TCC
Pre-Filed Testimony
Dean Apostol
EXH-5102_T

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 DEAN APOSTOL

I have been asked by Tri-Cities C.A.R.E.S. to provide analysis and recommendations on the visual and scenic impacts of the Horse Heaven Hills Project, proposed by Scout Energy.

Concerns about conserving scenic landscapes are centuries old, and British Landscape Architects deliberately designed large estates to create or enhance grand scale scenery. Conservation of scenery was a big factor in the setting aside of national parks and forests in the early 20th century. In the 1960s-70s, based on concerns over clearcutting, the US Forest Service created a system for inventorying scenery, researching public preferences (using environmental psychology), mapping and ranking scenic areas, and devising means for conservation, and for mitigation of impacts. These methods have been built upon by other agencies, including: Bureau of Land Management, National Park Service, Natural Resource Conservation Service,

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Army Corps, Bureau of Ocean Energy Management, Federal Highway Administration, and multiple states, provincial Canadian forestry agencies, Australia, and in Europe.

1.

Years of research & practice demonstrate that people strongly prefer natural appearing landscapes, particularly those with complex topography, variety, water, and lack of development. Some cultural landscapes are also highly valued for scenery, particularly patchwork farm fields, vineyards, orchards, and old rural buildings or structures.

I have previously been qualified to provide expert testimony for multiple cases in Washington State involving wind energy, timber harvest, and transmission lines. I have worked as a consultant for EFSEC in Oregon on energy projects and am considered an expert in this field by multiple agencies and utilities. I have done visual assessments for wind energy projects, including two pending projects offshore of Martha's Vineyard and Nantucket.

My review of the visual impact analysis for the Horse Heaven Hills Project has included:

- Aesthetic Technical Memorandum for the Horse Heaven Wind Farm Project (October 2021)
- Appendix Q: Visual Simulations (Revised)

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- Horse Heaven Wind Farm Draft Environmental Impact Statement (December 2022)A Visual Impact assessment Process for Wind Energy Projects (May 2011)
- Appendix 3.10-2 SWCA 2022 Visual Impact Assessment Report

Additionally I did a site visit to the project area on May 24-25. This included going to multiple Key Observation Points identified in the Visual Impact Assessment.

Importance of Scenic Resources

Scenic resources are important not simply because people care what the landscape around them looks like. Scenic views provide multiple benefits to people and the communities they live in.

Based on research summarized in the Science of Scenery (2017)," Dr. Andrew Lothian, scenic views provide the following benefits:

- Life enhancement.
- Sense of identity, spirituality, stability, strength, calming
- Stimulation of imagination (creativity) & adventure
- Providing a "Sense of place"

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- Economic development and tourism. i.e. wine country tours. Scenery is an asset that attracts people, business, and investors.
- Scenery enhances property values (mean value was 18% positive impact per house with view, up to 90%)
- Higher property values result in higher tax revenue to communities
- Promotes physical and psychological health & healing.

Scenery is a core asset of Washington State and the Palouse Region. Additionally, RCW 80.50.010 (2) states that one of the premises of EFSEC review is to: "*preserve and protect the quality of the environment; to enhance the public's opportunity to enjoy the esthetic and recreational benefits of the air, water and land resources . . . .*" In other words, it is the policy of the State to preserve aesthetic values while balancing renewable energy development.

Findings and Recommendations

I found the existing Visual Impact Analysis of the Horse Heaven Wind Farm to be deficient in multiple important aspects. These include:

- Methodology was not properly applied.
- Selection and Usefulness of Key Observation Points (KOPs) is deficient.
- Base photography for visual simulations is deficient.

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- Simulations themselves, including instructions for viewing are misleading.
- Impact Conclusions understate the magnitude of the impact.
- Mitigation is inadequate, and makes no real effort to reduce impacts.

These deficiencies will be described in detail below. Before getting into that I want to state my recommendations to EFSEC on how best to move forward.

