

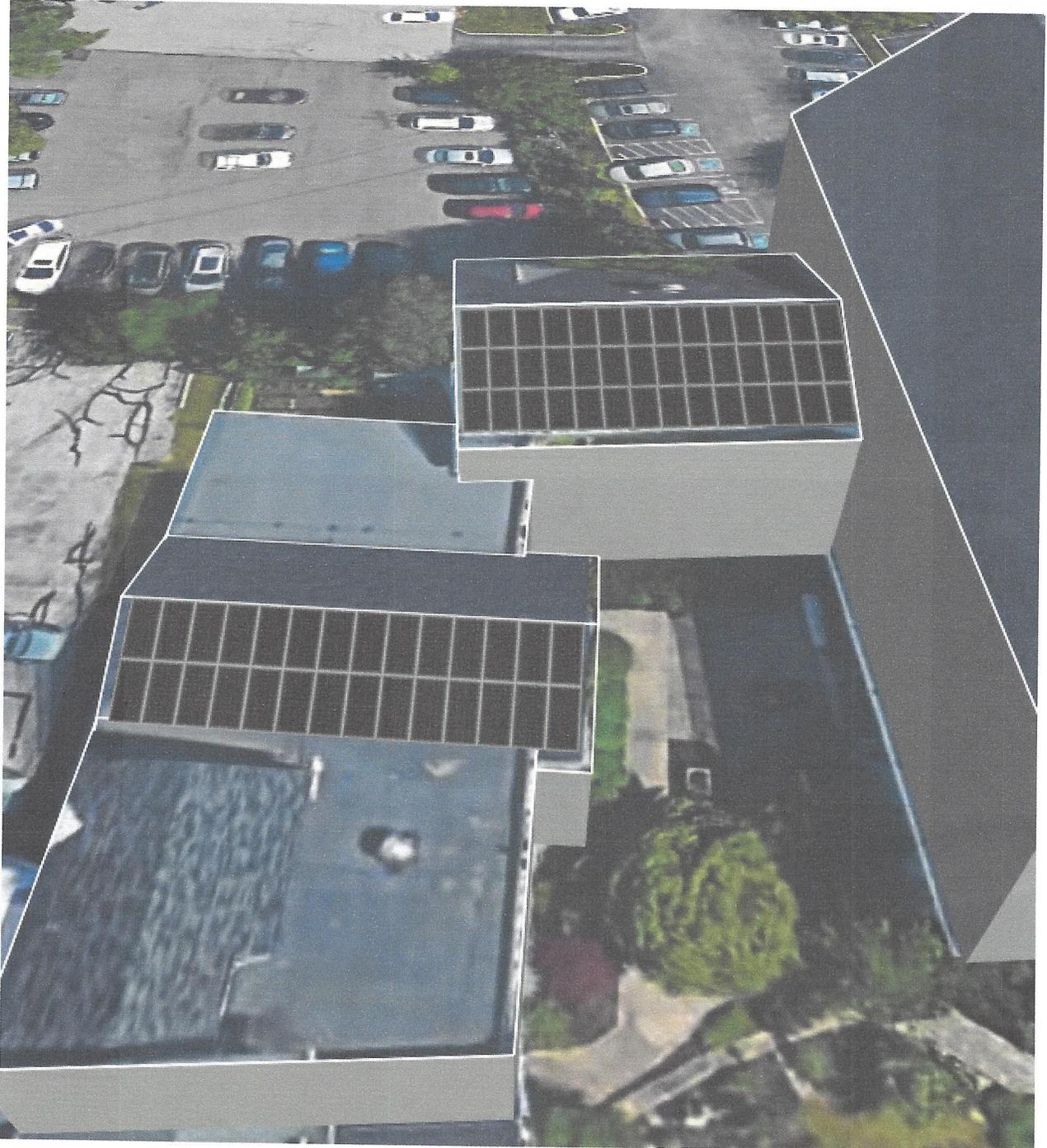
Secondary Option
Site Plan





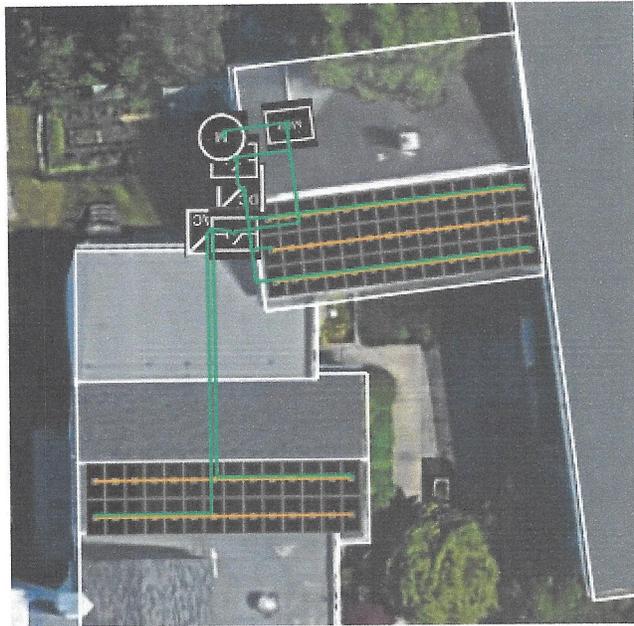
Customer: n/a n/a
Address: 21 Aurora St
Hudson, OH 44236
System size: 24.29 kW
Yr 1 Production: 29,008 kWh
Designer: Better Together Solar
Date: August 25th, 2020

Site Assessment



Site Assessment

Customer: n/a n/a
Address: 21 Aurora St
 Hudson, OH 44236



Component List

Manufacturer	Model	Quantity
Canadian Solar Inc.	CS1H-325MS (1000V)	42
SolarEdge Technologies Inc.	P370	42
Canadian Solar Inc.	CS3U-380MS (1000V)	28
SolarEdge Technologies Inc.	P405	28
SolarEdge Technologies Inc.	SE14.4KUS (208V)	2
(none)	Meter	1
null	30A Fused AC Disconnect	2



Notes:

Secondary Option



Secondary Option



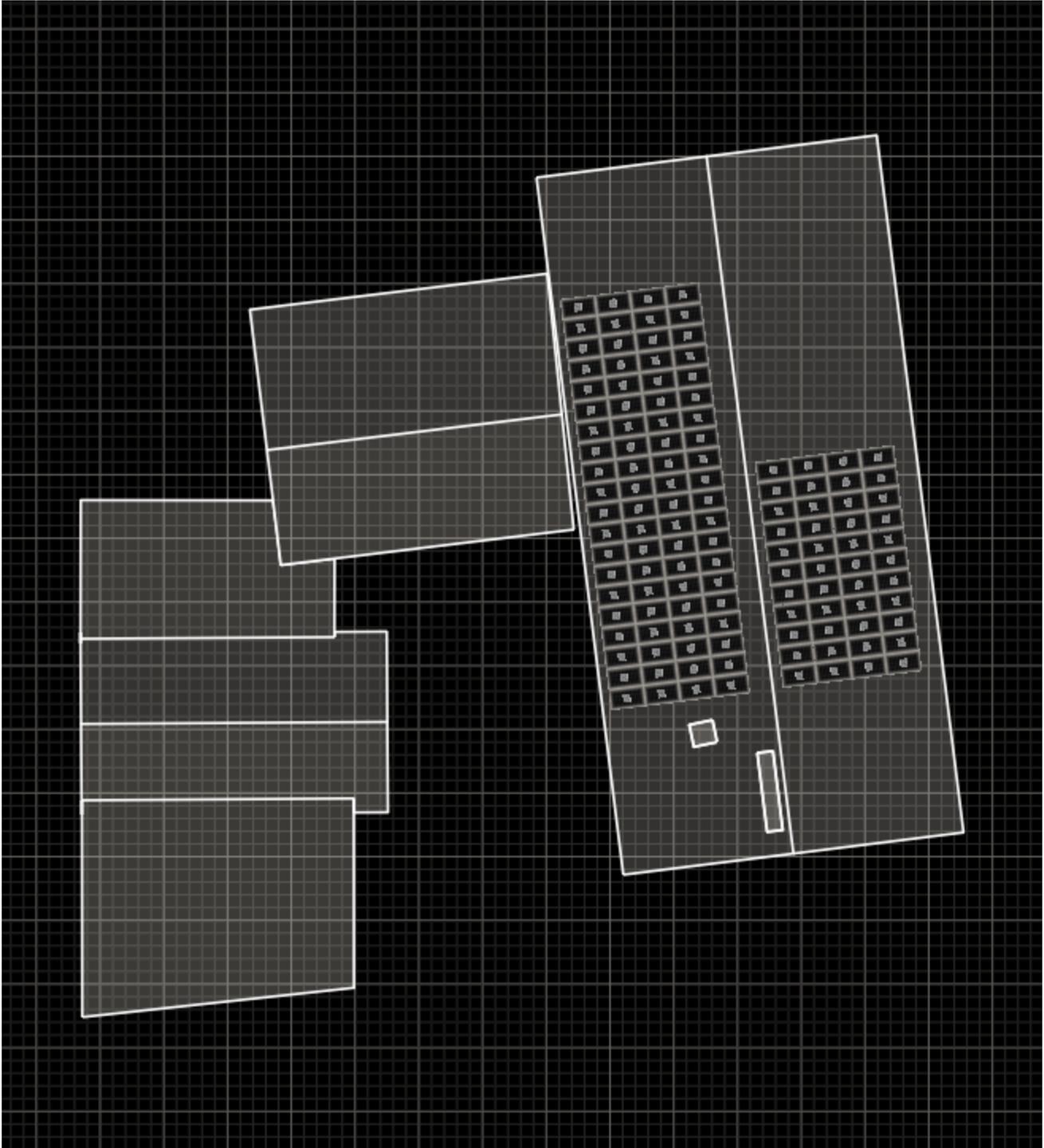
Secondary Option



Site Assessment

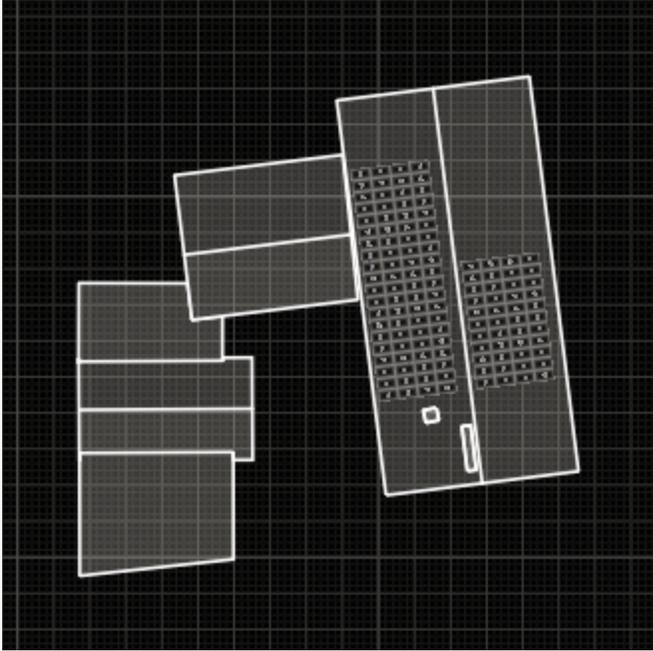
Customer: n/a n/a
Address: 21 Aurora St
Hudson, OH 44236

System size: 47.12 kW
Yr 1 Production: 50,251 kWh
Designer: Jamie Doyle
Date: September 21st, 2020



