

**EXHIBIT L**  
**IMPACTS ON PROTECTED AREAS**  
OAR 345-021-0010(1)(L)

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## L.1 INTRODUCTION

The Energy Facility Siting Council (EFSC; Council) previously approved construction of the 404-megawatt (MW) Montague Wind Power Facility (Facility)<sup>1</sup> and found that the Facility complies with the Protected Areas standard required in OAR 345-022-0040. Montague Wind Power Facility, LLC (Montague) is constructing the Facility in phases. Phase 1 consists of up to 81 wind turbines generating 202 MW of power within the approved site boundary. Montague has already begun construction of Phase 1 under the conditions of the existing Site Certificate. Phase 2 consists of an expanded site boundary, modification of turbine types and construction schedule, and addition of a solar array and battery storage. The analysis in this exhibit focuses on Phase 2 and the three design scenarios described in *Request for Amendment No. 4 Project Description and OAR Division 27 Compliance* (referred to herein as RFA 4).

## L.2 SUMMARY OF ANALYSIS RESULTS

The Council previously addressed the Protected Areas standard in the Final Order on the Application, Final Order on Amendment 1, Final Order on Amendment 2, and Final Order on Amendment 3. The Council found that the Facility is not located in any protected area listed in OAR 345-022-0040; that the design, construction, and operation of the Facility, taking mitigation into account, are not likely to result in significant adverse impact to any protected area; and that the Facility satisfies the requirements of the Protected Areas standard.<sup>2</sup>

This exhibit updates information on protected areas within the analysis area and demonstrates that there has been no significant change in impacts to protected areas since the original Site Certificate was issued in 2010. This exhibit describes potential adverse impacts on protected areas, including noise, traffic, water use, wastewater disposal, and visual impacts, resulting from construction of the Facility as described in RFA 4.

The analysis results are summarized as follows:

- **Expansion of Site Boundary:** The expansion of the site boundary results in a corresponding larger analysis area for protected resources (i.e., 20 miles from the site boundary). Six additional protected areas not previously considered by EFSC in the Final Order on the Application are located within the expanded RFA 4 analysis area. The relocation of turbines into the proposed expanded site boundary will not affect these new protected areas or the previously identified protected areas. Montague's conclusion is based on the distance (more than 10 miles) separating proposed Phase 2 components from protected areas, the localized nature of wastewater disposal activities, and the implementation of Site Certificate conditions related to controlling construction traffic, minimizing dust and noise, and establishing setbacks from Horn Butte Wildlife Area.
- **Modification of Turbine Type:** The design, construction, and operation of the Facility, using the larger turbine proposed in RFA 4, will not result in significant adverse impacts to protected areas. Use of larger turbines relocated under RFA 4 could result in greater turbine visibility from protected areas within the 20-mile analysis area; however, because fewer turbines will be installed, potential impacts will be similar to or less than impacts from the approved Facility. Views from newly identified protected areas listed in Section L.4.2 toward the modified turbines will be limited, range in distance from approximately 7.5 to over 20 miles, and because turbines will constitute relatively small elements on the overall horizon

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<sup>1</sup> EFSC. 2017a. *Third Amended Site Certificate for Montague Wind Power Facility*. July 11.

<sup>2</sup> EFSC. 2017b. *Final Order on Amendment #3 of the Site Certificate for the Montague Wind Power Facility*. pp. 21-22. July 12.

from these areas, the Facility is not expected to have a significant adverse visual impact on protected areas.

- **Modification of Construction Schedule:** Six protected areas not previously considered by EFSC in the Second Amended Sited Certificate<sup>3</sup> are located within the expanded RFA 4 analysis area (see Section L.4.2). This analysis demonstrates that relocation of turbines into the proposed expanded site boundary will not have a significant adverse impact on these new protected areas or the previously identified protected areas. Montague is unaware of proposals that would add protected areas to the analysis area addressed in this exhibit. Accordingly, change in construction schedule for phased development of RFA 4 does not affect analysis for protect areas.
- **Addition of Solar Array:** Noise, traffic, water use, wastewater disposal, and visual impacts resulting from the construction of a solar array under Design Scenario C will not directly affect protected areas during construction and operation of the Facility. Construction-related noise, traffic, water use, and wastewater disposal impacts resulting from the solar array are of the same nature as those EFSC previously analyzed and approved for the wind facility. The implementation of Site Certificate conditions related to construction traffic control, dust, and noise will mitigate the same impacts resulting from construction of the solar array. The solar array adds a new element into the visual environment; however, the distances separating the array from protected areas (more than 10 miles) minimizes potential impact to nonsignificance. The solar array will not be a significant source of operational noise (see Section X.6 in Exhibit X). Construction, operation, maintenance, and retirement of the solar array therefore will not alter the types or intensity of impacts to protected areas.
- **Addition of Battery Storage:** Noise, traffic, water use, wastewater disposal, and visual impacts resulting from construction and operation of the battery storage system will not directly affect protected areas. Construction-related noise, traffic, water use, and wastewater disposal impacts resulting from battery storage are of the same nature as those previously analyzed for the approved wind facility. The implementation of Site Certificate conditions related to construction traffic control, dust, and noise will effectively mitigate the same impacts resulting from construction of battery storage. The visual impacts of battery storage are localized and minimal; the distances separating the battery storage system from protected areas (more than 10 miles) minimizes potential impact. Battery storage will not be a significant source of operational noise (see Section X.6 in Exhibit X). Construction, operation, maintenance, and retirement of the battery storage system therefore does not alter the types or intensity of impacts to protected areas.

### L.3 CONDITION COMPLIANCE

The Third Amended Site Certificate imposes seven conditions (82, 97, 102, 103, 104, 105, and 107) designed to reduce or avoid potential impacts to protected areas. The conditions address dust management, lighting, limits on construction activities near the Horn Butte Wildlife Area, paint selection, and noise limitations. The modifications proposed under RFA 4 do not affect Montague's ability to comply with the existing Site Certificate conditions and no new conditions are needed to manage potential impacts on protected areas. Montague proposes modifications to Condition 103 to address design and construction of the containers or enclosures associated with battery storage, as shown below. The modifications are underlined.

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<sup>3</sup> EFSC. 2015. *Second Amended Site Certificate for Montague Wind Power Facility*. December 4.

103 *The certificate holder shall design and construct the O&M buildings, substations, and containers or buildings associated with battery storage to be generally consistent with the character of similar buildings used by commercial farmers or ranchers in the area and shall paint the building in a low-reflectivity, neutral color to blend with the surrounding landscape.*

**L.4 LIST OF PROTECTED AREAS AND MAP OF LOCATION**

**OAR 345-021-0010(1)(L)** *Information about the proposed Facility’s impact on Protected Areas, providing evidence to support a finding by the Council as required by OAR 345-022-0040, including:*

**OAR 345-021-0010(1)(L)(A)** *A list of the Protected Areas within the analysis area showing the distance and direction from the proposed Facility and the basis for protection by reference to a specific subsection under OAR 345-022-0040(1).*

**Response:** OAR 345-022-0040 requires that “the Council must find that, taking into account mitigation, the design, construction and operation of the facility are not likely to result in significant adverse impact to the areas listed below. References in this rule to protected areas designated under federal or state statutes or regulations are to the designations in effect as of May 11, 2007: [...]” At the same time, the Council may apply the requirements of OAR 345-022-0110(1) as conditions on the Facility’s Site Certificate. Therefore, this exhibit is organized in accordance with the application requirements contained in OAR 345-021-0010(1)(I) and provides evidence to support a finding by the Council as required by OAR 345-022-040.

In accordance with OAR 345-001-0010(57)(e), the analysis area for protected areas consists of the area within the Facility site boundary and 20 miles from the Facility site boundary. Figure L-1 shows the analysis area for protected areas, and identifies the expanded site boundary resulting from Phase 2. Because of the elongated shape of the approved site boundary and the contiguous nature of property additions, the increase in the analysis area for protected areas relative to the expanded site boundary is very small, about a 0.7 percent increase.

Available geographic information system data, maps, and other information pertaining to the relevant protected area designations identified in OAR 345-022-0040(1) were reviewed to identify both protected areas that had not been present or identified by the Council, or for which a designation status had changed. As a result of this review, six new protected areas have been identified for evaluation (see Section L.4.2).

Protected areas in the analysis area for the expanded site boundary are listed in Table L-1 and shown on Figure L-1. Table L-1 shows the approximate distance from the nearest portion of the site boundary to the closest point of the protected area boundary, and the direction of each protected area from the Facility.

**Table L-1. Protected Areas within the 20-Mile Analysis Area**

Protected Area	Approximate Distance to Portion of Facility Site Boundary (Miles)	Direction from Facility Site Boundary Containing Turbines*	Type
Horn Butte Wildlife Area	0	NE	BLM ACEC <sup>a</sup>
John Day Wildlife Refuge	5	W	State wildlife refuge <sup>b</sup>
John Day Wild and Scenic River	5	W	Federal wild and scenic river <sup>c</sup>
John Day State Scenic Waterway	5	W	Federal wild and scenic river <sup>c</sup>
John Day (Hilderbrand) State Park	6	W	State park and wayside <sup>d</sup>

**Table L-1. Protected Areas within the 20-Mile Analysis Area**

<b>Protected Area</b>	<b>Approximate Distance to Portion of Facility Site Boundary (Miles)</b>	<b>Direction from Facility Site Boundary Containing Turbines*</b>	<b>Type</b>
Cottonwood Canyon State Park	6	SW	State park and wayside <sup>d</sup>
Arlington State Park (Wayside)	10	N	State park and wayside <sup>d</sup>
Willow Creek Wildlife Area	12	NE	State wildlife area <sup>e</sup>
Ferry Canyon ACEC	17	SW	BLM ACEC <sup>a</sup>
Umatilla National Wildlife Refuge	20	NE	National wildlife refuge <sup>b</sup>
Lindsey Prairie Preserve	20	E	State natural heritage area <sup>f</sup>
Crow Butte State Park	20	N	State park and wayside <sup>d</sup>
Boardman Research Natural Area	20	E	BLM ACEC <sup>a</sup>

\* N = North, S = South, W = West, NE = Northeast

<sup>a</sup> OAR 345-02200040 (1)(o) Bureau of Land Management (BLM) Areas of Critical Environmental Concern (ACECs), outstanding natural areas, and research natural areas

<sup>b</sup> OAR 345-02200040 (1)(d) National and state wildlife refuges

<sup>c</sup> OAR 345-02200040 (1)(k) Scenic waterways designated pursuant to ORS 390.826, wild or scenic rivers designated pursuant to 16 U.S.C. 1271 et seq., and those waterways and rivers listed as potentials for designation

<sup>d</sup> OAR 345-02200040 (1)(h) State parks and waysides as listed by the Oregon Department of Parks and Recreation and the Willamette River Greenway

<sup>e</sup> OAR 345-02200040 (1)( p) State wildlife areas and management areas identified in OAR chapter 635, division 8

<sup>f</sup> OAR 345-02200040 (1)(i) State natural heritage areas listed in the Oregon Register of Natural Heritage Areas pursuant to ORS 273.581

#### **L.4.1 Previously Considered Protected Areas**

The Council previously identified the following seven protected areas located within 20 miles of the approved site boundary:

- Horn Butte Wildlife Area
- Arlington State Park
- John Day Wildlife Refuge
- John Day Wild and Scenic River
- John Day State Scenic Waterway
- John Day (Hilderbrand) State Park
- Willow Creek Wildlife Area

#### **L.4.2 New Protected Areas**

Since the time the Facility was originally approved, six new areas within the RFA 4 analysis area have been identified by EFSC as protected. These areas are as follows:

- Crow Butte State Park
- Lindsey Prairie Reserve
- Boardman RNA
- Ferry Canyon ACEC
- Cottonwood Canyon State Park
- Umatilla National Wildlife Refuge

Crow Butte State Park is located 20 miles northeast of the approved site boundary, and Lindsey Prairie Reserve and Boardman RNA are located 20 miles east/northeast of the approved site boundary. The Ferry Canyon ACEC is located 17 miles southwest of the proposed expanded site boundary. Ferry Canyon was previously evaluated as part of BLM lands without a management plan, but in 2015 it was separately designated and included in the John Day management plan (BLM, 2015).

