EXHIBIT
INTERVENORS
2

From: Michael Melone <mjmelone@allcous.com> on behalf of Michael Melone
Sent: Monday, March 23, 2020 4:29 PM
To: PUC - Clerk
Cc: Porter, James; Aceves, Sarah; Thomas Melone; Einhorn, Donald; Brooke Dingledine
Subject: PUC Docket No. 8454 - Amendment to Petition
Attachments: AH 8454 Amendment - Certificate of Service.pdf; 8454 Amendment cover letter.pdf; Exhibit AHS-JM-1 - Resume of Jim McClammer.pdf; McClammer PFTAppleHill (FINAL).pdf; Apple Hill Solar - Supplemental Prefiled Testimony of Ian Jewkes 3_22_20 (FINAL).pdf; Exhibit AHS-IJ-2 ECOS Apple Hill_revised final (3-22-2020)-C-100.pdf; Apple Hill Solar - 4th Supplemental Prefiled Testimony of Mark Kane (FINAL).pdf; Apple Hill Solar - Prefiled Testimony of Chris Little (FINAL).pdf; Exhibit AHS-CL-1 (Resume) (FINAL).pdf; Exhibit AHS-JM-1 - Resume of Jim McClammer.pdf; McClammer PFTAppleHill (FINAL).pdf; Docket 8454 Apple Hill Amendment 3_10_20 (FINAL).pdf

Dear Ms. Whitney,

Attached for filing in the above-captioned docket please find an electronic copy of the *Petitioner's Amendment to Petition* with related testimony and certificate of service.

Michael Melone
Allco Renewable Energy Limited
1740 Broadway, 15th Floor
New York, NY 10019
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mjmelone@allcous.com

From: Michael Melone
Sent: Monday, January 13, 2020 1:03 PM
To: PUC - Clerk <PUC.Clerk@vermont.gov>
Cc: Porter, James <James.Porter@vermont.gov>; Aceves, Sarah <Sarah.Aceves@vermont.gov>; Thomas Melone <thomas.melone@gmail.com>; Einhorn, Donald <Donald.Einhorn@vermont.gov>; Brooke Dingledine <lbrooke@vdmlaw.com>
Subject: RE: PUC Docket No. 8454 - Motion for Extension of Schedule

Dear Ms. Whitney,

Attached for filing in the above-captioned docket please find an electronic copy of the *Petitioner's Motion for Extension of Schedule* with hard copies to follow. I am also attaching the related certificate of service. Please feel free to contact me with any questions.

Michael Melone
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New York, NY 10019

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From: PUC - Clerk <PUC.Clerk@vermont.gov>
Sent: Monday, January 6, 2020 9:39 AM
To: Porter, James <James.Porter@vermont.gov>; Aceves, Sarah <Sarah.Aceves@vermont.gov>; Thomas Melone <thomas.melone@gmail.com>; Michael Melone <mjmelone@allcous.com>; Einhorn, Donald <Donald.Einhorn@vermont.gov>; Brooke Dingledine <lbrooke@vdmlaw.com>
Subject: PUC Docket No. 8454 - Apple Hill Solar Project

Dear Parties – Enclosed is a copy of the Proposal for Decision on Remand with cover letter ("PFD") issued today by Public Utility Commission Hearing Officer, Michael Tousley, Esq., in the above-referenced case. Hard copies of the PFD are also being sent via mail.

Thank you.

Sincerely,

Judith C. Whitney
Clerk of the Commission
Vermont Public Utility Commission
112 State Street
Montpelier, VT 05620-2701
802-828-2358
uc.clerk@vermont.gov

ALLCO RENEWABLE ENERGY LIMITED
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March 23, 2020

Judith Whitney
Clerk of the Commission
112 State Street
Montpelier, VT 05620

Re: **Docket 8454 PET – Project Amendment to Petition**

Dear Ms. Whitney:

Enclosed for filing please find Apple Hill Solar LLC's Amendment to Petition, related testimony and a certificate of service.

Please feel free to contact me with any questions.

Very truly yours,

Michael Melone

STATE OF VERMONT
BEFORE THE
PUBLIC UTILITY COMMISSION

Petition of Apple Hill Solar LLC for a certificate of public good, pursuant to 30 V.S.A. § 248, authorizing the installation and operation of the "Apple Hill Solar Project" consisting of a 2.0 MW solar electric generation facility to be located at 1133 Willow Road in Bennington, Vermont	)	**Docket No. 8454**

AMENDMENT TO PETITION FOR CERTIFICATE OF PUBLIC GOOD OF APPLE HILL SOLAR LLC

Pursuant to Public Utility Commission ("Commission") Rule 2.204(G), Apple Hill Solar LLC ("AHS") submits this amendment (the "Amendment") to AHS's petition for a certificate of public good.[1] In accordance with Rule 5.406 and 5.407 and 30 V.S.A. § 248(a)(4), AHS requests a public hearing on the petition as amended as there is sufficient reason to do so because the amendment filed herewith constitutes a substantial change to the proposed project.

The site on which the Apple Hill Solar project is proposed is owned by PLH LLC ("PLH") (the "PLH Lands"). PLH also owns the adjoining lot, referred to herein as the "Orchard Lot."

Notice is provided that PLH has commenced preparing the PLH Lands and the Orchard Lot for agricultural use. For the PLH Lands, PLH is establishing a sheep farm with 50-100 sheep,

[1] Commission Rule 2.204(G)(1) provides: "Proposed amendments may be filed at any time." AHS is also providing notice to all parties and entities entitled to notice under Rule 5.400 and section 248. *See,* Rule 5.407 *Substantial Change Prior to Decision on a Petition*: "If the petitioner makes a substantial change to the proposed project after the petition has been filed with the Commission, the petitioner is required to provide notice of this change to all parties and entities entitled to notice under this Rule and Section 248, including any newly affected adjoining property owners, as defined by this rule. For the purpose of this subsection, a substantial change is one that has the potential for significant impact with respect to any of the criteria of Section 248(b) or on the general good of the state under Section 248(a)."

the sheep from which will be used to graze on related and third-party solar sites in Vermont, Connecticut and Massachusetts. PLH will immediately commence clearing the PLH Lands for that agriculture use and is partnering with Fortunate Ewe Farm. The PLH Lands will also have shelters for the sheep, and storage for hemp to be grown on the Orchard Lot. Specifically, the shelters and storage will be established on the site at the south end of the property. *See* **Exhibit AHS-IJ-2** included with the Supplemental Prefiled Direct Testimony of Ian Jewkes filed in connection with this Amendment. PLH is filing the required plan with the Town of Bennington to show that the structures comply with the local setback rules.

For the Orchard Lot, PLH or its lessee plans to grow hemp (a horticultural enterprise) on the site (instead of the apples that currently grow on the site) and will register the site for the 2021 growing season with the Agency of Agriculture, Food and Markets. PLH has partnered with BioSoil Farms Inc. to supply the seeds, management and other expertise. A storage house approximately 30 feet tall is planned for the northern end of the Orchard Lot and will be used as a storage house for the hemp along with storage capacity on the PLH Lands.

These agricultural activities (which are currently in process) are wholly unrelated to the proposed solar use and are permitted as of right under Vermont law. As a result of PLH's activities for the lands, the following amendments are being made to the petition for a CPG and the plans and sworn testimony for the Apple Hill solar project:

1. No clearing is required by the solar use;[2]
2. Updated aesthetics testimony is included, *see*, Fourth Supplemental Prefiled Direct Testimony of Mark Kane;

[2] By the time construction might commence on the solar project, the hemp and sheep operations would be established for quite some time (as the litigation over the project is likely to continue for at least a couple more years).

3. The solar project would use regular solar modules, not the all black variety, although the standard module generally is now almost all black (excluding the frame which is generally silver) (*see*, Prefiled Direct Testimony of Chris Little);
4. The racking system would be standard silver and not painted a matte-black color (*see*, Prefiled Direct Testimony of Chris Little);
5. There would be no black colored 10-foot fence surrounding the project;
6. No additional plantings on the north side of the Orchard Lot are needed for visual screening and are removed from the plans;
7. The updated plan showing the location of the proposed array and the state of the site taking into account the PLH agriculture activities is shown as an exhibit to the Supplemental Prefiled Direct Testimony of Ian Jewkes.

As the supplemental testimony of Mark Kane states, the Project would not be visible from the Vermont Welcome Center, any neighboring residences or to vehicles heading north on Route 7, even in winter conditions. As to visibility from the Mount Anthony Country Club, it would be minimal at best. Even if part of the array could be seen by the naked eye it would be difficult to discern what is being seen for two reasons. First, it is a long-range view from over a mile away. Second, the sheep houses at the south of the property are expected to be painted in vivid colors and would distract from any potential view of the project.

The amended plan continues to satisfy all requirements of the Bennington Town Plan and the regional plan. Further details of the Amendment are provided in the prefiled testimony of Chris Little, Mark Kane, Ian Jewkes and the prefiled testimony of Jim McClammer.

Respectfully submitted,

Thomas Melone
Apple Hill Solar LLC
c/o Allco Renewable Energy Limited
101 West 78th St., Unit 7A
New York, NY 10024
Phone: (212) 681-1120
Email: Thomas.Melone@AllcoUS.com

Dated: March 23, 2020

LOCATION MAP
SCALE: 1" = 100 MILES

NOTES

1. ASPECTS OF PLAN ARE APPROXIMATE AND DERIVED FROM AERIAL PHOTOGRAPHY.
2. THE HORIZONTAL COORDINATE SYSTEM IS BASED ON NAD83 VERMONT STATE PLANE 4400 (US SURVEY FEET). ELEVATIONS ARE BASED ON THE NAVD88 (US SURVEY FEET).
3. EXISTING GROUND CONTOUR ELEVATIONS ARE BASED ON LIDAR DATA FROM VCGI.
4. UTILITIES ARE NOT WARRANTED TO BE COMPLETE OR ACCURATE. CONTRACTOR SHALL CONTACT DIG SAFE BEFORE BEGINNING ANY EXCAVATION.
5. THIS IS IN NO WAY A BOUNDARY SURVEY. PROPERTY LINES SHOWN ON THIS PLAN ARE BASED ON TOWN TAX MAP INFORMATION AND A PLAN ENTITLED, "PROPERTY OF JONATHAN M. & MICHELLE M. WARD TO BE CONVEYED TO ECOS ENERGY, LLC", PREPARED BY VERMONT SURVEY CONSULTANTS, LLC AND DATED AUGUST 2, 2013.

LEGEND

- EXISTING POWER POLE / PROPOSED POLE
- EXISTING OVERHEAD POWER
- EXISTING TREELINE
- EXISTING GRADE CONTOUR LINES (10 FOOT INTERVALS)
- EXISTING GRADE CONTOUR LINES (2 FOOT INTERVALS)
- APPROXIMATE PROPERTY LINES
- DELINEATED WETLANDS
- ENVIRONMENTAL BUFFERS
- EXISTING SOIL FROM VCGI
- BUILDING SETBACKS PRESCRIBED IN BENNINGTON ZONING CODE
- PROPOSED FENCING
- PROPOSED FIXED SOLAR PANEL RACKING
- PROPOSED UNDERGROUND POWER LINES
- PROPOSED CONSTRUCTION STAGING
- PROPOSED SILT FENCE AND PROJECT LIMIT BARRIER FENCE
- PROPOSED PROJECT LIMIT BARRIER FENCE
- FOOTPRINT OF SOLAR PROJECT WORK AREA = 8.4 ACRES

SETBACK DISTANCES TO SOLAR MODULES

POINT OF INTEREST	DISTANCE FROM NEAREST SOLAR PANEL TO POINT OF INTEREST
NORTHERN PROPERTY LINE	±30'
EASTERN PROPERTY LINE	±75'
SOUTHERN PROPERTY LINE	±330'
WESTERN PROPERTY LINE	±320'
NEAREST RESIDENT	±760'
EDGE OF APPLE HILL ROAD	±725'
EDGE OF ROUTE 7	±360'

PROJECT AREA CALCULATIONS

PROPOSED CLEARING
- NO PROPOSED CLEARING

PROPOSED DISTURBED SOIL
- ACCORDING TO VERMONT DEC, ALL AREAS OF THE SOLAR SITE HAVE THE POTENTIAL FOR GROUND DISTURBANCE UNDER THE STORMWATER PERMIT DUE TO DRIVING VEHICLES OR OTHER ACTIVITIES DURING CONSTRUCTION. THE PROJECT WILL LIMIT THE DISTURBANCE TO THE EXTENT PRACTICAL. FOR THE STATE CONSTRUCTION STORMWATER DISCHARGE PERMIT WE WILL CONSIDER THE ENTIRE SITE DISTURBED. THIS AREA IS IDENTIFIED ON THE SITE PLAN AS "FOOTPRINT OF SOLAR PROJECT WORK AREA"

