

Exhibit CS-BW-36

Docket 8302
Prefiled Testimony of
Scott Michael Mapes

**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	)	Docket No. _____
and operation of the “Sudbury Solar	)	
Project” consisting of a 2.0 MW solar	)	
electric generation facility to be located at	)	
500 Apple Hill Road in Bennington,	)	
Vermont	)	

**PREFILED DIRECT TESTIMONY OF SCOTT MICHAEL MAPES ON
BEHALF OF PETITIONER CHELSEA SOLAR LLC**

EXHIBITS

Exhibit CS-SMM-1	Résumé of Scott Michael Mapes
Exhibit CS-SMM- 2	Project EPSC Plan and Construction General Permit #3-9020 Appendix A – Risk Evaluation for Chelsea Solar by SMM dated 12 June 2014
Exhibit CS-SMM- 3	Project Site Drainage Area Map
Exhibit CS-SMM- 4	Bennington NRCS Soils Map and Fact Sheets
Exhibit CS-SMM- 5	Project Operational Phase Stormwater Runoff Model and Design Summary by SMM dated 12 June 2014
Exhibit CS-SMM- 6	Bennington Groundwater Source Protection Area Map

1 **Q. Please state your name, occupation and business address.**

2 Response: My name is Scott Michael Mapes. I am an environmental consultant. My
3 office is located at 89 College Street, Burlington, VT, and I also reside in Burlington.

5 **Q. Please describe your background and qualifications.**

6 Response: I have a civil and environmental engineering and environmental law
7 practice. I have provided land use assessments and environmental impact analyses to
8 clients for over 35 years. I am a registered Vermont Professional Engineer and I am
9 admitted to the Vermont Bar. My resume is attached as ***Exhibit CS-SMM-1.***

10

11 **Q. Have you previously testified before the Public Service Board or in other**
12 **judicial or administrative proceedings?**

13 Response: Yes, throughout my 35-year career I have been a fact and expert witness
14 in a number of judicial, state and local administrative proceedings. I have appeared
15 before local review boards, state agencies, District Environmental Commissions and
16 the Natural Resources Board and have appeared in a number of court proceedings as
17 an expert witness. I also have prepared testimony or testified before the Public
18 Service Board in the section 248 Petitions of Charlotte Solar, Ferrisburgh Solar and
19 Sudbury Solar projects.

20

21 **Q. What is the purpose of your testimony?**

22 Response: The purpose of my testimony is to describe the work that I have
23 conducted regarding the Chelsea Solar project ("Project"). Generally I have

1 participated in developing the Project's civil and site plans and details, assessing the
2 Project's environmental site sensitivities and I have provided information regarding
3 the Project's compliance with the section 248 criteria pertaining to environmental
4 issues.

5

6 **Q. What work have you conducted with respect to the Project?**

7 Response: I conducted in-the-field site observations, I researched and prepared a
8 number of project GIS based environmental site locator maps, and I prepared and
9 reviewed Project site plans and construction notes and details. I met with and
10 corresponded with a number of State Agency personnel and I prepared this written
11 testimony. In preparing my testimony I utilized state GIS data, on-site field
12 observation and Project site plans that include topography, existing and proposed
13 site features and a current boundary survey for the parcel. The solar array location
14 and configuration resulted from a collaborative effort with the client with input from
15 Project team consultants.

16

17 **SECTION 248 CRITERIA**

18 **30 V.S.A. § 248(b)(5) – Environmental Considerations**

19 **Q. Will the Project have an undue adverse effect on aesthetics, historic sites, air**
20 **and water purity, the natural environment, and the public health and safety, with due**
21 **consideration being given to the criteria specified in 10 V.S.A. § 1424a(d) and §**
22 **6086(8a)(1) through (8) and (9)(K)?**

1 Response: No, it will not have an undue adverse effect on historic sites, air and
2 water purity, or the natural environment. A discussion of the following issues is
3 provided below: outstanding resource waters, air pollution, water pollution
4 (headwaters, waste disposal, water conservation, floodways, streams, shorelines, and
5 wetlands), and sufficiency of water, burden on existing water supply, soil erosion and
6 historic sites.

7 See the prefiled direct testimony of Mark Kane of SE Group for discussion
8 of aesthetics. See the prefiled testimony of Dori Barton of Arrowwood
9 Environmental for discussion of streams, shorelines, wetlands, necessary wildlife
10 habitat and endangered species, rare and irreplaceable natural areas.