In addition, Cottonwood Canyon State Park was previously identified but did not have a management plan in place when the Final Order on the Application was issued on September 10, 2010. Since that time, a management plan has been developed for this park and it is included in the current analysis.

Only a very small portion of the Umatilla National Wildlife Refuge is within the 20-mile analysis area for the approved site boundary. This area was not addressed in the Council's previous findings. Phase 2 elements will be constructed at greater distances from the refuge.

#### **L.4.3 Areas Not Included**

The Lewis and Clark National Historic Trail is not addressed in this exhibit because it does not meet the definition of a protected area under OAR 345-022-0040(1). It is a national trail managed by the National Park Service. Exhibits R, S, and T discuss this trail. The Oregon National Historic Trail is not addressed in this exhibit because it does not meet the definition of a protected area under OAR 345-022-0040(1). Exhibits R, S, and T discuss this trail.

The Blue Mountain Scenic Byway is not addressed in this exhibit because it does not meet the definition of a protected area under OAR 345-022-0040(1). The byway was designated in 1989 under the National Scenic Byway Project and by the Oregon Department of Transportation as an Oregon State Scenic Byway in 1997. Exhibits R and T address the Blue Mountain Scenic Byway.

The analysis area also includes the Oregon Trail McDonald and John Day Crossings and Fourmile Canyon interpretive sites. These areas do not meet the definition of a protected area under OAR 345-022-0040(1). They are further addressed in Exhibits R, S, and T.

Consistent with Council's prior findings, no protected areas lie within the approved or proposed expanded site boundaries.

**OAR 345-021-0010(1)(L)(B)** *A map showing the location of the proposed Facility in relation to the Protected Areas listed in OAR 345-022-0040 located in the analysis area.*

**Response:** Figure L-1 depicts the Facility approved and expanded site boundaries, the Phase 2 analysis area, and the locations of inventoried protected areas listed in Table L-1.

#### **L.5 POTENTIAL IMPACTS OF PROPOSED FACILITY**

**OAR 345-021-0010(1)(L)(C)** *A description of significant potential impacts of the proposed Facility, if any, on the Protected Areas including, but not limited to, potential impacts such as:*

- (i) Noise resulting from Facility construction or operation;*
- (ii) Increased traffic resulting from Facility construction or operation;*
- (iii) Water use during Facility construction or operation;*
- (iv) Wastewater disposal resulting from Facility construction or operation;*
- (v) Visual impacts of Facility structures or plumes.*

- (vi) *Visual impacts from air emissions resulting from Facility construction or operation, including, but not limited to, impacts on Class 1 Areas as described in OAR 340-204-0050.*

**Response:** As a result of overlapping analysis areas for Phases 1 and 2, the following discussion addresses the combined effects of both phases, while highlighting any differences between the impacts previously considered by the Council and impacts resulting from expansion of the site boundary, and the addition of a solar array and battery storage system.

## **L.5.1 Potential Noise, Traffic, Water Use, and Wastewater Disposal Impacts**

### **L.5.1.1 Noise**

**Response:** The Council previously found that noise generated by construction and operation of the Facility would not likely result in significant adverse noise impacts to protected areas. The Council imposed conditions (Conditions 97 and 107) to ensure compliance with the Oregon Department of Environmental Quality's (DEQ's) noise standards and to minimize noise-related impacts at protected areas.<sup>4</sup>

#### Construction

The Council previously found that noise produced during construction is exempt from the DEQ regulations under OAR 13 340-035-0035(5)(g), and that considering the distance of construction activity from most of the protected areas as well as the temporary duration of the activity, construction noise is not likely to result in significant adverse impacts to these areas. The Council gave specific consideration to the Horn Butte Wildlife Area, as discussed in additional detail below. The Horn Butte Wildlife Area is designated and managed as an ACEC by BLM.

Construction activities will be similar to those described for the approved Facility. Construction activities within the proposed expanded site boundary will occur between 5 and 22 miles from protected areas. Given the distance of the Facility to these protected areas, significant effects from construction noise are not expected.

As shown on Figure L-1, the proposed expanded site boundary is at least 6 miles from the Horn Butte Wildlife Area. The Council previously found that construction noise could impact long-billed curlew nesting at the Horn Butte Wildlife Area and imposed a condition to limit construction activities within 1,300 feet of the wildlife area during the curlew nesting period. Construction activities related to Phase 2 turbines relocated to the proposed expanded site boundary, solar array, and battery storage would be more than 8 miles from the wildlife area. Therefore, there is no change to the Council's previous conclusion, and construction impacts to the Horn Butte Wildlife Area are adequately managed by Condition 97 as written.

#### Operations

The Council previously analyzed operational impacts on protected areas based on the loudest turbine under consideration. The Council found that based on the maximum sound power level for turbines under consideration, operation of the Facility would not result in significant adverse noise impacts at protected areas located 3 miles or more from the nearest Facility wind turbines<sup>5</sup>. The Council also found that existing Site Certificate Condition 107 would ensure compliance with DEQ's noise standards and minimize noise-related impacts at protected areas.

All protected areas are at least 3 miles from the proposed expanded site boundary. Based on the Council's prior finding that protected areas located more than 3 miles from the nearest turbines

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<sup>4</sup> EFSC. 2017b. *Final Order on Amendment #3 of the Site Certificate for the Montague Wind Power Facility*. p. 26. July 12.

<sup>5</sup> EFSC. 2017b. *Final Order on Amendment #3 of the Site Certificate for the Montague Wind Power Facility*. pp. 23-25. July 12.

will not experience significant adverse noise impacts<sup>6</sup>, the Council may find similarly that implementation of Condition 107 will be sufficient to prevent adverse noise impacts from wind turbines to protected areas.

Noise from operation of the battery storage area and the solar array will be less than noise generated by the wind turbines. As described in Exhibit X, Montague has identified proxy battery storage components to have a sound level of 65 dBA at 15 meters (approximately 50 feet) from the 100 MW battery storage area and components are anticipated to be less than 78 decibels on an A-weighted scale (dBA) at 6 feet from the battery enclosures and 79 dBA at 6 feet from the battery inverters, compared to the previously analyzed maximum of 112 dBA (110 + 2 dBA) emitted by the wind turbines. Distance attenuation alone of 700 feet yields a sound level of 42 dBA from the closest container in the proposed battery storage area. In addition to distance attenuation, sound levels will be further reduced by atmospheric absorption. Montague has identified that the solar inverters sound level is less than 66 dBA at 33 feet when at full load and less than 55 dBA when at half-load.<sup>7</sup> Distance attenuation alone at 2 miles from the proposed solar inverters provides a reduction of 50 dBA, resulting in less than 20 dBA when at full load. Given the distance from the nearest protected areas to the proposed expanded site boundary (over 3 miles), and that the sound level associated with the solar and battery storage components is substantially less than that of the previously analyzed turbines, the basis of the previous Council finding remains unaffected. Noise from operation of the battery storage area and the solar array will not materially change the noise profile of the overall Facility. Wind turbines will continue to be the primary noise generating component of the Facility (see Exhibit X for additional information).

Given predicted noise levels and the distance between Facility elements and protected areas, noise resulting from Facility construction and operation will not significantly affect any protected areas in the 20-mile analysis zone. Consistent with modeled impacts resulting from wind turbine operation considered by the Council in the Final Order, Order on Amendment 1, Order on Amendment 2, and Order on Amendment 3, as well as information on noise generated by the solar array and battery storage area as discussed in Exhibit X and Montague compliance with Site Certificate Condition 107, Council may rely on its prior findings to determine that the modifications proposed under RFA 4 will not result in any new noise impacts to protected areas. Therefore, there will be no significant impacts from noise on protected areas.

#### L.5.1.2 Traffic

**Response:** The Council previously found that traffic at the Facility during construction and operation would not adversely impact protected areas<sup>8</sup>. A detailed traffic analysis is presented in Exhibit U. As previously identified, Phase 2 will be located partially within the approved site boundary, and partially within the proposed expanded site boundary. The road network used to access the Facility will not be modified as a result of the changes requested in RFA 4. Phase 2 construction activities will occur in areas south and west of the intersection of Oregon Highway 19 (OR 19) and Old Tree Road, and east and north of Baseline and Lone Roads. Additional access to the westernmost areas of Phase 2 construction will occur via Weatherford Road, Bottemiller

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<sup>6</sup> EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. p. 63. September 10.

<sup>7</sup> Tracking arrays, if used, use a very small and therefore quiet motor that intermittently rotates the solar panels to maintain the optimum angle with the sun. Given that these small motors are not primary sound sources, vendors have not published sound levels for them. Rather, it has reasonably been indicated that their sound level is negligible. Additionally, the tracking motors operate for a very brief (seconds) period of time; they would not influence the most restrictive L<sub>50</sub> sound requirement as the L<sub>50</sub> requires a source to operate for 30 or more minutes in an hour. For both of these reasons, this analysis does not include the minor sound emissions from tracking motors. Nonetheless, Montague understands its obligation to comply with the conditions.

<sup>8</sup> EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. p. 64. September 10.

Lane, and Middle Rock Creek Lane. All of these roads were previously identified as potential access routes for the approved site boundary.

The proposed primary route for Facility-related construction and operational traffic within either the approved or expanded site boundaries does not pass through or near any protected areas within the analysis area. The closest portion of the proposed primary route to a protected area is a portion of Fourmile Road that passes within 2 miles of part of the Horn Butte Wildlife Area, which was previously considered by the Council. Traffic volume along this portion of the proposed route is estimated at between 59 and 180 trips per day during the approximate peak 9-month construction period for Phase 2 (see Section 5.3.2 in Exhibit U). Trip volume during operations will be significantly lower than during construction, with an estimated permanent work force of 10 to 30 staff for the entire Facility. As detailed in Exhibit U, Facility-related traffic does not represent a significant increase over the current use, and therefore will have no adverse impact on the Horn Butte Wildlife Area or on any other protected area.

Montague will use a phased construction approach to build the Facility in two mobilizations. Phase 1 construction began in September 2017 and will be completed by December 2019. Phase 2 construction will begin as early as June 2019 and completion is targeted within the modified construction schedule by September 14, 2023. Phased construction does not significantly increase traffic intensity (e.g., trucks per turbine) but does result in longer construction duration than building the Facility in a single mobilization. Although a phased approach may take longer, Montague will construct the Facility within the timeframe outlined in the Site Certificate Condition 24, and the proposed amended Condition 25, respectively.

The Council previously considered potential impacts associated with truck traffic volumes ranging from 156 to 269 daily trips going to or coming from the Facility<sup>9</sup> (that is, roundtrips equal two truck trips). These trips were associated with the installation of 269 turbines over an assumed 12-month construction period. Montague is now proposing to install up to 162 turbines. This reduction in the total number of turbines will result in a corresponding reduction in the number of component deliveries for turbines. Construction of the solar array will take about 9 months, with 20 days of construction per month, and require about 32,400 truck trips for component deliveries with an average of 180 truck trips per day (90 trucks making roundtrips).

