

6.0 VISUAL QUALITY AND SCENIC CHARACTER

Coplon Associates (CA) and Atlantic Resource Co, LLC (ARC) completed a visual impact assessment (VIA) for the Three Rivers Solar Power Project. The assessment looked at the potential visual and aesthetic impacts to scenic resources within the viewshed of the Project. The analysis concluded the Project would not have a significant impact on scenic or public resources as regulated under the Natural Resources Protection Act (NRPA) and Chapter 315 of the Maine Department of Environmental Protection Rules. Exhibit 6-1 includes the VIA report for the complete findings.



Exhibit 6-1

Three Rivers Solar Power Visual Impact Assessment

COPLON ASSOCIATES

Landscape Architecture and Planning

OCTOBER 1, 2019

Three Rivers Solar Power, LLC Attention: Dave Fowler, Director 89 Main Street Yarmouth, ME 04096 Via email: dfowler@swiftcurrentenergy.com

RE: Three Rivers Solar Project, T16MD, Maine-Visual Impact Assessment Report

Dear Dave,

As requested, Coplon Associates (CA) and Atlantic Resource Co, LLC (ARC) have completed a visual impact assessment (VIA) for the Three Rivers Solar Power project in Township 16 MD in Hancock County. The assessment looked at the potential visual and aesthetic impacts to scenic resources within the viewshed of the approximately 550 acre solar project. The assessment included landscape analysis to identify potential viewshed areas, a review of published data on visual resources, and onsite field analysis of scenic resources and potential viewsheds of the project area during May and June of 2019. The analysis concluded the proposed project would not have a significant visual impact on scenic or public resources as regulated under the Natural Resources Protection Act (NRPA) and Chapter 315 of the Maine Department of Environmental Protection Rules.

Please see the enclosed report for the complete findings. We very much appreciate the opportunity to provide this report and please contact us with any questions or for further information.

Sincerely,



Samuel Coplon, FASLA Principal | Coplon Associates

plas

Roger St. Amand, CSS, LSE, LPF, CPESC, PWS

VISUAL IMPACT ASSESSMENT REPORT

FOR

THREE RIVERS SOLAR PROJECT T16-MD HANCOCK COUNTY, MAINE

PREPARED FOR

THREE RIVERS SOLAR POWER, LLC.

OCTOBER 2019

Prepared by: Coplon Associates 112 Cottage Street Bar Harbor, ME 04609 207.288.4122 www.coplonassociates.com

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1. Introduction:

This Visual impact assessment (VIA) was prepared by Coplon Associates (CA) and Atlantic Resource Co, LLC (ARC) for the Three Rivers Solar Project in Township 16 MD in Hancock County. The purpose of this assessment is to determine the potential effect of the proposed solar installation on scenic resources as required under Maine Department of Environmental Protection (MDEP) requirements for approval under the Natural Resource Protection Act (NRPA) and the Site location of Development Act (SLODA).

Section 480-D. Standards of the NRPA requires that the project, "not unreasonably interfere with existing scenic, aesthetic, recreational or navigational uses." Section 14 of MDEP Chapter 375: *No Adverse Environmental Effect Standards of the Site Location of Development Act* requires that, "the developer has made adequate provision for fitting the development harmoniously into the existing natural environment and that the development will not adversely affect existing uses, scenic character, or natural resources in the municipality or in neighboring municipalities". The following VIA has been completed to determine whether the project will have an unreasonable effect on the aesthetic or scenic resources within the area. The assessment follows the standards and procedures as outlined in MDEP Chapter 315: *Assessing and Mitigating Impacts to Existing Scenic and Aesthetic Uses*.

2. Project Overview

Three Rivers Solar Power LLC is proposing to develop a solar panel installation on approximately 520 acres with associated substation in T16MD, an unorganized township located between Deblois and Eastbrook in Hancock County, Maine.

