reptiles/Amphibians** | | | | |
| Northern Pacific pond turtle | *Actinemys marmorata marmorata* | Species of Concern | Aquatic | Habitat not present within study area |
| Coastal tailed frog | *Ascaphus truei* | Species of Concern | Aquatic | Habitat not present within study area |
| Oregon slender salamander | *Batrachoseps wrighti* | Species of Concern | Large, well-decayed logs and stumps in old growth and mature forests. | Habitat not present within study area |
| Northern red-legged frog | *Rana aurora aurora* | Species of Concern | Humid forests, woodlands, grasslands, and streamsides with plant cover. | Habitat not present within study area |
| Foothill yellow-legged frog | *Rana boylii* | Species of Concern | Frequents shallow, slow, gravelly streams and rivers with sunny banks, Habitat not present within study area in forests, chaparral, woodlands. | Habitat not present within study area |
| Cascades frog | *Rana cascadae* | Species of Concern | Inhabits wet mountain areas in open coniferous forests to near timberline, including small streams, small pools in meadows, lakes, bogs, ponds, and marshy areas near streams. | Habitat not present within study area |
| **Fish** | | | | |
| Oregon chub | *Oregonichthys crameri* | Endangered | Aquatic | Habitat not present within study area |
| Bull trout | *Salvelinus confluentus* | Threatened | Aquatic | Habitat not present within study area |
| Malheur mottled sculpin | *Cottus bairdi ssp.* | Species of Concern | Aquatic | Habitat not present within study area |

| Common Name | Latin Name | Federal Status | Habitat | Study Area Characteristics and Likelihood of Occurrence |
|---|---|---|---|---|
| Pacific lamprey | *Lampetra tridentata* | Species of Concern | Aquatic | Habitat not present within study area |
| Coastal cutthroat trout | *Oncorhynchus clarki ssp.* | Species of Concern | Aquatic | Habitat not present within study area |
| **Birds** | | | | |
| Northern spotted owl | *Strix occidentalis caurina* | Threatened | Northern Spotted Owls inhabit old growth forests and younger forests with remnants of larger trees. | Habitat not present within study area |
| Streaked horned lark | *Eremophila alpestris strigata* | Candidate | Streaked horned larks are found in short-grass habitats and areas with bare ground, including spits, estuaries, sand dunes and Garry oak meadows, as well as some modified areas such as pastures, playing fields, airports and roadsides. Nests are generally built in open, barren areas that are sparsely vegetated or have very short vegetation. | Due to sites industrial use, lack of habitat, and periodic maintenance; presence of species is highly unlikely. |
| Northern goshawk | *Accipiter gentilis* | Species of Concern | Coniferous and deciduous forests. During their nesting period, they prefer mature forests consisting of a combination of old, tall trees with intermediate canopy coverage and small open areas within the forest for foraging. | Habitat not present within study area |
| Western burrowing owl | *Athene cunicularia hypugaea* | Species of Concern | Optimum habitat typified by short vegetation and presence of fresh small mammal burrows. Found in open grasslands, especially prairie, plains, and savanna. | Due to sites industrial use, lack of habitat, and periodic maintenance; presence of species is highly unlikely. |
| Black tern | *Chlidonias niger* | Species of Concern | Inland marshes and sloughs with fairly dense cattail or other marsh vegetation and pockets of open water. | Habitat not present within study area |
| Olive-sided | *Contopus cooperi* | Species of | Forest and woodland, | Habitat not present |

| Common Name | Latin Name | Federal Status | Habitat | Study Area Characteristics and Likelihood of Occurrence |
|---|---|---|---|---|
| flycatcher | | Concern | especially in burned-over areas with standing dead trees, in taiga, subalpine coniferous forest and mixed coniferous-deciduous forest. | within study area |
| Harlequin duck | *Histrionicus histrionicus* | Species of Concern | Aquatic | Habitat not present within study area |
| Yellow-breasted chat | *Icteria virens* | Species of Concern | Riparian woodland, forest, and scrub. | Habitat not present within study area |
| Acorn woodpecker | *Melanerpes formicivorus* | Species of Concern | Pine-oak woodlands and riparian corridors. | Habitat not present within study area |
| Lewis' woodpecker | *Melanerpes lewis* | Species of Concern | Logged or burned out areas; prefer old growth woodlands rather than dense forest. | Habitat not present within study area |
| Mountain quail | *Oreortyx pictus* | Species of Concern | Typically found in shrub-dominated communities. Also found in mixed conifer/ hardwood, redwood, pine, white fir, red fir, pinyon-juniper, and hardwood forests. May occur in foothill woodlands if shrubs are present, in aspen stands associated with sagebrush, and in riparian and oak woodlands. | Habitat not present within study area |
| Band-tailed pigeon | *Patagioenas fasciata* | Species of Concern | Foothill woodlands and montane forests, chaparral with an abundance of oak and occasionally subalpine forests. | Habitat not present within study area |
| Oregon vesper sparrow | *Pooecetes gramineus affinis* | Species of Concern | Dry, open grasslands; uniformly structured grassy areas such as pastures and hayfields appear to be avoided. | Due to sites industrial use, lack of habitat, and periodic maintenance; presence of species is highly unlikely. |
| Purple martin | *Progne subis* | Species of Concern | Open water, grassy fields, and recent clearcuts and burns with brush and young trees. | Due to sites industrial use, lack of habitat, and periodic maintenance; presence of species is highly unlikely. |
| **Mammals** | | | | |
| White-footed vole | *Arborimus albipes* | Species of Concern | Riparian; alder and hazel thickets. | Habitat not present within study area |

| Common Name | Latin Name | Federal Status | Habitat | Study Area Characteristics and Likelihood of Occurrence |
|---|---|---|---|---|
| Red tree vole | *Arborimus longicaudus* | Species of Concern | Old-growth forests. | Habitat not present within study area |
| California wolverine | *Gulo gulo luteus* | Species of Concern | Subalpine and alpine forests; also alpine meadows, forests of lodgepole pine and red fir. | Habitat not present within study area |
| Silver-haired bat | *Lasionycteris noctivagans* | Species of Concern | Temperate, northern hardwoods with ponds or streams nearby. | Habitat not present within study area |
| Long-eared myotis bat | *Myotis evotis* | Species of Concern | Mixed coniferous forests. | Habitat not present within study area |
| Long-legged myotis bat | *Myotis volans* | Species of Concern | Forests. | Habitat not present within study area |
| Yuma myotis bat | *Myotis yumanensis* | Species of Concern | Variety of habitats, ranging from juniper and riparian woodlands to desert regions near open water. | Habitat not present within study area |
| Camas pocket gopher | *Thomomys bulbivorus* | Species of Concern | Rich soil of the Willamette Valley in central Oregon. | Due to sites industrial use, and periodic maintenance; presence of species is highly unlikely. |

# OREGON NATURAL HERITAGE INFORMATION CENTER

OSU Oregon State University

*Institute for Natural Resources*
1322 SE Morrison Street
Portland, Oregon 97214-2423
503.731.3070
*http://oregonstate.edu/ornhic*

Tuesday, November 10, 2009

Robin Griffin
Potomac-Hudson Engineering
7830 Old Georgetown Road, Ste 220
Bethesda, MD 20814

Dear Robin Griffin:

Thank you for requesting information from the Oregon Natural Heritage Information Center (ORNHIC). We have conducted a data system search for rare, threatened and endangered plant and animal records for your Electric Drive Vehicle Battery and Component Manufacturing Facility Project at Oregon Freeze Dry property near Albany.

