

EXHIBIT G
MATERIALS ANALYSIS
OAR 345-021-0010(1)(g)

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INTRODUCTION

Archway Solar Energy LLC (Applicant) proposes to construct the Archway Solar Energy Facility (Facility) in Lake County, Oregon, with generating capacity of up to 400 megawatts (MW). The Facility may also contain a battery energy component with storage capacity of up to 400 MW and discharge capacity of up to 1,600 megawatt-hours. This Exhibit presents an inventory of the industrial materials proposed for use during Archway Solar Energy Facility (Facility) construction and operation, and a description of how the Applicant plans to manage hazardous and nonhazardous substances as required by OAR 345-021-0010(1)(g).

G.1 INDUSTRIAL MATERIALS ANALYSIS AND INVENTORY

OAR 345-021-0010(1)(g) *A materials analysis including:*

OAR 345-021-0010(1)(g)(A) *An inventory of substantial quantities of industrial materials flowing into and out of the proposed facility during construction and operation.*

Response: The primary industrial materials to be used during Facility construction and operation are rock and gravel aggregate, water, concrete, steel, and assorted electrical equipment, along with smaller quantities of other materials, including fuels and oils. Table G-1 presents an inventory of materials flowing into and out of the Facility during construction. Table G-2 presents an inventory of materials flowing into and out of the Facility during operation.

Construction will include land clearing, minimal grading, installation of concrete foundations for inverter and transformer pads, erection of an operations and maintenance (O&M) building and a control house building, installation of electrical controls and associated components, and improvement of a private or BLM access road and various private service roads within the Facility perimeter fence. During construction, temporary trailers and storage facilities will be required and most materials not in use will be stored in the temporary staging area. Industrial materials flowing into the Facility include fuels and lubricants associated with construction equipment, paints, and solvents. These materials will be stored within the temporary staging area. Oils, lubricants, paints, and solvents will be stored within covered containers such as work trailers and conex boxes to prevent incidental spills or drips from reaching the environment. Fuels will be stored in mobile, double-walled tanks to be parked in the construction staging area. The primary location for fueling will occur offsite at local gas stations, and the mobile tanks will only be used to fuel equipment that cannot travel offsite (such as excavators). Onsite refueling will occur only within the staging areas. The quantity of petroleum products stored onsite at any time will be below 1,320 gallons. Oils will be installed in transformers, approximately 650 gallons in each pad-mounted transformer and approximately 10,000 gallons in the GSU transformer.

The major categories of material that will be flowing into the Facility site are rock and gravel to be used in road and parking area construction, water (used for dust suppression and concrete production), and the solar photovoltaic modules, mounting racks, and trackers. In addition, either aggregate for concrete or concrete will be brought into the Facility site.

The Facility will require approximately 90,000 tons of aggregate consisting of rock and gravel. Gravel will be obtained from a local commercial gravel source. As described in Exhibit O, an annual average may see between 9 and 33 million gallons of water used (40,000 to 80,000 gallons per day) for dust suppression during construction. If water alone does not sufficiently address wind erosion or visible dust, the use of additives may be employed. Dust suppression additives will be chosen based on low environmental and human toxicity, such as polyacrylamide (PAM) or magnesium chloride. Both PAM and magnesium chloride are state and

local agency-approved dust suppression best management practices, and are widely recognized in the construction industry as low-toxicity dust suppression additives.

The solar photovoltaic modules each will consist of 72 cells and 350-570 watts of polycrystalline. Each module measures approximately 6.4 by 3.3 feet and will be placed on a rack with 10 to 30 other modules and mounted approximately 4 feet off the ground on a single-axis tracker. Modules will be installed along with the rest of the components to form module blocks. There will be an estimated 105 module blocks. Mounting racks will be constructed of galvanized steel. Each tracker will be supported by steel posts; post depth will vary depending on soil conditions. If soil conditions require it, concrete foundations will be used, and for the purposes of this analysis, it was assumed that they will be used.

During operation, the Facility will use small amounts of paints, lubrication oils, transformer oil, and aqueous nonpetroleum based solvents. Aqueous nonpetroleum solvents are water-based cleaners that have less than 5 percent volatile organic compounds. They clean by heat, agitation, or soap action rather than by dissolution.

Table G-1. Inventory of Materials to be Used During Facility Construction

Material/Chemical	Purpose	Estimated Quantity Used During Construction	Ultimate Disposition
Construction			
Rock/gravel aggregate	Road construction material: Approximately 89,000 tons for construction of private Facility service roads and access road improvements Approximately 1,000 tons for a parking area and service yard	90,000 tons	Permanent installation until the useful life of the Facility has expired
Water	Dust suppression	Approximately 9 to 33 million gallons of water (40,000 to 80,000 gallons per day) will be used for dust suppression	Evaporation or seepage into the ground
Concrete	Foundations for O&M building and control house building	240 cubic yards	Permanent installation until useful life of the Facility has expired.
Solar photovoltaic modules, steel mounting racks, and steel trackers	105 module blocks for solar power generation. Each module consists of 72 cells and 370-570 watts of polycrystalline on a steel mounting rack and single-axis steel tracker.	150,000 steel mounting posts	Permanent installation until useful life of the Facility has expired.
500-kilovolt electrical cable	overhead transmission line	One 5-mile-long overhead transmission line	Permanent installation until useful life of the Facility has expired.
Transmission poles and associated structures	Connection of the Facility substation to the point of interconnection	1.6 miles of transmission line with 400-foot spacing (25 poles)	Permanent installation until useful life of the Facility has expired.
34.5-kilovolt electrical cable	Solar photovoltaic underground collection cables	280 miles	Permanent installation until useful life of the Facility has expired.