1. Do not accept the Visual Impact Assessment (VIA) for this project. It is deficient, incomplete, inadequate, and misleading. The VIA is flawed, and if used by EFSEC to make a decision, will lead to significant, avoidable impacts to visual and scenic resources. Send Scout Energy back to the drawing board.
2. A better VIA would make a more accurate accounting of impacts, but it will not help avoid or reduce them unless the project is redesigned. Specifically, Scout should be required to develop one or more alternatives that reduce the visual dominance of the proposed wind turbines from multiple Key Observation Points (KOPs).
3. While it is not likely possible to avoid all visual impacts given the size and nature of the proposed facilities, it is probable that a design could be done that retains significant renewable energy production, while reducing visual/scenic impacts to a level that most of the community would find to be acceptable. We can't know this for certain unless or until new alternatives are explored and evaluated. But my professional opinion is that it can be done.

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The Horse Heaven Hills Project, while it may help Washington achieve its renewable energy objectives, will, if allowed to go forward as designed, create irreparable, significant, long term, and avoidable harm to important visual and scenic resources to a community of over 300,000, as well as to other nearby communities that use or value the Horse Heaven Hills (i.e. Yakima People). It is, geographically, one of the largest, if not the largest wind project in the State of Washington. The scale of the project makes the scale of the impacts large, and means EFSEC should hold it to a high standard. Alternative designs can quickly and easily be generated, and impacts avoided or reduced to reasonable levels.

Methodology Problems

As described in the Final Visual Impact Assessment (April 2022), Method of Analysis (page 10), reference is made to "The CESA methods" (2011). CESA is a guidance document developed in 2011 by the "Clean Energy States Alliance." It is described in the introduction (Page 3), the CESA document's purpose is to guide regulators on what to expect from a Visual Impact analysis for wind projects. It is not meant to be a complete analysis method, but more to guide regulators as to the issues they will encounter in determining visual impacts resulting from wind projects. It outlines what a Visual Assessment Process should look like, what sort of skills are needed to undertake it, how to use visualization techniques, and how to determine the degree of impact.

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While useful as an introduction and guide for how to determine impacts, it doesn't provide nearly enough detail to serve as a methodology in its own right. Other, more comprehensive methods are available and referenced in CESA, these include the US Forest Service Landscape Aesthetics Handbook (and multiple supporting chapters), Bureau of Land Management's Visual Management System (also with multiple supporting documents), and the Federal Highway Administration's "Guidelines for the Visual Impact Assessment of Highway Projects," to name just three of the most commonly used methods. The Horse Heaven Final VIA does make mention of these and goes into some detail on the BLM method. It claims the BLM "Contrast Rating" was used, though it does not appear to have been used appropriately.

In my book: "The Renewable Energy Landscape (Routledge Press, 2016) we provide a "Visual Impact Assessment Framework" that represents a defensible method for determining impacts. It includes: scoping, baseline conditions, units of analysis, observer characteristics (people), how to select Key Observation Points, landscape character analysis, how to prepare and use visual simulations, and on thorough determination of impacts. While the CESA document includes much of what we recommended, it is incomplete as a methodology, as is the product of the analysis by Scout Energy and its consulting team.

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Selection and Usefulness of Key Observation Points

Key Observation Points (KOPs) are one of the most important elements of Visual Impact Assessment. They can be specific points (GPS specific) or representative areas (i.e. a park) with multiple viewing locations, or a corridor (i.e. road, trail) that has a potentially continuous view over a short or long distance. KOPs are a critical element of Visual Impact Analysis, but also limiting in that they often resulted in truncated analyses that rely too heavily on how a project looks from them, while ignoring or diminishing how it looks from elsewhere, outside the frame of the KOPs.

The VIA for this project includes a description of "Inventory Points" and "Representative Viewpoints" (pages 25-26). It says inventory points were selected and photographed in 2018 and 2020, with seven selected as "representative". These vary by elevation and distance, and are intended to "represent perspectives from which the public will be expected to be able to observe the project".