Overall, construction of Phase 1 (59 truck trips) and Phase 2 (180 truck trips under Design Scenario C) could result in a combined total of approximately 239 trips per day over an assumed 9-month construction period. This represents the “worst case” associated with Design Scenario C, which remains within the range of truck traffic volumes previously evaluated for the approved Facility. See Exhibit U for additional detail on construction traffic estimates.

Consistent with impacts considered by the Council in the Final Order on the Application, Final Order on Amendment 1, Final Order on Amendment 2, and Final Order on Amendment 3, increased traffic resulting from Facility construction or operation will not adversely impact protected areas.

### L.5.1.3 Water Use

**Response:** The Council previously found that water use by Montague would not adversely impact protected areas.<sup>10</sup> The Council found that Montague is permitted to obtain construction water from the City of Arlington (City) and truck such water to the site or obtain construction water

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<sup>9</sup> EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. pp. 63 and 121. September 10.

<sup>10</sup> EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. p. 64. September 10.

from an existing well or a new well permitted under a limited water use license, and that a maximum water usage of 120,000 gallons per day, with a total of 36.9 million gallons could be accommodated by the City.<sup>11</sup> Montague will source construction water from the same sources as previously approved by the Council and will not exceed the approved daily usage rate, and overall volume that can be accommodated by the City. No water will be sourced from protected areas. As identified in Exhibit O, Phase 2 construction will consume approximately 18,300,000 gallons. Overall construction of the Facility will consume an estimated 36,800,000 gallons, which is less than previously considered by the Council.

Water for dust control will ensure that protected areas, specifically Willow Creek Wildlife Area and Horn Butte Wildlife Area, are not affected by dust that otherwise might arise during Phase 2 construction.

Given these considerations, Phase 2 and the Facility as modified by RFA 4 will have no adverse impacts to protected areas from construction or operational water use.

#### **L.5.1.4 Wastewater Disposal**

**Response:** The Council previously found that wastewater disposal from Facility construction or operations would not adversely impact protected areas.<sup>12</sup>

As discussed in Exhibit V, the use of water for construction practices is not anticipated to generate runoff, and wastewater will not be discharged into wetlands or other adjacent water resources.

As identified in Exhibit O, no cleaning solvents or other additives will be mixed with the solar array washwater and it will be discharged to the ground for evaporation or infiltration. Water discharge will occur in the immediate vicinity of the solar array and will not impact protected areas located 4 or more miles from the solar array.

These factors ensure that no wastewater will reach protected areas and, consequently, there will be no potential impacts from wastewater to protected areas.

#### **L.5.2 Potential Visual Impacts**

The following addresses whether each of the changes to the Facility resulting from RFA 4 will contribute to visual impacts to protected areas.

##### **L.5.2.1 Expanded Site Boundary**

The Council previously found that primary visual impact to protected areas from the Facility is the visibility of wind turbines from each protected area but that the visibility of turbines would not have a significant adverse impact on protected areas<sup>13</sup>. In making this conclusion, the Council considered the maximum height of the turbines, the distance of turbines to protected areas, and the influence of topography obscuring views of turbines from certain protected areas. The Council found that proposed wind turbines would not be visible from vantage points within the Arlington State Park, the John Day (Hilderbrand) State Park or the Willow Creek Wildlife Area but might be visible from some high point within the John Day Wildlife Refuge, the Wild and Scenic portion of the John Day River, and the John Day State Scenic Waterway, although the visual impact of the turbines on these protected areas would be diminished by the distance from the turbines of at

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<sup>11</sup> EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. p. 136. September 10.

<sup>12</sup> EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. p. 64. September 10.

<sup>13</sup> EFSC. 2017b. *Final Order on Amendment #3 of the Site Certificate for the Montague Wind Power Facility*. p. 28. July 12.

least 4 miles. The Council also concluded that some of the 230-kV transmission line support structures would be visible from locations within the Horn Butte Wildlife Area.<sup>14</sup>

The relocation of turbines into the proposed expanded site boundary will result in no change to the Council’s previous findings on previously analyzed protected areas because the proposed larger turbine (up to 182 meters tall) will be seen from the same protected areas (as listed in Table L-1) from the same distance (5 to 20 miles)<sup>15</sup>. Montague conducted a zone of visual influence (ZVI) analysis (see Exhibit R) to assess whether the Facility could be visible from the protected areas identified in Table L-1, and concluded that relocating turbines to the proposed expanded site boundary, and using taller turbines, may result in turbine visibility from five of the six new protected areas or portions of protected areas identified in Section L.4.2 that were not previously evaluated (Table L-2). The Design Scenario A layout and Design Scenario B maximum blade tip height were used for this analysis because it represents the greatest number of turbines that could be constructed, and due to their height, the turbines are the most visible component of the Facility.

**Table L-2. Potential Facility Visibility from and Distance to Protected Areas within 20 Miles**

<b>Protected Area</b>	<b>Approximate Distance to Portion of Facility Site Boundary Containing Turbines (Miles)</b>	<b>Approximate Number of Turbines Visible<sup>a</sup></b>	<b>Change Relative to Previous Analysis</b>	<b>Approximate Distance to Solar Array (Miles)</b>	<b>Is Solar Array Potentially Visible?</b>
Horn Butte Wildlife Area	0	0 to over 50 (varies depending on location)	No Change	9	Yes (depending on location)
John Day Wildlife Refuge	5	0 to over 50 (varies depending on location)	No Change	7	Yes (depending on location)
John Day Wild and Scenic River	5	0 to over 50 (varies depending on location)	No Change	7	Yes (depending on location)
John Day State Scenic Waterway	5	0 to over 50 (varies depending on location)	No Change	7	Yes (depending on location)
John Day (Hilderbrand) State Park	6	None expected	No Change	8	No
Cottonwood Canyon State Park	6	0 to over 50 (varies depending on location)	No Change	8	Yes (depending on location)
Arlington State Park (Wayside)	10	None expected	No Change	12	No
Willow Creek Wildlife Area	12	0 to over 50 (varies depending on location)	No Change	17	No

<sup>14</sup> EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. p. 65. September 10.

<sup>15</sup> EFSC. 2017b. *Final Order on Amendment #3 of the Site Certificate for the Montague Wind Power Facility*. p. 28. July 12.

**Table L-2. Potential Facility Visibility from and Distance to Protected Areas within 20 Miles**

Protected Area	Approximate Distance to Portion of Facility Site Boundary Containing Turbines (Miles)	Approximate Number of Turbines Visible <sup>a</sup>	Change Relative to Previous Analysis	Approximate Distance to Solar Array (Miles)	Is Solar Array Potentially Visible?
Ferry Canyon ACEC	17	0 to 25 (location)	NA	19	No
Lindsey Prairie Preserve	18	None expected	NA	22	No
Crow Butte State Park	22	0 to over 50 (varies depending on location)	NA	24	No
Boardman Research Natural Area	22	0 to over 50 (varies depending on location)	NA	24	No
Umatilla National Wildlife Refuge	20	0 to over 50 (varies depending on location)	NA	30	No

<sup>a</sup> Design Scenario A layout and maximum turbine blade tip height of 599 feet to conservatively capture the maximum turbine blade tip height of 597 feet (182 meters) associated with Design Scenario B.

Note:

NA = Not applicable. This protected area was not previously considered by the Council.

Review of the ZVI analysis presented on Figure L-1 and summarized in Table L-2 indicates that the Facility’s turbines under the maximum layout will potentially be visible from ten of the twelve protected areas. Of these, it is expected that the Facility’s turbines will be clearly visible from only one area, the Horn Butte Wildlife Area. From the other nine areas, visibility is possible in portions of the areas, and the distance of these areas to the nearest turbines (5 miles or greater) will greatly diminish the visual impacts.

**L.5.2.2 Wind Turbine Generators**

Phase 2 will consist of up to 81 wind turbines, located within the original approved site boundary and the proposed expanded site boundary. The turbine vendor, size, number, and actual generating capacity have not yet been determined. No change is proposed to construction methods or operational requirements of wind turbines as part of Phase 2. Wind turbine components and dimensions are described in detail in Section 3.2 of RFA 4.

Montague evaluated the visual impacts of the approved Phase 1 layout and the proposed 182 meter tall turbines at 81 turbine locations within the maximum turbine layout (i.e., Design Scenario A). Montague compared this evaluation to the previously analyzed maximum turbine layout of 269 turbines at 119 meters and concluded that use of fewer taller turbines will not result in substantial additional visibility of wind turbines in protected areas. Montague’s analysis greatly overestimates the number of turbines that would be used if the larger turbines are selected, but it also depicts the worst-case scenario from within the 20-mile analysis area. Views of the Facility as modified by RFA 4 are discussed for each protected area below.

### **L.5.2.3 230-kV Transmission Line**

The Council previously found that portions of the previously 230-kV transmission line could be visible from the Horn Butte Wildlife Area.<sup>16</sup> Approximately 3 miles of 230-kV transmission line will be constructed as part of Phase 2. However, the modifications proposed under RFA 4 do not alter transmission line structure location in the vicinity of Horn Butte Wildlife Area because the proposed expanded site boundary and Phase 2 transmission line corridor are farther from Horn Butte Wildlife Area than the previously-approved site boundary and Phase 1 transmission line corridor. Views of the transmission line support structures proposed under RFA 4 will be significantly less prominent than views of wind turbines (see Exhibit R, Figure R-4) and therefore visual impacts of the proposed modifications on each protected area are focused on wind turbine visibility.

### **L.5.2.4 Solar Array**

Solar array components and dimensions are described in detail in Section 3.2 of RFA 4. The most visible component of the solar array will be the solar panels. The solar array will consist of strings of solar modules mounted on single-axis tracker systems located adjacent to OR 19. The nearest protected area to the solar array is 7 miles away (see Table L-2). Resources associated with the John Day River (Wildlife Refuge, Wild and Scenic River, State Scenic Waterway) are approximately 7 miles from the solar array. Cottonwood Canyon and the John Day Hilderbrand State Park are approximately 8 miles from the solar array, and Horn Butte ACEC is approximately 9 miles from the array.

The visual impact of the solar array will depend on distance and topography between the viewer and the solar array, and the presence of view obstructions. The array, with a maximum height of approximately 15 feet above ground, will not be visible from locations situated in draws or gullies that are lower in elevation than the plateau on which the array is constructed (for example, Shutler Flat). Viewed from distances at locations with similar elevation, the solar array will appear as a dark line on the horizon. Viewed from locations with higher elevation, and based on the distance from the viewing locations, the array may be visible from directions looking towards the primary angle at which the array is tilted towards the sun.

The solar array will be designed so that reflectivity is minimized. Further, the surface of the panels must present a very high transmittance to maximize the amount of light reaching the PV cells for energy generation. Together, the high transmittance and antireflective design minimize the potential for glare to less than that of natural bodies of water or coated glass that is not antireflective. Additional discussion of glare from solar panels can be found in Exhibit R.

As a result of the distance between protected areas and the solar array (7 miles or greater), the low profile of the array (15 feet above ground surface), and the minimal reflectivity of the array, the array will be significantly less visible or not visible at all from the identified protected areas. Therefore, addition of the solar array to Montague under Design Scenario C will not result in a significant adverse visual impact to protected areas. Views of the Facility as modified by RFA 4 will continue to be dominated by wind turbines and their visibility is further discussed for each protected area below.

### **L.5.2.5 Battery Storage**

Battery storage components and their dimensions are described in detail in Section 3.2 of RFA 4. The battery storage components will consist of containers stacked on top of each other or within a single warehouse type storage building of similar size and scale with an expected height

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<sup>16</sup> EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. p. 64. September 10.

of approximately 20 feet above ground surface. The battery storage components will be painted in a low-reflectivity, neutral color to blend with the surrounding landscape, consistent with Site Certificate Condition 103. The battery storage area will be located adjacent to the Facility substation and Phase 2 O&M building. The most visible component of the battery storage area will be the assemblage of battery components contained in shipping containers (stacked up to two high) placed on a concrete slab, or housed in a warehouse type building. The visual impact of the battery storage components, whether containerized or housed in a warehouse, will be similar to that of a typical building similar in shape and size to the already approved O&M building.