11

12 **Outstanding Resource Waters – 30 V.S.A. § 248(b)(5) and (8)**

13 **Q. Is the Project located on or would it affect any segment of any outstanding**
14 **resource waters designated by the Natural Resources Board or the Secretary of the**
15 **Agency of Natural Resources? Will the Project have an undue adverse effect on the**
16 **natural environment, with due consideration being given to the criteria of 10 V.S.A. §**
17 **1424a(d) regarding the designation of Outstanding Resource Waters?**

18 Response: No. A search of the Agency of Natural Resources' ("ANR") database
19 shows that there are no Outstanding Resources Waters ("ORW") located on or near
20 the Project. The parcel does not drain into an ORW or any segment of an ORW.
21 GIS databases and site observations show that runoff from the site drains to a
22 VTrans storm system network at the U.S. Route 7 & 279 interchange which
23 eventually discharges to an unnamed tributary of Furnace Brook which eventually

1 flows into Furnace Brook roughly a quarter mile away from the project. Furnace
2 Brook then flows into the Walloomsac. Neither the unnamed tributary, Furnace
3 Brook or the Walloomsac are designated as an ORW. Aside from these drainage
4 features, field observation confirms there are no perennial streams located on the
5 property, and impacts to the identified on-site and off-site watercourses will be
6 negligible.

7

8 **Air Pollution - 10 V.S.A. § 6086(a)(1)**

9 **Q. Will the Project result in undue air pollution?**

10 Response: No. With respect to construction of the Project, potential dust is the
11 only anticipated air pollutant. Undue generation of dust is not anticipated for the
12 following reasons: 1) the construction entrance and eventual project access drive will
13 be stabilized; 2) the access drive will be a gravel surface and require limited site cut
14 and fill; 3) while there will be extensive tree and brush clearing that activity will be
15 conducted in strict accordance with the Project's Erosion Prevention and Sediment
16 Control plan phasing and VTDEC Construction General Permit #3-9020; 4) there
17 will be limited soil disturbance associated with the installation of the solar panel
18 support structures as these will be pile driven; 5) the installation of the perimeter
19 security fence will involve limited soil disturbance as the fence posts will be pile
20 driven or augured; 6) there will be only limited, temporary soil disturbance associated
21 with the installation of underground conduit, as where practical conduit trenching
22 will be achieved with a "ditch witch" excavator; 7) water will be applied as needed
23 during construction phase; and 8) during construction phase activities, including

1 clearing, grubbing and site preparation, the developer will implement best
2 management practices ("BMPs") as detailed in the project Erosion Prevention and
3 Sediment Control ("EPSC") plan and as required by the Project seeking coverage
4 under VTDEC's Construction General Permit #3-9020. See ***Exhibit CS-SMM-2***
5 ***and the Project plan set.***

6 Installation of the solar project will take place only during daylight hours,
7 which will minimize the effects of construction-related noise at neighboring
8 properties. During both construction and operation of the Project there will be no
9 burning or other emissions. The solar project will produce no air pollutants during
10 operation.

11 See also the prefiled direct testimony of Brad Wilson of Ecos for discussion
12 of noise radiated emissions from the inverters.

13

14 **Water Pollution - 10 V.S.A. § 6086(a)(1)**

15 **Q. Will the Project result in undue water pollution?**

16 **Response:** No. Further support is provided below under criteria 6086(a)(1)(A) –
17 (a)(1)(G).

18

19

20 **Headwaters - 10 V.S.A. § 6086(a)(1)(A)**

21 **Q. Is the Project located in a headwater and, if so, will it reduce the quality of**
22 **ground or surface water?**

1 Response: The Project is located within a headwater as defined by 10 V.S.A. §
2 6086(a)(1)(A). While the project parcel is not characterized by steep slopes or
3 shallow soils, is not above 1,500 feet in elevation (located between 670' and 770'
4 USGS), is not in a watershed of a public water supply as designated by ANR, and is
5 not in an area supplying significant amounts of recharge water to aquifers, it is
6 located in a drainage area of less than 20 square miles. GIS databases and site
7 observations show that runoff from the site drains to a VTrans storm system
8 network at the U.S. Route 7 & 279 interchange which eventually discharges to an
9 unnamed tributary of Furnace Brook which eventually flows into Furnace Brook
10 roughly a quarter mile away from the project. Furnace Brook then flows into the
11 Walloomsac. This headwater sub-watershed is less than 1 square mile at the point
12 where this project runoff would discharge to the VTrans storm system network.

13 Notwithstanding the size of the sub-watershed, the Project will meet any
14 health and environmental conservation department regulation regarding the
15 reduction of the quality of ground or surface waters flowing through lands defined as
16 headwater. Adhering to the conditions in VTDEC's Stormwater Construction
17 General Permit #3-9020, which the Project will seek coverage under as well as
18 adhering to the installation and continued operation and maintenance of the project
19 operational phase stormwater BMP's will ensure that ground and surface water
20 quality are not impacted by the Project's construction and post construction
21 activities. See additional discussion on the operational phase stormwater BMP's
22 under the Waste Disposal section below as well as *Exhibits CS-SMM-2 and CS-*
23 *SMM-5 and the Project plan set.*

1 See also the prefiled direct testimony of Brad Wilson of Ecos for discussion
2 of containment and/or secondary containment spill measures associated with the
3 project transformers.