Sixteen (16) records total were noted within a two-mile radius of your project site and are included on the enclosed computer printouts.

Please remember that the lack of rare element information from a given area does not mean that there are no significant elements there, only that there is no information known to us from the site. To assure that there are no important elements present, you should inventory the site, at the appropriate season.

This data is confidential and for the specific purposes of your project and is **not to be distributed**. Please also note that as our database is continually updated, the data in this report should be considered current for one year from the date it was generated and should not be cited after **November 2010**.

Please forward the included invoice to the appropriate party in your organization.

If you need additional information or have any questions, please do not hesitate to contact me.

Sincerely,

Lindsey Koepke
Assistant Information Manager
lindsey.koepke@oregonstate.edu
503.731.3070 x104

encl.: **invoice (H-111009-LAK8)**
**computer printouts and data key**

Oregon
Theodore R. Kulongoski, Governor

**Parks and Recreation Department**
State Historic Preservation Office
725 Summer St NE, Ste C
Salem, OR 97301-1266
(503) 986-0671
Fax (503) 986-0793
www.oregonheritage.org

February 05, 2010

Ms. Robin Griffin
Potomac-Hudson Engineering
7830 Old Georgetown Rd STE 220
Bethesda, MD 20814

RE: SHPO Case No. 10-0199
Energ2 Ultracapcitor Energy Storage Media Production Facility Proj
3000 SW Calapooia, Albany, Linn County

Dear Ms. Griffin:

We have reviewed the materials submitted on the project referenced above, and we concur with the determination that the property is not eligible for the National Register of Historic Places in accordance with 36 CFR Part 60.4. Additionally, there will be no historic properties affected for this undertaking.

Our response here is to assist you with your responsibilities under Section 106 of the National Historic Preservation Act (per 36 CFR Part 800). Please feel free to contact me if you have further questions, comments or need additional assistance.

Sincerely,

Stephen P. Poyser, Ph.D.
Review and Compliance Specialist
(503) 986-0686 or Stephen.Poyser@state.or.

*As of August 2009, a redesigned form is available for Section 106 and ORS 358.653 projects. Find it on our updated and expanded Review and Compliance website www.oregonheritage.org. Click on the "Review and Compliance" link.*

Surveyor/Agency Potomac-Hudson Engineering/Dept. of Energy. Date recorded November 21, 2009

# SECTION 106 LEVEL OF EFFECT FORM

| | |
|---|---|
| Agency/Project: EnerG2, Inc. Electric Drive Vehicle Battery Component Manufacturing Facility. | |
| Property Name: Oregon Freeze Dry | |
| Street Address: 3000 SW Calapooia Street | City, County: Albany, Linn County |

**Preliminary Finding of Effect:**

☒ No Historic Properties Affected ☐ No Historic Properties Adversely Affected ☐ Historic Properties Adversely Affected

**State Historic Preservation Office Comments:**

☑ Concur ☐ Do Not Concur:
- ☐ No Historic Properties Affected
- ☐ No Historic Properties Adversely Affected
- ☐ Historic Properties Adversely Affected

Signed _____ Date 2/5/2010

Comments:

Oregon
Theodore R. Kulongoski, Governor

**Parks and Recreation Department**
State Historic Preservation Office
725 Summer St NE, Ste C
Salem, OR 97301-1266
(503) 986-0671
Fax (503) 986-0793
www.oregonheritage.org

February 11, 2010

Ms. Robin Griffin
Potomac-Hudson Engineering
7830 Old Georgetown Rd STE 220
Bethesda, MD 20814

RE: SHPO Case No. 10-0199
Energ2 Ultracapcitor Energy Storage Media Production Facility Proj
FOE
USDOE/EnerG2/Oregon Freeze Drv
3000 SW Calapooia, Albany, Linn County

Dear Ms. Griffin:

Our office recently received a request to review the proposal for the project referenced above. In checking our statewide cultural resource database, I find that there have been no previous cultural resource surveys completed near the proposed project area. However, the project area lies within an area generally perceived to have a high probability for possessing archaeological sites and/or buried human remains.

While not having sufficient knowledge to predict the likelihood of cultural resources being within your project area, extreme caution is recommended during future ground disturbing activities. ORS 358.905 and ORS 97.740 protect archaeological sites and objects and human remains on state public and private lands in Oregon. If any cultural material is discovered during construction activities, all work should cease immediately until a professional archaeologist can assess the discovery. If your project has a federal nexus (i.e., federal funding, permitting, or oversight) please coordinate with your federal agency representative to ensure that you are in compliance with Section 106 of the NHPA.

If you have any questions about my comments or would like additional information, please feel free to contact our office at your convenience. In order to help us track your project accurately, please be sure to reference the SHPO case number above in all correspondence.

Dennis Griffin, Ph.D., RPA
State Archaeologist
(503) 986-0674
dennis.griffin@state.or.us

Oregon
Theodore R. Kulongoski, Governor

**Parks and Recreation Department**
State Historic Preservation Office
725 Summer St NE, Ste C
Salem, OR 97301-1266
(503) 986-0671
Fax (503) 986-0793
www.oregonheritage.org

February 16, 2009

Ms. Robin Griffin
Potomac-Hudson Engineering
7830 Old Georgetown Road, Suite 220
Bethesda, MD 20814

Dear Ms. Griffin:

Thank you for contacting Oregon SHPO re: the proposed Energ2 facility in Albany, OR. As stated in your letter, because there are no historic resources (50 years or older) within the APE, the project will not have an adverse effect on any above-ground resources under Section 106. You should also contact Oregon SHPO's State Archaeologist, Dr. Dennis Griffin, to make sure that has he no concerns as well. If you have questions or need additional information, please contact me at the above address.

Sincerely,

Stephen P. Poyser, PhD
Review and Compliance

Surveyor/Agency Potomac-Hudson Engineering/Dept. of Energy. Date recorded November 21, 2009

## SECTION 106 LEVEL OF EFFECT FORM

| | |
|---|---|
| Agency/Project: | EnerG2, Inc. Electric Drive Vehicle Battery Component Manufacturing Facility. |
| Property Name: | Oregon Freeze Dry |
| Street Address: | 3000 SW Calapooia Street |
| City, County: | Albany, Linn County |

**Preliminary Finding of Effect:**

☒ No Historic Properties Affected ☐ No Historic Properties Adversely Affected ☐ Historic Properties Adversely Affected

**State Historic Preservation Office Comments:**

☐ Concur ☐ Do Not Concur: ☑ No Historic Properties Affected
☐ No Historic Properties Adversely Affected
☐ Historic Properties Adversely Affected

Signed _____ Date 2/16/2010

Comments:

Provide written description of the project, and its potential effects on the subject property per 36 CFR 800. Include maps, drawings, and photographs as necessary to effectively describe and discuss the project. Use continuation sheets as needed.

The Department of Energy's (DOE) National Energy Technology Laboratory (NETL) proposes to fund a project under the American Reinvestment and Recovery Act (ARRA). The project would involve the construction and operation of an Electric Drive Vehicle Battery and Component Manufacturing Facility. The proposed project is located on EnerG2, Oregon Freeze Dry property. Energ2 is a research and development partner with Oregon Freeze Dry, The project will be located on land currently owned by Oregon Freeze Dry, 3000 SW Calapooia Street, Albany, in Linn County, Oregon. The industrial park is located on the southwest side of Albany, an incorporated town located between Eugene and Salem. The Oregon Freeze Dry site currently operates the site as a distribution center. The site is in an industrial area and there are no known historic properties within one quarter mile of the project area.