Approximately 1,100 acres were recently re-zoned for the project by the Maine Land Use Planning Commission (LUPC). This area of Title, Right and/or Interest ("TRI Area") is located west of the West Branch of the Narraguagus River, north and east of Colson Branch, and south of Mahanon Brook. The TRI area is mainly accessed by seasonal gravel roads from Eastbrook and Deblois. There are six proposed development areas within the TRI area. The solar panels will be installed on up to six areas of existing agricultural fields that have been or are being converted to commercial agriculture for wild blueberry production. These areas are labeled on the project plans as Areas 1 through 6. A proposed substation will be constructed in Area 6 near an existing Emera electrical transmission corridor

The solar installation will consist of rows of 39.17" wide by 77.6" tall solar panels stacked two high in portrait orientation, tilted to between 24°-30° at 180° Azimuth with 12'-24' distance between rows. Once constructed, each segment will stand approximately 10'-15' above existing grade. The panels are supported by two (2) steel columns that are driven into the ground. The six proposed development areas will be surrounded by fencing to prevent entry by people or wildlife.

Access to the site will be from the west via Molasses Pond Road in Eastbrook along existing gravel logging roads. The proposed solar farm is just east of the Bull Hill and Weaver wind turbine installation.

General Overview of Scenic and Cultural Landscape Area

The project area is located on the eastern edge of Hancock County in an area dominated by private commercial forestland. Other primary uses in the region include: commercial blueberry agriculture, peat mines, and wind power generation. The nearest community and population center are Eastbrook, Maine located approximately 6 miles to the west.

The landscape character of the larger region includes rolling hills interspersed with lakes, ponds, and rivers interrupted by occasional high ridges and peaks. Large wetland complexes, including Denbow Heath and Rock Dam heath lie to the east. The area consists of miles of gravel roads

used primarily for forest operations and agriculture. Within the last decade commercial wind power facilities and turbines have also been developed with associated access roads and infrastructure.

The landscape within the project area or TRI area is centered on Colson Branch Hill; average elevation is 266' above sea level situated on a small knoll above the confluence of three drainages: Mahanon Brook, the West Branch, and Colson Branch of the Narraguagus River. Area 1 of the



project is located on Colson Branch Hill, with the Areas 2 through 6 to the south and west.

3. Methodology:

The visual impact assessment followed accepted practices and methods for determining the potential effect of the project on scenic resources of state or national significance (SRSNS) The MDEP Chapter 315 and 375 Rules provide the basis for defining scenic resources and the process for evaluating potential impacts to assess. Qualified landscape architects and natural resource professionals reviewed the region for potential scenic resources. A viewshed analysis of the project site was completed to identify public vista points that may potentially have views of the project.

Viewshed Analysis: The potential project visibility or viewshed was assessed by ARC using Geographic Information System (GIS) mapping software from ESRI. ArcGIS version 10.6, ESRI 3D Analyst and Spatial Analyst extensions, and ESRI ArcGIS Pro and ESRI geoprocessing tools were used to develop datasets of the viewshed. The primary elevation data was obtained from the ESRI Living Atlas terrain layer, and the National Elevation Dataset with a resolution of approximately 10 meters. Higher accuracy Lidar data while available for some regions of Maine, was not available for the entire project area. The elevation data and the project parameters

provided by the client were used to develop the viewshed model where the project might be visible. An average observer height of 1.75 meters (5.7 feet) and a solar panel height of 4 meters (13 feet) was established to establish potential line of sight areas. A "bare Earth" model of potential viewsheds was created as a worst-case scenario, then more realistic viewshed maps were developed taking into account vegetation and forest cover using the Maine land use and land cover data from the Maine office of GIS (MEGIS) to model vegetation heights. The Viewshed Analysis using ArcGIS is a reasonable approximation of where the project would be visible from but based on ground truthing by field staff, the software generally over-estimated the visibility. The viewshed analysis does not adequately consider the near field screening effect of vegetation for an observer. The ground hugging nature of the project and the rolling forested terrain generally limit the projects visibility to mountaintops and elevated topography surrounding the site.

