<u>Exhibit CS-SR-2</u>

Wind Speed Analysis

Mechanical/Electrical Engineering Consultants

Rochester • Buffalo • Syracuse • Schenectady

CHELSEA SOLAR PROJECT

Comparative CFD Modeling of Wind Speeds With and Without Tree Removal

Chelsea Solar Project

Bennington, Vermont

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M/E Reference 170104

Value-Driven Solutions

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1. Executive Summary

Computational Fluid Dynamics (CFD) models were employed to determine if the construction of a solar array at the Chelsea Solar Project (the "Project") site in Bennington, VT would increase the wind speeds experienced at neighbors' homes of the Apple Hill residential area. There is a concern on the neighbors' part that, by removing trees to make way for solar panels, wind speeds would increase dramatically on their property.

Satellite imaging reveals that only one house would be in a direct, unobstructed line-of-sight path over a very narrow band of wind directions (~210° to ~220° SW, or 215° average) across open fields. All other wind directions do not have a direct line-of-sight path because of obstructions due to trees on neighboring properties and retained trees on the Project property. Therefore, wind speeds from all other directions, aside from this narrow band, will not be measurably altered as a result of the placement of the subject solar array compared to the current uncleared land.

According to local wind data from the Bennington airport, winds from 215° at any speed occur about 2.2% of the time during a typical year (< 192 hours/year). Further, higher wind speeds above 15 mph from 215° SW occur about 0.015% of a typical year, or about 1.3 hours per year. Winds above 20 mph from this direction occur 0.001% of the year, or about 5 minutes per year.

Modeling reveals that BOTH cases, the as-is condition and a condition where the proposed Project would be built, provide some degree of wind shielding for the worst case wind direction of 215°. Using a prevailing wind speed of 25 mph near the visitor center to the south, both models show a reduction of a few miles per hour, mainly due to upstream trees.

The conclusion of this study indicates the following:

a. Approximately 350° out of a total of 360° wind directions will have no adverse wind speed effects on the neighbors' properties of Apple Hill.
b. At the worst case wind direction of 215°, one neighbor will be in an unobstructed, direct line-of-site path between the proposed solar array and their house. The house is expected to see a net reduction in wind speed compared to winds measured at the visitor center to the south.
c. No prevailing wind speeds or directions will cause an increase in wind speed at any of the Apple Hill residential area homes.
d. There appears to be no significant differences in wind patterns with or without the proposed solar array in place.

2. Introduction

The proposed Project is expected to be located on a portion of a 27.3-acre parcel situated a short distance to the north of downtown Bennington and just south of a small residential community commonly known as Apple Hill. The parcel slopes gently to the southwest and is bounded by Route 7 to the west, route 279 and the visitor center to the south, Apple Hill Road and a large, high voltage power line right-of-way to the north, and a mostly wooded area to the east. Anecdotally, the proportion of deciduous trees to conifers appears to be approximately 90% to 10% respectively.

Neighbors in the Apple Hill area have expressed some concern that the construction of the Project may cause wind speeds at their residences to increase. In order to examine the neighbors' concerns, the Petitioner contracted M/E Engineering to scientifically evaluate the potential for wind speed effects resulting from the clearing of the land for the Project. M/E Engineering has prepared comparative Computational Fluid Dynamics (CFD) models to show the differences in wind fields between a topology as it stands today to a topology where trees have been removed to make way for the proposed solar array.

A wind direction from 215° SW was selected as a straight line direction between where the solar array would be located and where the most wind exposed home is located. This wind direction occurs less than 2.2% of the year and approximately 0.015% of the year above 15 mph.

Both models were run in a transient mode to observe the natural variations in wind turbulence or gusts. The results of this study, from both models, are laid out in the following pages.