The battery storage components will not be distinguishable from background when viewed from the protected areas identified above due to distance, topography, and height of the components. The battery storage area is located a similar distance to each protected area as the solar array (approximately 7 miles from the nearest elements of the John Day River; 8 miles from Cottonwood Canyon, and 9 miles from Horn Butte). Based on topography, location, and height of battery storage components, the battery storage will have limited to no visibility from identified protected areas.

#### **L.5.2.6 Horn Butte Wildlife Area**

The Council previously found that the Horn Butte Wildlife Area is managed for wildlife and wildlife habitat (the protection and preservation of nesting habitat for the long-billed curlew) and not for scenic quality<sup>17</sup>. There have been no changes to the status of management of visual resources for this area since 2010. Existing views from the majority of the Horn Butte Wildlife Area already include wind turbines, various transmission lines, highways and roads, and other human-made features.

As illustrated on Figure L-1, fewer Montague wind turbines will be located in direct vicinity of this protected area. The closest wind turbines as part of Phase 1 are now located more than 4 miles from the boundary of the core area of this area, and more than 2 miles from the southernmost portion of the area; Phase 2 turbines are located at even further distances.

The modifications proposed under RFA 4 do not alter the visual impacts of the Facility on this protected area as the use of larger turbines considered in this analysis is balanced by the reduction in the number of potentially visible turbines under Design Scenario B. Accordingly, the views of the Facility will not constitute a significant adverse impact to this protected area.

#### **L.5.2.7 John Day Wildlife Refuge**

The Council previously found that turbines could be visible from higher elevations located within the John Day Wildlife Refuge but that from a distance of 4 miles or more, the visual impact of the turbines would be diminished.<sup>18</sup> The ZVI on Figure L-1 shows that a few turbines might still be visible from some isolated areas of the refuge. However, turbines within the proposed expanded site boundary will be located 5 miles or more from the river and the visual impact of the turbines will therefore be diminished (see Exhibit R). The modifications proposed under RFA 4 do not alter the visual impacts of the Facility on this protected area as the use of larger turbines considered in this analysis is balanced by the reduction in the number of potentially visible turbines under Design Scenario B.

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<sup>17</sup> EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. pp. 64-65. September 10.

<sup>18</sup> EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. pp. 64-65. September 10.

### **L.5.2.8 John Day Wild and Scenic River**

The Council previously found that turbines could be visible from some higher elevations located within the John Day Wild and Scenic River but that from a distance of 4 miles or more, the visual impact of the turbines would be diminished.<sup>19</sup> As shown in the ZVI on Figure L-1, some turbines might still be visible from some isolated higher-elevation areas of this protected area. Turbines within the proposed expanded site boundary will be located 5 miles or more from John Day River. The modifications proposed under RFA 4 will not alter visibility of turbines within the boundary of this protected area as the use of larger turbines considered in this analysis is balanced by the reduction in the number of potentially visible turbines under Design Scenario B.

### **L.5.2.9 John Day State Scenic Waterway**

The Council previously found that turbines could be visible from higher elevations located within the John Day State Scenic Waterway but that at a distance of 4 miles or more, turbine visibility would be diminished.<sup>20</sup> The ZVI on Figure L-1 shows that with the modifications proposed under RFA 4, a few turbines might still be visible from some isolated areas at higher elevations of this protected area. The modifications proposed under RFA 4 will not alter visibility of turbines within the boundaries of this protected area as the use of larger turbines considered in this analysis is balanced by the reduction in the number of potentially visible turbines under Design Scenario B.

### **L.5.2.10 John Day (Hilderbrand) State Park**

The Council previously found that turbines would not be visible from vantage points within the John Day (Hilderbrand) State Park.<sup>21</sup> The wind energy components of the Facility will be located approximately 6 miles from this park. The park is accessible to the public only from the river. The modifications proposed under RFA 4 do not alter the fact that wind energy components will not be visible from this park due to the surrounding topography (Figure L-1). Therefore, the Facility is not expected to have a visual impact on the area.

### **L.5.2.11 Cottonwood Canyon State Park**

Cottonwood Canyon State Park, established in 2013, is also located on the John Day River, approximately 8 miles from the proposed expanded site boundary and 6 miles from the nearest planned turbine location. Park lands include Cottonwood Bridge and J. S. Burres State Park, as well as additional acreage to the east of the river. The park's 2011 Master Plan includes a number of trails and viewpoints from which some turbines may be visible. But these areas are limited to trails crossing the higher elevation areas of the park. From these trails, the closest turbines will be approximately 7.5 miles away and will be relatively small against the horizon. Turbines will only be visible in higher-elevation locations on the ridges south of Hay Creek (see Exhibit R).

Because views from the park toward the turbines will be limited, and because turbines will constitute relatively small elements in the overall panorama, the Facility is not expected to have an adverse visual impact on Cottonwood Canyon State Park.

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<sup>19</sup> EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. pp. 64-65. September 10.

<sup>20</sup> EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. pp. 64-65. September 10.

<sup>21</sup> EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. pp. 64-65. September 10.

#### **L.5.2.12 Arlington Wayside**

The Council previously found that no wind energy turbines would be visible from this protected area.<sup>22</sup> As illustrated on Figure L-1, fewer wind turbines are planned within the northern portion of the site boundary, and all modifications proposed under RFA 4 occur at locations further from the wayside. There will still be no turbines visible from this protected area.

#### **L.5.2.13 Willow Creek Wildlife Area**

The Council previously found that no wind energy turbines would be visible from this protected area.<sup>23</sup> As illustrated on Figure L-1, fewer wind turbines will be located in the northern portion of the site boundary, and modifications proposed under RFA 4 occur at locations further from the wildlife area.

The ZVI on Figure L-1 shows that with the modifications proposed under RFA 4, turbines might be visible from some isolated areas at higher elevations within the wildlife area. The closest visible Phase 2 turbines are located approximately 12 miles from the wildlife area. However, at 12 miles, distance will greatly diminish the visibility of any turbines, making them relatively small against the horizon and potential visibility of the turbines considered in this analysis is balanced by the reduction in the number of potentially visible turbines under Design Scenario B.

Therefore, Facility structures will not constitute a significant adverse visual impact on this protected area.

#### **L.5.2.14 Ferry Canyon ACEC**

The Ferry Canyon ACEC was designated by the BLM in 2012 (BLM, 2015) and encompasses a 2,364-acre protected area along the John Day River, approximately 15 miles northwest of Condon. BLM manages this area for wildlife and not for scenic quality, as indicated in the *John Day Basin Record of Decision and Resource Management Plan* (BLM, 2015). The management plan does not identify any important scenic resources or values for this area.

The ZVI on Figure L-1 shows that with the modifications proposed under RFA 4, turbines might be visible from some isolated areas at higher elevations within the ACEC. The closest visible Phase 2 turbines are located approximately 17 miles from the ACEC. However, at 17 miles, distance will greatly diminish the visibility of any turbines, making them relatively small against the horizon and potential visibility of the turbines considered in this analysis is balanced by the reduction in the number of potentially visible turbines under Design Scenario B.

Therefore, Facility structures will not constitute a significant adverse visual impact on this protected area.

#### **L.5.2.15 Lindsay Prairie Preserve**

The Lindsay Prairie Preserve is a native prairie remnant on the Columbia Plateau that hosts rare grasslands and a variety of wildlife. Similar to the Boardman RNA, the preserve is not managed for its scenic qualities. The preserve is located approximately 18 miles east of the nearest proposed turbines. According to the ZVI analysis wind turbines will not be visible from the preserve.

Therefore, Facility structures will not constitute a significant adverse visual impact on this protected area.

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<sup>22</sup> EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. p. 64. September 10.

<sup>23</sup> EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. p. 64. September 10.

### **L.5.2.16 Crow Butte State Park**

Crow Butte State Park is a 275-acre park on an island in the southwestern section of Benton County in Washington, on the edge of the analysis area approximately 22 miles from the nearest proposed turbines. While the park is closed seasonally between March 15 and October 31, the boat ramp is open year-round and provides the nearest publicly accessible viewpoint towards the Facility from the park.

The ZVI analysis shows that some small areas at higher elevations within the park may have limited views of turbines. However, at 22 miles, distance will greatly diminish the visibility of any turbines, making them relatively small against the horizon.

Therefore, Facility structures will not constitute a significant adverse visual impact on this protected area.

### **L.5.2.17 Boardman Research Natural Area**

The Boardman RNA is within the military-controlled area known as the Naval Weapons Systems Training Facility Boardman, which is a 47,000-acre site used by the U.S. Navy, the Oregon National Guard, and other agencies for aerial gunnery practice to meet their training and testing requirements. The RNA site is approximately 22 miles east of the nearest proposed turbines and is protected to preserve native grasslands and wildlife such as the Washington ground squirrel. The RNA site is not protected for its scenic qualities (Oregon Natural Heritage Advisory Council, 2010).

According to the ZVI analysis wind turbines may be visible from the RNA, but given the distance will appear as very small elements in the background.

Therefore, the Facility will not have a significant adverse visual impact on this protected area.

### **L.5.2.18 Umatilla National Wildlife Refuge**

As described in Section L.4.2, only a very small portion of the Umatilla National Wildlife Refuge is within the 20-mile analysis area for the approved site boundary. This area was not addressed in the Council's previous findings. Phase 2 elements will be constructed at greater distances from the refuge.

The ZVI analysis shows that some small areas within the refuge may have limited views of turbines. However, at over 20 miles, distance will greatly diminish the visibility of any turbines, making them relatively small against the horizon.

Therefore, Facility structures will not constitute a significant adverse visual impact on this protected area.

### **L.5.3 Class I Areas**

- (vi) *Visual impacts from air emissions resulting from Facility construction or operation, including, but not limited to, impacts on Class 1 Areas as described in OAR 340-204-0050.*

**Response:** The Facility does not lie within a Class 1 area for air quality. The closest Class 1 area is the Badger Creek Wilderness, more than 60 miles away.

Construction activities related to Phase 2 will be similar to those previously considered by the Council. Dust might be generated during road construction and clearing activities for Phase 2 generation and related or supporting facilities, but dust suppression measures previously adopted by Council (Condition 82) will reduce the potential for visible dust clouds.

As previously noted by Council, operation of wind energy facilities does not create air emissions and has no adverse effects on air quality or visibility.<sup>24</sup>

## L.6 POTENTIAL IMPACTS OF PROPOSED TRANSMISSION LINE

**OAR 345-022-0040 (2)** *Notwithstanding section (1), the Council may issue a site certificate for a transmission line or a natural gas pipeline or for a Facility located outside a Protected Area that includes a transmission line or natural gas or water pipeline as a related or supporting Facility located in a Protected Area identified in section (1), if other alternative routes or sites have been studied and determined by the Council to have greater impacts. Notwithstanding section (1), the Council may issue a site certificate for surface facilities related to an underground gas storage reservoir that have pipelines and injection, withdrawal or monitoring wells and individual wellhead equipment and pumps located in a Protected Area, if other alternative routes or sites have been studied and determined by the Council to be unsuitable.*

**Response:** The Council previously found that the Facility is not located in any protected area.<sup>25</sup> Neither the 3.0-mile length of 230-kV transmission line constructed as part of Phase 2, nor any other Facility components constructed as part of Phase 2, occur within any of the protected areas listed in Tables L-1 and L-2.

