TCC
Pre-Filed Testimony
Dave Sharp
EXH-5402_T_RECON

BEFORE THE STATE OF WASHINGTON
ENERGY FACILITY SITING EVALUATION COUNCIL

In the Matter of the Application of: Scout Clean Energy, LLC, for Horse Heaven Wind Farm, LLC, Applicant.	DOCKET NO. EF-210011 PRE-FILED TESTIMONY OF TCC WITNESS DAVID SHARP

Q. Please state your name, occupation and qualifications.

A. My name is Dave Sharp. My address is 89417 Summit View Drive, Kennewick, WA 99338

~~Q. Have you prepared a report regarding the Horse Heaven Wind Farm application?~~

~~A. Yes, I have concerns about a number of topics that were presented in the ASC. My primary concern is that the project is using a nameplate capacity that far exceeds what the BPA system can accept. That overstatement prevents reasonable mitigation options and impedes the ability to analyze whether project generation components can be deployed consistent with Washington Utility Integrated Resource Plans. The details of my concerns and observations are discussed here.~~

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
aramburulaw.com

~~Comments on the HHH Project by Dave Sharp~~

~~The ASC Section 2.3 Construction on Site~~

~~The purpose of the proposed Project is to provide 1,150 MW of renewable energy using wind energy and solar energy. The Applicant selected the Project location because it meets the following feasibility and viability criteria:~~

- ~~Commercially viable above-average wind speeds~~
- ~~Close proximity to existing transmission lines with sufficient available capacity to carry the Project's output to the grid~~

~~ASC does not provide any data or information that validates the feasibility or viability of the Project whatsoever. There are no reports, data or other evidence in the record that EFSEC has utilized utility and power experts to guide them in what is needed to integrate renewable components in a manner to align with Washington State utility Integrated Resource Plans, power needs and that the Project is able to meaningfully contribute to them.~~

~~The ASC fails to provide any wind speed information that validates this statement. There is no validation of the 1,150 MW being proposed, no validation of the wind speeds needed to make the project viable, no analysis of the capacity of the existing transmission lines to carry the output of the Project to the grid. There is no data to show that the underlying purpose of the Proposed Action can truly and meaningfully fulfill the goals set by the Legislature in RCW 80.50.010.~~

~~Washington as a State is viewed as moderate wind speed, and the existing Nine Canyon Wind Project is already at the heart of the best wind speeds available in the~~

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J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
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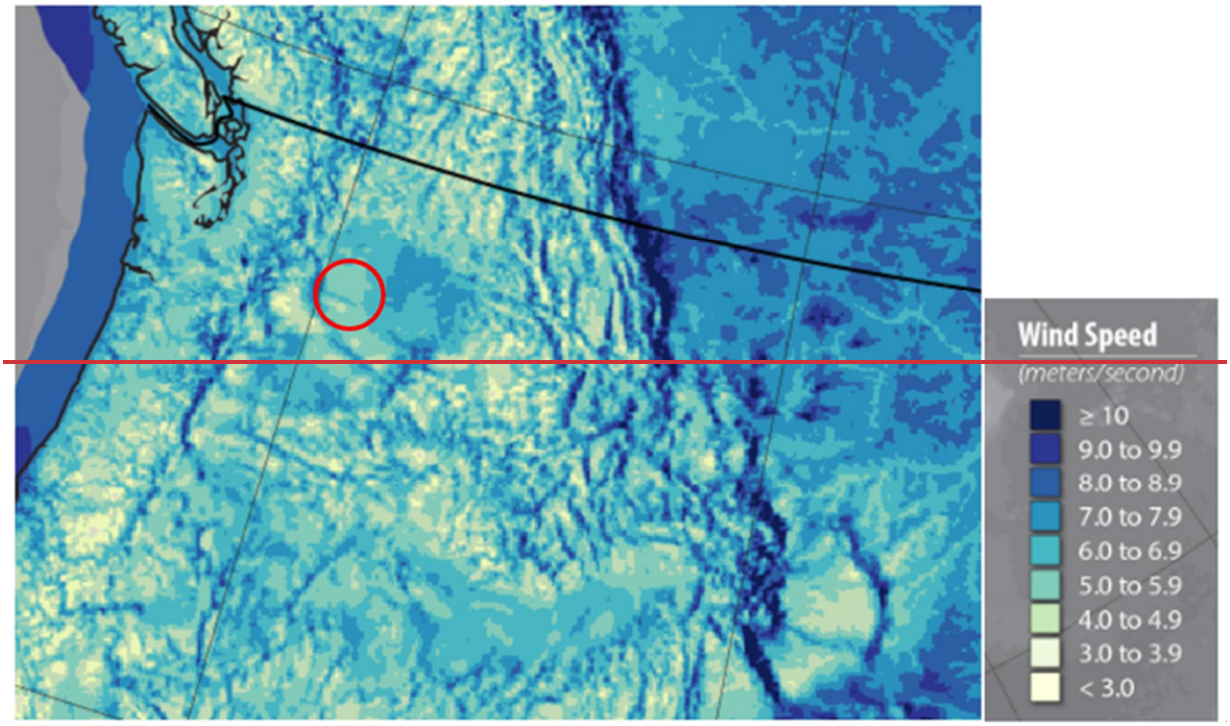
HHH. The National Renewable Energy Laboratory rates the overall state wind resource as moderate. The Horse Heaven Hills is not as well situated as sites in Wyoming, and Montana. The best wind resources in Washington are in the vicinity of Ellensburg, the Columbia River Gorge, and in the vicinity of Dayton. The red circle on this digital map from the NREL Geospatial Data Science Wind Resource Maps and data website shows the approximate location of the Project. That particular area shows general wind speed averages of 5-7 meters/second.



North American Annual Average Wind Speed at 100 Meter level above Surface Level https://www.nrel.gov/gis/assets/images/wtk-100-north-america-50-nm-01.jpg

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
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~~Utility Integrated Resource Plans developed by Puget Sound Energy indicate that Montana has much better wind resources in the Winter months, and utilities are looking toward the highest wind resources they can obtain. The Northwest utilities also have a pressing need, and it is not just a pressing need for power. It is a pressing need for power at times of high demand, which are the hottest months, and the coldest months, when both solar and wind are least effective; particularly wind. Very cold days are generally calm, while very cold days often times are sunny; at least solar works during the higher load daylight periods.~~

~~Northwest Utilities are focusing on power generation that is dispatchable. That is, power that can be called upon when needed, often on short notice; just as a residential homeowner can switch a light on and off. The Horse Heaven Hills Project could be stranded financially and operationally if not able to produce and deliver power when required.~~

~~The ASC should identify and describe the references and the detail the interface with integrated resource plans from Northwest IOU's.~~

~~ASC does not identify, describe and evaluate the relationship between the Project and the Western Resources Adequacy Program (WRAP) and the Effective Load Carrying Capacity (ELCC) of renewable resources during high load months. Those initiatives show that both wind and solar power production, already intermittent and unreliable, drops even further during high load months in the Summer and Winter. Northwest~~

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
aramburulaw.com

~~Utilities are using this tool to validate and grade future possible generation sources. The data for the Horse Heaven Hills location does not rate well and does not appear to support the underlying premise for the Project.~~

~~While the Project is in proximity to transmission lines, BPA and the utilities in the Pacific Northwest are recognizing that a project with 30% capacity that has to secure 100% of the transmission line is not an effective use of the infrastructure. If a low-capacity wind project has large chunks of transmission tied up, that blocks others from using those transmission lines, and adds significant unnecessary costs for upgraded infrastructure.~~

~~The ASC lacks information developed by power specialists to describe and quantify the proper balance of wind, solar and battery that can be utilized efficiently in the region and then explain how the Project will impact the present and future situation.~~

~~The 2022 amendments to the EFSEC statute, RCW 80.50.010(1)(4) say that one of premises of review by EFSEC is "to encourage the development and integration of clean energy sources." There is no information to show that this project will be usefully integrated to satisfy the need and help meet peak demand periods and efficiently utilize available transmission. There is no available information that the project will be allowed to generate over 850 MW.~~