Table G-1. Inventory of Materials to be Used During Facility Construction

Material/Chemical	Purpose	Estimated Quantity Used During Construction	Ultimate Disposition
Generator step-up transformer	Solar power generation	(1) transformer	Permanent installation until useful life of the Facility has expired.
Paint	Prime and finish painting	50 gallons	Unused paint to be recycled
Fuel	Stored onsite in double-walled containers, and used for construction vehicles	Up to 500 gallons	Consumed by construction vehicles
Heavy, medium, and light lubrication oils	Heavy and light equipment lubrication	50 gallons	Lubricants to be recycled
Transformer oil	Generator step-up and pad mount transformers	(31) transformers	Used solvent to be disposed of at an appropriate facility
Aqueous nonpetroleum-based solvents	Cleaning of equipment	20 gallons	Unused solvent to be recycled if possible, or disposed of at an appropriate facility

Table G-2. Inventory of Materials to be Used During Facility Operation

Material/Chemical	Purpose	Estimated Quantity Used During Operation	Ultimate Disposition
Light lubrication oil	Small equipment lubrication	50 gallons	Lubricants to be recycled
Transformer oil	Generator step-up and pad mount transformers	(31) transformers	Used solvent to be disposed of at an appropriate facility
Water	Cleaning solar modules	250,000 gallons per wash, for a total of 0.5 million gallons per year	Evaporation and infiltration into the ground
Water	Office use in the O&M building	165 gallons per day	Onsite septic system
Aqueous nonpetroleum-based solvents	General cleaner	50 gallons	Unused solvent to be recycled if possible, or disposed of at an appropriate facility

G.2 HAZARDOUS SUBSTANCES

OAR 345-021-0010(1)(g)(B) *The applicant's plans to manage hazardous substances during construction and operation, including measures to prevent and contain spills.*

Response: During Facility construction and operation, it is expected that a minimal amount of hazardous materials will be generated. Hazardous materials are expected to consist of paint, spent lubrication oils, and solvents, as listed in Tables G-1 and G-2.

The hazardous materials required for Facility construction and maintenance will be stored in accordance with U.S. Environmental Protection Agency and U.S. Occupational Safety and Health

Administration regulations, as applicable. Safety data sheets of each hazardous material will be stored onsite. Facility personnel will receive guidelines and will be trained on the handling, storage, transport, and disposal of hazardous materials.

The Facility will develop a hazardous materials spill prevention program. Hazardous materials will be stored inside and hazardous material containment and cleanup kits will be maintained and available onsite to minimize the impact resulting from a spill.

Disposal practices for hazardous waste materials will follow applicable regulations and will depend on the type of waste. Paints, oil, and solvents will be disposed of during the Lake County annual household hazardous waste event, or will be transported to Lake County Landfill with prior coordination.

G.3 NONHAZARDOUS WASTE MATERIALS

OAR 345-021-0010(1)(g)(C) *The applicant's plans to manage non-hazardous waste materials during construction and operation.*

Response: Solid waste generated during construction will include general construction debris such as scrap steel and packing materials from delivery of components, waste concrete, and excavated soil. Excavated soil will be used onsite as fill or transported offsite for reuse. Construction material and office recycling programs will be implemented to the extent practical to reduce the volume of material that will be disposed of as solid waste. General construction debris will be collected by a local contractor and transported to the Lake County Landfill.

Waste concrete will be disposed of as solid waste, recycled, or used onsite as fill. Concrete truck chutes will be washed out in a dedicated area onsite, where the concrete will be allowed to harden.

During construction, portable toilets will be provided for onsite sanitary waste management. The portable toilets will be maintained by a local contractor. Construction of the Facility will include a septic tank to manage operation sewage and wastewater onsite. Water for the Facility will be trucked in and stored in an aboveground water tank.

Operation

During operation, sanitary wastewater will be disposed of and treated using an onsite septic system and drain field. Washwater that contains no added cleaning solutions from solar panel and equipment washing will be discharged by evaporation and seepage into the ground. Nonhazardous solid waste generated during operation will be recycled or disposed of as municipal waste, as described in Exhibit V.

G.4 SUMMARY

On the basis of the information presented above, the Applicant has satisfied the requirements of OAR 345-021-0010(1)(g).