3. Existing and Proposed Tree Line Conditions

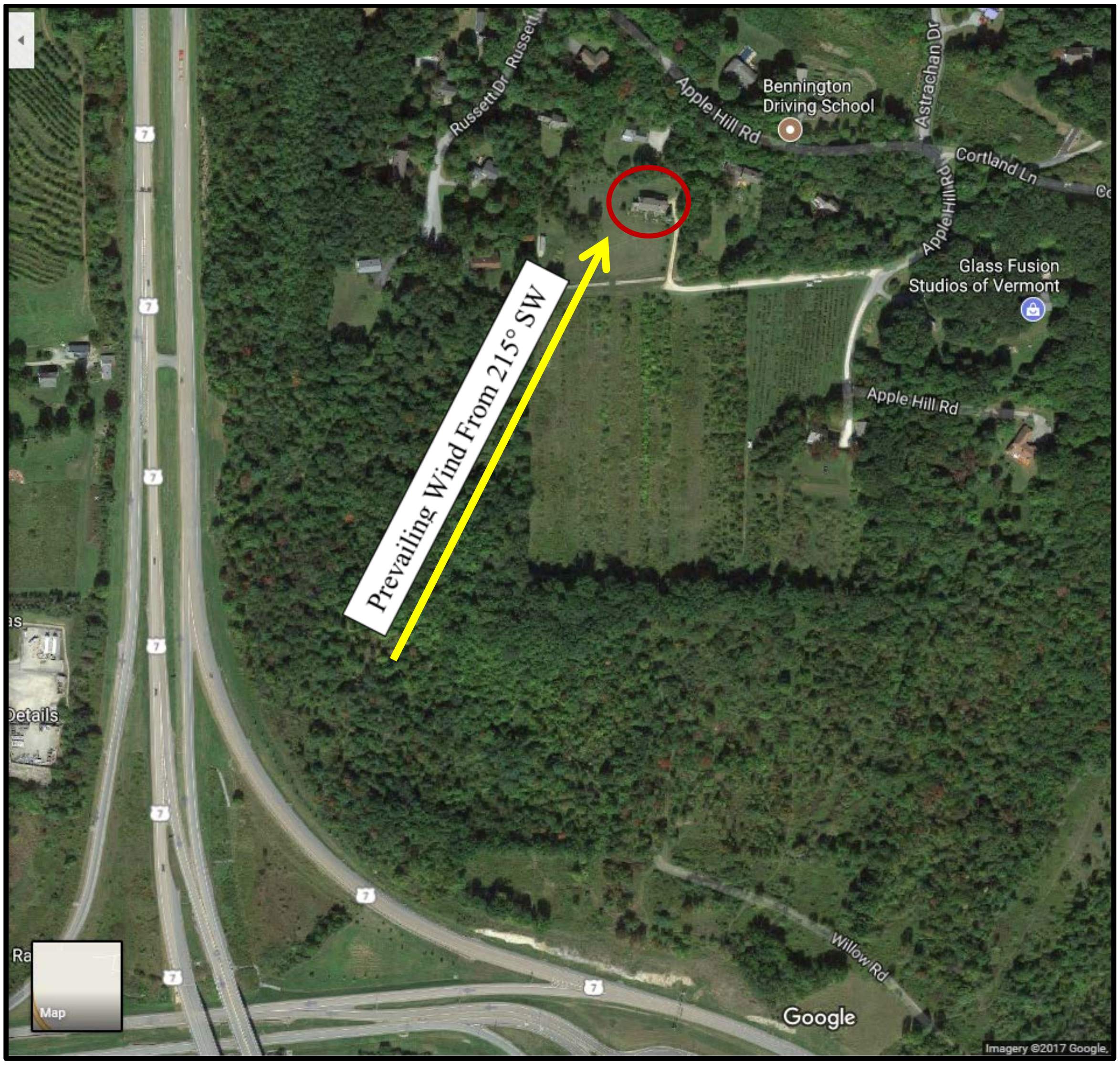


Figure 1. - Satellite Map of the CFD Model Area (As-Is)