TOTAL SOIL DISTURBANCE = ±8.4 ACRES

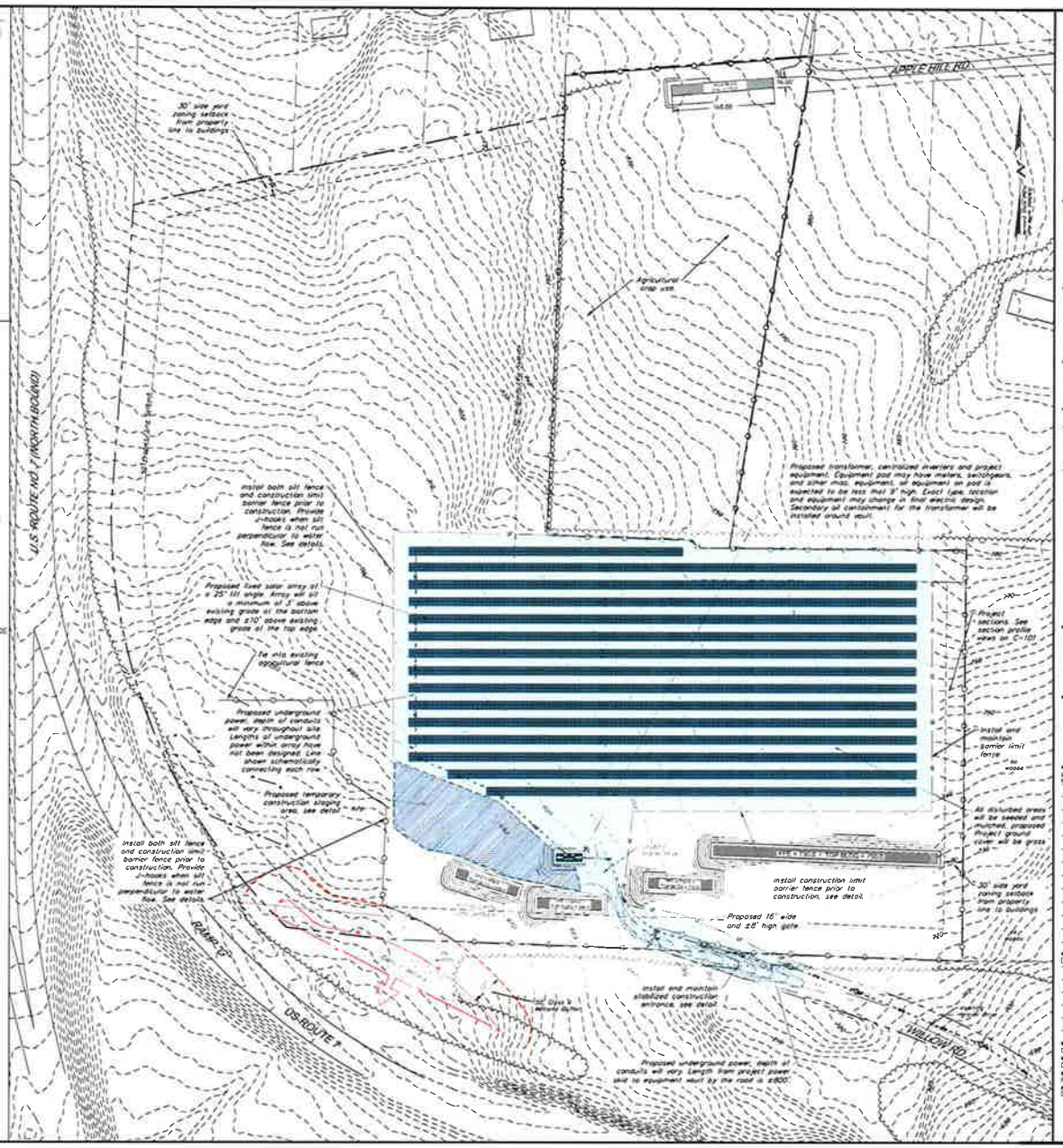
PROPOSED SOLAR PROJECT IMPERVIOUS AREA

SOLAR PROJECT EQUIPMENT

- 1,100 SQUARE FOOT EQUIPMENT PAD AND SECONDARY OIL CONTAINMENT FOOTPRINT = ±1,100 SQUARE FEET
- SOLAR RACKING POST AREA (0.25 SQUARE FEET PER POST * 1785 POSTS) = 446 SQUARE FEET

TOTAL PROPOSED SOLAR PROJECT IMPERVIOUS AREA = ±1,546 SQUARE FEET = ±0.04 ACRES

COMPLETED EXTENT OF SOLAR ARRAY (LIMITS OF PANELS) = ±6.8 ACRES



Parcel ID No. 29-50-31
Willow Road
Bennington, Vermont

ecos ENERGY
222 SOUTH 9TH STREET
SUITE 1600
MINNEAPOLIS, MN 55402

KREBS & LANSING CONSULTING ENGINEERS
164 Main Street, Suite 201
Colchester, Vermont 05446
P: (802) 878-0375
www.krebsandlansing.com

ISSUED FOR PERMIT REVIEW
NOT FOR CONSTRUCTION

CIVIL ENGINEER
Krebs and Lansing Consulting Engineers, Inc.
164 Main Street, Suite 201
Colchester, Vermont 05446

ELECTRICAL ENGINEER
ECOS Energy
222 South 9th Street
Minneapolis, MN 55402

STANDARD GRAPHIC SCALE (1" = 80')
VALID WHEN PLOTTED ON 24" BY 36" MEDIA

REDUCED GRAPHIC SCALE (1" = 181.82')
WHEN PLOTTED TO FIT ON 11" BY 17" MEDIA

REV. NO.	REVISIONS/COMMENTS	DATE

Drawing Title
SITE PLAN

DATE of Issue: 03/22/20
Drawn by: GTD
Checked by: IAJ
Project No.: 17273
Scale: 1" = 80'
Drawing No.: C-100
Rev. No.:

STATE OF VERMONT
PUBLIC UTILITY COMMISSION

Petition of Apple Hill Solar LLC, pursuant to 30 V.S.A. § 248, for a certificate of public good authorizing the installation and operation of the "Apple Hill Solar Project," a 2.0 MW solar electric generation facility located on Willow Road in Bennington, Vermont	)))))))	Case No. 8454

FOURTH SUPPLEMENTAL PREFILED DIRECT TESTIMONY
OF MARK KANE
ON BEHALF OF PETITIONER

March 23, 2020

Q1. Please state your name, occupation, and business address.

A1. My name is Mark Kane, and I am currently a land use planner and Director of Community Planning and Design at SE Group. My business address is 131 Church Street, Burlington, Vermont 05401.

Q2. What is the purpose of your testimony?

A2. My testimony describes the effect that the recent changes to the Apple Hill Solar Project (the "Project") have upon Project aesthetics and orderly development of the region.

Q3. Please describe the Project design revisions in the amended site plan and the overall effects of those revisions on Project aesthetics and orderly development of the region?

A3. The revised site plans are set forth in **Exhibit AHS-IJ-2**. The site on which the Project is proposed is owned by PLH LLC ("PLH") (the "PLH Lands"). PLH also owns the adjoining lot, referred to herein as the "Orchard Lot." PLH is in the process of establishing a sheep farm on the PLH Lands. The PLH Lands will also have shelters for the sheep, and storage for hemp to be grown on the Orchard Lot. Specifically, the shelters and storage will be established on the site at the south end of the property. For the Orchard Lot, PLH or its lessee plans to grow hemp (a horticultural enterprise) on the site (instead of the apples that currently grow on the site) and, in connection therewith, a storage house approximately 30 feet tall is planned for the northern end of the Orchard Lot and will be used as a storage house for the hemp along with storage capacity on the PLH Lands to the south. The Project as revised will continue to not have an undue adverse effect on aesthetics.

In my Third Supplemental Prefiled Testimony filed in these proceedings on September 14, 2017 ("Kane 3rd"), I concluded that the Project would be fully screened from the public and neighboring viewpoints during all seasons. The recent changes to the Project have not changed those conclusions. In my Third Supplemental Prefiled Testimony, I also concluded that the Project would not unduly interfere with the orderly development of the region because the Project complied with the Bennington Town plan and the Bennington regional plan.

As a part of this review, I updated the original 3D model of the project site to reflect the addition of the new agricultural facilities on the PLH Lands. This update included placing the dimensionally accurate (mass and scale) representations of the barn and support structures in their planned locations and modifying the solar project's layout to reflect the changes. The purpose of this update was to ascertain to what extent these facilities would influence a) the overall visibility of the Project from offsite vantage points, and b) whether previously proposed landscape mitigation measures would be needed.

It is my conclusion that the recent changes to the Project have not changed my original conclusions with respect to aesthetics and orderly development and, in addition, my review of other recently approved solar projects in Bennington's Rural Conservation District (the "RCON") support those conclusions.

Q4. Is the Project visible from the Vermont Welcome Center?

A4. No, the Project is not visible from the Vermont Welcome Center. The Project was already fully screened by existing natural vegetation as explained in my Third Supplemental Testimony (see Kane 3rd at 9). The addition of the new storage facility for the sheep and the hemp growing

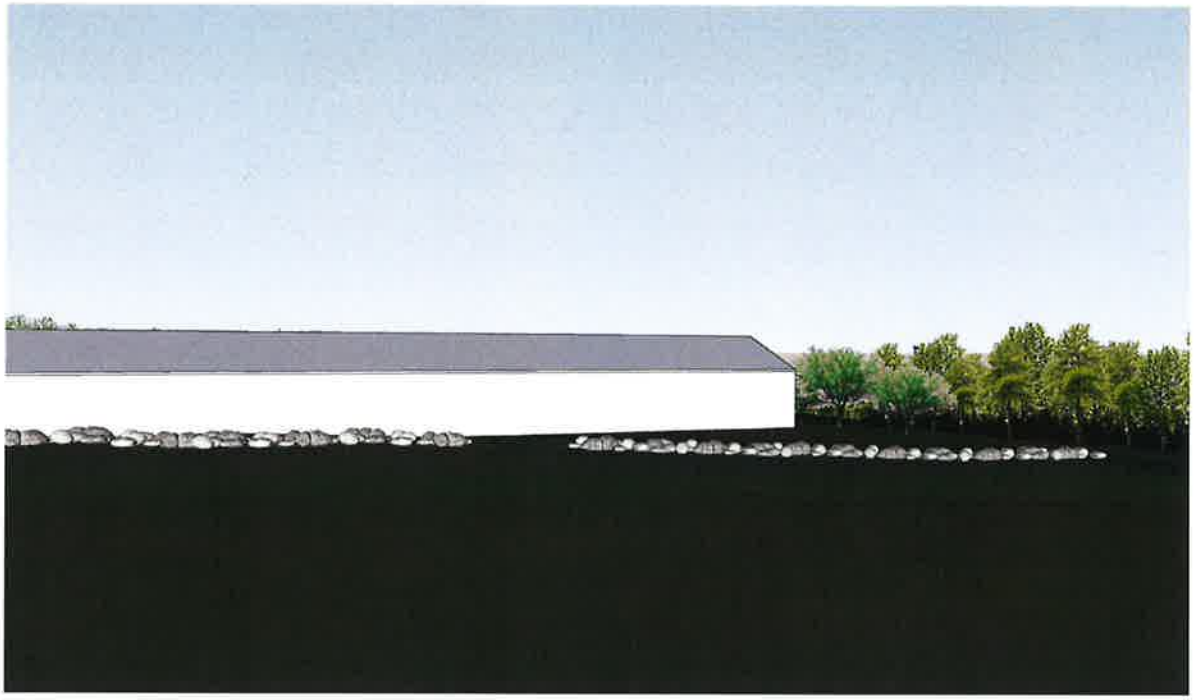
operation serve to reinforce my original conclusion that the Project will not be visible from the Vermont Welcome Center. Based on my analysis, portions of the sheep enclosures or barns would be visible from the Welcome Center in a midground position relative to observation points at the Vermont Welcome Center. Given the distance between the Vermont Welcome Center and the PLH lands, these agricultural uses would appear modest in scale and very much contextually appropriate to the existing landscape character. The following 3D view demonstrates the anticipated condition from a vantage point I previously considered in my testimony. The white boxes reflect the sheep house structures. Note that the color white is being used solely for purposes of these model and is not indicative of the final color of the structures.

Q5. Is the Project visible from vehicles heading north on Route 7?

A5. No, the Project is not visible from vehicles heading north on Route 7. Existing woods along the edge of the property and extending west onto lands within the right-of-way provide screening of the Project.

Q6. Is the Project visible from any neighboring residences?

A6. No, the Project is not visible from any neighboring residences. The Project was already fully screened by existing natural vegetation and the supplemental landscape mitigation plan on the north side of the Orchard Lot as explained in my Third Supplemental Testimony (see Kane 3rd at 12-16). The addition of the new storage facility for the hemp growing operation serves to reinforce my original conclusion (i.e. that the Project will not be visible from any residences) and it obviates the need for (i) any supplemental plantings on the north side of the Orchard Lot and (ii) using all black panels for the Project. Based on my analysis, the position, scale, and mass of the proposed storage facility, would eliminate any views to the south towards the Project. Again, in this setting, particularly with its legacy character as a former apple orchard, the presence of an agricultural structure is visually compatible with the landscape character. The 3D model view below reflect the likely impact of the storage facility as viewed from the most proximate residential property to the north. This is the same vantage point I had previously considered in early testimony. Note that the white color of the facility is not indicative of the color to be used.



1 **Q7. Is the Project visible from the Mount Anthony Country Club (MACC")?**

2 A7. The new site plan makes much of the Project unable to be seen even with a telescope from
3 the MACC, including from the viewpoint identified in the testimony of Joseph Schoenig. The
4 elevation of that viewpoint is 711 feet. The tops of the sheep farm buildings are as high as 750.

5 Overall, even if it is possible that there may be some views of the Project site from the
6 MACC, the impact of these views needs to be taken into context. Firstly, these views are at
7 substantial distance from the property – upwards of 1.2 miles. From these distances other elements
8 of the built environment would be visible including commercial and industrial uses, highways and
9 residential properties (including those in the Apple Hill neighborhood). In addition, the views
10 would not be persistent. While portions of the course might have some visibility of the Project site,
11 it is not ubiquitous and is influenced by the local vegetation patterns. In addition, the sheep house
12 at the southern end of the Project site is expected to be a more visually dominant focal point within
13 the landscape, and would help to screen the limited view of the Project and contextualize the
14 assemblage of facilities (Project and PHL facilities) as more agricultural in character. The result
15 of this is that the broader landscape characteristics of the view from the MACC are not undermined
16 by the Project. The views to the west, north and east which terminate in the backdrop of larger
17 mountains and support a layered sense of depth, are not impeded. The retained vegetation on the
18 eastern, southern and western periphery of the Project will further lessen its impact even from this
19 distance and, most greatly in leaf-on conditions when the use of the course is expected where
20 whatever views of the array might be possible would blend into the broader natural pattern of
21 vegetation. My conclusion based on the review of the amended Project is that it will not result in
22 adverse impacts to views from the Mount Anthony Country Club.

