Attachment 8-E

RATING PANEL QUALIFICATIONS

MATTHEW W. ALLEN, RLA

TREASURER, PRINCIPAL

CREATING COMPELLING DESTINATIONS | ENRICHING COMMUNITIES | SAFEGUARDING SPECIAL PLACES www.saratogaassociates.com

PROJECT ROLE

Principal-in-Charge

PROFESSIONAL EXPERIENCE

Mr. Allen is a Registered Landscape Architect with over 30 years of experience in regional and community planning, downtown streetscape and waterfront redevelopment and environmental compliance. He serves as project manager and site designer for a wide variety of site development projects including industrial, commercial, institutional, residential, and mixed-use projects.

Matt leads the firm's Visual Impact Assessment and Scenic Resource Management practice. He is a recognized leader in the specialized discipline of visual impact assessment and aesthetic mitigation. As such, he is highly skilled in the application of advanced computer-generated visual simulation, animation and viewshed development technology. Matt served on the peer review team for the landmark 2000 NYSDEC Program Policy concerning visual impact assessment and mitigation. He frequently serves as a third party advisor to the NYSDEC, helping state regulators understand and minimize aesthetic impacts associated with large and often controversial development projects.

EDUCATION

Master of Science, Urban & Environmental Studies
Rensselaer Polytechnic Institute, 1991

Bachelor of Landscape Architecture
SUNY College of Environmental Science & Forestry, 1983

REGISTRATION/CERTIFICATION

New York – License # 001087

REPRESENTATIVE EXPERIENCE

NYS Department of Environmental Conservation Expert Services - Various Locations, Upstate, NY

Project Manager responsible for third-party review and expert witness services for visually sensitive and controversial projects. Projects include Sour Mountain Realty Mine Proposal, Thalle Quarry, Domain Mine, Belleayre Resort at Catskill Park, and Athens Generating Project. Provided pre-filed written and direct oral testimony in administrative hearings on behalf of NYSDEC.

Wind Energy

Vineyard Wind Offshore Energy Project - Vineyard Wind, LLC, Atlantic Ocean off coast of Martha's Vineyard & Nantucket Islands, MA

Principal-in-Charge/Visual Analyst responsible for evaluating the potential visibility of an 800 megawatt (106 turbine) off-shore wind energy facility. The analysis was consistent with procedural standards defined by the Bureau of Offshore Energy Management (BOEM) for visual assessment and included evaluation of existing landscape character, identification of sensitive visual resources and preparation of highly accurate photo simulations taking into account the effect of earth curvature, meteorological visibility and distant visibility of aviation lighting.

Hounsfield Windfarm Visual Impact Assessment - Upstate NY Power Corp., Hounsfield, NY

Landscape Architect/visual analyst responsible for comprehensive visual resource assessment of an 84-turbine wind energy and associated 51 mile, 230kV transmission line. The VRA identified potential aesthetic impacts and provided an assessment of the visual character of the Project from which agency decision-makers can render a determination of visual significance. The VRA included zone of visual influence analysis, as well as multiple photo realistic simulations illustrating project visibility.

St. Lawrence Wind Energy Project Visual Assessment - Acciona Energy, Cape Vincent, NY

Principal-in-Charge of a visual resource assessment (VRA) of a 96-turbine wind farm. Work included a zone of visual influence analysis, photo-realistic simulations illustrating project visibility, assessment of potential shadow flicker impact and objective evaluation of the project's impact on the scenic resources of the region.

West Hill Windfarm Visual Assessment - Acciona Energy, Madison County, NY

Principal-in-Charge of a visual resource assessment (VRA) of a 25-turbine wind farm. Work included a zone of visual influence analysis, photo-realistic simulations illustrating project visibility, assessment of potential shadow flicker impact and objective evaluation of the project's impact on the scenic resources of the region.

Solar Energy

Various Solar Project Photo Simulations– Borrego Solar, New York State & Massachusetts

Visual analyst responsible for developing a series of photo simulations illustrating how a proposed solar energy facility would appear from off-site vantage points. The simulations were used to communicate project character and visibility to agency decision-makers and stakeholder groups. Provided landscape mitigation plans to minimize project visibility from adjacent properties and the public right-of-way. Client projects include 10 locations throughout New York State and Massachusetts.

Grafton Solar Project Photo Simulations – Sun Edison, Grafton MA

Visual analyst responsible for developing a series of photo simulations illustrating how a proposed 1mW solar energy facility would appear from both on and off-site vantage points. The simulations were used to communicate project character and visibility to agency decision-makers and stakeholder groups.

Roswell Solar Project Photo Simulations - GCL-SR Solar Energy, Roswell, NM

Visual analyst responsible for developing a series of photo simulations illustrating how a proposed 70mW solar energy facility would appear from off-site vantage points. The simulations were used to communicate project character and visibility to agency decision-makers and stakeholder groups.

Confidential Solar Energy Project Photo Simulations – New England

Visual analyst responsible for developing a series of photo simulations illustrating how a proposed solar energy facility would appear from off-site vantage points. The simulations were used to communicate project character and visibility to adjacent property owners.

Natick Golf Center Solar Project Photo Simulations, Sage Stone, LLC. – Natick, MA

Visual analyst responsible for developing a series of photo simulations illustrating how a proposed solar energy facility would appear from both on and off-site vantage points. The simulations were used to communicate project character and visibility to agency decision-makers and stakeholder groups.

Yellow Mill Road Solar Project - Delaware River Solar, Farmington, NY

Visual analyst responsible for developing a series of photo simulations illustrating how a proposed solar energy facility would appear from off-site vantage points. The simulations were used to communicate project character and visibility to agency decision-makers and stakeholder groups

Electric Generation and Transmission

C**ricket Valley Transmission Line Visual Assessment - Cricket Valley Energy, LLC, Pleasant Valley, NY**

Project manager/visual analyst assisting with a detailed visual resource assessment consistent with requirements set forth in the NYS Article VII siting regulations. Using standard accepted methodologies, the assessment identified and evaluated dozens of visually sensitive resources. Viewshed analysis and photographic simulations illustrated the nature and degree of potential visual impact. Provided written and oral testimony in NYSDPS administrative hearings.

Indian Point Cooling Feasibility Study Visual Assessment - Entergy Nuclear Indian Point 2, LLC and Entergy Nuclear Indian Point 3, LLC, Buchanan, NY

Principal-in-Charge of Visual Assessment for two very large and highly visible counter-flow, forced draft, plume-abated hybrid cooling towers. The assessment evaluates the potential visual impact of the Project on the scenic resources of the region. Viewshed analysis and photographic simulations illustrated the nature and degree of potential visual impact including complex analysis of the degree and duration of visible vapor plumes that would be periodically emitted from the cooling towers. Provided written and oral testimony in NYSDPS administrative hearings.

Ramapo Energy Facility - Palisades Interstate Park Commission, Ramapo, NY

Project Manager responsible for providing a third-party review of an Article X application for issues associated with the visual impact of a major electric generating station on the adjacent Harriman State Park. Provided pre-filed testimony in administrative hearings before the NYS Public Service Commission.

Bethlehem Energy Center Visual Impact Assessment - PSEG Power New York, Bethlehem, NY

Principal-in-Charge responsible for visual impact assessment for the repowering of a 750 MW electric generating facility. The project included design alternatives for major components of the plant to minimize impact and improve the appearance of the site from the Hudson River and other sensitive public vantage points. Provided pre-filed written and direct oral testimony in administrative hearings before the NYS Public Service Commission.

Industrial Facilities

Broadwater LNG Terminal Visual Assessment - TransCanada/Shell, Long Island Sound, NY/CT

Principal-in-Charge for visual assessment and coastal consistency evaluation of a major offshore floating liquefied natural gas (LNG) terminal. Project included photographic simulation illustrating project visibility from heavily populated shoreline areas and objective evaluation of the project's impact on the scenic resources of the region. Assessment addressed the effect of facility lighting, earth curvature, variable weather conditions and atmospheric refraction (mirage).

Safe Harbor Offshore LNG Facility - Atlantic Sea Island Group, Long Beach, NY

Landscape architect/visual analyst responsible for visual impact assessment of a deepwater port application for a proposed LNG facility constructed on a man-made island off the coast of Queens, NY. Project included photographic simulation illustrating project visibility from heavily populated shoreline areas. Assessment addressed the effect of earth curvature, variable weather conditions and atmospheric refraction (mirage).

Greenport Replacement Project Visual Assessment - St. Lawrence Cement, Greenport, NY

Project manager for visual impact assessment, mitigation strategy, and coastal zone consistency compliance for a proposed $300 million cement manufacturing facility. Advised the applicant on interpretation of public policy and compliance with a myriad of governmental regulations. Worked closely with federal, state and local regulatory agencies to design and implement creative measures that minimized or eliminated visual and aesthetic impacts in a manner that balanced economic development with environmental protection. Provided pre-filed written and direct oral testimony in administrative hearings before the NYS Department of Environmental Conservation.

Sparrows Point LNG Terminal Project Visual Study - AES Sparrows Point LNG, LLC, Baltimore, MD

Principal-in-Charge responsible for preparation of a series of photo simulations illustrating how a new industrial Liquefied Natural Gas port and re-gasification facility will appear from off-site vantage points. Photo simulations were used to communicate project character and visibility to agency decision-makers and stakeholder groups.

Smith's Basin Mine Visual Assessment - Jointa Galusha,LLC, Hartford. NY

Project manager responsible for providing visual resource assessment for a proposed 200-acre surface mine. Provided pre-filed written and direct oral testimony in administrative hearings before the NYS Public Service Commission.

Refinery Expansion Project Visual Impact Assessment - Murphy Oil Corporation, Superior, WI

Principal-in-Charge responsible for providing visual resource assessment for a major expansion of an existing heavy industrial facility. Work included a zone of visual influence analysis within a 5-mile radius of the proposed project, photo-realistic simulations illustrating project visibility and evaluation of the project's impact on surrounding neighborhoods and cultural resources.

Solid Waste Management Facilities

Solid Waste Landfill Visual Assessment - Seneca Meadows, Inc., Waterloo, NY

Project Manager responsible for providing visual assessment and a mitigation plan for proposed horizontal and vertical expansion of an existing solid waste landfill. Work included a zone of visual influence analysis, photo-realistic simulations illustrating project visibility and objective evaluation of the project's impact on the scenic resources of the region. Provided visual assessment and mitigation services for proposed landfill expansion in 1990, 2003, and 2016.

Town of Colonie Landfill Expansion - Waste Connections, Inc, Colonie, NY

Principal-in-Charge responsible for visual resource assessment and mitigation plan for a proposed horizontal and vertical expansion of an existing 211-acre solid waste landfill. A revegetation plan was prepared using a blend of native seed types to create a subtle "camouflage effect" to blend the final landform into the surrounding landscape.

Hyland Landfill Expansion Visual Impact Assessment - Casella Waste Management Systems, Angelica, NY

Project manager responsible for providing visual resource assessment and a mitigation plan for a proposed height increase and expansion of an existing solid waste landfill. The visual assessment was used to redesign the project contour to maximize fill area while completely avoiding view from key residential areas.

Clinton County Solid Waste Management Facility Expansion - Casella Waste Systems, Schuyler Falls, NY

Project manager responsible for providing visual assessment and mitigation plan for a proposed expansion of an existing solid waste landfill. Work included a zone of visual influence analysis, photo-realistic simulations illustrating project visibility and objective evaluation of the project's impact on the scenic resources of the region.

Energy-From-Waste Facility Visual Assessment - Covanta Hempstead Company, Westbury, NY

Principal-in-Charge responsible for an assessment and mitigation strategy for a proposed 35MW expansion to an existing energy-from-waste facility in suburban Long Island. Project involved development of a visual mitigation plan and preparation photo simulations. Information was used to communicate project character and visibility to agency decision-makers and stakeholder groups.

Solid Waste Landfill Visual Assessment - Seneca Meadows, Inc., Waterloo, NY

Project Manager responsible for providing visual assessment and a mitigation plan for proposed horizontal and vertical expansion of an existing solid waste landfill. Work included a zone of visual influence analysis, photo-realistic simulations illustrating project visibility and objective evaluation of the project's impact on the scenic resources of the region. Provided visual assessment and mitigation services for proposed landfill expansion in 1990, 2003, and 2016.

Wireless Telecommunications

Armonk Road Cell Tower - Homeland Towers, LLC., New Castle, NY

Principal-in-Charge responsible for providing visual resource assessment for the controversial telecom tower project that received municipal approval. A subsequent lawsuit contesting the municipal decision was dismissed based largely on the findings of the visual impact assessment.

Schoolhouse Site Cell Tower Visual Assessment - Airosmith Development, Guilderland, NY

Principal-in-Charge responsible for providing visual resource assessment. The project involved a publicly advertised balloon visibility study, viewshed mapping and photo simulations of monopole and monopine tower alternatives. Findings were summarized in visual report to meet municipal requirements.

Dantara Drive Cell Tower Visual Assessment - Homeland Towers, LLC., East Fishkill, NY

Principal-in-Charge/Project Manager responsible for providing visual resource assessment for the controversial telecom project was initially denied by the Town. Decision was overturned by the US Court of Appeals due, in part, to the Town's failure to fully consider the findings of the visual assessment.

EcoSite Glastonbury Wireless Telecommunications Tower - Infinigy, Glastonbury, CT

Principal-in-Charge responsible for providing visual resource assessment. The project involved a publicly advertised balloon visibility study, viewshed mapping and photo simulations of a monopole tower design. Findings were summarized in visual report to meet Connecticut Siting Council requirements.

BlueSky Towers Evergreen Street Telecommunications Tower – IVI Telecom Services, Bridgeport, CT

Principal-in-Charge responsible for providing visual resource assessment. The project involved viewshed mapping and photo simulations of a monopole tower design. Provided written and oral testimony in Connecticut Siting Council administrative hearings.

Residential/Commercial/Mixed Use Development

Hudson Landing Scenic Resource Assessment - AVR Realty, Kingston, NY

Principal-in-Charge for a visual impact assessment of a 1,682-unit, mixed use residential and commercial waterfront community on a former industrial site along the Hudson River. The project included viewshed analysis, photo-realistic simulations and an objective evaluation of the project's impact on the scenic resources of the region. Worked closely with municipal and state regulators to identify potential aesthetic impacts and develop a mitigation strategy to protect the coastal landscape.

Victor Square Visual Assessment - Benderson Development Company, Victor, NY

Principal-in-Charge responsible for providing aesthetic impact evaluation and mitigation plan for a 566,000 GSF retail and commercial project. The project involved detailed assessment of project visibility from neighboring properties, including consideration of site lighting impacts. Worked closely with municipal leaders to develop an acceptable mitigation strategy to minimize visibility from off-site locations.

Scenic Resource Management Projects

Integrated Concept Plan - Scenic Resource Management Plan - Plum Creek Maine Timberlands, LLC, Moosehead Lake Region, ME

Principal-in-Charge responsible for addressing the potential impact associated with the rezoning of 20,000 acres of timberland for waterfront residential and resort uses on the scenic water bodies of Maine's "North Woods". The Concept Plan included a new quantifiable shoreline tree clearing standard to assure sufficient shoreline vegetation remains to adequately screen waterfront development. Provided pre-filed and direct oral testimony before the Maine Land Use Regulation Commission.

LG Electronics v. Protect the Palisades - Scenic Hudson, Inc., Englewood Cliffs, NJ

Principal-in-Charge providing scenic resource management consulting to conservation organizations associated with a planned high rise office building atop the iconic Hudson River Palisades Escarpment. Work involved reviewing application documents and making recommendations to reduce the building height and redesign the roof lien to protect sensitive views. Resulted in a successful negotiation with the project sponsor to build a project that balances economic development with resource management.

EMILY L. GARDNER

LANDSCAPE DESIGNER & COMMUNITY PLANNER

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PROJECT ROLE

Landscape Designer
Planner

PROFESSIONAL EXPERIENCE

Emily Gardner has 11 years of experience in all phases of site analysis, community planning, and design. She serves as a landscape designer and planner on a wide variety of site development projects including commercial, institutional, residential, and mixed-use projects. Ms. Gardner utilizes GIS analysis for regional and community master planning projects and has worked successfully on all project phases from site analysis and site design through construction documents. Her experience also includes designs for stormwater management, including green infrastructure practices and erosion and sediment controls; brownfield and waterfront revitalization; and residential and streetscape design.

EDUCATION

Masters in Urban & Regional Planning
With Graduate Certificate in Urban Policy
University at Albany, SUNY, 2013

Bachelor of Science, Landscape Architecture
Cornell University, 2008

REPRESENTATIVE EXPERIENCE

Community and Regional Planning & Design

Southside Public Realm Improvements – City of Amsterdam, NY

Project Manager for the Southside Public Realm Improvements located in the Downtown Revitalization (DRI) boundary. These improvements encourage pedestrian activity along Bridge Street and connect the Mohawk Valley Gateway Overlook (former Saratoga Associates Project) pedestrian bridge to the Southside's emerging shopping and restaurant scene. The project includes the creation of an elevated walkway or boardwalk, and improvements to the sidewalks, streetscapes, and civic spaces adjacent to the former Chalmers Mill site (former Saratoga Associates Project).

Comprehensive Plan – Town of Schroeppel, NY

Project manager and planner for the development of a draft town-wide comprehensive plan for the Town of Schroeppel, located in Oswego County, NY. The plan is focused on the trends and issues essential to the community and a vision for its future, supported by goals, recommended policies and action items, and priority projects identified in coordination with the steering committee.

Chuctanunda Creek Trail – City of Amsterdam, NY

Project manager and lead designer for the extension of the Chuctanunda Creek Trail, a four-mile path that begins at the Mohawk River Trail and follows the creek through the downtown. The trail contains numerous points of interest including waterfalls, bridges, and historic structures. This DRI project expands upon improvements being made along the trail north of the DRI boundary and will establish a clear path through the downtown and provide enhanced signage, lighting, and safety measures. It would also connect to the proposed library expansion, allowing the downtown to serve as a trailhead.

Comprehensive Plan and Zoning Updates – City of Plattsburgh, NY

Project manager for updates to the City's 20-year old Comprehensive Plan, with corresponding updates to its Zoning Ordinance, to support the sustainability and community revitalization efforts undertaken by the City. Goals included strengthening neighborhoods, promoting revitalization, protecting natural resources, and promoting recreation and tourism in order to realize the City's vision to be inclusive, vibrant, steeped in history and culture with mixed use, walkable neighborhoods and abundant affordable housing.

Local Waterfront Revitalization Program – Town of Willsboro, NY

Project manager leading the development of a community vision and revitalization strategy for the Town of Willsboro in Essex County. The focus of the Local Waterfront Revitalization Program (LWRP) is on water-related uses, water quality, the community's connection with the Bouquet River and Lake Champlain, and improvements to public infrastructure and the business district to enhance walkability, wayfinding, tourism activities, and public waterfront access.

Hudson River Estuary Program: Scenic Vista Guidance, Training, & Demonstration Projects – New England Interstate Water Pollution Control Commission & NYSDEC

Project manager, landscape designer, and planner leading the development of guidelines for the creation and management of scenic vistas along the Hudson River. Saratoga Associates worked with stakeholders to identify common management and environmental concerns, identify opportunities, and select locations for demonstration projects as case studies. Research and findings were documented for the creation of a Guidance Handbook and

Training Sessions to provide landowners, including individuals and institutional property owners, such as parks and historic sites, with principles and practices to help them plan for establishing and maintaining scenic vistas.

Streetscape and Riverfront Access Improvements – City of Plattsburgh, NY

Project manager and lead designer for community planning, public outreach, design development, and construction administration services for projects to increase public access to the Saranac River and improve connections between downtown, the river, and Lake Champlain. These projects advance the City's Local Waterfront Revitalization Program and Downtown Revitalization Initiative. The projects will enhance streetscapes and the pedestrian and cyclist experience, increase recreational opportunities, and highlight Plattsburgh's natural assets.

Local Waterfront Revitalization Strategy – Town of Cicero, NY

Project manager and planner leading the development of a community vision and revitalization strategy for the Hamlet of Brewerton in the Town of Cicero, along the Oneida Lake waterfront. The focus of the Local Waterfront Revitalization Program (LWRP) is on water-related uses and tourism activities, the hamlet's connection with the waterfront, and improvements to public infrastructure and the business district to walkability, wayfinding, and public waterfront access.

Seneca Turnpike Creek Access Project – City of Syracuse, NY

Project manager leading community planning, public outreach, design development, and construction document development for a plan to provide public access to Onondaga Creek from Seneca Turnpike, a project which was identified in the City's previously completed Local Waterfront Revitalization Program. In addition to providing access, the project will improve environmental quality and strengthen non-motorized connections between Seneca Turnpike, Onondaga Lake, and adjacent neighborhoods.

Downtown-Riverfront Parks Connection Feasibility Study - City of Watertown, NY

Project manager, landscape designer, and planner for the preparation of a feasibility study focused on improving connections for pedestrian and bicyclists from the City's downtown Public Square to two of its riverfront parks, the Veterans' Memorial Riverwalk and Whitewater Park. Goals include working with the Advisory Committee and the public to create a sense of arrival as visitors approach the parks, improve lighting, wayfinding, and safety measures, and advance the vision created in the City's Local Waterfront Revitalization Program – to highlight the trail and park system as an accessible regional attraction.

Waterfront Feasibility Study - Village of Sackets Harbor, NY

Landscape designer and planner for a feasibility study identifying new and expanded recreational use along the waterfront to increase water-based recreation, coastal tourism, and economic development. The plan identified pedestrian connections between the waterfront and local destinations, as well as opportunities for boat launches, docking facilities, waterfront parks, scenic overlooks, and open space.

Community Vision and Implementation Strategy - City of Plattsburgh, NY

Landscape designer and planner responsible for updating the City's Local Waterfront Revitalization Program. The community vision and implementation strategy seeks to unify the waterfront and commercial core to facilitate business development. The plan focused on making the waterfront and downtown pedestrian friendly and expanding public waterfront access. The project identified priority projects that could serve as catalysts for the revitalization of the City's waterfront, downtown, and historic sites.

Waterfront Design and Feasibility Study - City of Plattsburgh, NY

Landscape designer and planner managing a NYS DOS-funded feasibility study for a property which includes a natural beach along Lake Champlain and the Crete Center, a 30,000 square foot multipurpose facility used for recreation and special events. Saratoga Associates assisted with an assessment of the entire property, provided redevelopment ideas, and developed visions that both included and removed the Crete Center. The preferred concept provides enhanced open space with a focus on community recreation, a multipurpose performance pavilion in place of the Crete Center, new buildings near the beach, piers, and a wetland trail network and educational nature center. Cost estimates were developed for the mitigation, remediation, renovation and restoration of the property, including the redevelopment options for the Crete Center.

Downtown Master Planning for Brentwood & Central Islip - Town of Islip, NY

Landscape designer and planner assisting with an update to the Town Comprehensive Plan focused on establishing a unique vision and economic development strategy for two declining hamlet areas. The project reflects and incorporates the significant public and stakeholder input, proposes a series of catalytic redevelopment strategies, and outlines the design guidelines recommended to create a sense of place and celebrate the cultural diversity of each hamlet.

Community Revitalization Plan, Village of Oxford, NY

Landscape designer and planner assisting with an economic and market analysis to guide the Village of Oxford in repositioning its downtown for future investment and revitalization; defining trade areas; and analyzing demographics, market base, and market potential. The project included design for streetscape improvements, flexible infill development, and expansion of the village green as part of the overall revitalization strategy for the village.

Comprehensive Plan Update, Town of Woodstock, NY

Landscape designer and planner assisting with efforts to update the Town's comprehensive plan. The planning process included documentation of existing conditions, exploration of issues and trends, developing a community vision, and establishing a strategy going forward. The goal of the planning process was to enhance and preserve quality of residential life in the town, support its cultural institutions and businesses, and also protect is arts-based heritage as well as its natural resources.

Waterfront and Community Revitalization Strategy, Town of Crown Point, NY

Project manager and planner responsible for the development of a community vision for the future of the Crown Point waterfront. The Local Waterfront Revitalization Strategy includes the identification and prioritization of needs, followed by a detailed plan and strategy for the implementation of priority projects. The strategy focuses on strengthening connections between the Main Street corridor and the waterfront, while improving public access to Lake Champlain and recreational opportunities.

Bennett Street and Route 11 Streetscapes - Hamlet of Brewerton, Cicero, NY

Landscape designer supporting design development and contract documents for redevelopment of a downtown streetscape alongside a riverfront park. Streetscape improvements provide enhanced pedestrian and bicycle connections between the waterfront and downtown business district, as well as to the highly traveled Route 11 corridor.

Landscape Architect Services – City of Albany Parking Authority, Albany, NY

Landscape designer and planner for the design and construction of enhancements to three parking garage facilities located along Broadway in downtown Albany. The project included the assessment of pedestrian circulation routes to and from the garages, to create a safe, aesthetically pleasing pedestrian environment which incorporates landscape planting, site lighting, pavement improvements, murals, and site furnishings.

North Street Parking Lot Conceptual Master Plan, Village of Monticello, NY

Landscape designer for the development of a conceptual master plan for the Village of Monticello, which included draft construction documents, an illustrative master plan, a feasibility study for green infrastructure installation, and grant writing support. The Master Plan's intent is to create a connective, enticing pedestrian node to connect visitors and municipal employees in nearby buildings to the Village's main commercial district.

Multi-Modal Train Station Feasibility Study, City of Amsterdam, NY

Planner providing support for the development of design concepts for the siting of a multi-modal transportation center in the City of Amsterdam. The study included the development of concepts with a local advisory committee and the presentation of those concepts to the public. Results of study are to be used to pursue further funding for the construction of the multi-modal facility that will serve to revitalize the City's downtown.

Canada Street Complete Street & Green Infrastructure, Village of Lake George, NY

Landscape designer and planner assisting with design development and contract documents for streetscape improvements to the south end of Canada Street. The project design included a pedestrian bridge over a brook at the Village-Town gateway. Streetscape elements included permeable brick pavers, concrete sidewalks, granite curbing, pedestrian lighting, native flowering street trees, and tree grates. Green infrastructure stormwater management practices employed on this project include permeable brick pavers to act as a filter strip preventing runoff onto Canada Street, which drains directly to Lake George.

State and Hawley Street Improvements, City of Binghamton, NY

Landscape designer and planner assisting with design documents for the redevelopment of a streetscape in the City of Binghamton. The project involves vehicular improvements to facilitate circulation, provision of pedestrian access to improve safety in a commercial area, incorporation of "complete streets" principles, and streetscape enhancements to improve this gateway corridor. Road widths were narrowed to slow traffic, bicycle lanes and crosswalks were added, and landscaping was incorporated to improve the streetscape.

Winchester Street Improvements, City of Keene, NH

Project manager, landscape designer, and planner for the creation of design documents for the redevelopment of a streetscape in the City of Keene. The project involves vehicular improvements to facilitate circulation, provision of pedestrian access to improve safety in a commercial area, incorporation of complete streets principles, and green infrastructure and streetscape enhancements to improve this gateway corridor.

Universal Access Design - Schuylerville Public Library, Schuylerville, NY

Landscape designer supporting design development through construction to provide increased ADA compliant accessibility throughout the library facility. New elements included sidewalks from the parking lot, new code compliant stairs and handrails, as well as new entry and vestibule doors with ADA compliant door hardware. The project also includes renovation to restroom to meet universal access requirements.

Lincoln Depot Plaza, Peekskill, NY*

Landscape designer for design and construction documents for an urban plaza. The project involved preparation of planting plans, product specifications, and a 3D model for a civic plaza and interpretive area outside of the museum and visitor center. The historic site is enhanced with interpretive elements, a brookside boardwalk, and a rain garden and bioswale.

Campus Master Plan - Adirondack Museum, Blue Mountain Lake, NY

Landscape designer and planner for the conceptual site design for the heart of the museum campus. The design enhances outdoor pedestrian flow and incorporates site, architectural, and accessibility improvements identified in the Museum's Exhibition Master Plan. Masterplan elements include a new vestibule on the rear of the museum building, improvements to the water feature and plaza at the Boats and Boating building, great lawn and open space enhancements, orientation and wayfinding improvements, a stormwater management plan that incorporates green infrastructure, and native landscape plantings.

Dunn Building Redevelopment Plan - Hudson Community Development and Planning Agency, Hudson, NY

Landscape designer and planner for a strategic redevelopment plan for a 1850s-era manufactured gas plant/warehouse along the Hudson River and near the city's downtown. This adaptive reuse plan encourages sustainable economic development opportunities that capitalize on its waterfront location and stimulate targeted economic growth throughout this post-industrial district.

Northern & Eastern Neighborhood Brownfield Opportunity Area Step 1 – Pre-Nomination Study - City of Amsterdam, NY

Planner assisting with the preparation of an economic revitalization strategy for the City's northern and eastern neighborhoods. The Step 1 Pre-Nomination Study focused on leveraging the district's economic and community advantages; complementing local and regional economic activities; analyzing the local, regional and national markets; and facilitating community involvement in shaping the future redevelopment of these key districts.

Brownfield Opportunity Area Step 2 – Nomination - Village of East Syracuse, NY

Landscape designer and planner assisting with preparation of a Brownfield Opportunity Area Step 2 Nomination Report for the downtown district. The report identified opportunities to increase home ownership and the resident diversity; redevelopment of vacant, abandoned, and underutilized properties; streetscape and pedestrian connection enhancements; green infrastructure improvements; and regulatory recommendations to facilitate improved compatibility between industrial uses and residential neighborhoods.

Census Tract 5 Brownfield Opportunity Area - City of Newburgh, NY

Landscape designer and planner assisting with a redevelopment strategy for a distressed area that has been challenged by environmental limitations, fiscal crisis, and devastating social problems. The plan harnesses a dynamic interface between brownfields restoration and community development that is fundamental to sustaining future growth. The plan recommends specific strategic investment opportunities, development programs, policies, and projects that will stimulate economic success.

Zoning Ordinance Review - Village of Great Neck, NY

Planner assisting with a third party review of a proposed commercial development. Project involved review of existing zoning and brownfield redevelopment regulations to determine project compliance.

Zoning and Code Updates - Town of Liberty, NY

Landscape designer and planner assisting with review and update of municipal planning documents to make the Town more attractive to private sector investment. The project involved analysis of existing and proposed zoning, site plan, and subdivision regulations and recommended modifications that would stimulate economic development in appropriate districts. A GIS-based build-out analysis was used to predict future development under various zoning update scenarios.

Environmental Assessment Process - Orange County, NY*

Planner responsible for the preparation of the Draft Environmental Assessment form and associated SEQR documentation for the anticipated negative declaration regarding the adoption of the Orange County Greenway Compact.

Commercial Planning & Design

Monaghan Medical Facility – Town of Plattsburgh, NY

Landscape designer for the creation of landscape plans to complement a 65,000 square foot state-of-the-art medical manufacturing facility. Plants were carefully selected to be cold-hardy and low maintenance, and were sited to allow natural light into the building and views to the distant mountains, while providing year-round interest and protection from winds. Landscaping complemented the new building entrance, a large stormwater basin, an employee patio, and the entrance flagpole area.

Maguire Ford-Lincoln Dealership – City of Ithaca, NY

Landscape designer supporting the development of site plan documents for an existing auto dealership on a 3.1-acre site in the City of Ithaca. The project included site plan development, grading, stormwater management, and landscaping. The site plan submission involved compliance with local site plan, zoning, SWPPP, and NYS DOT regulations.

Maguire Nissan and Dodge Ram Dealership – City of Syracuse, NY

Landscape designer supporting the development of site plan documents for a 15.7-acre auto dealership in the City of Syracuse. The project included site plan development, grading, stormwater management, and landscaping on a site located in the floodplain and adjacent to a NYS Highway. The site plan submission involved compliance with local site plan, zoning, SWPPP, and NYS DOT regulations. An illustrative master plan was also developed for the project.

Tompkins County Community Action Center – City of Ithaca, NY

Landscape designer responsible for the development of an illustrative site plan, as well as a landscaping plan to enhance aesthetics and stormwater management, for a project which included the expansion of a county community action center and adjacent child care center. Documents were provided in support of site plan submission and construction bidding.

Hotel and Subdivision Development Site Plan - Confidential Client, Colonie, NY

Project manager responsible for landscape design and planning for a site plan application on behalf of a national hotel franchise. The project involved zoning and code review and site plan compliance. A conceptual site plan was prepared illustrating the site layout, building footprint, parking, lighting, walkways and green space consistent with municipal site plan submission requirements.

Station Park Site Plan – Top Capital of New York, Saratoga Springs, NY

Landscape designer and planner for the preparation of site plan documents for a 17-acre mixed-use development adjacent to the Saratoga Springs Amtrak station. The project includes construction of senior residences, senior assisted care, a hotel/motel, commercial space, a small spa, and residences-over-retail. The site plan submission involved compliance with local site plan, zoning, and SEQRA requirements.

Higher Education Planning & Design

Facilities Master Plan Update – Finger Lakes Community College, Canandaigua, NY

Landscape designer and planner assisting with the update to the 2013 Campus Master Plan. The master plan identifies contemporary educational services necessary for regional business success. The ten-year plan guides formulation and implementation of future projects that are aligned with SUNY requirements, the College's academic and enrollment goals, mission, and the 2014-2018 Strategic Plan. The project included site and facilities assessment and concepts for renovations, recommendations for new construction, and site amenities.

Campus Master Plan Update – Rhode Island College, Providence, RI

Landscape designer and planner supporting updates to the College's Campus Master Plan, which will guide implementation of projects that support the College's mission and goals. Recommendations include concepts for building renovations, program relocation, open space and landscape enhancements, pedestrian accommodations, new housing and athletics facilities, and improvements to parking and vehicular circulation.

Campus Facilities Master Plan - SUNY Broome, Binghamton, NY

Landscape designer and planner for the preparation of a campus facilities master plan. The project involved site assessment, campus and community involvement, renovation concepts, campus recreation, wayfinding, and open space enhancement. Final plan recommendations included concept alternatives, a preferred management plan, development priorities, and budgetary considerations.

Quad Renovation - St. Lawrence University, Canton, NY

Landscape designer assisting with design and construction documents for a new campus quad. The quad, constructed in conjunction with a new residence hall, includes a large sunken lawn area surrounded by a perimeter promenade. Terraced stone steps lead down to the lawn and seat walls, decorative lighting, and site furnishings accent the site. Permeable brick pavers and porous asphalt create a green infrastructure stormwater management system.

Reconstruction of Campus Parking Lots - Hudson Valley Community College, Troy, NY

Landscape designer assisting with design development and construction documents for three campus parking lots (770 total spaces). The project design incorporates porous asphalt pavement to minimize surface runoff, surface and subsurface stormwater management systems, pavement restoration, granite curbing, traffic signage, and landscape planting. A stormwater pollution prevention plan (SWPPP) was prepared for construction.

Parks/Recreation Planning & Design

Birds of the Park Playground – Clarence Fahnestock State Park, NYSOPRHP, Hamlet of Carmel, NY

Lead designer for the development of a themed playground near Canopus Lake in Clarence Fahnestock State Park, from concept design through construction. The woodland play area, designed to be accessible to all, integrated interpretive signs and other elements to tie in the birds of the park, as the site is located within a Bird Conservation Area. The design included features for ages 2-5 and 5-12, while providing seating areas for parents and connections to picnic space and the lakeshore.

Norrie Ridge Visitor Entry & Access Improvements – Mills-Norrie State Park, NYSOPRHP, Staatsburg, NY

Landscape designer for improvements to the entry and access experience of day users and campers visiting the Norrie Ridge area of Mills-Norrie State Park, located along the Hudson River in Staatsburg. The design focused on improvements to a parking area, rehabilitation of an out-of-use comfort station building, and design of a new building for camper registration and patron information. Additional enhancements included a designated picnic area with river views, trail connections, circulation improvements, space for bicycle rentals, courtyard seating, and site lighting.

Center Park Revitalization – Village of Dolgeville, NY

Project manager leading the rehabilitation of a park in the Village of Dolgeville to enhance the park's use and connectivity to the community. Primary elements of the park design are a new four-season pavilion with restrooms and a kitchen, improved parking, enhanced basketball court, a new splash pad, and site enhancements including signage, lighting, and landscaping. The final appearance of the design elements were guided by feedback received during outreach to students, stakeholders, a project committee, and the community. Saratoga Associates is guiding the project from design development through construction.

Crandall Park Revitalization – City of Glens Falls, NY

Project manager and lead landscape designer for the first phase of revitalization efforts at Crandall Park. Park enhancements included the reconstruction of existing basketball and tennis courts, the incorporation of pickleball courts, drainage improvements, and enhancements to seating, lighting, and walkways. Saratoga Associates provided services for these enhancements from design development through construction. Concepts were also developed for a splash pad to be constructed during a subsequent project phase.

Central Park Wayfinding and Circulation Plan – City of Schenectady, NY

Landscape designer supporting the development of wayfinding and circulation improvements for Central Park in the City of Schenectady. Saratoga Associates is working with the City of Schenectady and stakeholders to develop a plan that supports Central Park's varied features – including a performance stage, rose garden, swimming pool, athletic fields, baseball and tennis courts, pavilion, greenhouse, trails, disc golf, and a dog park – in a manner that enhances aesthetics, function, and safety. The resulting plan will welcome visitors into this historic resource with a clear sequence for arrival, wayfinding, circulation, and parking, allowing them to easily and safely explore all that the park has to offer.

