

Exhibit CS-BW-53

Docket 8302

First Supplemental Testimony of Brad Wilson

**STATE OF VERMONT
PUBLIC SERVICE BOARD**

Petition of Chelsea Solar LLC for a certificate	)	
of public good, pursuant to 30 V.S.A. § 248,	)	
authorizing the installation and operation of	)	Docket No. 8302
the “Chelsea Solar Project” consisting of a 2.0	)	
MW solar electric generation facility to be	)	
located along Highway 7 in Bennington,	)	
Vermont	)	
	)	

**SUPPLEMENTAL PREFILED TESTIMONY OF
BRAD WILSON
ON BEHALF OF
CHELSEA SOLAR LLC**

September 26, 2014

EXHIBITS

Exhibit CS-ECOS-4	Site Plan, Construction Details, and Elevations
Exhibit CS-ECOS-7	Apple Hill Road Access Diagram
Exhibit CS-ECOS-8	Geotechnical Report
Exhibit CS-ECOS-9	Structural Design
Exhibit CS-ECOS-10	Secondary Containment System Design

Q1. What is the purpose of your testimony?

A1. This testimony will provide additional information about the proposed Chelsea Solar Project (the “Project”). This additional information was generated in response to Vermont state agency requests and discussions with future neighbors of the property.

Q2. Have any elements of the Project’s physical site design been modified since the original certificate of public good petition, filed on June 18, 2014?

A2. Yes. The original site plan was filed as Exhibit CS-ECOS-4. This site has been revised and is included as a replacement Exhibit CS-ECOS-4. The footprint and overall design of the Project was not significantly altered. The revisions include minor changes and additional detail. I will describe the changes, in detail, with answers to following questions.

Q3. Please provide additional detail regarding site access.

A3. The Project site plan (Exhibit CS-ECOS-4) has been updated with additional detail regarding site access. The site plan now shows that all site clearing, site preparation, and construction traffic for the Project will access the Project property via a temporary construction access driveway off of Willow Road along the southern border of the property. A permanent access driveway will be constructed to connect the northeast corner of the property to Apple Hill Road. The permanent access driveway will be used for operations and maintenance (“O&M”) traffic, as well as emergency vehicle access during project operation. No site clearing, site preparation, or construction traffic will

1 utilize the permanent Apple Hill Road driveway, and no Project O&M traffic will utilize
2 the temporary Willow Road Driveway.

3
4 **Q4. Please provide additional detail regarding the temporary access driveway off of**
5 **Willow Road.**

6 A4. The temporary access driveway will connect with existing Willow Road at the southern
7 boundary of the Project property. The temporary access driveway will be constructed
8 with a 3-inch aggregate base and a 12-foot width. The temporary access driveway will
9 extend approximately 750 feet to connect Willow Road with the southern boundary of the
10 Project footprint.

11
12 **Q5. Please provide additional detail regarding the permanent access driveway off of**
13 **Apple Hill Road.**

14 A5. The permanent access driveway will run throughout the middle of the Project footprint to
15 provide O&M and emergency vehicle access during Project operation. The permanent
16 access driveway will be constructed with a 6-inch aggregate base and a 14-foot width.
17 This driveway will connect the northeastern corner of the Project property to the existing
18 Apple Hill Road right-of-way.

19
20 **Q6. How will the permanent access driveway connect the Project property to Apple Hill**
21 **Road?**

1 A6. The Project property does not directly abut Apple Hill Road. Two properties separate the
2 Project property from Apple Hill Road; a 5.73 acre property owned by PLH, LLC (“the
3 PLH property”), and a 9.71 acre property owned by The Estate of David Sholes (“the
4 Sholes property”). The PLH property directly abuts the Project property to the east, and
5 the Sholes property separates the PLH property from Apple Hill Road. The PLH
6 property holds an existing access easement across the Sholes property for ingress/egress
7 to Apple Hill Road. There is an existing gravel driveway across that easement,
8 connecting the PLH property to Apple Hill Road. The Project property holds an access
9 easement across the PLH property, connecting the existing gravel driveway to the
10 northeastern corner of the Project property. This provides access from the Project
11 property to Apple Hill Road across the PLH and Sholes properties. An exhibit is attached
12 that shows this arrangement visually (Exhibit CS-ECOS-7).