Q8. Does the amended Project have an adverse impact on aesthetics?

A8. No for the reasons stated above and in my prior testimony.

Q9. Does the amended Project unduly interfere with the orderly development of the region?

A9 No. Under 30 V.S.A. §248(b)(1), the Public Utility Commission ("PUC") must find that the construction of the Project will not unduly interfere with the orderly development of the region, with due consideration given to the recommendations of the municipal and regional planning commissions, the recommendations of municipal legislative bodies, and the land conservation measures contained in the plan of any affected municipality. For the reasons described above and below, I conclude that the Project does not unduly interfere with orderly development of the region. Indeed, my conclusion is quite to the contrary, as a renewable energy project in a well sited location that is screened from public and neighboring views, the Project furthers the orderly development of the region. Moreover, as described above, the language of the Town and Regional Plans do not establish standards that the development of the Project would violate. The land on which the Project is planned has not been identified as conservation lands nor is it prohibited from development. No easement or legal constraints prohibit the development of the property. As I have previously discussed, the description of Rural Conservation district (the "RCON") in the Town Plan establishes that the "preservation of distinctive rural character" is the intended land use objectives within the district. The Town Plan and the by-laws support all development so long as development is not prominently visible on hillsides or ridgelines as viewed from the valley floor, uses "earth tone colors and non-reflective materials on exterior surfaces of all structures" and

"minimize[s] clearing of natural vegetation". It is my assertion that the Project complies with each of these measures as explained in further detail in my Third Supplemental Testimony (See Kane 3rd at 36-38), and that the amended Project continues to comply with those goals.

Q10. What additional work have you performed with respect to the Project since the filing of your Third Supplemental Testimony?

A10. I have continued to work with the Petitioner on this Project since my last filing in 2017. Most recently, on February 20th, 2020, I traveled to the Bennington area to review, observe, and photograph two recently approved solar projects within the community that had previously been approved and developed within the Town of Bennington's RCON and which had been previously brought to the attention of the PUC in these proceedings. Additional images were collected on February 24th, 2020 by staff of SE Group under my direction. Each of these projects are briefly summarized below. The approximate centroid location of each project was derived from Google Earth.

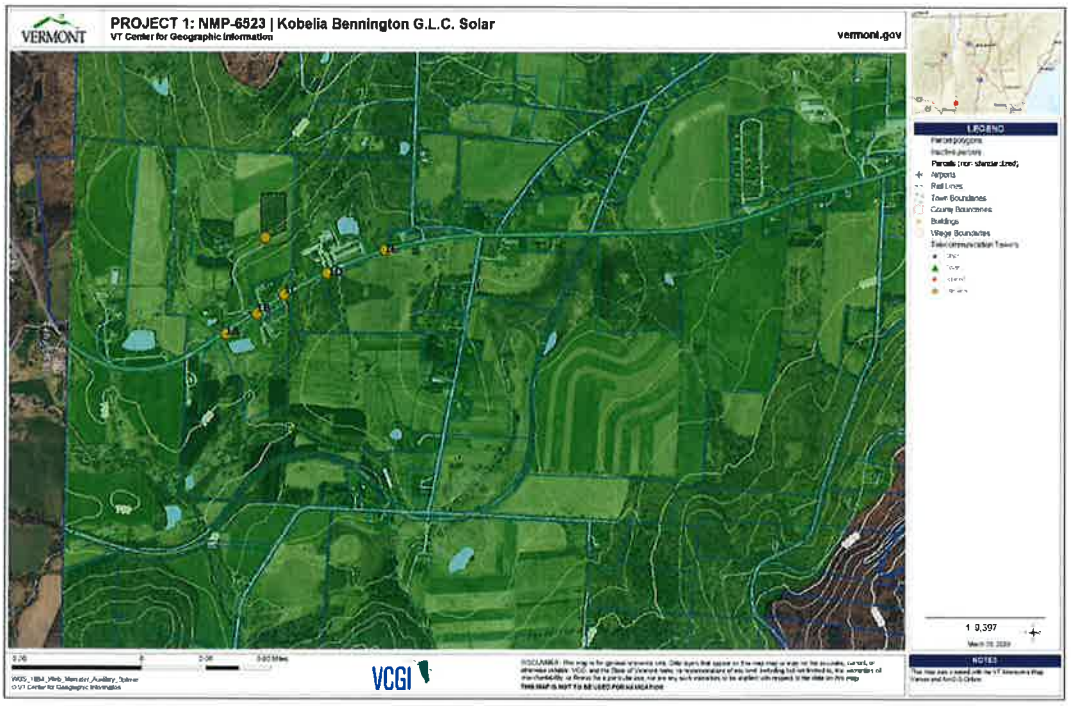
Project	PUC Docket / Name	General Description	Approximate Location
1	NMP-6523 Kobelia Bennington G.L.C. Solar (the "Kobelia Project")	This CPG was issued to develop a 500-kW group net-metered solar generation facility on 4.3 acres within a 54-acre parcel. The array is set back about 600 feet from Route 9. About 850 feet of new overhead and upgraded lines along the driveway and Route 9 were completed. The CPG was issued on 10/14/2015.	North of Route 9 in Bennington
2	NMP-16-0049 ER Paper Mill Solar (the "Paper Mill Project")	This CPG was issued in November 2016 for a 500-kW, net-metered facility located off Murphy Road in Bennington. The site was previously agricultural fields, and no clearing was needed. The array encompassed about 3.5 acres.	North of Murphy Road in Bennington

The position (latitude and longitude) and elevation of my observation points were collected using a GPS application (GPS & Maps v2.8) on my iPhone 8. These locations correlated to areas along public roadways from which, based on a review of topographic maps, some potentiality of visibility was expected. The horizontal accuracy of the positions ranged between 10-15 feet. The weather conditions during the visit began with some haze and light snow but gradually become clearer during the day. Temperatures were between 15 and 25 degrees. Observations were made between 10am and 4pm with photographic data collection occurring in between 1:30pm and 4:30 pm when atmospheric and light conditions were most favorable.. Additional photographs were taken on February 24th at around 11am to reshoot some images for better light conditions. Photographs were collected with a Canon EOS Digital Rebel S.L.R. camera using a 35mm (53mm equivalent focal length) lens. During the field visit, I periodically used a telephoto lens (ranging from 100mm to 300mm) to help orient myself with specific projects when I was at some distance. During the visit, and contemporaneously with my observations and photography, I noted specific physical or landscape features that I felt might be helpful for subsequent review of photographs. Using Geographic Information Systems software (ArcGIS 10.7) and the Vermont Center for Geographic Information (VCGI) ArcGIS-Online enabled viewer, I imported the positional information from my field visits into a base map that included Town of Bennington parcel data, Town of Bennington land use (zoning) districts, mapped telecom sites, lidar topography from the VCGI, and an aerial photograph background image for cartographic reference. This information set served to help affirm my positional information and determine the spatial relationship between observation points and the subject projects. This information also helped to establish the positional

relationship between the solar projects and the boundary of the RCON district, the elevation of those projects with respect to the surrounding terrain, and the land use context within which they were developed.

Q11. What conclusions did you reach with respect to the Kobelia Project?

A11. This facility is located along VT Route 9 near the VT-NY state border. The project's location is depicted on the following map. The green tone on the map indicates the RCON district, as depicted on a GIS layer distributed through the Bennington Regional Commission.



This project location has an approximate spatial reference of 42.87740° N latitude, 73.26842°W longitude, and an elevation of 870 feet. This position was used in my analysis of distances between observation points and the project. This position reflects my best attempt at locating the edge of the array that is closest to VT Route 9, as derived from information in the docket and review of

aerial photographs and Google Streetview images. Photographs were taken from five observation points, as summarized here in the table below.

PROJECT 1: NMP-6523 | Kobelia Bennington G.L.C. Solar				
PHOTO LOCATION	**LATITUDE**	**LONGITUDE**	**ELEV (FT)**	**NOTES**
1A	42.8743° N	73.2701° W	801	View from VT Route 9 looking NE towards the solar field. The field is about 1,200 feet away. Some foreground obstruction from vegetation.
1B	42.8750° N	73.2688° W	799	View from VT Route 9 looking more North than East.
1C	42.8756° N	73.2676° W	797	View from VT Route 9 looking North towards the project site.
1D	42.8763° N	73.2657° W	807	View from VT Route 9 looking North and West towards the project site
1E	42.8770° N	73.2631° W	828	View from VT Route 9 looking West

Photographs 1A to 1E are provided on the following pages:

PHOTO LOCATION: 1A | View looking east and north from VT Route 9 towards Kobelia Solar project site. The array is visible through foreground vegetation in the midground.

PHOTO LOCATION: 1B | View looking north and east from VT Route 9 towards Kobelia Solar project site. The array is visible through light foreground vegetation. Panels are oriented towards observation points.

PHOTO LOCATION: 1C | View looking north from VT Route 9 towards Kobelia Solar project site. The array is visible through the scrub hedgerow in front of the array. The array's position is at the top of the hill relative to the observer. Summer observations would be somewhat more screened by the hedgerow. The panels are oriented directly towards the observation point.

PHOTO LOCATION: 1D | View looking north and slightly west from VT Route 9 towards Kobelia Solar project site. The array is visible through hedgerow that separates it from this industrial property. Array's position is at the top of the hill relative to the observer. Summer visibility from this location is expected to be similar, given the evergreens that provide the bulk of the screening. Panels are oriented slightly away from the observation point.

PHOTO LOCATION 1E | View looking north and slightly west from VT Route 9 towards Kobelia Solar project site. The array is partially visible in context with the foreground industrial facility. Leaf-on conditions expected to be more screened due to foreground vegetation and an intervening hedgerow, as discussed in Site Photograph 1D.

Photo location 1A reflects a viewpoint near the westernmost location along VT Route 9 from which an eastbound traveler could see the array. Photo location 1B to 1D reflects additional viewpoints along VT Route 9. These locations are between about 680 feet and 1,200 feet away.

Photo location 1E is the easternmost view looking NW from about 1,320 feet away.

During my field review and drive, I also noted additional long-range views of the Project from areas along Pleasant Valley Road, and Horst Road, to the south. Given the relatively open nature of the landscape and elevated position of the array, additional points of visibility are likely.

The duration of view along VT Route 9, as determined while driving at the posted speed limit, was about 35 seconds in either direction of travel (west or east).

The array is elevated above the general topographic elevation of VT Route 9. Referencing the GIS Lidar elevation data collected and Google Earth elevation data, the array is set about 80 to 85 feet above an observer traveling along VT Route 9.

The slope of the terrain on which the array is set, again based on the GIS Lidar elevation data, ranges from between approximately 11% to 31% and averages about 20% in the specific area where the array is positioned.

The elevated position of the array makes it more prominent relative to the hillside on which its located. As seen from photo location 1C, the array basically appears near the top of the hillside from this lower vantage point.

The rural character of the area is somewhat compromised by the motel across the street from the project site and the manufacturing building just to the east.

The subject property clearly had a farming past, and the landscape reflects that pattern through hedgerows and open meadows. The project contrasts with the visual character of the surrounding landscape.

Route 9 in this area is part of the Molly Stark Scenic Byway, and the Bennington Scenic Resource Inventory identifies a scenic view on VT Route 9, directed towards Mount Anthony to the south.

Based on my assessment, I conclude that the Kobelia Solar project creates an adverse impact with respect to the visual resources of the area. The PUC concurred in its final order for a CPG for the project. The array is clearly visible for an extended duration along a well-traveled roadway, is elevated above natural grades that increases its prominence on a hillside, and its form and character are visually incongruent with the natural conditions of the area.

The Town Plan identifies four design goals relevant to development in the:

1) the purpose of the Rural Conservation District is to preserve the distinctive rural character and working landscape

2) no development may be sited in prominently visible locations on hillsides or ridgelines

3) any development must utilize earth tone colors and non-reflective materials on exterior surfaces of all structure

4) any development must minimize the clearing of natural vegetation

Relative to point #1 – The area surrounding the Kobelia Solar project is mostly rural and agricultural. While a former motel and older industrial building exist along the roadway, their presence does not significantly diminish the overall rural character. In fact, Google Earth photos (posted by the public) include one entitled "Summer View of Farm Country" taken by

1 Arthur Harvey that shows the rural and somewhat pastoral character of the area.[1] VT Route 9
2 in this area intersects with NY 7, and the area functions as a gateway into the State of Vermont.
3 The New York border is less than 0.5 miles to the west. The roadway is part of the Molly Stark
4 Scenic Byway. The approach to the project from the west (i.e., from New York State) has a
5 more farmland appearance, while the approach from the east is degraded by the industrial
6 building seen from Photo Locations 1D and 1E.

7 Relative to point #2 - The location of the Kobelia Solar project lacks significant foreground
8 vegetation. The terrain is steep with the array elevated about 80 feet above the roadway. The
9 array's placement on the hill gives it the appearance of being nearly at its top. Photo Location
10 1B and 1C demonstrate this. The array is visible from areas where observers are moving at a
11 moderate speed (55 mph) and in proximity. These factors combine to make the Kobelia Solar
12 project prominently visible on the hillside from lower areas.

