



1 A I am employed by CH2M Hill. CH2M Hill provides environmental and engineering consulting  
2 services to organizations such as Zilkha Renewable Energy. We assist those organizations in  
3 analyzing environmental impacts of projects such as the Kittitas Valley Wind Power Project. I  
4 am an acoustical and environmental engineer. My duties on this project included assistance in  
5 the preparation of the Air and Noise portions of the Application for Site Certification and  
6 subsequent filings related to these subject areas.

7  
8 Q Would you please identify what has been marked for identification as Exhibit 25-1 (MB-1).

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10 A Exhibit 25-1(MB-1) is a résumé of my educational background and employment experience.

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12 Q Are you sponsoring any portions of the “Application for Site Certification” and “Clarification  
13 Information Provided to EFSEC Independent Consultant for EIS Preparation”, for the Kittitas  
14 Valley Wind Power Project?

15  
16 A Yes. I am sponsoring the following sections for which I was primarily responsible for the  
17 analysis and development:

18 Section 1.4 Mitigation – (1.4.1.3 Dust Control)

19 Clarification Information Section 3.2 Air

20 Section 4.1.1 Noise

21 Clarification Information Section 4.1.1 Noise

22 Clarification Information Attachment 8

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24 Q What exhibits that are part of the Application that you are sponsoring?

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A I am sponsoring the following exhibits to the Application:  
Exhibit 21-1 House and Wind Turbine Generator Locations  
Exhibit 21-2 Noise Impact Zones

Q Are you familiar with these sections of the Application and Exhibits?

A Yes

Q Did you prepare these sections and exhibits, or, if not, did you direct and/or supervise its preparation?

A Yes

Q Is the information in these sections and exhibits within your area of authority and /or expertise?

A Yes

Q Are the contents of these sections and exhibits of the Application either based upon your own knowledge, or upon evidence, such as studies and reports as a reasonably prudent persons in your field and expertise are accustomed to rely in the conduct of their affairs?

A Yes.

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Q To the best of your knowledge, are the contents of these sections and exhibits of the Application true?

A Yes.

Q Do you incorporate the facts and content of these sections and exhibits as part of your testimony?

A Yes.

Q Are you able to answer questions under cross examination regarding these sections and exhibits?

A Yes.

Q Do you sponsor the admission into evidence of these sections and exhibits of the Application?

A Yes

Q Are there any modifications or corrections to be made to those portions of the Application that you are sponsoring?

1 A No.

2  
3 Q Would you please summarize and briefly describe your evaluation of potential noise  
4 resulting from the construction an operation of the project.  
5

6 A Noise generated by construction of the Project is expected to vary, depending on  
7 the construction phase (see Section 2.12.2, 'Construction Schedule, Activities and  
8 Milestones'). Table 4.1.1-4 in the Application for Site Certification lists the typical noise  
9 levels associated with common construction equipment at various distances. These levels  
10 range from 54 to 62 dBA at 1000 feet from the source. All noise-generating construction  
11 activities will be conducted between the hours of 7 a.m. and 10 p.m. and are therefore  
12 exempt from the State of Washington Noise Limits which are 60 dBA (daytime) and 50  
13 dBA (nighttime) at residential properties (per 173-60-050 WAC). Blasting is anticipated  
14 for the foundations and potentially some road areas. Blasting will be conducted only  
15 between the hours of 7 a.m. and 10 p.m. and is anticipated to occur over a period of about  
16 eight weeks. Blasting activities are specifically exempted from the noise regulations (per  
17 WAC 173-60-050 (1)(c)).  
18

19 Q Are there any cumulative effects regarding noise from the Desert Claim, Kittitas Valley  
20 and Wild Horse wind power projects.  
21

22 A No. The boundaries of the Kittitas Valley and Desert Wind projects are located in excess  
23 of 1.6 miles apart. The wind turbines in these two projects are located in excess of 1.6  
24 miles apart. The Wild Horse project is located over 12 miles from the Desert Claim and  
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1 Kittitas Valley project. There should be no cumulative effects with regard to noise from  
2 these projects.