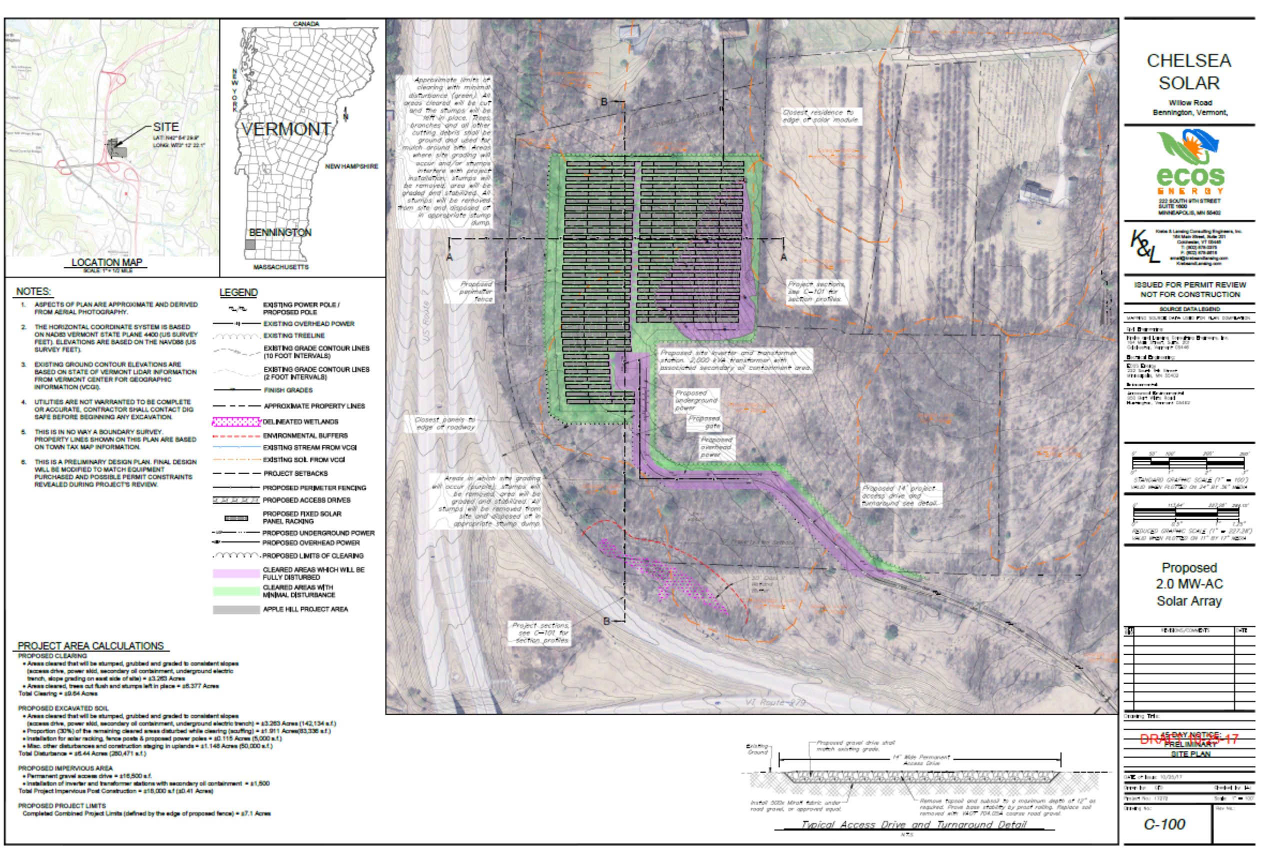


Figure 2. - Proposed Chelsea Solar Array Placement

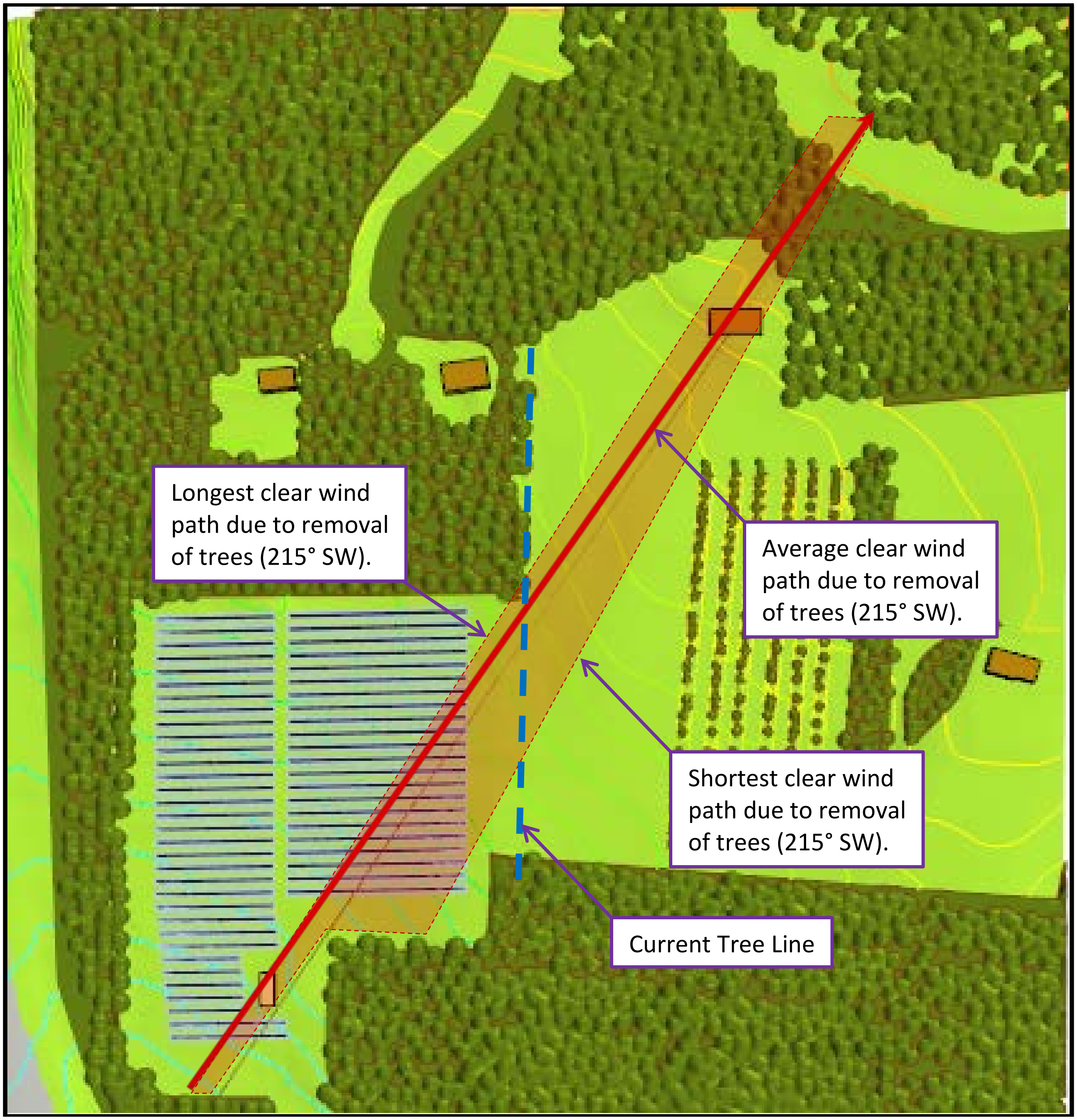


Figure 5. - Aerial View: Model domain showing clear wind path as a function of tree removal. Between a 5° and 10° open path may be developed between the project clearing and the most wind-exposed residence. All other wind directions are unaffected by the Project.

4. CFD Model and Parameters

CFD Models:

- STAR-CCM+ version 12.04 was used to solve the model parameters.
- State-of-the Art techniques are used to solve for wind momentum (velocity), turbulence, and temperature profiles.
- The models are meshed using trimmer cells and prism cell sub-layers near surfaces.
- The models were executed in a transient mode (time-dependent) using a k-□ Detached Eddy Solver (DES). This stat-of-the art solver allows the model to resolve gusts and natural variations in the wind speed over time.
- The as-is landscape mode and the model containing the proposed solar array contain approximately 4.1 and 4.8 million computational cells respectively.

Input Parameters:

- 3D topology
  - USGS Bennington Quadrangle
  - 7.5 minute series
  - Contours from National Elevation Dataset, 2014
- Wind speed of 25 mph at the ground level is used and an ambient temperature of 50 °F at the ground level (both cases).
- Trees tops are ~45 feet above ground level
- Tree boundaries taken from *Chelsea Solar Project Design Drawing (C-100)*.