The site consists of a 72,000 square foot warehouse, partially paved access drive, loading docks, and parking lot. The warehouse building is primarily open storage space, but includes 2,000 square feet of office space. The site is defined as the existing warehouse, access road, and parking area comprising approximately 5.4 acres. The site is proposed to be split from the larger parcel, which is also owned by Oregon Freeze Dry.

The Proposed Action involves the reconfiguration of an existing building for a nano-structured carbon manufacturing facility. The construction phase of this project would involve the interior reconfiguration of the existing warehouse facility such that 36,000 square feet would be partitioned to be used for the intermediate production of ultracapacitor energy storage media. New construction would involve installation of process equipment including 50,000-pound carbon dioxide tank and an 110,000 pound liquid nitrogen above ground tank. The raw material would be provided by a third party and would be frozen and freeze-dried in the new facility. Two kilns would be located in the new facility where the material will be pyrolyzed and activated.

(See Continuation Sheet)

Surveyor/Agency_____ Date recorded_____

**Comments on EnerG2 EA received from Eric Peterson, via Telephone call with DOE on February 24, 2010.**

Eric Peterson, U.S. EPA, Seattle, WA. 206-553-6382.

1. The EA says that the project would result in a net benefit re CO2 emissions from vehicles that use products manufactured from the materials to be made by this project. U.S. EPA would like to see more of a "life cycle" review or analysis of the benefit of the proposed project. In other words, if the EnerG2 project product is used to manufacture ultra-capacitors for 60,000 EDVs/year, how much reduction in CO2 emissions might we expect, on a life-cycle basis.

2. There is another DOE EA on a proposed project in Symrna, TN in which Nissan would manufacture electric vehicles (EA-1678). This EA includes some level of life cycle benefit analysis. U.S. EPA would like to see a similar analysis for the EnerG2 project, if feasible.

3. Some additional description of the benefit in CO2 emissions reductions is needed.

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# DOE Response to USEPA Comments on Draft Environmental Assessment for EnerG2, Inc.

| Comment Number | Public Comment on EnerG2 EA from U.S. Environmental Protection Agency (Region 10) | Response |
|---|---|---|
| 1 | The EA says that the project would result in a net benefit regarding $CO_2$ emissions from vehicles that use products manufactured from materials to be made by this project. U.S. EPA would like to see more of a "life cycle" review or analysis of the benefit of the proposed project. In other words, if the EnerG2 project product is used to manufacture ultra-capacitors for 60,000 EDVs peryear, how much reduction in $CO_2$ emissions might we expect, on a life-cycle basis. | *DOE's and EnerG2's ability to estimate the net benefit of products to be manufactured as a result of this project is highly limited by our inability to forecast the market utilization of ultracapacitors using EnerG2's products. Ultracapacitors might be used in all types of hybrid electric vehicles as well as in all-electric vehicles. Because these vehicles cover a considerable spectrum of hydrocarbon-fuel efficiency benefit, ranging from only a few percentage points in increased hydrocarbon fuel efficiency up to zero onboard usage of hydrocarbon fuels, it is necessary to have an estimate of market utilization across this spectrum. At the present time, no such forecasts are available. Even for all-electric vehicles, efficiency in usage of plug-in sources of electricity will vary with a number of vehicle design features, including the utilization of ultracapacitors. EnerG2 has made an initial estimate of lifecycle benefit, although a few of the key assumptions are pure speculation (because nothing better exists and nothing better is expected in the near-term).* |
| 2 | There is another DOE EA on a proposed project in Symrna, TN in which Nissan would manufacture electric vehicles (EA-1678). This EA includes some level of life cycle benefit analysis. U.S. EPA would like to see a similar analysis for the EnerG2 project, if feasible. | *DOE reviewed DOE/EA-1678. While the analyses and results presented in this EA are inspiring, these analyses are based on a reasonable forecast of the type of vehicle that would use the products to be produced by that project, as well as the type of vehicles that might be supplanted by the vehicles that would be produced. While the hybrid and electric vehicle market for ultracapacitors (and EnerG2's products) is sure to develop, such certainty in the type of market adoption does not exist at this time.* |
| 3 | Some additional description of the benefit in $CO_2$ emissions reductions is needed. | *For the reasons explained in the Responses to Comments 1 and 2, DOE and EnerG2 cannot estimate the benefit quantitatively to a reasonable degree. However, to illustrate the fact that market adoption of EnerG2's products, and market adoption of hybrid electric vehicles and all-electric vehicles in general, are the most critical factors in reducing vehicular $CO_2$ emissions, EnerG2 has provided illustrative calculations (see attached - . Net CO2 Emissions Analysis – EnerG2 Albany Facility).* |

**Net $CO_2$ Emissions Analysis – EnerG2 Albany Facility**

The EnerG2 advanced carbon manufacturing facility planned for Albany, Oregon is expected to have a net beneficial reduction in greenhouse gas emissions, including emissions of carbon dioxide ($CO_2$). As noted in the Draft Environmental Assessment, production capacity of the proposed plant would supply at least 60,000 Electric Drive Vehicles ("EDVs") per year. It is the increased availability and use of these EDVs on US roads and highways that could create a significant reduction in $CO_2$ emissions.

The use of ultracapacitors in EDVs will increase in accordance with the performance, affordability and availability of EnerG2's carbon materials, following commencement of plant operations. Increased use of ultracapacitors in EDVs will have two important impacts on vehicular $CO_2$ emissions:

1. ***Improved Fuel Efficiency*** – Ultracapacitors improve the rate at which braking energy (which is otherwise wasted) can be stored and released for subsequent use in hybrid vehicles. Today, approximately 45 percent of the kinetic energy available in a breaking event is lost (in the form of heat) due to the inability of the battery to quickly store the energy. Ultracapacitors using EnerG2 carbons can completely recharge in a matter of minutes rather than hours. As a result, energy loss during breaking events for cars equipped with ultracapacitor-based energy storage is approximately 5 percent. The 40 percentage point improvement in energy capture and reuse translates into improved fuel efficiency for hybrid vehicles.

2. ***Accelerated Market Penetration*** – Ultracapacitors will improve the cost and performance of EDVs, especially hybrid vehicles. First, the use of ultracapacitors should reduce the cost of the energy storage pack (because less battery storage is needed), both for initial sale and for replacement, thereby reducing the total cost of ownership of the vehicle. Second, the power delivery profiles of ultracapacitors are orders-of-magnitude better than those of batteries, which provide more efficient and better acceleration from a stop. As cost declines and performance increases, greater numbers of buyers will select hybrid vehicles over internal combustion engine vehicles.

Assuming that in a given year half of the 60,000 vehicles containing EnerG2 carbons are sold to consumers who were already planning to buy hybrid vehicles and the other half are sold to consumers who would have otherwise purchased conventional vehicles, the total improvement in $CO_2$ emissions for that year would be at least 75,000 MT/year. This improvement is calculated as follows:

For the 30,000 vehicles that would replace less efficient hybrid vehicles, assume that the 40-percentage point improvement in captured braking energy results in a 10% improvement in experienced fuel efficiency (expressed in mpg). Therefore, using the average fuel consumption of a hybrid 2010 Toyota Prius of approximately 50 mpg (55% city driving, 45% highway), ultracapacitors would create a 5 mpg improvement. Using an EPA conversion factor of 8,887 grams of $CO_2$ per mile per mpg, the $CO_2$ emissions for such an improved efficiency hybrid would be 162.7 grams per mile while the $CO_2$ emissions for an un-improved hybrid would be 179.0 grams per mile. Assuming 15,000 miles driven per year, the improvement is 0.244 metric tons per vehicle per year [(179.0 - 162.7)*15,000 / 1,000,000] or approximately 7,000 MT (metric tons) per year for all 30,000 vehicles.

