BEFORE THE STATE OF WASHINGTON

ENERGY FACILITY SITE EVALUATION COUNCIL

In the Matter of Application No. 2003-01: SAGEBRUSH POWER PARTNERS, LLC; KITTITAS VALLEY WIND POWER PROJECT	EXHIBIT 22 SUP (AY-T SUP)

APPLICANT'S PREFILED SUPPLEMENTAL DIRECT TESTIMONY
WITNESS # 3: ANDREW YOUNG

Q Please state your name and business address.

A My name is Andrew Young and my business address is 53 SW Yamhill Street, Portland, Oregon 97204.

Q Have you previously filed prepared testimony in this matter?

A Yes

Q Is this testimony given to supplement your prior testimony?

A Yes

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Q. What is the specific purpose of this supplement to your prior testimony?

A The purpose of the additional testimony is to describe details of the underground cable trenching design and the reduction in shadow flicker effects from refining the Project site layout.

Q What types of alterations and refinements were made to the Project?

A Primarily, refinements were made to the Project configuration to mitigate potential environmental impacts including reducing the maximum number of turbines from a maximum of up to 150 units in the original Application to 65 units. Supplemental testimony provided by Chris Taylor elaborates more specifically on the history and reasons for the modifications that were made to the Project.

Also, based on our experience thus far with the construction of the Wild Horse project, we now anticipate that a modification of the underground cable trench design will be made to account for the very low thermal resistivity levels of the soils we expect to encounter on the Project Site. A detailed geotechnical investigation will be conducted prior to construction to confirm the properties of the soils at the Kittitas Valley site. However, we now expect that underground cable trenches will have to be approximately 3 feet wide, however, due to the anticipated low thermal resistivity levels of the soils, in areas where multiple circuit trenches of the collector system converge, each of the trenches will have to be approximately 7 feet apart in order to comply with prudent engineering standards and electrical codes. Due to the reduction in the number of turbines for the Project however, the overall temporarily

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disturbed area footprint from underground trenching is still within the limits and scope of the Addendum to the Draft EIS issued by EFSEC on December 2005. We are presently entering into consultation with WDFW and EFSEC staff regarding the issue of trench construction and installation in the shrub steppe lands that exist on the site, which we hope will result in clarification and criteria. When developed we will suggest they be implemented through the SCA.

Q Would you please summarize and briefly describe your knowledge of the Project's potential for shadow flicker to neighbors?

A Yes. I gave testimony to the County on this subject matter on January 10, 2006.

While shadow flicker is addressed in the various analyses associated with the project, it should be remembered that there is no legitimate documented evidence of adverse health effects caused by shadow flicker. Based on information available from the Epilepsy Foundation, fast strobes that are in excess of 10 Hertz can cause epilepsy -- or epileptic seizures. For the wind turbines that are proposed for this Project, the frequency will be below 1 Hertz which is an order of magnitude less than what would be considered capable of inducing something like an epileptic seizure.

Recognizing that although no shadow flicker criteria or standards have been established, I worked closely with Arne Nielsen to characterize likely measurable shadow flicker effects at the project. He's an independent consultant and has provided testimony in this case. Shadow flicker is essentially the casting of a shadow by the moving object. Therefore shadow flicker is defined as the alternating changes in light intensity caused by

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wind turbine blade as it passes through the sun's line of sight, causing a passing shadow. The analysis that we had prepared by Arne Nielsen specifically for the project used modeling software that is used and widely accepted in the industry called WindPro. Specific inputs to the Project model include the specific turbine locations, which have been, as previously discussed significantly reduced. Further setbacks have also been increased significantly from nearby residences. The specific geometry and sizes of the machines are also inputted to the model along with the specific locations of residences, the terrain and the topography. For the analysis carried out by Arne Nielsen, we assumed each residence as a receptor with omni-directional windows without screening or obstructions. So the modeling results represent an exaggerated worst case situation.

Another factor that is not included in the analysis is the fact that as the distance from the turbines increases, the shadow flicker intensity also diminishes. Generally for siting wind power projects, a 1,000 foot setback has been used with regard to shadow flicker. All the residences that were within the theoretical "shadow flicker shed area" were examined. The studies have shown that there are zero residences with any more than 100 hours of potential shadow flicker impact per year and there are two residences with potential for shadow flicker of more than 50 hours per year. Of those two residences, one is a non-participating landowner, and the other one is a participating landowner.

The setback we originally proposed in our Application for Site Certification and County land use applications was 1,000 feet from existing residences. There were no residences within at least 1200 feet of turbine and we did not believe the shadow flicker affects to be significant. However during the County hearing process, in response to the comments of the BOCC, we committed to increase the setback from existing residences to 1,320 feet.

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Due to the significant reductions in the number of wind turbines as well as the increase in setbacks from neighboring residences, the potential for shadow flicker impacts to neighbors has been dramatically reduced. A detailed report prepared by Arne Nielsen of Wind Engineers was prepared to analyze shadow flicker and was submitted to EFSEC and the County in October 2005. As I stated above, this analysis was an exaggerated worst case analysis of all structures in the area. Because of the extreme assumptions the impact will be considerably less. Further as shown in the testimony of Tom Priestly many of the houses within 2,500 feet of a turbine are significantly screened from its view and many of the houses that are not screened are oriented away from the turbine. Therefore any actual affect will be much less than as modeled. Based on this detailed analysis, we do not expect the nonparticipating residences to be significantly adversely impacted by shadow flicker. However in the unlikely event that the modeling results are shown later to be inaccurate, and some residences are significantly adversely impacted by shadow flicker, we have stated that we are willing and able to mitigate by programming the turbines to shutdown during those specific times that significant shadow flicker exists.

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