

EXHIBIT W
RETIREMENT AND RESTORATION
OAR 345-021-0010(1)(w)

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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 W presents retirement and restoration information as required by OAR 345-021-0010(1)(w).

OAR 345-021-0010(1)(w) *Information about site restoration, providing evidence to support a finding by the Council as required by OAR 345-022-0050(1). The applicant shall include:*

W.1 USEFUL LIFE

OAR 345-021-0010(1)(w)(A) *The estimated useful life of the proposed facility.*

Response: The estimated useful life of the proposed Facility is 30 years. However, the Facility will operate for as long as there is a market for the production of electrical energy. Facility upgrades may be implemented to prolong operation well beyond 30 years.

Applicant plans to secure a Power Purchase Agreement to sell the energy and environmental attributes from the Facility to a reputable entity. The Applicant will use the Power Purchase Agreement to secure financing for Facility construction.

W.2 RETIREMENT AND RESTORATION ACTIONS

OAR 345-021-0010(1)(w)(B) *Specific actions and tasks to restore the site to a useful, non-hazardous condition.*

Response: The Facility will be constructed with materials consisting of steel, aluminum, concrete, solar modules, cable, transformer insulating oil, battery storage units, and plastics. When the Facility reaches the end of its operational life, the components will be disassembled and component materials will be recycled, sold for scrap, or taken to a landfill. Retirement and restoration will be accomplished using conventional construction equipment with the objective of maximizing the recycling of materials and minimizing the amount of waste to be disposed. Demolition debris will be placed in temporary onsite, secured, storage areas pending final transportation and disposal or recycling according to the following steps:

1. The first step in the retirement and restoration process is the assessment of existing site conditions and preparation of the Facility site. Internal service roads and access road, fencing, and electrical power will remain in place for use by the retirement and restoration workers until no longer needed. The necessary permits, such as for land use or road access, will be obtained before conducting any retirement and restoration work.
2. The retirement and restoration of the Facility will then proceed in reverse order of its construction and commissioning. The Facility will be disconnected from the transmission system. Solar modules will be disconnected, collected, packed, and sent to the original manufacturer or a local recycler. Site equipment will be disconnected from aboveground and underground cables. The underground cables below three feet of the surface will be rendered inert and left in place; all other cables will be removed and transported offsite to an approved recycling facility or landfill. The solar module steel racking system will be removed and transported offsite to a recycling facility. Electrical and electronic devices, including medium voltage step-up transformers and solar inverters, will be removed and transported offsite to a recycling facility. Disconnect switches will be removed and sold for reuse, recycled, or sent to a landfill. Battery storage units will be disconnected and removed and the underlying ground restored. Concrete foundations will be removed to a minimum

depth of 3 feet and then transported offsite and recycled, recycled by portable recycling equipment brought onsite, or taken to a landfill.

3. The last step, treatment of internal service roads and access road, fences, gates, and the transmission line, will depend on whether there is a planned next use of the land. If there is a need for these improvements, they will be left in place and maintained. If there is not, they will be removed and the land will be restored. Because the area will be minimally graded for construction, it will only be necessary to restore the original grading in certain locations. The land will be revegetated with as appropriate.

W.3 RETIREMENT AND RESTORATION COST ESTIMATE

OAR 345-021-0010(1)(w)(C) *An estimate, in current dollars, of the total and unit costs of restoring the site to a useful, non-hazardous condition.*

Response: Attachment W-1 provides a detailed cost estimate for Facility retirement and restoration. The estimated cost, in fourth quarter 2020 dollars, is approximately \$30 million. The estimate assumes removal of all improvements to restore the Facility to preconstruction condition. It was prepared using Oregon Department of Energy (ODOE) 2011 guidelines. ODOE does not have a guidance document for estimating retirement and restoration costs for solar energy facilities, but the key components of Facility retirement and restoration will be similar to those of a wind energy facility. For example, the unit cost for grading, seeding, electrical transmission line removal, transport, and disposal will be the same for solar and wind energy facilities. As such, the cost estimate presented in Attachment W-1 relies on the unit costs developed by ODOE in the wind energy facility guidance document titled *Site Restoration Cost Estimating Guide* (ODOE, 2011), and on specific unit costs developed for components that apply to a solar energy facility. The solar unit costs were developed based on standard industrial practice and are consistent with estimates approved by the Department for other solar facilities.