For consumers purchasing their first hybrid vehicle, assume that the foregone non-hybrid would have achieved 27 mpg; this metric is slightly higher than the current 25 mpg corporate average fuel economy in the United States. Using the same conversion factors described above, this vehicle would have produced

329.1 grams of $CO_2$ per mile compared to 162.6 grams per mile for the same higher-efficiency hybrid described above. This difference will reduce $CO_2$ emissions by 2.5 metric tons per vehicle per year [(329.1 – 162.7)*15,000 / 1,000,000] or 75,000 MT per year for all 30,000 vehicles.

As indicated in the example calculations presented above, accelerating hybrid vehicle adoption in the US market will have the more significant impact on $CO_2$ emissions in the United States. As cost and performance are the two factors currently inhibiting customer acceptance of hybrids and other EDVs, the availability of lower-cost, higher-performance ultracapacitors for such vehicles would increase market adoption. Indeed, it may be highly conservative to assume that only half of the 60,000 annual EDV vehicles supplied by the plant in Albany would be purchased in lieu of conventional vehicles. A faster rate of market adoption for EDVs would only further reduce vehicular $CO_2$ emissions.

The partial offset to these reductions in $CO_2$ emissions will be the direct and indirect production of $CO_2$ from plant operations. As noted in the Draft Environmental Assessment, plant operations are expected to directly produce 1,466 MT / year largely from the kiln operations required to carbonize precursor materials and from the boiler operations used to generate process heat. Note that these emissions may be further reduced by the capture of waste heat (thereby reducing reliance on the boiler) and the capture of $CO_2$ for further process use ($CO_2$ is a primary process input). Neither types of capture of technologies are considered in the EA but may be evaluated for their economy and feasibility as the project progresses.

Indirect $CO_2$ emissions will arise largely from the use of electricity and natural gas to power key process machinery. As noted in the EA, the plant is expected to consume approximately 700,000 kilowatt hours per month, or 8,400 MWh per year. Using a conservative $CO_2$ emissions factor of 0.6 MT of $CO_2$ per MWh of electricity used, the total annual indirect emissions from electricity consumption in the plant is expected to be approximately 5,000 MT / year. However, the prevalence of hydroelectric power in the Pacific Northwest is likely to reduce the actual indirect emissions created by the plant's power consumption.

The plant is also expected to consume 16,000 therms per month of natural gas, or 192,000 therms per year. This amount is equivalent to 19,195 MCF of natural gas. Using a $CO_2$ emissions factor of 0.055 MT of $CO_2$ per MCF of natural gas used, the total annual indirect emissions from natural gas consumption in the plant is expected to be approximately 1,100 MT / year.

The total direct and indirect $CO_2$ emissions from plant operations are expected to be no more than approximately 7,600 MT / year. Notably, this amount is approximately equivalent to the amount of $CO_2$ emissions reduced by consumers driving more efficient hybrid vehicles, as discussed above. This result indicates the beneficial impact of greater market adoption of hybrid vehicles and EDVs, relative to convention internal combustion engine vehicles, by creating a supply of materials that can reduce cost and improve performance of hybrid vehicles and EDVs.

**Comments on EnerG2 EA via email received from R. Foster on Feb 3, 2010**

>>> "tweet37@juno.com" <tweet37@juno.com> 2/2/2010 5:52 PM >>>
Dear DOE, For DOE/EA 1718D January 2010
Toxic air pollutants
3.2.8.2.2 Particle size "mostly" greater then 1 micro meter. Particles after production will be "porous, spherical, irregular"
Dust control is vacuum systems and air pressure control systems.

Wondering about the proposed dust control systems will it be able to capture and remove particulate below 1 micro meter? If people live within a mile east of the plant this particulate level will impact this area. Pm10 and Pm25 are being permitted for release. How much particulate less then Pm2.5 will be released as dust less then l micro meter and will this be production material, finished product release? Finished particles are described as porous, spherical, irregular and not at nanoscale. The total amount of particle below 1 micro meter is not clearly stated in the draft EA.

SAP Ammonia condenser and Acid/base water treatment process- will any of these on site outdoor and indoor stored chemicals react-combine in the air or under rainy conditions within the atmosphere localized over this industrial area? The area as heavy industrial zone contains other industrial production chemical/gas use and release of waste chemicals/gases released to air shed.
SAP safety, are the gas condensor, acid, base and other tanks explosive and could they be a hazard to surrounding residential areas should they leak, explode, burn?
How are tank stored chemicals and gases protected from leaks, spills from none scheduled release of tank contents?

Will this corporation request production of nanoscale fibers, balls, tubes or randomly shaped particles in the future with this production facility? If yes then will they have to complete other EA and or add more controls on production of this sized particle?

How well are the Oregon Freeze Dry storage and production areas protected from cross contamination of this material should this material production process create dust before and after production? Hopefully escaping dust as a biproduct of production will not at be at hazardous levels for workers who have offices in the same building, or who have to walk in or near the production areas.

How is the finished product packaged and shipped? Would this production material be toxic and require specific handling and shipping guidance not mentioned in this draft EA? The draft EA had few details about air scrubbing process and few details about the production or finished product. Mention of acid/base H2O water treatment and Ammonia condenser shows that more then one process is involved and the production will use many chemicals for production of pyrolyzed and activated 1 micron or less particle.

How is raw carbon resin stored?EA said, in totes, which is not defined clearly in the EA. So the carbon resin unspecified raw material is coming from someplace could be put or poured perhaps into production process and then how is the finished product stored for packaging. Is there a secure method/procedure to contain raw and finished fine carbon particle or "ultra capacity energy storage media"? Does the finished product get stored on site before packaging to be sold? If the product is stored, will this be secure and safe from accidental release of finished, unpackaged particles?

Will EPA/ODEQ do any air testing around this site after the start of production to make sure particles of less the 1 micro meter scheduled to be released are not being placed in the airshed? The EA describes particles of 1 mirco meter size as mostly visible. What percent of production will be smaller then 1um

and not visible? Will air cleaning systems capture these particles as product or as ash/residue to be resold/recycled for other uses? Will air stagnation and inversions of these particles become a problem in this area with combine release of particulates from all the manufacturers in this industrial zone? Joint area air quality degredation due to combine atmospheric release of waste/particulate,gas, liquid vapours at the same time.

EA 3.2.1.3 Emission Control Devices "actual emissions are to be held well below permitted levels" Pm10 and Pm25 with production size molecules to be visible and about 1 um in size. Hopefully this percent of produce is captured or can be contained in air emissions engineering which are not clearly defined in the draft ea.

EA 2.3 Alternatives
Details variance in NEPA 10 CFR 1021.216 DOE General Council. Wondering what the variance are as I did not read about this in the draft EA.
Would the company be able to contribute to carbon reduction/carbon conservation by reusing recycling waste heat to another production line or to some other reclaimable heat use such as redirecting production heat for use in area home heating?

Waste ash and other non target materials generated in production will be sold, reclaimed, so wondering how these secondary wastes will be dealt with should they be even more toxic and hazardous then the materials they produce for battery manufacture?