Beach Feasibility Study and Design – City of Geneva, NY

Landscape designer and project manager leading the development of a feasibility study and design for the development of a public beach along the shore of Seneca Lake in the City of Geneva. Saratoga Associates worked with the City, stakeholders, and the community to understand the existing constraints along the lakefront – including bathymetric, topographic, and water quality conditions - to determine whether select locations were appropriate for a public beach. The goal was to build upon the vision created for lakefront access that will serve the recreational needs of the Geneva community and visitors for generations.

Downtown Waterfront Recreation Project and Ballfield Park – Town of Wilna, NY

Landscape designer and planner supporting the development of a year-round multi-use recreation plan as part of the redevelopment of a superfund site – a former dry cleaning and laundry facility in the Hamlet of Herrings along the Black River. The project also included the development of a ballfield and park area in the Hamlet of Natural Bridge. Saratoga Associates worked with the Town of Wilna, an appointed committee, and the public to develop a shared vision, reflected in concepts that enhance public use and access to the waterfront and recreational opportunities. Designs were accompanied by a project narrative, cost estimates, and implementation strategies.

Park Cottages – Hamlin Beach State Park, NYSOPRHP, Hamlin, NY

Landscape designer for design development and construction documents for site development associated with the creation of new cottages overlooking Lake Ontario. The project involved reimagining a large underutilized parking lot as the location for ten new cottages, creating a comfortable and private user experience while not obstructing the lakefront views. The site design allowed for connections to an adjacent trail and walkways to the beach while remaining conscious of the future plans for a reception hall and lakeview pavilions.

Saratoga Performing Arts Center Facilities Master Plan – Saratoga Spa State Park, NYSOPRHP, Saratoga Springs, NY

Landscape designer and planner for the assessment and master planning for the facilities at the Saratoga Performing Arts Center (SPAC), a historic and iconic performance venue centrally located within Spa State Park. The process included working with stakeholders to assess park facilities, review patterns of use, and identify needed improvements. Potential rehabilitation and additional amenity projects were prioritized based on potential costs and funding sources, resulting in a strategy for phased implementation.

Park Cottages – Westcott Beach State Park, NYSOPRHP, Henderson, NY

Landscape designer for design development and construction documents for site development associated with the creation of new cottages overlooking Lake Ontario. The buildings are carefully sited along the top of a wooded ridge, designed and oriented to take advantage of sweeping views while remaining inconspicuous in the landscape. Site elements include a gravel road, accessible parking, stone dust walkways, native plantings, and green infrastructure practices which acknowledge the challenges of shallow bedrock throughout the site– permeable paver patios, stormwater storage under the roadway, and a roadside swale to convey runoff to surface treatment.

Upper Hudson Recreation Hub – Open Space Institute, North Hudson, NY

Landscape designer and planner for the preparation of a master plan concept for the development of a recreational facility along the Schroon River at the former Frontier Town theme park. The project will contain a visitor center and serve as a gateway into the Adirondack Mountains and the Five Towns Hub, while providing a variety of trail connections, and lodging opportunities such as primitive and modern campsites, equestrian accommodations, and cabins. The site will offer day use areas and passive recreational opportunities, local and historic interpretation, and complementary commercial development along Route 9.

Lakeland Park Master Plan - Town of Cazenovia, NY

Landscape designer and planner for a master plan to improve the park while protecting its historical character. The plan included the installation of a hand boat launch, drainage improvements, the relocation of a multiuse pavilion, an expanded beach, parking and safety improvements, and the rehabilitation of historic stone walls and fencing. Community participation and coordination with NYS SHPO was an integral part of the project.

Visitor Center - John Boyd Thacher State Park, NYSOPRHP, Voorheesville, NY

Landscape designer and planner for design development and construction documents for site development associated with a $3.5 million two-story, timber framed park visitor's center. Site development included pedestrian walks and plazas, vehicular circulation and parking, landscaping, and site furnishings. Green infrastructure stormwater management practices employed on this project include porous asphalt pavement and permeable brick pavers.

Welcome Center - Grafton Lakes State Park, NYSOPRHP, Grafton, NY

Landscape designer and planner for design development and construction documents for site development associated with a new $2.5 million, 5,000 square foot Nature/Visitors Center. The structure responds to the site in its design vocabulary, incorporating local rock outcroppings. Site development includes pedestrian walks and plazas, parking, wetland boardwalk, landscaping, and site furnishings. Green infrastructure stormwater management practices include a rain garden and permeable crushed stone drives and plaza.

Beach Reconstruction - Chenango Valley State Park, NYSOPRHP, Chenango Forks, NY

Landscape designer and planner responsible for site master planning and design of swimming and water play amenities that meet current recreational expectations of park patrons. Primary project elements include a renovated beach area that improves visual connectivity and

integrates pedestrian paths between the lake, spray play area, children's play area, expanded beach, boat rental, docks, and other recreational areas.

Park Cottage Colony - Sampson State Park, NYSOPRHP, Romulus, NY

Landscape designer and planner assisting with design development and construction documents for a new cottage colony on the shore of Seneca Lake. Program elements include accessible pedestrian walks, screened parking, signage, and lighting. Green infrastructure includes rain gardens, porous concrete pavement, and permeable crushed stone drives and parking. Careful cottage siting and tree clearing offer scenic lake views while preserving the uninterrupted forest edge along the waterfront.

Lower Entrance Design - Watkins Glen State Park, NYS OPRHP, Watkins Glen, NY

Landscape designer and planner for design development and contract documents for the renovation of the main entrance to the scenic and heavily visited Lower Falls area of the park. The project involves a complete redesign of the park entrance including walks, plazas, landscaping, and site furnishings. Parking was relocated to a less conspicuous location and replaced with a new great lawn and day use area. A new creek walk provides an interpretive promenade. A traffic signal was installed to enhance pedestrian access into the park. Sustainable stormwater management practices include porous asphalt pavement, porous concrete, bioretention areas, and permeable brick pavers.

East Gate Plaza - Walkway over the Hudson State Historic Park, NYSOPRHP, Poughkeepsie, NY

Landscape designer assisting with the preparation of construction documents for a retaining wall, plaza area, and pavilion at the east entrance of the 1.3-mile elevated pedestrian walkway spanning the Hudson River. The project includes visitor information, a souvenir store, and a multi-purpose outdoor covered area. The design included permeable pavements, native plantings, and site furnishings to complement the previous segments of the park design.

East Approach Visitor Center - Walkway over the Hudson State Historic Park, NYSOPRHP, Poughkeepsie, NY

Landscape designer and planner assisting with design and construction documents for a new comfort station at the east entrance of the 1.3-mile elevated pedestrian walkway spanning the Hudson River. The project includes visitor information, interpretive exhibits, and restroom facilities. A multi-purpose outdoor plaza accommodates public functions, education, and entertainment activities. Seating areas and level pads complemented by pavement accents provide rest areas for trail users and space for food concessions and picnicking. Parking and walkway enhancements complete universal access to east side park facilities.

West Approach Visitor Center - Walkway over the Hudson State Historic Park, NYSOPRHP, Highland, NY

Landscape designer and planner assisting with design and construction documents for a new welcome center at the west entrance of the 1.3-mile elevated pedestrian walkway spanning the Hudson River. The project includes visitor information, interpretive exhibits, restroom facilities and permanent OPRHP facilities. A multi-purpose outdoor amphitheater accommodates public functions, education, and entertainment activities. An adjacent courtyard deck provides a rest area for trail users and an outdoor space for food concessions and picnicking. Parking and walkway enhancements complete universal access to west side park facilities.

Robert Moses Parkway South Segment Redevelopment Plan - Niagara Falls State Park, NYSOPRHP, Niagara Falls, NY

Landscape designer assisting with a redevelopment plan for the south segment of the Robert Moses Parkway. The project restores the Park's south entrance to the original Olmsted/Vaux design by removing the divided highway and realigning it as an appropriately scaled roadway. The new plan allows direct pedestrian access, enhances the historic park landscape, improves vehicular circulation into the park and city, and creates natural habitat on land formerly occupied by the parkway.

East & West Bathhouse Renovations - Fair Haven Beach State Park, NYSOPRHP, Sterling, NY

Landscape designer and planner for design development through contract documents for site development associated with a $2.5 million renovation of two heavily used park bathhouse facilities and the surrounding pedestrian plaza. An exterior waiting area with outdoor showers, seat wall, and landscape planting provides necessary amenities with a warm and welcoming feel for patrons.

Washington Park Erosion and Mitigation Study – City of Albany, NY

Landscape designer supporting the development of a park erosion mitigation plan in one of oldest continuous public spaces in the nation. The plan addressed widespread erosion issues with a holistic approach, ensured the character of the park, balanced user needs relative to historic park design, preserved and incorporated historic design established by Frederick Law Olmsted, and sought consensus among stakeholders.

Kingston Connectivity Project - City of Kingston, NY

Landscape designer and planner assisting with schematic design of pedestrian and bicycle routes from Midtown Kingston to the Hudson River waterfront. Plans include streetscape revitalization utilizing "complete streets" techniques and adaptive reuse of the 1½ mile-long Kingston Point Rail Trail. Streetscape and trail design included new signage, pedestrian crosswalks, trailhead park nodes, kiosk shelters, seating, lighting, landscape plantings, and improvement of existing railroad trestles and tunnel for pedestrian use.

Regional Girl Scout Camp Development Master Plan - Girl Scouts of Northeastern New York, Albany, NY

Landscape designer and planner for a comprehensive facilities assessment for numerous Girl Scout camps located in Northeastern New York. Evaluated the existing conditions and programs among various camp properties and developed the conceptual site master plan for future investment and improvements.

Schenectady Municipal Golf Course Restoration - City of Schenectady, NY

Landscape designer and planner for the focused redesign of the 1930s-era golf course. Developed plans for all softscape improvements to the course, including modeling of course drainage improvements, and facilitated Army Corps and NYS DEC permitting necessary for construction.

Interpretive Shelter - Ganondagan State Historic Site, NYSOPRHP, Victor, NY

Landscape designer assisting with site design for a new park interpretive shelter. The project design incorporated architectural and graphic reflections of the Native Americans who inhabited the sacred site. The design of the three-tiered berm seating area and double-sided masonry chimney allows for intimate group educational settings during the warmer months, and keeps cold winds out of the shelter in the cooler season.

Brookwood Point, Universal Access Trail & Hand Carry Boat Launch Amenities - Otsego Land Trust, Cooperstown, NY

Landscape designer involved with the schematic design of a universal access trail and hand carry boat launch at the Brookwood Point gardens and nature education center. Responsible for design of new signage to complement entry and access improvements to the site, as well as the facilitation of permitting and DOT design review.

Goodwin Park Golf Course Facility Analysis - City of Hartford, Hartford, CT

Landscape designer and planner assisting with a facility master plan assessing the potential for existing clubhouse structures to be renovated and expanded to accommodate new recreational and social uses to meet user demand and generate additional revenue. The master plan also evaluated the potential of the golf course, originally designed by Frederick Law Olmsted, to be modified to accommodate a driving range and golf training facility.

Glimmerglass Strategic Plan of Action - Glimmerglass State Park, NYSOPRHP, Cooperstown, NY

Landscape designer and planner assisting with a conceptual feasibility study for the design and location of new park amenities including: a new Nature Educational Center, new camping and bathhouse facilities, cabins, and interpretive trails. The project objectives were to establish facilities that improved the visitor experience and protected scenic viewsheds within this culturally significant and picturesque park.

Comprehensive Operations Plan - Niagara Falls State Park, Niagara Falls, NY

Landscape designer assisting with design development and contract documents for enhancements to the Visitor Center and Prospect Point Lookout. The project involved redesign of the pedestrian plaza and access walkways connecting with the bus arrival area and city streets. Site amenities including paving systems, site furnishings, lighting, landscaping, and signage were improved to enhance the pedestrian experience.

Yonder Hill Park – Town of Lake George, Lake George, NY

Landscape designer involved assisting with the development of a concept plan for a 6-acre open space park designed as a watershed protection resource. The park is designed as a low impact public greenspace with passive recreation opportunities associated with the future Warren County Bikeway.

Five Rivers Environmental Education Center – Delmar, NY*

Landscape designer responsible for design development and contract documents for a new Visitor Center and Guided School Program building. The project involved developing spaces to allow accessible opportunities for interaction with live exhibits, such as a wheelchair-accessible touch-pond; site grading; sustainable stormwater management; and conceptual design graphics.

Nature's Discovery Playground - Greenburgh Nature Center, Scarsdale, NY*

Landscape designer responsible for conceptual design documents for a children's nature playground. The project included nature-inspired play structures and spaces to accommodate a variety of ages and abilities.

Saugerties Public Library Site Development – Saugerties, NY*

Landscape designer responsible for the preparation of a landscape plan associated with an expansion of the library building. The $6.995 million library improvements included a significant expansion and renovation to the Town's 1915 Carnegie Library, universal access improvements, pedestrian amenities, site lighting, and landscaping that focused on native plants.

Mohonk Preserve Trails Development - New Paltz, NY*

Landscape designer assisting with the management and development of the Preserve's trails and land use. The project involved public outreach and stakeholder involvement to locate and map new multiple-use trail networks that would take advantage of site features and views of the Shawangunk Ridge.

Primary Education Planning & Design

High Meadow School - Stone Ridge, NY*

Landscape designer responsible for the conceptual design of an entrance walkway, gardens, and tree plantings to improve the aesthetic quality of campus arrival. Project included a detailed landscape planting plan.

Residential Planning & Design

Soundview Point – Queens, NY*

Landscape designer responsible for design development and contract documents for the modification of a waterfront walkway in conjunction with development of a new townhome community at College Point, Queens. The project included redesign of the walkway system, site furnishings, lighting, and landscape planting.

W. Alton Jones Cell Science Center - North Elba, NY

Landscape designer and planner assisting with the facility master plan to create a conceptual vision for the development potential of a 34-acre parcel in the Town of North Elba, just outside of Lake Placid. The project involved the development of three different development concepts for the property. The first provides 24 new active adult and single-family residences as well as landscape enhancements around the repurposed Cell Science building. The second involved the development of a regulation soccer field, parking, and trails along with the repurposing of the Cell Science building. The third concept created a sports-focused campus, including a field house, sports field, student residences, and the reuse of the existing Cell Science building for classrooms and student services.

Resort/Tourism Planning & Design

Master Plan and Permitting Updates - Whiteface Club and Resort, Lake Placid, NY

Landscape designer and planner for a facility master plan update creating a conceptual vision for a new clubhouse, residential units, and support facilities including administration, restaurants, and banquet facilities to expand the resort's special event and conference services.

** Prior to association with Saratoga Associates*

ANDREW S. TRODLER

LANDSCAPE ARCHITECT & 3D COMPUTER MODELER

CREATING COMPELLING DESTINATIONS | ENRICHING COMMUNITIES | SAFEGUARDING SPECIAL PLACES www.saratogaassociates.com

PROJECT ROLE

Landscape Architect
3D Computer Modeler

PROFESSIONAL EXPERIENCE

Andrew Trodler has over 19 years of experience in all phases and facets of landscape architecture throughout the Carolinas, Texas, and New York State. Andrew has worked on urban, resort, commercial, institutional, residential, golf course, and mixed-use projects. Andrew's recent endeavors involve the use of 3D computer modeling and imaging. His role has been in creating the vision or the story of what a project beholds for better understanding by clients, stakeholders, municipalities, and consultants. If the old adage holds true, "a picture is worth a thousand words", a model is worth a thousand pictures. Andrew's experience has proven to be a versatile asset to any project.

EDUCATION

Bachelors in Landscape Architecture
SUNY College of Environmental Science and Forestry, 1996

Associates in Applied Science, horticulture,
SUNY Delhi, 1993

REGISTRATION/CERTIFICATION

North Carolina - License # 1355

REPRESENTATIVE EXPERIENCE

Commercial Landscape Architecture

Mayfaire Towne Center – City of Wilmington, NC *

Landscape architect responsible for coordinating the new mixed-use chapter of the city's Unified Development Ordinance with city officials for rezoning, site plan approval, and phase one construction, consisting of retail, office, residential, and community open space components. Mayfaire Towne center was the first official mixed-use project in the city of Wilmington circa 2000-2001 and was the prototype to becoming the flagship for which all mixed-use projects going forward were to be approved by.

Lowe's Corporate Headquarters – City of Mooresville, CN *

Landscape architect involved with site feasibility studies, site selection, and initial master planning for the Lowe's corporate headquarters campus. Location within the Lake Norman watershed overlay district governed the ratio of maximum developed to preserved open space acreage thereby becoming a primary objective for selection of a site large enough to accommodate project build out while meeting the economic goals laid out by the client.

Regents Square – City of Houston, TX *

Landscape architect assisting with design development of a mixed-use project on the edge of downtown Houston, including streetscape design, ground level retail and parking structures, mid level office components, and upper level residential components complete with roof top gardens and amenities.

Cliffdale Plaza – City of Fayetteville, NC *

Landscape Designer involved with design and drafting of planting plans and details for a small commercial property in accordance to the city's Unified Development ordinance.

Carolina Sportsplex – City of Charlotte, NC *

Consultant involved with construction of a 3D computer model of a multi field out door soccer facility for use in site plan approval, marketing, and understanding of the project in general.

Zion Senior Community – City of Cornelius, NC *

Consultant involved construction of a 3D computer model and video tour of an assisted living retirement community for using in marketing outreach.

Elm Tree Court – City of Southern Pines, NC *

Consultant involved with construction of a 3D computer model of a small streetside courtyard in the central business district of Southern Pines for use in Historic Preservation Board approval, marketing, and understanding of the project in general.

Scotia Village – City of Laurinburg, NC *

Consultant involved with planning and drafting of a community garden plan. Scotia village is a specialized community for those with Alzheimer's disease and the garden seeks to provide a garden with therapeutic entities aimed at providing a sense of comfort for those in need. A 3D computer model was created to supplement the plans to help showcase the vision of the garden to clients, and city representatives.

Dollar General – Village of Germantown, NY *

Consultant involved with construction of a 3D computer model of a proposed Dollar General store for use in a visual assessment exercise consisting of existing conditions photographs and proposed built project simulations.

Institutional / Municipal Planning and Design

Langford Road Realignment – Blythewood, SC *

Consultant involved with streetscape design for sections of Langford and Blythewood Roads to be improved and realigned under the direction of SCDOT. A 3D computer model of the proposed alignments and steetscape was constructed for use in generating aerial fly through animations to help present the project to city representatives and affected property holders.

Stanley Central Business District Master Plan – Stanley, NC *

Consultant assisting with efforts to update the Town's comprehensive plan. The planning process included, developing a community vision, and establishing a strategy going forward. The goal of the planning process was to establish a streetscape plan introducing a much needed street tree program and revitalization of vacant properties into vibrant community parks and open spaces. The use of 3d modeling and imaging was incorporated into the planning process to showcase the potential of the planning and revitalization efforts.

University of North Carolina, Charlotte – City of Charlotte, NC *

Consultant and planner assisting with the development of the conceptual site design for the heart of the university campus. The design enhances outdoor pedestrian flow and incorporates site, architectural, and accessibility. Master plan elements include open space enhancements, orientation and wayfinding improvements, vehicular and modal transportation improvements.

Grace Presbyterian Church – City of Houston, TX *

Landscape architect involved with design development and construction documents for redevelopment of an overcrowded courtyard within a church complex. As population of parishioners has increased the capacity of the courtyard has been over extended. The design called for an increase in pedestrian oriented square footage while preserving as much of the trees and green space in the original courtyard as possible.

Bethel Presbyterian Church – Town of Clover, SC *

Consultant involved with construction of a 3D computer model of the proposed church additions and site improvements for use by the church community in understanding of the project.

Pilot's Ridge Elementary, Middle, and High School – City of Wilmington, NC *

Landscape architect involved with design development of a joint venture between the Hanover County school district and Hanover County parks department in efforts to maximize availably facilities, while maintaining distinction and separation between the two specific landuses.

Parks/Preserves/Conservancies

Center Park Revitalization – Village of Dolgeville, NY

Lead designer for the rehabilitation of a park in the Village of Dolgeville to enhance the park's use and connectivity to the community. Primary elements of the park design are a new four-season pavilion with restrooms and a kitchen, improved parking, enhanced basketball court, a new splash pad, and site enhancements including signage, lighting, and landscaping. The final appearance of the design elements were guided by feedback received during outreach to students, stakeholders, a project committee, and the community. Saratoga Associates is guiding the project from design development through construction.

Minnewaska State Park – Town of Kerhonkson, NY *

Consultant involved with construction of a computer 3D model and images of a new visitor center and site improvements for better understanding of the project by clients, stakeholders, municipalities, and consultants.

Pinehurst Arboretum – Village of Pinehurst, NC *

Landscape architect involved with design development of a community arboretum and contract documents for an initial phase of the project.

Fahnestock State Park – Town of Cornwall, NY *

Consultant involved with construction of a computer 3D model and images of a new visitor center and site improvements for better understanding by clients, stakeholders, municipalities, and consultants.

Buffalo Bayou Greenway Trail – City of Houston, TX *

Landscape architect assisting with design development of an urban greenway trail within the Buffalo Bayou. The city of Houston has been systematically converting and engineering the concrete drainage channels back to more natural conditions where the reclaimed space is now viable green space for trails and parks. The greenway trail design is another link in a rapidly growing network of trails, parks and open space.

Mohonk Peserve Testimonial Gateway – City of New Paltz, NY *

Consultant involved with construction of a computer 3D model and images of a new visitor center and site improvements on recently acquired acreage for a better understanding of the project by clients, stakeholders, municipalities, and consultants. The newly acquired property was previously owned by the original founding family of the preserve and has on it the testimonial gateway and Oak tree lined portion of driveway; both of which were part of the original estate.

Multi-Family Residential

Jefferson at Cary Towne – City of Raleigh, NC *

Landscape architect involved with design development and construction documents for an apartment community with amenities.

The Willows – City of Labanon, PA *

Landscape architect involved with design development and landscape plans for an apartment community with amenities.

Fulton Street Apartments – City of Poughkeepsie, NY *

Consultant involved with construction of a computer 3D model and images of a new apartment project improvements near Marist College for a better understanding of the project by clients, stakeholders, municipalities, and consultants.

Savannah Row – City of Huntersville, NC *

Consultant involved with construction of a computer 3D model and images of a new apartment project improvements near Marist Colege for a better understanding of the project by clients, stakeholders, municipalities, and consultants.

Single Family Residential

Torres Residence – City of Poughkeepsie, NY •

Consultant involved with construction of a computer 3D model and images of site improvements for a better understanding of the project by the home owner. Improvements included the addition of a pool, multi-level decks, a dining patio, and landscaping.

Currey Horse Farm – City of Southern Pines, NC *

Landscape architect assisting with the master planning of a private estate and horse farm on 11 plus acres including new residence, entry drive stables, paddocks, and pastures.

Sullivan Residence – City of Southern Pines, NC *

Landscape architect assisting with the master planning of a private estate including new residence, entry drive, pool, and landscape plans.

Fogarty Residence – Village of Pinehurst, NC *

Landscape architect assisting with the master planning and drafting of landscape plans for a private residence.

* Prior to association with Saratoga Associates

Attachment 8-F

VISUAL CONTRAST RATING FORMS

VISUAL CONTRAST RATING FORM

Project:	**Tracy Solar Project**	Date:	26-Aug-21
Viewpoint Number	**2**	Preparer:	MWA
Resource Name:	**Hart Road**		
Municipality:	Clayton		
Resource Type:	Local Road		
Landscape Similarity Zone	Rural Agricultural		

Scenic Quality *(please rate quality of existing view)* ☐ Low ☑ Moderate ☐ High

Sensitivity Scale				
	Very Low	Low	Moderate	High
VSR Classification	NA	**Ordinary Roadside**		Visually Sensitive Resource
Distance Zone	Background	Middleground	**Foreground**	Immediate Foreground
Viewer Group	Rarely Viewed	Through Travel/Comm.	**Local Residents**	Recreational
Duration/Frequency of View	Infrequent	Brief/Transient	Extended/Repeated	**Continuous**
Intensity of use	Rarely Visited	**Low Intensity**	Moderate Intensity	High Intensity

Visual Contrast Rating							
	None		Weak		Moderate		Strong
Score Range	0	0.5	1	1.5	2	2.5	3
Condition Evaluated	Without Mitigaton	Landscape Mitigation (Year 7-9 Growth)	Description of Contrast				
Landform	1	NA	Landscape is completely flat. No visible change to landform. Panels are visible but do not alter the visual characteristic or the landform or draw attention.				
Vegetation	1	NA	Scene is dominated by low deciduous scrub vegetation. No alteration to existing vegetation. Slight contrast caused by color, line and geometric form is diminished by the presence of foreground vegetation to remain.				
Land Use	1	NA	Current land use is low density residential and undeveloped scrubland. Energy development is introduced but not obvious.				
Water	0	NA	No water within view.				
Sky	0.5	NA	Project does not appreciably alter the skyline.				
Contrast Total	3.5	NA					
Average	0.7	NA					

VISUAL CONTRAST RATING FORM

Project:	**Tracy Solar Project**	Date:	26-Aug-21
Viewpoint Number	**8**	Preparer:	MWA
Resource Name:	**Wilder Road**		
Municipality:	Clayton/Orleans		
Resource Type:	Local Road		
Landscape Similarity Zone	Rural Agricultural		

Scenic Quality *(please rate quality of existing view)* ☐ Low ☑ Moderate ☐ High

Sensitivity Scale

	Very Low	Low	Moderate	High
VSR Classification	NA	**Ordinary Roadside**		Visually Sensitive Resource
Distance Zone	Background	Middleground	Foreground	**Immediate Foreground**
Viewer Group	Rarely Viewed	Through Travel/Comm.	**Local Residents**	Recreational
Duration/Frequency of View	Infrequent	Brief/Transient	Extended/Repeated	**Continuous**
Intensity of use	Rarely Visited	**Low Intensity**	Moderate Intensity	High Intensity

Visual Contrast Rating

	None		Weak		Moderate		Strong
Score Range	0	0.5	1	1.5	2	2.5	3

Condition Evaluated	Without Mitigaton	Landscape Mitigation (Year 7-9 Growth)	Description of Contrast
Landform	2	1.5	Landform is planar. Project will not alter the existing landform, but solar panels will limit extended vistas of the distant agricultural plane. The horizontal form of the panels is generally consistent with the landform.
Vegetation	1.5	1	Existing vegetation is predominantly scrub. Project will remove minor foreground scrub marginally altering roadside enclosure. Geometric form, line, color and texture of the panels is in contrast with more random naturalistic elements of existing vegetation. Landscape mitigation tempers color and texture contrast by minimizing the degree of panel visibility.
Land Use	2.5	2	Existing land use is undeveloped scrubland, unplanted agricultural with low density rural residential along the roadside. New energy development will be a new land use and visually dominant. Solar panels will add a sense of enclosure to the roadside view.
Water	0	0	No water within view.
Sky	2	1.5	Solar panels do not extend above the skyline. Panel color contrasts with the background tree line at the horizon drawing attention away from the existing natural transition from tree line to sky. Mitigating vegetation breaks the skyline, but is viewed as a beneficial change as compared to the unmitigated condition.
Contrast Total	8	6	
Average	1.6	1.2	

VISUAL CONTRAST RATING FORM

Project:	**Tracy Solar Project**	Date:	26-Aug-21
Viewpoint Number	**12**	Preparer:	MWA
Resource Name:	**Wilder Road**		
Municipality:	Clayton/Orleans		
Resource Type:	Local Road		
Landscape Similarity Zone	Rural Agricultural		

Scenic Quality *(please rate quality of existing view)* ☐ Low ☑ Moderate ☐ High

Sensitivity Scale

	Very Low	Low	Moderate	High
VSR Classification	NA	**Ordinary Roadside**		Visually Sensitive Resource
Distance Zone	Background	Middleground	Foreground	**Immediate Foreground**
Viewer Group	Rarely Viewed	Through Travel/Comm.	**Local Residents**	Recreational
Duration/Frequency of View	Infrequent	Brief/Transient	Extended/Repeated	**Continuous**
Intensity of use	Rarely Visited	**Low Intensity**	Moderate Intensity	High Intensity

Visual Contrast Rating

	None		Weak		Moderate		Strong
Score Range	0	0.5	1	1.5	2	2.5	3

Condition Evaluated	Without Mitigaton	Landscape Mitigation (Year 7-9 Growth)	Description of Contrast
Landform	2	1.5	The existing terrain is highly planar in form. Project will not alter the existing terrain. Solar panels have a strong geometric linear and horizontal form which contrasts wth the natural flow of the terrain. Fence line and panel edges add a contrasting noticeable vertical element.
Vegetation	2.5	2	Current vegetation is low meadow grasses. Project will require removal of a low hedgerow visible at the right edge of the photo. Project will not alter distant tree line. Form, color and texture of the solar paels are in clear contrast with the patterns of existing meadow grass vegetation. Landscape mitigation tempers color and texture contrast by minimizing the degree of panel visibility.
Land Use	2.5	2	Current land use is unplanted agriculture. Low density single family residential homes are visible along the roadside beyond frame of the photo. The project will change the land use to energy generation. Solar panels will be visually dominant and will add a sense of enclosure to the roadside view.
Water	0	0	No water within view.
Sky	2	1.5	Solar panels do not extend above the skyline. Panel color contrasts with the background tree line at the horizon drawing attention away from the existing natural transition from tree line to sky. Mitigating vegetation breaks the skyline, but is viewed as a beneficial change as compared to the unmitigated condition.
Contrast Total	9	7	
Average	1.8	1.4	

VISUAL CONTRAST RATING FORM

Viewpoint Number	**13**	Preparer:	MWA
Resource Name:	**Wilder Road**		
Municipality:	Clayton/Orleans		
Resource Type:	Local Road		
Landscape Similarity Zone	Rural Agricultural		

Scenic Quality *(please rate quality of existing view)* ☐ Low ☑ Moderate ☐ High

Sensitivity Scale

	Very Low	Low	Moderate	High
VSR Classification	NA	**Ordinary Roadside**		Visually Sensitive Resource
Distance Zone	Background	Middleground	Foreground	**Immediate Foreground**
Viewer Group	Rarely Viewed	Through Travel/Comm.	**Local Residents**	Recreational
Duration/Frequency of View	Infrequent	Brief/Transient	Extended/Repeated	**Continuous**
Intensity of use	Rarely Visited	**Low Intensity**	Moderate Intensity	High Intensity

Visual Contrast Rating

	None		Weak		Moderate		Strong
Score Range	0	0.5	1	1.5	2	2.5	3

Condition Evaluated	Without Mitigaton	Landscape Mitigation (Year 7-9 Growth)	Description of Contrast
Landform	2	NA	The existing terrain is highly planar in form. Project will not alter the existing terrain. Solar panels have a strong geometric linear and horizontal form which contrasts wth the natural flow of the terrain. Fence line and panel edges add a contrasting noticeable vertical element.
Vegetation	2	NA	Current vegetation is low meadow grasses. Project will require removal of a low hedgerow visible at the right edge of the photo and a small island tree and surrounding scrub in the center of the photo. Project will also alter a portion of the distant tree line. The gravel access road breaks the uniformity of the foreground meadow. Form, color and texture of the solar panels are in clear contrast with the patterns of existing meadow grass vegetation.
Land Use	2.5	NA	Current land use is unplanted agriculture. Low density single family residential homes are visible along the roadside beyond frame of the photo. The project will change the land use to energy generation. Solar panels will be visually dominant.
Water	0	NA	No water within view.
Sky	2	NA	Solar panels do not extend above the skyline. Tree removal will alter the skyline to a minor degree. Panel color contrasts with the background tree line at the horizon drawing attention away from the existing natural transition from tree line to sky.
Contrast Total	8.5	NA	
Average	1.7	NA	

Project:	**Tracy Solar Project**	Date:	26-Aug-21

VISUAL CONTRAST RATING FORM

Viewpoint Number	**25**	Preparer:	MWA
Resource Name:	**NY 180 (Rottiers, John N. Farm NRHP listed site)**		
Municipality:	Orleans		
Resource Type:	High Used Road/NRHP		
Landscape Similarity Zone	Rural Agricultural		

Scenic Quality *(please rate quality of existing view)* ☐ Low ☑ Moderate ☐ High

Sensitivity Scale				
	Very Low	Low	Moderate	High
VSR Classification	NA	Ordinary Roadside		**Visually Sensitive Resource**
Distance Zone	Background	Middleground	**Foreground**	Immediate Foreground
Viewer Group	Rarely Viewed	Through Travel/Comm.	**Local Residents**	Recreational
Duration/Frequency of View	Infrequent	Brief/Transient	**Extended/Repeated**	**Continuous**
Intensity of use	Rarely Visited	Low Intensity	**Moderate Intensity**	High Intensity

Visual Contrast Rating							
	None		Weak		Moderate		Strong
Score Range	0	0.5	1	1.5	2	2.5	3
Condition Evaluated	Without Mitigaton	Landscape Mitigation (Year 7-9 Growth)	Description of Contrast				
Landform	2	NA	Landscape gently slopes upward to a low ridge which forms the visible horizon. Th project creates no visible change to landform. Solar panels have a strong geometric linear and horizontal form which contrasts wth the natural flow of the terrain. Panel edges add a contrasting				
Vegetation	1.5	NA	Scene is dominated by low deciduous scrub vegetation with unplanted agricurltural field visible in the mid-ground. No alteration to existing vegetation is evident. Slight contrast caused by color, line and geometric form is somewhat diminished by the presence of foreground vegetation to remain.				
Land Use	2	NA	Current land use is low density residential and undeveloped scrubland. Energy development is introduced but not obvious.				
Water	0	NA	No water within view.				
Sky	2	NA	Solar panels appear slightly above the skyline formed by the open meadow ridge. Geometric panels diminish the natural form of the horizon.				
Contrast Total	7.5	NA					
Average	1.5	NA					

Project:	**Tracy Solar Project**	Date:	26-Aug-21

VISUAL CONTRAST RATING FORM

Viewpoint Number	**30**	Preparer:	MWA
Resource Name:	**CR 12**		
Municipality:	Orleans		
Resource Type:	Local Road		
Landscape Similarity Zone	Rural Agricultural		

Scenic Quality *(please rate quality of existing view)* ☐ Low ☑ Moderate ☐ High

Sensitivity Scale				
	Very Low	Low	Moderate	High
VSR Classification	NA	**Ordinary Roadside**		Visually Sensitive Resource
Distance Zone	Background	Middleground	Foreground	**Immediate Foreground**
Viewer Group	Rarely Viewed	Through Travel/Comm.	**Local Residents**	Recreational
Duration/Frequency of View	Infrequent	Brief/Transient	**Extended/Repeated**	**Continuous**
Intensity of use	Rarely Visited	Low Intensity	**Moderate Intensity**	High Intensity

Visual Contrast Rating							
	None		Weak		Moderate		Strong
Score Range	0	0.5	1	1.5	2	2.5	3
Condition Evaluated	Without Mitigaton	Landscape Mitigation (Year 7-9 Growth)	Description of Contrast				
Landform	2	1.5	The existing terrain is highly planar in form. Project will not alter the existing terrain. Solar panels have a strong geometric linear and horizontal form which contrasts wth the natural flow of the terrain. O&M building, fence line and panel edges add a contrasting clear geometric vertical element.				
Vegetation	2.5	2	Current vegetation is low meadow grasses in the foreground with scrub vegetation interspersed with moderately sized trees beyond. Project will require removal this vegetation. The more distant tree line will become exposed. Form, color and texture of the solar panels are in clear contrast with the patterns of existing meadow and scrub vegetation currnlty withn view. Box likel form of the O&M building is in strong contrast with the naturalistic for of the existing vegetation. Landscape mitigation tempers color and texture contrast to some degree.				
Land Use	2.75	2.5	Current land use is meadow and scrubland. Low density single family residential homes are visible along the roadside beyond frame of the photo. The project will change the land use to energy generation. Solar panels will be visually dominant and will add a sense of enclosure to the roadside view.				
Water	0	0	No water within view.				
Sky	2.25	2	Removal of foreground vegetation alters the skyline. Solar panels do not extend above the newly opened background skyline.the O&M building does extend above the skyline disrupting the naturalistic transition between vegetatin and sky. Panel color contrasts with the background tree line at the horizon drawing attention away from the existing natural transition from tree line to sky. Mitigating vegetation breaks the skyline, but is viewed as a beneficial change as compared to the unmitigated condition.				
Contrast Total	9.5	8					
Average	1.9	1.6					

Project:	**Tracy Solar Project**	Date:	26-Aug-21

VISUAL CONTRAST RATING FORM

Viewpoint Number	**33**	Preparer:	MWA
Resource Name:	**CR 12 at Tracy Road**		
Municipality:	Orleans		
Resource Type:	Local Road		
Landscape Similarity Zone	Rural Agricultural		

Scenic Quality *(please rate quality of existing view)* ☐ Low ☑ Moderate ☐ High

Sensitivity Scale				
	Very Low	Low	Moderate	High
VSR Classification	NA	**Ordinary Roadside**		Visually Sensitive Resource
Distance Zone	Background	Middleground	Foreground	**Immediate Foreground**
Viewer Group	Rarely Viewed	Through Travel/Comm.	**Local Residents**	Recreational
Duration/Frequency of View	Infrequent	Brief/Transient	**Extended/Repeated**	**Continuous**
Intensity of use	Rarely Visited	Low Intensity	**Moderate Intensity**	High Intensity