13 Relative to point #3 – The materials and colors used for the Kobelia Solar project are
14 similar to other solar installations and non-reflective.

15 Relative to point #4 –Little to no clearing was needed for the Kobelia project. The design
16 standard does not prohibit clearing, but rather the minimization of the clearing (i.e. not clearing
17 vegetation in excess of what is needed to build the project).

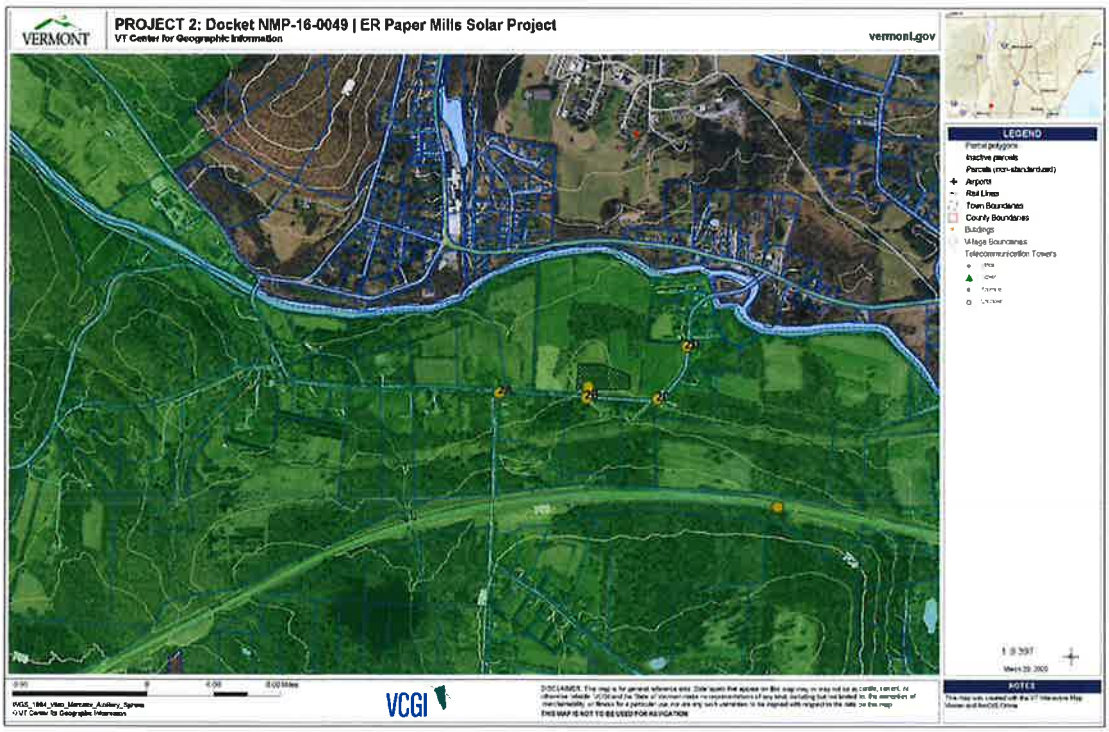
18 Overall, if the Town Plan's design goals for the RCON district were clearly written
19 community standards, the Kobelia Solar project would have failed on points #1 and #2. The
20 Kobelia Solar project is visible from a state highway at a gateway into the State of Vermont.

[1] https://lh5.googleusercontent.com/p/AF1QipO01i5epectXZ_Fbfx4NMHqqT9fSRlpLp4_Q4mV=h720

The PUC found that the Kobelia Solar project satisfied section 248 and did not violate any clear written community standard. [2]

Q12. What conclusions did you reach with respect to the Paper Mill Project?

A12. This facility is located to the north of Murphy Road in Bennington, Vermont. This project location has an approximate spatial reference of 42.90964°N latitude, 73.24049° W longitude, and an elevation of 606 feet. This position was used in my analysis of distances between observation points and the project. This position reflects my best attempt at locating the center of the array as it faces Murphy Road. This was derived from information in the docket and review of aerial photographs.



[2] CPG #NMP-6523, Order of 10/14/15.

The setting and context of the area are generally rural, with some active and some remnant farm properties. The terrain is moderate with low gradients.

Along an approximately 1,500-foot stretch of Murphy Road (extending from the about its intersection with Austin Road north and east to where the road enters a more wooded environment), the foreground in the direction towards the solar array is generally open, with some hedgerows and foreground vegetation.

The array is set about 86 feet from the travel way. See the image below from the GIS software.

1 Photographs were taken from four observation points, as summarized here in the table below.

PROJECT 2: Docket NMP-16-0049 | ER Paper Mills Solar Project				
PHOTO LOC	**LATITUDE**	**LONGITUDE**	**ELEV (FT)**	**NOTES**
2A	42.9094° N	73.2443 ° W	587	View from Murphy Road near the intersection with Austin Hill Road looking West towards array site. View impacted by foreground vegetation with some screening. Screening in summer is likely higher due to deciduous hedgerow.
2B	42.9093° N	73.2406° W	616	View from Murphy Road looking north.
2C	42.9093° N	73.2376° W	599	View from Murphy Road looking North and slightly West.
2D	42.9109° N	73.2363° W	585	View from Murphy Road looking south and west near where Murphy Road comes out of the woods and heads south then west.

2

3 Photographs 2A, 2B, 2C, and 2D are on the following pages.

PHOTO LOCATION 2A: View looking to the east and slightly north from the intersection of Austin Road and Murphy Road towards the ER Paper Mill Solar Project. The viewpoint is about 1,100 feet away from the array. The project is visible through the existing narrow hedgerow.

PHOTO LOCATION 2B: View looking to the north from Murphy Road towards the ER Paper Mill Solar Project. The array is about 110 feet away at this point.

PHOTO LOCATION 2C: View looking north and west from Murphy Road. The project is visible beyond narrow hedgerows that separate the project parcel from adjacent tracts. The view is "on-end" and looking almost towards the side of the array.

PHOTO LOCATION 2D: View looking west and south towards the ER Paper Mill Solar array. The view is towards the back of the array. Murphy Road heads south from this point then turns sharply to the west.

This project is clearly visible from multiple vantage points along Murphy Road. While foreground hedgerow vegetation within the landscape screens offsite views in some instances, the position of the array places in relative proximity to potential observers traveling along the roadway. Based on my observations, the project is visible along approximately 1,500 feet of road frontage.

The terrain on which the project was placed is relatively flat, but slopes slightly downward with respect to Murphy Road with a drop of about 50 feet over 1,500 feet or 3%.

Photo location 2A reflects a viewpoint near the westernmost location along Murphy Road from which an eastbound traveler could see the array. From this vantage point, an observer is about 900 feet to the west. The view of the array would be somewhat more limited during the summer when hedgerows between adjacent parcels are in leaf-out conditions.

Photo locations 2B-2C reflect position closer to the array. Again, the array is generally visible from the roadway.

Photo location 2D represents a viewpoint north and east of the array where Murphy Road heads south as it comes out of a more wooded area. At this point, the array is about 700 feet away and directed away from observers.

Overall, the duration of visibility is between about 30-40 seconds, depending on the season. With that and the proximity of the array to observers, a conclusion of an adverse impact is warranted.

As the photos plainly show, either direct or partially filtered visibility of the project extends over a 1,500-foot stretch of Murphy Road. No clear evidence of landscape mitigation was noted that directly addresses the position of the array with respect to the public roadway or

nearby residents. As shown on the photograph from photo location 4B, the entirety of the array is visible and unobstructed by any landscape. Third, the array is set very close to the road, allowing observers to have a prominent and detailed view of the structure.

As shown on the base map, the ER Paper Mill Solar project site is located within a large area of RCON. My field observations to the area, and the review of aerial photographs of this area, show that it is low density with farmland and a few houses. The mapping also shows an existing transmission corridor extending east-west that bisects this area of RCON.

The Town Plan identifies four goals relevant to development in the RCON:

1) the purpose of the Rural Conservation District is to preserve the distinctive rural character and working landscape

2) no development may be sited in prominently visible locations on hillsides or ridgelines

3) any development must utilize earth tone colors and non-reflective materials on exterior surfaces of all structure

4) any development must minimize the clearing of natural vegetation

Relative to point #1 – The ER Paper Mill Solar project sits within a very rural landscape. While the selection of a smaller scale, net-metered solar project reduces the footprint of the enterprise, the setting is decidedly not commercial in nature, nor in the surrounding area. In the absence of more substantive aesthetic mitigation, a compelling case could be made that the array is not compatible with the rural character of this area.

Relative to point #2 – The ER Paper Mill Solar property is relatively flat with little topographic relief. While the array is highly visible from the roadway, it is not on a hillside or ridgeline.

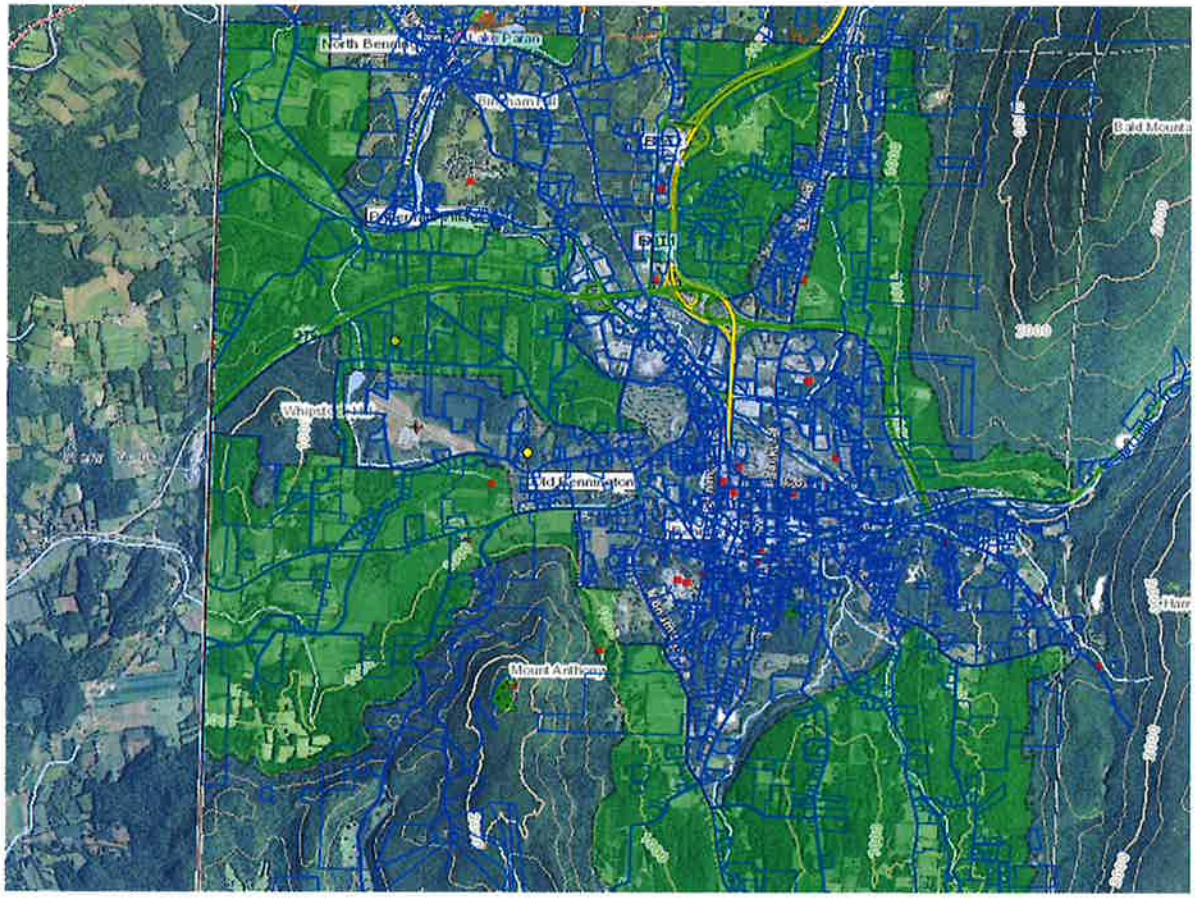
Relative to point #3 – The materials and colors used for the ER Paper Mill Solar project are similar to other solar installations and non-reflective.

Relative to point #4 – The ER Paper Mill Solar project did not require clearing.

Overall, based upon the rationale use by the hearing officer in this case in his proposal for decision on remand, the ER Paper Mill project would have violated #1.

Q13. What additional conclusions have you reached with respect to the RCON district in Bennington?

A13. The RCON district within the Town of Bennington is spatially organized into four large blocks, representing four quadrants surrounding the transportation and urban core of the community. The map below highlights this pattern. VT Routes 7, 279, 67A, and 9 all converge in the center of the community, with the RCON district broadly divided by these corridors.



The Apple Hill project is proposed within the northeast quadrant. The existing Bennington Substation (See Docket 7763) is also generally located in this quadrant.

The ER Paper Mill Solar Project is located within the northwest quadrant.

The Kobelia Bennington Solar Project is located within the southwest quadrant.

No solar projects are within the RCON district within the southeast quadrant. The Mansion Road cell tower (Docket 8355), and other towers, are visible from locations within this quadrant.

While the form and scale of the projects reviewed in this assessment differ from what has been proposed at Apple Hill, that difference should not led to a conclusion different from the

1 approvals given by the PUC in the Kobelia and Paper Mill cases. The fact is that the
2 development of utility projects within the RCON district has clearly not been precluded by
3 virtue of the design goals and the Kobelia and Paper Mill projects illustrate what the Town
4 considers a development that meets those goals, or indicate standards that are not consistently
5 applied.