**OAR 345-022-0040 (3)** *The provisions of section (1) do not apply to transmission lines or natural gas pipelines routed within 500 feet of an existing utility right-of-way containing at least one transmission line with a voltage rating of 115 kilovolts or higher or containing at least one natural gas pipeline of 8 inches or greater diameter that is operated at a pressure of 125 psig.*

**Response:** This OAR does not apply since the 3.0-mile length of 230-kV transmission line constructed as part of Phase 2 is not being routed within an existing utility right-of-way and is not being co-located with an existing transmission line or pipeline.

## L.7 CONCLUSION

This exhibit demonstrates that, consistent with prior Council findings, the proposed Facility is not located in any protected area listed in OAR 345-022-0040 and the design, construction, and operation of the Facility, as modified by RFA 4, will not result in significant adverse impacts to protected areas.

## L.8 REFERENCES

- Bureau of Land Management (BLM). 2015. *John Day Basin Record of Decision and Resource Management Plan*. BLM Prineville District. April.
- Energy Facility Siting Council (EFSC). 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. September 10.
- Energy Facility Siting Council (EFSC). 2010. *Site Certificate for the Montague Wind Power Facility*. September 10.
- Energy Facility Siting Council (EFSC). 2017a. *Third Amended Site Certificate for Montague Wind Power Facility*. July 11.
- Energy Facility Siting Council (EFSC). 2017b. *Final Order on Request for Contested Case and Amendment #3 of the Site Certificate for the Montague Wind Power Facility*. July 12.

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<sup>24</sup> EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. p. 64. September 10.

<sup>25</sup> EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. p. 62. September 10.

Energy Facility Siting Council (EFSC). 2017c. *Final Order in the Matter of the Application for a Site Certification Agreement for the Wheatridge Wind Energy Facility*. April.

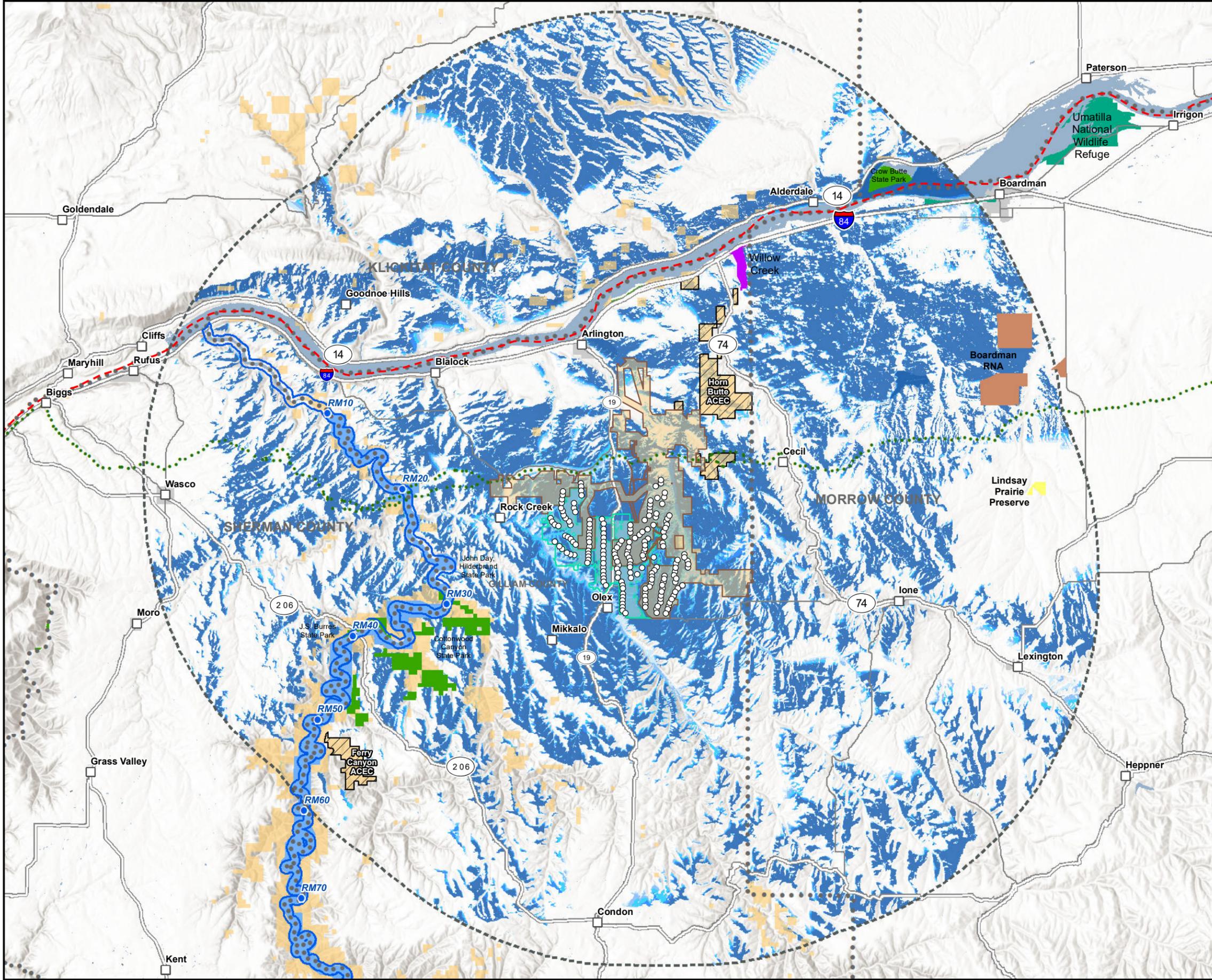
Iberdrola Renewables, Inc. 2010. *Application for Site Certificate for the Montague Wind Power Facility*.

Oregon Natural Heritage Advisory Council. 2010. *Oregon Natural Areas Plan*. Oregon Biodiversity Information Center, Institute for Natural Resources – Portland, Portland State University, Portland, OR. 198 pp.

Figure



**Figure L-1  
Protected Areas  
Montague Wind Power Facility**



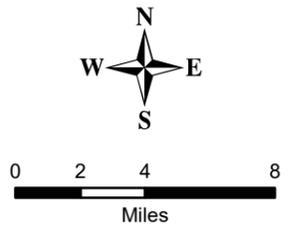
**Legend**

- Approved Site Boundary
- Approved Micrositing Corridor
- Proposed Expanded Site Boundary
- Proposed Expanded Micrositing Corridor
- 20-mile Analysis Area
- Turbine
- Oregon Trail
- Lewis and Clark Trail (Historic Route)
- John Day WSR and SSW
- John Day River Mile Marker
- John Day River Wildlife Refuge
- ACEC
- State Park
- Boardman RNA
- Lindsay Prairie Preserve
- Willow Creek Wildlife Area
- Umatilla National Wildlife Refuge
- BLM Land
- Populated Place
- Road
- Highway
- Water Body
- County Boundary

**Number of Visible Turbines**

- < 6
- 6 - 15
- 16 - 30
- 31 - 50
- > 50

Data Source: Gilliam County (2017), OR Spatial Data Library (2017), ESRI (2017)  
 Basemap Source: ESRI Multi-Directional Hillshade



**EXHIBIT M**  
**FINANCIAL ANALYSIS**  
OAR 345-021-0010(1)(m)

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- M-1 Legal Opinion
- M-2 Credit Letter



## M.1 INTRODUCTION

The Energy Facility Siting Council (EFSC; Council) previously approved construction of the 404-megawatt (MW) Montague Wind Power Facility (Facility)<sup>1</sup> and found that the Facility complies with the Retirement and Financial Assurance standard required in OAR 345-022-0050. Montague Wind Power Facility, LLC (Montague) is constructing the Facility in phases. Phase 1 consists of up to 81 wind turbines generating 202 MW of power within the approved site boundary. Montague has already begun construction of Phase 1 under the conditions of the existing Site Certificate. Phase 2 consists of an expanded site boundary, modification of turbine types and construction schedule, and addition of a solar array and battery storage. The analysis in this exhibit focuses on Phase 2 and the three design scenarios described in *Request for Amendment No. 4 Project Description and OAR Division 27 Compliance* (referred to herein as RFA 4).

## M.2 SUMMARY OF ANALYSIS RESULTS

The Council previously found in the Final Order on the Application, Final Order on Amendment 1, Final Order on Amendment 2, and Final Order on Amendment 3 that Montague is able to restore the site are feasible and that restoration of the site to a useful, nonhazardous condition could be achieved. In addition, the Council found that Montague has a reasonable likelihood of obtaining a bond or letter of credit in an amount necessary to restore the site.<sup>2</sup>

For Phase 1, Montague provided a bond in the amount of \$8.685 million, which the Oregon Department of Energy (ODOE) has confirmed is sufficient to restore the portions of the site where Phase 1 will be constructed.<sup>3</sup> This amount was later reduced to \$7.595 million to reflect changes in the final layout for Phase 1. The estimated cost of Phase 2 restoration is \$9.759 million (in second-quarter 2019 dollars) for the largest layout configuration (see Attachment W-1 in Exhibit W for a detailed cost estimate). Attachment M-1 contains a legal opinion stating that Montague has the legal authority to construct and operate the Facility consistent with its bond indenture provisions, articles of incorporation, common stock covenants, or similar agreements. Attachment M-2 contains a letter of credit demonstrating the reasonable likelihood that Montague will be able to provide one or more bonds in an amount equal to or greater than the net cost of Phase 2 retirement and restoration.

## M.3 CONDITION COMPLIANCE

The Third Amended Site Certificate imposes five conditions that apply to Facility retirement and restoration (Conditions 8, 9, 16, 32, and 33). These conditions cover the requirement to restore the site to a useful, nonhazardous condition by way of obtaining a bond or letter of credit in an amount sufficient to retire and restore the Facility. Condition 32 established the initial bond amount for the Facility at \$21.511 million (third-quarter 2010 dollars) and outlines procedures to adjust the bond amount to reflect final design.

Montague proposes revisions to Condition 32 to allow it to carry two bonds, one for each phase, that equate the total retirement and restoration costs of the Facility (see Exhibit W for Montague's proposed modification to Condition 32). The bond requirements have not significantly changed and the proposed modifications do not otherwise affect Montague's ability to comply with the other Site Certificate conditions related to bonding (Conditions 8, 9, 16, and 33).

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<sup>1</sup> EFSC. 2017a. *Third Amended Site Certificate for Montague Wind Power Facility*. July 11.

<sup>2</sup> EFSC. 2017b. *Final Order on Amendment #3 of the Site Certificate for the Montague Wind Power Facility*. p. 31. July 12.

<sup>3</sup> Cornett, Todd, Oregon Department of Energy. 2017. Letter to Brian Walsh, Montague Wind Power Facility, LLC. September 8.

#### **M.4 FINANCIAL CAPABILITY**

**OAR 345-021-0010(1)(m)** *Information about the applicant's financial capability, providing evidence to support a finding by the Council as required by OAR 345-022-0050(2). Nothing in this subsection shall require the disclosure of information or records protected from public disclosure by any provision of state or federal law. The applicant shall include:*

**Response:** See Sections M.5 through M.7.

#### **M.5 OPINION OF LEGAL COUNSEL**

**OAR 345-021-0010(1)(m)(A)** *An opinion or opinions from legal counsel stating that, to counsel's best knowledge, the applicant has the legal authority to construct and operate the facility without violating its bond indenture provisions, articles of incorporation, common stock covenants, or similar agreements.*

**Response:** Attachment M-1 is an opinion from Jeffery Durocher, in-house legal counsel for Montague, conforming to the requirements of the rule.