Field Assessment: Using the viewshed analysis from ArcGIS as a guide, CA and ARC visited all potential public viewpoints to assess visibility of the proposed solar array. Field reviews were completed in May, June, and July of 2019 using a Trimble GEO 7x GPS with Terrasync Pro with an ArcGIS Collector App on an iPad tablet to verify locations of previously identified potential views of the site. Photographs were taken using a Fujifilm X20 12MP digital camera with a 28mm lens. Where applicable, these photographs then served as the basis for photo simulations of the proposed solar array that accompany this report.

Determination of Scenic Resources: The USFS publication #701 on Landscape Aesthetics¹ identifies three zones of viewing: **foreground, midground** and **background**. The foreground is from the immediate viewpoint up to ½ mile away. The midground is the viewshed from ½ mile to 4 miles away, and the background includes the view area from 4 miles out to the horizon. All potential views of the proposed solar array lay within the background viewshed designation.

State of Maine Regulatory requirements: The MDEP in the SLODA Chapter 375 identifies "scenic character to be one of Maine's most important assets" and recognizes that "visual surroundings strongly influence people's behavior." Any proposed development shall not "have an unreasonable adverse effect on the scenic character of the surrounding area" and "the design of [any] proposed development [must] take into account the scenic character of the surrounding area." Where this is not possible, "structures will be designed and landscaped to minimize their visual impact on the surrounding area."

The MDEP in the NRPA Chapter 315 "describes the process for evaluating impacts to existing scenic and aesthetic uses resulting from activities in, on, over, or adjacent to protected natural resources." Because the proposed solar array "appears to be located within the viewshed of... a scenic resource," it is the responsibility of CA and ARC, on behalf of Three Rivers Solar Power LLC., to demonstrate the quality and or degree of alteration to the natural environment of the proposed solar array and whether or not this change represents a "rapid degradation...or destruction of these critical resources." Within this rule, a *scenic resource* is defined as: "public natural resources or public lands visited by the general public, in part for the use, observation, enjoyment, and appreciation of natural or cultural visual qualities" and as "the typical point from which an activity in, on, over or adjacent to a protected natural resource is viewed."

Photo Simulation Methodology: Upon identification of potentially affected viewshed areas, the entire array and its associated topography and vegetation were modeled in Rhinoceros 3D modeling software. Temporal, material and climatic conditions were then programmed into V-Ray Rendering Engine to simulate weather and atmospheric conditions of the site and surrounding areas as well as material qualities such as reflectivity and absorption of the solar panels and associated structures. From there, through the use of Adobe Photoshop, rendered scenes from each identified point of potential visibility of the proposed solar array were created and inserted into photographs taken from each vantage point in order to, as accurately as possible, simulate the visual effects of construction of the solar array.

4. Viewshed Area Description



The existing viewshed is an industrial landscape nestled in the Maine woods dotted with wind turbines, commercial forests, and blueberry fields. Though the existing viewshed is primarily private lands with some public access, the viewshed is of a large scale managed landscape. Notable geographic features of the landscape include Lead and Pleasant Mountains (right hand side of the above image at the horizon) as well as the various streams, ponds and marshes that reflect the sky. The few dozen wind turbines create striking vertical elements in the landscape, spanning nearly half of the visual field. Other than a few roads, transmission lines, and the wind turbines; the footprint of development seems quite far away from the north side of the summit of Tunk Mountain, however the solar array is being developed in an impacted landscape that is distant from the nearest public viewing location.

5. Visual Impact Assessment Locations

The following represent the sites identified by the MDEP under the NRPA Chapter 315 which may be affected by the development of the proposed solar array:

A. National Natural Landmarks:

There are 14 national natural landmarks in Maine according to the National Park Service website (<u>https://www.nps.gov/subjects/nnlandmarks/state.htm?State=ME</u>)

There are no National Natural Landmarks in Hancock County. One landmark is located in Washington County, the Carrying Place Cove Bog, located at Quoddy head State Park. The project is over 50 miles away and not visible from this resource.

B. State or National Wildlife Refuges, sanctuaries or Preserves and State Game Refuges: Within the Project Area, Petit Manan National Wildlife Refuge and the Lyle Frost (Scammon Marsh) WMA are present.