The project area extends some 26 miles east to west. Looking at the viewshed maps, (Attachment A of the Draft EIS, December 2022) turbine visibility extends 25 miles or more. Ultimately 13 KOPs were selected to represent all the views and viewers across this region. However, what is missing is discussion over why these particular KOPs were selected, and what it is they are expected to represent. According to the Bureau of Ocean Energy Management's new manual for Visual Impact Assessment (BOEM, 2022) KOPs should be chosen to represent:

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- Scenic overlooks and viewpoints
- Roads, trails, other transportation routes
- Where people work
- Where people engage in recreation and
- Where people live

KOPs should be selected after a detailed desktop analysis and consultation with government agencies, civic groups, and the community. They should be chosen because the view from them is valued. If they are meant to be representative, they should be selected to represent the general nature of views of users over a wide area that may lack specific viewpoints. Representative KOPs should not be randomly selected. Selection should start with places people are known to visit, and where views are known to be valued. Truly representative KOPs, meant to stand in for views across a larger area, should be identified as such, and the areas they represent should be noted or mapped.

In reviewing the EIS and VIA, I noted that the selected KOPs for the most part do not appear to be important viewing places, with a few exceptions, like Badger Mountain. Nor did I note any discussion of what they are meant to represent. For example, KOP 2 A, B, and C (a panorama looking south from Clodfelter Road) provides an interesting view of the project area, but what is it supposed to represent? I could not

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find any description in the VIA or EIS about why this viewpoint was chosen, who uses it, or what other views it is meant to represent. This is true for most of the other KOPs as well.

Bureau of Ocean Energy Management recently developed guidelines for visual impact assessments (2022), and has a detailed suggested procedure for selecting KOPs. It begins with the viewshed analysis (potential area from which the project is visible), and is followed by field visits to determine actual visibility (taking account of finer grained topography, buildings, vegetation, etc.). It suggests an inventory of important viewpoints, including:

- Scenic overlooks and specially designated areas
- Roads, trails, other transportation routes
- Places where people work
- Places where people engage in recreation
- Places where people live

In a paper selected for presentation at a November 2023 Visual Resource conference at the Argonne Lab, Peter Langenfeld presents a methodology for KOP selection, similar to that used by BOEM. Start with viewshed analysis, then list designated resources (trails, historic sites, parks, vista points, rivers, scenic roads, and traditional cultural sites). These can be identified from existing information, and/or via public

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involvement and consultation with federal, state, and local agencies. Desktop analysis of these candidate sites follows, to identify those that likely have the best view of the project (angle, height, lack of screening). Langenfeld advocates a quantitative method to score each possible KOP from 1 (little consequence likely) to 5 (major infringement).

Selection of KOPs includes consultation with governments and other interested parties through scoping and ongoing public involvement. They should be places from which the view is valued. If they are picked to “represent” some wider area or class of views, that should be noted. KOPs, particularly those from which simulations will be developed, should be selected to cover the range of views (varying distances, locations, high places, low places) that are out there. In a very large project that affects many viewers, like Horse Heaven Hills, we should expect there to be many KOPs, probably dozens. While simulations may not be needed for all, the project proponent should state that a given simulation can reasonably represent the view from other, identified KOPs.

I do not see that this has been done. As noted, the few selected KOPs, for the most part, are not particularly important viewpoints, nor is it explained what they represent. A reasonable inventory of potential KOPs is missing altogether. The visual impacts of the project are largely based on the views from these KOPs. More information about why should be provided. The KOP selection should be considered incomplete and insufficient.

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Additionally, the number of KOPs evaluated (13) is simply insufficient to provide a complete analysis of visual impacts. The project is some 26 miles east to west. The population of the Tri Cities area, which lies just north of the project boundary, is over 300,000 people. The Horse Heaven Hills ridgeline is plainly visible from virtually any place not screened from the view by buildings or vegetation. The proponent's own visibility analysis confirms that potential views extend out to 25 miles, particularly to the north. Yet the Scout Energy EIS team chose only seven viewpoints north of the project to evaluate. Unless they can show how these seven represent all or nearly all project views from the north, where the vast majority of viewers live, work, and visit, EFSEC should find the KOP selection deficient and send the team back to do more work or show why it is sufficient.