6 In conclusion, if the Town Plan RCON design goals were clear written community
7 standards, the Kobelia and Paper Mill projects illustrate what the Town considers development
8 that meets those goals. If, however, a CPG is not issued for the Apple Hill solar project based
9 upon the Town's RCON goals, then the Kobelia and Paper Mill projects prove that the
10 purported standards that preserve the scenic resource have not been consistently applied, and
11 a as result lose their status as a clear community standard.

12 I understand and appreciate that the PUC has broad discretion to weigh the facts of specific
13 cases but the differences between the Apple Hill project on the one hand and the Kobelia and
14 Paper Mill projects on the other do not justify denying a CPG to the Apple Hill project based
15 upon the Town's RCON goals.

16 I also continue to assert that the impact of the Apple Hill Solar project with respect to
17 aesthetic and orderly development of the region would create neither an adverse condition nor
18 an unduly adverse condition. All the projects I reviewed for this assessment have clearly had
19 some level of aesthetic impact on surrounding areas. My perspective is that the proposed Apple
20 Hill Solar project even before the amendment would have a far, far less proximate impact on
21 potential observers, given its distance from them and the characteristic of potential observers
22 (mostly moving through the area at considerable speed). With the amendment, there is no

impact at all. Even before the amendment, he Apple Hill Solar project would also have less general impact on residential observers when compared to the other projects I reviewed.

To be clear, I continue to believe that the application of the RCON design review standard as a clearly written community standard is incorrect. I believe that the intention of that standard is to prevent or temper the development of residential or commercial uses on sensitive hillsides and ridgelines. I also believe the standard is unclear because it was developed outside of the consideration of energy generation facilities (or utility projects in general).

Q14. Does this conclude your testimony?

A14. Yes.

STATE OF VERMONT
PUBLIC UTILITY COMMISSION

Petition of Apple Hill Solar LLC, pursuant to 30 V.S.A. § 248, for a certificate of public good authorizing the installation and operation of the "Apple Hill Solar Project," a 2.0 MW solar electric generation facility located on Willow Road in Bennington, Vermont	)	Case No. 8454

PREFILED DIRECT TESTIMONY
OF CHRISTOPHER LITTLE
ON BEHALF OF PETITIONER

March 20, 2020

EXHIBITS

Exhibit AHS-CL-1 Resume of Chris Little

Q1. Please state your name, occupation, and business address.

A1. My name is Chris Little. I am a Vice President and Director of Development at Ecos Energy LLC ("Ecos"). My business address is 222 South 9th Street, Suite 1600, Minneapolis, Minnesota 55402. Ecos and the Petitioner are companies under indirect common ownership.

Q2. Please describe your educational background and work experience.

A2. I received a Bachelor of Science degree in Business Administration in Real Estate and Urban Land Economics from the University of Wisconsin-Madison. I am presently responsible for managing Ecos Energy's solar project development and operating activities. I am directly responsible for energy forecasting, business development, project and land acquisition and project financing. I have been directly involved in the successful development of 38 distributed generation (DG) solar facilities totaling over 66 megawatts in 7 different states, including the Sudbury Solar Project in Sudbury, Vermont and the Battle Creek Solar Project in Bennington, Vermont. I also oversee the day to day operations of 31 DG solar facilities totaling over 57 megawatts. I have worked for Ecos Energy since 2008.

Prior to joining Ecos Energy, I was a Land Acquisition Manager for Ryland Homes, a national homebuilder and from 1999 to 2005 I was a right of way agent for We Energies in their Property Management group. At We Energies I was responsible for land acquisition and land use entitlements for transmission lines, substations, gas pipelines and gas regulator stations. A copy of my resume is included as ***Exhibit AHS-CL-1***.

Q3. Have you previously testified before the Public Utility Commission or in other judicial or administrative proceedings?

A3. Yes. I have testified before the Public Utility Commission in connection with the Petition of Otter Creek Solar LLC pursuant to Board Rule 5.508 seeking dispute resolution over an interconnection request with Green Mountain Power (PUC Case No. 8775), Battle Creek 1 Solar Project (PUC Case No. 17-3727-PET), the Warner Solar Project (PUC Case No. 19-0516), the Stark Solar Project (PUC Case No. 19-3236), the Investigation into Establishing Rates for Power Sold to the Purchasing Agent (PUC Case No. 8684) and the Chelsea Solar Project (PUC Case No. 17-5024-PET). I have also provided testimony with respect to the Otter Creek 1 Solar Project (PUC Case No. 8797), the Otter Creek 2 Solar Project (PUC Case No. 8798) and the Otter Creek 3 Solar Project (PUC Case No. 20-0253).

Q4. What is the purpose of your testimony?

A4. This testimony introduces an amended site plan and supporting materials for the Apple Hill Solar Project (the "Project"), and it introduces supplemental testimony being provided by Jim McClammer, Ian Jewkes and Mark Kane. In addition, my testimony addresses compliance with the following Section 248(b) criteria: need for present and future demand for service (30 V.S.A. § 248(b)(2)), system stability and reliability (30 V.S.A. § 248(b)(3)), economic benefit to the state (30 V.S.A. § 248(b)(4)), transportation (10 V.S.A. § 6086 (a)(5)), educational services (10 V.S.A. § 6086 (a)(6)), municipal services (10 V.S.A. § 6086 (a)(7)), public investments (10 V.S.A. § 6086(a)(9)(K)), public health and safety (10 V.S.A. § 6086(a)(9)(K)), greenhouse gas impacts (30

1 V.S.A. § 248(b)(5)), least cost integrated plan (30 V.S.A. § 248(b)(6)), transmission system
2 impacts (30 V.S.A. § 248(b)(10)), and solar setbacks (30 V.S.A. § 248(s)).
3
4 **Q5. Please explain why an amended design for the Project was prepared.**
5 A5. The site on which the Project is proposed is owned by PLH LLC ("PLH") (the "PLH
6 Lands"). PLH also owns the adjoining lot, referred to herein as the "Orchard Lot." PLH has
7 commenced preparing the PLH Lands and the Orchard Lot for agricultural use. For the PLH
8 Lands, PLH is establishing a sheep farm with 50-100 sheep, the sheep from which will be used to
9 graze on related and third-party solar sites in Vermont, Connecticut and Massachusetts. PLH will
10 commence the clearing the PLH Lands for that agriculture use and is partnering with Fortunate
11 Ewe Farm. The PLH Lands will also have shelters for the sheep, and storage for hemp to be grown
12 on the Orchard Lot. Specifically, the shelters and storage will be established on the site at the
13 south end of the property. See ***Exhibit AHS-IJ-2***.
14 For the Orchard Lot, PLH or its lessee plans to grow hemp (a horticultural enterprise) on
15 the site (instead of the apples that currently grow on the site) and will register the site for the 2021
16 growing season with the Agency of Agriculture, Food and Markets. PLH has partnered with
17 BioSoil Farms Inc. to supply the seeds, other expertise and management. A storage house
18 approximately 30 feet tall is planned for the northern end of the Orchard Lot and will be used as a
19 storage house for the hemp along with storage capacity on the PLH Lands.
20 These agricultural activities (which are currently in process) are wholly unrelated to the
21 proposed solar use and are permitted as of right under Vermont law. As a result of PLH's activities
22 for the lands, the following amendments are being made to the petition for a CPG:

1. No clearing is required by the solar use;
2. Updated aesthetics testimony is included in the Fourth Supplemental Direct Prefiled Testimony of Mark Kane;
3. The solar project would use regular solar modules, not the all black variety, although the standard module generally is now almost all black (excluding the frame which is generally silver);
4. The racking system would be standard silver and not painted a matte-black color;
5. No additional plantings on the north side of the Orchard Lot are needed for visual screening and are removed from the plans;
6. No additional fencing would be installed as a result of the project. Fencing will already exist around the site as part of the agriculture use. Thus, the opaque mesh (black) screening material previously contemplated would not be installed;
7. Under the amended site plan, the total footprint for the Project is 6.8 acres.

Q6. What other experts has the Petitioner consulted with regarding the Project design?

A6. The Petitioner has worked closely with a number of local experts to make sure that the Project design continues to be in accordance with applicable Vermont rules regarding ground-mounted solar facilities. Those experts will also provide supplemental testimony and exhibits in this docket.

Q7. Will the amended Project adhere to all applicable local, state, and national design codes, regulations, and standards?

A7. Yes. If the Project is given approval to construct and operate, the Petitioner will engage the services of licensed civil, structural, electrical, and landscape engineers to produce a stamped and certified set of design documents for the Project that specifies exactly how it is to be constructed. All aspects of Project design will adhere to all applicable local, state, and national design codes, regulations, and standards.

Q8. Does the amended Project meet the Section 248 criteria listed in 30 V.S.A § 248(b)(1)(A)?

A8. The Project is not a natural gas transmission line, therefore 30 V.S.A. § 248(b)(1)(A) does not apply.

Q9. Does the amended Project satisfy the requirements of 30 V.S.A. § 248(b)(2)?

A20. As a renewable project with a plant capacity of 2.0 MW, the Project continues to be waived from evaluation under 30 V.S.A. § 248(b)(2) per State of Vermont Public Utility Commission Section 8007(b) order, dated August 31, 2010. Notwithstanding such waiver, the Project is required to meet the need for present and future demand for renewable energy in Vermont that cannot be provided through energy conservation or energy-efficiency programs. The 2016 Vermont Comprehensive Energy Plan and Electric Plan specifically requires the addition of new solar electricity generation facilities within the state whose RECs will be eligible to be applied to the renewable energy standards described in 30 V.S.A § 8001 through 30 V.S.A § 8010. The Project meets those requirements. Energy conservation programs and measures and energy efficiency and load management measures do not satisfy the renewable generation needs of the

1 State of Vermont that the Project provides. In addition, the Project will provide a range of
2 economic benefits to the State of Vermont, which includes employment opportunities (during
3 Project design, construction, and operation), municipal and state tax payments, and the
4 procurement of long-term low-cost renewable electricity for Vermont ratepayers. RECs generated
5 by the Project will be eligible to count towards meeting Vermont's mandated Renewable Energy
6 Standards goals, per 30 V.S.A § 8001 through 30 V.S.A § 8010. Electricity generated by the
7 Project may also help offset or avoid future transmission or distribution system upgrades that may
8 be required if the Project is not built and operated, and it will lessen the need for large transmission
9 projects that are proposed to bring renewable energy into ISO-NE from places such as Canada.

10 In the April 10, 2019 edition of the Boston Globe, Bill McKibben, the Schumann
11 Distinguished Scholar at Middlebury College, wrote:

12 > The basic stability of our planet has been upended in our lifetimes. Unless
13 > we act quickly, the changes we've seen so far will be mild by comparison
14 > with what comes next. Science … makes clear that without an emergency
15 > transition away from coal and gas and oil, we can expect such rapid shifts
16 > that our ability to maintain civilizations will be in doubt… Unless we goose
17 > the pace with government action, the world that we some day power with
18 > clean energy would be a dirty world, a broken planet.[1]

19 In 2018 the U.S. Administration released the complete *Fourth National Climate*
20 *Assessment* (the "Climate Report").[2] The Climate Report assesses the current and increasing

[1] https://www.bostonglobe.com/opinion/2019/04/10/the-clock-keeps-ticking-fight-save-planet/R8ZrHbh2yFqA8bNXe6wdjJ/story.html.

[2] *See*, https://nca2018.globalchange.gov/, USGCRP, 2018: *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II* [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA. doi:10.7930/NCA4.2018.

adverse impacts from the continued use of fossil fuels on the public health, safety and welfare of the United States, its citizens and residents, and individual areas of the United States:

> *Earth's climate is now changing faster than at any point in the history of modern civilization, primarily as a result of human activities. The impacts of global climate change are already being felt in the United States and are projected to intensify in the future—but the severity of future impacts will depend largely on actions taken to reduce greenhouse gas emissions.*

Climate Report, Vol. II, Overview at 2.

The *Climate Report* provides overwhelming evidence that the continued use of fossil fuels endangers the public health, safety and welfare of Vermont and the Northeastern United States:

> *Changing climate threatens the health and well-being of people in the Northeast through more extreme weather, warmer temperatures, degradation of air and water quality, and sea level rise. These environmental changes are expected to lead to health- related impacts and costs, including additional deaths, emergency room visits and hospitalizations, and a lower quality of life. Health impacts are expected to vary by location, age, current health, and other characteristics of individuals and communities.*

Climate Report, Vol. II, Ch. 18, at 117.

With every kilo-watt hour of electricity consumed in Vermont, more carbon dioxide is pumped into the air.

The continued injection of carbon-dioxide into the atmosphere from fossil-fuel electricity production that the Project would otherwise displace harms the public health, safety and welfare., establishing a clear need for the Project. *See, e.g.*, Climate Report Chapter 14, KM1 and KM2:

> The health and well-being of Americans are already affected by climate change, with the adverse health consequences projected to worsen with additional climate change. ***Climate change affects human health by altering exposures to heat waves, floods, droughts, and other extreme events; vector-, food- and waterborne infectious diseases***; changes in the quality and safety of air, food, and water; and stresses to mental health and well-being.... People and communities are differentially exposed to hazards and disproportionately

> affected by climate-related health risks. Populations experiencing greater health risks include children, older adults, low-income communities, and some communities of color.

(emphasis added.)

The World Health Organization has stated that: "Changes in infectious disease transmission patterns are a likely major consequence of climate change." [3]

As the Climate Report establishes:

> Reducing greenhouse gas emissions would benefit the health of Americans in the near and long term. By the end of this century, thousands of American lives could be saved and hundreds of billions of dollars in health-related economic benefits gained each year under a pathway of lower greenhouse gas emissions.

See, Climate Report, Chapter 14, KM4.