B1. The Petit Manan NWR is located near Steuben and is over 20 miles from the project area. The project would not be visible from the resource.

B2. The Lyle Frost Wildlife Management Area (WMA) is located in Eastbrook, approximately 8 miles from the Project site. The LFWMA is managed by the Maine Department of Inland Fisheries and Wildlife (MDIFW) According to the MDIFW, the WMAs are managed to provide habitat for wildlife and recreation opportunities with a focus on hunting and fishing. The project would not be visible from the Lyle Frost WMA.

C. State or federally designated trail:

Within the project area, state designated trails include the Down East Sunrise Trail, ITS trail 87, and hiking trails in the Donnell Pond Public Land unit.

C.1 The ITS trail is located along private gravel logging roads north of the project area. Because of tree and vegetation cover and the rolling terrain, the project site is not visible from the ITS trail.

C.2 The Downeast sunrise trail extends from Ellsworth to Cherryfield and is used by ATVs, hikers, Skiers and horseback riders. Based on the viewshed analysis, and site reviews, the project would not be visible from any spot on the trail.

C.3 Donnell Pond Unit: Donnell Pond

The Donnell Pond Unit (DPU) has over 15,000 acres of forested land interspersed with ponds, lakes, and mountains is located approximately 6 miles south of the project site between Cherryfield and Franklin in Hancock County. Several viewsheds exist within the DPU that the project would be visible from; these include: Schoodic Mountain summit (1069') and the Tunk Mountain Summit (1157'). Potential views of the proposed solar array from Black Mountain summit (1049'), Caribou Mountain summit (954'), and associated trails were identified as possible via ArcGIS however, tree coverage as well as natural geographic features such as rock outcroppings and slope aspect prevent any views. Donnell Pond Map

Schoodic Mountain is located just North of Route 1 off Route 183 in East Hancock. Access to the moderately trafficked 2.5 mile loop is located off Schoodic Beach Road. The trail up Schoodic Mountain is used for hiking in the summer and snowshoeing in the winter. Views at the top of the mountain are panoramic with particularly striking views due South of Mount Desert Island. To the North, there are views of rolling managed forested hills and blueberry fields dotted with wind

turbines from several wind farms. Under ideal viewing conditions, the proposed solar array would appear as a thin black line just under the horizon, about 10 miles away.

Tunk Mountain is located in the Tunk Lake Area just off the Blackwoods Scenic Byway (Route 182) in the unorganized territories of T10 SD and T9 SD. Comprising 6,215 acres, the Tunk Lake Area contains many varied ecological communities, ponds, and overlooks. There are pond accessible campsites, trails and various open areas. The views from atop Tunk Mountain include: sweeping coastline vistas of Mount Desert Island to the South as well as marshlands and streams, mountains, and various wind turbine farms to the North. At 5.75 miles away, the wind-swept summit of Tunk Mountain offers the closest viewpoint of the proposed solar array from any publicly accessible trail. The proposed solar array will appear as a dark shadow just below the horizon, in line with Lead Mountain. The proposed array is not readily apparent and is difficult to distinguish from the shadows cast by clouds.

Black Mountain is located between Donnell Pond and Tunk Lake within the Donnell Pond Unit. Access is from either Highway 182 or 183 via Dynamite Brook Road or Black Mountain Road, respectively. Neither the Black Mountain Summit trail nor the Big Chief Trail offer views of the proposed solar array as topography and vegetation impede any direct views.

Caribou Mountain is located between Donnell Pond to the West and Tunk Lake to the East just Northwest of Rainbow Pond within the Donnel Pond Unit. Tunk Mountain to the Northeast obscures any views of the proposed solar array.

C4. Blackwoods Scenic Byway. Blackwoods scenic byway extends along route 182 from Franklin east to the town of Cherryfield. The black woods road is located approximately 5 miles south of the project area. The project would not be visible from any portion of the road.

D. Property on the National Register of Historic Places:

The following places are within the project area: Brick School House, School House Hill, Aurora and the Eastbrook Baptist Church and Eastbrook Town House, Eastbrook Road, ME 200, Eastbrook.