Errors in Base Photography for Visual Simulations

Visual simulations are extremely important in visual impact analysis. They are presumed to show the public and reviewing agency what the project will look like from important and/or representative viewpoints. Photo-realistic simulations should be expected to be as spatially accurate as possible, and should be based on photographs that can be viewed "at scale." The goal is to produce an image as realistic and representative as possible, within the unavoidable limitations that any photo will have.

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Scale Problems

Accurately depicting the scale of wind turbines in a simulation from a given viewpoint has long been a problem in VIAs for wind projects. These problems were first recognized in Great Britain, where people noted that built projects appeared much larger than depicted in simulations prior to development. Much work has since been done to better understand how to properly scale turbines within simulations, how to reproduce these, and importantly, how to view them.

Objects such as wind turbines will appear to be at an approximately correctly scale in a photograph that is taken with the equivalent of a 50 mm lens on a full-frame camera, if printed (or viewed on a screen) at 11”x17” and held at arm’s length. An object can also be viewed at scale if printed on an 8.5”x11” sheet held at a comfortable book-reading length.

However, the human field of vision is approximately 120 degrees, or “wide angle”. Full peripheral vision extends to nearly 180 degrees, while the field of view for a 50 mm lens is less than 40 degrees.

The use of a 50 mm lens is a compromise that has become the common standard for base photography for photosimulations because it has low distortion, and is a standard, relatively inexpensive lens. It provides a knowable scale when printed at

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standard sizes, if the paper is held at a comfortable viewing distance with the image filling the sheet.

A telephoto lens would create an image that, in order to get a correct scale, would have to be held farther away than the length of our arms. Conversely, if a wide-angle lens were used the resulting print must be held uncomfortable close. **And this is the problem with the base photos used for the simulations in the Scout Energy Horse Heaven Hills project.** The photos were apparently taken with a wide-angle lens. I say "apparently" because no information is provided by the project team regarding what lens they used for the base photos. The simulations provided (in pdf format) give instructions that the viewer should view the image **6 inches** away from the eye for proper scaling. Note that it is nearly impossible for most people (including EFSEC reviewers) to comfortably view the simulations at a 6-inch distance. What this means as a practical matter is that the public and EFSEC will likely be misled by the simulations. They will view them from a greater distance than 6 inches, thus significantly diminishing the apparent size of the turbines (and utility poles) in comparison with their true scale from any given viewpoint.

I recommend that EFSEC read a technical paper by James Palmer, "The Best Paper Format and Viewing Distance to Represent the Scope and Scale of Visual Impacts" (2019, available from Research Gate online.) This paper was based on work done for the Bureau of Ocean Energy Management in helping them determine how to produce and view simulations for offshore wind projects.

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Apparently the Scout Energy team took the photography using a wide angle lens, possibly from a cell phone. It is not “Best Practice” to use wide angle or cell phones for simulations. For reasons stated, it is difficult to generate an approximately correct scale that can be viewed from a comfortable distance, thus understating the scale of the turbines in the simulations. All of them.

In addition to problems with the lens used, there are additional problems with the base photos. Most of them appear (in the PDF report) to be “hazy,” or not very clear. I took prints of the “existing condition” photos (top image on the simulations) with me to the field and stood on or near the photo points as described. From some points, notably KOPs 8, 11, and 2A, the existing turbines near “Jumpoff Joe” are clearly visible and high contrast. In the base photos (existing conditions) provided in the EIS, one can barely make them out.