5. Base Case - Model of the undisturbed, as-is conditions.

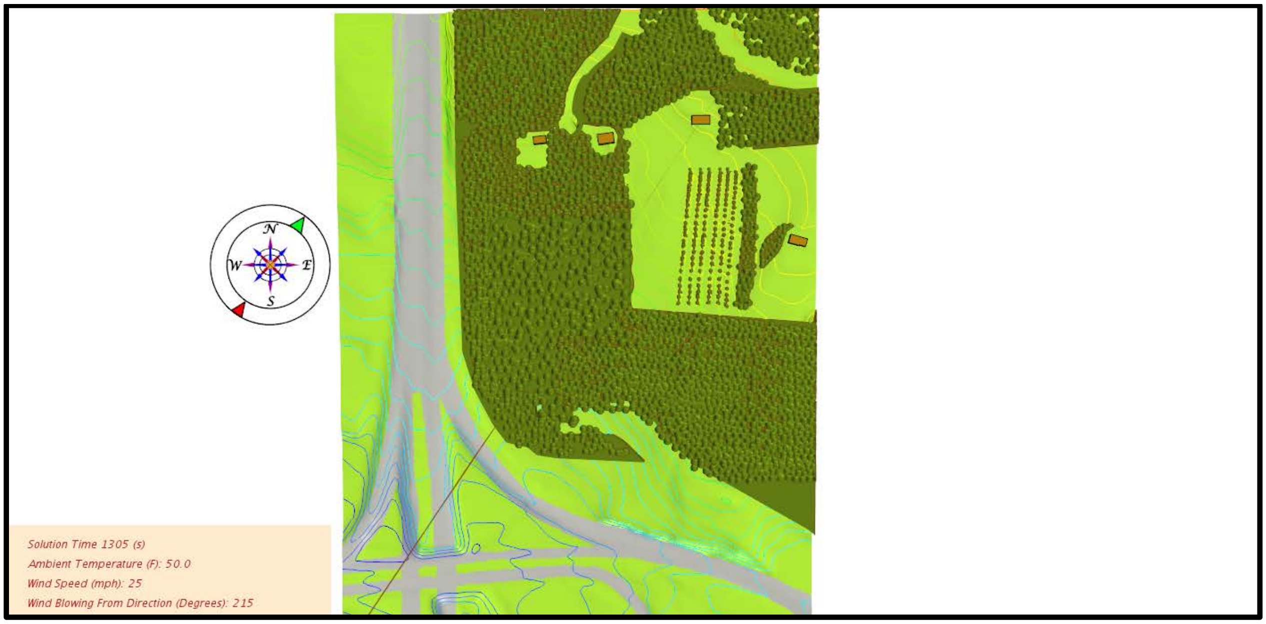


Figure 3. - Aerial View of the undisturbed land for the proposed Chelsea Solar Site.

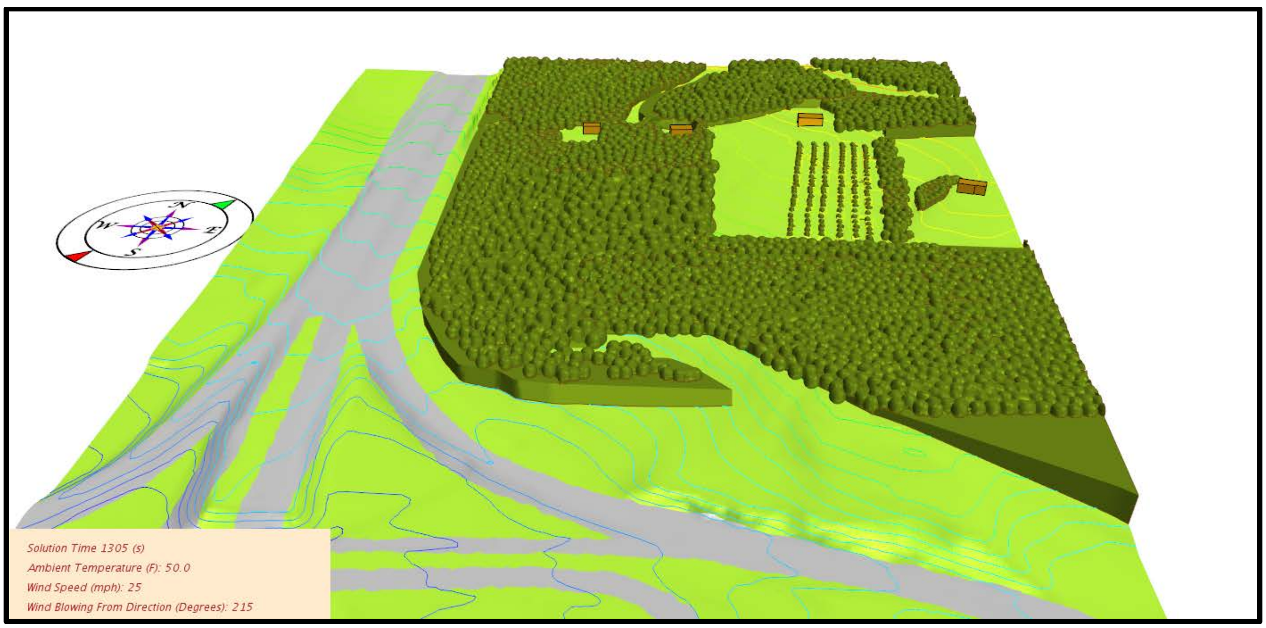


Figure 4. - Isometric View of the undisturbed land for the proposed Chelsea Solar Site.