#### **M.6 BOND, SECURITY, OR OTHER FINANCIAL INSTRUMENT**

**OAR 345-021-0010(1)(m)(B)** *The type and amount of the applicant's proposed bond or letter of credit to meet the requirements of OAR 345-022-0050.*

**Response:** The estimated cost of Phase 2 restoration is \$9.759 million (in second-quarter 2019 dollars) for the wind and solar array layout configuration (Design Scenario C). Attachment W-1 in Exhibit W provides a detailed estimate. Before Facility construction begins, Montague will submit to ODOE a bond or letter of credit in an amount equal to or greater than the net cost of Phase 2 retirement and restoration. The bond or letter of credit will assure that adequate funds are available to restore the site to a useful, nonhazardous condition following permanent cessation of Facility construction or operation. The amount will be inflation-adjusted on an annual basis according to the Gross Domestic Product Implicit Price Deflator Index.

#### **M.7 EVIDENCE OF REASONABLE LIKELIHOOD OF OBTAINING SECURITY**

**OAR 345-021-0010(1)(m)(C)** *Evidence that the applicant has a reasonable likelihood of obtaining the proposed bond or letter of credit in the amount proposed in paragraph (B), before beginning construction of the facility.*

**Response:** Montague has obtained a letter (see Attachment M-2) from Liberty Mutual demonstrating that it has a reasonable likelihood to obtain one or more bonds in an amount equal to or greater than the cost of Phase 2 retirement and restoration.

#### **M.8 REFERENCES**

Energy Facility Siting Council (EFSC). 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. September 10.

Energy Facility Siting Council (EFSC). 2013. *Final Order on Request for Contested Case and Amendment #1 of the Site Certificate for the Montague Wind Power Facility*. June 21.

Energy Facility Siting Council (EFSC). 2015. *Final Order on Request for Contested Case and Amendment #2 of the Site Certificate for the Montague Wind Power Facility*. December 4.

Energy Facility Siting Council (EFSC). 2017a. *Third Amended Site Certificate for Montague Wind Power Facility*. July 11.

Energy Facility Siting Council (EFSC). 2017b. *Final Order on Request for Contested Case and Amendment #3 of the Site Certificate for the Montague Wind Power Facility*. July 12.



Attachment M-1  
Legal Opinion





October 16, 2017

Oregon Department of Energy  
550 Capitol St. NE, 1st Floor  
Salem, Oregon 97301

Re: In the Matter of the Application for a Site Certificate for the Montague Wind  
Power Facility

Dear Ladies and Gentleman:

I am an attorney for Avangrid Renewables, LLC, an Oregon corporation, and also represent and have acted as counsel to its affiliate, Montague Wind Power Facility, LLC (the "Applicant").

I have examined originals or copies certified or otherwise identified to my satisfaction as the books and records of Applicant and such other documents, limited liability company records, certificates of public officials and other instruments regarding the Applicant as I have deemed necessary and appropriate for the purposes of this opinion.

In rendering this opinion expressed below, I have assumed (i) the authenticity of all the documents submitted to me as originals and (ii) the conformity to original documents of all documents submitted to me as copies. As to factual matters, I have relied to the extent deemed proper upon statements and certification of officers and managers of the Applicant.

Based on the foregoing, to the best of my knowledge, I am of the opinion that, subject to the Applicant's meeting of all applicable federal, state and local laws (including all rules and regulations), the Applicant has the legal authority to construct and operate the Montague Wind Power Facility, a renewable energy generation facility with a maximum capacity of up to 404 MW, and its associated facilities located in Gilliam County, Oregon (the "Project") for which the Applicant holds a Site Certificate<sup>1</sup> without violating articles of organization covenants or similar agreements.

I am a member of the bar of the states of Oregon, New York, New Jersey, and the District of Columbia. For the purposes of this opinion, do not hold myself out as an expert in, and do not express any opinion with respect to the law of any jurisdiction other than the law of the state of Oregon.

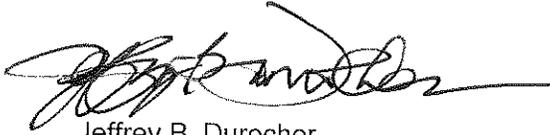
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<sup>1</sup> Oregon Energy Facility Siting Council, Site Certificate for the Montague Wind Power Facility, issued September 10, 2010.

The foregoing opinion is limited solely to whether the Applicant has the authority under its operating agreements to construct, own and operate the Project.

Please contact me if you have any additional questions regarding this matter.

Very truly yours,

A handwritten signature in black ink, appearing to read "Jeffrey B. Durocher", with a long horizontal flourish extending to the right.

Jeffrey B. Durocher  
Senior Counsel

Attachment M-2  
Credit Letter





**Liberty Mutual Surety**

October 19, 2017

Ms. Sarah T. Esterson  
Energy Facility Siting Analyst  
Oregon Department of Energy  
550 Capitol St NE, 1<sup>st</sup> Floor  
Salem, OR 97301

**RE: Avangrid Renewables, LLC**  
Phase 2 – Montague Wind Power Facility

Dear Ms. Esterson:

Avangrid Renewables, LLC is a highly regarded and valued client of Aon Risk Services and Liberty Mutual Insurance Company. Liberty Mutual Insurance Company (hereinafter, Liberty Mutual) is privileged to act as surety for Avangrid Renewables, LLC. Our surety relationship and experience with Avangrid Renewables, LLC has been superior in all respects and is qualified for issuance of a single bond in the amount of \$10,000,000 with aggregate capacity of \$50,000,000.

Liberty Mutual is a national provider of surety bonds, enjoying an “Excellent” A.M. Best rating of “A”. Liberty Mutual is listed in the Federal Register as a surety acceptable on government projects, and is approved by the Massachusetts Department of Insurance with authorization to issue surety bonds in the State.

If Avangrid Renewables, LLC is selected for the project, and we receive a request from them to provide decommissioning bonds, we are prepared to look favorably upon issuance of these bonds. Such pre-qualification and approval would be conditioned upon applicable underwriting procedures, which are routine at the time of the bond request. However, please understand that the surety assumes no liability to you or to third parties if for any reason we do not execute any required bonds.

Should you have any questions or comments, please feel free to call our office.

Sincerely,

Liberty Mutual Insurance Company

Jaquanda S. Martin, Attorney-in-Fact

**Member of Liberty Mutual Group**

**THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.**

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Certificate No. 7880392

Liberty Mutual Insurance Company  
The Ohio Casualty Insurance Company West American Insurance Company

**POWER OF ATTORNEY**

KNOWN ALL PERSONS BY THESE PRESENTS: That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Douglas R. Wheeler; Elizabeth Marrero; Jaquanda S. Martin; Joanne C. Wagner; Kimberly G. Sherrod; Marina Tapia; Maureen McNeill; Patricia A. Rambo; Sara Owens; Wayne G. McVaugh

all of the city of Philadelphia, state of PA each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 30th day of August, 2017.



The Ohio Casualty Insurance Company  
Liberty Mutual Insurance Company  
West American Insurance Company

By: David M. Carey  
David M. Carey, Assistant Secretary

STATE OF PENNSYLVANIA ss  
COUNTY OF MONTGOMERY

On this 30th day of August, 2017, before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



COMMONWEALTH OF PENNSYLVANIA  
Notarial Seal  
Teresa Pastella, Notary Public  
Upper Merion Twp., Montgomery County  
My Commission Expires March 28, 2021  
Member, Pennsylvania Association of Notaries

By: Teresa Pastella  
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

**ARTICLE IV – OFFICERS** – Section 12. Power of Attorney. Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

**ARTICLE XIII – Execution of Contracts – SECTION 5.** Surety Bonds and Undertakings. Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

**Certificate of Designation** – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

**Authorization** – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 19th day of October, 2017.



By: Renee C. Llewellyn  
Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.



LIBERTY MUTUAL INSURANCE COMPANY  
 FINANCIAL STATEMENT — DECEMBER 31, 2016

Assets		Liabilities	
Cash and Bank Deposits .....	\$1,092,914,837	Unearned Premiums .....	\$6,929,723,299
*Bonds — U.S Government .....	1,406,763,970	Reserve for Claims and Claims Expense .....	17,233,877,300
*Other Bonds .....	11,379,916,523	Funds Held Under Reinsurance Treaties .....	208,362,823
*Stocks .....	10,349,761,988	Reserve for Dividends to Policyholders .....	944,909
Real Estate .....	290,265,760	Additional Statutory Reserve .....	39,649,905
Agents' Balances or Uncollected Premiums .....	4,709,977,463	Reserve for Commissions, Taxes and	
Accrued Interest and Rents .....	112,757,395	Other Liabilities .....	3,061,117,958
Other Admitted Assets .....	<u>14,659,523,751</u>	<b>Total .....</b>	<b><u>\$27,473,676,194</u></b>
<b>Total Admitted Assets .....</b>	<b><u>\$44,001,881,687</u></b>	Special Surplus Funds .....	\$95,257,334
		Capital Stock .....	10,000,000
		Paid in Surplus .....	9,229,250,104
		Unassigned Surplus .....	7,193,698,055
		<b>Surplus to Policyholders .....</b>	<b><u>16,528,205,493</u></b>
		<b>Total Liabilities and Surplus .....</b>	<b><u>\$44,001,881,687</u></b>



\* Bonds are stated at amortized or investment value; Stocks at Association Market Values.  
 The foregoing financial information is taken from Liberty Mutual Insurance Company's financial statement filed with the state of Massachusetts Department of Insurance.

I, TIM MIKOLAJEWSKI, Assistant Secretary of Liberty Mutual Insurance Company, do hereby certify that the foregoing is a true, and correct statement of the Assets and Liabilities of said Corporation, as of December 31, 2016, to the best of my knowledge and belief.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said Corporation at Seattle, Washington, this 23<sup>rd</sup> day of March, 2017.

*T. Mikolajewski*

Assistant Secretary

**EXHIBIT N**  
**NONGENERATING FACILITY INFORMATION**  
OAR 345-021-0010(1)(n)

Exhibit N requires information about a nongenerating facility. Montague Wind Power Facility, LLC, is not proposing to construct a nongenerating energy facility; therefore, Exhibit N is not required for this amendment request.

**EXHIBIT O**  
**WATER RESOURCES**  
OAR 345-021-0010(1)(o)

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O-1 City of Arlington Confirmation of Available Water

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## O.1 INTRODUCTION

The Energy Facility Siting Council (EFSC; Council) previously approved construction of the 404-megawatt (MW) Montague Wind Power Facility (Facility)<sup>1</sup> and found under OAR 345-022-0000(1), that the Facility complies with the Groundwater Act of 1955 and the rules of the Oregon Water Resources Department (OWRD). Montague Wind Power Facility, LLC (Montague) is constructing the Facility in phases. Phase 1 consists of up to 81 wind turbines generating 202 MW of power within the approved site boundary. Montague has already begun construction of Phase 1 under the conditions of the existing Site Certificate. Phase 2 consists of an expanded site boundary, modification of turbine types and construction schedule, and addition of a solar array and battery storage. The analysis in this exhibit focuses on Phase 2 and the three design scenarios described in *Request for Amendment No. 4 Project Description and OAR Division 27 Compliance* (referred to herein as RFA 4).