The commonly accepted practice in professional photo realistic simulations is to use “clear sky” conditions. This means little or no haze. In a technical paper done for the National Park Service, “Evaluating Photosimulations,” by Robert Sullivan of the Argonne Lab (April 2021), there is a section titled “Common Problems in Photosimulations”. A partial list of these problems follows:

- *Improper display*. Sims provided in a VIA that are viewed on screens or printed on standard printers are usually duller than a human eye would experience in

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the field. EFSEC can demonstrate this for themselves by taking a print of the existing conditions, go to the KOP on a clear day, and note how much sharper everything appears in comparison to the print.

- *Improper viewing distance*. This was covered in the previous section. A 6" viewing distance, recommended by the Scout Energy team, is not feasible for most people.
- *Improper display lighting*. Viewing sims in a poorly lit space, or overly bright, results in images that are difficult to see.
- *Lack of information*. For example, time of day is very important in understanding how accurate a simulation is. In the case of the Scout sims for Horse Heaven Hills, time of day is not given. We don't know if the turbines should be front lit (early morning), side lit (late morning and afternoon), or backlit (most of the day).
- *Improper selection of views to simulate.* Already noted. The simulations for this project do not appear to be important viewpoints, nor are they representative.
- *Not selecting enough views for simulation*. Also already noted. Not enough viewpoints leaves regulators unable to understand the range of impacts.
- *Omitting important views*. I believe this is a problem in this project.
- *Omitting representative views*. See above.
- *Selecting a partial obstructed view for simulation*. This was done at KOP 9. The photo was taken from behind a large gas station sign that blocks the view of several turbines. Had the photographer moved south a few yards they would

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have avoided this problem, and more of the project would be visible in the simulation.

- *Improper selection of lighting conditions*. Most of the day, for most viewers (who are north of the project looking south) the turbines will be "backlit." That is, they will be seen as dark against a light sky. The best illustration of this is the simulations from KOP 5, though the apparent size of the turbines will be much larger than what is depicted, for reasons stated previously.
- *Not simulating worst case visibility scenarios*. As noted, the sims appear to have hazy atmospheric conditions. Worst case is low humidity, clear skies, and back lighting. And the worst case will unfortunately be the common case given the desert-like conditions of the Tri Cities area.
- *Omitting nighttime simulations*. Given the high visibility and the value of night skies, Scout should provide one or more nighttime, or at the least dawn or dusk simulations.
- *Changes to project design after simulations are prepared*. It is hard to know if this has happened, or may happen on this project. Some of the simulations date to 2021. Have there been design changes not reflected in the sims? Are changes anticipated? The question should be put to the Scout Energy team.
- *Incorrect locations for the KOPs*. This appears to be the case with KOP 10. As checked in the field, it appears a mile or more farther west than what is shown on the map.

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- *Insufficient contrast range*. Because the simulations provided are much "duller" than the field conditions, it is likely that the Scout Energy team underestimated "visual contrast," an important factor in measuring the impacts. Given the distance from the viewers to the project, EFSEC should assume contrast will be high. That is, many very large, dark turbines against a light sky from many viewpoints seen by many people.
- *Improper atmospheric effects*. Already noted as a problem.
- *Lack of realism*. I call attention to Figure 8-1b, the simulations from Viewpoint 5. The turbines do not appear realistic. You can see down to their bases, but they appear disconnected to the land. And they do not cast shadows despite being backlit.
- *Too narrow or overly wide field of view*. This is a critical problem in the applicant's simulations. Views from a number of the KOPs should be more extensive horizontally than depicted in the sims. For example, only one sim, KOP 2, provides a full panorama, and it does this awkwardly, with 3 separate images (2a, 2b, and 2c) not spliced together, which is how simulations are normally done. Other KOPs are inexplicably simply cut off. Why is there an 8a and 8b, but no 8c for example? Why is KOP 5 limited to a single frame? The view from there is clearly more panoramic, and will likely show many more turbines than what is depicted.