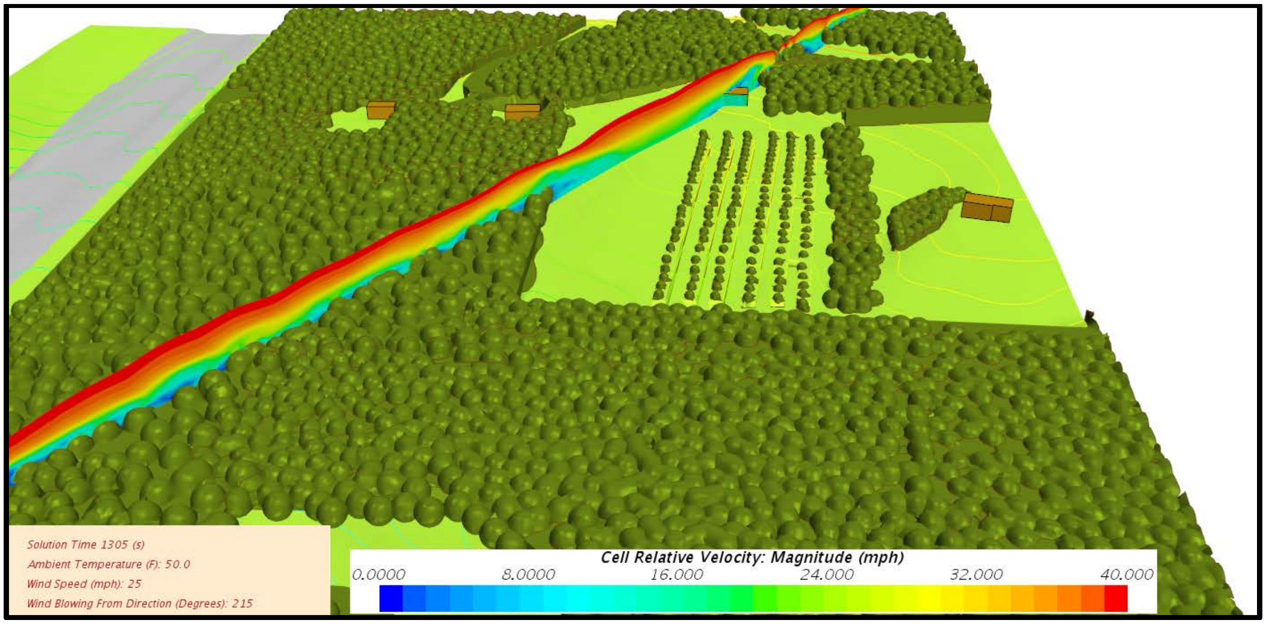


Figure 6. - Isometric View: Velocity contours of wind flowing across the undisturbed land at the location of the proposed Chelsea Solar Site.

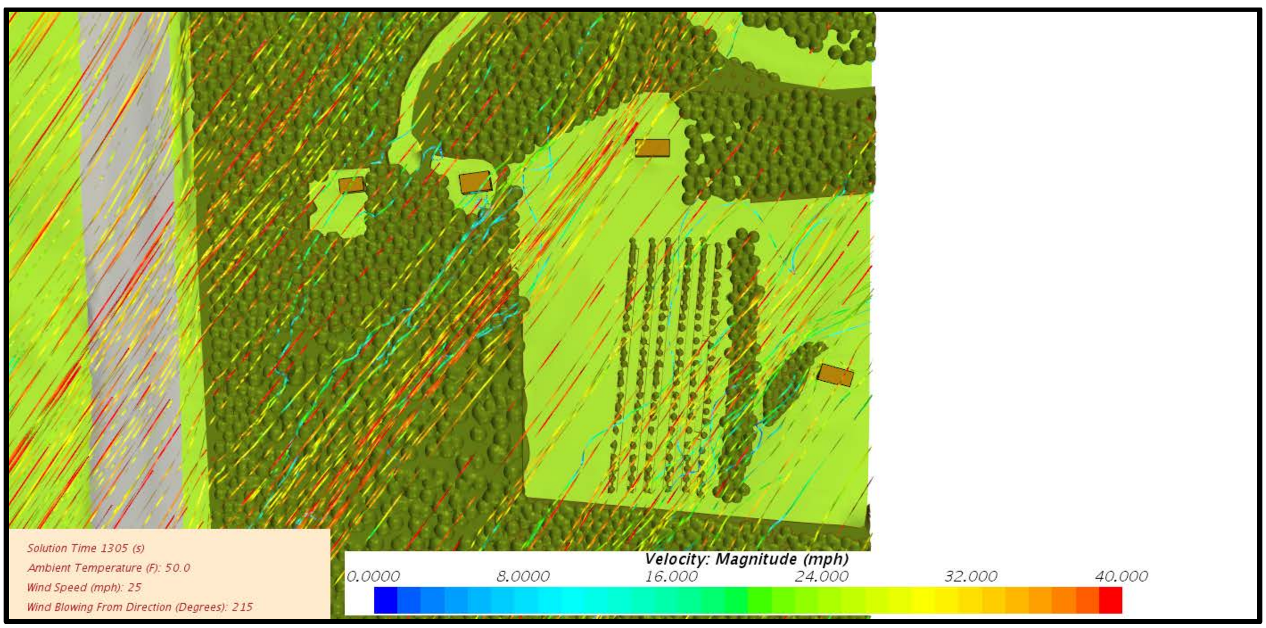


Figure 7. - Aerial View: Streamlines of wind flowing across the undisturbed land at the location of the proposed Chelsea Solar Site.