> Current and future emissions of greenhouse gases, and thus emission mitigation actions, are crucial for determining future risks and impacts of climate change to society.... Climate change is projected to significantly damage human health, the economy, and the environment in the United States, particularly under a future with high greenhouse gas emissions.... Research supports that early and substantial mitigation offers a greater chance of avoiding increasingly adverse impacts.

See, Climate Report, Chapter 29 at 1348.

Katharine Hayhoe, a climate scientist at Texas Tech and an author of the Climate Report has explained in the March 18, 2020, New York Times:[4]

> When we burn fossil fuels for energy, in addition to releasing greenhouse gases, we're adding pollution to the air. And research has shown that air pollution kills. A study published this month suggests that air pollution is responsible for 8.8 million deaths each year.
>
> Even worse, air pollution makes people more susceptible to respiratory illness. A look at the SARS epidemic in China in the past found that patients from regions with high air pollution were "twice as likely to die from SARS" compared to patients form regions with cleaner air.

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[3] https://www.who.int/globalchange/climate/summary/en/index5.html.

[4] https://www.nytimes.com/2020/03/18/climate/nyt-climate-newsletter-coronavirus.html.

Thus, Dr. Hahyoe said, climate change is a "threat multiplier" that makes many of our problems worse.

Q10. Will the amended Project adversely affect system stability and reliability? (30 V.S.A. § 248(b)(3))

A21. No. The Project interconnection process has been described in detail in Brad Wilson's prefiled testimony in this docket. The interconnection of the Project is not changing from that described in ***Exhibit AHS-ECOS-5***. The amended plan does not change how or where the Project interconnects to the electric grid.

Q11. Does the Project satisfy the criteria of 30 V.S.A. § 248(b)(4)?

A11. As a solar facility under the Standard Offer program with a plant capacity of 2.0 MW, the Project is waived from evaluation under this criterion per State of Vermont Public Utility Commission Section 8007(b) order, dated August 31, 2010. Notwithstanding such waiver, the Project will provide a range of economic benefits to the State of Vermont, which includes employment opportunities (during Project design, construction, and operation), municipal and state tax payments, and the procurement of long-term low-cost renewable electricity for Vermont ratepayers. RECs generated by the Project will be eligible to count towards meeting Vermont's mandated Renewable Energy Standards goals, per 30 V.S.A § 8001 through 30 V.S.A § 8010. Electricity generated by the Project may also help offset or avoid future transmission or distribution system upgrades that may be required if the Project is not built and operated, and it will lessen the need for large transmission projects that are proposed to bring renewable energy into ISO-NE from places such as Canada.

There are economic impacts generated by both the construction and operation of the project, including:

- **Direct impacts** representing the short-term construction labor and materials used on the project site, as well as long-term plant workers and supplies needed to maintain the facility;
- **Indirect impacts** representing the industries in Vermont that supply the materials needed to construct and operate the project; and
- **Induced impacts** representing the activity generated by employees re-spending their wages within the Vermont economy.

Further, the Project will generate additional positive economic benefits for Vermont residents through (i) certain unquantified benefits and (ii) downward pressure on power supply costs. The Project will provide other key benefits to ratepayers in Vermont. Firstly, the Project provide a social and environmental benefit in avoided CO2 emissions. Numerous Vermont policies demonstrate the value of the reduction of greenhouse gas emissions. The emissions reductions provided by the Project are clearly of economic value to the State. Secondly, the power purchase agreement will act as a hedge against wholesale market volatility by including a long-term, stably priced contract over a multi-year timeframe. Lastly, Vermont ratepayers will benefit from the downward pressure the Project will place on wholesale prices for energy, capacity, and perhaps eventually RECs. By displacing climate-destroying fossil fuel, it will lower electricity and other costs to ratepayers.

Q12. Does the amended Project have an undue adverse effect on historic sites? (30 V.S.A. § 248(b)(5))

A12. No. None of the changes in the revised Project design would result in different conclusions for this criterion than those found in the original testimony of Scott Mapes and the conclusions reached by the Vermont Division of Historic Preservation ("DHP"). The amended site plan sits within the same location on the Project property that was originally reviewed by the Vermont Division of Historic Preservation and determined to have no potential for onsite archaeological resources. Those same conclusions apply to the revised site plan. There are no adjacent or nearby properties on the state historic register that would be affected by the Project.

Q13. Does the amended Project have an undue adverse effect on the public health and safety? (30 V.S.A. § 248(b)(5))

A13. No. The Project would continue to not have an undue adverse effect on the public health and safety. None of the changes in the revised Project design would result in different conclusions for this criterion than those found in Brad Wilson's prefiled testimony. The revised Project remains a ground-mounted solar PV installation. The revised site plan for the Project does not create any waste or other emissions that would be harmful to the public health and safety. The revised site plan for the Project will be designed to follow all applicable safety codes and design standards, and the revised site plan for the project will continue to include safety and security measures designed to discourage access to the site by unauthorized/untrained members of the public.

Q14. Does the Project meet the Section 248 criteria listed in 30 V.S.A. § 248(b)(6)?

A14. The Project is a non-utility renewable energy generation facility with a plant capacity of 2.0 MW, and as such is not subject to the criteria in section 248(b)(6) per State of Vermont Public Utility Commission Section 8007(b) order, dated August 31, 2010.

Q15. Is the Project in compliance with the 2016 Vermont Comprehensive Energy Plan and Electric Plan? (30 V.S.A. § 248(b)(7)).

A15. The Project is a non-utility renewable energy generation facility with a plant capacity of 2.0 MW, and as such is not subject to the criteria in section 248(b)(7) per State of Vermont Public Utility Commission Section 8007(b) order, dated August 31, 2010. Notwithstanding such waiver, the Project complies with the 2016 Vermont Comprehensive Energy Plan and Electric Plan. The 2016 Vermont Comprehensive Energy Plan and Electric Plan specifically require the addition of new solar electricity generation facilities within the state whose RECs will be eligible to be applied to the renewable energy standards described in 30 V.S.A § 8001 through 30 V.S.A § 8010. The Project's RECs meet those requirements. The Executive Summary of the CEP states:

> This CEP embraces a different vision: a distributed energy future in which a significant portion of Vermont's energy is produced near where it is consumed, and which is shaped by many coordinated actions by distributed energy users, rather than through singular central control. This alternate vision is possible thanks to the increasing availability of cost-effective distributed electric generation technology, such as solar PV.

The CEP's vision is of "a distributed energy future," which means local, in-state energy facilities should be used to meet Vermont's energy demands. See also, CEP at 196 ("Vermont's current regulatory and policy framework is designed to promote the development of distributed energy resources, and the planning process is likewise designed to capture value from DER.")

1 The Project indisputably helps to meet the goals of the CEP, which calls for meeting
2 Vermont's long-term energy needs largely with in-state renewable resources.
3 The CEP proposes that Vermont obtain 40% of its total energy needs (after reducing energy
4 consumption per capita) from renewable energy sources by 2035, and 90% from renewable sources
5 by 2050. Achievement of those goals will require the deployment of substantial volumes of
6 renewable electricity generation. The CEP's strategies with respect to solar include increasing the
7 amount of solar PV generation in Vermont's power portfolio. The Project is also consistent with
8 other thematic goals (e.g., in-state generation, diversity of supply, grid resiliency, low emissions)
9 outlined in the CEP.
10 Moreover, there is clearly "good cause to permit the proposed action." Last November, a
11 new report by 11,258 scientists in 153 countries from a broad range of disciplines warned that the
12 planet "clearly and unequivocally faces a climate emergency."[5] The Project would displace the
13 energy produced by climate-destroying fossil fuels. That alone establishes good cause for this
14 criterion, and that the Project is consistent with the CEP.
15
16 **Q16. Does the Project meet the Section 248 criteria listed in 30 V.S.A § 248(b)(9)?**
17 A16. The Project is not a waste-to-energy facility, therefore 30 V.S.A. § 248(b)(9) and related
18 sub-criteria do not apply.
19

[5] "*More than 11,000 scientists from around the world declare a 'climate emergency.'*" Washington Post, November 5, 2019, https://www.washingtonpost.com/science/2019/11/05/more-than-scientists-around-world-declare-climate-emergency/.

1 **Q17. Can the amended Project be served economically by existing or planned transmission**
2 **facilities without undue adverse effect on Vermont utilities or customers? (30 V.S.A. §**
3 **248(b)(10))**
4 A16. Yes. The Project would continue to satisfy the criteria of being served economically by
5 existing or planned transmission facilities without undue adverse effect on Vermont utilities or
6 customers. None of the Project revisions affect the interconnection. The system upgrades that are
7 required by GMP for safe and reliable project interconnection will be fully paid for by the
8 Petitioner, so there will be no economic burden on Vermont utilities or customers for those
9 upgrades.
10
11 **Q17. Does the amended Project meet the Section 248 criteria listed in 30 V.S.A. §**
12 **248(b)(11)?**
13 A17. The Project is not a woody biomass facility, therefore 30 V.S.A. § 248(b)(11) and related
14 sub-criteria does not apply.
15
16 **Q18. Will the amended Project inject waste materials or toxic substances into ground water**
17 **or wells? (10 V.S.A. § 6086(a)(1)(B))**
18 A40. No. The Project will meet all applicable health and Vermont Department of Environmental
19 Conservation regulations regarding the disposal of wasters and will not involve the injection of
20 water materials or any harmful toxic substances into groundwater or wells. Waste generated
21 during construction and operation of the Project will be handled and disposed of in accordance
22 with applicable regulations. The equipment pad that supports the equipment sits atop a fabricated

concrete floor that includes a secondary transformer oil containment system built into the base that will ensure that the Project will not inject any materials into the ground water.

Q19. Does the amended Project design consider water conservation and incorporate multiple use or recycling where technically and economically practical? (10 V.S.A. § 6086(a)(1)(C))

A19. As a renewable project with a plant capacity of 2.0 MW, the Project is waived from evaluation under this criterion per State of Vermont Public Utility Commission Section 8007(b) order, dated August 31, 2010. Notwithstanding such wavier, the Project design considers water conservation and incorporates multiple use or recycling where technically and economically practical. It is expected that no water will be required for the site preparation or construction of the Project other than a minimal amount that may be required for dust control. The only water expected to be required during the operation of the Project would be for occasional module surface cleaning, which would take place less than annually, on average. It is unusual for solar panels in the Vermont area to require washing since mother nature typically provides the precipitation necessary to wash or clean the solar panels, so water required to wash the modules would only be needed during periods of drought. The water required for these activities is minimal and could be accomplished either by bringing it in by truck, constructing a well on site or connecting to the Town's water system. In any case, since the Project is not expected to require any regular water use and whatever use there is would be minimal, no significant issues are raised by the Project with respect to water supply.

Q20. Does the amended Project have sufficient water available for the reasonably foreseeable needs of the subdivision or development? (10 V.S.A. § 6086(a)(2))

A20. As a renewable project with a plant capacity of 2.0 MW, the Project is waived from evaluation under this criterion per State of Vermont Public Utility Commission Section 8007(b) order, dated August 31, 2010. Notwithstanding such waiver, the Project has sufficient water available for the reasonably foreseeable needs of the subdivision or development. It is expected that no water will be required for the site preparation or construction of the Project other than a minimal amount that may be required for dust control. The only water expected to be required during the operation of the Project would be for occasional module surface cleaning, which would take place less than annually, on average. It is unusual for solar panels in the Vermont area to require washing since mother nature typically provides the precipitation necessary to wash or clean the solar panels, so water required to wash the modules would only be needed during periods of drought. The water required for these activities is minimal and could be accomplished either by bringing it in by truck, constructing a well on site or connecting to the Town's water system. In any case, since the Project is not expected to require any regular water use, it would not place any material additional demand, strain, or burden on existing water supply in the vicinity. Therefore, the Project will not result in any undue adverse impact on existing water supplies

Q21. Will the amended Project cause an unreasonable burden on an existing water supply if one is to be utilized? (10 V.S.A. § 6086 (a)(3))

A22. As a renewable project with a plant capacity of 2.0 MW, the Project is waived from evaluation under this criterion per State of Vermont Public Utility Commission Section 8007(b)

order, dated August 31, 2010. Notwithstanding such waiver, as discussed above in the context of 10 V.S.A. § 6086(a)(2), the Project will not cause an unreasonable burden on an existing water supply if one is to be utilized. Therefore, the Project will not result in any undue adverse impact on existing water supplies

Q22. Will the amended Project cause unreasonable congestion or unsafe conditions with respect to use of the highways, waterways, railways, airports and airways, and other means of transportation existing or proposed? (10 V.S.A. § 6086 (a)(5))

A22. No. The Project would continue to not cause unreasonable congestion or unsafe conditions with respect to use of the highways, waterways, railways, airports and airways, and other means of transportation existing or proposed. Under the amended site plan, the projected traffic patterns related to the Project remain the same as originally described. None of the changes in the revised Project design would result in different conclusions for this criterion than those found in Brad Wilson's testimony in this docket.

Q23. Will the amended Project cause an unreasonable burden on the ability of the municipality to provide educational services? (10 V.S.A. § 6086 (a)(6))

A23. As a renewable project with a plant capacity of 2.0 MW, the Project is waived from evaluation under this criterion per State of Vermont Public Utility Commission Section 8007(b) order, dated August 31, 2010. Notwithstanding such waiver, the Project does not contribute to bringing new families with additional students to the area. The Project will have no impact on area educational services.

Q24. Does the amended Project place an unreasonable burden on the ability of the local governments to provide municipal or governmental services? (10 V.S.A. § 6086 (a)(7))

A24. No. The Project would continue to not place an unreasonable burden on the ability of the local governments to provide municipal or governmental services. None of the changes in the revised Project design would result in different conclusions for this criterion than those found in Brad Wilson's prefiled testimony in this docket. The modifications to the site plan do not create a need for municipal sewer or water services, and the Project continues not to require above average use of police, fire, or rescue services.