D1. The Brick School House in Aurora is approximately 14 miles northeast of the project area on Route 179. The project would not be visible from this resource due to elevation and vegetation.

D2. The Eastbrook Baptist Church located on the Eastbrook Road, (ME 200) in Eastbrook is located approximately 9 miles from the project site and would not be visible.

E. National or State Parks (e.g., Acadia National Park, Sebago Lakes State Park)

E1. Acadia National Park (ANP) located on Mount Desert Island, and the Schoodic Unit located in Winter Harbor and Gouldsboro, Maine are located within the project viewshed. The ANP lands on Mount Desert Island are located over 26 miles away and the project would not be visible, both

due to the distance and the terrain between the project and viewpoints in the Park. Cadillac Mountain, at 1,530 feet of elevation, the highest point in the park is a popular destination and commands an expansive viewshed to the north where the project is located. While the potential view range from Cadillac to the horizon is approximately 52 miles, the Schoodic Mountain landform 16 miles from Cadillac block any potential view of the project area.

E2. The Schoodic Unit of ANP is located in the towns of Winter Harbor and Gouldsboro. Schoodic Head, the highest viewpoint at approximately 450' is over 25 miles away and the project would not be visible from this resource due to the terrain and vegetation between the points.

F. Public natural resources or public lands visited by the general public, in part for the use, observation, enjoyment and appreciation of natural or cultural visual qualities (e.g., great ponds, the Atlantic Ocean).

Public natural resources and public lands include areas that are accessible and open to the public and would be visited for fishing, wildlife watching, and general recreation.

F.1 Great Ponds: Several Great Ponds occur within the view shed area. The Maine Wild Lakes Assessment report (MWLA) identifies some of these as significant scenic resources. While several identified great ponds occur, the solar array would be within 10'-15' of existing grade and the terrain and forest cover block any potential view from a great pond. Based on the viewshed analysis and field visits, the project would not be visible from any great ponds or the Atlantic Ocean.

F2. The West Branch of the Narraguagus River meanders along the eastern edge of the Project Area and comes within approximately 250 feet at the closest point. The river is located along the lowest gradient. The topography and forest cover between the river and project block any views of the solar array.

F3. Lead Mountain is located on private land North of Beddington Maine on the border of Hancock and Washington counties. Though Lead Mountain is open to the public via an access road, no views of the proposed site were found.

Summary and Conclusions

Through extensive mapping using sophisticated software and hardware systems, field verification and 3D modeling we have come to the conclusion that the visual impacts of the proposed Three Rivers Solar Array would be negligible to nonexistent. The site of the Three Rivers Solar Array has already been heavily impacted as it has been cleared for blueberry production which was not implemented. The proposed solar array is located in a commercial agriculture (blueberries, forestry products, etc.,) and energy production and transmission landscape. The project will have no negative impact on the viewshed from any public vista point.

References:

1. USFS Agriculture Handbook 701 Landscape Aesthetics: A Handbook for Scenery Management (1996, 264 pp).

ATTACHMENTS

- 1- Location Maps
- 2- Resource Maps
- 3- Photo simulations4- Site Photographs

ATTACHMENT 1

LOCATION MAPS







THREE RIVERS SOLAR OVERVIEW MAP

ATTACHMENT 2

RESOURCE MAPS





ATTACHMENT 3

PHOTO SIMULATIONS

Schoodic Mountain



Panoramic view looking North Northeast from the Schoodic Mountain Overlook towards the proposed Three Rivers Solar Array (red locator arrow for approximate location). The proposed solar array would be approximately 10 miles from the overlook. Depending on weather conditions, atmospheric haze and time of day, the proposed site would be either more or less visible. In clear weather at mid day the proposed site appears as a thin dark line just below the horizon.