6. Case 1 - Model of the Proposed Solar Array

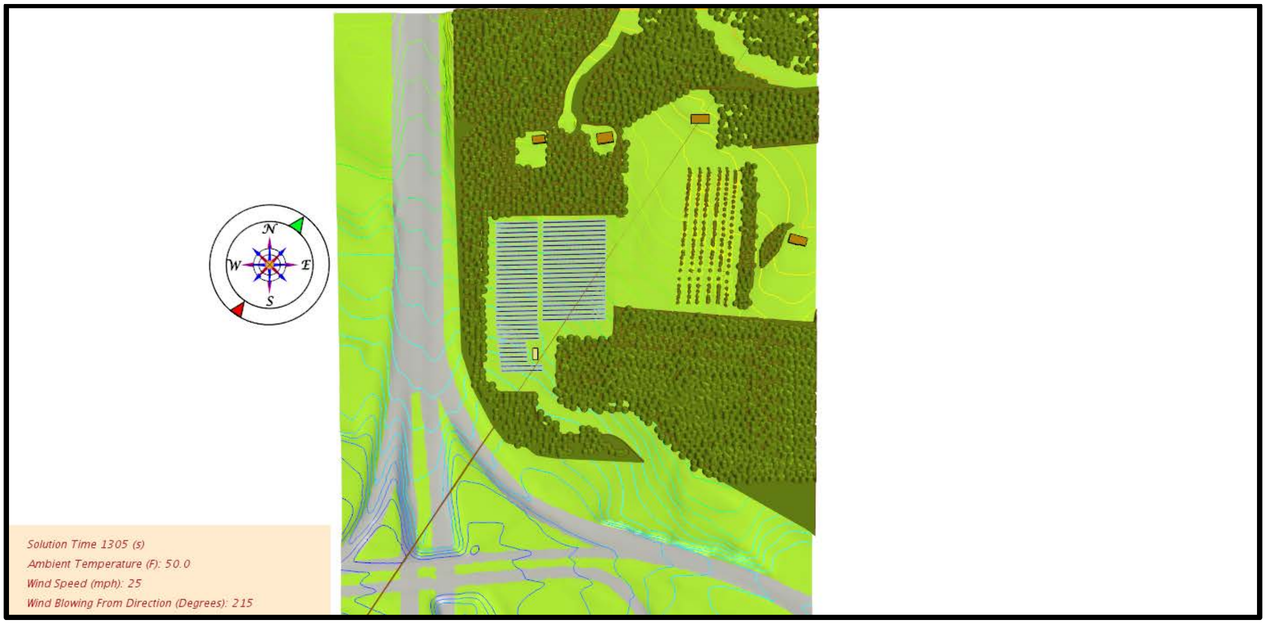


Figure 8. - Aerial View of the cleared land for the proposed Chelsea Solar Site.

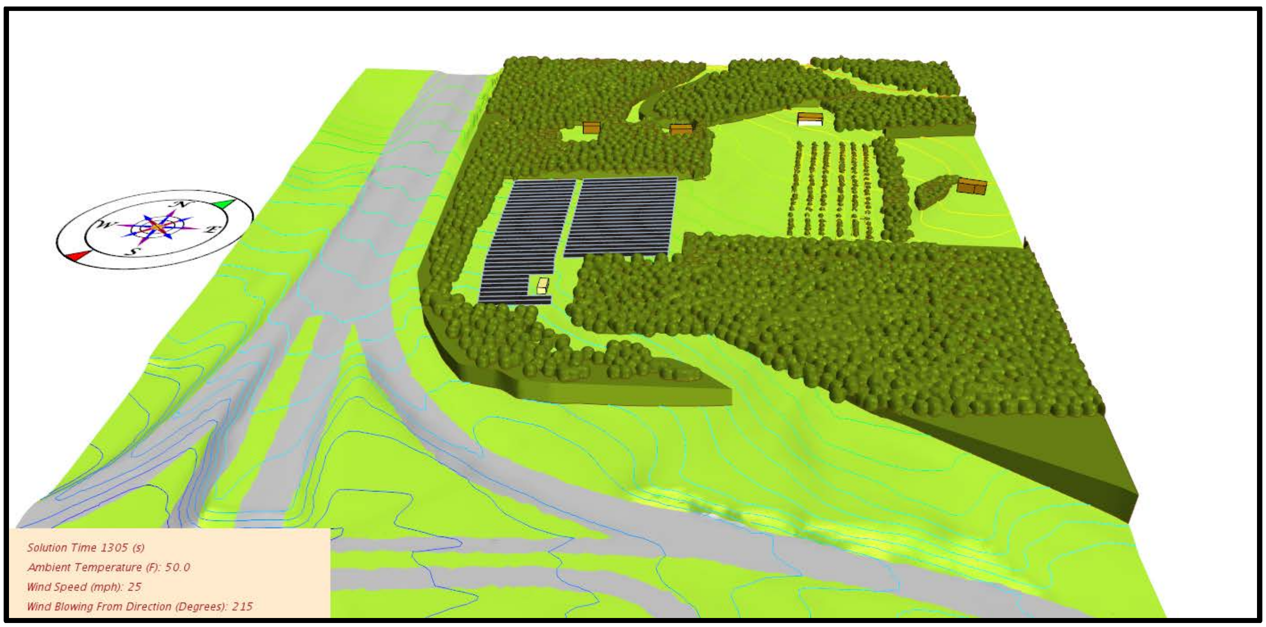


Figure 9. - Isometric View of the cleared land for the proposed Chelsea Solar Site.