~~The Project Nameplate Capacity of 1,150 MW is Not Supported by the Record~~

~~The ASC repeatedly cites the Project Nameplate Capacity to be 1,150mw. This is not supported by the documentation on record.~~

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
aramburulaw.com

~~The HH Wind Project generation capacity has been stated in the ASC and the revised ASC as 1150mw nameplate.~~

~~However, an analysis of the BPA Large Generation Interconnection Procedure (LGIP) database records shows the maximum generation capability of the project is 350mw for Phase 1, and an ASC limit of 500mw for Phase 2 for a total power generation capacity of 850mw. Energy storage is not included as nameplate as it is not considered a generating source.~~

~~As a result of the ASC public comment period, there were no alternatives other than the single proposed action and the no action. This is very unusual, particularly for a project that is so large and is impactful geographically and with impacts at so many locations in so many ways. If the No Action positioned is maintained, maintains this position Council is saying in effect that there are no reasonable alternatives for this project that can be identified and evaluated that can meet project objectives with lower impacts and degradation.~~

~~I reviewed the interconnection requests made to BPA which limits the actual generation to 850 mw. A robust and integrated hybrid system would have a mix of renewable generation resources that nominally total the maximum injection capacity. For example, if 300mw of solar is analyzed as optimal, then only 550mw of wind resource would be needed to reach maximum generation capacity. The Applicant, however, insists that the site must accept 850mw nameplate of wind on top of the 300mw solar. The ASC is in error using 1150 nameplate. If the Developer used the standard industry practice with this example, less wind turbine resource would be required and the project would have much less impact on the environment. The~~

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
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~~number of turbines needed could be reduced significantly and other turbines be relocated to avoid sensitive areas, better protect the environment, reduce cultural impacts identified by native American tribes, and reduce visual impact to people. Properly integrating differing renewable generation resources allows development of reasonable alternatives and more efficient utilization of capital and lower costs. Continuing to mismatch nameplate generation to actual injection capacity shows that the developer is either unwilling, or unable to take that step.~~

~~To our knowledge, the Applicant has not had previous experience with hybrid project development. We note on the last project the applicant developed in South Dakota, one of the premier and respected nationally known Engineering firms was utilized to develop that ASC. We ask, and EFSEC should ask, who the developer is using for their technical consultancy for this aspect of this project, and what their background and experience is for renewable hybrid development.~~

~~The scope and magnitude of the changes in the ASC Update on December 1, 2022 Could Undermine public trust in the Process, and EFSEC as a whole.~~

~~As an example of a change, the ASC describes a 230kv intertie transmission line. The revised ASC further emphasized this line that would tie one end of the project to the other. The line is built along the ridge crest of the Horse Heaven Hills and ties into the Applicants switchyard near the BPA Bofer Canyon switchyard.~~

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
aramburulaw.com

~~The developer does not describe what the line would be used for and calls it an alternate that only may be utilized if Phase 2 of the project is all wind, and no solar. There is no indication or description of use and nothing that indicates a purpose.~~

~~In the case of this revision, EFSEC should ask for an explanation of the anticipated use. If the use is not specific, only a potential use, or a speculative one, the line should not be allowed to remain in the ASC and the project.~~

~~A concern is that this line is being proposed, not with the intent to build in the near future, but only to take advantage of potential future developments of the transmission system in the area that are not known at this time. Speculative over-designs of such as this power line should not be allowed. Just as speculative over design of nameplate generation should not be allowed.~~

~~In the Revised ASC, in Section 2.3.10, on page 2-81-83, the developer states:~~

> ~~2.3.10 Transmission Line~~
> ~~The Project will require two new 230 kV single-circuit overhead transmission lines (one for the eastern and another for the western portions of the Project), an optional 230 kV single-circuit overhead transmission east-west intertie, and a 500 kV single-circuit overhead transmission line.~~

~~Even though the revised ASC adds language describing additional transmission and substation infrastructure, (reference section 2, pages 2-81 to 2-83), it appears that the maps associated with that infrastructure additions have not been updated, and undermining the process that is supposed to allow proper time for substantive review and comment.~~

~~The Updated revisions not only update the ASC but also updates every Attachment to the Application.~~

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
aramburulaw.com

There is no way for a reviewer to know what changes have been made because the updated attachments do not identify the redlined changes to the ASC and the underlying documentation in the ASC.

The magnitude and scope of these changes undermines the integrity of the process and complicates the review and comment of the ASC.

Recommendation:

Rather than an entirely new ASC, EFSEC should require amendments with notice to the Public. If revisions or changes are determined to be extensive, EFSEC should require the Applicant to reapply with a restarted review clock. In the case of the Horse Heaven Wind Project and the short notice and late revisions to the ASC, a new public comment period should be allowed.

General Concern About the Application

I have followed the project with interest since early 2020 including reviewing the Project website, The Horse Heaven Clean Energy Center Project in Benton County. The project website had a Frequently Asked Questions section, with Project Answers. A couple of FAQ's got my attention. One of FAQ's was "Where will the power go? The answer was surprising because the answer was, and I am paraphrasing, they did not really know where but some went into the local area because the power chose its own path. My opinion was that was a disingenuous answer. The people, myself included, wanted to know who would purchase for beneficial use whether it be Eastern Washington, Western Washington, California, etc. The people in this area are knowledgeable about power. They did not want to know where the electrons go.

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
aramburulaw.com

~~From that point on, attention was paid to what was written and how it was parsed, more from a legal perspective. Words matter.~~

~~The ASC is loaded with non-committal words such as "up to", "could", "may", "would", and worded phrases that could have multiple meanings.~~

~~An example is in Section 1.3 of the ASC, Pressing Need. The Applicant states "*However, the Project would supply renewable energy to help the state of Washington meet its goal of making its energy supply carbon neutral by 2030*"~~

~~What does that phrase actually mean? First and foremost, there is no commitment to provide direct and substantial renewable energy. How much energy is enough to help the state of Washington? One kilowatt hour makes it a true statement. When would Washington get that help? Getting "help" by 2030 makes this a true statement. What does "energy supply carbon neutral by 2030 mean"? Does it mean the project will sell the state utilities Renewable Energy Credits that have been unbundled from the power? Or does it mean that any unspecified power the utilities buy on the spot market may have a lower carbon content because increased power into the spot market drives fossil fuels out of the market, and consequently reduces the grid average carbon intensity. That is a pretty roundabout way to receive a minimal renewable benefit from that project.~~

~~Combine these language ambiguities and the Developer clearly stating and emphasizing in this same section the increased role that Commercial and Industrial (C&I) buyers are having in purchasing renewable energy. Add to that the developer's previous propensity to sell their projects to C&I entities. The Applicant has not disclosed, and we have no idea how the output of the project will be used for~~

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
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~~Washington's benefit. We can only look at the actions of the Applicant to evaluate whether the project development favors what our utilities need.~~

~~The Council for the Environment posed insightful questions in her public comment letter of February 1, 2021 of whether an emissions analysis had been performed, and whether the project would even reduce the state's greenhouse gas emissions.~~

~~Data centers consume large amounts of power and require high reliability of supply. It is imperative that a comprehensive emissions analysis be performed that examines the CO2 impact to the state. We may just be trading reduced CO2 emissions from a renewable energy project to increase CO2 emissions for new industry. Even worse, we could receive very little renewable benefit from a renewable project if the REC's leave the state, either for a C&I project, or merchant plant selling REC's to the highest bidder that very well may be located in another state.~~

~~Guardrails must be put up to ensure that Washington State receives abundant renewable energy at reasonable cost, and with reasonable cost to the environment.~~

~~Because of the importance of this subject, later on in the testimony more details will be provided.~~

~~One would think that the Applicant would make a positive affirmation that the State of Washington would benefit from some specific amount of renewable energy, and perhaps provide a commitment that the enormous impact this project will actually provide substantial and identifiable benefit to the state.~~

~~**In the ASC Section 1.8 Full Disclosure by Applicant**~~

~~WAC 463-60-065: *It is recognized that these guidelines can only be comprehensive in a relative sense. Therefore, and in addition to the other guidelines contained herein,*~~

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
aramburulaw.com

~~*the council adopts the basic guideline that an applicant for site certification* ***must*** ***(emphasis)*** *identify in the application all information known to the applicant which has a bearing on site certification.*~~