Thanks, R. Foster

# DOE and EnerG2 Response to R. Foster Comments on Draft Environmental Assessment for EnerG2, Inc.

| Comment Number | Public Comment on EnerG2 EA from R. Foster | DOE Response | EnerG2 Response |
|---|---|---|---|
| 1 | Section 3.2.8.2.2 Particle size "mostly" greater then 1 micro meter. Particles after production will be "porous, spherical, irregular". Dust control is vacuum systems and air pressure control systems**.** | *Any air-quality hazard would occur for workers but not for the general public. Because of the hazards to workers, engineering controls (e.g., vacuum systems and filters) would be installed in the facility to restrict airborne particulates and vapors from going into the work space of the workers. Filters and cleanup devices would be used to limit emissions to the environment. Where needed, workers would use personal protective equipment (e.g, dust masks); however, almost all hazards would be removed by the engineering controls so there would be minimal need for personal protective equipment. Because the detailed design has not been done on the project, the EA does not report emissions for particulates and VOCs. Emissions of PM and VOCs will be calculated as the design work progresses, and the calculated values would be used in the permit application (or compliance with PSELs) for this facility as a minor source.* | *All fugitive small particles created during EnerG2's production processes will be contained within the proposed facility by physical barriers, vacuum systems, closed conveyances and air pressure control systems. At no time will the facility release product particles into the external environment – all exhaust streams pass through filters. EnerG2's process equipment chain is specifically designed to minimize human handling of process intermediates and of the final product and virtually eliminates the potential for product exposure outside of the facility.*<br><br>*Inside the facility, there is a potential for worker exposure to dust in two steps: (1) a solids crushing step and (2) the unloading of dried gel from the drying systems, with particles in step (2) being the smallest and most likely to become airborne inside the facility. All downstream steps (kiln processes, product milling, and finished goods packaging) will be designed as a contained process chain with no opportunity for dust exposure.*<br><br>*EnerG2 has analyzed the dried gel particles from step (2) to determine the nature of the particles. Dried gel was sieved through a 38-micron mesh; about 4% (by weight) of the dried gel sample passed through the sieve. Material that passed through the sieve was further examined for its particle size distribution by passing laser light through particles suspended in a liquid and analyzing the light scatter caused by the particles, a common method for obtaining particle size distribution of solid particles.*<br><br>*The data indicate that the smallest sieved particles are about 0.4 microns with the mean size at approximately 23 microns. All of these particles are smaller than the smallest particle visible to the unaided human eye, which is approximately 100 microns. In addition, it can be calculated that about 0.4% of any given batch of material could have potential to be respirable dust (particles less than 4 microns), if not further abated.* |

## DOE and EnerG2 Response to R. Foster Comments on Draft Environmental Assessment for EnerG2, Inc.

| Comment Number | Public Comment on EnerG2 EA from R. Foster | DOE Response | EnerG2 Response |
|---|---|---|---|
| | | | *Using these data, EnerG2 also calculated the maximum potential volume of particles in the facility's air at any one time. Assuming that the portion of the facility exposed to the dust has an air volume of 10,000 $m^3$ and assuming an exposed dryer tray load of about 6 kg (our current expectation), the theoretical maximum concentration of particles less than 4 microns if all available dust on the tray were to become simultaneously airborne (a highly unlikely event) is: 2.4 mg / $m^3$. This value is below the American Conference of Governmental Industrial Hygienists (ACGIH) recommendation of 3 mg / m3 for "respirable particles" (particles less than 4 microns). As it is highly unlikely that all sub-4 micron particles would be airborne at the same time, normal respirable dust concentrations would be well below safety thresholds.*<br><br>*Regardless of the likelihood of low concentrations, the facility itself would be equipped to minimize the exposure of workers to the particles. Physical barriers combined with engineered pressure and airflow controls would remove any particles from the air and would cause them to be trapped in replaceable filters. As a final protective measure, all personnel in the area of the two dust-creating stages of the process would be required to wear personal protective equipment, including filtration dust masks.* |
| 2 | Wondering about the proposed dust control systems will it be able to capture and remove particulate below 1 micro meter. | *Dust control systems would be used to minimize dust emitted to the atmosphere and air-borne dust in the work areas of the plant. Manufacturers of filters usually provide data on capture efficiencies for particles of various sizes. Such capture data would therefore become available for this project during the detailed design stage when filters are selected.* | *Please see Response to Comment 1.*<br><br>*Areas of the facility where dust can be created will be enclosed and negatively pressured to retain any fugitive particles inside a small, controlled atmosphere. Each of these areas (currently, two are expected) will be equipped with dust control and environmental filtration systems to filter out the very small amounts of dust particles that may be created.* |
| 3 | If people live within a mile east of the plant this particulate level will impact this area. | *Please see EnerG2's Response to Comment #1.*<br><br>*Emissions of particulate matter to the atmosphere would be extremely small and would not cause a noticeable impact.* | *Please see Response to Comment 1.* |

## DOE and EnerG2 Response to R. Foster Comments on Draft Environmental Assessment for EnerG2, Inc.

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|---|---|---|---|
| 4 | Pm10 and Pm2.5 are being permitted for release. How much particulate less then Pm2.5 will be released as dust less then l micro meter and will this be production material, finished product release? Finished particles are described as porous, spherical, irregular and not at nanoscale. The total amount of particle below 1 micro meter is not clearly stated in the draft EA. | *Please see DOE Response to Comment #2.*<br><br>*Currently, EPA provides specific regulations for "inhalable coarse particles", which are larger than 2.5 micrometers and smaller than 10 micrometers, in the form of the PM10 standard. Additionally, EPA provides specific regulations for "fine particles" (such as those found in smoke and haze), which are 2.5 micrometers in diameter and smaller in diameter, in the form of the PM2.5 standard. The PM2.5 standard is designed to regulate emissions of particulate matter that is less than 1 micron. Therefore, determining the amount of PM2.5 that would be PM1 from a facility's operation is unnecessary since the PM2.5 standard is designed to limit any emissions of PM less than 2.5.* | *Please see Response to Comment 1 and the DOE Response to this Comment.* |
| 5 | SAP Ammonia condenser and Acid/base water treatment process- will any of these on site outdoor and indoor stored chemicals react-combine in the air or under rainy conditions within the atmosphere localized over this industrial area? The area as heavy industrial zone contains other industrial production chemical/gas use and release of waste chemicals/gases released to air shed. | *Please see EnerG2's Response to this Comment.* | *The ammonia refrigeration system design for the production facility is a closed loop system. Industry accepted fail-safe design will minimize the potential release of ammonia. Ammonia is one of the most widely used industrial chemicals in the world and is a naturally occurring refrigerant that is not generally considered a fire or explosion risk when exposed to the atmosphere.*<br><br>*All equipment and materials in the containment and compression systems will be fully documented and undergo rigorous and regular engineering testing to comply with industry standards. All pressure vessels and piping will be designed for applicable ASME and ASTM standards. System controls will be redundant and failsafe so that the system will always shut down in a controlled manner during an upset.*<br><br>*Federal and state regulations require facilities that store, handle, or use ammonia to develop a Risk Management Plan. This plan will mandate rigorous internal and external audits, communication, maintenance, and training.* |