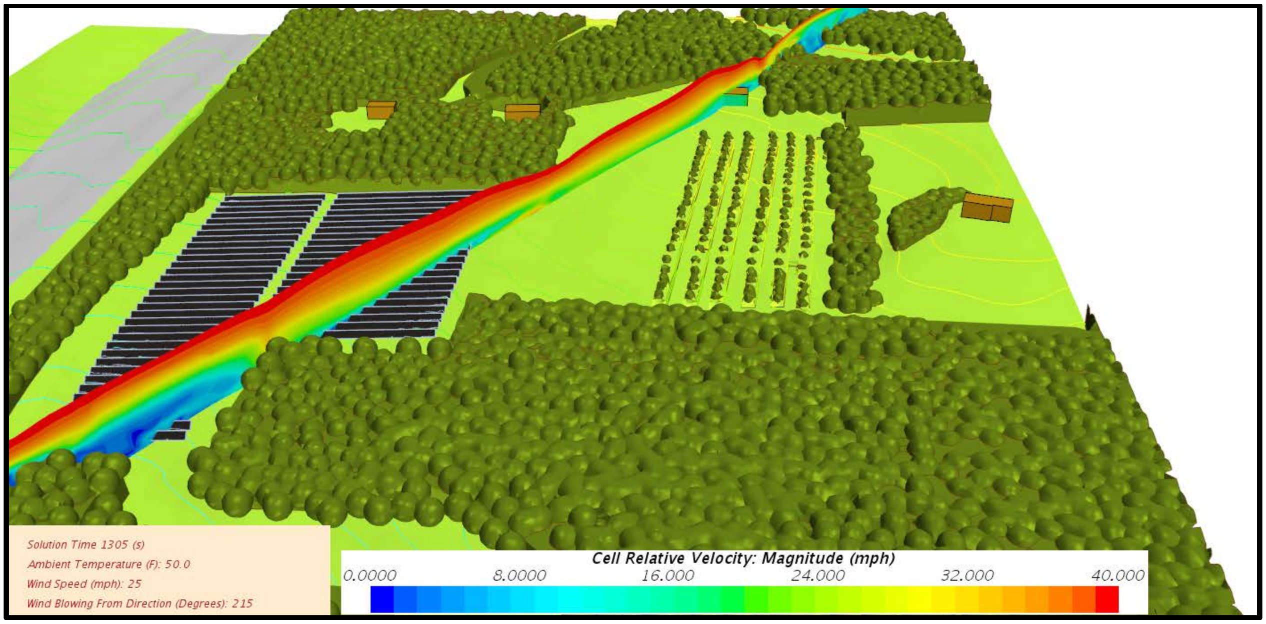


Figure 10. - Isometric View: Velocity contours of wind flowing across the land at the location of the proposed Chelsea Solar Site.

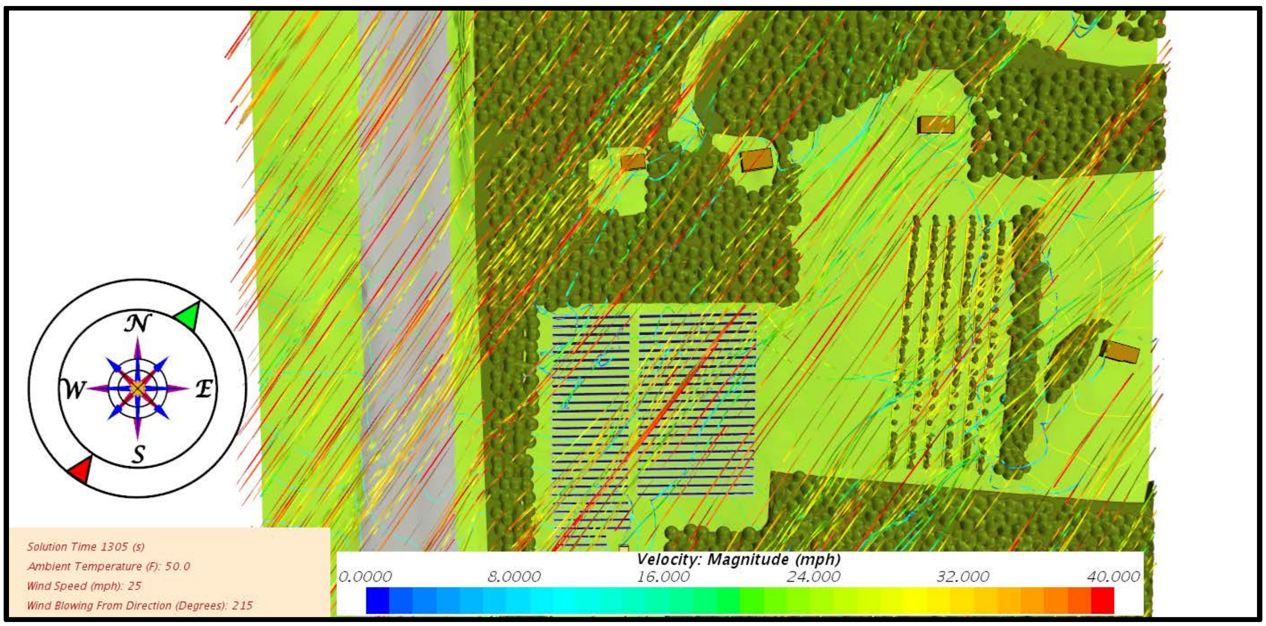
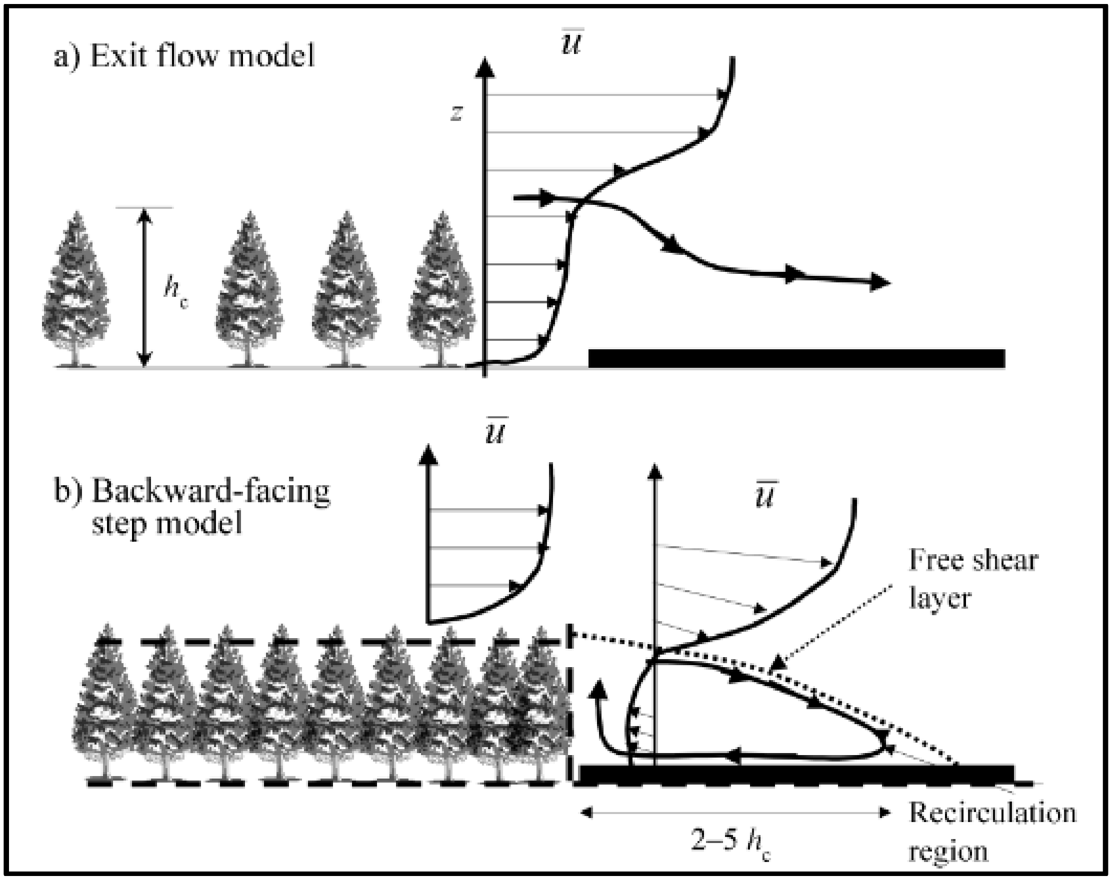