~~At the time of application, the Applicant was requesting expedited processing. In essence this is a fast track to approval. One of the requirements for expedited processing is that environmental impacts must be mitigated to the extent possible. The applicant certified that they mitigated all critical issues. Shortly after that, the Applicant requested to withdraw the application for expedited processing, and was granted the request.~~

~~However, even now there are mitigation issues not resolved associated with protection of the State endangered Ferruginous Hawk. The applicant cites the need to maintain full project nameplate generating capacity. That does not align with limitation to generation that Bonneville Power has imposed on the contractor. The Applicant continues of pattern of non-disclosure of key aspects of the project.~~

~~The state is moving quickly to provide a recommendation to the Governor for a project up to $1.7 billion in cost. Yet, there is no indication of either the financial or technical viability of the project, no knowledge of how the project will integrate into the existing power need, how the hybrid system will be optimized and operated, or even if it will be of value to in-state utilities. We do not even know how much, or type of renewable benefit the State will receive, or when. Over a period of over 2 ½ years, we have learned very little more about the project than we knew then. And we do not know how mitigation will be performed for the ferruginous hawk.~~

~~There are many issues in the Application that need to be addressed. The Applicant~~

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
aramburulaw.com

~~desires to resolve issues using a Technical Advisory Committee. Those have been utilized in the past, but primarily for administrative issues. All issues need to be resolved in the public domain.~~

~~The Applicant was allowed to submit essentially a generic ASC without specifics. The Applicant was allowed to submit a revised ASC at the very last minute without repercussion or penalty.~~

~~In any plan "The Devil is in the Details". And by allowing the Applicant to submit non-specific plans, a non-specific project will result with non-specific mitigation. An examination of other EFSEC Projects has not shown an ASC approach similar to this project.~~

~~If this is allowed to set precedent, the State of Washington, and particularly rural areas will be disproportionately harmed. And this by an organization that is charged with balancing cost and benefit to the state.~~

~~***Recommendation-EFSEC should examine the Application Process and require more specificity and allow less optionality in the ASC. As submitted, the review, commenting, and preparation of any further evaluations or recommendation is inefficient. There should be punitive action against an Applicant that does not Adhere to Section 1.8***~~

~~The history of the power generation requests (BPA LGIP) are not consistent with the Project's nameplate power generation claims.~~

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
aramburulaw.com

Project Chronological History *I read, reviewed and developed a review of the project chronological history and review of BPA Interconnection Records. Here are my findings and conclusions:*

Question Can you give an example of a major irregularity in the ASC.

Answer-One of the major discrepancies I found was in the ASC's presentation of the generating capacity in nameplate terminology compared to actual generation that BPA could accept. But to properly lead into that topic, first the project historical chronology should be examined.

The historical chronology of the project below uses publicly available documentation and provides insights into how the developer has expanded the project, and that the expected power generation has changed over time. As a lead in, the 1150mw nameplate capacity of the project was **first** seen by the public the day the ASC was posted. Before that time, it was described publicly as an 850mw project.

This is a summary compilation of the chronological history of the Horse Heaven Wind Project. Only public sources are utilized, primarily Scout Clean Energy Press Releases, news and business articles published on the Scout Website, and information from the Bonneville Power Administration Large Generation Interconnection Procedures[1], primarily the Interconnection Queue log and associated studies. The BPA Procedures and information are open to the public.

Project history is summarized in the following chronology (with references provided below) as follows:

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
aramburulaw.com

1. Mar 1, 2017-Application for interconnection made for 250mw of wind. The point of interconnection is Bofer Canyon switchyard. Applicant appears to be WPD.
2. 2019 Date Uncertain. Scout purchased WPD's assets including studies and interconnection rights.
3. Jan 7, 2020 Application for interconnection for an additional 100 mw of wind at Bofer Canyon (=350mw total). System Impact Study was completed Feb 1, 2021.
4. Feb 3, 2020-The project upscaled from 250mw to 600mw wind. 212 Turbines. Tri-City Herald Article
5. Aug 31, 2020, Scout Press Release- Project Expanded from 600mw to 850mw with hybrid generation-Wind, Solar, Energy Storage-Phase 1, 350mw, Phase 2, 500 mw. Quote:

"Scout recently acquired additional wind farm assets from wpd which will enable the company to scale up to 850 MW of combined wind, solar and battery power. Scout and wpd will continue to cooperate in the development of the Horse Heaven project. "The project will seek permits to likely come online in phases:

• Phase 1: up to 350 megawatts (MW), anticipated to begin operations in 2022

• Phase 2: up to 500 MW, anticipated to begin operations by 2024".

6. Dec 15, 2020-An Interconnection Request was made to BPA for 300mw solar, 250mw battery for Horse Heaven East (Phase 1)- Bofer Canyon substation
7. Dec 15, 2020-Scout announces will go directly to EFSEC (S&P Global Article).

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
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~~**8.** Nov 5, 2020, Scout Website- "WPD partners on 850mw hybrid Project." Renewable Energy Biz Journal-Article on Scout Website dated October 19. "WPD and Scout Clean Energy are joining forces to combine two onshore wind farms into one 850MW hybrid project development that also includes solar and energy storage in Washington State in the US". WPD sold project assets to Scout in 2019 including interconnection queue positions, land leases and wind data".~~

~~**9.** Dec 17, 2020, S&P Global Market Intelligence Article on Scout Website News- Date Dec 18, 2020- "Scout Clean Energy LLC on Dec. 15 said it will ask a Washington state agency for a permit to build an ambitious hybrid renewable energy project that the Colorado-based developer hopes will provide up to 850 MW of wind and solar power, along with battery storage, in Benton County, Wash. Scout Clean Energy recently acquired new interconnection agreements for the addition of solar and battery storage to scale the Horse Heaven project up to 850 MW"~~

~~**10.** Feb 8, 2021-Scout files ASC with EFSEC-First public mention of 1150mw nameplate[3].~~

~~**11.** Feb 8, 2021-EFSEC posts ASC on Website- "The ASC proposes the construction of a renewable energy generation facility that would have a nameplate energy generating capacity of up to 1,150 megawatts[2] (MWs) for a combination of wind and solar facilities as well as battery energy storage systems (BESS)".~~

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
aramburulaw.com

12. Feb 8, 2021-Scout Press Release – "Horse Heaven Wind Farm Makes Application to State." Following quote was included in Press Release: "Scout recently acquired an additional interconnection queue position, which will enable the company to scale up to 1150 MW of wind, solar and battery power. Scout and wpd continue to cooperate in the development of the Horse Heaven project"

13. Sep 13, 2021 Application for Interconnection Request for 100mw solar, and 30mw Energy Storage through Bofer Canyon BPA response states Bofer Canyon cannot exceed 350mw.

14. September 13, 2021 or before – The Dec 15, 2020 application for 300mw was withdrawn. Date is not certain. The best estimate is before Sep 13, 2021. A second request would not have been made on top of an earlier open request.

15. Dec 22, 2021-Application was made for 0mw, but added 4 turbines of 3.4mw each previously removed. Bofer Canyon substation cannot exceed 350mw.

16. March 15, 2022-Application was made for 20mw of energy storage

17. Dec 16, 2022 The Draft Environmental Impact Statement is issued.

18. Estimated April 2023-Documentation submitted to EFSEC and is posted that provides turbine coordinate locations. Posting in the form of Department of Defense Contract with Scout. Document dated 1/20/2023 Posting date.

Notes. In the BPA Interconnection Application Database Spreadsheet, the names of the Developers are not disclosed. It can be assumed that all of these applications with

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J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
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exception of the initial application were made by the Applicant for the HH Wind Project.

[1]Reference BPA Queue Interconnection Requests-For Horse Heaven East, Bofer Canyon-

G0559, 250mw Wind

G0635, 100mw Wind

G0661, 300mw solar, 150mw Energy Storage-Status Withdraw

G0691, 100mw solar, 30mw Energy Storage

GO721, 0mw Wind, Added Back 4 turbines 3.4mw each

G0734, 20mw Energy Storage

[2]The term nameplate is the maximum generation a source can generate. Industry practice is to designate a project by the maximum amount the project can provide to the grid, usually net generation. Wind and Solar are considered generating sources. Batteries are not considered generators, and are not included as nameplate generation.