Q25. Does the amended Project unnecessarily or unreasonably endanger the public or quasi-public investment in adjacent governmental and public utility facilities, services, and lands, or does the Project materially jeopardize or interfere with the function, efficiency, or safety of the public's use or enjoyment of or access to the facility, service, or lands? (10 V.S.A. § 6086(a)(9)(K))

A25. No. The Project would continue to not unnecessarily or unreasonably endanger the public or quasi-public investment in adjacent governmental and public utility facilities, services, and lands, or materially jeopardize or interfere with the function, efficiency, or safety of the public's use or enjoyment of or access to the facility, service, or lands. None of the changes in the Project design would result in different conclusions for this criterion than those found in Brad Wilson's testimony in this docket. The revised site plan will continue to have no adverse effect on adjacent public investments, such as Route 7, Willow Road, or the local GMP distribution circuit.

1

2 **Q26. Does this conclude your testimony?**

3 A26. Yes.

4

EXHIBIT AHS-CL-1

Resume of Chris Little

CHRISTOPHER M. LITTLE

PROFESSIONAL EXPERIENCE

Ecos Energy, Minneapolis, MN *March 2008 to Present*

Vice President and Director of Development

- Business development for new PV solar facilities
- Site selection and acquisition of land for PV solar facilities
- Energy production forecasting for all planned and operating assets
- Project feasibility and pro-forma modeling
- Land use entitlements for planned facilities
- Arrange financing and manage closings for all company assets
- Oversee day to day management of company assets, including operating PV plants
- Management of all company employees

Key Accomplishments

- Led the development and construction of 21 solar generating facilities totaling over 45 megawatts
- Financed over $100 million in solar PV assets

Ryland Homes, Eden Prairie, MN *July 2006 – March 2008*

Land Acquisition Manager - Negotiate general terms and conditions for the acquisition of raw land and finished lots for new home construction.

Colliers Turley Martin Tucker, Minneapolis, MN *February 2005 – July 2006*

Associate, Land Brokerage Services - Provided land acquisition and disposition services to land owners and buyers.

We Energies, Milwaukee, WI *July 1999 – February 2005*

Right of Way Agent - Responsible for land/site acquisition and land use entitlements for company assets including communication towers, gas regulator stations, substations and power plants.

EDUCATION

University of Wisconsin, Madison, WI – Bachelor of Business Administration, May 1999
Major – Real Estate and Urban Land Economics

STATE OF VERMONT
PUBLIC UTILITY COMMISSION

Petition of Apple Hill Solar LLC for a certificate of public good, pursuant to 30 V.S.A. § 248, authorizing the installation and operation of the "Apple Hill Project" consisting of a 2.0 MW solar electric generation facility to be located at 1133 Willow Road in Bennington, Vermont	)	Docket No. 8454

PREFILED DIRECT TESTIMONY AND EXHIBITS OF JIM MCCLAMMER

EXHIBITS

Exhibit AHS-JM-1	Résumé of Jim McClammer

Q1. Please state your name, occupation and business address.

A1. My name is Jim McClammer. I am an Environmental Consultant and President of Connecticut Valley Environmental Services, Inc. ("CVES"). My business address is 391 River Road, Charlestown, New Hampshire 03603.

Q2. Please describe your educational background and professional experience.

A2. I have an undergraduate degree in biology and advanced degrees in botany, geology, ecology, and evolution. I have been certified by the United States Army Corps of Engineers as a Wetland Delineator (ACOE WDCP # 93MD0410014A), and by the state of New Hampshire as a Certified Wetland Scientist (Wetland Scientist #003). I have been employed as a Botanist by the United States Department of Agriculture in Washington D.C., and as the Senior Environmental Scientists by the engineering firm Dufresne-Henry, Inc. in Springfield, Vermont. I have continuously practiced in the State of Vermont since 1989. Attached hereto as ***Exhibit AHS -JM-1*** is a copy of my resume, which sets forth my educational background and professional experience.

Q3. **Have you previously testified before the Public Utility Commission or in other judicial or administrative proceedings?**

A3. Yes. I was recently qualified as a natural resource expert and provided expert testimony in cases before the Land Court in Boston, Massachusetts and the General Court and Superior Court in New Hampshire. I have also provided testimony on environmental impacts related to the Champlain Gas Pipeline and Bennington Bypass in Vermont and the W.E. Dailey Rock Quarry in Hoosick, New York. I have provided testimony to the Vermont Public Utility Commission for other solar projects, including the Battle Creek 1

Solar Project (PUC Case No. 17-3727-PET), the Warner Solar Project (PUC Case No. 19-0516) and the Stark Solar Project (PUC Case NO. 19-3236).

Q4. What is the purpose of your testimony?

A4 I was retained by Apple Hill Solar LLC (the "Petitioner") to assess potential effects of the Apple Hill Project (the "Project") on existing natural resources. My testimony specifically describes possible effects on the following statutory criteria: streams (10 V.S.A. § 6086(a)(1)(E)), shorelines (10 V.S.A. § 6086(a)(1)(F)), outstanding resource waters (30 V.S.A. § 248(b)(8)), floodways (10 V.S.A. § 6086(a)(1)(D)), wetlands (10 V.S.A. § 6086(a)(1)(G)), rare and irreplaceable natural areas (10 V.S.A. § 6086(a)(8)), necessary wildlife habitat (10 V.S.A. § 6086(a)(8)(A)), and rare, threatened and endangered species (10 V.S.A. § 6086(a)(8)(A)).

Q5. What work have you conducted with respect to the Project?

A5. I evaluated the proposed amendment to the Project as related to the suite of environmental resource mentioned in A4 above. I performed a desktop review of the Project Site and surrounding area, conducted a site visit of the proposed Project Site on March 22, 2020 and reviewed all of the testimony and reports that Ms. Dori Barton and her associates at Arrowwood Environmental, LLC have filed in these proceedings. I also reviewed plans converting the existing site to agricultural use.

Q6. Is the Project located adjacent to or near a stream?

A6. No. Based upon my review of the Vermont Natural Resources Atlas and my own visit to the Project Site, there are no perennial streams on or near the Project Site.

Q7. Will the Project have an undue adverse impact on streams?

A7. The Project will not result in an adverse impact on streams. As there are no perennial streams or other stream resources on or near the Project Site, I conclude that the Project does not raise any significant issues with respect to streams.

Q8. Is the Project located adjacent to or near a shoreline?

A8. No. Based upon my review of the Vermont Natural Resources Atlas, Google Earth maps, and my own visit to the Project area, the Project Site is not located on or near a shoreline.

Q9. Will the Project have an undue adverse impact on shorelines?

A9. The Project will not result in an adverse impact on shorelines. As there are no shorelines on or near the Project Site, I conclude that the Project does not raise any significant issues with respect to shorelines.

Q10. Is the Project located in any segment of waters of the state that has been designated as outstanding resource waters by the Agency of Natural Resources?

A10. No. The Project is not located on or near any segment of waters designated as outstanding resource waters.

Q11. Will the Project have an undue adverse impact on outstanding resource waters of the state?

A11. The Project will not cause an adverse impact to Outstanding Resources Waters ("ORWs") because there are no designated ORWs on or near the Project site. The nearest designated ORWs are located more than eleven miles from the Project site, at the Batten Kill River in the towns of East Dorset and Arlington, and at Pike's Falls/Ball

Mountain in the Town of Jamaica. These designated ORWs are not close enough to be affected by the Project. As such, I conclude that the Project does not raise a significant issue with respect to ORWs.

Q12. Will the Project result in an undue adverse impact on floodways?

A12. The Project will not result in an adverse impact on floodways. Based on my review of the Vermont Natural Resource Atlas and personal knowledge of the Project vicinity, the Project Site is not located in a floodway or a floodway fringe. As such, I conclude that the Project does not raise any significant issues with respect to floodways.

Q13. Is the Project located on or near wetlands?

A13. No. There are no wetlands (significant or otherwise) on or adjacent to the Project Site. Arrowwood Environmental identified and mapped a significant (Class II) wetland approximately 150 feet southwest of the Project Site on May 30, 2014 (see Prefiled Testimony of Dori Barton, dated February 23, 2015).

Q14. Will the Project have an undue adverse impact on wetlands?

A14. No. The proposed Project will not result in an adverse impact on any wetland nor the 50-foot upland buffer of the significant wetland located southwest of the Project Site. As such, I conclude that the Project does not raise any significant issue with respect to wetlands.

Q15. Will the Project have an undue adverse impact on rare and irreplaceable natural areas (RINA)?

A15. There is no natural area on or near the Project Site that qualifies as a rare and irreplaceable natural area, therefore there will be no adverse impact on these resources by

the Project. As such, I conclude that the Project does not raise any significant issue with respect to RINA.

Q16. Will the Project have an undue adverse impact on necessary wildlife habitat?

A16. There is no necessary wildlife habitat on or near the Project Site; therefore, the Project does not have the potential to cause an adverse impact on necessary wildlife habitat. Necessary wildlife habitat means concentrated habitat, which is identifiable and is demonstrated as being decisive to the survival of a species of wildlife at any period in its life, including breeding and migratory periods (10 V.S.A § 6001(12)). CVES researched the deer wintering area maps on the ANR Natural Resource Atlas and found that the closest one is more than 2.5 miles from the Project Site. The site visit confirmed that there are no deer wintering or black bear productive habitats on the Project Site. Also, the Agency of Natural Resources' BioFinder does not show the Project Site within a priority interior forest block nor a priority connectivity block. As such, I conclude that the Project does not raise any significant issues with respect to necessary wildlife habitat.

Q17. Will the Project have an undue adverse impact on rare, threatened or endangered (RTE) <u>animal</u> species?

A17. Ms. Dori Barton in prefiled testimony, submitted on February 23, 2015, stated after reviewing the NNHP digital database and corresponding with Mr. Scott Darling, VT Fish and Wildlife, that: 1) " there are no records or occurrences" of RTE animal

species within approximately 1 mile of the Project Site and 2) the Project is not located within the range of the Indiana Bat.

Q18. Will the Project have an undue adverse impact on rare, threatened or endangered (RTE) plant species?

A18. No. Plants of two RTE species, white arrow-leaved aster (*Symphyotrichum urophyllum*) and nimblewill muhly (*Muhlenbergia schreberi*) were identified on the Project Site by Arrowwood Environmental. However, the site is currently being converted to agricultural use, and it is likely logging, stumping, grubbing, grading and revegetating the site will destroy these plants.

If any RTE plants are found on the Project Site prior to construction of the solar array, direct impact to these plants will be avoided during construction by either covering the plants with matting, or placing flagging or fencing around the plants. Any RTE plant that cannot be avoided during construction will be transplanted to a conservation area.

Q19. Does this conclude your testimony?

A19. Yes. This concludes my testimony at this time.

Exhibit AHS-JM-1

Resume of Jim McClammer

Professional Profile of JAMES U. McCLAMMER, JR.

Specialized Professional Competence

Natural Resource Mapping and Permitting
Federal and State Environmental Assessment Procedures
Federal, State and Local Land Use Regulations
Wetland Delineation, Evaluation, Mitigation and Permitting
Section 106 Coordination, Determination of Effect & Preparation of MOAs
National Environmental Policy Act Compliance Procedures
National Pollution Discharge Elimination System Compliance Procedures
Fluvial Geomorphologic Evaluations and Restorations

Related Expertise

Design of Habitat Enhancement, Restoration and Conservation Plans
Delineation of Wetlands based on Federal, State and Local Wetland Definitions
Permitting of Wetland Impacts
Assessment of Wetland and Upland Functions and Values
Design, Implementation and Monitoring of Compensatory Mitigation Projects
Habitat Evaluations and Wildlife Inventories
Storm Water Pollution Prevention Plans

Representative Assignments

Expert Witness Testimony; Montpelier, VT, Boston, MA, Concord, NH. Expert witness testimony for the Vermont Natural Resources Council before the Public Service Board regarding the scientific validity of the environmental review undertaken by the Champlain Natural Gas Pipeline. Testimony before the Massachusetts Trial Court (Land Court) on the intent and success of post-construction land restoration activities. Testimony before New Hampshire Superior Court and General Court on water quality and wetland science.

Resource Consultant for Major Commercial Developments in Keene, NH. Projects include C&S Wholesale Grocers Inc., Monadnock Center, Black Brook Trust, Smith Industries Medical Systems, IMTEC, FedEx, Mountainview Subaru, and New Hampshire Gas Corporation. Alternatives analyses, wetland delineation and evaluation, preparation of mitigation plans for wetland and floodplain impacts, and design, implementation and monitoring of restoration and construction projects.

Lebanon Municipal Airport, Lebanon, NH. Projects include the preparation of a base map, determination of project feasibility, wetland delineation and permitting for condominium hangars on airport property. Preparation of a base map, wetland assessment and preliminary design for Phase 1B of the Airport Business Park. Previous projects include the preparation of the Environmental Assessment for airport improvement projects that evaluated the full-length reconstruction of Runway 18-36, improvement of the Runway Safety Areas on Runway 18-36, and the reconstruction and extension of Taxiway Alpha. Preparation of a storm water pollution prevention plan for the facility.

Environmental Assessments. Environmental Assessments in compliance with the National Environmental Policy Act and US Department of Transportation regulations for improvement projects at airports in Gardner, MA, Wiscasset and Fryeburg ME, and Lebanon, NH.

Enfield Water Wells; Enfield, NH. Design and permitting of two new production wells within the floodplain, floodway, and wetland system of the Mascoma River. Permitting to construct wells within State-designated prime wetlands. Wetland function and value assessment, corridor analyses, Hec-2 analysis of the floodplain and floodway, alternatives analyses and design of mitigation plans.