OAR 345-021-0010(1)(w)(D) *A discussion and justification of the methods and assumptions used to estimate site restoration costs.*

Response: The Applicant made the following assumptions to estimate site restoration costs:

- Demolition debris will be removed to a licensed landfill that will accept construction materials.
- Steel, concrete, and other components will be recycled, to the extent possible.
- Underground material below 3 feet will be left in place. This will include concrete foundations for the solar module posts, and a portion of the posts themselves.
- Before removing the main transformer, oil will be removed and disposed of appropriately. Inverters and transformers will be removed with oils in place.
- Bare ground portions will be seeded in accordance with the *Revegetation and Noxious Weed Control Plan* (Exhibit P, Attachment P-6) once retirement and restoration are complete. Owing to the nature of the retirement and restoration activities, site grading will not be required prior to seeding. During Facility operations, noxious weeds will be controlled to promote establishment of native vegetation. During Facility retirement and restoration, care will be taken to minimize the disturbance to existing vegetation. To be conservative, this estimate assumes that the entire area occupied by the solar modules (approximately 3360 acres) will be reseeded (or likely over-seeded).
- The operations and maintenance (O&M) facility will be removed, and the surrounding graveled area will be removed, regraded, and reseeded.

- The site perimeter fence, O&M fence, and substation fence will be removed and recycled.
- Internal services roads and access road will be removed, regraded, and reseeded as part of retirement and restoration activities. During retirement and restoration of the module blocks, the internal service roads and access road will be used to minimize the disturbance to the surrounding areas.
- Salvage value of Facility materials is not included, but should be considered if Energy Facility Siting Council policy or rules change to allow credit for these values.
- The estimate includes a 10 percent administration and project management allowance and a 10 percent future developments contingency allowance.

On a per megawatt (MW) basis, this estimate (\$75,000/MW) is consistent with the other facilities reviewed by the Department. The Site Certificate for the 303-MW Bakeoven Solar Energy Facility estimates \$23,036,000 (\$76,026/MW) in Q1 2019 dollars, Draft Proposed Order for the 400-Megawatt (MW) Obsidian Solar Energy Facility estimates \$28,863,462 (\$72,159/MW) in Q3 2018 dollars, and the Site Certificate for the 75-MW Boardman Solar Energy Facility estimates \$8,780,000 (\$117,066/MW) in Q4 2017 dollars.

W.4 MONITORING PLAN

OAR 345-021-0010(1)(w)(E) *For facilities that might produce site contamination by hazardous materials, a proposed monitoring plan, such as periodic environmental site assessment and reporting, or an explanation why a monitoring plan is unnecessary.*

Response: The Facility is not expected to cause site contamination by hazardous materials, and therefore no monitoring plan is proposed or required. Hazardous materials associated with the Facility will be limited to transformer oils that will either be pumped out to a specialized vehicle for recycling before removing the transformers, or removed with the equipment. The Facility will not have any fuel storage tanks, and any small quantities of lubricants or fuel from passing vehicles are highly unlikely to result in soil contamination. Hazardous materials will be used and stored in a manner that will minimize the chance of accidental release to the environment. Hazardous waste will be disposed of through an appropriate waste disposal service provider.

Archway Solar Energy Facility
COST ESTIMATE FOR FACILITY SITE RETIREMENT AND RESTORATION

Cost Estimate Component	Quantity	Unit Cost	Extension
Module Blocks			
Disconnect electrical and ready for disassembly	1	\$65,799	\$65,799
Remove solar facilities (per block)	109	\$2,959	\$322,481
Remove steel posts (per ton)	11,375	\$82	\$932,750
Remove post foundation (per CY)	0	\$0	\$0
Remove pad transformer and foundation (per block)	109	\$2,917	\$317,917
Restore module site (per block)	109	\$141,206	\$15,391,438
O&M Facilities			
Remove O&M facility and fences/gates	1	\$310,912	\$310,912
Substations			
Remove substation or substations	1	\$11,704	\$11,704
Battery System			
Remove battery units			\$3,000,000
Transmission Lines			
Remove 34.5-kV collector, single-circuit (per mile)	0	\$0	\$0
Remove 34.5-kV collector, double-circuit (per mile)	0	\$0	\$0
Remove aboveground high-voltage transmission line (per mile)	10	\$6,190	\$61,899
Remove collector system junction boxes (each)	14	\$220	\$3,081
Road Restoration			
Internal service roads (Mi)	33.0	\$29,754	\$981,895
Access road (Mi)	0.3	\$29,754	\$8,346
Restore Additional Areas Disturbed by Facility Removal			
Grading and seeding			
Temporary Disturbance - Access roads, O&M facility and staging areas	59	\$3,398	\$200,435
General Costs			
- Permits, mobilization, engineering, overhead			\$342,375
Subtotal			\$21,951,031
Subtotal Adjusted to Current Dollars		3Q 2022	\$24,624,276
Performance Bond @ 1%			\$246,243
Gross Cost (Adjusted)			\$24,870,518
Administration and Project Management @ 10%			\$2,487,052
Future Developments Contingency @ 10%			\$2,487,052
Total Site Restoration Cost (current dollars)			\$29,844,622
Total Site Restoration Cost (rounded to nearest \$1,000)			\$29,845,000