[3]After nearly two years of interaction and communication from Scout, the public first saw the 1150mw nameplate number on the EFSEC website on February 8, 2021.

References and Links for the Chronology:

https://scoutcleanenergy.com/wpd-partners-on-850-mw-us-hybrid-scheme/

Wind Farm Plan Adds Solar and Battery Energy Storage – Scout Clean Energy

Horse Heaven Wind Farm Submits Application to State Board – Scout Clean Energy

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
aramburulaw.com

Scout Clean Energy advances ambitious hybrid renewable energy project – Scout Clean Energy

Scout-Clean-Energy-Advances-Hybrid-Wind-Solar-Storage-Project-in-WA.pdf (scoutcleanenergy.com)

Horse Heaven Clean Energy Center Permitting Process Moves Forward with Release of Draft Environmental Impact Statement – Scout Clean Energy

BPA LGIP Link Large Generator Interconnection Procedures (LGIP) – Bonneville Power Administration (bpa.gov)

Generation Queue Report-

Open the Link Above-Large Generator Interconnection Procedures

Scroll Down to **Related Links**

Open Link Interconnection Request Queue from the BPS Home Page

All Generation Interconnection Requests will be listed most recent request first. Each IC Request has Unique Number shown of Testimony Page 16, lines 17-25.

In my opinion, the ASC needs to accurately present the detailed history of the project and in the interests of full disclosure and transparency explain any relationships and uncertainties that exist in the power generation arrangements for the Project.

Q-Can you comment about what can be learned from developing the project chronology?

A-There are a number of surprising issues;

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
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1. The Applicant narrative has decoupled the 1150mw total nameplate capability from the actual generation restriction that BPA imposed upon them as part of the technical review process to allow Interconnection. The actual generation that can be injected is 350mw for Phase 1, and the ASC limited generation for Phase 2 to 500mw.
2. The Applicant position has been that any reduction in nameplate generation would reduce their capability to generate at desired nameplate generation.
3. This "all-or-nothing" approach appears to have led to a decision to not analyze alternatives to the Applicant's position. No Alternatives Build options were considered.
4. There is no indication that the Applicant disclosed the BPA generation limitation to EFSEC prior to the Submittal in December 2022
5. The Applicant's decision to request an additional 300mw of nameplate generation was made just prior to the original ASC submittal, and that request was withdrawn shortly after that.

The ASC and the Updated ASC repeatedly use 1150mw nameplate and instead of 850mw, and use the 300mw overbuild to avoid mitigation, and as justification to not provide project alternatives.

Here is an example statement:

> "Phase 1 is assumed to have a nameplate capacity of up to 650 MW, with 350 MW generated via wind and 300 MW generated via solar. Phase 1 also includes a BESS capable of storing up to 150 MW of energy."

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J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
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~~The LGIP records show the history of requests the Applicant developer has made to the Bonneville Power Administration over time.~~

~~https://www.bpa.gov/energy-and-services/transmission/interconnection/large-generator~~

~~The Applicant applied for an additional 300mw, but elected not to proceed and withdrew the application after being informed by BPA that no more than 350mw could be injected through the Phase 1 (HHE) substation without an estimated $83 million for facilities, and cost to reinforce the transmission line (upgrade), cost not stated.~~

~~Page 1 of the G0661 Interconnection Report Conclusion states the following in pertinent part:~~

> ~~"As identified in the system study for G0635, no additional generation can be interconnected at Bofer Canyon beyond the 350 MW identified for the G0559/G0635 wind project, without a reinforcement of the McNary=Bofer Canyon 230 kV line. …[]… A non-binding good faith estimated cost to build the facilities associated with the interconnection of G0661 is $83.4 million."~~
> ~~This statement indicates that cost shown above was just for the switchyard facilities, and reinforcement of the transmission lines still needed to be accomplished.~~
> ~~According to BPA, the G0635 System Study indicated that no more than 350mw could be installed through Bofer Canyon without reinforcement of the transmission line. G0635 was issued prior to original ASC submittal of February 8, 2021. This implies the Applicant knew, or should have known before the ASC was submitted that the application for an additional 300mw of wind could not be accommodated.~~

~~https://www.bpa.gov/-/media/Aep/transmission/interconnection-reports/G0661_R1-ISIS.pdf~~

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
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~~As of the date of the ASC and revised ASC, the Interconnection requests identify 850 MW of interconnection capability.~~

~~The application fails to evaluate and analyze alternatives to the project based upon inability of the project to generate the desired nameplate generation required (**Not Offering Alternatives**)~~

~~The 1,150mw nameplate generation is repeatedly cited as an impediment to any mitigation measures that would require turbine elimination of relocation.~~

~~"Where siting features away from ferruginous hawk habitat is not feasible, the mitigation measure would require using options such as turbine curtailment to reduce potential strikes with ferruginous hawks in core habitat while nests are active (i.e., during the breeding season)." (**Avoidance of Mitigation**)~~

~~**Questions that arise from the above section:**~~

~~When would hawk breeding occur that might result in turbine curtailment to avoid strikes? What is "core habitat"? When would siting features away from Hawk habitat not be feasible? How is not feasible defined? What triggers turbine curtailment? Time based, or observer action?~~

~~If the turbines are being located in an area that could threaten the endangered species, the first option should be to evaluate and analyze whether a reasonable mitigation option could be accomplished without affecting the project generating capacity. In this case, nameplate generation can be removed without affecting how much generation is injected into the grid. If feasibility is being defined by potentially reducing nameplate capability of the project, BPA has spoken. The record has spoken. The Applicant has spoken by withdrawing from the opportunity to generate~~

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J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
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~~over 850mw. The analysis of independent reviewers and experts will speak. It is impossible for the project to generate to 1150mw, and the mitigation solution is very clear; move the turbines away from the sensitive area or eliminate the turbine as one of the turbines that would not be built, leaving the project capacity unchanged at 850mw injection to the grid.~~

~~Project alternatives are not provided as required:~~

~~**WAC-463-60-296 Proposal-Analysis of Alternatives**. The application shall include an analysis of alternatives for site, route, and other major elements of the proposal.~~

~~**WAC-463-60-115 General—Specific contents and applicability.** Did the Applicant request a waiver and justify why no alternatives could be provided as per the above?~~

~~Below is a screenshot of the newly added section of the Updated Redlined ASC where the contractor Project manager is responding to tribal concerns about the need to protect viewshed from sacred places presented by a Tribal representative, along with a map identifying wind turbines of concern.~~

Date	Nature of Communication and Participants	Topics Discussed
6/18/22	Kobus/Scout to Landess/Scout, Lughes/Scout, Ridgeby/Scout, Tim Thompson/Thompson Consulting Group, Ryan Thompson/Thompson Consulting Group, McMahan/Stoel	Project representatives had a conference call with Jessica Lally of the Yakama Nation on Thursday June 16th. The discussion topics were as follows: • Dave Kobus shared the completed visual simulations prepared for the points of interest requested by Jessica Lally. Dave also shared the Figure 5 visual simulation. • The YN believes that viewshed from their sacred places are "cultural resources". • Jessica Lally requested a response to her previously shared map identifying wind turbines of concern. Dave Kobus stated that the project has just filed a redline of the EFSEC application that has maintained the original project scope which includes all wind turbines previously requested for approval. Dave also stated that many of these wind turbines are the most productive on the site and their loss would severely impact the projects economic viability. • Dave Kobus stated that the independent Draft Environmental Impact Statement (DEIS) is nearly complete and will be the subject of a public comment period. Dave also stated that the project will not make commitments for project scope changes until all parties comments are collected from the public process. • We revisited the issue of proceeding forward with a tour of the site, funding a Traditional Cultural Property study and funding a full time Cultural Resources person that would work for the Tribe and agreed to take those issues up after the DEIS is completed. • SCOUT agreed to develop a proposal for the Tribe's consideration shortly after the DEIS is released.