Growth Center Planning; Hinesburg, VT & Lebanon, NH. Wetland resource mapping within the Hinesburg town center for growth center planning, and within the Route 120 Corridor in Lebanon.

Section 106 Review; Claremont Municipal Airport; Claremont, NH. Coordination with the State Historic Preservation Officer, determination of effect on historic structures and evaluation of alternatives. Development of a mitigation plan in a Memorandum of Agreement between the Federal Aviation Administration and the New Hampshire State Historic Preservation Officer with concurrence from the Advisory Council on Historic Preservation.

Environmental Permitting; Gardner Municipal Airport; Templeton, MA. Wetland Delineation, Wetland Evaluation, Preparation of Environmental Notification Form, Notice of Intent for Wetland Impacts, and Environmental Assessment/ Environmental Impact Report for airport improvement projects. Design of storm water structures to avoid and minimize impacts to groundwater sources of municipal drinking water.

Site Assessments and Permitting for Utility-scale Solar Project in Vermont and Massachusetts. Wetland delineation and evaluation, endangered species survey, vernal pool evaluations, alternative analyses, mitigation plans, U.S. Army Corps of Engineers permits, and Vermont Wetland Program permits.

Railway Crossing Site Assessment; Shaftsbury, VT. Site assessment for railway crossing of Paran Creek; corridor analysis, wetland delineation and wetland evaluation, endangered species survey, alternative analysis, mitigation plan, U.S. Army Corps of Engineers application, Conditional Use Determination Application.

Site Assessment; Hoosic, NY. Site assessment for 100-acre consolidated mining operation; wetland delineation, mitigation measures; compensation plan, wildlife inventory, endangered species survey, wetland permits, restoration plan for depleted quarry.

Education

Ph.D. abd (Admitted to Candidacy), Ecology & Evolution, Yale University
M.Phil. and M.S., Biology, Yale University

M.S., Botany & Geology, and B.S., Biology & Botany, University of Maryland
In-Service Training, Botany, specifically Plant Taxonomy, National Arboretum, U.S. Department of Agriculture, Washington, D.C.

Experience

President, 1993-present. Connecticut Valley Environmental Services, Inc. Responsible for all aspects of data collection, data analysis, project design and permitting of impacts on natural and historic resources for projects in Maine, New Hampshire, Vermont, Massachusetts and New York. Permitted complex and often controversial projects. Designed and negotiated low-cost solutions to compensatory mitigation requirements.

Senior Environmental Scientist, 1996-1997. Dufresne-Henry, Inc. Springfield, VT and Portland, ME. Responsible for project compliance with Federal, state and local environmental laws, regulations, and executive orders for projects in VT, ME, NH, NY and MA. Wrote Environmental Assessments for compliance with the National Environmental Protection Act. Designed projects for compliance with federal land use regulations (e.g., Federal Aviation Administration Order 5050.4a and Army Corps of Engineers Wetland rules) as well as state and local statutes and regulations.

Principal, 1989-1993. Connecticut Valley Environmental Services, Charlestown, New Hampshire. Responsible for listed species surveys, wetland delineations, expert witness testimony, and permitting of wetland impacts.

Affiliations

Member of New Hampshire Association of Natural Resource Scientists
Certified Wetland Delineator by the U. S. Army Corps of Engineers
Certified Wetland Scientist # 003 by the State of New Hampshire.

Community Service

Commissioner, New Hampshire Depart. of Transportation, Right-of-Way Commission
President and Commissioner, Connecticut River Joint Commissions (CRJC)
Chair, CRJC Work Group on Federal Energy Regulatory Commission Relicensing of Connecticut River Dams
Chair, New Hampshire Connecticut River Valley Resource Commission
State Representative, New Hampshire Legislature, 2008-2010. Resources, Recreation & Development Committee.
Practicum Advisor, Antioch New England Graduate School, Keene, NH.
Steering Committee Member, Compensatory Mitigation Regulations, NH Department of Environmental Services
Participant, Water Quality Standards Advisory Committee, New Hampshire Department of Environmental Services
Commissioner, Upper Valley (NH & VT) Lake Sunapee Regional Planning Commission
Board Member, Charlestown Planning Board

CERTIFICATE OF SERVICE

I, Michael Melone, certify that on March 23, 2020, I forwarded copies of the *Petitioner's Amendment to Petition* to the service list below by email:

Vermont Public Utility Commission
ATTN: Judith Whitney, Clerk
112 State Street, Drawer 20
Montpelier, VT 05620

Vermont Agency of Natural Resources
ATTN: Donald Einhorn
1 National Life Drive
Davis Building, 2nd Floor
Montpelier, VT 05620

Vermont Department of Public Service
ATTN: James Porter
112 State Street, 3rd Floor
Montpelier, VT 05620

L. Brooke Dingledine
VDM Law
172 North Main Street
Suite 301
Barre, VT 05641

Dated this 23rd day of March 2020

By:

Michael Melone

STATE OF VERMONT
PUBLIC UTILITY COMMISSION

Petition of Apple Hill Solar LLC, pursuant to 30 V.S.A. § 248, for a certificate of public good authorizing the installation and operation of the "Apple Hill Solar Project," a 2.0 MW solar electric generation facility located on Willow Road in Bennington, Vermont	)))))))	Case No. 8454

SUPPLEMENTAL PREFILED DIRECT TESTIMONY
OF IAN JEWKES
ON BEHALF OF PETITIONER

March 23, 2020

EXHIBITS

Exhibit AHS-IJ-2	Project Site Plans

Q1. Please state your name, occupation, and business address.

A1. My name is Ian A. Jewkes. I am the President of Krebs and Lansing Consulting Engineers, Inc., State of Vermont Professional Engineer #7200. My business address is 164 Main Street, Suite 201, Colchester, Vermont 05446.

Q2. What is the purpose of your testimony?

A4. My testimony introduces the site plan and civil engineering details for the revised Apple Hill Solar Project (the "Project"), a 2.0 MW photovoltaic electric generation facility located in Bennington, Vermont. In addition, my testimony reaffirms my initial conclusions with respect to the Project's potential impacts on the following statutory criteria: air and water purity (30 V.S.A. § 248(b)(5)), soil erosion (10 V.S.A. § 6086(a)(4)), primary agricultural soils, waste disposal (10 V.S.A. § 6086(4)), water conservation (10 V.S.A § 60860(a)(1)(C)), and noise (30 V.S.A. § 248(b)(5) and 10 V.S.A. § 6086(a)(8)) and I conclude that there are no significant issues raised by the Project (as revised) with any of those statutory criteria.

Q3. What work have you conducted with respect to the Project?

A3. We have worked with the Petitioner to develop the site plan and civil engineering details. We have used information provided by the design team (engineering, electrical, environmental, etc.) and from our own surveying to assemble the final Project design. We have completed the erosion prevention and sediment control design and details necessary for the construction of the Project.

Q4. Please describe the recent changes to the design of the Project and the Project site plan.

A4. The overall design of the Project footprint is detailed in the included ***Exhibit AHS-IJ-2***. The solar project would use regular solar modules, not the all black variety, although the standard module generally is now almost all black (excluding the frame which is generally silver). The racking system would be standard silver and not painted a matte-black color. Additional plantings on the north side of the Orchard Lot are removed from the plans. No additional fencing would be installed as a result of the project. Fencing will already exist around the site as part of the agriculture use. Thus, the opaque mesh (black) screening material previously contemplated would not be installed. The updated plan showing the location of the proposed array and the state of the site taking into account the PLH agriculture activities is shown on ***Exhibit AHS-IJ-2***. Under the amended site plan, the total footprint for the Project is approximately 6.8 acres.

Q5. Please describe the site clearing work required for the Project.

A5. No clearing is required for the Project. The site on which the Project is proposed is owned by PLH LLC ("PLH") (the "PLH Lands"). PLH also owns the adjoining lot, referred to herein as the "Orchard Lot." PLH is in the process of establishing a sheep farm with 50-100 sheep. PLH is currently clearing the PLH Lands in connection with the establishment of the sheep farm.

Q6. Has the civil earthwork proposed for the Project changed?

A6. The project area of disturbance for the solar array, power runs and staging area is 9.4 acres. All of this area will be disturbed during construction to some extent. The site is currently being

cleared, grubbed, and planted for the agricultural operation. There will be general site work to install the solar module racking and underground conduit trenching. The existing grades throughout the majority of the project area will remain unchanged. The excavation associated with underground utility lines, and the equipment pad will change the ground elevations. There could also be excavation required for any racking post refusals encountered in the solar array area. If a racking post cannot be driven into place a "Sonotube" type concrete foundation would be installed. The typical rate of refusal is typically 2% to 5% of the posts.

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Q7. Has the total much impervious area that will be added by the Project changed?

A7. The impervious area associated with the solar project will consist of approximately 1,100 square feet for the equipment pad, and approximately 446 square feet for equipment posts (0.25 square feet per post * 1785 posts). The total impervious area added for the solar project will be approximately 1,546 square feet = 0.04 acres.

Q8. Will the Project result in undue water or air pollution?

A8. No. The Project will still include a secondary transformer oil containment system which will protect the groundwater from the potential of contamination. The Project has no other components that have any potential for releasing harmful water or air pollutants. As such, I have concluded that no significant issues are raised by the Project with respect to air pollution.

Q9. Will the Project cause unreasonable soil erosion or reduction in the capacity of the land to hold water so that a dangerous or unhealthy condition may result?

A9. No. The implementation of the erosion prevention and sediment control measures consistent with the Vermont Standards & Specifications for Erosion Prevention and Sediment Control during construction and the establishment of vigorous permanent vegetative ground cover will ensure that the Project's lands will retain the ability to hold water. The Project continues to be designed in compliance with requirements of all applicable rules and regulations regarding erosion and stormwater control. As such, I have concluded that no significant issues are raised by the Project with respect to soil erosion or the capacity of the land to hold water.

Q10. How is stormwater runoff managed in the Project design?

A10. A low proportion of the Project area (less than 0.5%) will be made impervious. 0.04 acres of new impervious surface will be created within the 9.4-acre Project area of disturbance. Stormwater runoff will be treated at the source by having it flow across the vegetated Project site. This will provide ample opportunity for vegetative uptake and for the sediment to filter out of the stormwater runoff while it flows slowly across the grass/brush surface of the array field.

Q11. Will the project result in increased off-site stormwater runoff compared to the conditions with the agriculture use?

A11. No. The establishment of a vigorous permanent vegetative ground cover and the low proportion of impervious surface will ensure that no significant change in the stormwater runoff

from this site occurs. As such, I have concluded that no significant issues are raised by the Project with respect to stormwater runoff.

Q12. Will the Project require a construction stormwater permit?

A12. Yes. The Project will disturb approximately 9.4 acres of soil. The Appendix A Risk Evaluation for this site scores it as a "Moderate Risk" site. Therefore, it will need to be covered by a State of Vermont General Permit for Stormwater Runoff from Construction Sites (3-9020). This will include a site-specific Erosion and Sediment Control Plan that conforms to the Vermont Standards & Specifications for Erosion Prevention and Sediment Control. Given the fact that the unstabilized project area disturbed by the Project will be under 5 acres at a single time, it is unlikely that the ANR would request that an Individual State of Vermont Permit for Stormwater Runoff from Construction Sites be pursued in lieu of the General Permit. The Petitioner will obtain the appropriate construction stormwater permit from ANR for the Project prior to beginning Project construction. As such, I have concluded that no significant issues are raised by the Project with respect to stormwater runoff.

Q13. Will the Project require an operational stormwater permit?

A13. No. The 0.04 acres of impervious area proposed for the Project is well below the 1-acre operational permit threshold.

Q14. Does the amended Project site plan result in any new impacts to primary agricultural soils as defined by 10 V.S.A. § 6001(15)?

A14. No. The project area of disturbance consists of 6.2 acres of Stockbridge Loam soils and 3.2 acres of Georgia Loam soils. Neither of these soil types are Primary or Statewide Important soils.

Q15. Will the amended Project meet any applicable health and department of environmental conservation regulations regarding the disposal of any generated waste?

A15. Yes. Some solid (trash) waste will be generated during construction. All waste will be recycled or disposed of in accordance with all applicable health and environmental conservation regulations regarding the disposal of waste. Also, there will be no injection of waste materials or any harmful or toxic substances into the groundwater. As such, I have concluded that no significant issues are raised by the Project with respect to the disposal of generated waster.

Q16. Has the design of the amended Project considered water conservation, incorporated multiple uses or recycling where technically and economically practical, utilized the best available technology for such applications, and provided for continued efficient operation of these systems?

A16. Yes. No water will be required for the construction of this Project other than that used for dust control. The only water required during the operation of the Project would be for occasional module surface cleaning, which would take place less than annually, on average. As such, I have concluded that no significant issues are raised by the Project with respect to water conservation.

Q17. Will the Project use an existing water supply and does the Project have sufficient water available for its reasonably foreseeable needs?

A17. The Project will either use an existing water supply that would exist on site as part of the agriculture use or the water required during construction for dust control would be imported to the site by a water tank truck. Water required for module surface cleaning would either be imported to the site by small vehicles, pickup trucks, and 4-wheelers or use an existing water supply that would exist on site as part of the agriculture use. Since the Project will not require any regular water use, it will not place any additional demand, strain, or burden on existing water supply in the Project vicinity. Therefore, the Project will not result in any undue adverse impact on existing water supplies. As such, I have concluded that no significant issues are raised by the Project with respect to water supply.

Q18. Do the changes to the Project site plan result in any changes to the noise generated by the Project?

A18. No. There continue to be no significant issues are raised by the Project with respect to noise.

Q19. Does this conclude your testimony?

A19. Yes.