## DOE and EnerG2 Response to R. Foster Comments on Draft Environmental Assessment for EnerG2, Inc.

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| | | | *The process wastewater treatment system planned for the production facility consists of a simple enclosed structure for pH balancing, sampling, and screening equipment for pre-treatment of wastewater before discharge to the Albany Municipal System. The system would duplicate existing installations at two adjacent Oregon Freeze Dry, Inc. facilities. The "acid" and "base" tanks referenced in the environmental assessment are relatively small double walled atmospheric tanks for storage of small amounts of acid and base that are metered into the process wastewater for pH adjustment. Any wastewater generated from production activities will flow to the pre-treatment system through a separate and dedicated process drainage system.* |
| 6 | SAP safety, are the gas condensor, acid, base and other tanks explosive and could they be a hazard to surrounding residential areas should they leak, explode, burn? | *Please see EnerG2's Response to this Comment.* | *Please see Response to Comment 5.*<br><br>*Additional external storage tanks contain nitrogen and carbon dioxide and will be purchased and installed according to well establish safety requirements.* |
| 7 | How are tank stored chemicals and gases protected from leaks, spills from none scheduled release of tank contents? | *Please see EnerG2's Response to this Comment.* | *Please see Response to Comment 5.*<br><br>*Additional external storage tanks contain nitrogen and carbon dioxide and will be purchased and installed according to well establish safety requirements.* |
| 8 | Will this corporation request production of nanoscale fibers, balls, tubes or randomly shaped particles in the future with this production facility? If yes then will they have to complete other EA and or add more controls on production of this sized particle? | *Please see EnerG2's Response to this Comment.*<br><br>*Another EA would be required only if EnerG2 changes their production process/products using Federal financial assistance.* | *EnerG2 does not expect to produce fibers, balls, or tubes in the facility. As described in the EA, the current plan is to produce randomly-shaped particles, but not at the nanoscale.* |
| 9 | How well are the Oregon Freeze Dry storage and production areas protected from cross contamination of this material should this material production process create dust before and after production? | *Please see EnerG2's Response to this Comment.* | *Please see Response to Comment 1. No neighboring facility, including Oregon Freeze Dry, will be exposed to cross contamination.* |

## DOE and EnerG2 Response to R. Foster Comments on Draft Environmental Assessment for EnerG2, Inc.

| Comment Number | Public Comment on EnerG2 EA from R. Foster | DOE Response | EnerG2 Response |
|---|---|---|---|
| 10 | Hopefully escaping dust as a biproduct of production will not at be at hazardous levels for workers who have offices in the same building, or who have to walk in or near the production areas. | *Please see DOE's and EnerG2's Responses to Comment 1.* | *Please see Response to Comment 1.* |
| 11 | How is the finished product packaged and shipped? Would this production material be toxic and require specific handling and shipping guidance not mentioned in this draft EA? The draft EA had few details about air scrubbing process and few details about the production or finished product. Mention of acid/base H2O water treatment and Ammonia condenser shows that more then one process is involved and the production will use many chemicals for production of pyrolyzed and activated 1 micron or less particle**.** | *Please see EnerG2's Response to this Comment.* | *The finished product is packaged with inert gas in sealed sacks or drums. It is non-toxic and does not require special handling or shipping.*<br><br>*See Response to Comment 5 on ammonia vapors and the uses of acids and bases for wastewater pH balancing.* |
| 12 | How is raw carbon resin stored? EA said, in totes, which is not defined clearly in the EA. So the carbon resin unspecified raw material is coming from someplace could be put or poured perhaps into production process and then how is the finished product stored for packaging. Is there a secure method/procedure to contain raw and finished fine carbon particle or "ultra capacity energy storage media"? Does the finished product get stored on site before packaging to be sold? If the product is stored, will this be secure and safe from accidental release of finished unpackaged particles? | *Please see EnerG2's Response to this Comment.* | *The raw materials are delivered in either totes (i.e., sacks) or drums and stored at the facility in these containers until ready for further processing. The raw material is stable and non-combustible.*<br><br>*The finished product is packaged with inert gas in fully sealed sacks or drums and then palletized. It is non-toxic and does not require special handling or shipping. The packaging system will necessarily be closed to prevent atmospheric moisture from contaminating the finished goods (the moisture level of the final product must be very low). As a result, no particulates from the finished goods will be exposed to the environment.* |

## DOE and EnerG2 Response to R. Foster Comments on Draft Environmental Assessment for EnerG2, Inc.

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| 13 | Will EPA/ODEQ do any air testing around this site after the start of production to make sure particles of less the 1 micro meter scheduled to be released are not being placed in the airshed? | *Air testing would be conducted if ODEQ and EPA determine that it is warranted during the permitting process. As part of the permitting process, ODEQ would review the project plans and would require the submission of information on the controls that would be used by EnerG2 to reduce the emissions of particulates and other pollutants to the atmosphere. ODEQ would then decide whether further controls or emission limits would be required to reduce emissions to levels that would not present a health or environmental hazard.* | *Please see Response to Comment 1 and the DOE Response to this Comment.* |
| 14 | The EA describes particles of 1 micro meter size as mostly visible. What percent of production will be smaller then 1um and not visible? | *This is an error and should have been 100 micron.* | *Please see Response to Comment 1 and the DOE Response to this Comment.* |
| 15 | Will air cleaning systems capture these particles as product or as ash/residue to be resold/recycled for other uses? | *Please see EnerG2's Response to this Comment.* | *Please see Response to Comment 1. The ash or residue from production will be at such low volumes that recycling or reuse will not be feasible.* |
| 16 | Will air stagnation and inversions of these particles become a problem in this area with combine release of particulates from all the manufacturers in this industrial zone? | *During the permitting process, ODEQ will consider whether the air emissions from this proposed project, when added to the emissions from all other industrial facilities and sources, would likely cause an exceedance of the National Ambient Air Quality Standards (NAAQS). For minor sources, as this project would be, ODEQ would be unlikely to do a detailed air-impact assessment using computer models. Instead, they would likely rely on past experience to judge whether this project might possibly cause an exceedance of the Standards. The impacts of all air emissions sources collectively (those from industrial sources, commercial sources, traffic, farming and other activities) are monitored through a network of air-quality monitoring stations. The regulatory processes under the Clean Air Act are designed to prevent the collective emissions from all sources from degrading the air quality to the point of non-compliance with the Standards.* | *Please see Response to Comment 1 and the DOE Response to this Comment.* |

## DOE and EnerG2 Response to R. Foster Comments on Draft Environmental Assessment for EnerG2, Inc.

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|---|---|---|---|
| 17 | Joint area air quality degredation due to combine atmospheric release of waste/particulate, gas, liquid vapors at the same time. | *The regulatory and permitting process requires the submission of data on the emissions of criteria pollutants and on hazardous air pollutants. This data, submitted along with an application for a permit, describes the "potential to emit" and the types and efficiencies of control devices to be used. Limits (and control devices) may be specified by the regulatory agency for both the emissions of criteria pollutants and hazardous air pollutants. Based on the types of facilities currently in the industrial park, the cumulative effect would be negligible to minor. These existing facilities are permitted and are required to operate control devices that would prevent significant degradation of the surrounding air quality as a result of their operations. The impacts of the existing facilities in the industrial park can be considered by the regulatory agency along with the potential impacts of the proposed project. Based on available information, DOE believes that the proposed project would not cause a significant deterioration in air quality in this area.* | *Please see Response to Comment 1 and the DOE Response to this Comment.* |
| 18 | EA 3.2.1.3 Emission Control Devices "actual emissions are to be held well below permitted levels" Pm10 and Pm2.5 with production size molecules to be visible and about 1 um in size. Hopefully this percent of produce is captured or can be contained in air emmissions engineering which are not clearly defined in the draft EA. | *Dust collectors that are likely to be used, and that have been used under similar circumstances at other factories, are engineered to be greater than 99% efficient in capturing particulates in the exhaust streams that pass through these devices.* | *Please see Response to Comment 1 and the DOE Response to this Comment.* |
| 19 | EA 2.3 Alternatives<br>Details variance in NEPA 10 CFR 1021.216 DOE General Council. Wondering what the variance are as I did not read about this in the draft EA. | *NETL sought and acquired a variance from DOE's own regulations regarding the preliminary environmental evaluation of applications received by DOE in response to a solicitation for applications under an open, competitive process. The variance was published in the Federal Register at: http://ceq.hss.doe.gov/nepa/DOE_Variance_FR_Jun_26_2009.pdf* | *Please see the DOE Response to this Comment.* |