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
aramburulaw.com

A key phrase is:

"Dave also stated that many of these wind turbines are the most productive on the site and their loss would severely impact the projects economic viability." (**Avoidance of Mitigation**)

This is not consistent with the BPA Large Interconnection Protocol requests on record, to date, which indicate that the project is 850 MW, with up to 350 MW going through the Bofer Substation and up to 500 MW going through the Webber Canyon Substation.

Within that 850 MW, there are a range of reasonable solar and wind turbine generation combination options that can readily be analyzed and discussed. It is my opinion, that this analysis also indicates that the ASC contains turbines in excess of the number of turbines needed to attain the project objectives, and that turbines and the many miles of micrositing corridors and roads, can be eliminated from consideration and still meet the underlying purpose of the project.

The following table was developed to illustrate that reasonable alternatives exist that can attain the project's objectives at a lower cost and a decreased level of environmental impact. This happens if the Applicant does not over-specify turbines by using nameplate generation instead of actual injection capability for project size.

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J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
aramburulaw.com

Horse Heaven Wind Project Power Generation Analysis
Five Options-Wind/Solar Mixes and Turbine Sizes

Small Turbine Size-Limit 244 Turbines									Large Turbine Size Limit-150 Turbines					
Option A			Option B			Option C			Option D			Option E		
HHE-250mw Wind+100mw Solar=350mw			HHE-250mw Wind+100mw Solar=350mw			HHE-250mw Wind+100mw Solar=350mw			HHE-250mw Wind+100mw Solar=350mw			HHE-250mw Wind+100mw Solar=350mw		
HHW 250mw Wind+250mw Solar=500mw			HHW-200mw Wind+300mw Solar=500mw			HHW-No Wind+500mw Solar=500mw			HHW 250mw Wind+250mw Solar=500mw			HHW-No Wind+500mw Solar=500mw		
Total Project Nameplate-850mw			Total Project Nameplate-850mw			Total Project Nameplate-850mw			Total Project Nameplate-850mw			Total Project Nameplate-850mw		
2.82mw Turbines-244	**HHE**	**HHW**	**2.82mw Turbines-244**	**HHE**	**HHW**	**2.82 Turbines-244**	**HHE**	**HHW**	**5.5mw Turbines-150**	**HHE**	**HHW**	**5.5mw Turbines-150**	**HHE**	**HHW**
Wind Nameplate (mw)	250	250	Wind Nameplate (mw)	250	200	Wind Nameplate (mw)	250	0	Wind Nameplate (mw)	250	250	Wind Nameplate (mw)	250	0
Turbines Required-#	88	88	Turbines Required	88	70	Turbines Required	88	0	Turbines Required	45	45	Turbines Required	45	0
Total Project Need #	176		Total Project Need #	158		Total Project Need #	88		Total Project Need #	90		Total Project Need #	45	
Unnecessary Turbines #	**68**		**Unnecessary Turbines #**	**86**		**Unnecessary Turbines #**	**156**		**Unnecessary Turbines #**	**60**		**Unnecessary Turbines #**	**105**	

Notes

1 HHE-Horse Heaven East, Phase 1 BPA Future Substation In Bofer Canyon Vicinity
2 HHW-Horse Heaven West, Phase 2, BPA Future Substation in Webber Canyon Vicinity
3 Horse Heavn East (Bofer Canyon, Phase 1) and Horse Heaven West (Webber Canyon , Phase 2) are separate and distinct Projects.
4 Project Capacity-850mw Nameplate Based Upon BPA Transmission Limit of 350mw on The Franklin McNary Line servicing Phase 1 of the Project Horse Heaven East

~~Note: This table is based upon 2.82mw GE Machines. Recent documentation[1] and information indicate that the Developer is planning on using a 3.4mw machine. That comes from Interconnection Request IC G0721, and from a video presentation made by Dave Kobus at the Badger club. That larger machine means fewer are required for the same output. Example, Option A identifies 68 unneeded turbines with a 2.82mw machine size. With use of a 3.4mw machine the number of unneeded turbines is 98, or 49 less turbines on each of Phase 1 and Phase 2.~~

~~[1]BPA Interconnection Queue # G0721 BPA System Impact Study G0721_ISIS.pdf (bpa.gov)~~

~~Badger Club Forum Video, Dave Kobus Project Manager Discussion. Badger Club – It's Not Easy Being Green | Benton County Democratic Central Committee (bencodems.org)~~

~~Key findings from a review of the project chronological history and review of BPA Interconnection Records.~~

- ~~From August 31, 2020 until the ASC was submitted the project was 850mw.~~

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J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
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- ~~Shortly after the interconnection request was made for the last 300mw to bring the total to 1150mw nameplate, the request was withdrawn by the Applicant.~~
- ~~The Applicant knew, or should have known, at the time of application, that Bofer canyon was already at the 350mw injection limit, and they still applied for an additional 300mw. Ref G0635ee~~
- ~~The project never was an 1150 mw project. It was 850mw with a request to study whether 1150mw could be accommodated. When BPA could not accommodate them without upgrades, and the Applicant declined to proceed with the upgrade of the BPA system, the Applicant accepted an 850mw project.~~
- ~~It is surprising that the Applicant publicly announced a hybrid project August 31, 2020, yet did not request interconnection for any hybrid components until December 15, 2020.~~
- ~~The Applicant up to this point has made 6 generation interconnection requests for the Horse Heaven East Project alone.~~
- ~~This project expanded in size and scope at an unheard-of rate. In a little over a year it went from a 250mw wind project to 1150mw nameplate (according to Scout) plus 300mw BESS Equivalent. Combine that with a late siting venue change to further complicate the public process.~~
- ~~The applicant is apparently planning on using a 3.4mw GE machine as indicated by interconnection request G0721, and public information by Dave Kobus. The implications are that the Applicant needs less turbines to meet the generation limitation.~~

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
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~~ASC should be revoked and suspended. The Applicant is required to accurately state correct generation information in the ASC. A new ASC should be reviewed and approved only after adequate public review and comment.~~

~~In addition, the ASC needs to be revised to accurately describe the power generation limitations. EFSEC should establish a **nominal** maximum nameplate generation limit of 350mw for HH East, and 500mw for HH West. The Applicant should not be able to "grow" into the inflated nameplate numbers in the future without going through the permitting process.~~

~~Project components do not Align with Northwest Utilities Integrated Resource Plans~~

~~Q-Did you examine the Integrated Resource Plans of the Major Washington Investor-Owned Utilities and what is your observation.~~

~~A-I did. The project did not appear to be using Integrated Resource Planning Principles-The IOU projects being developed or in planning do not appear to align with what the Applicant is proposing.~~

~~Q-What are Integrated Resource Planning Principles and how do they relate to the Project?~~

~~**A-**All utilities in the Northwest Power Pool must maintain an Integrated Resource Plans (IRP). For Public entities such as PUDs, REA's, and Municipalities they are pretty simple. For Investor-Owned Utilities, who provide for most of the utility customers in Washington it is a very detailed 10-year planning document that is~~

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
aramburulaw.com

~~updated every two years. Those IOU's rates are regulated by UTC. IOU's are required to provide the electricity when needed for the customer. Load growth projections are included, as are reserve margins, and increasingly, state regulations have been enacted that require an early exit from fossil fuel generation. Those have complicated the power supply picture in Washington.~~

~~That is particularly challenging, particularly for Puget Sound Energy who has the most customers and the most fossil fuel generation used in the state The UTC also reviews and has to approve rate increases for IOU's. This critical time in the State, and IOU's are looking for cost effective resources than can replace or compensate for the loss of fossil fuel generation. In 2022 changes in the EFSEC statute by the legislature requires EFSEC to "promote the development and integration of clean energy sources".~~

~~There is a very important distinction between "promoting development", and "integration" of clean energy sources.~~

~~Promoting development is not an issue. With recent Washington legislation eliminating fossil fuel generation, and a hugely generous tax advantage from the clean energy provisions in the 2022 Inflation Reduction Act, Developers are eager to develop renewable energy projects in Washington.~~

~~It is the "integration" part that may be getting overlooked. In the context of an Integrated Resource Plan, it means everything has to fit together and work together.~~

~~What process does EFSEC go through to understand what Applicants are proposing early in the process? How does EFSEC ensure that Applicants have done their homework about the peculiarities in the Northwest? Has the Applicant done their~~

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J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
aramburulaw.com

homework with respect to what IOU's need? Since EFSEC is the funnel that new projects increasingly are going through, EFSEC should be familiar with Integrated Resource Plans of IOU's to understand what utilities are doing.