## O.2 SUMMARY OF ANALYSIS RESULTS

The Council previously found in the Final Order on Amendment 3, based on compliance with existing Site Certificate conditions, that Montague's proposed use of groundwater for the construction and operation of the Facility complies with the Groundwater Act of 1955 and the rules of the OWRD.<sup>2</sup> The amount of water needed to construct and operate Phase 2, combined with the water used for Phase 1, will be approximately the same or less than previously described. This exhibit presents an analysis of the changes to water use, disposal, and acquisition as a result of construction and operations of the modifications proposed in RFA 4 to demonstrate that the Facility, as amended, will continue to comply with these requirements. The analysis results are summarized as follows:

- **Expansion of Site Boundary:** The expansion of the site boundary will not directly affect water use during construction and operation of the Facility. Facilities previously included within the approved site boundary (wind turbines, access roads, electrical lines, substation, and operations and maintenance [O&M] building) will be relocated to new areas, but the types and quantities of water use will be the same as previously described.
- **Modification of Turbine Type:** Installation of larger turbines will use the same amount or less water than previously evaluated because fewer turbines will be needed.
- **Modification of Construction Schedule:** The change in the construction schedule will not affect water use at the Facility.
- **Addition of Solar Array:** Construction of the solar array may require up to 810,000 gallons of water if concrete foundations are conservatively assumed to be required for 50 percent of the steel support structures. Operation of the solar array may require up to 860,000 gallons of water per year for solar panel washing. Washwater will either evaporate or infiltrate into the ground and will not result in any significant impacts.
- **Addition of Battery Storage:** Construction of the battery storage system may require up to 25,000 gallons of water for the concrete pad foundations. This is a relatively small portion of the total amount of water required for Facility construction and the total amount of water needed to construct Phases 1 and 2 is expected to be similar to or less than the amount

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<sup>1</sup> EFSC. 2017a. *Third Amended Site Certificate for Montague Wind Power Facility*. July 11.

<sup>2</sup> EFSC. 2017b. *Final Order on Amendment #3 of the Site Certificate for the Montague Wind Power Facility*. p. 56. July 12.

estimated for construction of the Facility as permitted. No water will be required for operation of the battery storage system.

### **O.3 CONDITION COMPLIANCE**

The Third Amended Site Certificate imposes six conditions (80, 82, 89, 87, 109, and 110) designed to reduce or avoid potential impacts to water resources. The conditions pertain to stormwater, dust control, operation water use, and sanitary wastewater. The modifications proposed under RFA 4 do not affect Montague's ability to comply with the existing Site Certificate conditions. However, Montague proposes a modification to Condition 87 to include solar panel washwater, which will be handled in the same manner as previously approved for blade washwater. Please refer to Exhibit V for an expanded description of the proposed modification to Condition 87. No new conditions are needed for protection of water resources.

### **O.4 WATER USE**

**OAR 345-021-0010(1)(o)** *Information about anticipated water use during construction and operation of the proposed facility. The applicant shall include:*

**OAR 345-021-0010(1)(o)(A)** *A description of the use of water during construction and operation of the proposed facility.*

**Response:** Water use during construction and operation of the approved Facility will be generally as previously described. Use of water for dust control during construction will be at the same rate as previously described.

#### **O.4.1 Construction**

The Final Order<sup>3</sup> considered the use of up to 37 million gallons for dust control, road and earthwork compaction, and concrete mixing during construction. The combined water use for Phases 1 and 2 will be less than 37 million gallons because fewer turbines will be built.

The primary water use during Phase 2 construction will be watering along access roads for dust control, and application of water for compaction of newly built roads. The estimated water use for road watering is the same under all Phase 2 design scenarios because the estimated road use and duration of construction is the same for each of the three scenarios. This analysis conservatively assumes that the road construction, turbine foundation construction, solar array construction, and turbine erection phases do not overlap. Consumption of water for road watering is based on estimated days of construction activity. Water use for dust control and compaction during Phase 2 construction is anticipated to be half of the originally estimated total of 34,100,000 gallons. Therefore, 17,050,000 gallons of water are included in Table O-1 for road watering during Phase 2 construction.

Concrete mixing for turbine, solar array, and battery pad foundations uses a standard assumption of 30 gallons of water per cubic yard (yd<sup>3</sup>) of concrete. The amount of water required for turbine foundations depends on turbine size, as shorter turbines can use smaller foundations than taller and heavier turbines. For example, Design Scenario A would use a smaller turbine (e.g., 2.5-MW turbine), that requires 365 yd<sup>3</sup> of concrete for each turbine foundation. In comparison, the larger turbines (e.g., 4.2-MW turbine) used under Design Scenario B would need approximately 825 yd<sup>3</sup>

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<sup>3</sup> EFSC. 2017b. *Final Order on Amendment #3 of the Site Certificate for the Montague Wind Power Facility*. p. 27. July 12.

of concrete for each turbine foundation. Water use for concrete mixing will vary from approximately 11,000 gallons of water per foundation for the smaller turbines to approximately 24,750 gallons of water per foundation for the larger turbines.

The water use for the solar array foundation is included only in Design Scenario C and assumes that 130,000 poles (50 percent of total) used to support the solar array will require concrete foundations. This assumption likely overestimates water use because poles typically are driven or screwed in place without concrete, and concrete is only used where soil conditions require it (for example, very rocky conditions). If concrete foundations are used for 50 percent of the solar array supports, then approximately 660,000 gallons of water may be required for concrete mixing.

The water use for battery pad foundations is included in all three design scenarios and assumes that up to 104 battery pad foundations of 8 yd<sup>3</sup> each will be required. Therefore, 25,000 gallons of water are included in Table O-1 for battery pad foundations during Phase 2.

Of the design scenarios considered for Phase 2, Design Scenario B will use the most water for construction (18,300,000 gallons). Design Scenario C will use the least amount of water (7,950,600 gallons). Table O-1 provides a detailed breakdown of construction water use for each design scenario.

**Table O-1. Water Use During Construction**

<b>Water Use (assumptions)</b>	<b>Phase 2 Design Scenario A</b>	<b>Phase 2 Design Scenario B</b>	<b>Phase 2 Design Scenario C</b>
<b><i>Road Watering for Dust Control and Compaction<sup>a,b</sup></i></b>			
During road construction (120,000 gal/day for 50 days)	6,000,000 gal	6,000,000 gal	3,000,000 gal
During foundation construction (80,000 gal/day for 85 days)	6,800,000 gal	6,800,000 gal	-
During turbine and solar panel erection (50,000 gal/day for 85 days)	4,250,000 gal	4,250,000 gal	4,250,000 gal
<b><i>Concrete Mixing (30 gal/yd<sup>3</sup><sup>b</sup></i></b>			
Turbine Foundations			
Turbine foundation (365 yd <sup>3</sup> /turbine for 81 turbines)	886,950 gal	-	-
Turbine foundation (825 yd <sup>3</sup> /turbine for 48 turbines)	-	1,188,000 gal	-
Turbine foundation (365 yd <sup>3</sup> /turbine for 40 turbines)	-	-	-
Solar array foundation (22,100 yd <sup>3</sup> for 130,000 steel posts) <sup>c</sup>	-	-	660,000 gal
Transformer pad foundations (13 yd <sup>3</sup> /turbine)	31,600 gal	18,700 gal	15,600 gal
Battery pad foundation (8 yd <sup>3</sup> /pad for 104 pads)	25,000 gal	25,000 gal	25,000 gal
<b>Phase 2 Total (rounded up to the nearest 100,000 gal)</b>	<b>18,000,000 gal</b>	<b>18,300,000 gal</b>	<b>7,950,600 gal</b>
<b>Phase 1 Total<sup>d</sup></b>		<b>18,500,000 gal</b>	
<b>Facility Total</b>	<b>36,500,000 gal</b>	<b>36,800,000 gal</b>	<b>26,450,600 gal</b>

<sup>a</sup> Total duration of road-watering activities for Phase 2 construction is approximately 115 days. Conservatively assumes that there is no overlap between phases.

<sup>b</sup> Water usage frequency and consumption rates are based on standard commercial facility estimates.

<sup>c</sup> Conservatively assumes that 50 percent of support structure steel posts will require a concrete foundation.

<sup>d</sup> Assumes that Phase 1 will require half of the 37,000,000 gallons of water previously approved for the Facility.

Notes: gal = gallon(s); gal/day = gallon(s) per day; - = not applicable

For the purpose of comparing estimated water use for the approved Facility to estimated water use for the proposed modified Facility, Montague assumed that construction of Phase 1 uses one-half of the originally estimated total of 37,000,000 gallons (18,500,000 gallons). This is conservative because Phase 1 is being constructed with fewer turbines (up to 81 turbines) than originally anticipated (up to 134 turbines), resulting in fewer turbine foundations that require concrete mixing. Because the majority of water use during construction comes from application of water to roads for dust control, the construction schedule is the primary driver for the amount of water needed. Turbine construction during Phase 2 is conservatively estimated to require up to a total of 240 days for road watering (50 days for road construction, 85 days for foundation construction, and 85 days for turbine or solar panel erection).

Under all three design scenarios, Phase 2 is anticipated to use slightly less than half of the originally estimated Facility total of 37,000,000 gallons. The calculations in Table O-1 show up to 18,300,000 gallons of water required for construction of Phase 2 (Design Scenario B), for a total of approximately 36,800,000 gallons of water for construction of the Facility as a whole. These calculations reflect a modest net reduction in total construction-related water use below the amount originally estimated. As stated above, many of the assumptions used in the calculations overestimate water usage, so the actual water usage may be even lower than the amount provided here. Therefore, the construction of the Facility as modified under RFA 4 will not result in significant additional impacts to water resources and no additional mitigation measures are necessary.

#### **O.4.2 Operations**

Water for Phase 2 operations will be used for drinking water at O&M buildings, blade washing, and solar panel washing (Design Scenario C only). All of these uses, except solar panel washing, were previously considered in the Final Order.<sup>4</sup> The battery storage system will not require any water usage during operations.

Under Design Scenario C, the solar panels may require periodic washing to minimize the effects of dust and dirt on energy production (referred to as soiling). For the purpose of this analysis, it is conservatively assumed that the array panels will be washed twice a year. At an estimated 0.5 gallon per module for a total of 867,000 modules, each wash will require 430,000 gallons, for a total of 860,000 gallons per year. Advancements in robotic panel cleaning will likely dramatically reduce the water needs for solar panel washing. Therefore, Montague's estimate of 430,000 gallons per wash likely overestimates the amount of water that will actually be used. Water applied for cleaning will not have added solvents or chemicals.

Table O-2 presents anticipated water use during operations for each design scenario. As shown in this table, Design Scenario C is the only design scenario that results in a change in operational water usage from the previously estimated amounts.<sup>5</sup> An addition of 860,000 gallons per year will not result in significant impacts and no new mitigation measures are necessary. A modification to Condition 87, as presented in Exhibit V, is proposed to include solar panel washwater to be handled in the same manner as previously approved for blade washwater.

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<sup>4</sup> EFSC. 2010. *Final Order on Amendment #3 of the Site Certificate for the Montague Wind Power Facility*. p. 27. July 12.

<sup>5</sup> EFSC. 2017b. *Final Order on Amendment #3 of the Site Certificate for the Montague Wind Power Facility*. p. 27. July 12.

Table O-2. Yearly Water Use During Operations

Water Use (assumptions) <sup>a</sup>	Phase 2 Design Scenario A	Phase 2 Design Scenario B	Phase 2 Design Scenario C
O&M Building (2,100 gal/day) <sup>b</sup>	770,000 gal	770,000 gal	770,000 gal
Blade washing <sup>c</sup>	N/A	N/A	N/A
Solar Panel Washing (215,000 gal/wash, twice per year) <sup>d</sup>	N/A	N/A	860,000 gal
Battery Storage <sup>e</sup>	N/A	N/A	N/A
<b>Total Usage (Approximate)</b>	770,000 gal	770,000 gal	1,630,000 gal

<sup>a</sup> Water usage frequency and consumption rates are based on standard commercial facility estimates.

<sup>b</sup> O&M building usage rates are the same as originally described in the Final Order on the Application (EFSC, 2010; Table O-2, p. O-4).