## DOE and EnerG2 Response to R. Foster Comments on Draft Environmental Assessment for EnerG2, Inc.

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| | | *NETL did perform an initial environmental review of the applications that were determined to be in the competitive range. However, NETL did not produce an Environmental Critique for use by the selecting official, and NETL did not produce an Environmental Synopsis for the public.* | |
| 20 | Would the company be able to contribute to carbon reduction/carbon conservation by reusing recycling waste heat to another production line or to some other reclaimable heat use such as redirecting production heat for use in area home heating? | *Please see EnerG2's Response to this Comment.* | *EnerG2 is actively exploring designs and methods to capture waste heat from the kilns for use in heating the freeze drying systems and for heating the inert gases used in our finished product milling. The amount of waste heat does not make redirection for home use economically feasible and was not contemplated in the proposed facility.* |
| 21 | Waste ash and other non target materials generated in production will be sold, reclaimed, so wondering how these secondary wastes will be dealt with should they be even more toxic and hazardous then the materials they produce for battery manufacture**?** | *Waste materials that have the potential for being hazardous or toxic would be tested, as required by regulations established under the Resource Conservation and Recovery Act (RCRA). Hazardous wastes would then be handled in accordance with RCRA regulations and sent to either an authorized treatment facility or a hazardous wastes disposal facility. Non-hazardous wastes would be sent to the local landfill or disposal facility.* | *Non-target materials, waste ash or residue from production will be at such low volumes that recycling, reuse or sale will not be feasible.* |

**FINDING OF NO SIGNIFICANT IMPACT**
**FOR**
**ELECTRIC DRIVE VEHICLE BATTERY AND COMPONENT MANUFACTURING INITIATIVE PROJECT**
**ENERG2, INCORPORATED**
**ALBANY, OREGON**

**RESPONSIBLE AGENCY:** U.S. Department of Energy (DOE)

**ACTION:** Finding of No Significant Impact (FONSI)

**SUMMARY:** DOE completed the *Final Environmental Assessment for EnerG2, Incorporated, Electric Drive Vehicle Battery and Component Manufacturing Initiative Project, Albany, OR* (DOE/EA-1718). Based on the analyses in the Environmental Assessment (EA), DOE determined that its proposed action - awarding a federal grant to EnerG2 for the reconfiguration of an existing warehouse into a manufacturing facility - would result in no significant adverse impacts. DOE further determined that there could be beneficial impacts to the local economy and to the nation's air quality and transportation industry from implementation of EnerG2's proposed project.

**BACKGROUND:** As part of the *American Recovery and Reinvestment Act of 2009* (Recovery Act; Public Law 111-5, 123 Stat. 115), DOE's National Energy Technology Laboratory, on behalf of the Office of Energy Efficiency and Renewable Energy's Vehicle Technologies Program, is providing up to $2 billion in Federal funding for competitively awarded agreements to facilitate the construction of U.S. manufacturing plants (including increases in production capacity at existing plants) to produce advanced batteries and electric drive components.

The federal action of providing funding for these projects, known as the Electric Drive Vehicle Battery and Component Manufacturing Initiative, requires compliance with the *National Environmental Policy Act of 1969* (NEPA; 42 U.S.C. 4321 et seq.), the Council on Environmental Quality's regulations (40 CFR Parts 1500 to 1508) and DOE's NEPA implementing procedures (10 CFR Part 1021). DOE prepared an EA to evaluate the potential environmental consequences of providing a grant for this proposed project under the initiative.

**PURPOSE AND NEED:** The overall purpose and need for DOE action pursuant to the Vehicle Technologies Program and the funding opportunity under the Recovery Act are to accelerate the development and production of various electric drive vehicle systems by building or increasing domestic manufacturing capacity for advanced automotive batteries, their components, recycling facilities, and electric drive vehicle components, and stimulating the U.S. economy. This and the other selected projects are needed to reduce U.S. petroleum consumption by investing in alternative vehicle technologies. The proposed project would also assist the nation's economic recovery by creating manufacturing jobs in the United States in accordance with the objectives of the Recovery Act.

**DESCRIPTION OF THE PROPOSED ACTION:** DOE's proposed action is to provide a grant to partially fund EnerG2's proposed project -- establishment of a commercial-size plant

that would produce nano-structured carbon powder that could be used in manufacturing ultra-capacitors and battery anodes. The plant would be setup in Albany, Oregon, and would support the anticipated growth in the electric-drive vehicles industry and hybrid-electric vehicle industry. The existing plant is a 72,000 square foot steel warehouse owned and operated by Oregon Freeze Dry, Inc. The construction phase of this project would partition 36,000 square feet of the warehouse for intermediate production of ultracapacitor energy storage media. Construction would involve installation of process equipment, including a 24-ton carbon dioxide tank and an 11,000-gallon inert compressed gas tank, concrete pads, and some paving. Raw material would be delivered to and freeze-dried in the new facility. Two kilns, which would operate either on electricity or natural gas, would be located in the new facility where the material would be pyrolyzed and activated.

The process converts a solid, polymerized resin to a fine carbon powder with exceptional surface area and specific nanostructure. The plant would also contain related material transport capabilities, utility interconnects, pollution control devices, a packaging line, and finished product handling facilities.

EnerG2's project would be the only plant dedicated solely to the commercial-scale production of synthetic, high-performance carbon electrode material and the only United States facility to manufacture electrode materials for ultracapacitors (a market currently dominated by Japanese suppliers). EnerG2's NC-Series electrode carbon would result in a new generation ultracapacitor with significantly higher power density and much lower cost per kilowatt. With this new product, ultracapacitors could be combined with batteries in electric drive vehicles to reduce capital and battery replacement costs as well as improve mileage efficiency and vehicle performance. The new plant would produce enough NC-Series electrode carbon to power 60,000 EDVs annually.

This plant would support anticipated growth in the lithium-ion battery industry and, more specifically, the electric drive vehicle industry and hybrid-electric vehicle industry. If approved, DOE would provide $21 million in financial assistance in a cost-sharing arrangement with the project proponent, EnerG2. The total cost of the project is estimated at $28 million.

**ALTERNATIVES CONSIDERED:** In addition to the proposed project, DOE considered the No Action Alternative as required under NEPA. Under the No Action Alternative, DOE would not provide funds for the proposed project. For the purposes of the EA, DOE assumed that the project would not proceed without DOE funding. This assumption establishes a baseline against which the potential environmental impacts of the project can be compared.

**ENVIRONMENTAL CONSEQUENCES:** DOE evaluated the potential environmental consequences of the Proposed Project and the No Action Alternative.