Figure 11. - Aerial View: Streamlines of wind flowing across the land at the location of the proposed Chelsea Solar Site.

7. Conclusions and Opinions Based Upon the Study

Comments Regarding Wind Fields Near Trees

The presence of trees can have the effect of reducing the prevailing winds in some circumstances. Typically, trees will slow the winds to near-zero conditions within the wake zone on the downwind side for a distance of 2 to 5 times the average forested tree height. In the area of the Project, this translates to between 90 feet to 225 feet. After the downwind wake zone is exceeded, the winds will typically increase over distance until the initial prevailing wind speed is reestablished - in this case, 25 mph. The distance required to reach the full prevailing wind speed again depends on downwind forestation, the topology of the land, and the presence of vegetation (surface roughness), etc.



According to the modeling, the wind speeds at the most wind-exposed residence will typically range between approximately 10 mph to 18 mph (average of 14 mph) without any removal of trees at the Project site, and from 15.5 mph to 21 mph (average 17 mph) with trees removed at the Project site; This is an average difference of about 3 mph. Both cases have not reached the fully developed prevailing wind speed (25 mph) by the time the most wind-exposed residence is reached. Additionally, winds from 215° SW at 20 mph or greater occur 0.001% of the time which translates to a few minutes per year.

To put into perspective how similar the wind speeds are to one another between the two cases evaluated here, a few analogies are listed below:

- For sailing: Wind speeds of 3 mph and below are generally not fast enough to propel a typical sailboat.
- For hiking: At a hiking rate of 3 mph, it would take 1.5 hours to walk the 4.5 mile long White Rocks trail from the trailhead in Bennington.
- For flags: A typical lightweight flag will not unfurl or wave in a 3 mph wind.
- For kites: Most kites will not stay aloft with a wind speed at or below 3 mph.
- For wind damage: Damaging winds are generally above 20 or 25 mph. Wind damage in the range of 14 to 17 mph is unlikely to cause a problem, and the difference between 14 mph and 17 mph will be unnoticeable.

The difference in wind speeds is further minimized at the most wind-exposed residence because at every other wind direction, 220° to 360° and 0° to 210°, there will be no measureable increase or decrease as a function of tree removal at the Project site.

Comments Regarding the Numerical Technique Used to Model this Project

For this modeling effort, the most accurate and well-accepted methodology was selected, Computational Fluid Dynamics (CFD). This type of numerical simulation is backed by hundreds of years of experience and experimentation in the field of fluid dynamics, and decades of development by top academic institutions, government agencies and commercial endeavors. Some of the more familiar names in this field include Newton and Bernoulli. Large corporations place great reliance on CFD as a scientific means to solve very complex problems such as aerodynamics and flight-worthiness for the Boeing 777 and 787 Dreamliner ® or NASA's calculations for flight and jet propulsion. Large wind turbine farms use CFD not only to solve for the wind fields driving their blades, but also to determine interference of upstream wind mills on downstream turbines. The latest state-of-the art turbulence solvers will accurately and realistically solve for the turbulence that we all experience every day as gusts of wind. Although this may seem simple, it's a very complex mechanism.

By using CFD on an application such as this project, the results will be both accurate and reliable.

Conclusions and Opinions

a. Approximately 350° out of a total of 360° wind directions will have no negative wind effects on the neighbors' properties of Apple Hill.
b. At the worst case wind direction of 215°, one neighbor will be in an unobstructed, direct line-of-site path between the proposed solar array and their house. The house is expected to see a net reduction in wind speed compared to winds measured at the visitor center to the south.
c. With the proposed solar array in place, there are no prevailing wind speeds or directions that will cause an increase in wind speed at any of the other Apple Hill residential area homes.
d. There appears to be no significant differences in wind patterns with or without the proposed solar array in place.

It is my conclusion that the removal of trees for the construction of the Chelsea Solar Project at its proposed location will have little or no negative wind effects on the neighbors' homes of Apple Hill.

Additionally, the worst case condition is so rare and so minor in its effects as to be insignificant.