Context Map



Location Map



Elevation Profile

Fujifilm X20

10 Miles

Visible Panels

10 Miles to Nearest





Photosimulation 1: Schoodic Mountain - Existing



Existing Conditions: Normal view looking North Northeast from the Schoodic Mountain Overlook. The proposed site of the Three Rivers Solar Array would be visible just under the horizon line between Lead Mountain (Center) and Spruce/Pleasant Mountains (Center right at horizon)

Photosimulation 1: Schoodic Mountain - Proposed



Proposed Conditions: Normal view looking North Northeast from the Schoodic Mountain Overlook. The proposed Three Rivers Solar Array is just visible below the horizon line (Center right) and marked with a red indiciator arrow.

Tunk Mountain



Panoramic view looking North Northwest from Tunk Mountain toward the proposed Three Rivers Solar Array. Ash Bog can be seen in the foreground with Narraguagus Lake in the upper left of the image and Lead Mountain is visible to the right of the red location marker. The proposed Solar Array is visible at 5.75 miles from the viewer in the center right of the image (see red location marker).

Context Map



Location Map



Elevation Profile



Photosimulation 2: Tunk Mountain - Existing



Existing Conditions: Normal view looking North Northwest from the overlook at Tunk Mountain. The site can be seen just to the right of the wind turbines under Lead Mountain (center).







Proposed Conditions: Normal view looking North Northwest from the overlook at Tunk Mountain. The site has been highlighted with a red arrow. The nearest solar panels are approximately 5.2 miles from the overlook where this picture was taken.



Exhibit 1: Black Mountain - Existing/Proposed



Existing and Proposed Conditions: Normal view looking due North from the overlook on the East Face of Black Mountain. The view of the site will be obstructed by Caribou Mountain to the North (Left of the red indicator arrow) and Tunk Mountain to the Northeast (Right of the red indicator arrow).

Photographic information

Location	Black Mountain
Viewing Direction	North
Angle of View	60°
Date and Time	6.12.19 at 3:52 p.m.
Camera Focal Length	28mm
Photo Source	Fujifilm X20
Proposed Structures Visible	No Panels Visible
Approximate Distance to Nearest Visible Structure	8.65 Miles

Exhibit 2: Caribou Mountain - Existing/Proposed



Existing and Proposed Conditions: Normal view of the proposed Three Rivers Solar Array from the top the East face of Black Mountain. The site will not be visible from this viewpoint due to tree cover, topography and orientation.

Photographic Information

_ocation	Caribou Mountain
Viewing Direction	North
Angle of View	60°
Date and Time	6.22.19 at 12:05 a.m.
Camera Focal Length	28mm
Photo Source	Fujifilm X20
Proposed Structures ∕isible	No Panels Visible
Approximate Distance to Nearest Visible Structure	7.5 Miles

Exhibit 3: Lead Mountain - Existing/Proposed



Existing and Proposed Conditions: Normal view of the proposed Three Rivers Solar Array from the top of Lead Mountain. The site will not be visible from this viewpoint due to tree cover.

Photographic Information

Location	Lead Mountain
Viewing Direction	South
Angle of View	60°
Date and Time	5.13.19 at 1:20 p.m.
Camera Focal Length	28mm
Photo Source	Fujifilm X20
Proposed Structures Visible	No Panels Visible
Approximate Distance to Nearest Visible Structure	9 Miles

ATTACHMENT 4

SITE PHOTOGRAPHS





Photo 1: Area 1 cleared field where proposed solar panels will be installed. Photograph taken 6/18/19.



Photo 2: Area 1 Project site (Area 1) looking south to Tunk Mountain in distance Photograph taken 11/18/18.





Photo 3: West Branch of Narraguagus looking upstream. Photograph taken 6/19/19.



Photo 4: View toward project from closest point along river at southern tip of Area 1. Project would not be visible. Photograph taken 6/19/19.





Photo 5: West Branch of Narraguagus on east side of Area 1 looking downstream. Photograph taken 6/19/19.



Photo 6: View toward project from closest point along river at eastern side of Area 1. (Photo 5). Project would not be visible. Photograph taken 6/19/19.





7: Aerial image of a comparable 100 MW solar installation in Virginia.



- Licensed in-house engineers
- Structural and foundation design
- Stamped drawings, including foundations
- Code compliance
- On-site pile testing





8: Typical solar panel construction (from RBI)