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4 The noise generated by the Project during operations is likely to be most noticeable at  
5 low wind speeds (8-10 mph) near the speed at which the wind turbines begin operating,  
6 when the background noise is at its lowest levels, particularly if constant or near constant  
7 speed turbines are utilized. Wind turbine noise tends to be masked by other background  
8 sources (i.e. the sound generated by the wind) at higher wind speeds. Although the exact  
9 turbine model to be use for the Project has not been determined yet, representative values  
10 for the type of equipment being considered for this Project have been used to predict  
11 project noise levels. The turbines are expected to be warranted by the manufacturer not to  
12 exceed a maximum sound power level 104 dBA with a wind speed of 18 mph (8 meters  
13 per second) at 33-feet (10 meters) in accordance with the protocol established in IEC  
14 61400. This is approximately equivalent to a sound pressure level of 66 dBA at 50 feet  
15 from the turbine. Measurements conducted by others at existing wind projects  
16 substantiate that the guaranteed sound power levels are realized under field conditions  
17

18 A three-dimensional noise model was developed using CADNA/A, a sophisticated noise  
19 modeling program developed by DataKustik, GmbH, Munich, Germany. The algorithms  
20 in CADNA/A are based on the International Standard ISO –9613-2 “Attenuation of  
21 Sound During Propagation Outdoors”. Octave band sound power levels (determined in  
22 accordance with the international standard IEC 61400) for the wind turbines and  
23 topographic information from the USGS were input into the model. The wind turbine  
24 noise emissions are required by 173-60 WAC not to exceed 70 dBA at all Class C EDNA  
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1 (industrial/agricultural) property boundaries of non-participating land owners.  
2 The Project will comply with this requirement at property boundaries of all non-  
3 participating landowners. In fact, the predicted property line noise levels are less than 60  
4 dBA. Non-participating residential daytime levels are required by 173-60 WAC not to  
5 exceed 60 dBA while nighttime levels are not to exceed 50 dBA. As shown in Exhibit  
6 21-2, 'Noise Impact Zones', the Project will comply with the more restrictive nighttime  
7 limit of 50 dBA at all existing residential structures owned by non-  
8 participating landowners. In fact, the Project is anticipated to comply with the residential  
9 nighttime noise limit at all existing residences, participating or non-participating.

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11 The Applicant is committed to designing and operating the Project in a manner that  
12 complies with all applicable noise standards.  
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## Exhibit 25-1 (MB-1)

### **Mark Bastasch**

#### **Environmental Engineer, Noise Assessment**

#### **Education**

MS, Environmental Engineering, William Marsh Rice University, Houston, Texas  
BS (cum laude), Environmental Engineering, Cal Poly San Luis Obispo, California

#### **Distinguishing Qualifications**

- Experienced in multimedia (air, water, soil, waste, and noise) industrial compliance and permitting
- Specializes in industrial noise measurements, modeling and control, and industrial compliance and permitting
- Experience includes evaluation and measurements of existing noise levels; analysis of noise levels for no-build and build alternatives; feasibility, design, and siting analysis of noise barriers; and preparation of noise and vibration impact assessment reports
- Has conducted numerous noise studies in conjunction with National Environmental Policy Act (NEPA) documents and numerous state's energy facility siting requirements
- Has prepared acoustical analysis or expert testimony for more than 700 megawatts (MW) from wind generation facilities and 6,000 MWs from gas-fired facilities

#### **Relevant Experience**

Mr. Bastasch is an environmental engineer with more than 6 years of experience conducting acoustical evaluations, environmental audits, contamination assessments, and multimedia environmental permitting. He has helped clients author, revise, update, and implement their environmental health and safety programs. Mr. Bastasch's regulatory experience includes stormwater permitting, National Pollutant Discharge Elimination System (NPDES) permitting, Title V permitting, hazardous air pollutant studies, prevention of significant deterioration (PSD), Process Safety Management (PSM) and Risk Management Plan (RMP) applicability studies, Form R preparation, spill documentation, response and reporting requirements, and audit preparation for the Oregon Department of Environmental Quality (DEQ) for hazardous waste and City of Portland Bureau of Environmental Services (BES) for stormwater and industrial wastewater.

Mr. Bastasch's acoustical experience includes preliminary siting studies, regulatory development and assessments, ambient noise measurements, industrial measurements for model development and compliance purposes, mitigation analysis, and modeling of industrial and transportation noise.

His field experience includes overseeing more than 250 soil boring and well installations, more than 500 feet of interlocking watertight sheet pile installation, tank decommissioning and associated cleanup, partitioning and conservative tracer tests, groundwater monitoring, and design/contracting/supervision of associated electrical, water and waste handling systems.

