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Attn: Steven K. Donovan, PE

From: Daly-Standlee & Associates, Inc.

Mike Raley, Acoustical Consultant
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Re: Jordan Cove Energy Project
Project #: 102141

**Introduction**

Daly-Standlee and Associates (DSA) was asked to determine if the proposed workforce housing facility for the Jordan Cove Energy Project (JCEP) will comply with the noise regulations outlined in Section 18.56.080 (1) of the North Bend City Code (NBCC). The following sections of this letter discuss the noise criteria set forth in the NBCC, the aircraft noise levels on the site shown in the North Bend Municipal Airport Land Use Plan, the housing facility design analyzed by DSA, and DSA’s determination of compliance with the NBCC criteria.

**Noise Criteria**

Section 18.56.080 (1) of the NBCC states that “Within airport noise impact boundaries, land uses shall be established consistent with the levels identified in OAR 660, Division 13, Exhibit 5.” The airport noise impact boundary is defined in Section 18.56 of the code as “areas located within 1,500 feet of an airport runway or within the most current, established noise contour boundaries exceeding 55 Ldn” (NBCC 18.56.030 (5)). Exhibit 5 of OAR 660, Division 13 says residential land use and development are compatible, without restriction, in areas where the yearly average day-night noise levels (DNL) is less than 65 dBA. However, Section 18.56.080 (1) of the NBCC states that, in North Bend, “...the permit applicant shall be required to demonstrate that a noise abatement strategy will be incorporated into the building design that will achieve an indoor noise level equal to or less than 55 Ldn” within those developments located within the airport noise impact boundary. Please note that DNL and Ldn denote the same noise metric, typically measured in dBA.
Aircraft Noise Levels at Proposed JCEP Workforce Housing Site

According to information in the 2002 Port of Coos Bay, North Bend Municipal Airport Master Plan, the northwest portion of the proposed JCEP workforce housing facility will be constructed between the DNL 55 dBA and DNL 60 dBA noise contour lines on the airport noise contour map. In order to provide a conservative analysis of the noise levels expected inside the housing units at the facility, DSA has assumed that aircraft noise exposure levels outside the structures would be at a DNL 60 dBA level.

Proposed Workforce Housing Facility Design

Construction details included in DSA’s analysis are based on information obtained through conversations with Mr. Steven Donovan of SHN Consulting Engineers & Geologist, Inc. and Dan McGinnis, a representative of ATCO, a modular housing manufacturer. Based on the information provided to DSA, the workforce housing unit construction is proposed, as a minimum, to include the design and materials described below:

- **Basic Layout**
  - The housing buildings will consist of two “dormitory” type modules placed, facing one another, approximately five feet apart and connected by an open exterior walkway.
  - A module will consist of individual rooms constructed side-by-side that have at least two walls exposed to directly to exterior noise and in some instances three walls exposed to exterior noise (the end rooms of the module).
  - Each room will have a door which opens to the exterior walkway located between modules, and a window and a through-the-wall air-conditioning unit in the exterior wall located opposite the door.

- **Walls** – elements listed from exterior to interior
  - 29ga steel siding
  - 3/8” oriented strand board (OSB) sheathing
  - 2x6 wood studs at 16” O.C.
  - R-21 batt insulation
  - ½” type “x” gypsum wallboard

- **Roof** – elements listed from exterior to interior
  - 0.045 EPDM over 15/32” OSB
  - 2x10 joists at 16” O.C.
  - Double layer R-21 batt insulation
  - 5/8” type “X” VCG (vinyl coated gypsum board)
• Windows
  o 4’ x 3.5” in size
  o 1/8” glass - ¼”air space - 1/8” glass
  o Vinyl, low-E, horizontal sliding

• Doors
  o 32” x 80” in size
  o Insulated steel

• HVAC
  o Through-the-wall PTAC type unit

Analysis

DSA predicted interior noise exposure levels using the method outlined in Controlling Sound Transmission into Buildings by J.D. Quirt published by the National Research Council Canada. This is the same method used by DSA to analyze structures being proposed within the City of Portland, Portland International Airport Noise Overlay Zone. Noise reduction properties for the construction materials included in the structures was taken from reference texts and data retained in DSA files from past projects.

With the building construction described above and an exterior DNL noise exposure level of 60 dBA DSA predicts an interior DNL noise exposure level of 46 dBA within the residential rooms of a module that have three exterior walls (two end rooms of a module). As stated above, all other rooms within the module will have only two exterior walls exposed directly to aircraft noise; the window wall and exterior walkway wall. Thus the noise level in those rooms will be slightly lower than DNL 46 dBA. In either case, the predicted interior noise exposure level is well below the maximum level of 55 dBA required in the NBCC.

DSA would like to point out that, at this time, the construction details for the housing modules have not been finalized. It is possible that the units could have construction details that provide more sound isolation than the minimum discussed above. In those cases, increasing the thickness of wall layers, roof layers or window glazing above that included in the analysis will increase the sound transmission loss of the structure and further reduce the interior noise levels.

Conclusion

Based on the results of our analysis, DSA concludes that the proposed workforce housing for the Jordan Cove Energy Project will comply with the noise regulation requirements in Section 18.56.080 (1) of the North Bend City Code.