13
14 **Q7. How will the Project affect the existing gravel driveway across the Sholes property?**

15 A7. The existing gravel driveway across the Sholes property is approximately 10 feet in width
16 and is suitable for the use of O&M access in its current condition. The Project proposes
17 no modifications to the existing driveway across the Sholes property. O&M traffic
18 during Project operation will account for four pickup truck trips to the site per month, on
19 average over the operational life of the project. This will not create a measureable
20 increase to existing traffic patterns or wear and tear on the driveway. There is one other
21 property owner that also uses this existing driveway for property access. The Project is

1 working with that property owner to into an agreement to equally share in the ongoing
2 maintenance costs of the driveway.

3
4 **Q8. Has the route of the access driveway across the PLH property been changed?**

5 A8. Yes, there has been a slight modification to the route of the access driveway across the
6 PLH property. In the Project's original petition filing, this driveway was shown closely
7 following the northern property boundary line of the PLH property. This revision shifts
8 the route of the driveway slightly south so that it is a direct line between the Project
9 property and the existing driveway across the Sholes property. This change was made to
10 accommodate a request by a neighboring property owner.

11
12 **Q9. Have there been any changes regarding proposed landscaping along the Project**
13 **fenceline?**

14 A9. Yes. SE Group performed some additional analysis of the aesthetic qualities of the
15 project with a focus on the direction of the Apple Hill Neighborhood, located to the north
16 and east of the Project. This analysis concluded that the Project would have very limited
17 visibility from the direction of the Apple Hill Neighborhood, but it also suggested that the
18 installation of some additional landscaping screening along the northern and eastern
19 Project fencelines could assist in shielding the Project from view entirely. Also, the route
20 of the Project's northern fencline was shifted slightly to accommodate the additional
21 landscaping there. The suggested landscaping plantings were added to the revised site
22 plans for the Project (Exhibit CS-ECOS-4). More details about the additional

1 landscaping and aesthetic analysis can be found in the Supplemental Prefiled Testimony
2 of Mark Kane for this docket.

3
4 **Q10. Have details of the structural supports for the solar module racking been finalized?**

5 A10. Yes. In the original petition filing for the Project, I described that the Project would
6 likely use steel H-beams driven directly into the ground for structural support of the solar
7 module racking. Since that filing, a detailed geotechnical investigation of the site was
8 completed. (Exhibit CS-ECOS-8) The results of this analysis indicates that direct-driven
9 H-beams are not an option for the Project on this property because the depth of soil
10 before meeting rock (only 4 to 5 feet in most places) is not sufficient for structural
11 support. Therefore, an alternate structural design was created that would work with the
12 geotechnical conditions on the Project property. (Exhibit SC-ECOS-9) This alternate
13 design utilizes a W6X8.5 steel H-beam that is encased in a cylinder of cement grout
14 material. The grout material will be poured in place within 8-inch diameter borings that
15 are 11.5 feet deep. An auger/drill machine will be used to create these borings into the
16 soil and rock ground foundation. Soil tailings from the borings will be distributed onsite,
17 while rock tailings from the borings will be disposed of at an offsite waste facility per
18 Vermont state regulations for construction byproducts. The included structural design
19 document gives details on the exact structural characteristics and the composition of the
20 grout material. This type of design does not utilize hammer or vibratory driving
21 machinery. This design that utilizes borings and grout material is a common structural

1 design and is specified per all applicable health, safety, and environmental codes and
2 regulations.

3
4 **Q11. Has the clearing and phasing plan for Project construction been revised to account**
5 **for the changes described above?**

6 A11. Yes. The revised site plan document (Exhibit CS-ECOS-4) includes a revised clearing
7 and phasing plan that works with the revised Project site plan.

8
9 **Q12. Have the impervious surface calculations for the Project been revised to account for**
10 **the changes described above?**

11 A12. Yes. The impervious surface numbers for the Project were revised to account for the
12 addition of a temporary construction driveway, a reduction in width to the O&M access
13 driveway, and the final structural design that utilizes cement material.

14
15 **Q13. Has the Project filed a Notice of Intent (“NOI”) for stormwater discharge with the**
16 **State of Vermont?**

17 A13. Yes. With the impervious surface numbers finalized, the design of stormwater BMPs and
18 features for the Project could be finalized. A stormwater NOI was prepared and filed
19 with the State. Please see the Supplemental Prefiled Testimony of Scott Michael Mapes
20 (which includes a copy of the NOI as Exhibit CS-SMM-7) for more details on this topic.