Q What about energy storage and the Applicant's plan to integrate with solar?

A There is not a lot of detail about that right now. But I do have some concerns. In the ASC they stated they were proposing 150mw of energy storage for each of phase 1 and 2, or 300mw total. Now according to what I have seen in the BPA information they have only applied for 50mw for each phase, or 100mw total. I believe they are 4 hour batteries, which means they could discharge a total of 100mw for 4 hours, or 400 megawatt hours. And that is not very much. But more telling, frankly, is they have only applied for 100mw when the ASC said they were going to apply for 300mw. Obviously, the issues described in testimony documented why they withdrew. However, that decision was the Applicants, only one third of what they indicated in the ASC. However, for Phase 2, I believe the Applicant has applied for interconnection capability for 240mw That roughly matches the ASC that indicated a nominal 250mw wind and 250mw solar.

But specifically, for Phase 1, the amount of energy storage is quite small, and earlier I testified my belief that most likely it was to be used for smoothing the generation rather than to extend hours of operation of customers using energy storage to supplement solar, or perhaps wind.

Energy storage is not a free ride. Not only is battery storage expensive, but there is an approximate 15% loss for each discharge/recharge cycle. And the power to

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J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
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~~recharge the batteries either has to come from renewable energy generated by the project, or from the electrical grid.~~

~~Right now, all utilities top priority is energy storage, and integration of energy storage and solar.~~

~~Washington is a moderate wind resource, but only in a few places, and utilities are favoring Montana and Wyoming to Washington because of better wind resources, particularly in winter, but also to diversify geographically. Wind may be calm in Washington but blowing in Montana, or vice versa.~~

~~Another wind project, and the biggest one ever proposed for Washington would not provide the geographic diversity that Northwest IOU's are seeking. Putting another one in the same regional area puts "a lot of eggs in one basket". When the area has heavy winds there will be too much generation when most likely it is not needed, and when there is no wind there will be thousands of megawatts of nameplate generation sitting idle.~~

~~Recent solar projects in Washington have made a commitment up front that they will serve Washington utilities. Some solar only projects are planning to add battery storage. One large one in the permitting process is proposing a 470mw project integrated with 470mw of energy storage. If those are 4-hour discharge batteries, the project could provide nearly 1900 mwh of energy, or 4 more hours of replacement generation after the sun is gone. That adds direct and significant value to a utility and Washington electric customers.~~

~~On Phase 1 of the Horse Heaven Project I did not see that. Solar for phase 1 is specified as 100mw, and battery at 50mw equivalent. If they are 4-hour batteries,~~

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J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
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they would provide only 200 mwh of energy and 2 additional hours of generation that the solar part of the project can provide.

And buying Renewable Energy Certificates may help meet the legislative goals set forth by Washington, but REC's provide no power. And that does not help the Utility meet customer need.

Washington and EFSEC do not have the time for projects that utilities cannot use, or are so high cost that getting rate relief is problematic.

Integrated Resource Planning Principles (IRPP) would be indications that the existing developing projects are being planned and developed to match the utility long range IRP much matching what the utilities are projected to need.

Specifically, in this case, the IRP's indicate that creating more reliable generation during high load periods, including the ability to extend generation though higher load evening hours especially with robust energy storage systems that can provide power after the sun sets, will have significant value.

To the best of my knowledge there are no new stand-alone wind projects being built in Washington by IOU's.

Q-Where does the phrase Integrated Resource Planning Principles come from

A-That phrase came from an order from an older EFSEC Project, Sumas Power project order #754, where EFSEC denied the SCA to the Applicant.

Q-What is your assessment of the HHH Application with regard to Integrated Resources Planning Principles?

A-The developer has not provided any information about how the wind/solar/energy storage resources would be integrated, and operated.

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
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~~Phase 1 is proposed to begin construction first. The entire BPA power injection capability is taken up with the Applicants application for 350mw of wind generation. Post ASC submittal, and after withdrawal of the excess generation request, the Applicant began a process of incrementally requesting small increments of generation; now at 100mw solar and 50mw energy storage. That appears more likely for smoothing the generation and to facilitate selling the power on the short-term market. I do not see IRPP in phase 1.~~

~~Phase 2 is proposed in the ASC as up to 250mw wind and 250mw solar, all wind, or all solar. There is really no way to tell, except almost certainly there will be some solar, and some energy storage to more efficiently bring power through the BPA transmission system without paying for smoothing services. The fact that the Applicant continues the All Wind option indicates at least that option is not following IRPP. Yes, it is only an option, but it is that option being used for a narrative that removal of any nameplate components will affect the project, and that has led to a No Alternative recommendation. I believe it is more likely going to a Corporate and Industrial Buyer, of either the project, or just the REC's. That would not be a good outcome for Washington State.~~

~~It is my opinion that greater specificity should be required in the Application in a manner consistent with the requirements identified in the final EFSEC COUNCIL ORDER NO. 754 Findings of Fact, Conclusions of Law, and Order Recommending Denial of Site Certification and Order Denying Motion to Reopen Record for the Sumac Energy 2 generation Facility~~

~~EFSEC Link Microsoft Word - Copy of final order 2-15-01 pm with s'.doc (wa.gov)~~

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
aramburulaw.com

Concern - Washington may not receive significant Renewable Energy Benefits.

Q-What are the various ways that the project power can be marketed, and what are the benefits to Washington State

A-There are at least four scenarios.

1. First, the HHH owner could sell the electricity as a renewable project to a buyer outside Washington. Washington is already a significant exporter of clean electricity to other states, and such a sale would not affect CETA compliance in any way. Washington utilities would still be required to acquire renewable or nuclear resources to serve their customers in Washington. Under this scenario, Washington would not receive any renewable energy benefit.

2. A second possibility is that the HHH owner sells the RECs to a corporate buyer and sells the electricity in the wholesale market. This electricity would not be considered renewable or carbon-free electricity. However, it would often displace the need for natural gas-fired generation in states that do not have clean electricity standards. If the electricity were sold to a Washington utility, it would be subject to the same requirements as other unspecified power; the utility would be limited to using no more than 20% of its load, and it would have to offset this use with RECs or other approved alternatives. If the utility uses RECs, the outcome is the same as if had purchased the electricity and the REC together. In this case, Washington receives no direct benefit, and little indirect benefit.

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J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
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~~***3.*** A third possibility is that a corporate buyer in Washington purchases the output of HHH, including both the electricity and the RECs, and uses that renewable resource to replace some or all of the electricity it otherwise buys from a utility. This would contribute to the state's clean energy goals and reduce the obligation on the utility to acquire renewable resources. In this case, whatever power is used by the corporate owner to offset their own facilities power usage would be beneficial but limited only power consumed in the state by the corporate entity. Washington would get limited benefits.~~

~~***4.*** A fourth possibility is that the project is sold to a Utility that serves Washington State electric customers. If the power is then used in the State, the project would represent a 100% benefit Washington. If the project is sold to a Utility that serves customers both in Washington, and outside of Washington, the benefit would be based upon how much renewable energy goes is used in the State.~~

~~What this comparison illustrates is the significant differences in how renewable energy and REC's can be applied to benefit Washington's clean energy goals. The renewable energy benefit of the project dwarfs the financial benefits that may come the way of Benton County, and without significant renewable energy benefit, the economic, environmental and human impacts would be difficult to balance in favor of the project.~~

~~**Q**-What about the statutory requirement "to provide abundant clean energy at a reasonable rate"?~~

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
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~~**A**-I have testified earlier that in my opinion, this is a marginal site, and it would be difficult for me to say it would meet the statutory requirement either for abundant power, or reasonable cost.~~