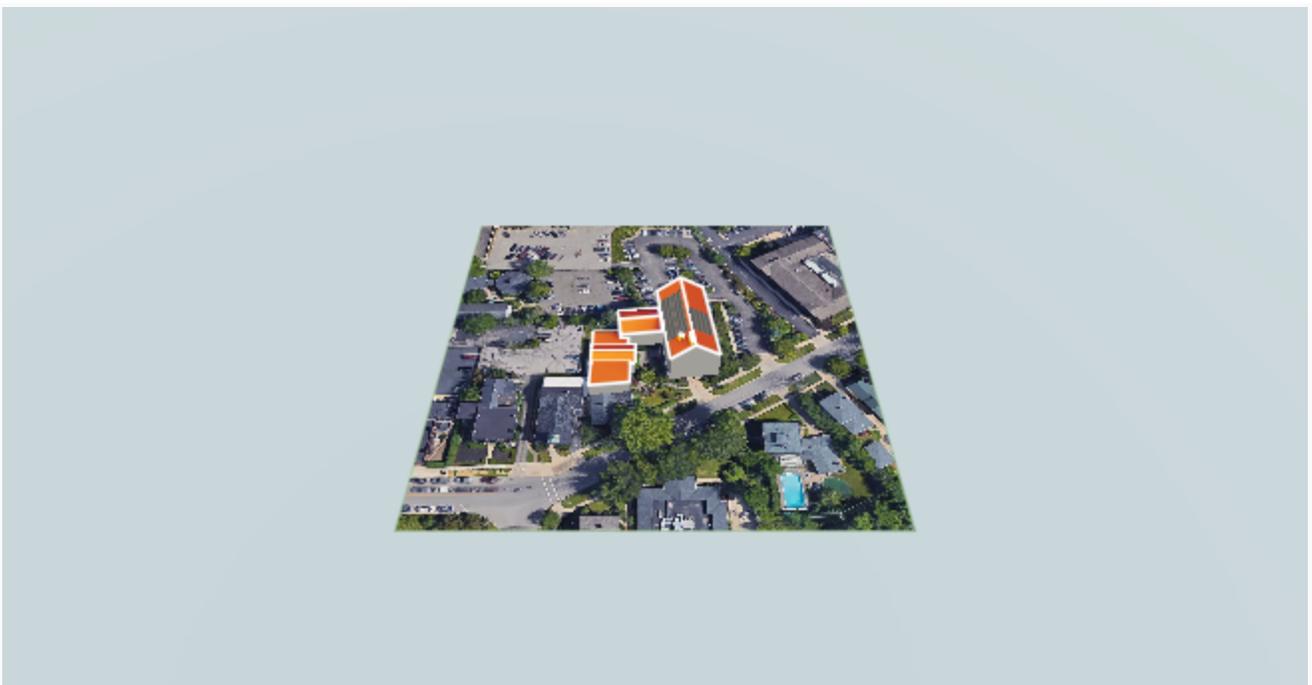
Site Assessment

Customer: n/a n/a
Address: 21 Aurora St
Hudson, OH 44236



Component List

Manufacturer	Model	Quantity
Canadian Solar Inc.	CS3U-380MS (1000V)	124
SolarEdge Technologies Inc.	P405	124
SolarEdge Technologies Inc.	SE43.2k	1
(none)	Load Center	1
(none)	Meter	1
(none)	Disconnect	1