4
5 **Waste Disposal - 10 V.S.A. § 6086(a)(1)(B)**

6 **Q. Will the Project meet any applicable health and department of environmental**
7 **conservation department regulations regarding the disposal of any generated waste?**

8 Response: Yes, the Project will meet applicable health and Environmental
9 Conservation Department regulations regarding the disposal of wastes. The Project
10 does not involve disposal of wastes or injection of any material into groundwater or
11 wells. The Project does not involve any domestic waste or potable water supply
12 needs. Therefore, the Project does not require a state Water Supply and Wastewater
13 Disposal Permit.

14 There will be brush and tree clearing and solid wastes generated will be
15 processed and/or recycled in accordance with Vermont solid waste management
16 rules.

17 Due to the nature and size of the new development and the resulting new
18 impervious surface created (less than one acre), the Project will not require coverage
19 under the VTDEC Stormwater Operational Phase General Permit #3-9015.

20 However, the project has been designed with appropriate operational phase
21 stormwater BMP's to provide flow mitigation and water quality treatment practices
22 given the change in site characteristics from pre to post development. See ***Exhibit***
23 ***CS-SMM-5 and the Project plan set.***

1 Due to its nature and size of earth disturbances, which include tree and brush
2 clearing, of greater than 1 acre of disturbed soils during construction the Project will
3 seek coverage under the VTDEC Stormwater Construction General Permit #3-9020.
4 The majority of the soils for the project area are mapped by the NRCS as either very
5 stony Georgia loam (67C) or very stony Stockbridge loam (65C). There is a small
6 mapped section of Galway-Farmington complex (41C). These soils are moderately
7 deep to very deep to bedrock and moderately to well drained thus they tend not to
8 be erodible when exposed for lengthy periods of time. See *Exhibit CS-SMM-4*.
9 However to lessen the chance of any erosion all disturbed areas are to be promptly
10 stabilized with temporary or final measures within 7 days of initial disturbance and
11 with no more than 5 acres of disturbed area open at any one time. Following this
12 protocol and the requirements of the project #3-9020 Stormwater Construction
13 General Permit, the site should experience little to no erosion. See *Exhibit CS-*
14 *SMM-2 and the Project plan set*.

15 The Project will not result in undue water pollution based on the
16 implementation construction-phase erosion prevention and sediment control
17 measures and BMP's and based on the implementation of the operational phase
18 stormwater BMP's.

19
20 **Water Conservation - 10 V.S.A. § 6086(a)(1)(C)**

21 **Q.** Has the design of the Project considered water conservation, incorporated
22 multiple uses or recycling where technically and economically practical, utilized the

1 best available technology for such applications, and provided for continued efficient
2 operation of these systems?

3 Response: Yes, understanding that this criterion has limited applicability to the
4 Project. The Project will not require the use of water during the construction phase
5 (unless required for dust control) or during the operational phase (except for
6 possible occasional cleaning of the solar panels). The water that may be required will
7 be brought to the site on small maintenance vehicles.

8
9 **Floodways - 10 V.S.A. § 6086(a)(1)(D)**

10 **Q. Is the Project within a floodway or floodway fringe? If within a floodway, will**
11 **it restrict or divert the flow of flood waters, and endanger the health, safety and**
12 **welfare of the public or of riparian owners during flooding? If within a floodway**
13 **fringe, will it significantly increase the peak discharge of the river or stream within or**
14 **downstream from the area of development and endanger the health, safety, or welfare**
15 **of the public or riparian owners during flooding?**

16 Response: No, the Project is not located in a floodway or floodway fringe. The
17 project is located outside and in elevation 670' USGS above any mapped Special
18 Flood Hazard Area for Bennington.

19
20 **Streams - 10 V.S.A. § 6086(a)(1)(E)**

21 **Q. Is the Project on or adjacent to the bank of a stream?**

Response: No. The project is not on or adjacent to the bank of any perennial stream. GIS databases and site observations show that runoff from the site drains to a VTrans storm system network at the U.S. Route 7 & 279 interchange which eventually discharges to an unnamed tributary of Furnace Brook which eventually flows into Furnace Brook roughly a quarter mile away from the project. Furnace Brook then flows into the Walloomsac. Given the scope and nature of during construction phase activities and associated implementation of the project EPSC plan and the state of the completed project there are no impacts expected to occur to those identified watercourses as a result of this Project. See also the prefiled direct testimony of Dori Barton of Arrowwood Environmental.