Visual Contrast Rating							
	None		Weak		Moderate		Strong
Score Range	0	0.5	1	1.5	2	2.5	3

Condition Evaluated	Without Mitigaton	Landscape Mitigation (Year 7-9 Growth)	Description of Contrast
Landform	2	NA	The existing terrain is highly planar in form. An existing wooden shed is visible at the right of the photo. Project will not alter the existing terrain. Solar panels have a strong geometric linear and horizontal form which contrasts wth the natural flow of the terrain. Fence line and panel edges add a contrasting noticeable vertical element. The "H" frame portion of the substation is visible above the solar panels in the center of the photo. Substation adds a new geometric vertical element.
Vegetation	2.5	NA	Current vegetation is low meadow grasses. Project will require removal of a thin hedgerow visible in the background. The form color and texture of the solar panels are in clear contrast with the patterns of existing meadow grass and background vegetation.
Land Use	2.5	NA	Current land use is unplanted agriculture. An existing overhead utility oline and wooden "H" frame towers are visible at the right side of the photo. A working farm including metal barns and outdoor equipment storage is visble along the roadside beyond frame of the photo. A single family residence is also visible. The project will change the land use from open meadow to energy generation. Solar panels will be visually dominant.
Water	0	NA	No water within view.
Sky	2	NA	Solar panels do not extend above the skyline. The upper portion of teh substation adds a vertical element extending slightly above tree line. Tree removal will alter the skyline to a minor degree. Panel color contrasts with the background tree line at the horizon drawing attention away from the existing natural transition from tree line to sky.
Contrast Total	9	NA	
Average	1.8	NA	

Project:	**Tracy Solar Project**	Date:	26-Aug-21

SARATOGA ASSOCIATES

VISUAL CONTRAST RATING FORM

Viewpoint Number	**45**	Preparer:	MWA
Resource Name:	**Carter Road**		
Municipality:	Orleans		
Resource Type:	Local Road		
Landscape Similarity Zone	Rural Agricultural		

Scenic Quality *(please rate quality of existing view)* ☑ Low ☑ Moderate ☐ High

Sensitivity Scale				
	Very Low	Low	Moderate	High
VSR Classification	NA	**Ordinary Roadside**		Visually Sensitive Resource
Distance Zone	Background	Middleground	Foreground	**Immediate Foreground**
Viewer Group	Rarely Viewed	Through Travel/Comm.	**Local Residents**	Recreational
Duration/Frequency of View	Infrequent	Brief/Transient	**Extended/Repeated**	**Continuous**
Intensity of use	Rarely Visited	Low Intensity	**Moderate Intensity**	High Intensity

Visual Contrast Rating							
	None		Weak		Moderate		Strong
Score Range	0	0.5	1	1.5	2	2.5	3
Condition Evaluated	Without Mitigaton	Landscape Mitigation (Year 7-9 Growth)	Description of Contrast				
Landform	2	2	The existing terrain is highly planar in form rising gently to a nodescript ride in the mid-ground. Project will not alter the existing terrain. Solar panels have a strong geometric linear and horizontal form which contrasts wth the natural flow of the terrain. Fence line and panel edges add a contrasting noticeable vertical element.				
Vegetation	2.5	2	Current vegetation is low meadow grasses. removal of vegetation is not evident. Form, color and texture of the solar paels are in clear contrast with the patterns of existing meadow grass vegetation. Landscape mitigation tempers color and texture contrast by minimizing the degree of panel visibility.				
Land Use	2.5	2	Current land use is unplanted agriculture. Low density single family residential homes are visible along the roadside beyond frame of the photo. The project will change the land use to energy generation. Solar panels will be visually dominant and will add a sense of enclosure to the roadside view.				
Water	0	0	No water within view.				
Sky	2.5	2	Solar panels extend above the skyline creating a strong horizontal eometric form in contrast wiht the current naturalistic transition between treeline and sky. Mitigating vegetation breaks up this linear condition to some degree. Mitigation planting breaks the skyline, but is viewed as a beneficial change as compared to the unmitigated condition.				
Contrast Total	9.5	8					
Average	1.9	1.6					

VISUAL CONTRAST RATING FORM

Project:	**Tracy Solar Project**	Date:	26-Aug-21
Viewpoint Number	**2**	Preparer:	ELG
Resource Name:	**Hart Road**		
Municipality:	Clayton		
Resource Type:	Local Road		
Landscape Similarity Zone	Rural Agricultural		

Scenic Quality *(please rate quality of existing view)* ☐ Low ☑ Moderate ☐ High

Sensitivity Scale				
	Very Low	Low	Moderate	High
VSR Classification	NA	**Ordinary Roadside**		Visually Sensitive Resource
Distance Zone	Background	Middleground	**Foreground**	Immediate Foreground
Viewer Group	Rarely Viewed	Through Travel/Comm.	**Local Residents**	Recreational
Duration/Frequency of View	Infrequent	Brief/Transient	Extended/Repeated	**Continuous**
Intensity of use	Rarely Visited	**Low Intensity**	Moderate Intensity	High Intensity

Visual Contrast Rating							
	None		Weak		Moderate		Strong
Score Range	0	0.5	1	1.5	2	2.5	3

Condition Evaluated	Without Mitigaton	Landscape Mitigation (Year 7-9 Growth)	Description of Contrast
Landform	0.5	NA	Existing landscape is a flat plain. The project is barely visible in the landscape and does not alter the landform.
Vegetation	1	NA	Existing vegetation includes lawn, with meadow and limited scrubby vegetation in the foreground and along the horizon. The projectdoes not appear to impact existing vegeation, but has a slight contrast to vegetation along the horizon due to its form and color.
Land Use	1	NA	Dominant land use appears undeveloped (meadow), bordering current rural residential. The project is slightly visible but does not impact the land use.
Water	0	NA	No water in view.
Sky	0.5	NA	View of the skyline is generally open. The existing horizon is occasionally interrupted by the vertical element of trees. The project is visible at the bottom of the horizon but is barely perceptible as its form follows the horizon.
Contrast Total	3	NA	
Average	0.6	NA	

VISUAL CONTRAST RATING FORM

Project:	**Tracy Solar Project**	Date:	26-Aug-21
Viewpoint Number	**8**	Preparer:	ELG
Resource Name:	**Wilder Road**		
Municipality:	Clayton/Orleans		
Resource Type:	Local Road		
Landscape Similarity Zone	Rural Agricultural		

Scenic Quality *(please rate quality of existing view)* ☐ Low ☑ Moderate ☐ High

Sensitivity Scale				
	Very Low	Low	Moderate	High
VSR Classification	NA	**Ordinary Roadside**		Visually Sensitive Resource
Distance Zone	Background	Middleground	Foreground	**Immediate Foreground**
Viewer Group	Rarely Viewed	Through Travel/Comm.	**Local Residents**	Recreational
Duration/Frequency of View	Infrequent	Brief/Transient	Extended/Repeated	**Continuous**
Intensity of use	Rarely Visited	**Low Intensity**	Moderate Intensity	High Intensity

Visual Contrast Rating							
	None		Weak		Moderate		Strong
Score Range	0	0.5	1	1.5	2	2.5	3

Condition Evaluated	Without Mitigaton	Landscape Mitigation (Year 7-9 Growth)	Description of Contrast
Landform	1.5	1	Existing landscape is a flat plain. While the project does not change the landform, it alters the view of the middle and background of the landscape with a contrast in form and texture.
Vegetation	1.5	1.5	Existing landscape includes a residential lawn, adjacent meadow, distant field, and low vegetation along the horizon. There are some trees in the middle and foreground. The project will remove some of the middleground vegetation and block views of the distant vegetation. Mitigated view further limits the view beyond and contrasts the existing vegetation, adding additional verticality and change in form.
Land Use	2.5	2	Existing land use is undeveloped agricultural adjacent to rural residential. The project is dominant in the landscape and provides strong contrast in form and scale to the existing land use elements. Mitigation screens a portion of the project, but remains in contrast to the existing limited vegetation in the open landscape.
Water	0	0	No water in view.
Sky	2	1.5	Existing skyline is visible above vegetation that borders the field. Project does not extend beyond this vegetation, but is a peceptible feature due to its form and presence in the landscape. Mitigation also affects view of the skyline, but with less contrast than the unmitigated condition.
Contrast Total	7.5	6	
Average	1.5	1.2	

SARATOGA ASSOCIATES

VISUAL CONTRAST RATING FORM

Project:	**Tracy Solar Project**	Date:	26-Aug-21
Viewpoint Number	**12**	Preparer:	ELG
Resource Name:	**Wilder Road**		
Municipality:	Clayton/Orleans		
Resource Type:	Local Road		
Landscape Similarity Zone	Rural Agricultural		

Scenic Quality *(please rate quality of existing view)* ☐ Low ☑ Moderate ☐ High

Sensitivity Scale				
	Very Low	Low	Moderate	High
VSR Classification	NA	**Ordinary Roadside**		Visually Sensitive Resource
Distance Zone	Background	Middleground	Foreground	**Immediate Foreground**
Viewer Group	Rarely Viewed	Through Travel/Comm.	**Local Residents**	Recreational
Duration/Frequency of View	Infrequent	Brief/Transient	Extended/Repeated	**Continuous**
Intensity of use	Rarely Visited	**Low Intensity**	Moderate Intensity	High Intensity

Visual Contrast Rating							
	None		Weak		Moderate		Strong
Score Range	0	0.5	1	1.5	2	2.5	3

Condition Evaluated	Without Mitigaton	Landscape Mitigation (Year 7-9 Growth)	Description of Contrast
Landform	2	1.5	Existing landscape is a flat plain. Proposed project does not perceptibly alter the topography but panel form, scale,and texture are dominant. The vertical form of the fencing is also visually dominant.
Vegetation	2.5	2	Existing vegetation is an open field with distant treeline along the horizon and some scrub vegetation at the edges. The project provides strong contrast in form, color, texture and scale to the existing vegetation, partially blocking the view of the distant treeline. Mitigation provides contrast in form due to verticality, but reduces the contrast of the panels.
Land Use	2.5	2	Existing land use is unplanted agricultural ina rural residential area. The project is a strong contrast to the existing use, with panels in the immediate foreground being visually dominant, and remaining noticeable when mitigated.
Water	0	0	No water in view.
Sky	2	1.5	Existing condition provides open views of the skyline above a distant horizontal treeline. While panels do not extend above the treeline, they contrast with the natural horizon line. Mitigation also interrupts the skyline, but in a more natural form and texture.
Contrast Total	9	7	
Average	1.8	1.4	

SARATOGA ASSOCIATES

VISUAL CONTRAST RATING FORM

Project:	**Tracy Solar Project**	Date:	26-Aug-21
Viewpoint Number	**13**	Preparer:	ELG
Resource Name:	**Wilder Road**		
Municipality:	Clayton/Orleans		
Resource Type:	Local Road		
Landscape Similarity Zone	Rural Agricultural		

Scenic Quality *(please rate quality of existing view)* ☐ Low ☑ Moderate ☐ High

Sensitivity Scale				
	Very Low	Low	Moderate	High
VSR Classification	NA	**Ordinary Roadside**		Visually Sensitive Resource
Distance Zone	Background	Middleground	Foreground	**Immediate Foreground**
Viewer Group	Rarely Viewed	Through Travel/Comm.	**Local Residents**	Recreational
Duration/Frequency of View	Infrequent	Brief/Transient	Extended/Repeated	**Continuous**
Intensity of use	Rarely Visited	**Low Intensity**	Moderate Intensity	High Intensity

Visual Contrast Rating							
	None		Weak		Moderate		Strong
Score Range	0	0.5	1	1.5	2	2.5	3
Condition Evaluated	Without Mitigaton	Landscape Mitigation (Year 7-9 Growth)	Description of Contrast				
Landform	2	NA	Existing landscape is a flat plain. The project does not appear to alter the topography, but its texture and horizontal form contrast the existing flowing landscape.				
Vegetation	2	NA	Existing vegetation is an open field with distant treeline along the horizon and some scrub vegetation at the edges. A tree and scrub vegetation in the center of the view and some scrub along the treeline are removed for the project.				
Land Use	2.5	NA	Existing land use is unplanted agricultural ina rural residential area. The project is a strong contrast to the existing use, with panels in the immediate foreground being visually dominant.				
Water	0	NA	No water in view.				
Sky	1.5	NA	Existing condition provides open views of the skyline above a distant horizontal treeline. While panels do not extend above the treeline, they contrast with the natural horizon line. Removal of some mature trees provides some alteration to the skyline, but the project does not block the view of the sky.				
Contrast Total	8	NA					
Average	1.6	NA					

VISUAL CONTRAST RATING FORM

Project:	**Tracy Solar Project**	Date:	26-Aug-21
Viewpoint Number	**25**	Preparer:	ELG
Resource Name:	**NY 180 (Rottiers, John N. Farm NRHP listed site)**		
Municipality:	Orleans		
Resource Type:	High Used Road/NRHP		
Landscape Similarity Zone	Rural Agricultural		

Scenic Quality *(please rate quality of existing view)* ☐ Low ☑ Moderate ☐ High

Sensitivity Scale				
	Very Low	Low	Moderate	High
VSR Classification	NA	Ordinary Roadside		**Visually Sensitive Resource**
Distance Zone	Background	Middleground	**Foreground**	Immediate Foreground
Viewer Group	Rarely Viewed	Through Travel/Comm.	**Local Residents**	Recreational
Duration/Frequency of View	Infrequent	Brief/Transient	**Extended/Repeated**	**Continuous**
Intensity of use	Rarely Visited	Low Intensity	**Moderate Intensity**	High Intensity

Visual Contrast Rating							
	None		Weak		Moderate		Strong
Score Range	0	0.5	1	1.5	2	2.5	3
Condition Evaluated	Without Mitigaton	Landscape Mitigation (Year 7-9 Growth)	Description of Contrast				
Landform	1.5	NA	The existing landform is generally flat, gently rising away from the viewer and toward the horizon. The panels are visible, but form and texture are slightly screened by existing vegetation.				
Vegetation	2	NA	Existing vegetation includes open meadow and successional scrub growth, dotted with trees and a ribbon of field weaving through in the distance. Impact to existing vegetation is minimal, but field characteristics are contrasted.				
Land Use	2	NA	Existing land use is unplanted agricultural, in an area with rural residences (visible beyond the frame). The project is a strong contrast to the existing use, with panels visually dominant in comparison to the field setting.				
Water	0	NA	No water in view.				
Sky	1.5	NA	Existing condition provides open views of the skyline above a distant horizontal treeline. While panels do not extend above the treeline, they contrast with the natural horizon line. Removal of some mature trees provides some alteration to the skyline, but the project does not block the view of the sky.				
Contrast Total	7	NA					
Average	1.4	NA					

VISUAL CONTRAST RATING FORM

Project:	**Tracy Solar Project**	Date:	26-Aug-21
Viewpoint Number	**30**	Preparer:	ELG
Resource Name:	**CR 12**		
Municipality:	Orleans		
Resource Type:	Local Road		
Landscape Similarity Zone	Rural Agricultural		

Scenic Quality *(please rate quality of existing view)* ☐ Low ☑ Moderate ☐ High

Sensitivity Scale				
	Very Low	Low	Moderate	High
VSR Classification	NA	**Ordinary Roadside**		Visually Sensitive Resource
Distance Zone	Background	Middleground	Foreground	**Immediate Foreground**
Viewer Group	Rarely Viewed	Through Travel/Comm.	**Local Residents**	Recreational
Duration/Frequency of View	Infrequent	Brief/Transient	**Extended/Repeated**	**Continuous**
Intensity of use	Rarely Visited	Low Intensity	**Moderate Intensity**	High Intensity

Visual Contrast Rating							
	None		Weak		Moderate		Strong
Score Range	0	0.5	1	1.5	2	2.5	3
Condition Evaluated	Without Mitigaton	Landscape Mitigation (Year 7-9 Growth)	Description of Contrast				
Landform	2.5	2	Existing terrain is a flat plain with meadow and treeline. The project does not appear to alter the topography, but the form of the barn, panels, and substation frame are a strong contrast to the existing landscape.				
Vegetation	2.5	2	Existing vegetation is a field with low hedgerow and distant treeline. Project requires removal of some hedgerow and contrasts the color, form and texture of the field and treeline. Proposed project elements -gravel drive, building, panels, utilities are in strong contrast to the natural appearance of the existing landscape, with only minor mitigation by proposed plantings.				
Land Use	2.75	2.5	Existing landscape appears as unplanted agricultural. The industrial nature of the new building, gravel drive, panels, and substation frame are a strong contrast to the existing rural agricultural use.				
Water	0	0	No water in view.				
Sky	2.25	2	The existing skyline is altered by the removal of vegetation from the treeline. Panels do not extend above the treeline, but the building impacts the skyline, partially blocking the view.				
Contrast Total	10	8.5					
Average	2	1.7					

VISUAL CONTRAST RATING FORM

Viewpoint Number	**33**	Preparer:	ELG
Resource Name:	**CR 12 at Tracy Road**		
Municipality:	Orleans		
Resource Type:	Local Road		
Landscape Similarity Zone	Rural Agricultural		

Scenic Quality *(please rate quality of existing view)* ☐ Low ☑ Moderate ☐ High

Sensitivity Scale

	Very Low	Low	Moderate	High
VSR Classification	NA	**Ordinary Roadside**		Visually Sensitive Resource
Distance Zone	Background	Middleground	Foreground	**Immediate Foreground**
Viewer Group	Rarely Viewed	Through Travel/Comm.	**Local Residents**	Recreational
Duration/Frequency of View	Infrequent	Brief/Transient	**Extended/Repeated**	**Continuous**
Intensity of use	Rarely Visited	Low Intensity	**Moderate Intensity**	High Intensity

Visual Contrast Rating

	None		Weak		Moderate		Strong
Score Range	0	0.5	1	1.5	2	2.5	3

Condition Evaluated	Without Mitigaton	Landscape Mitigation (Year 7-9 Growth)	Description of Contrast
Landform	2	NA	The existing landform is a flat plain with distant treeline. The project does not appear to alter the topography but the color and form of the panels and strong horizontal line of the panels and fencing provide contrast.
Vegetation	1.75	NA	Existing vegetation is an unplanted agricultural field with mature treeline in the distance. Vegetation is removed along the edge of the treeline closest to the viewer.
Land Use	2.5	NA	Existing land use is rural in nature, an unplanted field, with a shed at the right-hand side of the view. Utility poles are also visible in the treeline. The gravel drive, panels, and fence of the project dominate the view and are in strong contrast to the forms and textures of the natural landscape.
Water	0	NA	No water in view.
Sky	1.75	NA	The existing horizon line is framed by a treeline at the bottom, with some existing utility poles in the treeline. Vegetation is removed along the edge of the treeline closest to the viewer, resulting in minor alteration to the horizon line. H-frame adds an additional vertical element to the horizon.
Contrast Total	8	NA	
Average	1.6	NA	

Project:	**Tracy Solar Project**	Date:	26-Aug-21
Viewpoint Number	**45**	Preparer:	ELG

VISUAL CONTRAST RATING FORM

Resource Name: **Carter Road**
Municipality: Orleans

Resource Type: Local Road
Landscape Similarity Zone Rural Agricultural

Scenic Quality *(please rate quality of existing view)* ☐ Low ☑ Moderate ☐ High

Sensitivity Scale				
	Very Low	Low	Moderate	High
VSR Classification	NA	**Ordinary Roadside**		Visually Sensitive Resource
Distance Zone	Background	Middleground	Foreground	**Immediate Foreground**
Viewer Group	Rarely Viewed	Through Travel/Comm.	**Local Residents**	Recreational
Duration/Frequency of View	Infrequent	Brief/Transient	**Extended/Repeated**	**Continuous**
Intensity of use	Rarely Visited	Low Intensity	**Moderate Intensity**	High Intensity

Visual Contrast Rating							
	None		Weak		Moderate		Strong
Score Range	0	0.5	1	1.5	2	2.5	3
Condition Evaluated	Without Mitigaton	Landscape Mitigation (Year 7-9 Growth)	Description of Contrast				
Landform	2	1.5	Existing landscape is a flat plain that rises slightly. Proposed project does not perceptibly alter the topography but panel form, scale,and texture are dominant. The line of the panels is dominant in the landsacape. The vertical form of the fencing is also visually dominant. Landscape mitigation reduces the contrast of the project.				
Vegetation	2	1.5	Current vegetation is low grasses with a distant treeline along the field edge. It is not clear whether the project results in vegetation removal, but the treeline becomes obscured. The color, form, texture and line of the panels and the fencing are dominant over the existing grasses. Mitigation reduces this contrast, but is also in contrast to the existing landscape.				
Land Use	2.5	2	Existing land use is rural in nature, an unplanted field. The project's panels and fencing provide moderate to strong contrast to this use, occupying about half of the meadow visible. Mitigation helps to reduce the visibility of the use.				
Water	0	0	No water in view.				
Sky	2	1.5	Panels extend into the skyline, contrasting the natural texture, but in a similar horizontal form. Mitigation reduces the visibility of the panels, but does provide a new vertical form that obscures the skyline.				
Contrast Total	8.5	6.5					
Average	1.7	1.3					

SARATOGA ASSOCIATES

VISUAL CONTRAST RATING FORM

Project:	**Tracy Solar Project**	Date:	26-Aug-21
Viewpoint Number	**2**	Preparer:	AST
Resource Name:	**Hart Road**		
Municipality:	Clayton		
Resource Type:	Local Road		
Landscape Similarity Zone	Rural Agricultural		

Scenic Quality *(please rate quality of existing view)* ☐ Low ☑ Moderate ☐ High

Sensitivity Scale				
	Very Low	Low	Moderate	High
VSR Classification	NA	**Ordinary Roadside**		Visually Sensitive Resource
Distance Zone	Background	Middleground	**Foreground**	Immediate Foreground
Viewer Group	Rarely Viewed	Through Travel/Comm.	**Local Residents**	Recreational
Duration/Frequency of View	Infrequent	Brief/Transient	Extended/Repeated	**Continuous**
Intensity of use	Rarely Visited	**Low Intensity**	Moderate Intensity	High Intensity

Visual Contrast Rating							
	None		Weak		Moderate		Strong
Score Range	0	0.5	1	1.5	2	2.5	3

Condition Evaluated	Without Mitigaton	Landscape Mitigation (Year 7-9 Growth)	Description of Contrast
			Panels are visible but there is no change to the landform.
Landform	0.5	NA	Majority of foreground view is low deciduous vegetation. Small change in color, line and, form is reduced by the foreground vegetation that in not planned to be removed .
Vegetation	0.5	NA	Area is rural residential / agriculture. Proposed project introduces development but does not significantly change the overall character of the current land use .
Land Use	1	NA	
Water	0	NA	
Sky	0.5	NA	project briefly but insignificantly interupts skyline.
Contrast Total	2.5	NA	
Average	0.5	NA	

VISUAL CONTRAST RATING FORM

Project:	**Tracy Solar Project**	Date:	26-Aug-21
Viewpoint Number	**8**	Preparer:	AST
Resource Name:	**Wilder Road**		
Municipality:	Clayton/Orleans		
Resource Type:	Local Road		
Landscape Similarity Zone	Rural Agricultural		

Scenic Quality *(please rate quality of existing view)* ☐ Low ☑ Moderate ☐ High

Sensitivity Scale				
	Very Low	Low	Moderate	High
VSR Classification	NA	**Ordinary Roadside**		Visually Sensitive Resource
Distance Zone	Background	Middleground	Foreground	**Immediate Foreground**
Viewer Group	Rarely Viewed	Through Travel/Comm.	**Local Residents**	Recreational
Duration/Frequency of View	Infrequent	Brief/Transient	Extended/Repeated	**Continuous**
Intensity of use	Rarely Visited	**Low Intensity**	Moderate Intensity	High Intensity

Visual Contrast Rating							
	None		Weak		Moderate		Strong
Score Range	0	0.5	1	1.5	2	2.5	3
Condition Evaluated	Without Mitigaton	Landscape Mitigation (Year 7-9 Growth)	Description of Contrast				
Landform	1.5	1	The proposed development does not change the overall character of the landform change in form, line, color and texture of the panels stands out against the organic natural character of existing vegetation. Landscape mitigation reintroduces natural elements to the view while minimimizing views of the solar array.				
Vegetation	1.5	1	Area is rural residential / agriculture. Proposed project introduces development that significantly changes the overall character of the current land use .				
Land Use	2	1					
Water	0	0					
Sky	1.5	1	There is no alteration to the skyline, but the project distracts from the existing view of tree line to sky. Mitigation alters the skyline, but reintroduces more natural conditions synonymous with pre development.				
Contrast Total	6.5	4					
Average	1.3	0.8					

VISUAL CONTRAST RATING FORM

Project:	**Tracy Solar Project**	Date:	26-Aug-21
Viewpoint Number	**12**	Preparer:	AST
Resource Name:	**Wilder Road**		
Municipality:	Clayton/Orleans		
Resource Type:	Local Road		
Landscape Similarity Zone	Rural Agricultural		

Scenic Quality *(please rate quality of existing view)* ☐ Low ☑ Moderate ☐ High

Sensitivity Scale				
	Very Low	Low	Moderate	High
VSR Classification	NA	**Ordinary Roadside**		Visually Sensitive Resource
Distance Zone	Background	Middleground	Foreground	**Immediate Foreground**
Viewer Group	Rarely Viewed	Through Travel/Comm.	**Local Residents**	Recreational
Duration/Frequency of View	Infrequent	Brief/Transient	Extended/Repeated	**Continuous**
Intensity of use	Rarely Visited	**Low Intensity**	Moderate Intensity	High Intensity

Visual Contrast Rating							
	None		Weak		Moderate		Strong
Score Range	0	0.5	1	1.5	2	2.5	3
Condition Evaluated	Without Mitigaton	Landscape Mitigation (Year 7-9 Growth)	Description of Contrast				
Landform	2	1.5	Development does not change exisiting physical landform but does brings strong change to line and form contrasting significantly to softer natural character of the existing landform.				
Vegetation	2.5	2	Form, color and texture of the built project are significantly different than existing vegetation. Landscape mitigation reintroduces natural elements to the view while minimimizing views of the solar array.				
Land Use	2.5	1	Area is rural residential / agriculture. Proposed project introduces development that significantly changes the overall character of the current land use .				
Water	0	0					
Sky	1.5	1	There is no alteration to the skyline, but the project distracts from the existing view of tree line to sky. Mitigation alters the skyline, but reintroduces more natural conditions synonymous with pre development.				
Contrast Total	8.5	5.5					
Average	1.7	1.1					

SARATOGA ASSOCIATES

VISUAL CONTRAST RATING FORM

Project:	**Tracy Solar Project**	Date:	26-Aug-21
Viewpoint Number	**13**	Preparer:	AST
Resource Name:	**Wilder Road**		
Municipality:	Clayton/Orleans		
Resource Type:	Local Road		
Landscape Similarity Zone	Rural Agricultural		

Scenic Quality *(please rate quality of existing view)* ☐ Low ☑ Moderate ☐ High

Sensitivity Scale				
	Very Low	Low	Moderate	High
VSR Classification	NA	**Ordinary Roadside**		Visually Sensitive Resource
Distance Zone	Background	Middleground	Foreground	**Immediate Foreground**
Viewer Group	Rarely Viewed	Through Travel/Comm.	**Local Residents**	Recreational
Duration/Frequency of View	Infrequent	Brief/Transient	Extended/Repeated	**Continuous**
Intensity of use	Rarely Visited	**Low Intensity**	Moderate Intensity	High Intensity

Visual Contrast Rating							
	None		Weak		Moderate		Strong
Score Range	0	0.5	1	1.5	2	2.5	3
Condition Evaluated	Without Mitigaton	Landscape Mitigation (Year 7-9 Growth)	Description of Contrast				
Landform	1	NA	Development does not change exisiting physical landform but does brings strong change to line and form contrasting significantly to softer natural character of the existing landform.				
Vegetation	1	NA	Form, color and texture of the built project are significantly different than existing vegetation. Landscape mitigation reintroduces natural elements to the view while minimimizing views of the solar array.				
Land Use	2	NA	Area is rural residential / agriculture. Proposed project introduces development that significantly changes the overall character of the current land use .				
Water	0	NA					
Sky	0.5	NA	There is no alteration to the skyline, but the project distracts from the existing view of tree line to sky.				
Contrast Total	4.5	NA					
Average	0.9	NA					

VISUAL CONTRAST RATING FORM

Project:	**Tracy Solar Project**	Date:	26-Aug-21
Viewpoint Number	**25**	Preparer:	AST
Resource Name:	**NY 180 (Rottiers, John N. Farm NRHP listed site)**		
Municipality:	Orleans		
Resource Type:	High Used Road/NRHP		
Landscape Similarity Zone	Rural Agricultural		

Scenic Quality *(please rate quality of existing view)* ☐ Low ☑ Moderate ☐ High

Sensitivity Scale				
	Very Low	Low	Moderate	High
VSR Classification	NA	Ordinary Roadside		**Visually Sensitive Resource**
Distance Zone	Background	Middleground	**Foreground**	Immediate Foreground
Viewer Group	Rarely Viewed	Through Travel/Comm.	**Local Residents**	Recreational
Duration/Frequency of View	Infrequent	Brief/Transient	**Extended/Repeated**	**Continuous**
Intensity of use	Rarely Visited	Low Intensity	**Moderate Intensity**	High Intensity

Visual Contrast Rating							
	None		Weak		Moderate		Strong
Score Range	0	0.5	1	1.5	2	2.5	3
Condition Evaluated	Without Mitigaton	Landscape Mitigation (Year 7-9 Growth)	Description of Contrast				
Landform	1.5	NA	Development does not change exisiting physical landform but does brings strong change to line and form contrasting significantly to softer natural character of the existing landform.				
Vegetation	1	NA	Change in form, line, color and texture of the panels stands out against the organic natural character of existing vegetation, however the impact is broken up by the foreground vegetation that will remain.				
Land Use	1	NA	Area is rural residential / agriculture. Proposed project introduces development but does not significantly change the overall character of the current land use .				
Water	0	NA					
Sky	0.5	NA	There is minimal alteration to the skyline.				
Contrast Total	4	NA					
Average	0.8	NA					

VISUAL CONTRAST RATING FORM

Project:	**Tracy Solar Project**	Date:	26-Aug-21
Viewpoint Number	**30**	Preparer:	AST
Resource Name:	**CR 12**		
Municipality:	Orleans		
Resource Type:	Local Road		
Landscape Similarity Zone	Rural Agricultural		

Scenic Quality *(please rate quality of existing view)* ☐ Low ☑ Moderate ☐ High

Sensitivity Scale				
	Very Low	Low	Moderate	High
VSR Classification	NA	**Ordinary Roadside**		Visually Sensitive Resource
Distance Zone	Background	Middleground	Foreground	**Immediate Foreground**
Viewer Group	Rarely Viewed	Through Travel/Comm.	**Local Residents**	Recreational
Duration/Frequency of View	Infrequent	Brief/Transient	**Extended/Repeated**	**Continuous**
Intensity of use	Rarely Visited	Low Intensity	**Moderate Intensity**	High Intensity

Visual Contrast Rating							
	None		Weak		Moderate		Strong
Score Range	0	0.5	1	1.5	2	2.5	3
Condition Evaluated	Without Mitigaton	Landscape Mitigation (Year 7-9 Growth)	Description of Contrast				
Landform	2	1.5	Development does not change exisiting physical landform but does brings strong change to line and form contrasting significantly to softer natural character of the existing landform.				
Vegetation	2.5	2	Form, color and texture of the built project are significantly different than existing vegetation.				
Land Use	2.5	2	Form, color and texture of the built project are significantly different than existing vegetation. Landscape mitigation reintroduces natural elements to the view while minimimizing views of the solar array.				
Water	0	0					
Sky	2	0.5	There is significant disruption to the exisitng skyline. Mitigation reintroduces more natural conditions synonymous with pre development.				
Contrast Total	9	6					
Average	1.8	1.2					

VISUAL CONTRAST RATING FORM

Project:	**Tracy Solar Project**	Date:	26-Aug-21
Viewpoint Number	**33**	Preparer:	AST
Resource Name:	**CR 12 at Tracy Road**		
Municipality:	Orleans		
Resource Type:	Local Road		
Landscape Similarity Zone	Rural Agricultural		

Scenic Quality *(please rate quality of existing view)* ☐ Low ☑ Moderate ☐ High

Sensitivity Scale				
	Very Low	Low	Moderate	High
VSR Classification	NA	**Ordinary Roadside**		Visually Sensitive Resource
Distance Zone	Background	Middleground	Foreground	**Immediate Foreground**
Viewer Group	Rarely Viewed	Through Travel/Comm.	**Local Residents**	Recreational
Duration/Frequency of View	Infrequent	Brief/Transient	**Extended/Repeated**	**Continuous**
Intensity of use	Rarely Visited	Low Intensity	**Moderate Intensity**	High Intensity

Visual Contrast Rating							
	None		Weak		Moderate		Strong
Score Range	0	0.5	1	1.5	2	2.5	3
Condition Evaluated	Without Mitigaton	Landscape Mitigation (Year 7-9 Growth)	Description of Contrast				
Landform	1.5	NA	Development does not change exisiting physical landform but does brings strong change to line and form contrasting significantly to softer natural character of the existing landform.				
Vegetation	2	NA	Form, color and texture of the built project are significantly different than existing vegetation.				
Land Use	2	NA	Area is rural residential / agriculture. Proposed project introduces development with significant change to the overall character of the current land use .				
Water	0	NA					
Sky	0.5	NA	project briefly but insignificantly interupts skyline.				
Contrast Total	6	NA					
Average	1.2	NA					

VISUAL CONTRAST RATING FORM

Project:	**Tracy Solar Project**	Date:	26-Aug-21
Viewpoint Number	**45**	Preparer:	AST
Resource Name:	**Carter Road**		
Municipality:	Orleans		
Resource Type:	Local Road		
Landscape Similarity Zone	Rural Agricultural		

Scenic Quality *(please rate quality of existing view)* ☐ Low ☑ Moderate ☐ High

Sensitivity Scale				
	Very Low	Low	Moderate	High
VSR Classification	NA	**Ordinary Roadside**		Visually Sensitive Resource
Distance Zone	Background	Middleground	Foreground	**Immediate Foreground**
Viewer Group	Rarely Viewed	Through Travel/Comm.	**Local Residents**	Recreational
Duration/Frequency of View	Infrequent	Brief/Transient	**Extended/Repeated**	**Continuous**
Intensity of use	Rarely Visited	Low Intensity	**Moderate Intensity**	High Intensity

Visual Contrast Rating							
	None		Weak		Moderate		Strong
Score Range	0	0.5	1	1.5	2	2.5	3
Condition Evaluated	Without Mitigaton	Landscape Mitigation (Year 7-9 Growth)	Description of Contrast				
Landform	1	0.5	Development does not change exisiting physical landform but does brings strong change to line and form contrasting significantly to softer natural character of the existing landform.				
Vegetation	2	3	Form, color and texture of the built project are significantly different than existing vegetation.				
Land Use	1.5	2.5	Area is rural residential / agriculture. Proposed project introduces development with significant change to the overall character of the current land use .				
Water	2.5	0	There is significant disruption to the exisitng skyline. Mitigation reintroduces more natural conditions synonymous with pre development.				
Sky	3	2.5					
Contrast Total	10	8.5					
Average	2	1.7					

Appendix 8-B
Glint and Glare Analysis

GLINT AND GLARE HAZARD ANALYSIS
TRACY SOLAR ENERGY CENTER, LLC SOLAR ARRAY PROJECT
JEFFERSON COUNTY, NEW YORK

Contract Number: EE1005014.0046.01-B5793
Date: July 2021

Prepared by
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90 Broad Street
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ACRONYMS AND ABBREVIATIONS

AR	anti-reflection
ATCT	air traffic control tower
FAA	Federal Aviation
MW	megawatt
OP	observation point
PV	photovoltaic
SGHAT	Solar Glare Hazard Analysis Tool
TSEC	Tracy Solar Energy Center, LLC

INTRODUCTION

Tracy Solar Energy Center, LLC (TSEC) proposes to build, own, and operate a utility-scale photovoltaic (PV) major solar electric generating facility (Facility) located in the towns of Clayton and Orleans in Jefferson County, New York. Figure 1 depicts the regional location of the Facility. The Facility will generate up to 119 megawatts (MW) of electrical energy. A glare hazard analysis was conducted utilizing the ForgeSolar Solar Glare Hazard Analysis Tool (SGHAT) software licensed by Sandia National Laboratories, which predicts potential impacts of glare and annual energy production from solar PV arrays on defined receptors, observation points (OPs), and flight paths. Glint and glare can affect nearby receptors and may cause unwanted visual impacts on pilots, air traffic controllers, residents, and motorists under certain conditions. This report provides the analysis required by 19 New York Codes, Rules and Regulations (NYCRR) § 900-2.99(d)(7) using SGHAT methodology or equivalent to demonstrate that the solar glare exposure at any non-participating residence, airport, or public roadway will be avoided or minimized and will not result in complaints, impede traffic movements, or create safety hazards. This analysis factored in the geographic location and the design specifications of the Facility (see Figure 1) and the potential for glare impacts on nearby residences and roadways. Additionally, this analysis considered the potential for glare impacts on aviation infrastructure, including flight paths and air traffic control towers (ATCTs) associated with Wheeler-Sack Army Airfield at Fort Drum approximately 12 miles west of the Facility Site. The analysis adhered to the Federal Aviation Administration (FAA) policy that recommends conducting a glare analysis to demonstrate compliance with the standards for measuring visual impact for any proposed solar energy system near an airport airfield.