<sup>c</sup> As previously approved in the Final Order (EFSC, 2010, p. 137), blade washing is not anticipated to occur because the manufacturer does not recommend it. Blade washing is included here because it may be required in the future if recommended by the manufacturer. If implemented at the Facility, blade washing will have a de minimis impact on the environment.

<sup>d</sup> Solar panel washing will occur under Design Scenario C only.

<sup>e</sup> The battery storage system will not require any water use during operations.

Note: N/A = not applicable

## O.5 SOURCES OF WATER

**ORAR 345-021-0010(1)(o)(B)** *A description of each source of water and the applicant’s estimate of the amount of water the facility will need during construction and during operation from each source under annual average and worst-case conditions.*

**Response:** The following sections describe sources of water during construction and operation associated with the modifications proposed in RFA 4

### O.5.1 Construction

The Council addressed the Groundwater Act in the Final Order on the Application, Final Order on Amendment 1, Final Order on Amendment 2, and Final Order on Amendment 3 and found that the Facility, as approved and as amended, will comply with the Groundwater Act of 1955 and the rules of OWRD. The Council found that Montague or Montague’s third-party contractor could obtain construction water from the City of Arlington (City) and truck such water to the site or obtain construction water from an existing or newly constructed well or wells permitted under a limited water use license, and that a maximum water usage of 120,000 gallons per day, with a total of 36.9 million gallons, could be accommodated by the City.<sup>6</sup>

Construction needs for water under each of the design scenarios will not exceed the maximum water daily usage of 120,000 gallons per day. The total conservative estimated construction water use is 36.8 million gallons combined for Phases 1 and 2, which is lower than the total accommodated by the City of 36.9 million gallons. Therefore, the Council can rely on its prior

<sup>6</sup> EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. p. 136. September 10.

findings that Facility construction water use complies with the Groundwater Act of 1955 and the rules of OWRD.

## O.5.2 Operations

The Council addressed the Groundwater Act in the Final Order on the Application, Final Order on Amendment 1, Final Order on Amendment 2, and Final Order on Amendment 3 and found that the Facility, as approved and as amended, will comply with the Groundwater Act of 1955 and the rules of OWRD. The Council found that Montague is permitted to obtain operations water for domestic and incidental purposes, and for washdown of equipment, from new onsite wells located at the O&M buildings, at an approximate rate of 2,100 gallons per day.<sup>7</sup> The installation and operation of such wells is allowed in accordance with Site Certificate Condition 86.

The Council also permitted the washing of wind turbine blades with water sourced from the O&M building wells provided that withdrawals do not exceed 5,000 gallons per day, and in compliance with the other provisions of Site Certificate Condition 87.

Water for solar panel washing under Design Scenario C will either be obtained from the City under an existing municipal water right, or from an existing or newly constructed well or wells permitted under an existing or new water right. If the solar array is constructed and panel washing is needed, an additional water use not previously anticipated under the prior authorization will be required. However, this is an allowed use. For example, Montague may use existing or new wells for panel washing as long as such withdrawals maintain compliance with ORS 537.545(1)(f) by not exceeding 5,000 gallons per day without securing a withdrawal permit. If Montague chooses not to use existing or new wells, sufficient water is available from the City of Arlington. Attachment O-1 contains an updated letter from the City confirming that the City is able to provide up to 1,000,000 gallons of water per year for periodic solar array washing. Montague recommends that Condition 87 be modified to include solar washwater, as presented in Exhibit V.

## O.6 WASTEWATER AND WATER LOSS

**OAR 345-021-0010(1)(o)(C)** *A description of each avenue of water loss or output from the facility site for the uses described in (A), the applicant's estimate of the amount of water in each avenue under annual average and worst-case conditions and the final disposition of all wastewater.*

**Response:** The following sections describe wastewater and water losses associated with the modifications proposed in RFA 4.

### O.6.1 Construction

The Council previously found that during construction, water loss will occur primarily through evaporation from wetted road surfaces and from curing concrete<sup>8</sup>. The Council also found that no water used on the site will be discharged into wetlands, streams, and other waterways.<sup>9</sup> These conclusions remain unchanged under all three design scenarios for Phase 2.

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<sup>7</sup> EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. p. 136. September 10.

<sup>8</sup> EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. p. 124. September 10.

<sup>9</sup> EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. p. 124. September 10.

Construction-related stormwater runoff during Phase 2 will be managed according to an NPDES 1200-C permit, in compliance with Site Certificate Condition 80, and there is no change to the Council's previous conclusion that Montague is capable of following DEQ rules governing construction stormwater runoff. Likewise, Montague will follow DEQ rules, and Condition 109, regarding the disposal of sanitary wastewater and use of portable toilets.

## **O.6.2 Operations**

For all design scenarios, wastewater from domestic and incidental uses at the Phase 2 O&M building will be discharged to a County-approved septic system located near the O&M building. The Council previously approved the installation of up to two O&M buildings, each including a septic system with a capacity of less than 2,500 gallons per day. The approval was conditioned on compliance with Site Certificate Condition 110. Montague plans on using the existing LJIB O&M building and its associated septic system to service O&M activities for Phase 1. When Phase 2 is constructed, a single O&M building will be built to handle the O&M activities for both Phases 1 and 2, and use of the LJIB O&M building will be discontinued. Therefore, there will be no change to the discharge and treatment of sanitary wastes at the Facility as a result of the modifications proposed in RFA 4. Montague will continue complying with Site Certificate Condition 110.

Minimal wastewater will be generated during operations. The Council previously made a finding to this effect.<sup>10</sup> Under all design scenarios, Montague may choose to wash wind turbine blades. Should such washing occur, the water used will evaporate or infiltrate into the ground near the point of use. Water from this activity will not be discharged into wetlands, streams, or waterways. The Council has previously approved blade-washing activities conditioned on compliance with Site Certificate Condition 87. Under Design Scenario C, during periodic washing of solar panels (approximately twice per year), washwater will evaporate or infiltrate into the ground; any infiltration will be covered under an Oregon general WPCF permit (see Exhibit E). Water from this activity will not be discharged into wetlands, streams, or waterways. As indicated above, battery storage will not generate wastewater during operations. Stormwater will also infiltrate into the ground.

Water losses associated with operation of Phases 1 and 2 combined are the same as those previously considered and approved by the Council, with the exception of solar panel washing (Design Scenario C). The water losses from periodic washing of the solar panels during operations will be minor. Solar panel washing will occur approximately twice a year, and each occurrence will result in the use of approximately 430,000 gallons of water over an area of approximately 1,000 acres, with water either evaporating or seeping into the ground. Use of 860,000 gallons per year for this purpose will result in an average daily consumption during operations of approximately 2,400 gallons, in addition to the 2,100 gallons per day described for the approved Facility. Therefore, if the solar array is constructed, operational water losses may be as much as 100 percent higher with the changes proposed under RFA 4 than the operational water losses that were considered for the approved Facility.

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<sup>10</sup> EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. p. 125. September 10.

## **O.7 WATER BALANCE DIAGRAM**

**OAR 345-021-0010(1)(o)(D)** *For thermal power plants, a water balance diagram, including the source of cooling water and the estimated consumptive use of cooling water during operation, based on annual average conditions.*

**Response:** The Facility is not a thermal power plant. This criterion is not applicable.

## **O.8 WATER RIGHTS OR USE PERMITS**

**OAR 345-021-0010(1)(o)(E)** *If the proposed facility would not need a groundwater permit, a surface water permit or a water right transfer, an explanation of why no such permit or transfer is required for the construction and operation of the proposed facility.*

**Response:** The Council previously found that the Facility, as approved and as amended, will comply with the Groundwater Act of 1955 and the rules of OWRD.<sup>11</sup> Consistent with the approved Site Certificate, the Facility still does not need any groundwater permits, water rights, or surface water permits. Water for construction will either be obtained from the City under an existing municipal water right, or provided from an existing or newly constructed well or wells permitted under a limited water use license, which OWRD would issue to the landowner or to Montague's contractor. At the completion of construction activities, this well may continue to be used by the landowner for pre-existing uses; may be abandoned; or may be used for exempt groundwater purposes pursuant to Oregon Revised Statute (ORS) 537.545.

Operations water use will be minimal and most use will qualify as exempt under ORS 537.545(1)(f), which allows exempt industrial or commercial uses up to 5,000 gallons per day. Exempt industrial water uses include drinking, flushing toilets, using sinks, and other general industrial uses.

During operations, an anticipated 860,000 gallons per year of water will be required to wash the solar panels and maintain the overall efficiency of the panels. Washwater for periodic solar panel washing will be obtained from the City or from an existing or newly constructed well or wells. If water is obtained from the City, no permit or transfer is required because the City's existing municipal water rights allow use for industrial purposes such as the Facility (OAR 690-300-0010(29)). If water is obtained from either an existing or newly constructed well(s), the maximum daily withdrawal will be less than 5,000 gallons per day, as an exempt use for industrial purposes. As necessary, Montague may purchase water from landowner(s) with an existing water right that meets the intended use pursuant to ORS 537.545.

**OAR 345-021-0010(1)(o)(F)** *If the proposed facility would need a groundwater permit, a surface water permit or a water right transfer, information to support a determination by the Council that the Water Resources Department should issue the permit or transfer of a water use, including information in the form required by the Water Resources Department under OAR Chapter 690, Divisions 310 and 380.*

**Response:** Consistent with the Final Order, no new groundwater permit, surface water permit, or water right transfer is required for the Facility. The modifications proposed under RFA 4 will not change this conclusion. This criterion is not applicable.

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<sup>11</sup> EFSC. 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. p. 127. September 10.

## O.9 MITIGATION MEASURES

**OAR 345-021-0010(1)(o)(G)** *A description of proposed actions to mitigate the adverse impacts of water use on affected resources.*

**Response:** Because construction and operation of the modifications proposed under RFA 4 will not create any significant new impacts on water resources, no new mitigation measures are proposed.

## O.10 CONCLUSION

The information provided in this exhibit demonstrates that construction and operation of the modifications proposed in RFA 4 will not result in significant adverse impacts to water resources. Therefore, Montague continues to comply with the Groundwater Act of 1955 and the rules of the OWRD under ORS Chapters 537 and 540 and OAR Chapter 690. Under OAR 345-022-0000(1), the Council may find that the Facility will comply with these statutes and administrative rules.

## O.11 REFERENCES

Energy Facility Siting Council (EFSC). 2010. *Final Order on the Application for Site Certificate for the Montague Wind Power Facility*. September 10.

Energy Facility Siting Council (EFSC). 2013. *Final Order on Request for Contested Case and Amendment #1 of the Site Certificate for the Montague Wind Power Facility*. June 21.

Energy Facility Siting Council (EFSC). 2015. *Final Order on Request for Contested Case and Amendment #2 of the Site Certificate for the Montague Wind Power Facility*. December 4.

Energy Facility Siting Council (EFSC). 2017a. *Third Amended Site Certificate for Montague Wind Power Facility*. July 11.

Energy Facility Siting Council (EFSC). 2017b. *Final Order on Request for Contested Case and Amendment #3 of the Site Certificate for the Montague Wind Power Facility*. July 12.



Attachment O-1  
City of Arlington Confirmation of  
Available Water



December 17, 2018

Matt Hutchinson,

This letter is to confirm the discussion I had with Jordan Grace that the City of Arlington can supply Avangrid with approximately forty million gallons of water for construction and up to an additional five hundred thousand gallons a year for periodic solar array washing. We look forward to working with Avangrid to complete the construction process. Should you have any questions feel free to call me at 541-980-6324.

Thank you

Bill Rosenbalm

Public Works Superintendent

City of Arlington

541-980-6324