One additional simulation problem is the *failure of static photos to show movement*. Those blades in the images will, presumably be spinning most of the time. Movement

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catches the eye. It increases visibility. At least one, possibly more animation sims should be provided to let the regulators and public know what they will see if this project is developed as planned. They will see spinning turbines, not stationary ones. EFSEC and the public rely heavily on the simulations to understand the extent of impacts. The simulations provided are deficient, for the reasons pointed out. Scout Energy should be told to provide a much better, more complete product before allowing them to move forward.

Impact Conclusions

The Visual Impact Analysis for the Scout Energy Horse Heaven Hills project includes two tables to guide rating of impacts (Tables 2 and 3, pages 11 and 12). Table 2 is called "Impact Rating, and lists four factors; magnitude, duration, likelihood, and spatial extent. Table 3 is called "Criteria for Assessing Magnitude of Impacts to Visual Resources." It describes a range of impact magnitudes, from negligible to high. It then goes on to discuss the impacts under 4.2.2, titled "Impacts during Operation."

While the tables are useful in understanding impact factors and criteria, the conclusions are incomplete, misleading, and not defensible. For example, any independent visual resource professional looking at this project, hundreds of turbines placed along a prominent ridgeline a few miles from a metro area of 300,000 people, would conclude that the magnitude is high, the duration of the view long (continuous), the likelihood unavoidable, and the spatial extent regional, that is beyond neighboring

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receptors. So four out of four factors in impact rating are at their highest levels per Table 2.

From Table 3, magnitude, there can be no conclusion other than "High," which reads:

> *"Landscape character: landscape would appear to be strongly altered and Project components would dominate an intact visual setting. Project components would introduce form, line, color, texture, scale, and/or movement not common in the landscape and would be visually dominant in the landscape (strong contrast).*
>
> *Viewing locations: a strong level of contrast would be introduced by the Project, demanding attention. The Project would be highly prominent and dominate views from viewing locations where the form, line, color, texture, scale, and/or movement of Project components would be highly incongruent with existing landscape features, including existing structures. A strong level of contrast may also be introduced if the Project components occupy a large portion of the viewshed from a given viewpoint.*

Hundreds of 500-670' tall, white turbines, with spinning blades, reaching some 24 miles from east to west, occupying a visually prominent ridgeline that defines the southern edge of the Tri Cities region. This is not a matter of, well some people might like it, others not. In visual resource impact analysis, what we have, and there is really no question about this, are visually dominant, high contrast facilities placed on and in

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a valued scenic view. Don't be confused by terms used by Scout Energy, like "long term modifications to the landscapes form line color and texture". Well, yes. It goes on: "….the visual impacts associated with the project tend to change considerably with distance." Surely. But what are those impacts? And how much distance is required before they diminish to a lower range? The analysis does not venture to say.

There are Tables 4 and 5, on pages 17-24 that describe impacts to each Key Observation Point (KOP). Under the column "Magnitude of Impact", each KOP gets a "medium" or a "high." Referring back to my discussion of the problems with these KOPs and the simulations used to measure impacts, I would simply say that these tables are meaningless. They do not provide any useful information to the public or regulators.

This is a high impact project. It is high impact based on the very criteria that Scout identified in Table 2. It is high magnitude, long duration, unavoidable, and regional in its scale and scope. It will be plainly seen from many viewpoints all across a major metropolitan area. There is no escaping this conclusion.

Mitigation

The term "mitigation" is described in "The NEPA Book (Bass, et al 2001) as measures that deal with significant environmental effects of a project. They list 5 types of mitigation:

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1. Avoidance
2. Minimization
3. Rectifying
4. Reducing
5. Compensation

Page 32 of Appendix 3.10-2 Visual Impact Assessment Report discusses the mitigation measures offered "to reduce impacts on landscape character and views". These amount to a list of "Best Practices" from BLM and CESA, summarized below:

- Consider topography when siting wind turbines
- Cluster or group turbines to break up long lines
- Strive to create visual order
- Maintain operational turbines
- Prepare a decommissioning plan
- Select appropriate paint and finishes to match setting