21

1 **Q14. Is more detail available regarding the Project's secondary containment system for**
2 **medium voltage transformer coolant?**

3 A14. Yes. The Vermont Agency of Natural Resources ("ANR") had contacted Chelsea Solar,
4 LLC (the "Petitioner") with a request for additional detail regarding the design of the
5 Project's secondary containment system for medium voltage transformer coolant. I
6 addressed this topic in my original prefiled testimony, Question 38. In pursuit of the
7 additional detail that ANR requested, the proposed design of the containment system was
8 modified somewhat from what was described in my original testimony. Therefore, the
9 description of the containment system in this supplemental testimony shall supersede
10 Question 38 in my original prefiled testimony. As described in my original prefiled
11 testimony, the Project will utilize a single 2000 kVA medium voltage transformer to
12 provide voltage step-up functionality for the Project's electrical output. This transformer
13 will contain approximately 515 gallons of biodegradable cooling oil. As described in my
14 original prefiled testimony, the transformer will be located upon a pre-fabricated central
15 equipment skid. To provide secondary containment for the cooling oil (should the
16 transformer housing fail and leak), a secondary containment system will be built directly
17 into the prefabricated equipment skid. The floor of the skid will be a hollow-chambered
18 steel floor, 12-inches in height. The transformer will sit upon this floor and will be
19 surrounded on all sides by steel grates that are open to the interior of the skid floor.
20 Inside the floor, steel baffles will be installed to create a sealed oil containment chamber.
21 In the event of a coolant oil leak, the oil will run through the grates and be captured
22 within the containment chamber. The chamber has been sized for a volume of 1,080

1 gallons per ANR requirements which call for a capacity of 110% of the transformer
2 coolant oil volume plus an additional 5 inches of vertical containment space within the
3 container. The chamber was sized to be able to hold 600 gallons of transformer coolant
4 oil, which is 116% of the transformer coolant oil capacity. An additional 480 gallons of
5 containment capacity provides for the additional 5 inches of vertical containment space
6 required by ANR. The containment chamber will utilize a single SPI 'Petro Pipe' style
7 drainage valve. This valve is manually controlled and will remain in the closed position
8 during normal operation. This style of valve allows for automatic drainage of rainwater
9 and snow melt, but it will not allow passage of any transformer coolant oil. A document
10 detailing the design of the skid-based secondary containment system and the drainage
11 valve is included as Exhibit CS-ECOS-10.

12
13 **Q15. Does the Project have an undue adverse effect on air purity? (30 V.S.A. § 248(b)(5))**

14 A15. No. As described in the original filing documents (Prefiled Testimony of Brad Wilson),
15 the Project is a ground-mounted photovoltaic solar electricity generation facility. Please
16 refer to Question 6 of the Prefiled Testimony of Brad Wilson in this docket for a detailed
17 description of the Project and its components. None of the Project's components or
18 equipment produces gas or vapor emissions of any kind during installation and operation.
19 For this reason, the Project will not have an undue adverse effect on air purity during
20 operation. However, some vehicles will be used during Project construction and, to a
21 much lesser extent, during Project operation. These vehicles may generate emissions

1 during operation. The Petitioner will agree to enter into an emissions monitoring and
2 reporting program as prescribed by ANR for other, similar solar projects.

3
4 **Q16. Has the Petitioner met with any neighbors of the Project site to discuss their**
5 **questions or concerns about the Project?**

6 A16. Yes. The Petitioner reached out to the Apple Hill Neighborhood Association (the
7 “Association”), which encompasses the homes and properties that would be nearest the
8 Project once built. The Petitioner has since attended two Association meetings to listen to
9 concerns, share information, and answer questions about the Project. The Petitioner has
10 also conducted email correspondence with Bill Knight, the current chair of the
11 Association. These meetings and conversations have resulted in some of the minor
12 modifications to the Project site design that I have described earlier in this supplemental
13 testimony. These modifications were the result of the Petitioner and the Association
14 working together to identify changes that could be made to the Project site design in
15 order to increase the Project’s compatibility with the Association’s preferences and
16 wishes.

17
18 **Q17. Does this conclude your testimony?**

19 A17. Yes.