In addition, Mr. Bastasch was the on-site field engineer for installing and operating both standard (soil vapor extraction, air sparging, pump, and treat) and innovative (steam injection, cosolvent flushing, surfactant solubilization, surfactant mobilization) in the first side-by-side trial at Hill Air Force Base for the U.S. Environmental Protection Agency (EPA) and SERDP. He was commended by both the EPA project manager and the Air Force for his efforts to successfully complete the project.

Mr. Bastasch's remedial and feasibility investigation skills include identifying reasonable and low-cost solutions for a variety of contaminants including fuels, heavy metals, pesticides, solvents, and polycyclic aromatic hydrocarbons (PAHs).

## **Representative Projects**

**Pollution Control and Prevention Plans, Various Industrial Clients.** Assisted in evaluating their stormwater pollution control systems, and updating their stormwater pollution control plans and spill prevention control and countermeasure plans (SPCC). Also conducted their hazardous waste awareness, stormwater pollution prevention, and spill prevention training. Most recently, revised a major food processing facility's spill plan. Was able to remove the facility from the federally mandated SPCC program and was commended by the facility for assisting them in passing an internal environmental audit.

**Air Emission Inspections and Permitting Audits, Industrial and Government Clients.** Air experience includes permitting, reporting, and compliance assessment. Reviewed and prepared Title V Short-term Emission Limits, Form Rs, and annual emissions reports for major industrial clients. Also has completed several hazardous air pollutant inventories, compliance assessments, and PSD applicability studies.

**Wastewater Evaluation and Design Alternatives Study, Large Intermodal Transportation Facility.** Lead project engineer for conducting the study. Developed a preliminary design and permitting strategy that would enable the facility to continue operations with minimal financial impacts. Included negotiations with DEQ and City of Portland BES.

**Demolition Waste Characterization Study, Major Pulp and Paper Facility.** Authored study for a former acid plant at the facility.

**Demolition Waste Characterization Study, Primary Aluminum Smelting Facility.** Assisted in the study.

**Oil Spill Clean Up and Tank Replacement.** Responded to and oversaw the clean up of a 10,000-gallon Bunker C fuel oil tank spill and associated tank replacement under OR-DEQ's spill response program.

**Clean Up and Repair of Fuel Dispensing Station, Major Food Processing Client.**

Identified, contracted, and oversaw the inspection and associated clean up and repair of a malfunctioning oil/water separator at a fuel dispensing station.

**Various Groundwater Monitoring Reports.** Prepared several reports for high profile clients in the Portland, Oregon, metropolitan area and assisted the client in reducing monitoring requirements.

**EPA Superfund, Central California.** Provided oversight at a former oil disposal facility.

**Deactivation Workplan, Hanford.** Assisted in preparing deactivation workplan for a radioactive process and liquid waste sewer at Hanford.

**Preliminary Site Assessments, Federal Projects.** Conducted assessments for SERDPs (EPA, Department of Energy, and Department of Defense) dense non-aqueous-phase liquid remediation pilot project.

**Environmental Review and Audit, Portland, Oregon.** Reviewed and audited environmental documents and costs associated with redeveloping the city's Pearl District.

**Contamination Feasibility Report.** Prepared feasibility decision/evaluation matrix for a former wood-treating site (pentachlorophenol contamination).

**Noise Assessment/Noise Analysis**

**Maiden Wind, Prosser, Washington.** Acoustical technical lead. Prepared operational and construction noise assessment of a 300-MW wind generating facility for local, state, and federal authorities. Tasks included ambient noise measurements and detailed modeling of both NEG Micon and Enron Wind Turbines. Developed mitigation and permitting strategy that gave client flexibility to postpone final turbine selection.

**Stateline Wind Project, Oregon and Washington.** Acoustical technical lead for a 263-MW wind farm in northeast Oregon (Umatilla County) and southeast Washington (Walla Walla County). Tasks included monitoring at existing Vestas wind turbines and proposed turbine locations, authoring a noise impact evaluation, and preparing environmental documentation to comply with both Oregon and Washington standards.

**Stateline Wind Expansion, Oregon.** Prepared acoustical analysis documenting compliance with Oregon's 10-decibel degradation standard for an additional 40 MWs. Assisted legal counsel with regulatory interpretation and assessment.