Shorelines - 10 V.S.A. § 6086(a)(1)(F)

Q. Is the Project located on a shoreline?

14 Response: No. The Project parcel is not on a shoreline of a lake, pond, reservoir or
15 river, as defined in 10 V.S.A. § 6001(17) or as defined 10 V.S.A. § 1422(8). See also
16 the prefiled direct testimony of Dori Barton of Arrowwood Environmental.

Wetlands - 10 V.S.A. § 6086(a)(1)(G)

Q. Will the Project comply with the Water Resources Panel rules regarding significant (Class 1 or 2) wetlands? Will the Project have an undue adverse impact on any non-significant (Class 3) wetlands?

22 Response: See the prefiled direct testimony of Dori Barton of Arrowwood
23 Environmental for discussion of wetland and wetland impacts.

1

2 **Sufficiency of Water; Burden on Existing Water Supply - 10 V.S.A. § 6086(a)(2), (3)**

3 **Q. Does the Project have sufficient water available for its reasonably foreseeable**
4 **needs? Will the Project utilize an existing water supply?**

5 Response: The Project will not require the use of water during the construction
6 phase (unless required for dust control) or during the operational phase (except for
7 possible occasional cleaning of the solar panels). If water is required, it will be
8 brought to the site via small maintenance trucks. The Project is not located within
9 any known Source Protection Area, but given the nature of the project and its
10 location, the development is expected to have no impact on any public community
11 or private water source. See *Exhibit CS-SMM-3*.

12

13 **Soil Erosion - 10 V.S.A. § 6086(a)(4)**

14 **Q. Will the Project cause unreasonable soil erosion or the reduction in the**
15 **capacity of the land to hold water so that a dangerous or unhealthy condition may**
16 **result?**

17 Response: No. The Project will not cause unreasonable soil erosion or reduction in
18 the capacity of the land to hold water so that a dangerous or unhealthy condition
19 may result. While there are no streams and wetlands located on the Project site, any
20 of those features located off site will be sufficiently protected by the implementation
21 of a comprehensive EPSC plan which will include, at a minimum: silt fencing being
22 installed and maintained down gradient of areas of earth disturbance; and stabilizing
23 all earth disturbances with temporary BMPs. Permanent stabilization will be

1 achieved with native grass seed upon completion of construction activities. Access
2 by construction equipment and service vehicles will be from a new access driveway
3 from a single access point off of Apple Hill Road. This access will be improved and
4 stabilized with a stone construction entrance to prevent the tracking of sediment off
5 site. Any tracked sediments found on Apple Hill Road will be routinely swept up.
6 To control dust during construction-phase activities, water will be applied as needed.
7 During construction-phase activities, the developer will implement BMPs as detailed
8 in the project EPSC plan and/or as required by VT DEC Stormwater Construction
9 General Permit #3-9020. See ***Exhibit CS-SMM-2 and the Project plan set.***

10
11 **Necessary Wildlife Habitat and Endangered Species - 10 V.S.A. § 6086(a)(8)(A)**

12 **Q. Will the Project destroy or significantly imperil necessary wildlife habitat or**
13 **any endangered species?**

14 Response: No. See the prefiled direct testimony of Dori Barton of Arrowwood
15 Environmental.

16
17 **Aesthetics, Historic Sites and Rare and Irreplaceable Natural Areas**

18 **10 V.S.A. § 6086(a)(8)**

19 **Q. Will the Project have an undue adverse effect on any rare and irreplaceable**
20 **natural areas?**

21 Response: No. See the prefiled direct testimony of Dori Barton of Arrowwood
22 Environmental.

23

1 **Q. Will the Project have an undue adverse effect on any historic sites?**

2 Response: No. Based upon my site visit and consultation with the Scott Dillon of
3 the Vermont Division of Historic Preservation , the Project will not have an undue
4 adverse effect on any on-site historic or archaeological sites.

5

6 **Q. Although not a specific section 248 criteria, please describe the Project's,**
7 **effect, if any, on prime agricultural soils located at the site.**

8 Response: The Project will have very limited temporary impacts to no permanent
9 impacts to prime agricultural soils. There are no soils on site with significant
10 agricultural potential. The soils at the site, according to the USDA Soil Survey, are
11 mapped as either very stony Georgia loam (67C) or very stony Stockbridge loam
12 (65C). There is a small mapped section of Galway-Farmington complex (41C). See
13 ***Exhibit SS-SMM-6.*** These soils possess a Vermont Agricultural Value Group of
14 9-10. Based on an evaluation of the USDA soil survey for the project location, the
15 NRCS Farmland classification Systems for Vermont, GIS data, soil characteristics
16 and profile, the project area contains no primary agricultural soils of statewide
17 importance (agricultural value 1-7), as defined under Act 250.

18

19

20

21

22

23 **Q. Does this conclude your testimony at this time?**

24 Response: Yes.