There is no evidence that Scout Energy did any of the above. Did they consider topography? Where? How? How did this influence the layout? They don't say. Did they cluster or group turbines? In looking at the turbine layouts, options 1 and 2, there does not appear to be any clustering. The turbines appear to be equally distributed along lines. Is there "visual order"? Look at the simulation for KOP 5. There is no

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visual order whatsoever. Nor is any apparent in any of the other sims. Did Scout Energy find a turbine paint color that matches the background? It appears from the sims that they are all white. FAA allows modifications to turbine colors in some instances. But it does not appear they have asked FAA for permission to use other colors that may be less contrasting in this setting.

To be frank, there is no effective mitigation proposed for visual impacts within the VIA or EIS. Scout energy does not appear to have bothered with any design alternatives that might reduce impacts, even though these are obvious. *The visual impact problem, simply stated, is that this project is overwhelming in scale, occupies a prominent ridgeline clearly visible from a metro area of 300,000 people, and is quite close to most observers*. "Mitigation" depends on the design, including the placement of turbines and their distance from observers.

The most obvious way to reduce impacts is to build fewer turbines, removing those closest to the most viewers. This would help by reducing the scale of the project. Another is to test varying layouts. In particular "clustering" could be effective if it breaks up the long, overlapping lines of turbines in the present options. Designers could take their cues from the high and low areas along the ridgeline, leaving the higher places undeveloped, while clustering turbines (perhaps more densely) in the lower places or gaps.

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I note that WAC 463-69-115 requires consideration of alternatives in the mitigating measures. A project of this size, scope, and long duration should be required to produce more than 2 alternatives.

Conclusions and Recommendations

The Visual Impact Analysis for the horse Heaven Hills wind energy project is deficient, relies on misleading simulations, fails to consider enough views, and appears to make no effort to develop alternatives that bring impacts into an acceptable range. This is disturbing in that clearly Washington State wants more clean energy, and this may be a good place for turbines. But it is not a good place for so many turbines, so close to a metro area of 300,000, significantly changing the visual character of a prominent, important ridgeline.

If this project is approved as currently designed (either option 1 or 2) there is a high likelihood of significant, long term, irreparable impact to important scenic resources of the Tri Cities. My conclusion is based on:

- Existing scenic quality of the Horse Heaven Hills ridgeline
- A high visual contrast of the turbines & facilities with the ridgeline
- Open, uninterrupted views from many locations in the Tri Cities area

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- The proposed position of turbines continuously along the ridge
- A high number of sensitive viewers
- The huge scope and scale of the project, in area, height, and proximity

My professional, expert opinion is that EFSEC should send Scout back to the drawing board to come up with alternatives that show greater respect for the land and the Tri Cities community. Better alternatives are possible. It's a very large project area; there is room to experiment with layout, and this can be done quickly and inexpensively by building a computer model of the project.

However, regardless of new alternatives, better analysis should be required. More needs to be done on KOP selection, and the simulations need to be redone to meet a minimally acceptable standard. The existing sims are misleading and should not be relied upon by EFSEC to judge the impacts of the current design alternatives. At minimum, the simulations should use clear atmospheric conditions, and base photos should be retaken with a 50MM lens equivalent. Full panoramas from viewpoints should be provided. One or more night or dawn/dusk simulations should be included. One or more animations with moving blades should be provided. Viewing distance for simulations should be a comfortable reading distance.

Design alternatives should:

- Increase the distance from most viewers to the nearest turbines

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- Break up the long, linear line of turbines extending many miles along the ridgeline
- Explore options that cluster turbines
- Leave parts of the ridgeline (suggest highest areas) undeveloped
- Reduce the number of visible turbines from the most important or most representative viewpoints
- Consult with the FAA to determine whether colors other than white might be used.

Thank you for the opportunity to provide this testimony.

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Appendix Q. Visual Simulations (Revised)

Appendix 3.10-2 SWCA 2022 Visual Impact Assessment Report

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