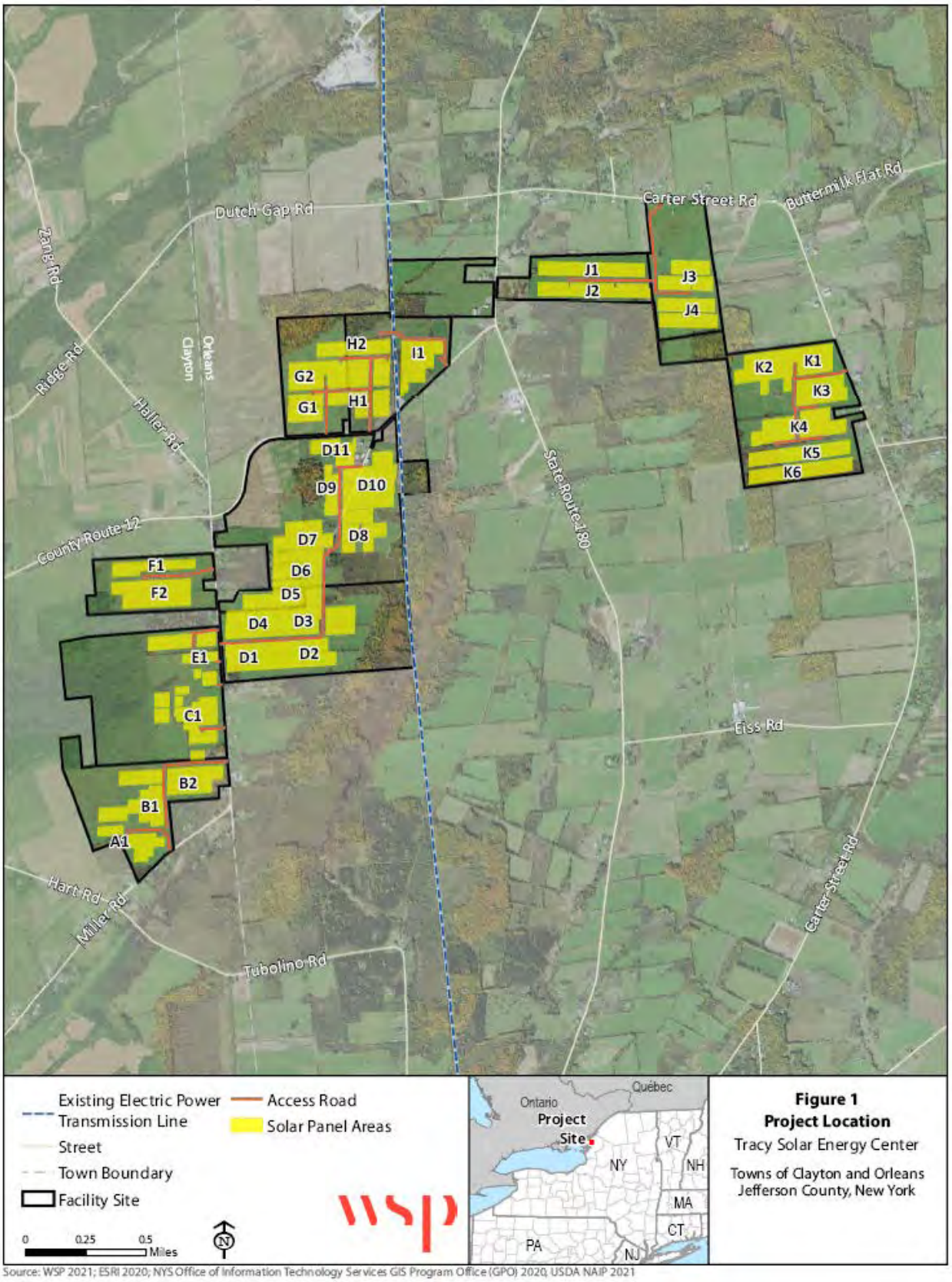
TRACY SOLAR ENERGY CENTER, LLC, SOLAR ARRAY PROJECT

Solar PV technology uses solar cells to convert energy from solar radiation into electricity. The basic unit in a PV system is a solar cell, made up of semiconductor material that absorbs solar radiation and converts it to an electrical current. Solar cells are contained within solar modules that are assembled into solar panels. A series of panels comprises a solar array. The system to be constructed would include solar PV arrays composed of panel-mounting brackets on vertical members within the Facility Site. Figure 1 provides the site plan for the Facility, which includes 34 solar panel areas with approximately 352,000 JA Solar[1] PV panel modules mounted on NexTracker[2] single-axis tracker tracking and support systems (see Appendix A).

[1] https://www.jasolar.com.cn/html/en/

[2] https://www.nextracker.com/trackers/

Figure 1: Tracy Solar Energy Center Project Location



Source: WSP 2021; ESRI 2020; NYS Office of Information Technology Services GIS Program Office (GPO) 2020; USDA NAIP 2021

Figure 2: Example of Single-axis Tracking System, Ground-mounted Solar PV

The tracking system is designed to optimize power production of the panels by ensuring proper orientation to the sun throughout the day and seasons (see Figure 2). The tracking system follow the sun's path moving east to west on a north-to-south axis. The system design includes solar panels constructed with lightly textured dark glass with an anti-reflection coating to reduce glint and glare. The highest point of the solar array for the ground-mounted solar PV system would typically not exceed 7.5 feet above the ground surface at maximum tilt angle.

Table 1 presents the design specifications that were utilized in the SGHAT modeling for the Facility. The specific receptors analyzed for potential impact are discussed later in this report.

Table 1: TSEC Facility Specifications

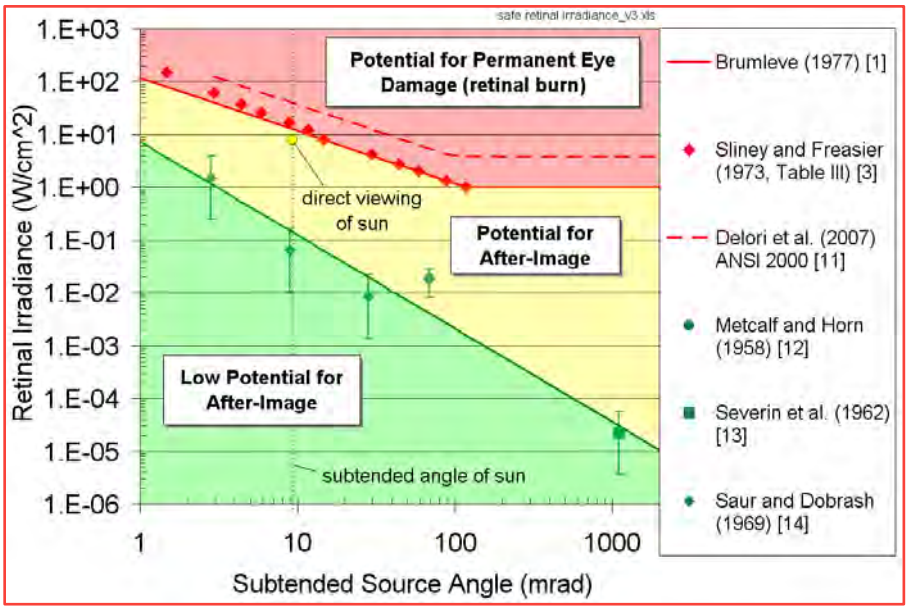
DESIGN FEATURE	SYSTEM SPECIFICATION
Number of Solar Panel Areas	34
Axis Tracking	Single-axis rotation
Axis Tilt (deg)	30°
Axis Orientation (deg)	180°
Axis Offset (deg)	0°
Rotation Max (deg)	+/- 60°
Resting Angle (deg)	60° (east)
Panel Material	Lightly textured glass with anti-reflective coating
Total Rated Power (kilowatt)	119,000
Approximate Acreage (panel areas)	520
Max Height of Array	7.5 feet above ground level
Average Elevation	440 feet above mean sea level

Source: Foley 2021.

METHODOLOGY

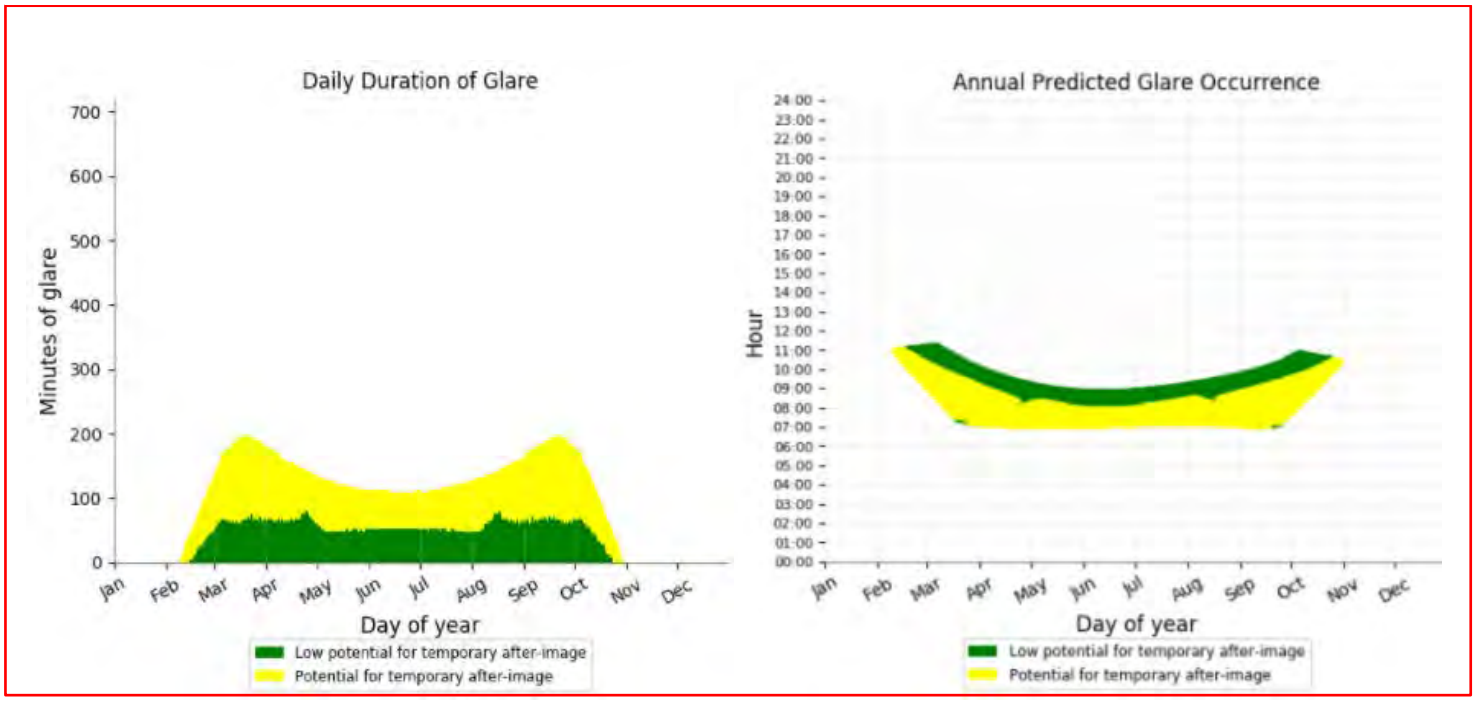
The U.S. Department of Energy and the FAA developed and validated the Sandia National Laboratories' SGHAT. The FAA requires using the SGHAT to demonstrate compliance with the standards for measuring ocular impact. The SGHAT employs an interactive Google mapping system that provides necessary information for sun position and vector calculations. The tool calculates the retinal irradiance and subtended angle (size/distance) of the glare source to predict potential ocular impact or hazards ranging from low potential for temporary after-image, potential for after-image, and potential for permanent eye damage with retinal burn. The results are presented in a simple, easy-to-interpret plot that specifies when glare will occur throughout the year, with color codes (green, yellow, or red) indicating the potential ocular hazard. Figure 3 illustrates these three types of glare intensity.

Figure 3: Glare Hazard Plot Illustrating the Ocular Impact



Sources: Ho et al. 2011; Ho 2013.

Figure 4: Sample Plot of Daily and Annual Glare Occurrences



Sources: Ho et al. 2011; Ho 2013.

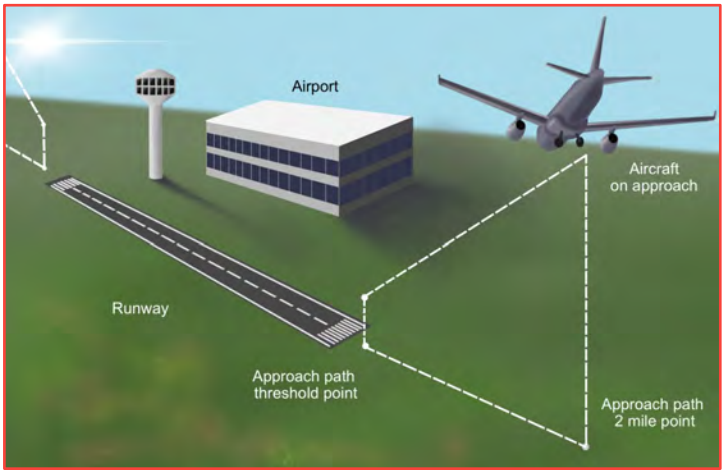
The site-specific information regarding the orientation and tilt of the PV panels, reflectance, and ocular factors were entered into the tool, based on the Facility's design specifications. The PV systems are modeled as a contiguous polygon footprint, and the site-specific design parameters include precise latitude, longitude, elevation, and height parameters. The analysis calculates the amount of sunlight reflected over each PV array on a minute-by-minute basis throughout the calendar year according to the user-specified module axis tracking parameters entered into the system. The modeling accounts for panel reflectivity that varies throughout the day to account for the position of the sun relative to the array. The modeling software then determines whether the resulting solar reflections would impact the imputed receptors (i.e., residents, roadways, and aviation infrastructure) around the Facility Site based on the modeling parameters. The SGHAT utilizes a simplified model of backtracking that assumes that panels instantaneously revert to the resting angle whenever the sun is outside the rotation range. If glare is predicted, the model will generate various plots that depict the expected duration both daily and annually (see Figure 4, above). The daily glare duration plot sums expected minutes of glare on a daily basis to provide an approximation of the total number of minutes glare will be evident each day. The annual glare occurrence plot displays the approximate times of year and times of day that glare is expected for the specified receptor. Occurrences are color-coded by predicted ocular impact. A summary of other key outputs and assumptions of the SGHAT analysis is discussed in the SGHAT's Technical Reference Manual (Ho and Sims 2013).

RECEPTORS

FLIGHT PATH RECEPTORS ASSOCIATED WITH THE WHEELER-SACK ARMY AIRFIELD

Flight path receptor data associated with Wheeler-Sack Army Airfield was gathered by evaluating the runway landing thresholds as shown on the current FAA-approved airport diagram (see Appendix B) and verified the parameters using this FAA database[3] for airport flight data (FAA 2021). Runway end coordinates were obtained using aerial imagery within the FAA database. The flight path heights of each OP were calculated based on the threshold height above ground, glide slope, and threshold elevation. The analysis was conducted from the FAA's approved default settings in the SGHAT tool, which utilizes the realistic view from the pilot's perspective. The SGHAT tool simulates a 2-mile final approach flight path, from 50 feet above the landing threshold, using a standard 3-degree glidepath for each runway end, assuming an aircraft would follow a straight-line approach path toward the runway (see Figure 5). Table 2 presents the FAA information related to the U.S. Army's Wheeler-Sack Army Airfield at Fort Drum.

Figure 5: Illustration of a 2-mile Approach Path of Aircraft towards a Runway



Source: ForgeSolar 2019.

Table 2: FAA Information on Fort Drum Wheeler-Sack Army Airfield

Name:	Wheeler-Sack Army Airfield
Ownership:	US Army Aeronautical Services
Location:	Fort Drum, New York
FAA Identifier:	KGTB
Latitude/Longitude:	44° 3.537'N, 075° 43.228'W (estimated)
Elevation:	689.9 feet
Runways:	3
Runway Designations:	03/21, 15/33, and 08/26
ATC Tower:	Yes
ATC Tower Latitude/Longitude:	44° 3.535'N, 075° 42.656'W (estimated)

Source: FAA 2021.

[3] https://www.faa.gov/air_traffic/flight_info/aeronav/aero_data/Airport_Data/

Table 3 and Figure 6 present the two flight path receptor data associated with the airfield modeled in the SGHAT analysis.

Table 3: Wheeler-Sack Army Airfield Runway 2-mile Flight Paths Data Parameters

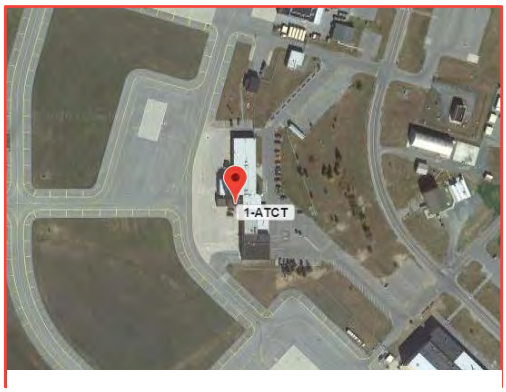
RUNWAY APPROACH HEADING	FLIGHT PATH POINT	LATITUDE	LONGITUDE	GROUND ELEVATION (FEET)	HEIGHT (FEET)	TOTAL ELEVATION (FEET)
03	Threshold	44.045477	-75.725818	681.76	50.00	731.77
	2-mile point	44.017628	-75.736641	714.79	570.43	1,285.22
08	Threshold	44.045655	-75.726879	680.82	50.00	730.82
	2-mile point	44.035971	-75.764824	636.82	647.46	1,284.28
15	Threshold	44.061833	-75.724679	668.81	50.00	718.81
	2-mile point	44.082102	-75.753406	526.36	745.90	1,272.27
21	Threshold	44.071868	-75.715324	662.38	50.00	712.38
	2-mile point	44.099580	-75.703834	579.69	686.15	1,265.83
26	Threshold	44.049313	-75.712665	686.34	50.00	736.34
	2-mile point	44.058721	-75.674583	700.39	589.41	1,289.80
33	Threshold	44.052517	-75.711258	687.32	50.00	737.33
	2-mile point	44.033137	-75.681370	715.94	574.85	1,290.78

Figure 6: Wheeler-Sack Army Airfield Runway 2-mile Flight Paths

DISCRETE OBSERVATION POINT RECEPTOR ASSOCIATED WITH WHEELER-SACK army AIRFIELD

The observation point receptor simulates an observer at a single, discrete location, defined by a latitude, longitude, elevation, and height above ground. The point can be marked to represent an ATCT to simulate the view of an air-traffic controller for aviation purposes (see Figure 7). Accounted for in the modeling, the ATCT at Wheeler-Sack Army Airfield is a 160-foot-tall structure. The location coordinates of the tower were obtained using aerial imagery (see Table 4) and verified by the

Figure 7: Air Traffic Control Tower at Wheeler-Sack Army Airfield



FAA-approved airport diagram (see Appendix B).

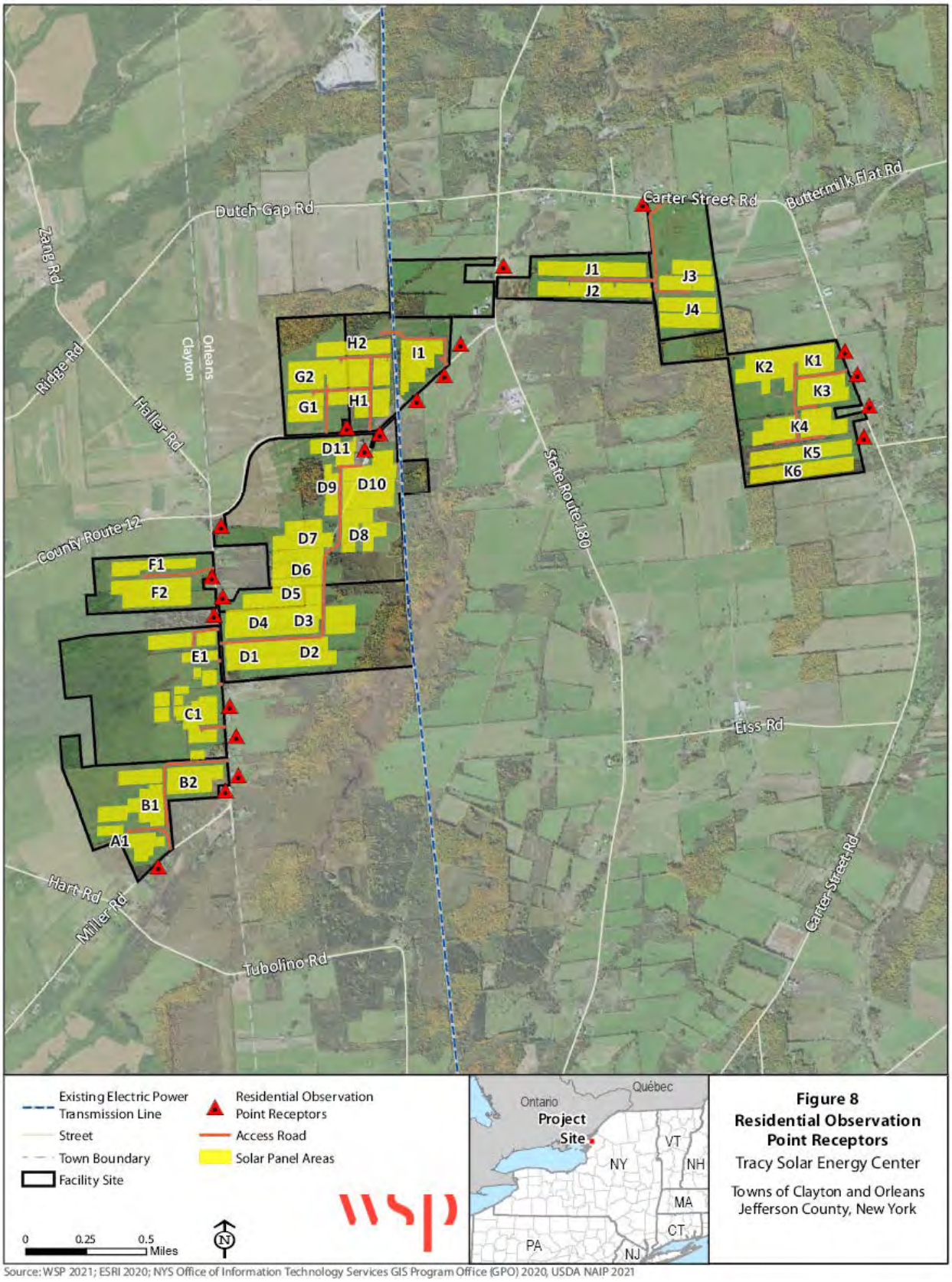
Table 4: Wheeler-Sack Army Airfield ATCT Parameters

POINT	LATITUDE	LONGITUDE	GROUND ELEVATION (FEET)	HEIGHT (FEET)	TOTAL ELEVATION (FEET)
ATCT	44.058919	-75.710960	701.11	160.00	861.11

DISCRETE OBSERVATION POINT RECEPTORS ASSOCIATED WITH ADJACENT NON-PARTICIPATING RESIDENCES

Other receptors analyzed in the SGHAT included 21 non-participating residences adjacent to the 34 solar panel areas that may have visual lines of sight to the solar panels during various periods of the calendar year (see Figure 8). Selected as a sampling around the site, the residences are located nearest to the site boundary (see Table 5). Structures located on the parcels within the Facility Site were assumed to be acceptable and were not included in the SGHAT analysis.

Figure 8: Residential Observation Point Receptors



Source: WSP 2021; ESRI 2020; NYS Office of Information Technology Services GIS Program Office (GPO) 2020, USDA NAIP 2021

Table 5: TSEC Facility Non-Participating Residential Discrete Observation Point Receptors

POINT (RESIDENCES)	LATITUDE	LONGITUDE	GROUND ELEVATION (FEET)	OBSERVATION HEIGHT (FEET) (ESTIMATED)	TOTAL ELEVATION (FEET)
OP 1	44.158683	-75.944897	430.00	8.00	438.00
OP 2	44.160523	-75.944468	422.07	8.00	430.07
OP 3	44.162385	-75.945498	435.12	8.00	443.12
OP 4	44.163786	-75.946582	445.39	8.00	453.39
OP 5	44.172450	-75.963574	438.09	8.00	446.09
OP 6	44.168629	-75.975115	423.25	8.00	431.26
OP 7	44.163935	-75.978607	437.06	8.00	445.06
OP 8	44.162039	-75.979939	436.54	8.00	444.54
OP 9	44.160546	-75.982182	441.78	8.00	449.79
OP 10	44.158860	-75.987980	458.35	8.00	466.35
OP 11	44.132404	-76.003236	425.15	8.00	433.15
OP 12	44.136988	-75.997692	435.96	8.00	443.96
OP 13	44.137912	-75.996654	438.32	8.00	446.32
OP 14	44.140282	-75.996856	438.10	8.00	446.11
OP 15	44.142074	-75.997459	445.53	8.00	453.53
OP 16	44.147505	-75.998852	468.52	8.00	476.52
OP 17	44.148619	-75.998144	473.13	8.00	481.13
OP 18	44.149801	-75.999083	473.75	8.00	481.75
OP 19	44.152838	-75.998342	471.86	8.00	479.86
OP 20	44.158872	-75.987995	458.28	8.00	466.28
OP 21	44.157545	-75.986445	451.88	8.00	459.88

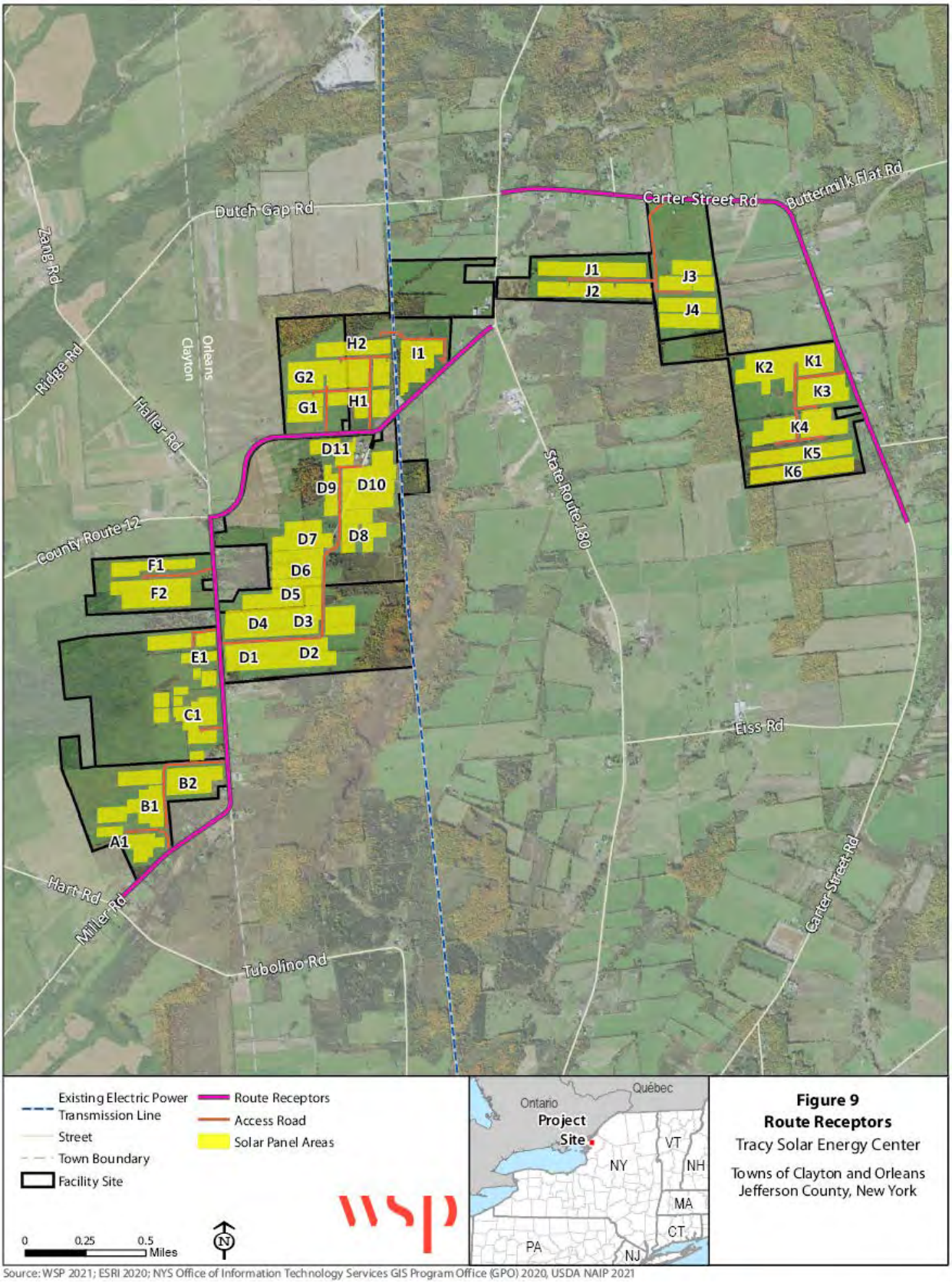
ROUTE RECEPTORS ASSOCIATED WITH MOTORISTS ALONG ADJACENT ROADWAYS

The SGHAT route receptor is a generic multi-line representation that can simulate motorists traveling along continuous paths, such as roads. There are four local roadways adjacent to the PV panel areas that were analyzed. Potential route receptors (i.e., motorists) were included in the SGHAT analysis as presented in Table 6 and Figure 9.

Table 6: TSEC Facility Route Receptors

ROUTE	ROAD NAME	TYPE	ADJACENT PANEL AREA	AVERAGE HEIGHT OF DRIVER EYES (FEET)[1]
1	Miller Road	Two-way (Two-lane)	A1, A2, B1, B2	3.54
2	Wilder Road	Two-way (Two-lane)	B1, B2, C1, C2, D1-3, E1-4, F	3.54
3	Overbluff Road	Two-way (Two-lane	D4, D5, D6, G1 G6 G7, G8	3.54
4	Carter Street Road	Two-way (Two-lane	J1. J3, J4, K1, L1, M2, M3	3.54
Source: AASHTO 2011.				

Figure 9: Route Receptors



Source: WSP 2021; ESRI 2020; NYS Office of Information Technology Services GIS Program Office (GPO) 2020, USDA NAIP 2021

RESULTS AND CONCLUSION

The SGHAT tool utilized the imputed design specifications and receptors previously described for the Facility to quantify potential glint and glare at various points along the flight paths, discrete OPs, and routes. The SGHAT tool was used to analyze each flight path between a 2-mile approach and the runway threshold associated with each of the six runway ends at Fort Drum's Wheeler-Sack Army Airfield and the ATCT located at the airfield. Utilizing the route tool for roadways and discrete OPs for the non-participating residents, the potential glint and glare at various points along Miller Road, Wilder Road, Overbluff Road, and Carter Street Road, as well as multiple (21) homes adjacent to the Facility were analyzed.

Based on the results of the glint and glare analysis, no significant visual impacts on key receptors were predicted. The analysis showed no impacts from glint and glare from the Facility on the approach flight paths. No impacts from glint and glare were detected on potential motorists along the roadway/route receptors or the non-participating residences.

Table 7 presents the results of this analysis, indicating no predicted glare on the flight paths, ATCT, roadways, or non-participating residences. See Appendix C for the ForgeSolar SGHAT Glare Analysis full modeling output results.

Table 7: TSEC Facility Predicted Annual Glare Results

RECEPTOR	GREEN GLARE (HOURS: MINUTES)	YELLOW GLARE (HOURS: MINUTES)	RED GLARE (HOURS: MINUTES)
Flight Paths			
Runway 03 Approach Heading	0:00	0:00	0:00
Runway 08 Approach Heading	0:00	0:00	0:00
Runway 15 Approach Heading	0:00	0:00	0:00
Runway 21 Approach Heading	0:00	0:00	0:00
Runway 26 Approach Heading	0:00	0:00	0:00
Runway 33 Approach Heading	0:00	0:00	0:00
Observation Points			
ATCT			
OP 1 - Residence	0:00	0:00	0:00
OP 2 - Residence	0:00	0:00	0:00
OP 3 - Residence	0:00	0:00	0:00
OP 4 - Residence	0:00	0:00	0:00
OP 5 - Residence	0:00	0:00	0:00
OP 6 - Residence	0:00	0:00	0:00
OP 7 - Residence	0:00	0:00	0:00
OP 8 - Residence	0:00	0:00	0:00
OP 9 - Residence	0:00	0:00	0:00
OP 10 - Residence	0:00	0:00	0:00
OP 11 - Residence	0:00	0:00	0:00
OP 12 - Residence	0:00	0:00	0:00
OP 13 - Residence	0:00	0:00	0:00
OP 14 - Residence	0:00	0:00	0:00
OP 15 - Residence	0:00	0:00	0:00
OP 16 - Residence	0:00	0:00	0:00
OP 17- Residence	0:00	0:00	0:00
OP 18 - Residence	0:00	0:00	0:00
OP 19 - Residence	0:00	0:00	0:00
OP 20 - Residence	0:00	0:00	0:00

Table 7: TSEC Facility Predicted Annual Glare Results

RECEPTOR	GREEN GLARE (HOURS: MINUTES)	YELLOW GLARE (HOURS: MINUTES)	RED GLARE (HOURS: MINUTES)
OP 21 - Residence	0:00	0:00	0:00
Route			
Miller Road	0:00	0:00	0:00
Wilder Road	0:00	0:00	0:00
Overbluff Road	0:00	0:00	0:00
Carter Street Road	0:00	0:00	0:00

Key:
Green Glare = low potential to cause after-image (flash blindness)
Yellow Glare = potential to cause temporary after-image
Red Glare = potential to cause retinal burn (permanent eye damage)
OP = Observation Point

The SGHAT model does not consider obstacles, either man-made or natural vegetation (i.e., trees, fencing, hills, or buildings), between the roadway users and residential OPs and the proposed Facility that may shield or block the various array panel areas. It should be noted that existing natural vegetation screening is already in place surrounding most of the panel areas, which provides a visual buffer. Existing vegetation will be kept to the extent possible (e.g., minimal tree clearing will be needed). Furthermore, fencing will also be installed to accommodate safety needs, as well as to provide a visual barrier and transition to surrounding residential properties.

Overall, no significant visual impacts on key receptors from the proposed Facility were predicted. The SGHAT modeling results show that the Facility is compliant with the FAA's policy for solar energy system projects.