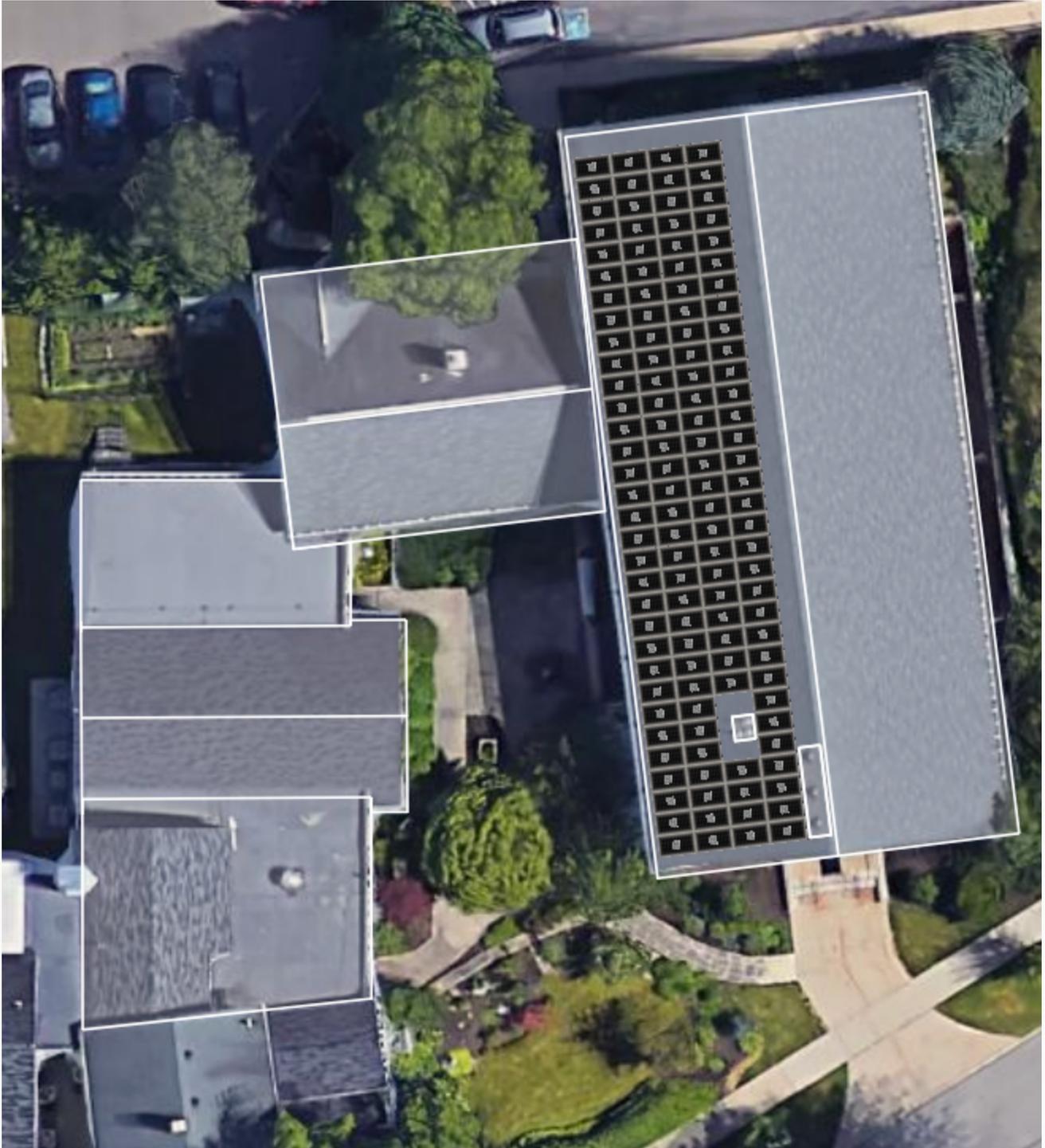
Notes:

Secondary Option



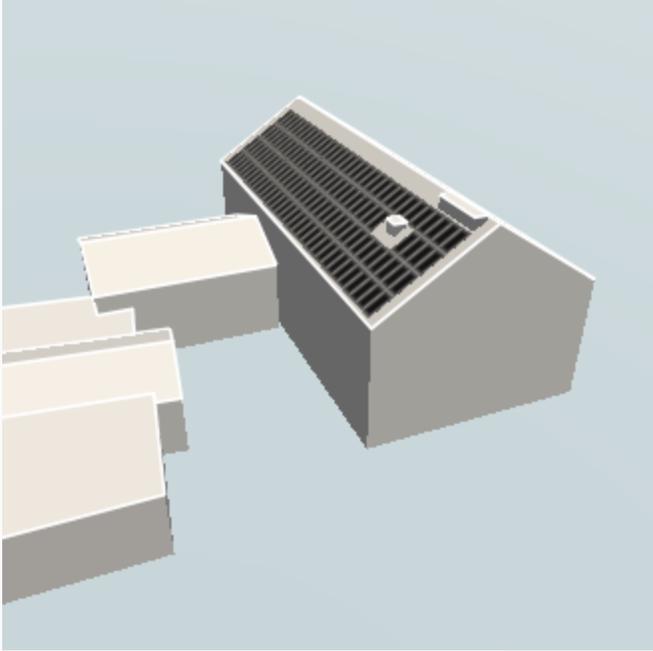
Site Assessment

Customer: n/a n/a
Address: 21 Aurora St
Hudson, OH 44236
System size: 47.50 kW
Yr 1 Production: 54,892 kWh
Designer: Jamie Doyle
Date: September 21st, 2020



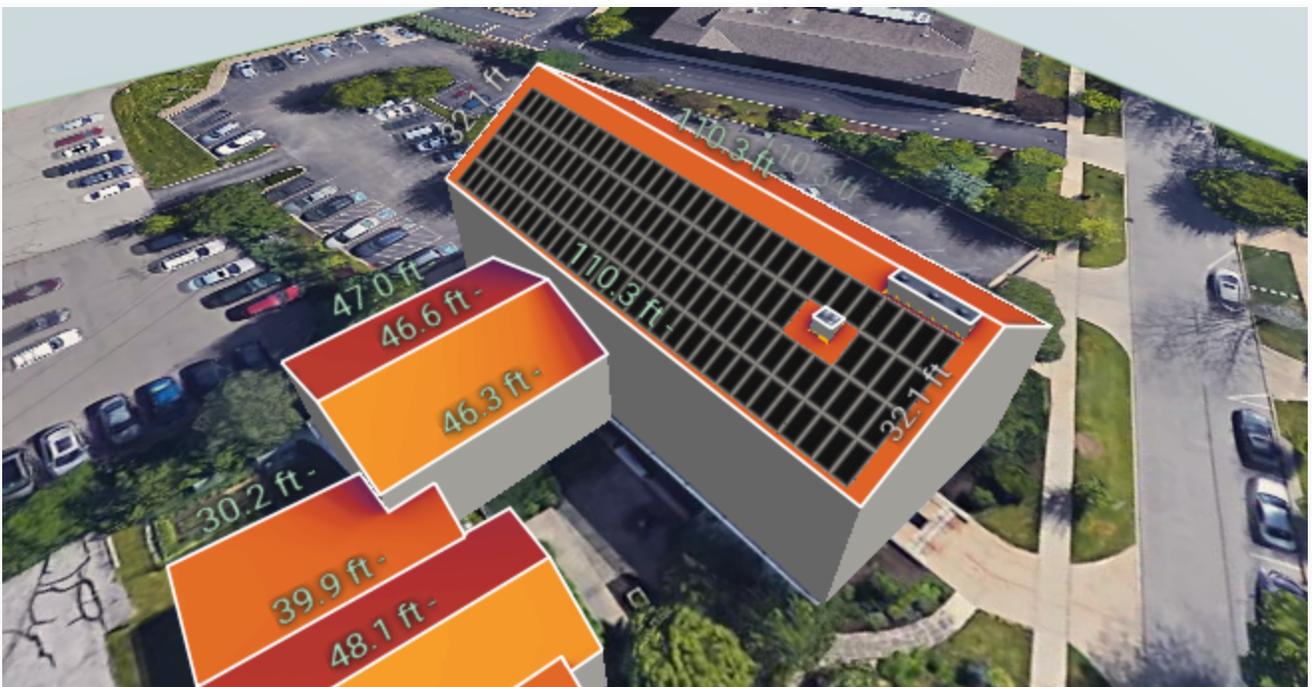
Site Assessment

Customer: n/a n/a
Address: 21 Aurora St
Hudson, OH 44236



Component List

Manufacturer	Model	Quantity
Canadian Solar Inc.	CS3U-380MS (1000V)	125
SolarEdge Technologies Inc.	P405	125
SolarEdge Technologies Inc.	SE43.2k	1
(none)	Load Center	1
(none)	Meter	1
(none)	Disconnect	1