**Klondike Wind, Northwestern Wind Power, Oregon and Washington.** Northwestern Wind is looking at several sites in three counties in Washington and Oregon. It currently has a 25-MW pilot project in Sherman County, Oregon, which uses the Enron Wind 1.5-MW generators. Subsequent phases would add up to 400 MWs of wind generation. Provided preliminary acoustical modeling and permit assistance at the local and state levels and developed a noise monitoring protocol. Helped draft alternatives for revisions to the state noise standard as it applies to wind energy facilities.

**Calpine Gilroy Peaker Program, Calpine Corporation, Dublin, California.** Project manager and acoustical lead for Calpine's Peaker Program. Prepared California Environmental Quality Act level noise assessments for more than 10 LM6000-based peaking power plants located throughout northern California. Developed a flexible and streamlined

program to accurately and quickly prepare acoustical assessment. Tasks included regulatory review and interpretation of city and county noise standards, ambient measurements and analysis, development of a standardized model that included several levels of optional mitigation and field verification at operating facilities, and regulatory negotiating.

**Metcalf Energy Center, San Jose, California.** Acoustical technical lead for a 600-MW power plant. Tasks include the following: evaluating and measuring background noise levels; modeling and comparison of expected noise levels with the City of San Jose, County of Santa Clara standards, and the California Energy Commission's (CEC) 5 dBA over background guideline; recommendations to acquire additional property; preparing Application for Certification submitted to the CEC; regulatory negotiation; and review of Conditions of Certification, testimony at public hearings, and CEC evidentiary hearings, which included detailed cross-examination. Successful negotiations saved the client more than \$5 million in capital expenditures.

**Los Esteros Critical Energy Facility, San Joaquin Valley Energy Center, East Altamont Energy Center, Delta Energy Center, Calpine Corporation, California.** Services similar to Metcalf Energy Center. Prepared Applications for Certification or testimony.

**Renewable Northwest Project, Oregon.** Provided technical assistance and testimony in modifying the Oregon noise rule as it applies to wind projects.

**Cosumnes Power Plant, Sacramento Municipal Utility District, California.** Prepared Application for Certification for combined-cycle gas fired generation facility at Rancho Seco. Prepare amendments to include a natural gas transmission line and required gas compressors. Expert witness testimony before California Energy Commission.

**Peoples Energy Resources Corporation (PERC), COB Energy Facility, Klamath County, Oregon.** PERC proposes to construct and operate a 1,150-MW combined-cycle gas-fired generation facility in southern Oregon, approximately 3 miles south of Bonanza. Because of the project's size, it must go through Oregon's Energy Facility Siting Council review, a rigorous and lengthy process that requires evaluation of a broad range of environmental issues. Prepared site certificate for the plant and associated transmission line.

**Power Projects, Confidential Client, California.** Prepared detailed regulatory analysis of all projects permitted and currently being permitted by the State of California, including Altamont Pass Wind Farm.

**Starbuck Power Plant, PPL Global, Starbuck, Washington.** Acoustical technical lead for a proposed 600-MW power plant and transmission line. Tasks included monitoring, modeling, and preparation of required environmental documentation.

**Grizzly Power Plant, Cogentrix, Madras, Oregon.** Prepared site certificate application.

**Power Plant, Confidential Client, California.** Acoustical technical lead for an internet data center and an onsite 50-MW power plant, chiller plant, and backup diesel generators. Tasks include monitoring, negotiations with the city's consultant, and preparing an environmental impact report.

**Power Plant, Confidential Client, Chicago, Illinois.** Acoustical technical lead for preliminary power plant siting study. Tasks included review and summarization of all applicable laws, ordinances, regulations, and standards.

**Multiple Landfill Clients, Washington and California.** Acoustical consultant to a municipal landfill design team. Tasks included evaluating background noise levels and applicable laws, ordinances, regulations, and standards to determine setback requirements for facility expansion.

**Various Transportation Projects.** Acoustical technical lead for numerous transportation projects in California, Colorado, Oregon, Washington, Alaska, and Idaho. Tasks include monitoring, modeling, and mitigation recommendations in accordance with all applicable laws.

## **Professional Registrations**

Registered Acoustical Engineer: Oregon  
Professional Environmental Engineer: Oregon  
Professional Civil Engineer: Oregon  
Certified Water Rights Examiner: Oregon  
Member, Institute of Noise Control Engineers  
40-hour HAZWOPER Certified  
8-hour HAZWOPER Site Supervisor Certification  
12-hour Site Safety Coordinator Certification