REFERENCES

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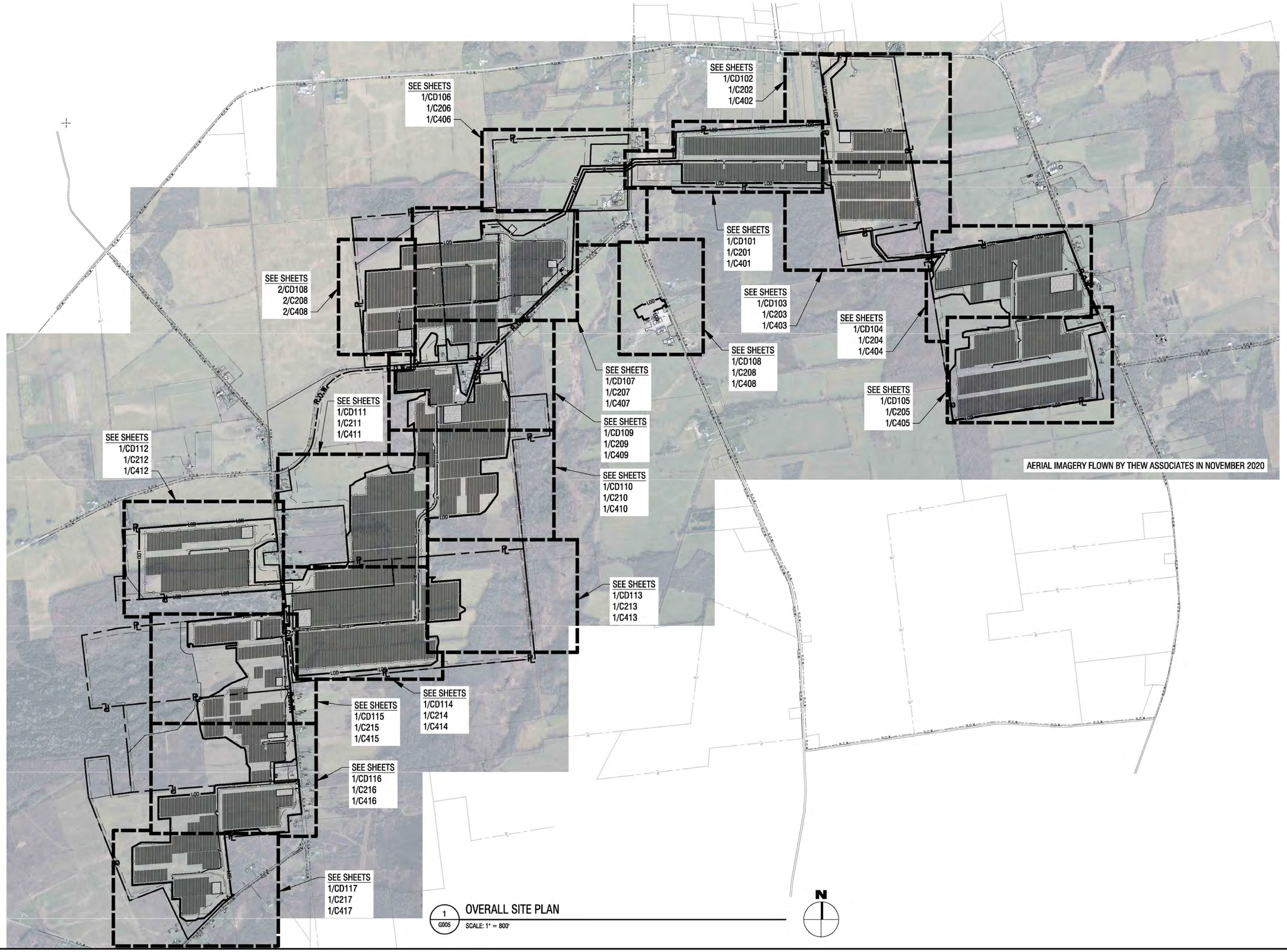
APPENDIX

A

TRACY SOLAR ENERGY CENTER PRELIMINARY SITE PLAN



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15445 INNOVATION DRIVE
SAN DIEGO, CA 92128

TRACY solar project

TRACY SOLAR ENERGY CENTER, LLC (TSEC)
ORLEANS AND CLAYTON, NY

NO:	DATE:	DESCRIPTION:
Revisions		

PROJECT NUMBER: 2210418
DRAWN BY: LMR
REVIEWED BY: RJS
ISSUED FOR: ORES
DATE: SEPTEMBER 2021
DRAWING NAME:

OVERALL SITE PLAN

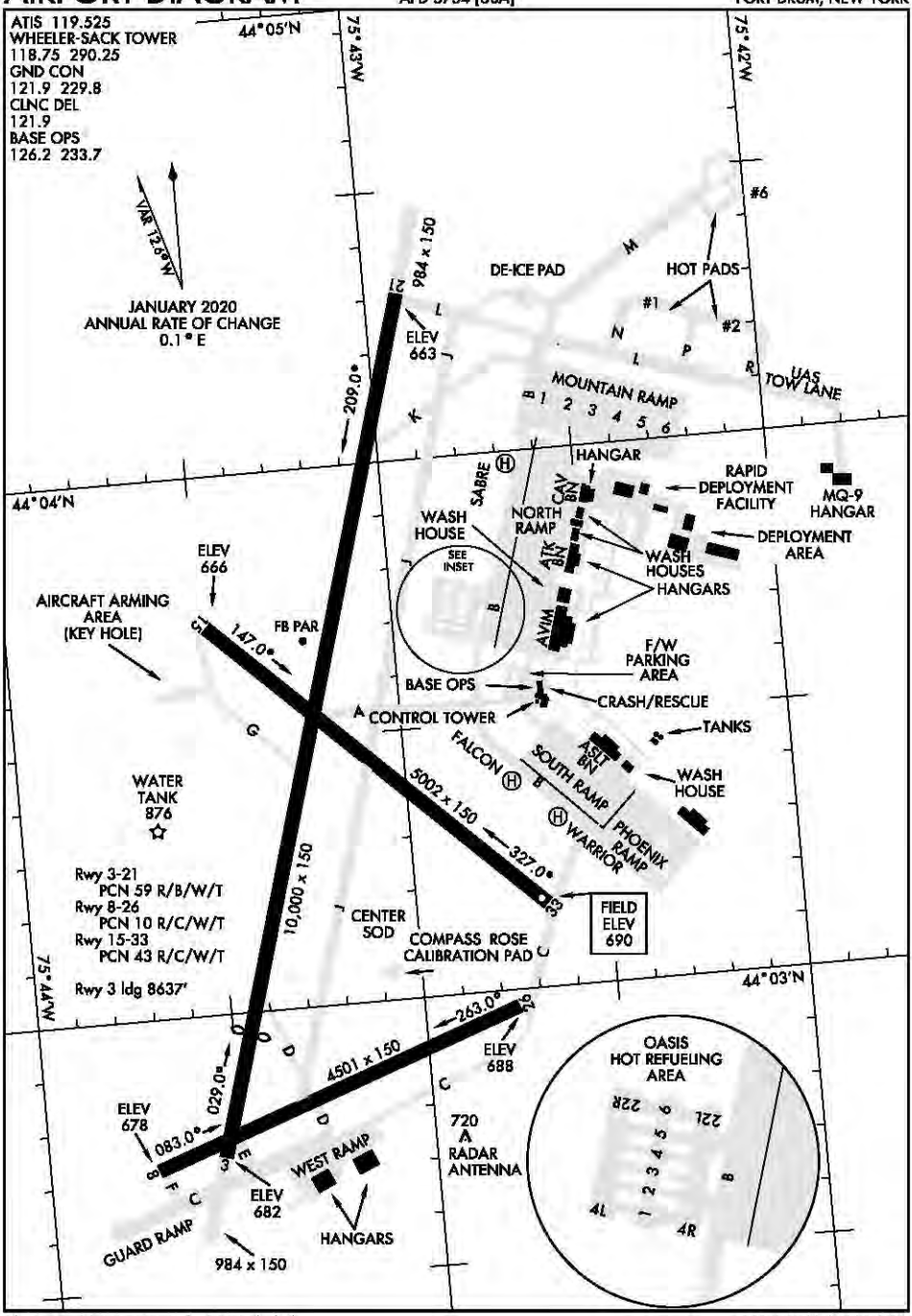
DRAWING NUMBER:

G005

APPENDIX

B

FORT DRUM WHEELER-SACK ARMY AIRFIELD AIRPORT DIAGRAM



NE-2, 03 DEC 2020 to 31 DEC 2020

APPENDIX

C

FORGESOLAR SGHAT GLARE ANALYSIS OUTPUT – TRACY SOLAR ENERGY CENTER

FORGESOLAR GLARE ANALYSIS

Project: **Tracy Solar Energy Center 94c**
Tracy Solar Energy Center, LLC, subsidiary of EDF Renewables Development, Inc., is proposing to construct a 119 megawatts (MW) photovoltaic (PV) solar energy generation facility, referred to as the Tracy Solar Energy Center (the Project), in the Towns of Clayton and Orleans Jefferson County, New York.

Site configuration: **TSEC_1**
Analysis conducted by William Huber (William.Huber@wsp.com) at 15:08 on 26 Aug, 2021.

U.S. FAA 2013 Policy Adherence

The following table summarizes the policy adherence of the glare analysis based on the 2013 U.S. Federal Aviation Administration Interim Policy 78 FR 63276. This policy requires the following criteria be met for solar energy systems on airport property:

- No "yellow" glare (potential for after-image) for any flight path from threshold to 2 miles
- No glare of any kind for Air Traffic Control Tower(s) ("ATCT") at cab height.
- Default analysis and observer characteristics (see list below)

ForgeSolar does not represent or speak officially for the FAA and cannot approve or deny projects. Results are informational only.

COMPONENT	STATUS	DESCRIPTION
Analysis parameters	PASS	Analysis time interval and eye characteristics used are acceptable
2-mile flight path(s)	PASS	Flight path receptor(s) do not receive yellow glare
ATCT(s)	PASS	Receptor(s) marked as ATCT do not receive glare

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

FAA Policy 78 FR 63276 can be read at https://www.federalregister.gov/d/2013-24729

SITE CONFIGURATION

Analysis Parameters

DNI: peaks at 1,000.0 W/m^2
Time interval: 1 min
Ocular transmission coefficient: 0.5
Pupil diameter: 0.002 m
Eye focal length: 0.017 m
Sun subtended angle: 9.3 mrad
Site Config ID: 56714.10130

PV Array(s)

Name: A1
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 30.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 60.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.134204	-76.008299	444.26	7.50	451.76
2	44.134749	-76.008294	445.27	7.50	452.77
3	44.134855	-76.006174	441.97	7.50	449.47
4	44.134310	-76.006179	441.86	7.50	449.36

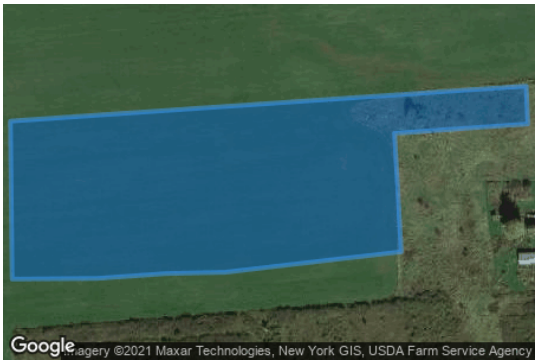
Name: A2
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 30.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 60.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.132709	-76.005210	432.95	7.50	440.45
2	44.133526	-76.005202	437.21	7.50	444.71
3	44.133519	-76.005725	437.86	7.50	445.36
4	44.134336	-76.005717	441.01	7.50	448.51
5	44.134372	-76.003831	437.75	7.50	445.25
6	44.134162	-76.003801	437.75	7.50	445.25
7	44.134172	-76.003569	438.50	7.50	446.00
8	44.134196	-76.003080	436.51	7.50	444.01
9	44.134208	-76.002840	434.67	7.50	442.17
10	44.133671	-76.002690	432.97	7.50	440.47
11	44.133602	-76.003671	435.58	7.50	443.08
12	44.133058	-76.003676	432.26	7.50	439.76
13	44.133038	-76.004023	431.81	7.50	439.31
14	44.132774	-76.004003	430.42	7.50	437.92

Name: B
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 30.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 60.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.138109	-76.006579	449.66	7.50	457.16
2	44.138290	-76.002956	446.45	7.50	453.95
3	44.138530	-76.002917	446.52	7.50	454.02
4	44.138772	-75.997834	435.28	7.50	442.78
5	44.137966	-75.997847	436.76	7.50	444.26
6	44.137713	-76.002925	444.12	7.50	451.62
7	44.137473	-76.002964	444.65	7.50	452.15
8	44.137292	-76.006587	448.90	7.50	456.40

Name: B1
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 30.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 60.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.136682	-76.002514	443.55	7.50	451.05
2	44.137707	-76.002530	443.77	7.50	451.27
3	44.137934	-75.997848	436.86	7.50	444.36
4	44.137689	-75.997834	435.47	0.00	435.47
5	44.137628	-75.999043	435.67	0.00	435.67
6	44.136859	-75.998983	434.01	7.50	441.51
7	44.136726	-76.000583	438.38	7.50	445.88
8	44.136718	-76.001115	440.22	7.50	447.72
9	44.136687	-76.001733	442.66	7.50	450.16

Name: B2
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 30.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 60.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.135047	-76.004844	440.72	7.50	448.22
2	44.135591	-76.004838	441.69	7.50	449.19
3	44.135561	-76.005821	443.80	7.50	451.30
4	44.135114	-76.005864	440.51	7.50	448.01
5	44.135052	-76.007135	443.32	7.50	450.82
6	44.135024	-76.007724	445.08	7.50	452.58
7	44.134985	-76.008306	446.44	0.00	446.44
8	44.135231	-76.008309	446.64	7.50	454.14
9	44.135938	-76.008277	447.74	7.50	455.24
10	44.136003	-76.007119	447.31	7.50	454.81
11	44.136078	-76.005832	445.44	7.50	452.94
12	44.136378	-76.005813	447.50	7.50	455.00
13	44.136448	-76.004811	445.33	7.50	452.83
14	44.136993	-76.004806	448.20	7.50	455.71
15	44.137029	-76.004058	447.49	7.50	454.99
16	44.137305	-76.004019	445.54	7.50	453.04
17	44.137361	-76.002879	445.03	7.50	452.53
18	44.135706	-76.002916	440.75	7.50	448.25
19	44.135694	-76.002784	440.09	7.50	447.59
20	44.134877	-76.002792	438.19	7.50	445.69
21	44.134815	-76.003818	437.50	7.50	445.00
22	44.135016	-76.003934	440.12	7.50	447.62

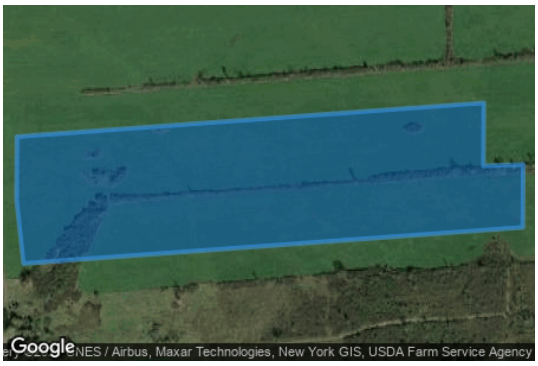
Name: C1
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 30.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 60.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.140966	-75.998464	443.50	7.50	451.00
2	44.140890	-75.999996	448.82	7.50	456.32
3	44.140658	-76.000035	447.20	7.50	454.70
4	44.140652	-75.999774	445.95	7.50	453.45
5	44.140383	-75.999740	444.96	7.50	452.46
6	44.140386	-75.999646	444.76	7.50	452.26
7	44.140662	-75.999607	446.32	7.50	453.82
8	44.140718	-75.998467	442.67	7.50	450.17
9	44.139901	-75.998475	441.30	7.50	448.80
10	44.139786	-76.000791	445.35	7.50	452.85
11	44.140603	-76.000783	448.09	7.50	455.59
12	44.140599	-76.001240	449.08	7.50	456.58
13	44.141159	-76.001271	451.69	7.50	459.19
14	44.141133	-76.001823	451.14	7.50	458.64
15	44.141402	-76.001857	451.71	7.50	459.21
16	44.141396	-76.002016	451.42	7.50	458.92
17	44.141940	-76.002011	452.61	7.50	460.11
18	44.142010	-76.000610	452.69	7.50	460.19
19	44.142285	-76.000570	453.19	7.50	460.69
20	44.142312	-76.000019	453.22	7.50	460.72
21	44.142544	-75.999980	453.42	7.50	460.92
22	44.142616	-75.998513	449.54	7.50	457.04
23	44.141783	-75.998456	446.23	7.50	453.73

Name: C2
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 30.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 60.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

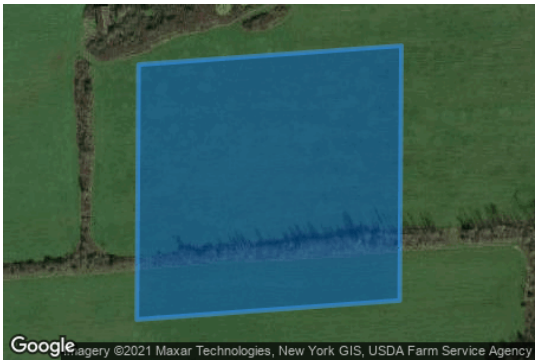
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.142021	-76.002018	452.75	7.50	460.25
2	44.143407	-76.001980	457.27	7.50	464.77
3	44.143468	-76.000545	455.50	7.50	463.00
4	44.142814	-76.000561	455.58	0.00	455.58
5	44.142795	-76.000901	454.31	0.00	454.31
6	44.142784	-76.001274	453.93	0.00	453.93
7	44.142069	-76.001328	453.70	7.50	461.20

Name: D1
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 30.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 60.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



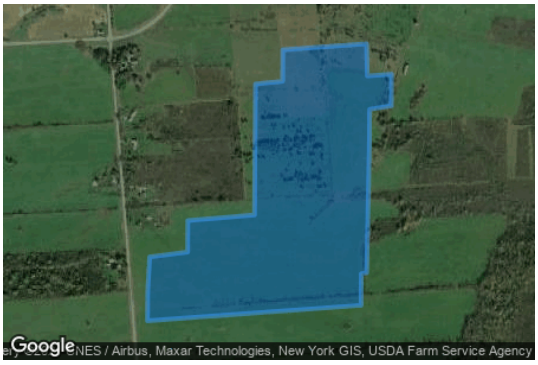
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.146263	-75.989314	434.28	7.50	441.78
2	44.145446	-75.989322	432.91	7.50	440.41
3	44.145464	-75.988600	430.81	7.50	438.31
4	44.144647	-75.988608	429.47	7.50	436.97
5	44.144178	-75.997671	450.73	7.50	458.23
6	44.145007	-75.997797	454.21	7.50	461.71
7	44.145824	-75.997789	456.51	7.50	464.01

Name: D2
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 30.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 60.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



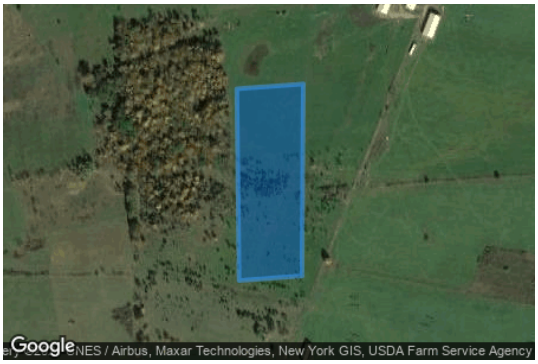
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.146413	-75.989484	436.34	7.50	443.84
2	44.148067	-75.989469	436.39	7.50	443.89
3	44.148190	-75.987083	431.09	7.50	438.59
4	44.146536	-75.987099	429.74	7.50	437.24

Name: D3
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 30.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 60.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



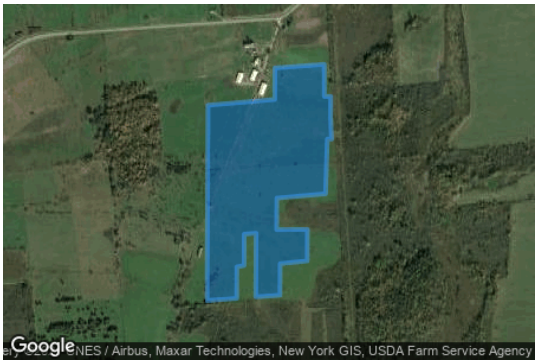
Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.147357	-75.989893	443.96	7.50	451.46
2	44.147328	-75.990090	444.79	7.50	452.29
3	44.146511	-75.990098	439.53	7.50	447.03
4	44.146110	-75.997852	458.84	7.50	466.34
5	44.146865	-75.997844	458.86	7.50	466.36
6	44.147767	-75.997770	458.98	7.50	466.48
7	44.147893	-75.996395	456.10	7.50	463.60
8	44.148710	-75.996387	457.89	7.50	465.39
9	44.148855	-75.993964	455.35	7.50	462.85
10	44.152253	-75.993930	459.86	7.50	467.36
11	44.152323	-75.992948	459.03	7.50	466.53
12	44.153140	-75.992940	458.39	7.50	465.89
13	44.153298	-75.989900	453.87	7.50	461.37
14	44.152464	-75.989871	450.23	7.50	457.73
15	44.152508	-75.988991	447.49	7.50	454.99
16	44.151691	-75.988999	446.43	7.50	453.93
17	44.151595	-75.989785	448.29	7.50	455.79
18	44.150778	-75.989793	445.27	7.50	452.77

Name: D4
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 30.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 60.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.153552	-75.989681	449.39	7.50	456.89
2	44.156039	-75.989722	457.25	7.50	464.75
3	44.156102	-75.988515	452.80	7.50	460.30
4	44.153612	-75.988539	446.07	7.50	453.57

Name: D5
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 30.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 60.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

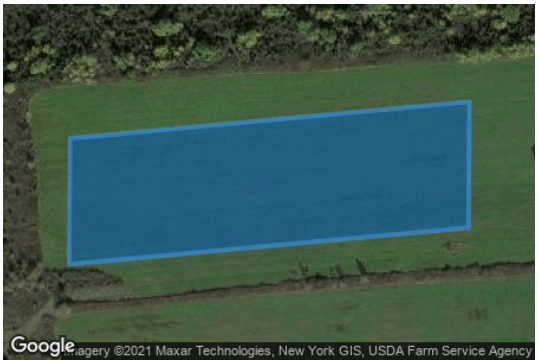


Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.157507	-75.983969	438.89	7.50	446.39
2	44.156671	-75.983961	440.33	7.50	447.83
3	44.156671	-75.983729	440.33	7.50	447.83
4	44.156120	-75.983737	438.60	0.00	438.60
5	44.155566	-75.983700	436.84	0.00	436.84
6	44.155566	-75.983855	436.54	0.00	436.54
7	44.154149	-75.983920	437.86	7.50	445.36
8	44.154034	-75.985688	439.34	7.50	446.84
9	44.153217	-75.985693	439.19	7.50	446.69
10	44.153222	-75.984579	436.60	7.50	444.10
11	44.152405	-75.984585	434.50	7.50	442.00
12	44.152334	-75.985567	437.07	7.50	444.57
13	44.151517	-75.985572	436.07	7.50	443.57
14	44.151471	-75.986452	434.40	7.50	441.90
15	44.152288	-75.986447	436.86	7.50	444.36
16	44.153123	-75.986441	441.51	7.50	449.01
17	44.153101	-75.986872	443.74	7.50	451.24
18	44.152284	-75.986877	436.64	7.50	444.14
19	44.152251	-75.987139	439.39	7.50	446.89
20	44.151434	-75.987145	436.38	7.50	443.88
21	44.151377	-75.988221	436.35	7.50	443.85
22	44.156445	-75.988188	453.70	7.50	461.20
23	44.156595	-75.985765	444.32	7.50	451.82
24	44.157412	-75.985757	448.37	7.50	455.87

Name: D6
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 30.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 60.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.156522	-75.988799	455.37	7.50	462.87
2	44.157339	-75.988794	457.15	7.50	464.65
3	44.157228	-75.991216	461.75	7.50	469.25
4	44.158045	-75.991211	461.33	7.50	468.84
5	44.158253	-75.987319	455.48	7.50	462.98
6	44.158233	-75.987025	452.50	0.00	452.50
7	44.157844	-75.987075	454.32	0.00	454.32
8	44.157450	-75.987088	453.63	0.00	453.63
9	44.157414	-75.987272	453.73	0.00	453.73
10	44.157056	-75.987306	452.62	0.00	452.62
11	44.156600	-75.987330	450.94	7.50	458.44

Name: E1
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 30.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 60.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.145355	-76.004260	458.25	7.50	465.75
2	44.146172	-76.004252	458.98	7.50	466.48
3	44.146409	-76.000628	461.75	7.50	469.25
4	44.145592	-76.000636	459.07	7.50	466.57

Name: E2
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 30.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 60.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.145621	-76.000228	457.32	7.50	464.82
2	44.146438	-76.000220	461.15	7.50	468.65
3	44.146537	-75.998688	458.10	7.50	465.60
4	44.145720	-75.998696	456.43	7.50	463.93

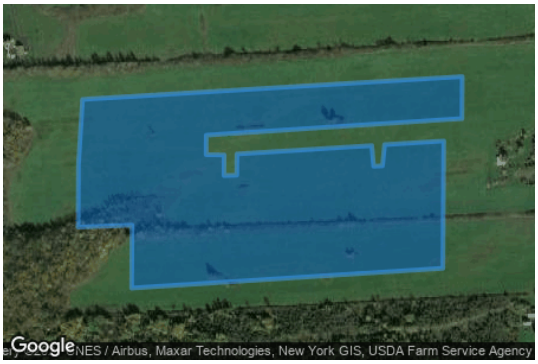
Name: E3
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 30.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 60.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.145175	-76.001417	457.49	7.50	464.99
2	44.145365	-75.998512	456.55	7.50	464.05
3	44.144820	-75.998517	454.08	7.50	461.58
4	44.144631	-76.001422	456.07	7.50	463.57

Name: E4
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 30.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 60.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.143318	-75.999712	455.10	7.50	462.60
2	44.143704	-75.999748	455.16	0.00	455.16
3	44.143654	-76.000776	455.10	0.00	455.10
4	44.144079	-76.000820	457.56	7.50	465.06
5	44.144208	-75.998564	458.01	7.50	465.51
6	44.143391	-75.998572	451.65	7.50	459.15

Name: F
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 30.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 60.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.150218	-76.000441	467.47	7.50	474.97
2	44.150003	-76.005082	458.78	7.50	466.28
3	44.149751	-76.005084	458.08	7.50	465.58
4	44.149746	-76.004758	458.04	7.50	465.54
5	44.149479	-76.004760	457.88	7.50	465.38
6	44.149483	-76.004528	458.35	7.50	465.85
7	44.149758	-76.004525	458.44	7.50	465.94
8	44.149869	-76.002078	463.35	7.50	470.85
9	44.149599	-76.002044	465.11	7.50	472.61
10	44.149605	-76.001885	465.69	7.50	473.19
11	44.149881	-76.001845	464.23	7.50	471.73
12	44.149928	-76.000771	466.88	7.50	474.38
13	44.148275	-76.000787	463.33	7.50	470.83
14	44.148018	-76.006437	457.50	7.50	465.00
15	44.148836	-76.006429	456.35	7.50	463.85
16	44.148810	-76.007409	456.97	7.50	464.47
17	44.149627	-76.007401	456.45	7.50	463.95
18	44.150466	-76.007328	455.05	7.50	462.55
19	44.150763	-76.000436	465.90	7.50	473.40

Name: Revised Array_01
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 30.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 60.0°
Rated power: -
Panel material: Smooth glass without AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.139498	-76.000717	445.00	7.50	452.50
2	44.138843	-76.000695	443.40	7.50	450.90
3	44.138936	-75.999418	445.06	7.50	452.56
4	44.139575	-75.999343	443.13	7.50	450.63

Name: Revised Array_01
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0°
Tracking axis tilt: 30.0°
Tracking axis panel offset: 0.0°
Max tracking angle: 60.0°
Resting angle: 60.0°
Rated power: -
Panel material: Smooth glass without AR coating
Reflectivity: Vary with sun
Slope error: correlate with material

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.142847	-76.002519	457.98	7.50	465.48
2	44.142762	-76.004021	459.03	7.50	466.53
3	44.141014	-76.003699	454.56	7.50	462.06
4	44.141161	-76.002219	453.62	7.50	461.12

Flight Path Receptor(s)

Name: FP 1_Rwy 03 Approach
Description:
Threshold height: 50 ft
Direction: 15.9°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	44.045471	-75.725853	681.65	50.00	731.65
Two-mile	44.017667	-75.736899	724.23	560.88	1285.11

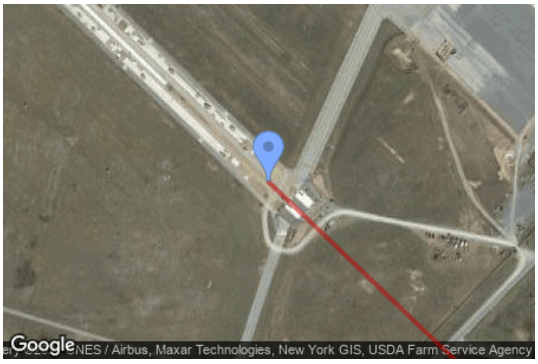
Name: FP 2_Rwy 21 Approach
Description:
Threshold height: 50 ft
Direction: 195.7°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	44.071843	-75.715331	663.19	50.00	713.20
Two-mile	44.099678	-75.704435	578.96	687.69	1266.65

Name: FP 3_Rwy 15 Approach
Description:
Threshold height: 50 ft
Direction: 134.3°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	44.061787	-75.724656	668.12	50.00	718.12
Two-mile	44.081965	-75.753505	526.80	744.78	1271.58

Name: FP 4_Rwy 33 Approach
Description:
Threshold height: 50 ft
Direction: 313.7°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°



Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	44.052584	-75.711389	686.90	50.00	736.90
Two-mile	44.032616	-75.682261	680.99	609.36	1290.35

Name: FP 5_Rwy 08 Approach
Description:
Threshold height: 50 ft
Direction: 70.1°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	44.045187	-75.728676	680.26	50.00	730.27
Two-mile	44.035336	-75.766538	639.42	644.30	1283.72

Name: FP 6_Rwy 26 Approach
Description:
Threshold height: 50 ft
Direction: 249.7°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	44.049289	-75.712712	686.63	50.00	736.63
Two-mile	44.059301	-75.674930	693.05	597.04	1290.09

Discrete Observation Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
OP 1	1	44.132404	-76.003236	425.15	8.00
OP 2	2	44.136988	-75.997692	435.96	8.00
OP 3	3	44.137912	-75.996654	438.32	8.00
OP 4	4	44.140282	-75.996856	438.10	8.00
OP 5	5	44.142074	-75.997459	445.53	8.00
OP 6	6	44.147505	-75.998852	468.52	8.00
OP 7	7	44.148619	-75.998144	473.13	8.00
OP 8	8	44.149801	-75.999083	473.75	8.00
OP 9	9	44.152838	-75.998342	471.86	8.00
OP 10	10	44.158872	-75.987995	458.28	8.00
OP 11	11	44.157545	-75.986445	451.88	8.00
12-ATCT	12	44.058919	-75.710960	701.11	160.01

Map image of 12-ATCT

Route Receptor(s)

Name: Route 1_Miller Rd
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.130164	-76.006821	427.76	3.54	431.30
2	44.132525	-76.003490	429.45	3.54	432.99
3	44.133210	-76.002503	425.04	3.54	428.58
4	44.133472	-76.002047	426.22	3.54	429.76
5	44.134738	-75.999590	420.74	3.54	424.28
6	44.135797	-75.997551	430.75	3.54	434.29
7	44.136197	-75.997267	432.91	3.54	436.45

Name: Route 2_Wilder Rd
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.136363	-75.997235	432.83	3.54	436.37
2	44.138473	-75.997455	434.62	3.54	438.16
3	44.140971	-75.997760	439.55	3.54	443.09
4	44.143293	-75.998023	453.28	3.54	456.82
5	44.145583	-75.998292	457.73	3.54	461.27
6	44.147415	-75.998490	464.14	3.54	467.68
7	44.149975	-75.998785	473.82	3.54	477.36
8	44.152257	-75.999053	470.22	3.54	473.76
9	44.153427	-75.999177	464.68	3.54	468.22

Name: Route 3_Overbluff Rd
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.153436	-75.999086	464.18	3.54	467.72
2	44.153467	-75.998753	463.67	3.54	467.21
3	44.153621	-75.998077	465.36	3.54	468.90
4	44.153929	-75.997487	465.35	3.54	468.89
5	44.154375	-75.996961	465.77	3.54	469.31
6	44.154821	-75.996682	464.85	3.54	468.39
7	44.156600	-75.996371	459.44	3.54	462.98
8	44.157192	-75.996135	459.65	3.54	463.20
9	44.157608	-75.995706	458.35	3.54	461.89
10	44.157931	-75.995191	458.62	3.54	462.16
11	44.158139	-75.994569	458.84	3.54	462.38
12	44.158254	-75.994000	458.73	3.54	462.27
13	44.158324	-75.992627	459.46	3.54	463.00
14	44.158447	-75.990138	460.52	3.54	464.06
15	44.158693	-75.985460	447.01	3.54	450.55
16	44.158874	-75.985153	445.01	3.54	448.55
17	44.159070	-75.984846	443.98	3.54	447.52
18	44.159493	-75.984242	442.65	3.54	446.19
19	44.160338	-75.983046	441.48	3.54	445.02
20	44.161999	-75.980621	435.42	3.54	438.96
21	44.163629	-75.978191	433.30	3.54	436.84
22	44.164505	-75.976896	426.47	3.54	430.01
23	44.164878	-75.976291	423.86	3.54	427.40
24	44.164995	-75.975972	423.93	3.54	427.47
25	44.165074	-75.975654	424.61	3.54	428.15

Name: Route 4_Carter Street Rd
Path type: Two-way
Observer view angle: 50.0°

Note: Route receptors are excluded from this FAA policy review. Use the 2-mile flight path receptor to simulate flight paths according to FAA guidelines.

Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	44.173221	-75.969289	417.77	3.54	421.31
2	44.172983	-75.965663	434.37	3.54	437.91
3	44.172814	-75.961618	442.28	3.54	445.82
4	44.172775	-75.959086	451.40	3.54	454.94
5	44.172721	-75.954677	438.35	3.54	441.89
6	44.172713	-75.952853	436.91	3.54	440.45
7	44.172621	-75.952273	438.59	3.54	442.13
8	44.172436	-75.951812	439.37	3.54	442.91
9	44.172129	-75.951383	437.05	3.54	440.59
10	44.171598	-75.950932	435.77	3.54	439.31
11	44.170859	-75.950600	436.36	3.54	439.90
12	44.170536	-75.950439	434.26	3.54	437.80
13	44.168396	-75.949312	421.54	3.54	425.08
14	44.165757	-75.947939	440.03	3.54	443.57
15	44.163986	-75.947016	443.67	3.54	447.21
16	44.161254	-75.945579	433.43	3.54	436.97
17	44.158014	-75.943733	423.81	3.54	427.35
18	44.154920	-75.941952	415.17	3.54	418.71
19	44.153580	-75.941191	428.65	3.54	432.19

GLARE ANALYSIS RESULTS

Summary of Glare

PV Array Name	Tilt (°)	Orient (°)	"Green" Glare min	"Yellow" Glare min	Energy kWh
A1	SA tracking	SA tracking	0	0	-
A2	SA tracking	SA tracking	0	0	-
B	SA tracking	SA tracking	0	0	-
B1	SA tracking	SA tracking	0	0	-
B2	SA tracking	SA tracking	0	0	-
C1	SA tracking	SA tracking	0	0	-
C2	SA tracking	SA tracking	0	0	-
D1	SA tracking	SA tracking	0	0	-
D2	SA tracking	SA tracking	0	0	-
D3	SA tracking	SA tracking	0	0	-
D4	SA tracking	SA tracking	0	0	-
D5	SA tracking	SA tracking	0	0	-
D6	SA tracking	SA tracking	0	0	-
E1	SA tracking	SA tracking	0	0	-
E2	SA tracking	SA tracking	0	0	-
E3	SA tracking	SA tracking	0	0	-
E4	SA tracking	SA tracking	0	0	-
F	SA tracking	SA tracking	0	0	-
Revised Array_01	SA tracking	SA tracking	0	0	-
Revised Array_01	SA tracking	SA tracking	0	0	-

Total annual glare received by each receptor

Receptor	Annual Green Glare (min)	Annual Yellow Glare (min)
FP 1_Rwy 03 Approach	0	0
FP 2_Rwy 21 Approach	0	0
FP 3_Rwy 15 Approach	0	0
FP 4_Rwy 33 Approach	0	0
FP 5_Rwy 08 Approach	0	0
FP 6_Rwy 26 Approach	0	0
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0
OP 9	0	0
OP 10	0	0
OP 11	0	0
12-ATCT	0	0
Route 1_Miller Rd	0	0
Route 2_Wilder Rd	0	0
Route 3_Overbluff Rd	0	0
Route 4_Carter Street Rd	0	0

Results for: A1

Receptor	Green Glare (min)	Yellow Glare (min)
FP 1_Rwy 03 Approach	0	0
FP 2_Rwy 21 Approach	0	0
FP 3_Rwy 15 Approach	0	0
FP 4_Rwy 33 Approach	0	0
FP 5_Rwy 08 Approach	0	0
FP 6_Rwy 26 Approach	0	0
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0

Receptor	Green Glare (min)	Yellow Glare (min)
OP 8	0	0
OP 9	0	0
OP 10	0	0
OP 11	0	0
12-ATCT	0	0
Route 1_Miller Rd	0	0
Route 2_Wilder Rd	0	0
Route 3_Overbluff Rd	0	0
Route 4_Carter Street Rd	0	0

Flight Path: FP 1_Rwy 03 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 2_Rwy 21 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 3_Rwy 15 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 4_Rwy 33 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 5_Rwy 08 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 6_Rwy 26 Approach

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare

0 minutes of green glare

Point Receptor: 12-ATCT

0 minutes of yellow glare
0 minutes of green glare

Route: Route 1_Miller Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 2_Wilder Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 3_Overbluff Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 4_Carter Street Rd

0 minutes of yellow glare
0 minutes of green glare

Results for: A2

Receptor	Green Glare (min)	Yellow Glare (min)
FP 1_Rwy 03 Approach	0	0
FP 2_Rwy 21 Approach	0	0
FP 3_Rwy 15 Approach	0	0
FP 4_Rwy 33 Approach	0	0
FP 5_Rwy 08 Approach	0	0
FP 6_Rwy 26 Approach	0	0
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0

Receptor	Green Glare (min)	Yellow Glare (min)
OP 9	0	0
OP 10	0	0
OP 11	0	0
12-ATCT	0	0
Route 1_Miller Rd	0	0
Route 2_Wilder Rd	0	0
Route 3_Overbluff Rd	0	0
Route 4_Carter Street Rd	0	0

Flight Path: FP 1_Rwy 03 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 2_Rwy 21 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 3_Rwy 15 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 4_Rwy 33 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 5_Rwy 08 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 6_Rwy 26 Approach

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare

0 minutes of green glare

Point Receptor: 12-ATCT

0 minutes of yellow glare
0 minutes of green glare

Route: Route 1_Miller Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 2_Wilder Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 3_Overbluff Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 4_Carter Street Rd

0 minutes of yellow glare
0 minutes of green glare

Results for: B

Receptor	Green Glare (min)	Yellow Glare (min)
FP 1_Rwy 03 Approach	0	0
FP 2_Rwy 21 Approach	0	0
FP 3_Rwy 15 Approach	0	0
FP 4_Rwy 33 Approach	0	0
FP 5_Rwy 08 Approach	0	0
FP 6_Rwy 26 Approach	0	0
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0

Receptor	Green Glare (min)	Yellow Glare (min)
OP 9	0	0
OP 10	0	0
OP 11	0	0
12-ATCT	0	0
Route 1_Miller Rd	0	0
Route 2_Wilder Rd	0	0
Route 3_Overbluff Rd	0	0
Route 4_Carter Street Rd	0	0

Flight Path: FP 1_Rwy 03 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 2_Rwy 21 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 3_Rwy 15 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 4_Rwy 33 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 5_Rwy 08 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 6_Rwy 26 Approach

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare

0 minutes of green glare

Point Receptor: 12-ATCT

0 minutes of yellow glare
0 minutes of green glare

Route: Route 1_Miller Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 2_Wilder Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 3_Overbluff Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 4_Carter Street Rd

0 minutes of yellow glare
0 minutes of green glare

Results for: B1

Receptor	Green Glare (min)	Yellow Glare (min)
FP 1_Rwy 03 Approach	0	0
FP 2_Rwy 21 Approach	0	0
FP 3_Rwy 15 Approach	0	0
FP 4_Rwy 33 Approach	0	0
FP 5_Rwy 08 Approach	0	0
FP 6_Rwy 26 Approach	0	0
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0

Receptor	Green Glare (min)	Yellow Glare (min)
OP 9	0	0
OP 10	0	0
OP 11	0	0
12-ATCT	0	0
Route 1_Miller Rd	0	0
Route 2_Wilder Rd	0	0
Route 3_Overbluff Rd	0	0
Route 4_Carter Street Rd	0	0

Flight Path: FP 1_Rwy 03 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 2_Rwy 21 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 3_Rwy 15 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 4_Rwy 33 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 5_Rwy 08 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 6_Rwy 26 Approach

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare

0 minutes of green glare

Point Receptor: 12-ATCT

0 minutes of yellow glare
0 minutes of green glare

Route: Route 1_Miller Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 2_Wilder Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 3_Overbluff Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 4_Carter Street Rd

0 minutes of yellow glare
0 minutes of green glare

Results for: B2

Receptor	Green Glare (min)	Yellow Glare (min)
FP 1_Rwy 03 Approach	0	0
FP 2_Rwy 21 Approach	0	0
FP 3_Rwy 15 Approach	0	0
FP 4_Rwy 33 Approach	0	0
FP 5_Rwy 08 Approach	0	0
FP 6_Rwy 26 Approach	0	0
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0

Receptor	Green Glare (min)	Yellow Glare (min)
OP 9	0	0
OP 10	0	0
OP 11	0	0
12-ATCT	0	0
Route 1_Miller Rd	0	0
Route 2_Wilder Rd	0	0
Route 3_Overbluff Rd	0	0
Route 4_Carter Street Rd	0	0

Flight Path: FP 1_Rwy 03 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 2_Rwy 21 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 3_Rwy 15 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 4_Rwy 33 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 5_Rwy 08 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 6_Rwy 26 Approach

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare

0 minutes of green glare

Point Receptor: 12-ATCT

0 minutes of yellow glare
0 minutes of green glare

Route: Route 1_Miller Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 2_Wilder Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 3_Overbluff Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 4_Carter Street Rd

0 minutes of yellow glare
0 minutes of green glare

Results for: C1

Receptor	Green Glare (min)	Yellow Glare (min)
FP 1_Rwy 03 Approach	0	0
FP 2_Rwy 21 Approach	0	0
FP 3_Rwy 15 Approach	0	0
FP 4_Rwy 33 Approach	0	0
FP 5_Rwy 08 Approach	0	0
FP 6_Rwy 26 Approach	0	0
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0

Receptor	Green Glare (min)	Yellow Glare (min)
OP 9	0	0
OP 10	0	0
OP 11	0	0
12-ATCT	0	0
Route 1_Miller Rd	0	0
Route 2_Wilder Rd	0	0
Route 3_Overbluff Rd	0	0
Route 4_Carter Street Rd	0	0

Flight Path: FP 1_Rwy 03 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 2_Rwy 21 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 3_Rwy 15 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 4_Rwy 33 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 5_Rwy 08 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 6_Rwy 26 Approach

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare

0 minutes of green glare

Point Receptor: 12-ATCT

0 minutes of yellow glare
0 minutes of green glare

Route: Route 1_Miller Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 2_Wilder Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 3_Overbluff Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 4_Carter Street Rd

0 minutes of yellow glare
0 minutes of green glare

Results for: C2

Receptor	Green Glare (min)	Yellow Glare (min)
FP 1_Rwy 03 Approach	0	0
FP 2_Rwy 21 Approach	0	0
FP 3_Rwy 15 Approach	0	0
FP 4_Rwy 33 Approach	0	0
FP 5_Rwy 08 Approach	0	0
FP 6_Rwy 26 Approach	0	0
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0

Receptor	Green Glare (min)	Yellow Glare (min)
OP 9	0	0
OP 10	0	0
OP 11	0	0
12-ATCT	0	0
Route 1_Miller Rd	0	0
Route 2_Wilder Rd	0	0
Route 3_Overbluff Rd	0	0
Route 4_Carter Street Rd	0	0

Flight Path: FP 1_Rwy 03 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 2_Rwy 21 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 3_Rwy 15 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 4_Rwy 33 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 5_Rwy 08 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 6_Rwy 26 Approach

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare

0 minutes of green glare

Point Receptor: 12-ATCT

0 minutes of yellow glare
0 minutes of green glare

Route: Route 1_Miller Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 2_Wilder Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 3_Overbluff Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 4_Carter Street Rd

0 minutes of yellow glare
0 minutes of green glare

Results for: D1

Receptor	Green Glare (min)	Yellow Glare (min)
FP 1_Rwy 03 Approach	0	0
FP 2_Rwy 21 Approach	0	0
FP 3_Rwy 15 Approach	0	0
FP 4_Rwy 33 Approach	0	0
FP 5_Rwy 08 Approach	0	0
FP 6_Rwy 26 Approach	0	0
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0

Receptor	Green Glare (min)	Yellow Glare (min)
OP 9	0	0
OP 10	0	0
OP 11	0	0
12-ATCT	0	0
Route 1_Miller Rd	0	0
Route 2_Wilder Rd	0	0
Route 3_Overbluff Rd	0	0
Route 4_Carter Street Rd	0	0

Flight Path: FP 1_Rwy 03 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 2_Rwy 21 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 3_Rwy 15 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 4_Rwy 33 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 5_Rwy 08 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 6_Rwy 26 Approach

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare

0 minutes of green glare

Point Receptor: 12-ATCT

0 minutes of yellow glare
0 minutes of green glare

Route: Route 1_Miller Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 2_Wilder Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 3_Overbluff Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 4_Carter Street Rd

0 minutes of yellow glare
0 minutes of green glare

Results for: D2

Receptor	Green Glare (min)	Yellow Glare (min)
FP 1_Rwy 03 Approach	0	0
FP 2_Rwy 21 Approach	0	0
FP 3_Rwy 15 Approach	0	0
FP 4_Rwy 33 Approach	0	0
FP 5_Rwy 08 Approach	0	0
FP 6_Rwy 26 Approach	0	0
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0

Receptor	Green Glare (min)	Yellow Glare (min)
OP 9	0	0
OP 10	0	0
OP 11	0	0
12-ATCT	0	0
Route 1_Miller Rd	0	0
Route 2_Wilder Rd	0	0
Route 3_Overbluff Rd	0	0
Route 4_Carter Street Rd	0	0

Flight Path: FP 1_Rwy 03 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 2_Rwy 21 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 3_Rwy 15 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 4_Rwy 33 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 5_Rwy 08 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 6_Rwy 26 Approach

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare

0 minutes of green glare

Point Receptor: 12-ATCT

0 minutes of yellow glare
0 minutes of green glare

Route: Route 1_Miller Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 2_Wilder Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 3_Overbluff Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 4_Carter Street Rd

0 minutes of yellow glare
0 minutes of green glare

Results for: D3

Receptor	Green Glare (min)	Yellow Glare (min)
FP 1_Rwy 03 Approach	0	0
FP 2_Rwy 21 Approach	0	0
FP 3_Rwy 15 Approach	0	0
FP 4_Rwy 33 Approach	0	0
FP 5_Rwy 08 Approach	0	0
FP 6_Rwy 26 Approach	0	0
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0

Receptor	Green Glare (min)	Yellow Glare (min)
OP 9	0	0
OP 10	0	0
OP 11	0	0
12-ATCT	0	0
Route 1_Miller Rd	0	0
Route 2_Wilder Rd	0	0
Route 3_Overbluff Rd	0	0
Route 4_Carter Street Rd	0	0

Flight Path: FP 1_Rwy 03 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 2_Rwy 21 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 3_Rwy 15 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 4_Rwy 33 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 5_Rwy 08 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 6_Rwy 26 Approach

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare

0 minutes of green glare

Point Receptor: 12-ATCT

0 minutes of yellow glare
0 minutes of green glare

Route: Route 1_Miller Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 2_Wilder Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 3_Overbluff Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 4_Carter Street Rd

0 minutes of yellow glare
0 minutes of green glare

Results for: D4

Receptor	Green Glare (min)	Yellow Glare (min)
FP 1_Rwy 03 Approach	0	0
FP 2_Rwy 21 Approach	0	0
FP 3_Rwy 15 Approach	0	0
FP 4_Rwy 33 Approach	0	0
FP 5_Rwy 08 Approach	0	0
FP 6_Rwy 26 Approach	0	0
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0

Receptor	Green Glare (min)	Yellow Glare (min)
OP 9	0	0
OP 10	0	0
OP 11	0	0
12-ATCT	0	0
Route 1_Miller Rd	0	0
Route 2_Wilder Rd	0	0
Route 3_Overbluff Rd	0	0
Route 4_Carter Street Rd	0	0

Flight Path: FP 1_Rwy 03 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 2_Rwy 21 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 3_Rwy 15 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 4_Rwy 33 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 5_Rwy 08 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 6_Rwy 26 Approach

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare

0 minutes of green glare

Point Receptor: 12-ATCT

0 minutes of yellow glare
0 minutes of green glare

Route: Route 1_Miller Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 2_Wilder Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 3_Overbluff Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 4_Carter Street Rd

0 minutes of yellow glare
0 minutes of green glare

Results for: D5

Receptor	Green Glare (min)	Yellow Glare (min)
FP 1_Rwy 03 Approach	0	0
FP 2_Rwy 21 Approach	0	0
FP 3_Rwy 15 Approach	0	0
FP 4_Rwy 33 Approach	0	0
FP 5_Rwy 08 Approach	0	0
FP 6_Rwy 26 Approach	0	0
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0

Receptor	Green Glare (min)	Yellow Glare (min)
OP 9	0	0
OP 10	0	0
OP 11	0	0
12-ATCT	0	0
Route 1_Miller Rd	0	0
Route 2_Wilder Rd	0	0
Route 3_Overbluff Rd	0	0
Route 4_Carter Street Rd	0	0

Flight Path: FP 1_Rwy 03 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 2_Rwy 21 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 3_Rwy 15 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 4_Rwy 33 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 5_Rwy 08 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 6_Rwy 26 Approach

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare

0 minutes of green glare

Point Receptor: 12-ATCT

0 minutes of yellow glare
0 minutes of green glare

Route: Route 1_Miller Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 2_Wilder Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 3_Overbluff Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 4_Carter Street Rd

0 minutes of yellow glare
0 minutes of green glare

Results for: D6

Receptor	Green Glare (min)	Yellow Glare (min)
FP 1_Rwy 03 Approach	0	0
FP 2_Rwy 21 Approach	0	0
FP 3_Rwy 15 Approach	0	0
FP 4_Rwy 33 Approach	0	0
FP 5_Rwy 08 Approach	0	0
FP 6_Rwy 26 Approach	0	0
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0

Receptor	Green Glare (min)	Yellow Glare (min)
OP 9	0	0
OP 10	0	0
OP 11	0	0
12-ATCT	0	0
Route 1_Miller Rd	0	0
Route 2_Wilder Rd	0	0
Route 3_Overbluff Rd	0	0
Route 4_Carter Street Rd	0	0

Flight Path: FP 1_Rwy 03 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 2_Rwy 21 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 3_Rwy 15 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 4_Rwy 33 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 5_Rwy 08 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 6_Rwy 26 Approach

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare

0 minutes of green glare

Point Receptor: 12-ATCT

0 minutes of yellow glare
0 minutes of green glare

Route: Route 1_Miller Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 2_Wilder Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 3_Overbluff Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 4_Carter Street Rd

0 minutes of yellow glare
0 minutes of green glare

Results for: E1

Receptor	Green Glare (min)	Yellow Glare (min)
FP 1_Rwy 03 Approach	0	0
FP 2_Rwy 21 Approach	0	0
FP 3_Rwy 15 Approach	0	0
FP 4_Rwy 33 Approach	0	0
FP 5_Rwy 08 Approach	0	0
FP 6_Rwy 26 Approach	0	0
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0

Receptor	Green Glare (min)	Yellow Glare (min)
OP 9	0	0
OP 10	0	0
OP 11	0	0
12-ATCT	0	0
Route 1_Miller Rd	0	0
Route 2_Wilder Rd	0	0
Route 3_Overbluff Rd	0	0
Route 4_Carter Street Rd	0	0

Flight Path: FP 1_Rwy 03 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 2_Rwy 21 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 3_Rwy 15 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 4_Rwy 33 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 5_Rwy 08 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 6_Rwy 26 Approach

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare

0 minutes of green glare

Point Receptor: 12-ATCT

0 minutes of yellow glare
0 minutes of green glare

Route: Route 1_Miller Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 2_Wilder Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 3_Overbluff Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 4_Carter Street Rd

0 minutes of yellow glare
0 minutes of green glare

Results for: E2

Receptor	Green Glare (min)	Yellow Glare (min)
FP 1_Rwy 03 Approach	0	0
FP 2_Rwy 21 Approach	0	0
FP 3_Rwy 15 Approach	0	0
FP 4_Rwy 33 Approach	0	0
FP 5_Rwy 08 Approach	0	0
FP 6_Rwy 26 Approach	0	0
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0

Receptor	Green Glare (min)	Yellow Glare (min)
OP 9	0	0
OP 10	0	0
OP 11	0	0
12-ATCT	0	0
Route 1_Miller Rd	0	0
Route 2_Wilder Rd	0	0
Route 3_Overbluff Rd	0	0
Route 4_Carter Street Rd	0	0

Flight Path: FP 1_Rwy 03 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 2_Rwy 21 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 3_Rwy 15 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 4_Rwy 33 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 5_Rwy 08 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 6_Rwy 26 Approach

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare

0 minutes of green glare

Point Receptor: 12-ATCT

0 minutes of yellow glare
0 minutes of green glare

Route: Route 1_Miller Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 2_Wilder Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 3_Overbluff Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 4_Carter Street Rd

0 minutes of yellow glare
0 minutes of green glare

Results for: E3

Receptor	Green Glare (min)	Yellow Glare (min)
FP 1_Rwy 03 Approach	0	0
FP 2_Rwy 21 Approach	0	0
FP 3_Rwy 15 Approach	0	0
FP 4_Rwy 33 Approach	0	0
FP 5_Rwy 08 Approach	0	0
FP 6_Rwy 26 Approach	0	0
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0

Receptor	Green Glare (min)	Yellow Glare (min)
OP 9	0	0
OP 10	0	0
OP 11	0	0
12-ATCT	0	0
Route 1_Miller Rd	0	0
Route 2_Wilder Rd	0	0
Route 3_Overbluff Rd	0	0
Route 4_Carter Street Rd	0	0

Flight Path: FP 1_Rwy 03 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 2_Rwy 21 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 3_Rwy 15 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 4_Rwy 33 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 5_Rwy 08 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 6_Rwy 26 Approach

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare

0 minutes of green glare

Point Receptor: 12-ATCT

0 minutes of yellow glare
0 minutes of green glare

Route: Route 1_Miller Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 2_Wilder Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 3_Overbluff Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 4_Carter Street Rd

0 minutes of yellow glare
0 minutes of green glare

Results for: E4

Receptor	Green Glare (min)	Yellow Glare (min)
FP 1_Rwy 03 Approach	0	0
FP 2_Rwy 21 Approach	0	0
FP 3_Rwy 15 Approach	0	0
FP 4_Rwy 33 Approach	0	0
FP 5_Rwy 08 Approach	0	0
FP 6_Rwy 26 Approach	0	0
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0

Receptor	Green Glare (min)	Yellow Glare (min)
OP 9	0	0
OP 10	0	0
OP 11	0	0
12-ATCT	0	0
Route 1_Miller Rd	0	0
Route 2_Wilder Rd	0	0
Route 3_Overbluff Rd	0	0
Route 4_Carter Street Rd	0	0

Flight Path: FP 1_Rwy 03 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 2_Rwy 21 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 3_Rwy 15 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 4_Rwy 33 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 5_Rwy 08 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 6_Rwy 26 Approach

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare

0 minutes of green glare

Point Receptor: 12-ATCT

0 minutes of yellow glare
0 minutes of green glare

Route: Route 1_Miller Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 2_Wilder Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 3_Overbluff Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 4_Carter Street Rd

0 minutes of yellow glare
0 minutes of green glare

Results for: F

Receptor	Green Glare (min)	Yellow Glare (min)
FP 1_Rwy 03 Approach	0	0
FP 2_Rwy 21 Approach	0	0
FP 3_Rwy 15 Approach	0	0
FP 4_Rwy 33 Approach	0	0
FP 5_Rwy 08 Approach	0	0
FP 6_Rwy 26 Approach	0	0
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0

Receptor	Green Glare (min)	Yellow Glare (min)
OP 9	0	0
OP 10	0	0
OP 11	0	0
12-ATCT	0	0
Route 1_Miller Rd	0	0
Route 2_Wilder Rd	0	0
Route 3_Overbluff Rd	0	0
Route 4_Carter Street Rd	0	0

Flight Path: FP 1_Rwy 03 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 2_Rwy 21 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 3_Rwy 15 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 4_Rwy 33 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 5_Rwy 08 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 6_Rwy 26 Approach

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare

0 minutes of green glare

Point Receptor: 12-ATCT

0 minutes of yellow glare
0 minutes of green glare

Route: Route 1_Miller Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 2_Wilder Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 3_Overbluff Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 4_Carter Street Rd

0 minutes of yellow glare
0 minutes of green glare

Results for: Revised Array_01

Receptor	Green Glare (min)	Yellow Glare (min)
FP 1_Rwy 03 Approach	0	0
FP 2_Rwy 21 Approach	0	0
FP 3_Rwy 15 Approach	0	0
FP 4_Rwy 33 Approach	0	0
FP 5_Rwy 08 Approach	0	0
FP 6_Rwy 26 Approach	0	0
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0

Receptor	Green Glare (min)	Yellow Glare (min)
OP 9	0	0
OP 10	0	0
OP 11	0	0
12-ATCT	0	0
Route 1_Miller Rd	0	0
Route 2_Wilder Rd	0	0
Route 3_Overbluff Rd	0	0
Route 4_Carter Street Rd	0	0

Flight Path: FP 1_Rwy 03 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 2_Rwy 21 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 3_Rwy 15 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 4_Rwy 33 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 5_Rwy 08 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 6_Rwy 26 Approach

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare

0 minutes of green glare

Point Receptor: 12-ATCT

0 minutes of yellow glare
0 minutes of green glare

Route: Route 1_Miller Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 2_Wilder Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 3_Overbluff Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 4_Carter Street Rd

0 minutes of yellow glare
0 minutes of green glare

Results for: Revised Array_01

Receptor	Green Glare (min)	Yellow Glare (min)
FP 1_Rwy 03 Approach	0	0
FP 2_Rwy 21 Approach	0	0
FP 3_Rwy 15 Approach	0	0
FP 4_Rwy 33 Approach	0	0
FP 5_Rwy 08 Approach	0	0
FP 6_Rwy 26 Approach	0	0
OP 1	0	0
OP 2	0	0
OP 3	0	0
OP 4	0	0
OP 5	0	0
OP 6	0	0
OP 7	0	0
OP 8	0	0

Receptor	Green Glare (min)	Yellow Glare (min)
OP 9	0	0
OP 10	0	0
OP 11	0	0
12-ATCT	0	0
Route 1_Miller Rd	0	0
Route 2_Wilder Rd	0	0
Route 3_Overbluff Rd	0	0
Route 4_Carter Street Rd	0	0

Flight Path: FP 1_Rwy 03 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 2_Rwy 21 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 3_Rwy 15 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 4_Rwy 33 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 5_Rwy 08 Approach

0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 6_Rwy 26 Approach

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 4

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 5

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 6

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 7

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 8

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 9

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 10

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 11

0 minutes of yellow glare

0 minutes of green glare

Point Receptor: 12-ATCT

0 minutes of yellow glare
0 minutes of green glare

Route: Route 1_Miller Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 2_Wilder Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 3_Overbluff Rd

0 minutes of yellow glare
0 minutes of green glare

Route: Route 4_Carter Street Rd

0 minutes of yellow glare
0 minutes of green glare

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.
Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to V1 algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual results and glare occurrence may differ.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Appendix 8-C
Presentation Materials and Correspondence

From: Jack Honor <Jack.Honor@edf-re.com> on behalf of Jack.Honor@edf-re.com
Sent: Monday, July 26, 2021 1:20 PM
To: Lee Shimel
Cc: orleanssuper@aol.com
Subject: Tracy Solar - Visual Assessment
Attachments: Tracy Solar Energy Center Photo Log KOP Selection.pdf

Hi Lee, Kevin

At our earlier meetings, we noted that a visual assessment would be conducted for our project. I believe we shared a map at the time. I have attached the map again with pictures added this time. We will be doing the visual simulations on these points so if you have any comments or want to see alternative locations, please let me know by around August 10th. I know that's a quick turn-around but it would be helpful as we're trying to wrap up the work and submit the permit by ~September 1.

Thanks!

Jack

Tracy Solar Project

Towns of Clayton & Orleans
Jefferson County, New York

Visual Impact Assessment

Figure 1: Visual Resource Inventory & Key Observation Selection

Visually Sensitive Resources (VSR)

- National Register of Historic Places
- Perch River Wildlife Management Area
- Snowmobile Trail
- State Trail
- Thousand Islands-Seaway Wine Trail
- National Register of Historic Places Eligable

Photo Locations (See Attachment A)

- Aesthetic Resource of Statewide Singificance
- Ordinary Roadside Views
- Suggested Key Observation Pont (KOP) - Photo Simulation

- Facility Site
- 2-Mile Visual Study Area

Viewshed Area Solar Arrays (9.25ft tall) Visible

- More Visible
- Less Visible

0 ft 2000 ft 4000 ft 6000 ft 8000 ft

TRACY solar project

Hart Road

Viewpoint	Resource Type	Municipality	Landscape Similarity Zone	Distance to Facility	Expected Visibility
2	Local Road	Clayton (T)	Rural Agricultural	1,570 feet	Yes

Hart Road

Viewpoint	Resource Type	Municipality	Landscape Similarity Zone	Distance to Facility	Expected Visibility
4	Local Road	Clayton (T)	Rural Agricultural	1,060 feet	Yes

Turbolino Road

Viewpoint	Resource Type	Municipality	Landscape Similarity Zone	Distance to Facility	Expected Visibility
5	Local Road	Clayton (T)	Rural Agricultural	2,300 feet	Yes

Miller Road

Viewpoint	Resource Type	Municipality	Landscape Similarity Zone	Distance to Facility	Expected Visibility
29	Local Road	Clayton (T)	Rural Agricultural	70 feet	Yes

Wilder Road

Viewpoint	Resource Type	Municipality	Landscape Similarity Zone	Distance to Facility	Expected Visibility
32	Local Road	Clayton (T)/Orleans (T) Line	Rural Agricultural	270 feet	Yes

Wilder Road

Viewpoint	Resource Type	Municipality	Landscape Similarity Zone	Distance to Facility	Expected Visibility
34	Local Road	Clayton (T)	Rural Agricultural	150 feet	Yes

Wilder Road

Viewpoint	Resource Type	Municipality	Landscape Similarity Zone	Distance to Facility	Expected Visibility
36	Local Road	Clayton (T)/Orleans (T) Line	Rural Agricultural	160 feet	Yes

Wilder Road

Viewpoint	Resource Type	Municipality	Landscape Similarity Zone	Distance to Facility	Expected Visibility
40b	Local Road	Clayton (T)/Orleans (T) Line	Rural Agricultural	100 feet	Yes

Wilder Road

Viewpoint	Resource Type	Municipality	Landscape Similarity Zone	Distance to Facility	Expected Visibility
43	Local Road	Clayton (T)/Orleans (T) Line	Rural Agricultural	150 feet	Yes

Wilder Road

Viewpoint	Resource Type	Municipality	Landscape Similarity Zone	Distance to Facility	Expected Visibility
46	Local Road	Clayton (T)/Orleans (T) Line	Rural Agricultural	390 feet	Yes

Wilder Road

Viewpoint	Resource Type	Municipality	Landscape Similarity Zone	Distance to Facility	Expected Visibility
50	Local Road	Clayton (T)/Orleans (T) Line	Rural Agricultural	651 feet	Yes

County Route 12

Viewpoint	Resource Type	Municipality	Landscape Similarity Zone	Distance to Facility	Expected Visibility
57	Local Road	Clayton (T)	Rural Agricultural	940 feet	No

State Route 180

Viewpoint	Resource Type	Municipality	Landscape Similarity Zone	Distance to Facility	Expected Visibility
67	Local Road	Orleans (T)	Rural Agricultural	950 feet	Yes

State Route 180 at County Route 12

Viewpoint	Resource Type	Municipality	Landscape Similarity Zone	Distance to Facility	Expected Visibility
70	Natl. Register of Historic Places	Orleans (T)	Rural Agricultural	1,200 feet	Yes

State Route 180

Viewpoint	Resource Type	Municipality	Landscape Similarity Zone	Distance to Facility	Expected Visibility
73	Natl. Register of Historic Places	Orleans (T)	Rural Agricultural	1,590 feet	Yes

County Route 12

Viewpoint	Resource Type	Municipality	Landscape Similarity Zone	Distance to Facility	Expected Visibility
76	Local Road	Orleans (T)	Rural Agricultural	160 feet	Yes

County Route 12 at Tracy Road

Viewpoint	Resource Type	Municipality	Landscape Similarity Zone	Distance to Facility	Expected Visibility
79	Local Road	Orleans (T)	Rural Agricultural	300 feet	Yes

County Route 12

Viewpoint	Resource Type	Municipality	Landscape Similarity Zone	Distance to Facility	Expected Visibility
82	Local Road	Orleans (T)	Rural Agricultural	120 feet	Yes

County Route 12

Viewpoint	Resource Type	Municipality	Landscape Similarity Zone	Distance to Facility	Expected Visibility
84	Local Road	Orleans (T)	Rural Agricultural	1,760 feet	Yes

Carter Street

Viewpoint	Resource Type	Municipality	Landscape Similarity Zone	Distance to Facility	Expected Visibility
90	Local Road	Orleans (T)	Rural Agricultural	1,440 feet	No

Carter Street

Viewpoint	Resource Type	Municipality	Landscape Similarity Zone	Distance to Facility	Expected Visibility
92	Local Road	Orleans (T)	Rural Agricultural	1,420 feet	Yes

Carter Street

Viewpoint	Resource Type	Municipality	Landscape Similarity Zone	Distance to Facility	Expected Visibility
95	Local Road	Orleans (T)	Rural Agricultural	170 feet	Yes

Carter Street

Viewpoint	Resource Type	Municipality	Landscape Similarity Zone	Distance to Facility	Expected Visibility
97	Local Road	Orleans (T)	Rural Agricultural	60 feet	Yes

From: Jack Honor <Jack.Honor@edf-re.com> on behalf of Jack.Honor@edf-re.com
Sent: Monday, July 26, 2021 1:23 PM
To: lpeterson@townofclayton.com
Subject: Tracy Solar - Visual Assessment
Attachments: Tracy Solar Energy Center Photo Log KOP Selection.pdf

Hi Lance

At our earlier meetings, we noted that a visual assessment would be conducted for our project. I believe we shared a map at the time. I have attached the map again with pictures added this time. We will be doing the visual simulations on these points so if you have any comments or want to see alternative locations, please let me know by around August 10th. I know that's a quick turn-around but it would be helpful as we're trying to wrap up the work and submit the permit by ~September 1.

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Tracy Solar Project

Towns of Clayton & Orleans
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TRACY solar project

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Viewpoint	Resource Type	Municipality	Landscape Similarity Zone	Distance to Facility	Expected Visibility
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County Route 12 at Tracy Road

Viewpoint	Resource Type	Municipality	Landscape Similarity Zone	Distance to Facility	Expected Visibility
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Viewpoint	Resource Type	Municipality	Landscape Similarity Zone	Distance to Facility	Expected Visibility
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Carter Street

Viewpoint	Resource Type	Municipality	Landscape Similarity Zone	Distance to Facility	Expected Visibility
97	Local Road	Orleans (T)	Rural Agricultural	60 feet	Yes

Appendix 8-D
Lighting Plan

Prepared For:
EDF Renewables Tracy Solar
Submitted by:
LaBella Associates
300 State Street
Suite 201
Rochester, NY 14614
(585) 454-6110

LaBella
Powered by partnership.

EDF Renewables Tracy
Exhibit 8-D Appendix

September 2021
Project No. 2210787

TABLE OF CONTENTS

SECTION 1: INTRODUCTION

1.1 Service and Security Lighting

Tracy Solar Energy Center has proposed lighting associated with the Project including security service lighting and HSE manually activated emergency lighting. These proposed lights are shown within the photometric plans and include the illumination level when considering only the perimeter lights and in combination with the working lights on. It is planned that the service lighting will only be activated in the event of an outage or other repair-related event that requires nighttime hours. Within the substation, a total of approximately 5 service (perimeter) lights and 9 emergency (work) lights will be installed. The perimeter lighting and work lights are shown at mounting heights of 16 fee and 25 feet respectively.

The work lights activate manually to reduce unnecessary lighting while providing visibility to all major equipment including circuit breakers, trans-formers, disconnect switches and required foot passageways. The proposed typical fixtures, Holophane Mongoose LED for service lighting and Holophane Predator LED for emergency lighting, provide an average of 30,000 lumens each. The emergency (work) lights are to be turned on when project personnel are performing maintenance; lights will be turned off after repairs are completed.

Exterior control house lights will also be installed above the door of the control building at the substation and will be manually switched on at night. At the control building, McGraw Edison Galleon LED fixtures (or similar) with a lumen output of 3,000 will be used. These exterior lights on the control building will be activated during nighttime hours by using a manual switch. Exterior control house lighting at the control building will be required to direct downward as well as shielded to avoid light trespass and nighttime light pollution impacts.

All service (perimeter), emergency (work) lights installed within the Substation will be on 30 feet poles except for three, which will be located on the lightning mast at the indicated heights. No nighttime lighting is proposed in the fenced solar array fields. Limited exterior lighting has been designed as required for health, safety, security, emergency and operational purpose in outdoor areas around the substation. Light levels will be limited to the maximum total outdoor lighting output based on the lowest allowable OSHA limits. The average light levels is approximately 7.07-foot candles throughout the substation when all lights are on. When only the service (perimeter) lights are on, average light levels are 1.98-foot candles which is acceptable.

Task lighting has been designed to be placed at the lowest allowed and practical heights and direct towards the ground/work areas to avoid being cast skyward or across long distances. Manual activation will be installed as practical instead of motion detection sensors. All lighting is directed downward at 35-degree or 25-degree tilt angles to minimize the effects of light pollution. Lighting has been kept to a minimum and with the lowest intensity necessary for safety and security. The nearest residential property to the substation and O&M building is approximately 1,500 feet. At this distance the impact of downward directed low level lighting is low.

SECTION 2: Photometric mapping

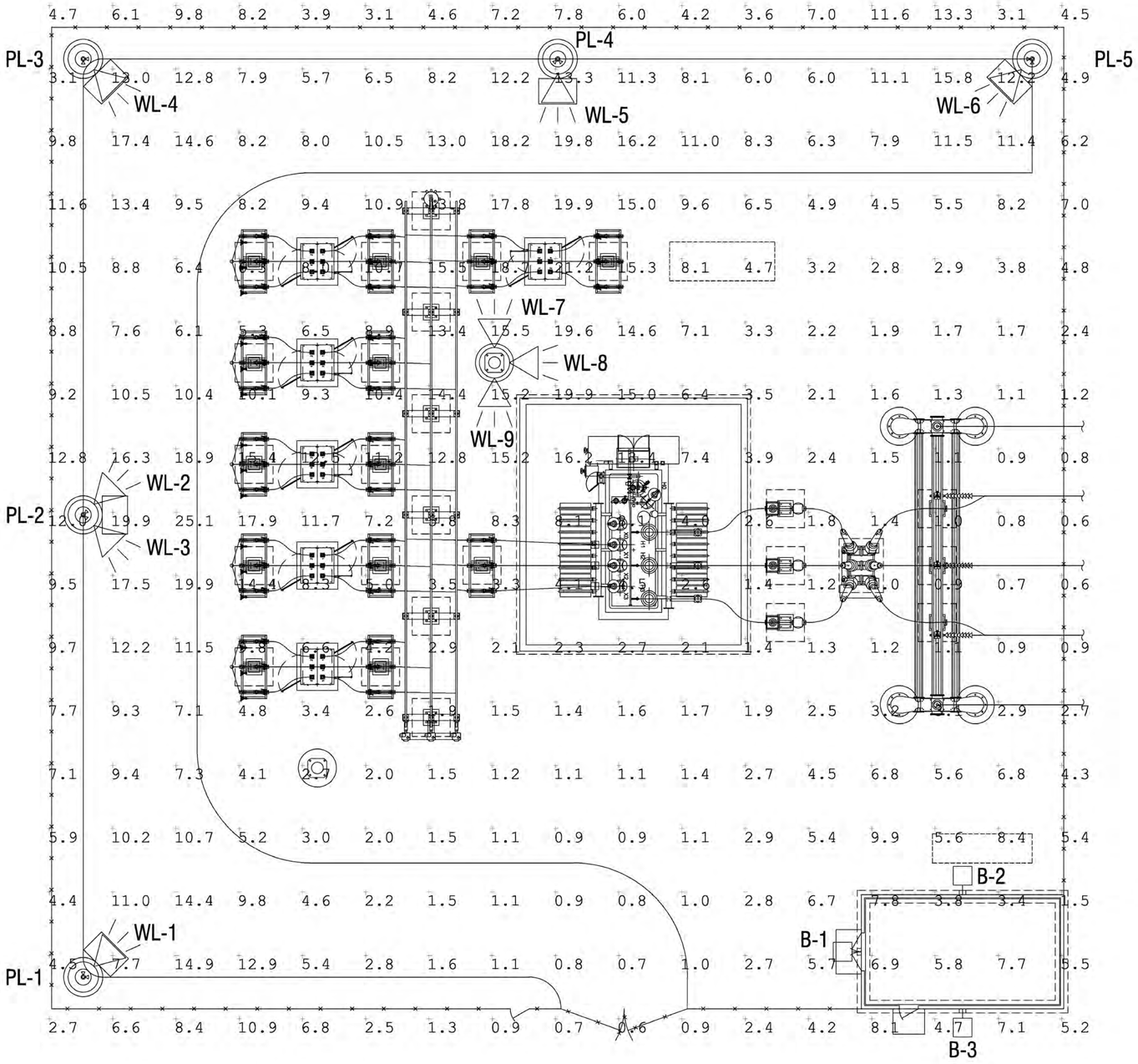
Refer to the attached drawings for the Photometric mapping with all lights on and with just service lights on scenarios for the Substation.

SECTION 3: Manufacturer Information

Refer to the attached manufacturers Information for the types of lighting discussed in the Plan.

CALCULATION SUMMARY					
LABEL	CALC TYPE	UNITS	AVG	MAX	MIN
Total Yard	Illuminance	Fc	7.07	25.1	0.6

LUMINAIRE SCHEDULE				
MARK	NO. REQ'D	POWER	DESCRIPTION	MOUNTING HEIGHT (FT)
B	3	250W	CONTROL HOUSE LUMINAIRES	11'
PL-X	5	250W	PERIMETER LUMINAIRES	16'
WL-X	9	350W	WORK LUMINAIRES	25'



SYMBOLS

	PL-X	PERIMETER LIGHT - HOLOPHANE MONGOOSE LARGE LED (MGLED)
	WL-X	WORK LIGHT - HOLOPHANE PREDATOR LARGE LED (PLLED)
	B-X	EXTERIOR CONTROL HOUSE LIGHT (MCGRAW EDISON GALLEON)

NOTES

1. LIGHTING HAS 2 CONTROL SCHEMES:
   a. PERIMETER LIGHTING: THIS LIGHTING IS PART OF THE SURROUNDING LIGHTING AND IS ALWAYS ON IN THE EVENING HOURS. THIS WILL HAVE AN AUTO-ON AND AUTO-OFF CONTROL VIA A PHOTOCELL.
   b. WORK LIGHTING: THE REMAINDER OF THE LIGHTING ON SITE IS WORK LIGHTING. THIS CAN BE ACTIVATED MANUALLY WITH THE PERIMETER LIGHTING TO PROVIDE ADEQUATE LIGHTING FOR SUBSTATION MAINTENANCE STAFF.
2. LIGHTING AROUND THE SITE PERIMETER AND MAST IS MOUNTED AT 16' ABOVE GRADE AND TILTED TO 35 DEGREES. LIGHTING MOUNTED TO EXTERIOR OF CONTROL BUILDING AT 11' ABOVE GRADE. WORK LIGHTING IS MOUNTED AT 25' ABOVE GRADE AND TILTED TO 40 DEGREES.
3. CALCULATION POINTS ARE SPACED AT 10' AND PLACED AT GRADE LEVEL AND GENERATED USING AGI32 SOFTWARE.