~~**Q**-Which scenario of the 4 do you think is most likely.~~

~~**A**-In the case of Horse Heaven Hills, we know the facility will be a merchant plant. The Applicant, in the ASC section 1.3 Pressing Need made no clear commitment to any specific renewable benefits to Washington. Indeed, the emphasis in 1.3 was to Corporate and Industrial buyers who use the REC's for their own carbon neutral goals. That was in my earlier testimony. The Applicant's past projects have favored corporate buyers, and to our knowledge none of the Applicant's past facilities have been sold directly to a utility. As mentioned previously in this testimony, there does not appear to be a clear picture that the facility is being developed using Integrated Resource Planning Principles. In my opinion, it is most likely that the project will go to a C&I purchaser.~~

~~It is also my opinion that on a project this large and impactful, the Energy Facility and Site Evaluation Council should require that a significant portion of the renewable energy benefits flow directly to the State.~~

~~**Q**-In your opinion, what would be the consequences if it was be sold to a Corporate or Industrial Buyer?~~

~~**A**-It depends on how the Corporate or Industrial buyer deploys the Renewable Energy Credits. If the REC's are deployed out of state, and the power put on the spot market Washington would get minimal benefits. In that case, this would It would be the biggest energy blunder since WPPSS and their bond default in the 1980's.~~

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
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~~The applicant applied for 350 megawatts of wind and 100 megawatts of solar 50 megawatts of battery, knowing they can only inject 350.~~

~~An appropriate alternative could be that the western part be all solar at 500 mw, with robust batteries to support it. That is what is happening on other projects in Washington including a large project in Benton County at 470mw solar and an addition of 470 megawatt battery storage. That would be much more attractive to utilities than another wind project in an area already over populated with wind projects operating at relatively low capacity factors, with far less environmental impact on the Tri-Cities.~~

Q. Is there any relevant issues you wish to add from your experience with wind turbine operations.

A. This testimony is to point out the inherent danger to humans from wind turbine operations and for this project, particularly along Kiona Ridge. For example, mechanical malfunctions can and do occur that could cause a turbine blade to separate from the hub. Depending on the rotational angle of the blade when the separation event occurs, wind speed and direction, and the downwind topography from the turbine, the blade could travel a significant distance, perhaps hundreds of yards, before coming to rest. A recent failure in Oregon was attributed to bolting of the blade to the hub. Although rare, the consequences could be deadly.

Q. Have you had experience with a similar operating incident at a wind facility?

A. Yes, on my assignment at the Foote Creek 1 project, located in Eastern Wyoming, there was a mechanical malfunction that resulted in a turbine blade

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
aramburulaw.com

breaking off. The turbine was on the crest of the ridge, and the blade broke into 2-3 pieces, and ended up approximately 100 yards or more from the turbine location. No one was injured, and the tower remained upright, but with a crease and a lean to it. The tower was replaced. Below is another example that happened at a nearby wind project.

Wind Bust: How an airborne blade exposed broader problems at PGE's flagship wind farm :: The Oregonian/OregonLive

Q. From your review of the project documentation, do you see any areas of concern?

A. Yes, I do. As with most wind projects that have topographical relief, the most efficient wind turbines are those located on ridge, or crest of a drop into a valley, or into a canyon. This project does this, and follows Kiona Ridge North of Benton City to Webber Canyon, and then from Webber Canyon to the Eastern edge of Badger Canyon. Specifically, there are a number of turbines that are placed on, or in close proximity to Kiona Ridge that sees activity all 4 seasons of the year. This is a popular hiking and horseback trail marked with a BLM Kiosk. Any operational incident could cause a hazard to humans. It should be noted that these problematic turbines are located off of agriculture land.

Q. Was this topic brought forth during the public comment period?

A. The topics of concern were of the proximity and prominence of the turbines to Benton City, and nearby wineries, difficulty in fighting fires on the downslope of Kiona Ridge, Native American cultural values of Kiona Ridge, wildlife connectivity, and

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
aramburulaw.com

threats to State endangered species, as well as impacts to the recreational experience. To my knowledge, the topic of these types hazards to people was not addressed in the Application.

Another complication for fighting fires is that a number of turbines on the Horse Heaven Hills escarpment are located adjacent to Bureau of Land Management land. Standard firefighting techniques for wind turbines is to let the fire burn out and contain the fire if possible, at a safe distance away from the turbine. There is no buffer in place giving firefighters the opportunity to contain fires before it travels to BLM land. BLM does not maintain a firefighting force for this area. The string of turbines along the Horse Heaven Hills escarpment adds a potential fire source that cannot easily be fought increasing risk to residences and business on the Badger Valley floor. To my knowledge that issue was not addressed in the application

(266) Dramatic footage shows Hull wind turbine on fire - YouTube

Q. Why are you adding this testimony at this time rather than during public comment period?

A. The Applicant all through the public comment period did not disclose coordinate locations of the turbines, and the documentation provided with the project did not allow positively locating the turbines. After the comment period had passed for the Application, documentation was posted to the EFSEC website in the form of Department of Defense Contractual Agreements[1] that showed number and coordinate

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
aramburulaw.com

locations of the turbines. The first time those locations became publicly available was after the Draft EIS public comment was closed. And during the site tour, the Applicant stated they were not on the ridgeline.

[1] 20230120_DODMitAgrmnt_Amended.pdf (wa.gov)

Q. Could you describe the results of your review of those coordinate locations?

A. First, I took the coordinates from the posted documentation from the EFSEC website and inserted the coordinates on Google Maps. Each label designates a turbine location. I was surprised that the several of the turbines were located at the crest of the Kiona Ridge[2 and 2A], and located **on the existing trail**. Another turbine is 400-500 feet from the trail. This conclusively puts the location of the turbines in an area regularly used by people. To say nothing about the loss of recreational experience, any type of operational incident could have deadly consequences directly under the turbines and also downwind to the North (prevailing winds).

Q. Do you see any other hazard concerns when humans are in close contact with wind projects?

A. Yes, there is as phenomena called “ice throw”. That happens in cold areas with moisture. It is similar to ice building up on an aircraft wing. This is much more common and routinely happens when weather conditions are right. The turbine will

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
aramburulaw.com

operate and continue to build up ice on the blades, and then periodically the ice sheds. Depending upon the angular position of the blade when the ice sheds it could just drop down, or could be launched for a distance.

Q. What are the mitigation strategies for ice throw?

A. General Electric has issued a technical Paper[3] assessing risk, and offering mitigation strategies. Passive mitigation strategy consists of siting the turbines away from people, roads, residences, etc, or shutting turbines down when there is ice buildup. There is a more recent mitigation strategy that GE offers which is a software algorithm that detects imbalance between blades, and automatically shuts the turbines off until the ice melts.

Q. Have you found information in the Application about mitigation of ice throw?

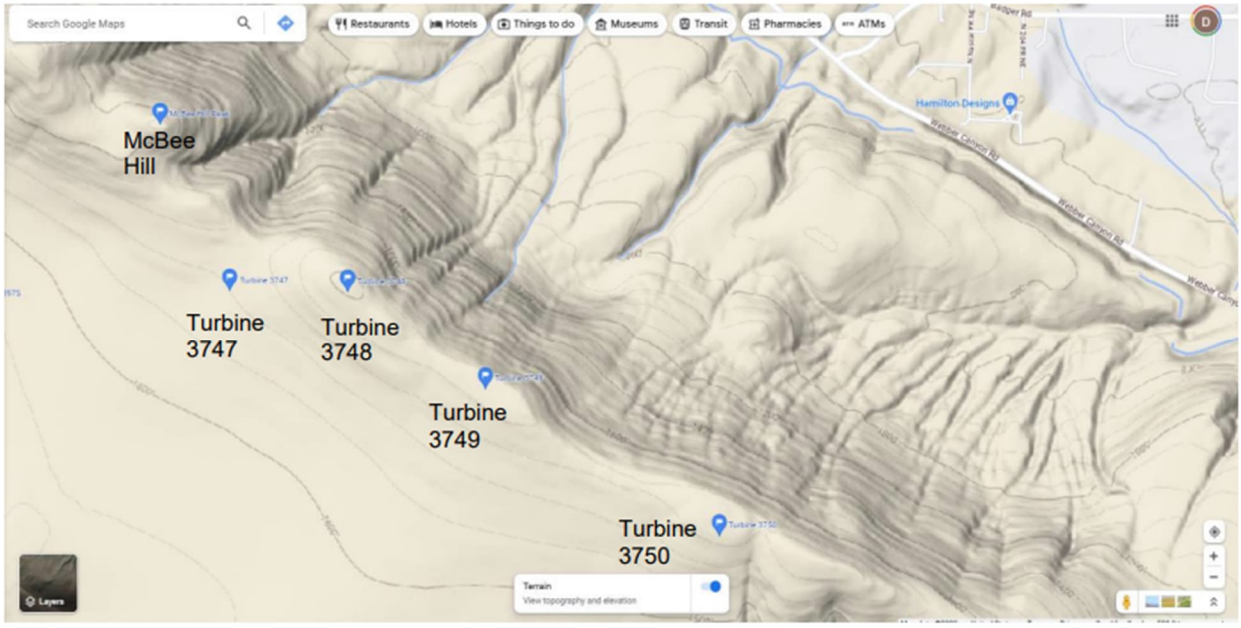
A. No, I have not, and I am troubled that for such an important aspect the ASC would be silent.