Notes:

ITS
NUMBER 52

Interpreting The Secretary of the Interior's Standards for Rehabilitation

Subject: Incorporating Solar Panels in a Rehabilitation Project

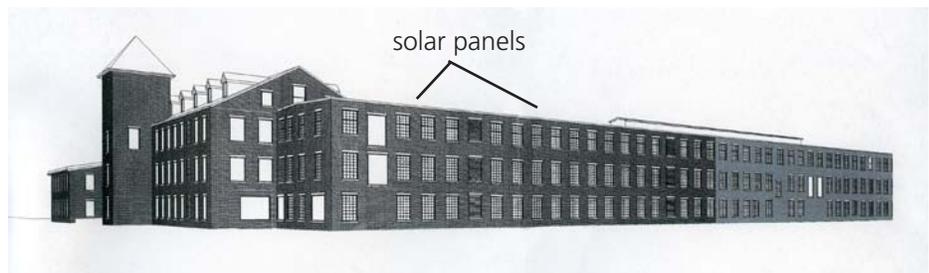
Applicable Standards: 2. Retention of Historic Character
9. Compatible Additions/Exterior Alterations

Issue: Enhancing the energy efficiency of a historic building is important. To that end, it is often possible to install features such as solar panels and photovoltaic cells provided they are installed in a sensitive manner. Because these elements must be positioned to take advantage of unobstructed sunlight, the roof of a historic structure is an obvious location. The roofline of a historic building is often a distinctive feature. Therefore, the installation of solar panels should conform to guidance regarding rooftop additions, i.e. that they be minimally visible, to avoid altering the historic character of the building. Historic buildings with a flat roof or parapet can usually accommodate solar panels because the panels will be hidden, while properties with a hipped or gabled roof are generally not good candidates for a rooftop solar installation. Solar panels on historic buildings should not be visible from the public right of way such as nearby streets, sidewalks or other public spaces.

In circumstances where solar collectors are not placed on rooftops, they should only be positioned in limited or no-visibility locations in secondary areas of the property. Vegetation or a compatible screen may also be an option to further reduce the impact of these features on a historic property. For some historic buildings, it may not be possible to incorporate solar panels and meet the Secretary of the Interior's Standards for Rehabilitation.

Application 1 (*Compatible treatment*):

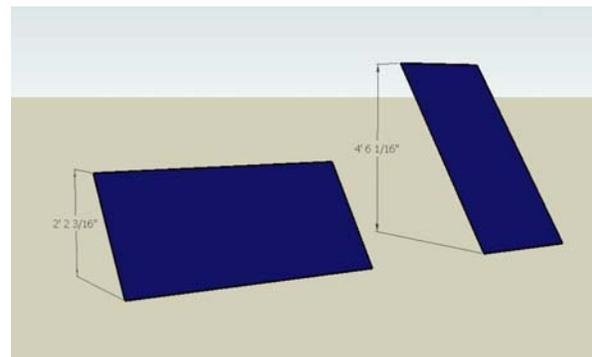
The rehabilitation of this mid-nineteenth century mill incorporated a large, roof-mounted photovoltaic installation. Although the historic building does not have a parapet wall at the roofline, the height of the building and the arrangement of the panels render the entire installation invisible from the ground. It is important to note that the panels are placed horizontally. Had the panels been installed with a vertical tilt, the angle required to maximize efficiency would have caused the panels to extend significantly higher above the roof. Simply changing the direction in which the panels are tilted can affect their visibility and reduce their impact on the character of the historic property.



Because of the size of this historic mill, a large array of solar panels could be installed on the flat roof without being seen from the ground.



Solar panels installed on the flat roof.



By placing the panels horizontally, the overall height of the installation and its visibility is reduced.