1 YARD PHOTOMETRIC PLAN
SCALE: 1" = 10'

N

0 5 10 20 40
SCALE: 1"=10'

VERSION 19.0
6/3/2010 8:47:55 AM

LaBella
Powered by partnership.
300 State Street, Suite 201
Rochester, NY 14614
585-454-6110
labellapc.com

NOT FOR CONSTRUCTION

EDF RENEWABLES
15445 INNOVATION DRIVE
SAN DIEGO, CA 92128

TRACY solar project

TRACY SOLAR ENERGY CENTER
ORLEANS AND CLAYTON, NY

NO:	DATE:	DESCRIPTION:
Revisions		

PROJECT NUMBER: 2210418
DRAWN BY: PP
REVIEWED BY: PP
ISSUED FOR: REVIEW
DATE: AUGUST 2021
DRAWING NAME:

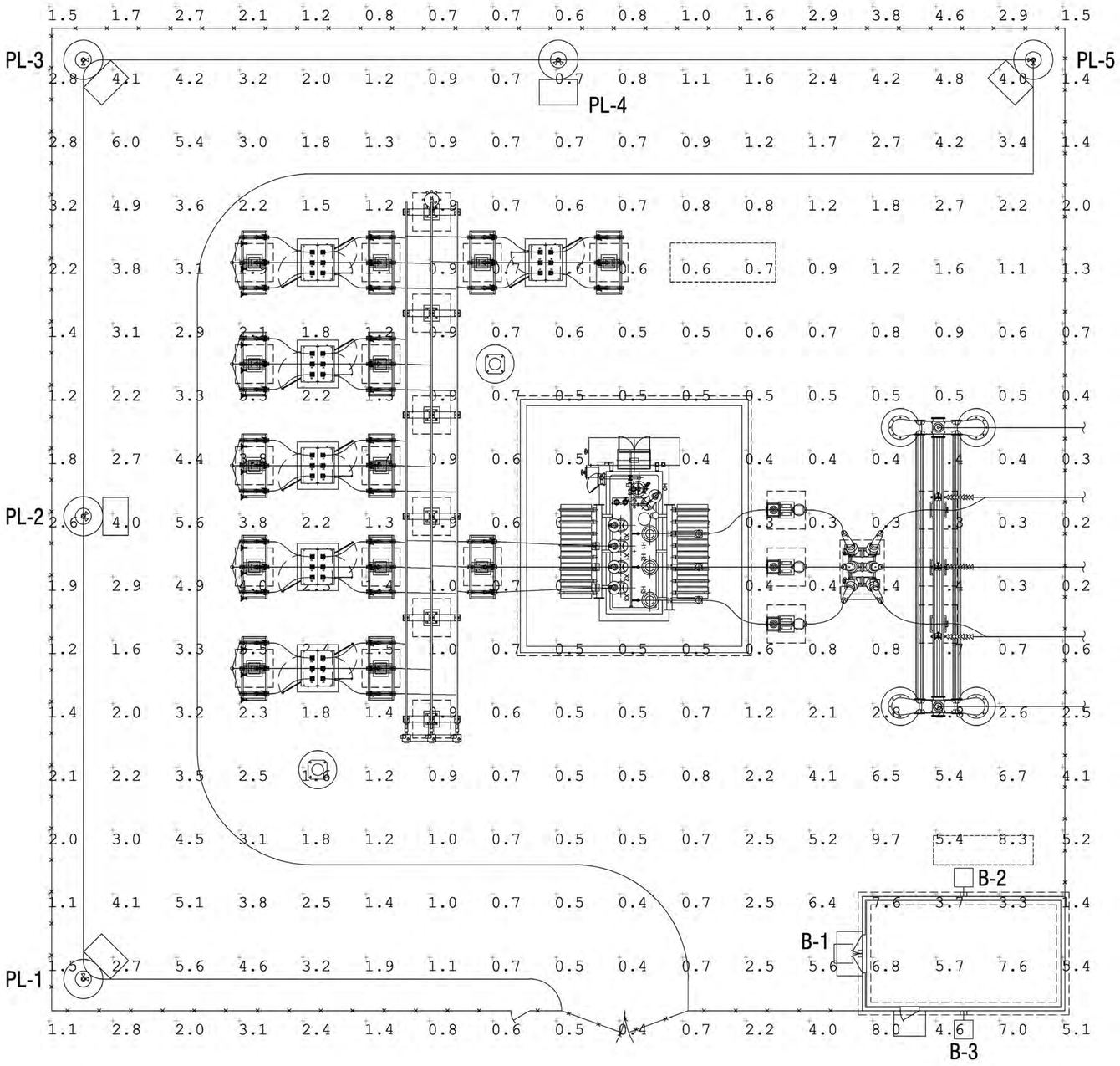
YARD PHOTOMETRIC PLAN

DRAWING NUMBER:

PS303

CALCULATION SUMMARY					
LABEL	CALC TYPE	UNITS	AVG	MAX	MIN
Total Yard	Illuminance	Fc	1.98	9.7	0.2

LUMINAIRE SCHEDULE				
MARK	NO. REQ'D	POWER	DESCRIPTION	MOUNTING HEIGHT (FT)
B	3	250W	CONTROL HOUSE LUMINAIRES	11'
PL-X	5	250W	PERIMETER LUMINAIRES	16'
WL-X	9	350W	WORK LUMINAIRES	25'



SYMBOLS

PL-X PERIMETER LIGHT - HOLOPHANE MONGOOSE LARGE LED (MGLED)

1 YARD PHOTOMETRIC PLAN(PERIMETER LIGHTS ON ONLY)
SCALE: 1" = 10'

N

0 5 10 20 40
SCALE: 1"=10'

VERSION: 19.0
6/3/2010 8:47:55 AM

LaBella
Powered by partnership.

300 State Street, Suite 201
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labellapc.com

NOT FOR CONSTRUCTION

EDF RENEWABLES
15445 INNOVATION DRIVE
SAN DIEGO, CA 92128

TRACY solar project

TRACY SOLAR ENERGY CENTER
ORLEANS AND CLAYTON, NY

NO:	DATE:	DESCRIPTION:
Revisions		

PROJECT NUMBER: 2210418
DRAWN BY: PP
REVIEWED BY: PP
ISSUED FOR: REVIEW
DATE: AUGUST 2021
DRAWING NAME:

YARD PHOTOMETRIC PLAN(PERIMETER LIGHTS ON)

DRAWING NUMBER:

PS304

McGraw-Edison

DESCRIPTION

The Galleon™ Wall LED luminaire's appearance is complementary with the Galleon area and site luminaire bringing a modern architectural style to lighting applications. Flexible mounting options accommodate wall surfaces in both an upward and downward configuration. The Galleon family of LED products deliver exceptional performance with patented, high-efficiency AccuLED Optics™, providing uniform and energy conscious lighting for parking lots, building and security lighting applications.

Catalog #		**Type**
Project		
Comments		**Date**
Prepared by		

SPECIFICATION FEATURES

Construction
Driver enclosure thermally isolated from optics for optimal thermal performance. Heavy wall aluminum housing die-cast with integral external heat sinks to provide superior structural rigidity and an IP66 rated housing. Overall construction passes a 1.5G vibration test to ensure mechanical integrity. UPLIGHTING: Specify with the UPL option for inverted mount uplight housing with additional protections to maintain IP rating.

Optics
Choice of thirteen patented, high-efficiency AccuLED Optics. The optics are precisely designed to shape the distribution maximizing efficiency and application spacing. AccuLED Optics create consistent distributions with the scalability to meet customized application requirements. Offered standard in 4000K (+/- 275K) CCT and minimum 70 CRI. Optional 3000K, 5000K and 6000K CCT. Greater than 90% lumen maintenance expected at 60,000 hours. Available in standard 1A drive current and optional 1200mA, 800mA, and 600mA drive currents.

Electrical
LED drivers are mounted for ease of maintenance. 120-277V 50/60Hz, 347V or 480V 60Hz operation. 480V is compatible for use with 480V Wye systems only. Drivers are provided standard with 0-10V dimming. An optional Eaton proprietary surge protection module is available and designed to withstand 10kV of transient line surge. The Galleon Wall LED luminaire is suitable for operation in -40°C to 40°C ambient environments. For applications with ambient temperatures exceeding 40°C, specify the HA (High Ambient) option. Emergency egress options for -20°C ambient environments and occupancy sensor available.

Mounting
Gasketed and zinc plated rigid steel mounting attachment fits directly to 4" j-box or wall with the Galleon Wall "Hook-N-Lock" mechanism for quick installation. Secured with two captive corrosion resistant black oxide coated allen head set screws which are concealed but accessible from bottom of fixture.

Finish
Housing finished in super durable TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Standard colors include black, bronze, grey, white, dark platinum and graphite metallic. RAL and custom color matches available. Consult the McGraw-Edison Architectural Colors brochure for the complete selection.

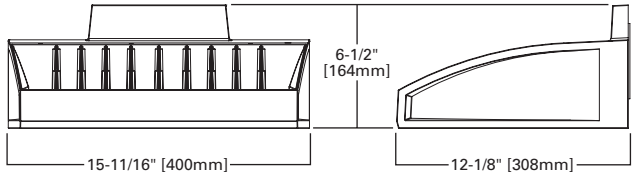
Warranty
Five-year warranty.

GWC GALLEON WALL

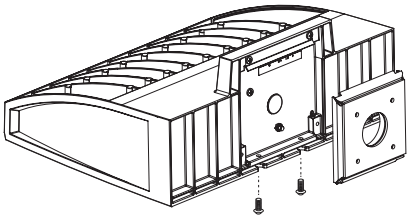
1-2 Light Squares
Solid State LED

WALL MOUNT LUMINAIRE

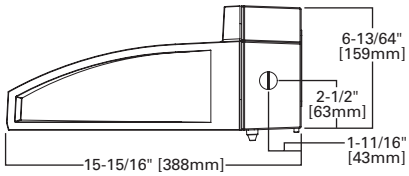
DIMENSIONS



HOOK-N-LOCK MOUNTING



BATTERY BACKUP AND THRU-BRANCH BACK BOX



CERTIFICATION DATA

UL/cUL Listed
LM79 / LM80 Compliant
IP66 Housing
ISO 9001
DesignLights Consortium® Qualified*

ENERGY DATA

Electronic LED Driver
>0.9 Power Factor
<20% Total Harmonic Distortion
120-277V/50 & 60Hz, 347V/60Hz, 480V/60Hz
-30°C Minimum Temperature
40°C Ambient Temperature Rating

SHIPPING DATA

Approximate Net Weight:
27 lbs. (12.2 kgs.)

*www.designlights.org

POWER AND LUMENS

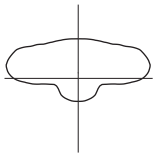
Number of Light Squares		1				2			
Drive Current		600mA	800mA	1.0A	1.2A	600mA	800mA	1.0A	1.2A
Nominal Power (Watts)		34	44	59	67	66	85	113	129
Input Current @ 120V (A)		0.30	0.39	0.51	0.58	0.58	0.77	1.02	1.16
Input Current @ 208V (A)		0.17	0.22	0.29	0.33	0.34	0.44	0.56	0.63
Input Current @ 240V (A)		0.15	0.19	0.26	0.29	0.30	0.38	0.48	0.55
Input Current @ 277V (A)		0.14	0.17	0.23	0.25	0.28	0.36	0.42	0.48
Input Current @ 347V (mA)		0.11	0.15	0.17	0.20	0.19	0.24	0.32	0.39
Input Current @ 480V (mA)		0.08	0.11	0.14	0.15	0.15	0.18	0.24	0.30
Optics									
T2	4000K/5000K Lumens	4,110	5,040	6,238	6,843	8,031	9,849	12,190	13,373
	3000K Lumens	3,638	4,461	5,522	6,057	7,109	8,718	10,791	11,838
	BUG Rating	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2
T3	4000K/5000K Lumens	4,189	5,138	6,359	6,975	8,187	10,039	12,425	13,630
	3000K Lumens	3,708	4,548	5,629	6,174	7,247	8,887	10,999	12,065
	BUG Rating	B1-U0-G1	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2
T4FT	4000K/5000K Lumens	4,214	5,167	6,395	7,016	8,233	10,097	12,497	13,709
	3000K Lumens	3,730	4,574	5,661	6,211	7,288	8,938	11,062	12,135
	BUG Rating	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G3
T4W	4000K/5000K Lumens	4,159	5,100	6,313	6,925	8,127	9,966	12,336	13,532
	3000K Lumens	3,682	4,515	5,588	6,130	7,194	8,822	10,920	11,979
	BUG Rating	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G3	B2-U0-G3
SL2	4000K/5000K Lumens	4,102	5,032	6,227	6,831	8,018	9,832	12,170	13,350
	3000K Lumens	3,631	4,454	5,512	6,047	7,098	8,703	10,773	11,817
	BUG Rating	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2	B1-U0-G2	B2-U0-G2	B2-U0-G3	B2-U0-G3
SL3	4000K/5000K Lumens	4,188	5,137	6,358	6,974	8,186	10,038	12,424	13,628
	3000K Lumens	3,707	4,547	5,628	6,173	7,246	8,886	10,998	12,064
	BUG Rating	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2	B1-U0-G2	B1-U0-G3	B2-U0-G3	B2-U0-G3
SL4	4000K/5000K Lumens	3,980	4,880	6,040	6,626	7,776	9,537	11,803	12,949
	3000K Lumens	3,523	4,320	5,347	5,865	6,883	8,442	10,448	11,462
	BUG Rating	B1-U0-G2	B1-U0-G2	B1-U0-G2	B1-U0-G2	B1-U0-G2	B1-U0-G3	B1-U0-G3	B2-U0-G3
5NQ	4000K/5000K Lumens	4,321	5,298	6,558	7,193	8,443	10,353	12,814	14,057
	3000K Lumens	3,825	4,690	5,805	6,367	7,474	9,164	11,343	12,443
	BUG Rating	B2-U0-G1	B2-U0-G1	B2-U0-G1	B3-U0-G1	B3-U0-G1	B3-U0-G1	B3-U0-G2	B3-U0-G2
5MQ	4000K/5000K Lumens	4,400	5,396	6,678	7,326	8,598	10,544	13,050	14,315
	3000K Lumens	3,895	4,777	5,911	6,485	7,611	9,334	11,552	12,672
	BUG Rating	B3-U0-G1	B3-U0-G1	B3-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2
5WQ	4000K/5000K Lumens	4,412	5,410	6,695	7,345	8,621	10,572	13,085	14,354
	3000K Lumens	3,906	4,789	5,926	6,502	7,631	9,358	11,583	12,706
	BUG Rating	B3-U0-G1	B3-U0-G1	B3-U0-G2	B3-U0-G2	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2
SLL/SLR	4000K/5000K Lumens	3,681	4,515	5,588	6,129	7,193	8,821	10,917	11,976
	3000K Lumens	3,258	3,997	4,946	5,425	6,367	7,808	9,664	10,601
	BUG Rating	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G2	B1-U0-G2	B1-U0-G3	B1-U0-G3	B2-U0-G3
RW	4000K/5000K Lumens	4,281	5,250	6,498	7,129	8,366	10,259	12,698	13,930
	3000K Lumens	3,790	4,647	5,752	6,311	7,406	9,081	11,240	12,331
	BUG Rating	B2-U0-G1	B2-U0-G1	B3-U0-G1	B3-U0-G1	B3-U0-G1	B3-U0-G1	B3-U0-G2	B3-U0-G2

* Nominal lumen data for 70 CRI. BUG rating for 4000K/5000K. Refer to IES files for 3000K BUG ratings.

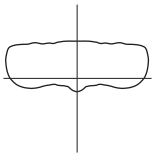
OPTICAL DISTRIBUTIONS

Asymmetric Area Distributions

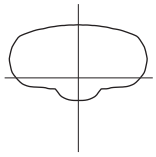
T2
(Type II)



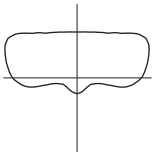
SL2
(Type II with Spill Control)



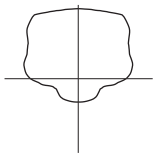
T3
(Type III)



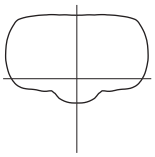
SL3
(Type III with Spill Control)



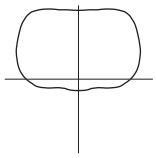
T4FT
(Type IV Forward Throw)



T4W
(Type IV Wide)

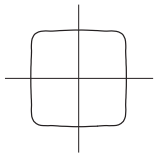


SL4
(Type IV with Spill Control)

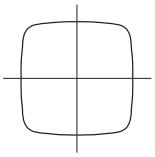


Symmertric Distributions

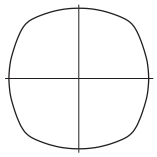
5NQ
(Type V Square Narrow)



5MQ
(Type V Square Medium)

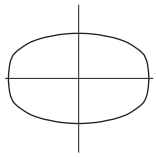


5WQ
(Type V Square Wide)

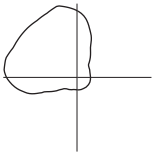


Specialized Distributions

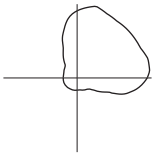
RW
(Rectangular Wide Type I)



SLL
(90° Spill Light Eliminator Left)

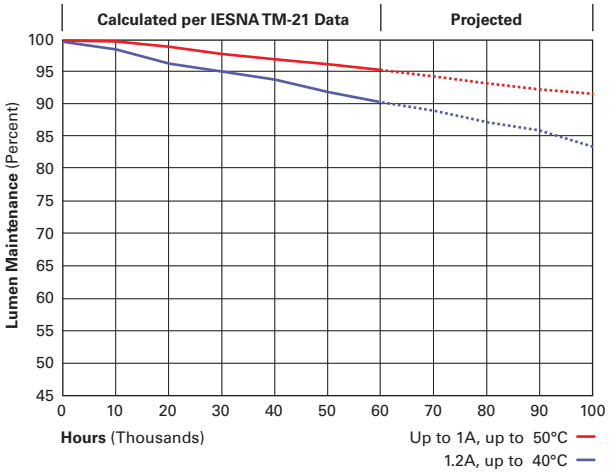


SLR
(90° Spill Light Eliminator Right)



LUMEN MAINTENANCE

Drive Current	Ambient Temperature	TM-21 Lumen Maintenance (60,000 Hours)	Projected L70 (Hours)
Up to 1A	Up to 50°C	> 95%	> 416,000
1.2A	Up to 40°C	> 90%	> 205,000



LUMEN MULTIPLIER

Ambient Temperature	Lumen Multiplier
0°C	1.02
10°C	1.01
25°C	1.00
40°C	0.99
50°C	0.97

CONTROL OPTIONS

0-10V (DIM)
This fixture is offered standard with 0-10V dimming driver(s). The DIM option provides 0-10V dimming wire leads for use with a lighting control panel or other control method.

Photocontrol (P, R and PER7)
Optional button-type photocontrol (P) and photocontrol receptacles (R and PER7) provide a flexible solution to enable "dusk-to-dawn" lighting by sensing light levels. Advanced control systems compatible with NEMA 7-pin standards can be utilized with the PER7 receptacle.

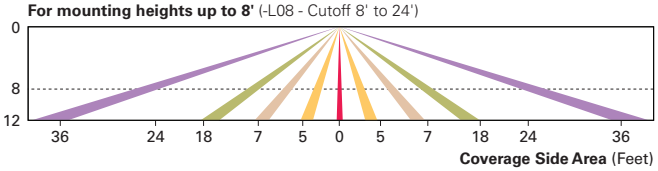
After Hours Dim (AHD)
This feature allows photocontrol-enabled luminaires to achieve additional energy savings by dimming during scheduled portions of the night. The dimming profile will automatically take effect after a "dusk-to-dawn" period has been calculated from the photocontrol input. Specify the desired dimming profile for a simple, factory-shipped dimming solution requiring no external control wiring. Reference the After Hours Dim supplemental guide for additional information.

Dimming Occupancy Sensor (MS/DIM-LXX, MS/X-LXX and MS-LXX)
These sensors are factory installed in the luminaire housing. When the MS/DIM-LXX sensor option is selected, the occupancy sensor is connected to a dimming driver and the entire luminaire dims when there is no activity detected. When activity is detected, the luminaire returns to full light output. The MS/DIM sensor is factory preset to dim down to approximately 50 percent power with a time delay of five minutes. The MS-LXX sensor is factory preset to turn the luminaire off after five minutes of no activity. The MS/X-LXX is also preset for five minutes and only controls the specified number of light engines to maintain steady output from the remaining light engines.

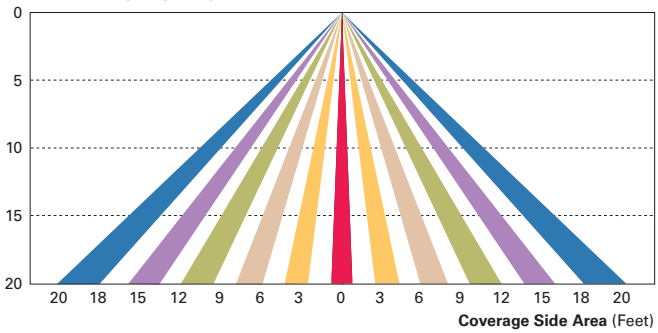
These occupancy sensors includes an integral photocell that can be activated with the FSIR-100 accessory for "dusk-to-dawn" control or daylight harvesting - the factory preset is OFF. The FSIR-100 is a wireless tool utilized for changing the dimming level, time delay, sensitivity and other parameters.

A variety of sensor lens are available to optimize the coverage pattern for mounting heights from 8'-40'.

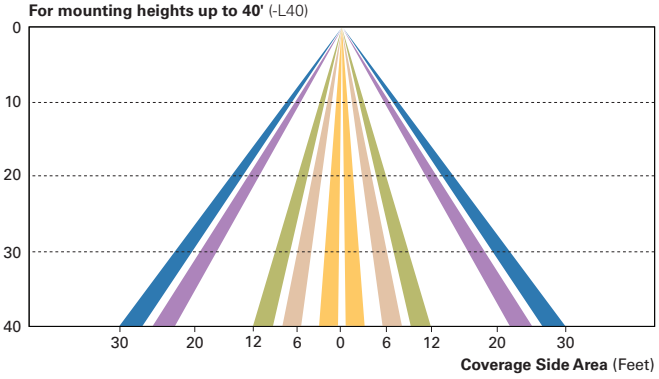
For mounting heights up to 8' (-L08 - Cutoff 8' to 24')



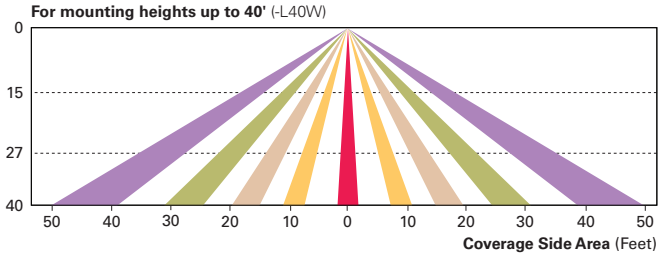
For mounting heights up to 20' (-L20)



For mounting heights up to 40' (-L40)



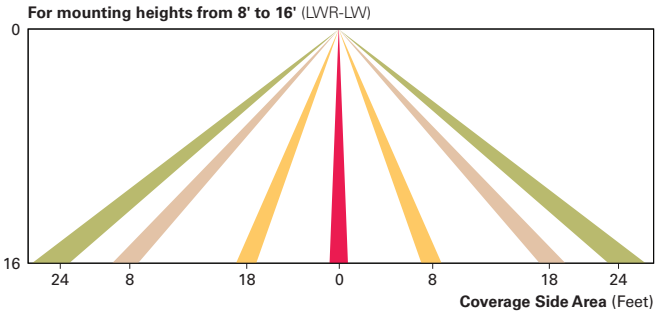
For mounting heights up to 40' (-L40W)



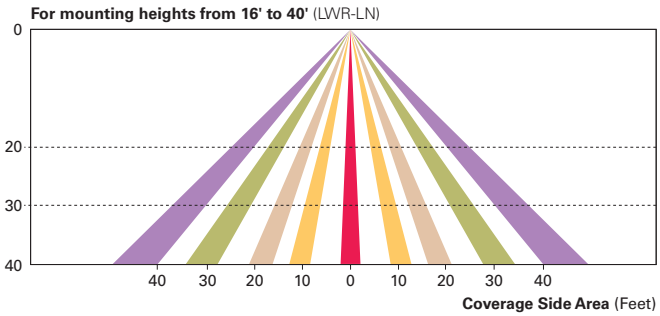
LumaWatt Pro Wireless Control and Monitoring System (LWR-LW and LWR-LN)
The LumaWatt Pro system is a peer-to-peer wireless network of luminaire-integral sensors for any sized project. Each sensor is capable of motion and photo sensing, metering power consumption and wireless communication. The end-user can securely create and manage sensor profiles with browser-based management software. The software will automatically broadcast to the sensors via wireless gateways for zone-based and individual luminaire control. The LumaWatt Pro software provides smart building solutions by utilizing the sensor to provide easy-to-use dashboard and analytic capabilities such as improved energy savings, traffic flow analysis, building management software integration and more.

For additional details, refer to the LumaWatt Pro product guides.

For mounting heights from 8' to 16' (LWR-LW)



For mounting heights from 16' to 40' (LWR-LN)



ORDERING INFORMATION

Sample Number: GWC-AF-02-LED-E1-T3-GM

Product Family [1]	Light Engine	Number of Light Squares [2]	Lamp Type	Voltage	Distribution	Color	Mounting Options
GWC=Galleon Wall	**AF**=1A Drive Current	**01**=1 **02**=2 [3]	**LED**=Solid State Light Emitting Diodes	**E1**=120-277V **347**=347V [4] **480**=480V [4, 5]	**T2**=Type II **T3**=Type III **T4FT**=Type IV Forward Throw **T4W**=Type IV Wide **SL2**=Type II w/Spill Control **SL3**=Type III w/Spill Control **SL4**=Type IV w/Spill Control **SLL**=90° Spill Light Eliminator Left **SLR**=90° Spill Light Eliminator Right **RW**=Rectangular Wide Type I **5NQ**=Type V Square Narrow **5MQ**=Type V Square Medium **5WQ**=Type V Square Wide	**AP**=Grey **BZ**=Bronze **BK**=Black **DP**=Dark Platinum **GM**=Graphite Metallic **WH**=White **CC**=Custom Color [6]	**[BLANK]**=Surface Mount

Options (Add as Suffix)

7030=70 CRI / 3000K [7]
8030=80 CRI / 3000K [7]
7050=70 CRI / 5000K [7]
7060=70 CRI / 6000K [7]
600=Drive Current Factory Set to 600mA
800=Drive Current Factory Set to 800mA
1200=Drive Current Factory Set to 1200mA [8]
F=Single Fused (120, 277 or 347V. Must Specify Voltage)
FF=Double Fused (208, 240 or 480V. Must Specify Voltage)
10K=10kV Surge Module
DIM=0-10V Dimming Leads [9, 10]
DALI=DALI Driver [11]
HA=50°C High Ambient [12]
UPL=Uplight Housing [13]
BBB=Battery Pack with Back Box [3, 8, 9, 14]
CWB=Cold Weather Battery Pack with Back Box [3, 8, 9, 14]
P=Button Type Photocontrol (120, 208, 240 or 277V. Must Specify Voltage)
R=NEMA Twistlock Photocontrol Receptacle
PER7=NEMA 7-PIN Twistlock Photocontrol Receptacle [15]
AHD145=After Hours Dim, 5 Hours [16]
AHD245=After Hours Dim, 6 Hours [16]
AHD255=After Hours Dim, 7 Hours [16]
AHD355=After Hours Dim, 8 Hours [16]
MS-LXX=Motion Sensor for On/Off Operation [17, 18, 19]
MS/DIM-LXX=Motion Sensor for Dimming Operation [17, 18, 19]
LWR-LW=LumaWatt Wireless Sensor, Wide Lens for 8' - 16' Mounting Height [19, 20, 21]
LWR-LN=LumaWatt Wireless Sensor, Narrow Lens for 16' - 40' Mounting Height [19, 20, 21]
L90=Optics Rotated 90° Left
R90=Optics Rotated 90° Right
MT=Factory Installed Mesh Top
LCF=Light Square Trim Plate Painted to Match Housing [22]
HSS=Factory Installed House Side Shield [23]
CE=CE Marking and Small Terminal Block [24]

Accessories (Order Separately)

OA/RA1013=Photocontrol Shorting Cap
OA/RA1016=NEMA Photocontrol - Multi-Tap 105-285V
OA/RA1201=NEMA Photocontrol - 347V
OA/RA1027=NEMA Photocontrol - 480V
MA1252=10kV Circuit Module Replacement
MA1059XX=Thru-branch Back Box (Must Specify Color)
FSIR-100=Wireless Configuration Tool for Occupancy Sensor [17]
LS/HSS=Field Installed House Side Shield [23, 25]

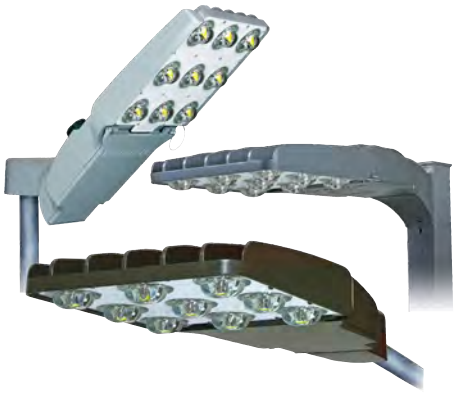
NOTES:
1. DesignLight Consortium® Qualied. Refer to www.designlights.org Qualified Products List under Family Models for details.
2. Standard 4000K CCT and minimum 70 CRI.
3. Two light squares with BBB or CWB options limited to 25°C, 120-277V only.
4. Requires the use of a step down transformer. Not available in combination with sensor options at 1200mA.
5. Only for use with 480V Wye systems. Per NEC, not for use with ungrounded systems, impedance grounded systems or corner grounded systems (commonly known as Three Phase Three Wire Delta, Three Phase High Leg Delta and Three Phase Corner Grounded Delta systems).
6. Custom colors are available. Setup charges apply. Paint chip samples required. Extended Lead times apply.
7. Extended lead times apply. Use dedicated IES files when performing layouts.
8. Not available with HA option.
9. Cannot be used with other control options.
10. Low voltage control lead brought out 18" outside fixture.
11. Only availble with BBB or CWB in single light square. HA option available for single light square only. Limited to 1A and below.
12. Not available with 1200, UPL, BBB and CWB options. Available for single light square only.
13. Not available with SL2, SL3, SL4, HA, BBB, CWB, R, or PER7 options.
14. Operates a single light square only. Cold weather option operates -20°C to +40°C, standard 0°C to +40°C. Backbox is non-IP rated.
15. Compatible with standard 3-PIN photocontrols, 5-PIN or 7-PIN ANSI controls.
16. Requires the use of P photocontrol or the PER7 or R photocontrol receptacle with photocontrol accessory. See After Hours Dim supplemental guide for additional information.
17. The FSIR-100 configuration tool is required to adjust parameters including high and low modes, sensitivity, time delay, cutoff and more. Consult your lighting representative at Eaton for more information.
18. Replace LXX with the available mounting height options: L08, L20, L40 or L40W are the only choices.
19. Includes integral photosensor.
20. LumaWatt wireless sensors are factory installed requiring network components in appropriate quantities. See www.eaton.com/lighting for LumaWatt application information.
21. Bronze sensor is shipped with Bronze fixtures. White sensor shipped on all other housing color options.
22. Not available with HSS option.
23. Only for use with SL2, SL3 and SL4 distributions. The light square trim plate is painted black when the HSS option is selected.
24. CE is not available with the 1200, DALI, LWR, MS, MS/DIM, P, R or PER7 options. Available in 120-277V only.
25. One required for each light square.

HOLOPHANE®
LEADER IN LIGHTING SOLUTIONS

Catalog Number	
Notes	Type

MGLED

Mongoose Large LED



The Mongoose LED offset roadway and area lighting product provides significant energy and maintenance savings vs. HID luminaires. It offers the ultimate in application flexibility with a uniquely designed advanced optical system and attractive appearance. This combined with multiple lighting distributions, mounting options and the ability to tilt the fixture offers unequalled performance in a diverse set of applications ranging from interstates and parking lots.

Mechanical

- Rugged grade A360 diecast aluminum (<1% copper)
- Tool-less access with stainless steel latches
- Rigorous 5-stage pretreatment, epoxy basecoat and polyester topcoat to ensure maximum durability
- Finish yields a finish that achieves a scribe creepage rating of 8 after 5,000 hours of salt spray
- Removable "power door" facilitates product installation and maintenance
- Corrosion resistant stainless-steel latches ensure secure closure over the long fixture life
- Multiple mounting configurations allow for attachment to horizontal mast arms (MA), vertical tenon (VT), architectural mounting to square poles (SPA) and universal mounting to round and square poles (UN)
- All Mountings are 3G vibration rated per ANSI C136.31
- Adjustable fixture tilt from 0-45 degrees provides flexibility to optimize lighting performance

Electrical

- Standard surge protection is 20kV/10kA "Extreme Level" per ANSI C136.2
- LED light engines are rated > 100,000 at 25°C, L70
- Electronic driver has an expected life of > 100,000 hours at 25°C
- Rated for -40°C / -40°F minimum ambient
- Programmable electronic driver with 0-10V control leads
- Driver voltage options: 120-277V 50/60 Hz and 347 50/60 Hz and 480V 50/60 Hz

Optical

- Performance is comparable to 400-1000 watt HID
- IP66 rated borosilicate glass optics ensure longevity and minimize dirt depreciation
- 3000K, 4000K and 5000K CCT, 70 CRI
- Distribution options: Narrow Roadway (NR), Medium Roadway (MR), Wide Roadway (WR), Forward Throw (FT), and Area Type (AR)
- Optional Uplight Skirt (US) ensures no light above 90°
- House side shield (HSS) option available

Controls

- 7 pin NEMA photocontrol receptacle
- Premium solid-state locking-style photocontrol (PCSS) – 10 year rated life
- Extreme long life solid state locking-style photocontrol (PCLL) – 20 year rated life
- Field adjustable output
- nLight Air motion and daylight sensor
- Programmable motion and daylight sensor

Certification & Standards

- CSA Certified to US and Canadian standards
- Suitable for operation in an ambient temperature up to 40°C / 104°F for standard product
- Designlights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.
- LM-79 compliant
- The projected LED Lumen Maintenance shall be based only on IES LM-80-08 and TM-21

Buy American

This product is assembled in the USA and meets the Buy America(n) government procurement requirements under FAR, DFARS and DOT. Please refer to www.acuitybrands.com/resources/buy-american for additional information.

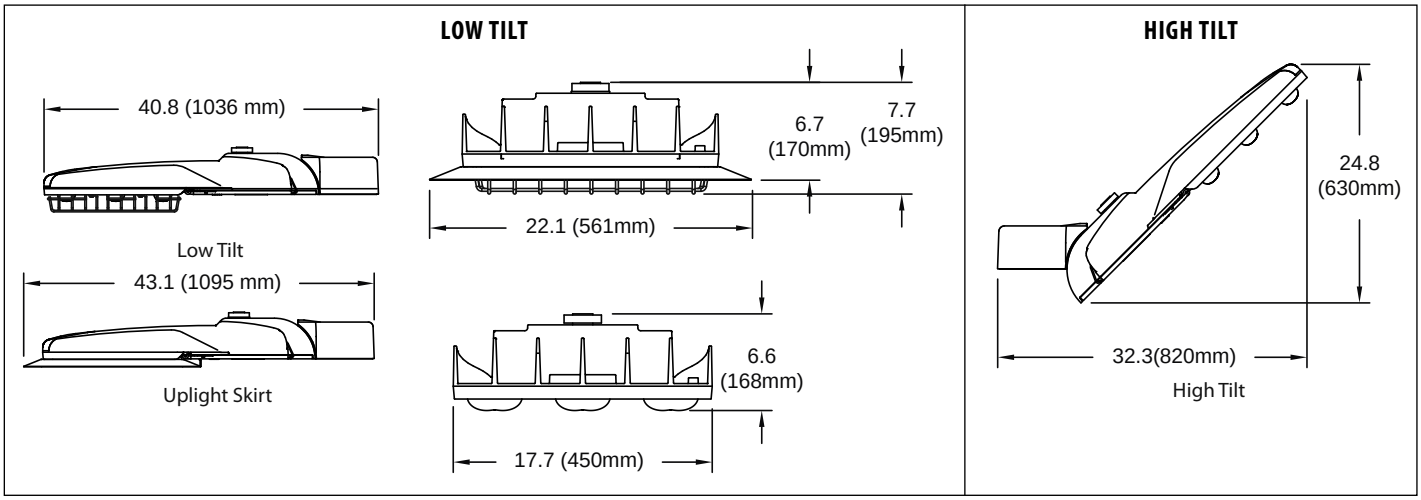
Warranty

5-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/support/customer-support/terms-and-conditions

Note: Actual performance may differ as a result of end-user environment and application.
All values are design or typical values, measured under laboratory conditions at 25°C

Buy American

DIMENSIONAL DATA



Maximum Weight - 55 lbs

Maximum Effective Projected Area:
Low Lilt = 1.20 sq. ft.
High Lilt = 3.25 sq. ft.