Q. Does this area have weather conditions conducive to ice buildup on turbine blades.

A. Yes, during November through January we get many days of freezing fog or sleet. A picture[4] is attached, taken from the Nine Canyon Project that identifies falling ice as a hazard. It can speak for itself.

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
aramburulaw.com

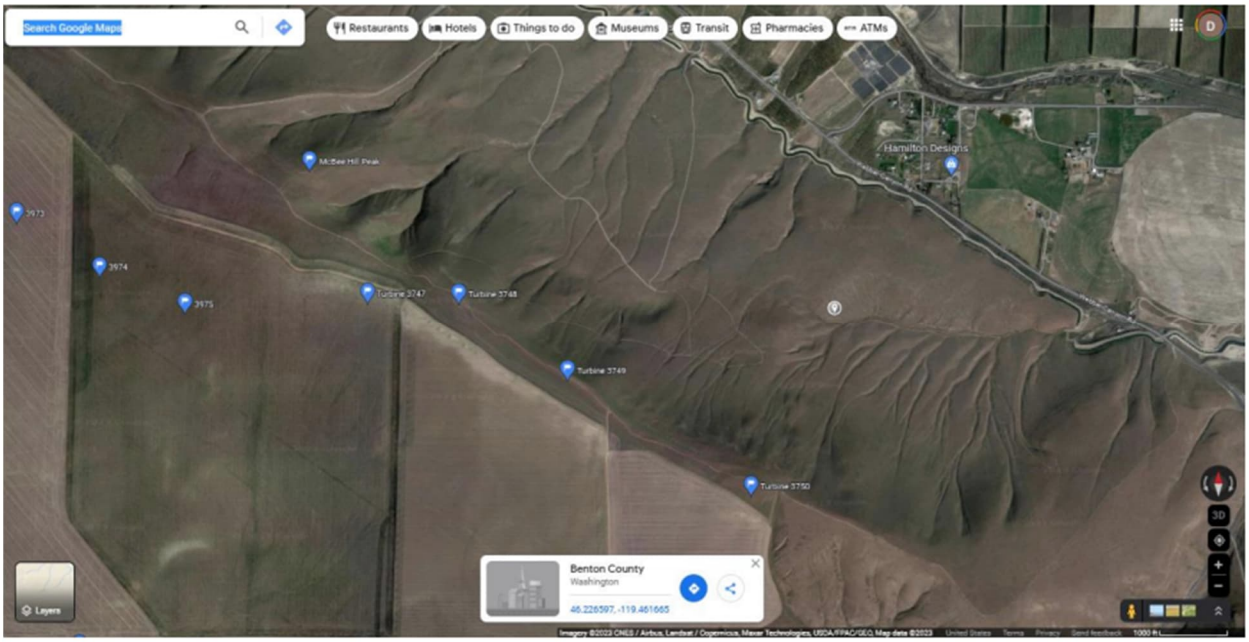
[1]Kiona Ridge Screenshot with Turbine Locations-Satellite View-Exhibit 1



Google Maps 2023 Map Data

Terrain View-Google Maps Showing wind turbines along the Kiona Ridge. Turbine numbers are from the Federal Agency Data posted on the EFSEC website after all public comment ended. Coordinate locations is from that data. We believe that the coordinates are what was submitted to the Federal Aviation Administration.

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
aramburulaw.com



Satellite View-The actual Kiona Ridge Trail and other trails can be seen on this view. These turbines are clearly either right on or very close to the actual trail. They also appear to be installed off of Agriculture Land.

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
aramburulaw.com

Picture taken from Nine Canyon Project-Danger Falling Ice-Exhibit 3

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
aramburulaw.com

Ice Shedding and Ice Throws-Risk and Mitigation ger-4262-ice-shedding-ice-throw-risk-mitigation.pdf

Q. What would be a reasonable mitigation strategy to reduce the risks you have described?

A. Curtail turbine operation when there is ice buildup on turbine blades. A prudent course of action would be to eliminate the turbines or move them back a safe distance. Removal would be preferred. EFSEC has established precedent of distance from a non-participating owner to a tower. Given the sensitivity associated with Kiona Ridge and the number of people that access the ridge for different purposes, that established precedent would seem to be appropriate.

Curtail turbine operation when there is ice buildup on turbine blades. The General Electric Technical Paper referenced above has a formula that recommends a minimum safe distance as follows:

Distance = Hub Height * Rotor Diameter * 1.5.

Distance = 82 meters + 140 meters * 1.5 = 333 Meters, or 1192'

For the Horse Heaven Project the Applicant offers a number of turbine models. The model chosen as the most likely project turbine for use is the GE-3.4 140. That model has a hub height of 82 meters, and a rotor diameter of 140 meters. That calculates to 333 meters, or 1192 feet.

~~Q. Are there any more pertinent areas of interest on the project that you have had experience related to your wind experience.~~

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
aramburulaw.com

A. Yes, I also had responsibility for a small project located in California near Palm Springs. There were provisions in the operating agreement that when the prevailing winds came from a certain direction, we were required to feather our blades, and discontinue operations because we were affecting another earlier downwind project. For this project, on the far eastern is the Nine Canyon Project, as stated by the Applicantthe "project wraps around" the existing Nine Canyon project. A review of project maps shows the close proximity to Nine Canyon Project. It has long been known that a close proximity upwind project will degrade performance and potentially increase maintenance costs because of wake turbulence induced problems. Any degradation in performance would result a loss of existing renewable energy. There is no indication that the Applicant took that into consideration when siting the HHH turbines.

Every customer of Benton PUD would be affected in a small way. Nine Canyon generation is used by Public Utilities, including Benton PUD.

One other area of concern is the close proximity of the blade tips to ground elevation. Increasingly, to capture more wind energy, wind turbine designers are increasing the Rotor Swept Area (rotor diameter) and at the same time avoiding exceeding the 500' total height to avoid additional FAA regulations. In the case of the machine specification listed above, the distance from the surface would be

Distance from Surface = Hub Height minus half of Rotor, or

82 meters – 140 meters * 0.5 = 12 meters, or approximately 39'.

That puts the wake turbulence fairly close to the ground in an already arid and dusty area. In this area historically we are already at border line compliance levels for

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
aramburulaw.com

~~National Ambient Air Quality Standards for PM-10. A few years ago, the Tri-Cities area was out of compliance for PM-10. There were comments in the public comment period about fugitive dust but most of the emphasis was during construction. There is almost a certainty dust levels could be incrementally higher during operation.~~

~~**Q**- Is there anything else you would like to add.~~

~~**A**-One final thought about visual impact. The wind turbines have been compared in height to the Seattle Space Needle. Consider the waterfront carousel in Seattle. The Seattle Great Wheel is 175' tall. Each wind turbine rotor will be in the neighborhood of 460' in diameter. So imagine 244 space needles with a rotating carousel nearly 3 times the diameter of the Seattle Great Wheel, attached to it, continuously turning. With that thought in your mind, this completes my testimony.~~

LAW OFFICES OF
J. RICHARD ARAMBURU, PLLC
705 2ND AVE., SUITE 1300
SEATTLE 98104
Telephone (206) 625-9515
FAX (206) 682-1376
aramburulaw.com