DOE considered 17 environmental resource areas in the EA. However, not all areas were evaluated at the same level of detail. DOE focused more detailed analysis on areas that would require new or revised permits, have the potential for significant adverse environmental impacts, or have the potential for controversy. The areas DOE evaluated in more detail included air quality, greenhouse gases, noise, geology and soils, vegetation and wildlife, solid and hazardous

wastes, utilities, transportation and traffic, and human health and safety. For these areas, DOE determined there would be minimal potential environmental impacts.

The EnerG2 facility would not be a major source of air pollutants as defined by the National Ambient Air Quality Standards of the Clean Air Act and Oregon Department of Environmental Quality (DEQ) regulations. EnerG2 has determined, however, that it would be required to obtain a modification of the facility's Simple Air Contaminant Discharge Permit. The proposed project would emit trace levels of the following hazardous air pollutants: formaldehyde, methanol, and methyl acetate. Overall, the EnerG2 facility would have a minor adverse impact on air quality as a result of the proposed project. Although air emissions from the facility are measurable, they would result in minimal consequences because of the facility's operating control devices that would be used to limit emissions, and emissions would remain under the Plant Site Emission Limits.

In relation to greenhouse gas emissions, an increase in the manufacture and use of advanced batteries potentially offers the positive benefits of reduced reliance on fossil fuels and long-term improvement in air quality through reduced emissions of greenhouse gases (and other pollutants).

Typical construction noise would be generated. Operational noises outside the building would come primarily from heating, ventilation, and air conditioning unit fans and from vehicle traffic.

A majority of the proposed construction would occur within an existing building, minimizing adverse impacts to soils. Localized soil disturbance may occur from the construction of support structures outside of the existing building (e.g., concrete pads, above-ground storage tank, paving). Overall, construction would not result in adverse impacts to geology and soils. Best management practices such as sediment control devices and seeding or sodding of temporarily disturbed areas following construction would minimize the potential for adverse indirect impacts such as soil erosion.

Operations of the site would have no impacts to vegetation or wildlife resources. Construction would occur within an existing building, minimizing adverse impacts to vegetation and wildlife. Potential staging areas for construction equipment and materials would not likely cause adverse impacts to vegetation as staging areas would occur on existing areas of impervious surface (i.e., parking lots).

During plant operations, EnerG2 would likely generate hazardous waste and would require an Environmental Protection Agency (EPA) Identification Number. Potential hazardous wastes include used oil (from the refrigeration system and from vacuum pumps) that would be recycled, used aerosol cans, used batteries (alkaline, nickel cadmium) and possibly waste ink from product labeling. The quantity of these hazardous wastes generated would not be known until the facility is operational. The process would not generate nano-fibers or nano-tubes, which could be deemed a hazardous waste. The facility would have to submit a Site Identification Form to the Oregon DEQ to notify the DEQ of the quantity and type of hazardous waste the facility would generate on a monthly basis. DEQ is authorized by the EPA to regulate hazardous waste in Oregon. As a generator of hazardous waste, the facility would have to adhere to Oregon DEQ's

regulations as well as applicable Federal regulations under 40 CFR 260-268, 273, 279, and 29 CFR 1910.

Construction and operation of the EnerG2 facility would have a minor impact on the municipal water system (Albany Water System), the municipal wastewater system (Albany-Millersburg Water Reclamation Facility), and the electric power utility (Pacific Power). All of these utility providers have adequate capacity to meet the demands of the proposed project.

Short-term but measurable adverse impacts to traffic are expected during the construction phase of the proposed project. Once operational, the project is expected to result in an overall decrease in the amount of trucks entering and leaving the site, compared to the current Oregon Freeze Dry warehouse activities. A small increase in personal vehicle traffic is expected, but would have only a minor adverse impact to the surrounding community, and the decrease in truck traffic would have a minor beneficial impact to the immediate vicinity.

The risk of exposure to hazardous materials in the general population would be negligible and would only occur if there were a release beyond the site property (e.g., a spill of a liquid) or possibly through dust if emission control equipment should malfunction. With appropriate implementation of safety procedures and equipment, the impacts on human health and safety are expected to be within OSHA tolerance levels for plant workers and would involve no exposure to the general public. The potential for impacts of an intentional destructive act on human health and safety is not expected to occur and would be reduced through implementation of emergency procedures to be developed by EnerG2.

DOE also evaluated socioeconomics to determine the potential positive benefits of the project on the affected communities. The proposed project is anticipated to result in small increases in local employment (approximately 35 permanent jobs) and local spending, potentially providing a beneficial impact.

The other environmental areas DOE evaluated for potential impacts were: land use, meteorology, socioeconomics, environmental justice, visual resources, surface water, groundwater, wetlands, floodplains, cultural resources, and energy use. DOE determined that there would be no potential for adverse impacts to these resource areas, or that the impacts would be negligible, temporary, or both. The EA gives the reasons DOE did not conduct more detailed evaluations of these areas.

Under the No Action Alternative, the project would either be delayed, as EnerG2 sought other funding sources, or abandoned altogether. If abandoned, the potential environmental consequences and benefits would not occur.

**PUBLIC AVAILABILITY:** DOE distributed the Draft EA on January 14, 2010, and advertised its release in the Democrat-Herald on January 24, 25 and 26, 2010. In addition, DOE sent copies for public review to the Albany City Library in Albany, Oregon. DOE established a 30-day public comment period that began January 24, 2010, and ended February 24, 2010. DOE announced it would accept comments by mail, e-mail, and facsimile.

The Draft EA was distributed to various federal, state, and local agencies with jurisdiction or special expertise. DOE conducted formal consultations by mail with the responsible U.S. Fish

and Wildlife Service's Oregon State Office in Portland; the Natural Heritage Information Center in Portland; and the Oregon Parks and Recreation Department's State Historic Preservation Office in Salem. In each case, DOE received correspondence supporting a determination of no potential impacts to threatened or endangered species and critical habitat, and no potential impacts to properties listed on or eligible for inclusion in the *National Register of Historic Places*

Copies of the Final EA and this FONSI will be sent to stakeholders that provided comments or consultation, and will be available at DOE's National Energy Technology Laboratory web site at http://www.netl.doe.gov/publications/others/nepa/ea.html.

**COMMENTS:** Comments were received from two entities, the Region 10 Office of EPA, and a private citizen, R. Foster. EPA provided comments on the net benefit of CO2 emissions reduction on a life-cycle basis for electric drive vehicles. Foster commented on the dust control system's ability to capture and remove particulate matter; ammonia condenser and acid/base treatment process; production of nanoscale fibers, balls, and tubes; storage and protection from cross-contamination of material protection; storage, packaging and shipment of material; air emissions and emission control devices; project alternatives; and waste ash and other generated material. DOE and EnerG2 have addressed these comments, and responses to the comments are included in Appendix B of the Final EA.

**DETERMINATION:** On the basis of the evaluations in the Final EA, DOE determined that its Proposed Action - providing a $21 million federal grant - and EnerG2's proposed project - renovating an existing plant and operating it for intermediate production of ultracapacitor energy storage media - would have no significant impact on the human environment. Although the proposed project would create manufacturing wastes; cause air emissions; increase demand on local utilities; and generate increased noise and traffic; these impacts would be minor. The project proponent would be required to adhere to applicable permit requirements during construction and operations. All other potential environmental impacts identified and analyzed in the EA would be negligible. Therefore, preparation of an Environmental Impact Statement is not required, and DOE is issuing this FONSI.

Issued in Pittsburgh, PA, this 7th day of April 2010.

Anthony V. Cugini
Director
National Energy Technology Laboratory