ORDERING INFORMATION

Example: MGLED P2 40K MVOLT FT LT UN GRSD

Series		LED performance package		Color temperature		Voltage		Optics		Tilt Range	
MGLED	Mongoose Large	P1	35,000 nominal lumens	30K	3,000 K CCT	MVOLT	Auto-sensing voltage (120 thru 277)	NR	Narrow Roadway	HT	HIGH (27°-45°)
		P2	41,000 nominal lumens	40K	4,000 K CCT	347	347 Volt	MR	Medium Roadway	LT	LOW (1°-18°)
		P3	45,000 nominal lumens	50K	5,000 K CCT	480	480 Volt	WR	Wide Roadway		
		P4	50,000 nominal lumens					FT	Forward Throw (Type 4)		
		P5	55,000 nominal lumens					AR	Area (Type 5)		
		P6	60,000 nominal lumens								
		P7	64,000 nominal lumens								

Mounting		Super Durable Paint		Options	
VT	Veritcal Tenon	GRSD	Vitracoat Gray	Adjustable/Programmable Options	NEMA Label Options
MA	Horizontal Arm	GHSD	Vitracoat Graphite	AO Field Adjustable Output	NL NEMA LABEL
SPA	Architectural	BKSD	Vitracoat Black		
UN	Universal (Rd. & Sq)	GNSD	Vitracoat Green	Control Options	NEMA Receptacle Options
		WHSD	Vitracoat White	PCLL DTL Extreme Long Life Twistlock Photocontrol for Solid State (20 year rated life)	PR7 7-pin Photocontrol Receptacle
		BZSD	Vitracoat Bronze	PCSS DSS Premium Twistlock Photocontrol for Solid State (10 year rated life)	Shielding Options
				POC2[1] Programmable occ. and daylight sensor, for mounting applications up to 20'	US Uplight Skirt
				POC4[1] Programmable occ. and daylight sensor, for mounting applications between 20' & 40'	HSS House Side Shield
				RSDGR nLight Air Occ. and daylight sensor	Shorting Cap Option
					SH SHORTING CAP

Accessories: *Order as separate catalog number.*

Wire Guard Kit

MGLED WG	Mongoose Large Wire Guard Kit

Uplight Skirt

MGLED US GRSD	Mongoose Large Uplight Skirt, Vitracoat Gray
MGLED US GHSD	Mongoose Large Uplight Skirt, Vitracoat Graphite
MGLED US BKSD	Mongoose Large Uplight Skirt, Vitracoat Black
MGLED US GNSD	Mongoose Large Uplight Skirt, Vitracoat Green
MGLED US WHSD	Mongoose Large Uplight Skirt, Vitracoat White
MGLED US BZSD	Mongoose Large Uplight Skirt, Vitracoat Bronze

House Side Shield

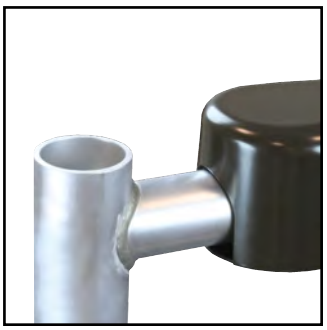
MGLED HSS	Mongoose Large House Side Shield

Notes

1 For custom programming of the sensor, a wireless handheld configuration tool, Part No. FSIR-100 should be purchased, either from Legrand, or from Acuity (by special request).

MOUNTING OPTIONS

Vertical Tenon Mount - VT
Attaches to 2" vertical tenon (2 3/8" O.D.)

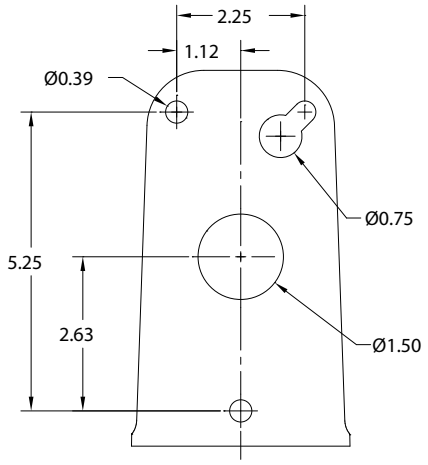


Horizontal Arm Mount - MA
Attaches to 2" horizontal mast arm (2 3/8" O.D.)

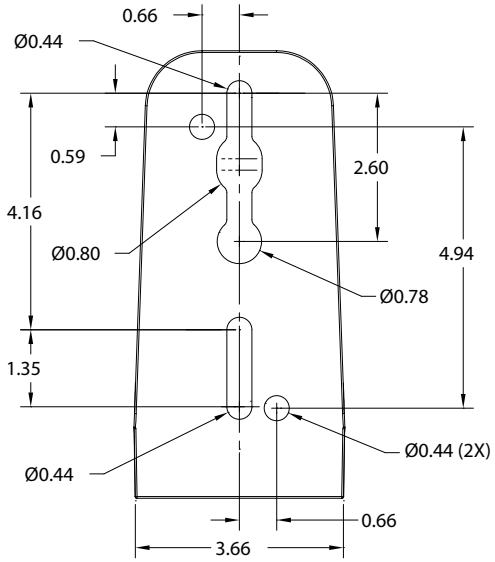
Architectural Mount - SPA
Attaches to square pole

Universal Mount - UN
Attaches to square or 3" minimum round pole

SPA (ARCHITECTURAL)



UN (UNIVERSAL)



OPTIONS MATRIX

Mounting		SELECTED OPTION (start here)							
		A0	PR7	PCLL	PCSS	POC2	POC4	RSDGR	SH
Controls	A0		Y	Y	Y	N	N	N	Y
	PR7	Y		Y	Y	N	N	N	Y
	PCLL	Y	Y		N	N	N	N	N
	PCSS	Y	Y	N		N	N	N	N
	POC2	N	N	N	N		N	N	N
	POC4	N	N	N	N	N		N	N
	RSDGR	N	N	N	N	N	N		N
	SH	Y	Y	N	N	N	N	N	
Voltage	MVOLT	Y	Y	Y	Y	Y	Y	Y	Y
	347	Y	Y	Y	N	Y	Y	Y	Y
	480	Y	Y	Y	N	Y	Y	Y	Y
Performance Packages	P1	Y	Y	Y	Y	Y	Y	Y	Y
	P2	Y	Y	Y	Y	Y	Y	Y	Y
	P3	Y	Y	Y	Y	Y	Y	Y	Y
	P4	Y	Y	Y	Y	Y	Y	Y	Y
	P5	Y	Y	Y	Y	Y	Y	Y	Y
	P6	Y	Y	Y	Y	N	N	N	Y
	P7	Y	Y	Y	Y	N	N	N	Y

Y = Valid Option Combination
N = Combination Not available

LUMEN AMBIENT TEMPERATURE (LAT) MULTIPLIERS

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Average Lumen Ambient Temperature (LAT) Multipliers								
°C	°F	P1	P2	P3	P4	P5	P6	P7
0	32	1.04	1.04	1.05	1.05	1.06	1.06	1.07
5	41	1.03	1.04	1.04	1.04	1.05	1.05	1.06
10	50	1.03	1.03	1.03	1.03	1.03	1.04	1.04
15	59	1.02	1.02	1.02	1.02	1.02	1.03	1.03
20	68	1.01	1.01	1.01	1.01	1.01	1.01	1.01
25	77	1.00	1.00	1.00	1.00	1.00	1.00	1.00

PERFORMANCE DATA

Performance Package	Distribution	Input Watts	30K (3000K CCT, 70 CRI)					40K (4000K CCT, 70 CRI)					50K (5000K CCT, 70 CRI)					LLD @ 25°C		
			Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	50k Hours	75k Hours	100k Hours
P1	AR	246	36,673	149	5	3	4	37,830	154	5	3	4	37,830	154	5	3	4	0.90	0.87	0.84
	FT		33,438	136	4	3	5	34,493	140	4	3	5	34,493	140	4	3	5			
	MR		35,102	143	3	3	5	36,209	147	3	3	5	36,209	147	3	3	5			
	NR		35,758	145	3	0	4	36,886	150	3	0	4	36,886	150	3	0	4			
	WR		35,119	143	4	0	5	36,227	147	4	0	5	36,227	147	4	0	5			
P2	AR	295	42,322	143	5	3	4	43,657	148	5	3	4	43,657	148	5	3	4	0.90	0.86	0.83
	FT		38,589	131	4	3	5	39,806	135	4	3	5	39,806	135	4	3	5			
	MR		40,509	137	4	3	5	41,786	142	4	3	5	41,786	142	4	3	5			
	NR		41,266	140	3	0	5	42,568	144	3	0	5	42,568	144	3	0	5			
	WR		40,529	137	4	0	5	41,807	142	4	0	5	41,807	142	4	0	5			
P3	AR	337	47,111	140	5	3	4	48,597	144	5	3	4	48,597	144	5	3	4	0.90	0.86	0.83
	FT		42,955	127	4	3	5	44,310	131	4	3	5	44,310	131	4	3	5			
	MR		45,092	134	4	3	5	46,515	138	4	3	5	46,515	138	4	3	5			
	NR		45,935	136	4	0	5	47,384	141	4	0	5	47,384	141	4	0	5			
	WR		45,115	134	4	0	5	46,538	138	4	0	5	46,538	138	4	0	5			
P4	AR	392	52,424	134	5	3	4	54,078	138	5	3	5	54,078	138	5	3	5	0.90	0.86	0.83
	FT		47,800	122	4	3	5	49,307	126	4	3	5	49,307	126	4	3	5			
	MR		50,178	128	4	3	5	51,761	132	4	3	5	51,761	132	4	3	5			
	NR		51,116	130	4	0	5	52,728	135	4	0	5	52,728	135	4	0	5			
	WR		50,203	128	4	0	5	51,787	132	4	0	5	51,787	132	4	0	5			
P5	AR	442	55,004	124	5	3	5	56,738	128	5	3	5	56,738	128	5	3	5	0.90	0.86	0.83
	FT		50,152	113	4	3	5	51,733	117	4	3	5	51,733	117	4	3	5			
	MR		52,647	119	4	3	5	54,307	123	4	3	5	54,307	123	4	3	5			
	NR		53,631	121	4	0	5	55,323	125	4	0	5	55,323	125	4	0	5			
	WR		52,673	119	4	0	5	54,335	123	4	0	5	54,335	123	4	0	5			
P6	AR	507	59,442	117	5	3	5	61,317	121	5	3	5	61,317	121	5	3	5	0.90	0.86	0.83
	FT		54,199	107	4	3	5	55,908	110	4	3	5	55,908	110	4	3	5			
	MR		56,896	112	4	3	5	58,690	116	4	3	5	58,690	116	4	3	5			
	NR		57,959	114	4	0	5	59,787	118	4	0	5	59,787	118	4	0	5			
	WR		56,924	112	4	0	5	58,720	116	4	0	5	58,720	116	4	0	5			
P7	AR	571	63,932	126	5	3	5	65,948	130	5	3	5	65,948	130	5	3	5	0.90	0.86	0.83
	FT		58,292	115	4	3	5	60,131	119	4	3	5	60,131	119	4	3	5			
	MR		61,192	121	4	3	5	63,122	125	4	3	5	63,122	125	4	3	5			
	NR		62,336	123	4	0	5	64,302	127	4	0	5	64,302	127	4	0	5			
	WR		61,223	121	4	0	5	63,154	125	4	0	5	63,154	125	4	0	5			

PERFORMANCE DATA WITH UPLIGHT SKIRT

Performance Package	Distribution	Input Watts	30K (3000K CCT, 70 CRI)					40K (4000K CCT, 70 CRI)					50K (5000K CCT, 70 CRI)					LLD @ 25°C		
			Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	50k Hours	75k Hours	100k Hours
P1	AR	246	36,351	148	5	0	4	37,497	152	5	0	4	37,497	152	5	0	4	0.90	0.87	0.84
	FT		33,339	136	4	0	5	34,390	140	4	0	5	34,390	140	4	0	5			
	MR		35,196	143	3	0	5	36,306	148	3	0	5	36,306	148	3	0	5			
	NR		35,858	146	3	0	4	36,989	150	3	0	4	36,989	150	3	0	4			
	WR		35,053	142	4	0	5	36,159	147	4	0	5	36,159	147	4	0	5			
P2	AR	295	41,951	142	5	0	4	43,274	147	5	0	4	43,274	147	5	0	4	0.90	0.86	0.83
	FT		38,474	130	4	0	5	39,688	135	4	0	5	39,688	135	4	0	5			
	MR		40,617	138	3	0	5	41,899	142	4	0	5	41,899	142	4	0	5			
	NR		41,381	140	3	0	4	42,687	145	3	0	4	42,687	145	3	0	4			
	WR		40,453	137	4	0	5	41,729	141	4	0	5	41,729	141	4	0	5			
P3	AR	337	46,697	139	5	0	4	48,170	143	5	0	4	48,170	143	5	0	4	0.90	0.86	0.83
	FT		42,828	127	4	0	5	44,179	131	4	0	5	44,179	131	4	0	5			
	MR		45,213	134	4	0	5	46,639	138	4	0	5	46,639	138	4	0	5			
	NR		46,064	137	4	0	4	47,517	141	4	0	5	47,517	141	4	0	5			
	WR		45,030	134	4	0	5	46,451	138	4	0	5	46,451	138	4	0	5			
P4	AR	392	51,964	133	5	0	4	53,603	137	5	0	4	53,603	137	5	0	4	0.90	0.86	0.83
	FT		47,658	122	4	0	5	49,161	125	4	0	5	49,161	125	4	0	5			
	MR		50,313	128	4	0	5	51,900	132	4	0	5	51,900	132	4	0	5			
	NR		51,259	131	4	0	5	52,876	135	4	0	5	52,876	135	4	0	5			
	WR		50,109	128	4	0	5	51,689	132	4	0	5	51,689	132	4	0	5			
P5	AR	442	54,521	123	5	0	5	56,240	127	5	0	5	56,240	127	5	0	5	0.90	0.86	0.83
	FT		50,003	113	4	0	5	51,580	117	4	0	5	51,580	117	4	0	5			
	MR		52,788	119	4	0	5	54,453	123	4	0	5	54,453	123	4	0	5			
	NR		53,781	122	4	0	5	55,477	126	4	0	5	55,477	126	4	0	5			
	WR		52,574	119	4	0	5	54,232	123	4	0	5	54,232	123	4	0	5			
P6	AR	507	58,921	116	5	0	5	60,779	120	5	0	5	60,779	120	5	0	5	0.90	0.86	0.83
	FT		54,038	107	4	0	5	55,743	110	4	0	5	55,743	110	4	0	5			
	MR		57,048	113	4	0	5	58,848	116	4	0	5	58,848	116	4	0	5			
	NR		58,121	115	4	0	5	59,954	118	4	0	5	59,954	118	4	0	5			
	WR		56,817	112	4	0	5	58,609	116	4	0	5	58,609	116	4	0	5			
P7	AR	571	63,370	125	5	0	5	65,369	129	5	0	5	65,369	129	5	0	5	0.90	0.86	0.83
	FT		58,119	115	4	0	5	59,952	118	5	0	5	59,952	118	5	0	5			
	MR		61,357	121	4	0	5	63,292	125	4	0	5	63,292	125	4	0	5			
	NR		62,511	123	4	0	5	64,482	127	4	0	5	64,482	127	4	0	5			
	WR		61,108	121	4	0	5	63,035	124	4	0	5	63,035	124	4	0	5			

PERFORMANCE DATA WITH HOUSE SIDE SHIELD

Performance Package	Distribution	Input Watts	30K (3000K CCT, 70 CRI)					40K (4000K CCT, 70 CRI)					50K (5000K CCT, 70 CRI)					LLD @ 25°C		
			Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	50k Hours	75k Hours	100k Hours
P1	AR	246	35,756	145	5	3	5	36,884	150	5	3	5	36,884	150	5	3	5	0.90	0.87	0.84
	FT		32,736	133	4	3	5	33,768	137	4	3	5	33,768	137	4	3	5			
	MR		34,294	139	3	3	5	35,376	144	3	3	5	35,376	144	3	3	5			
	NR		35,043	142	3	3	4	36,148	147	3	3	4	36,148	147	3	3	4			
	WR		34,593	141	3	3	5	35,684	145	3	3	5	35,684	145	3	3	5			
P2	AR	295	41,264	140	5	3	5	42,566	144	5	3	5	42,566	144	5	3	5	0.90	0.86	0.83
	FT		37,778	128	4	3	5	38,970	132	4	3	5	38,970	132	4	3	5			
	MR		39,577	134	3	3	5	40,825	138	3	3	5	40,825	138	3	3	5			
	NR		40,441	137	3	3	4	41,716	141	3	3	4	41,716	141	3	3	4			
	WR		39,921	135	4	3	5	41,180	140	4	3	5	41,180	140	4	3	5			
P3	AR	337	45,933	136	5	4	5	47,382	141	5	4	5	47,382	141	5	4	5	0.90	0.86	0.83
	FT		42,053	125	4	3	5	43,380	129	4	3	5	43,380	129	4	3	5			
	MR		44,055	131	4	3	5	45,445	135	4	3	5	45,445	135	4	3	5			
	NR		45,017	134	4	3	5	46,437	138	4	3	5	46,437	138	4	3	5			
	WR		44,439	132	4	3	5	45,840	136	4	3	5	45,840	136	4	3	5			
P4	AR	392	51,114	130	5	4	5	52,726	135	5	4	5	52,726	135	5	4	5	0.90	0.86	0.83
	FT		46,796	119	4	3	5	48,272	123	4	3	5	48,272	123	4	3	5			
	MR		49,024	125	4	3	5	50,570	129	4	3	5	50,570	129	4	3	5			
	NR		50,094	128	4	3	5	51,674	132	4	3	5	51,674	132	4	3	5			
	WR		49,450	126	4	3	5	51,010	130	4	3	5	51,010	130	4	3	5			
P5	AR	442	53,629	121	5	4	5	55,320	125	5	4	5	55,320	125	5	4	5	0.90	0.86	0.83
	FT		49,098	111	4	3	5	50,647	115	4	3	5	50,647	115	4	3	5			
	MR		51,436	116	4	3	5	53,058	120	4	3	5	53,058	120	4	3	5			
	NR		52,559	119	4	3	5	54,216	123	4	3	5	54,216	123	4	3	5			
	WR		51,883	117	4	3	5	53,520	121	4	3	5	53,520	121	4	3	5			
P6	AR	507	57,957	114	5	4	5	59,784	118	5	4	5	59,784	118	5	4	5	0.90	0.86	0.83
	FT		53,061	105	4	4	5	54,734	108	4	4	5	54,734	108	4	4	5			
	MR		55,587	110	4	3	5	57,340	113	4	3	5	57,340	113	4	3	5			
	NR		56,800	112	4	3	5	58,592	116	4	3	5	58,592	116	4	3	5			
	WR		56,071	111	4	3	5	57,839	114	4	3	5	57,839	114	4	3	5			
P7	AR	571	62,333	123	5	4	5	64,299	127	5	4	5	64,299	127	5	4	5	0.90	0.86	0.83
	FT		57,068	113	5	4	5	58,868	116	5	4	5	58,868	116	5	4	5			
	MR		59,785	118	4	3	5	61,670	122	4	3	5	61,670	122	4	3	5			
	NR		61,090	120	4	3	5	63,016	124	4	3	5	63,016	124	4	3	5			
	WR		60,305	119	4	3	5	62,207	123	4	3	5	62,207	123	4	3	5			

PERFORMANCE DATA WITH UPLIGHT SKIRT & HOUSE SIDE SHIELD

Performance Package	Distribution	Input Watts	30K (3000K CCT, 70 CRI)					40K (4000K CCT, 70 CRI)					50K (5000K CCT, 70 CRI)					LLD @ 25°C		
			Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	50k Hours	75k Hours	100k Hours
P1	AR	246	35,793	146	5	3	5	36,922	150	5	3	5	36,922	150	5	3	5	0.90	0.87	0.84
	FT		32,769	133	4	3	5	33,803	137	4	3	5	33,803	137	4	3	5			
	MR		34,400	140	3	0	4	35,484	144	3	0	4	35,484	144	3	0	4			
	NR		35,150	143	3	0	4	36,259	147	3	0	4	36,259	147	3	0	4			
	WR		34,663	141	3	0	5	35,756	145	3	0	5	35,756	145	3	0	5			
P2	AR	295	41,306	140	5	3	5	42,609	144	5	3	5	42,609	144	5	3	5	0.90	0.86	0.83
	FT		37,817	128	4	3	5	39,010	132	4	3	5	39,010	132	4	3	5			
	MR		39,698	135	3	0	5	40,951	139	3	0	5	40,951	139	3	0	5			
	NR		40,565	138	3	0	4	41,844	142	3	0	4	41,844	142	3	0	4			
	WR		40,002	136	4	0	5	41,264	140	4	0	5	41,264	140	4	0	5			
P3	AR	337	45,980	136	5	3	5	47,431	141	5	3	5	47,431	141	5	3	5	0.90	0.86	0.83
	FT		42,096	125	4	3	5	43,424	129	4	3	5	43,424	129	4	3	5			
	MR		44,190	131	4	0	5	45,584	135	4	0	5	45,584	135	4	0	5			
	NR		45,155	134	4	0	4	46,579	138	4	0	4	46,579	138	4	0	4			
	WR		44,529	132	4	0	5	45,933	136	4	0	5	45,933	136	4	0	5			
P4	AR	392	51,166	131	5	3	5	52,780	135	5	3	5	52,780	135	5	3	5	0.90	0.86	0.83
	FT		46,844	120	4	3	5	48,321	123	4	3	5	48,321	123	4	3	5			
	MR		49,174	125	4	0	5	50,725	129	4	0	5	50,725	129	4	0	5			
	NR		50,247	128	4	0	5	51,832	132	4	0	5	51,832	132	4	0	5			
	WR		49,551	126	4	0	5	51,114	130	4	0	5	51,114	130	4	0	5			
P5	AR	442	53,684	121	5	3	5	55,377	125	5	3	5	55,377	125	5	3	5	0.90	0.86	0.83
	FT		49,149	111	4	3	5	50,699	115	4	3	5	50,699	115	4	3	5			
	MR		51,594	117	4	0	5	53,221	120	4	0	5	53,221	120	4	0	5			
	NR		52,719	119	4	0	5	54,382	123	4	0	5	54,382	123	4	0	5			
	WR		51,989	118	4	0	5	53,629	121	4	0	5	53,629	121	4	0	5			
P6	AR	507	58,016	114	5	3	5	59,846	118	5	3	5	59,846	118	5	3	5	0.90	0.86	0.83
	FT		53,115	105	4	3	5	54,790	108	5	3	5	54,790	108	5	3	5			
	MR		55,758	110	4	0	5	57,516	113	4	0	5	57,516	113	4	0	5			
	NR		56,974	112	4	0	5	58,771	116	4	0	5	58,771	116	4	0	5			
	WR		56,184	111	4	0	5	57,957	114	4	0	5	57,957	114	4	0	5			
P7	AR	571	62,397	123	5	3	5	64,365	127	5	3	5	64,365	127	5	3	5	0.90	0.86	0.83
	FT		57,126	113	5	3	5	58,928	116	5	3	5	58,928	116	5	3	5			
	MR		59,968	118	4	0	5	61,860	122	4	0	5	61,860	122	4	0	5			
	NR		61,277	121	4	0	5	63,209	125	4	0	5	63,209	125	4	0	5			
	WR		60,428	119	4	0	5	62,333	123	4	0	5	62,333	123	4	0	5			

HOLOPHANE®
LEADER IN LIGHTING SOLUTIONS

Catalog Number	
Notes	Type

PLLED

Predator Large LED

The Predator LED is a robust, sustainable solution for any flood lighting application. The PLLED offers lumen packages for direct replacement of 750-1,500 watt HID floods. With energy savings exceeding 60% and expected service life over 20 years, Predator LED luminaires excel at meeting the challenges associated with flood lighting. The PLLED combines robust mechanical design features with the optical expertise, visual comfort and permanence of prismatic glass.

Mechanical

- Rugged grade A360 diecast aluminum (<1% copper)
- Tool-less access with stainless steel latches available
- Terminal block in arm available
- Rigorous 5-stage pretreatment polyester topcoat to ensure maximum durability that achieves a scribe creepage rating of 8 after 5,000 hours of salt spray
- Adjustable knuckle-mount option, designed to fit 2.375 inch to 2.875 inch tenon with wireway access door
- Adjustable yoke mount option available in galvanized or stainless steel
- Captured bolts
- All Mountings are 3G vibration rated per ANSI C136.31
- IP66 per IEC60068-2-3

Electrical

- All surge protection meets ANSI/IEEE C62.41.2 10kV/10kA
- Standard surge protection is 20kV/10kA "Extreme Level" per ANSI C136.2
- Optional surge protection is 10kV/5kA per ANSI C136.2
- LED light engines are rated > 100,000 at 25°C, L70
- Electronic driver has an expected life of > 100,000 hours at 25°C
- Rated for -40°C / (-40°F) minimum ambient
- Programmable electronic driver with 0-10V control leads
- Driver voltage options: 120-277V 50/60 Hz and 347 50/60 Hz and 480V 50/60 Hz XVOLT - Electrical option provides protection against dropped neutral in 277V input as derived from 480V Wye. XVOLT also provides greater immunity from six common power quality issues.
- Single and double fusing options available

Optical

- Performance is comparable to 1,000-1,500 watt HID
- Borosilicate prismatic glass ensure longevity and minimize dirt depreciation and improves visual comfort
- NEMA optical patterns:
  - 3x3 Medium Spot
  - 4x4, Narrow Spot Flood
  - 4x5, Medium Flood
  - 5x5, Flood
  - 6x6, Wide Flood
  - 6x5, Wide Flood Rectangle
- 2700K, 3000K, 4000K and 5000K CCT, 70 CRI
- Full Visor option available
- Upper/Bottom Visor option available
- Vandal Guard option available
- Wire guard kit option available

Controls

- 7 pin rotatable NEMA photocontrol receptacle
- 3 pin rotatable NEMA photocontrol receptacle
- Premium solid-state locking-style photocontrol – 10 year rated life
- Extreme long life solid state locking-style photocontrol – 20 year rated life
- Field adjustable output
- nLight Air motion and daylight sensor
- DALI Driver

Certification & Standards

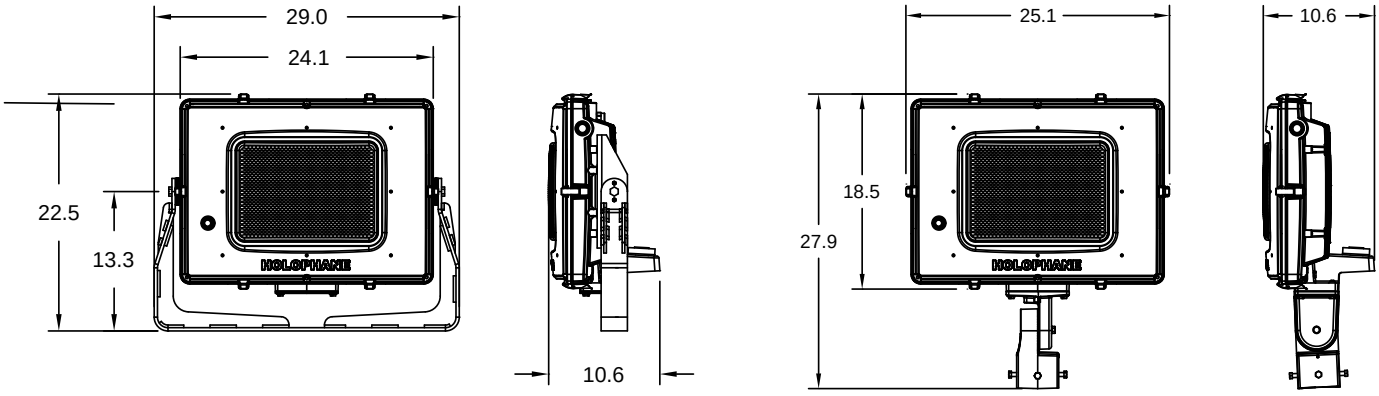
- CSA Certified to US and Canadian standards
- Suitable for operation in an ambient temperature up to 40°C/ 104°F for standard product

Warranty

5-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/support/customer-support/terms-and-conditions

Note: Actual performance may differ as a result of end-user environment and application.
All values are design or typical values, measured under laboratory conditions at 25 °C.

DIMENSIONAL DATA



Tenon Mount Luminaire max. EPA of 3.8 sqft and max. weight 73 lbs.

PLLED

Predator Large LED

ORDERING INFORMATION

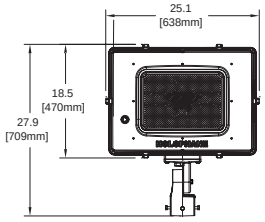
Series	LED Performance Package	Color Temperature	Voltage	Optics
PLLED	P1 52,000 Lumens	27K 2700K CCT, 70 CRI Min.	MVOLT Multiple voltage (120V - 277V)	33 3x3 (prismatic glass)
	P2 58,600 Lumens	30K 3000K CCT, 70 CRI Min.	347 347V	44 4x4 (prismatic glass)
	P3 64,100 Lumens	40K 4000K CCT, 70 CRI Min.	480 480V	45 4x5 (prismatic glass)
	P4 71,700 Lumens	50K 5000K CCT, 70 CRI Min.	XVOLT 277V - 480V	55 5x5 (prismatic glass)
	P5 79,200 Lumens			65 6x5 (prismatic glass)
				66 6x6 (prismatic glass)

Mounting Methods	Color	Surface Protection	Options
KM Tenon Slipfitter - knuckle (cord/leads exit bottom slipfitter)	BKSDP Black Paint	20KV 20kV/10kA w/Indictor Light Extreme Surge (fail off)	WL Wet Locations
KO Tenon Slipfitter - knuckle (cord exit via knock-out) [1]	BZSDP Bronze Paint	10KVMP 10kV/5kA MOV pack (fail on)	MRE Marine Outside
YMS Yoke Stainless Steel 3G [1]	GHSDP Graphite Paint		TL Tool-less entry with latches
YMG Yoke Galvanized 3G [1]	GYSDP Gray Paint		NL Nema Label
	WHSDP White Paint		F1 Single Fusing
			F2 Double Fusing

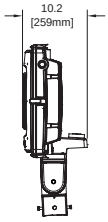
Cord Length	Cord Type	Options / Controls	Accessories (Shipped Seperately)
04 4 ft cord length	23 12 gage, 3 conductor	PR3 3 pin rotatable NEMA receptacle	PLLEDFV-BKSPD Full Visor - Black Paint
05 5 ft cord length	43 14 gage, 3 conductor	PR7 7 pin rotatable NEMA receptacle	PLLEDFV-BZSPD Full Visor - Bronze Paint
06 6 ft cord length	63 16 gage, 3 conductor	NPR No PER receptacle	PLLEDFV-GHSPD Full Visor - Graphite Paint
08 8 ft cord length		PCLL Solid State Long Life Photocontrol	PLLEDFV-GYSPD Full Visor - Gray Paint
10 10 ft cord length		PCSS Solid State Photocontrol	PLLEDFV-WHSPD Full Visor - White Paint
		HRSBOR nLight Air Occ. and daylight sensor (15-30 ft) [2]	PLLEDUBV-BKSPD Upper/Bottom Visor - Black Paint
		LRSBOR nLight Air Occ. and daylight sensor (8-15 ft) [2]	PLLEDUBV-BZSPD Upper/Bottom Visor - Bronze Paint
		SH Shorting Cap	PLLEDUBV-GHSPD Upper/Bottom Visor - Graphite Paint
		AO Field Adjustable Output	PLLEDUBV-GYSPD Upper/Bottom Visor - Gray Paint
		DL DALI Driver - Consult Factory	PLLEDUBV-WHSPD Upper/Bottom Visor - White Paint
			PLLEDVG Vandal Guard
			PLLEDWG Wire Guard

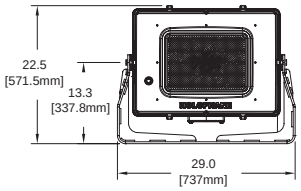
Note:
1 Cord Length and Cord Type required with KO, YMS and YMG.
2 Only available with KO mounting method.

MOUNTING OPTIONS

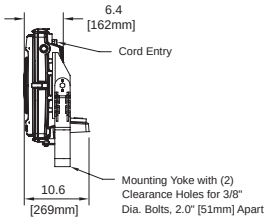


KNUCKLE MOUNT





3G YOKE MOUNT




Tenon Slipfitter

OPTIONS MATRIX

PLLED		LED Packages					Voltage				Controls										Options					
		P1	P2	P3	P4	P5	MVOLT	347	480	XVOLT	P7	P3	NR	PCLL	PCSS	HRSBOR	LRSBOR	SH	AO	DL	F1	F2	WL	MRE	TL	NL
LED Packages	P1						Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P2						Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P3						Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P4						Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	P5						Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Voltage	MVOLT	Y	Y	Y	Y	Y					Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	347	Y	Y	Y	Y	Y					Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	480	Y	Y	Y	Y	Y					Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	XVOLT	Y	Y	Y	Y	Y					Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Controls	P7	Y	Y	Y	Y	Y	Y	Y	Y	Y		N	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	N	Y	Y
	P3	Y	Y	Y	Y	Y	Y	Y	Y	Y	N		Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	N	Y	Y
	NR	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	PCLL	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y		N	N	N	N	Y	Y	Y	Y	Y	N	Y	Y
	PCSS	Y	Y	Y	Y	Y	Y	N	N	N	Y	Y	Y	N		N	N	N	Y	Y	Y	Y	Y	N	Y	Y
	HRSBOR	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	N		N	N	N	Y	Y	Y	Y	Y	Y	Y
	LRSBOR	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	N	N		N	N	Y	Y	Y	Y	Y	Y	Y
	SH	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N		Y	Y	Y	Y	Y	N	Y	Y
	AO	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y		N	Y	Y	Y	Y	Y	Y
	DL	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N		Y	Y	Y	Y	Y	Y
Options	F1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		N	Y	Y	Y	Y
	F2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N		Y	Y	Y	Y
	WL	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y
	MRE	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	N	Y	Y	N	Y	Y	Y	Y	Y		Y	Y
	TL	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y
	NL	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	

LUMEN AMBIENT TEMPERATURE (LAT) MULTIPLIERS

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Ambient Temperature (°C) Factor				
0°C	15°C	25°C	35°C	40°C
1.03	1.01	1.00	0.99	0.98

ELECTRICAL LOAD

Performance Packages	Watts	Current (A)					
		120V	208V	240V	277V	347V	480V
P1	357	3.02	1.74	1.52	1.34	1.06	0.77
P2	409	3.47	1.99	1.74	1.52	1.21	0.88
P3	463	3.93	2.25	1.96	1.70	1.37	0.99
P4	522	4.43	2.53	2.19	1.92	1.55	1.12
P5	581	4.86	2.77	2.40	2.09	1.69	1.22

PERFORMANCE DATA

PLLED	Distribution	Input Watts	3000K		4000K		5000K		LDD @ 25°C		
			Lumens	LPW	Lumens	LPW	Lumens	LPW	50k Hours	75k Hours	100k Hours
P1	33	357	50,612	142	51,548	144	52,484	147	0.92	0.89	0.85
	44		50,687	142	51,625	145	52,562	147			
	45		49,153	138	50,062	140	50,971	143			
	55		51,043	143	51,987	146	52,931	148			
	65		50,709	142	51,647	145	52,584	147			
	66		51,361	144	52,311	146	53,260	149			
P2	33	409	57,110	140	58,166	142	59,222	145	0.92	0.89	0.85
	44		57,194	140	58,252	142	59,310	145			
	45		55,463	136	56,489	138	57,514	141			
	55		57,596	141	58,661	143	59,726	146			
	65		57,219	140	58,277	142	59,335	145			
	66		57,955	142	59,026	144	60,098	147			
P3	33	463	63,381	137	64,553	139	65,725	142	0.92	0.89	0.85
	44		63,476	137	64,649	140	65,823	142			
	45		61,554	133	62,692	135	63,830	138			
	55		63,921	138	64,103	141	66,285	143			
	65		63,503	137	64,677	140	65,851	142			
	66		64,319	139	65,508	142	66,698	144			
P4	33	522	69,772	134	71,062	136	72,352	139	0.91	0.87	0.84
	44		69,876	134	71,168	136	72,460	139			
	45		67,760	130	69,013	132	70,266	135			
	55		70,366	135	71,667	137	72,968	140			
	65		69,906	134	71,198	136	72,491	140			
	66		70,804	136	72,114	138	73,423	141			
P5	33	581	77,225	133	78,653	135	80,081	138	0.9	0.85	0.81
	44		77,199	133	78,627	135	80,054	138			
	45		74,862	129	76,246	131	77,630	134			
	55		77,741	134	79,178	136	80,616	139			
	65		77,232	133	78,660	135	80,088	138			
	66		78,225	135	79,671	137	81,118	140			