Secondary Option

Application 2 (*Incompatible treatment*): During the rehabilitation of this late-nineteenth century commercial building, a conspicuous rooftop monitor with prominent solar panels and skylights was constructed on the one-story structure. The size and finish of this rooftop addition are incompatible with the historic character of the building. However, the building could have accommodated both skylights and solar panels if they had been installed differently. An alternative design that could have met the Standards would have included low-profile skylights and solar panels concealed behind the parapet wall.



The addition of a large rooftop monitor featuring skylights on the front slope and solar panels on the rear slope is not compatible with the historic character of this small, one-story commercial building.

Application 3 (*Compatible treatment*): The rehabilitation of this historic post office incorporated solar panels as dual-function features: generation of electricity and shading for south-facing windows. In this instance, the southern elevation of the building is also a secondary elevation with limited visibility from the public right of way. Additionally, because this area of the building is immediately next to the post office's loading dock, it has a more utilitarian character than the primary facades and, therefore, can better accommodate solar panels. Because the panels are in a suitable location at the rear of the property and are appropriately sized to serve as awnings, they do not affect the overall historic character of the property. Additionally, a screen of tall plantings shields the solar panels from view from the front of the building, further limiting their visibility.



Above: Shown from the rear of the property, these solar panels serve a secondary function as awnings to shade south-facing windows. Because of their location at the back of the building immediately adjacent to a loading dock, the installation of these panels does not affect the historic character of the property.



Left: The solar panels are not visible from the front of the building. Additionally, even if the vegetation were removed, the installation would only be minimally visible along an alley at the rear of a secondary side elevation.

Jenny Parker, Technical Preservation Services, National Park Service

These bulletins are issued to explain preservation project decisions made by the U.S. Department of the Interior. The resulting determinations, based on the [Secretary of the Interior's Standards for Rehabilitation](#), are not necessarily applicable beyond the unique facts and circumstances of each particular case.

August 2009, ITS Number 52



Installing Solar Panels and Meeting the Secretary of the Interior's Standards

Solar panels installed on a historic property in a location that cannot be seen from the ground will generally meet the Secretary of the Interior's Standards for Rehabilitation. Conversely, an installation that negatively impacts the historic character of a property will not meet the Standards. But what about the grey area between out-of-sight and obviously obtrusive installations?



This installation negatively impacts the character of this mid-twentieth century house and does not meet the *Standards*.

Although every project is different and must be evaluated on its own merit, the National Park Service has developed this information on how to apply the Standards to the installation of solar panels.



This "invisible" installation of solar panels on a historic industrial building—hidden behind a low parapet—meets the *Standards for Rehabilitation*.

Secondary Option



Primary view of the brewery after rehabilitation.

Gund Brewery, Wisconsin

Solar panels were installed on a new addition as part of the rehabilitation of this historic brewery. Although visible from a parking area on the site, the panels are appropriately located on top of a compatible new addition at the back of the historic property. The installation of these panels is consistent with the historic industrial character of the site, and the project meets the Standards.



View from the parking lot of the solar panels on the new addition with the historic building in the foreground.



Site map showing the new addition constructed behind the historic brewery. Image from Google Maps 2010.



New rear addition with rooftop solar panels.



Front view of the railway barn after it was rehabilitated for office use.

Richmond & Chesapeake Railway Barn, Virginia

Two pole-mounted arrays of solar panels were installed at the rear of this historic railway barn. Because the site is industrial in character and the panels are located at the end of the barn away from primary viewpoints, this installation meets the Standards.



This site map shows the location of the pole-mounted solar panels. Image from Google Maps 2010.



Vermont Residence

The gable end of this historic apartment building faces the street. Low profile solar collectors for a water heating system were flush mounted on the sloped roof on the south side of the gable. Though visible, these few panels have relatively little impact on the historic character of the property. However, if the roof had been a more prominent feature of the property, this installation may not have been appropriate.



Low-profile solar collectors located on the south side of the gable roof are minimally visible.



From this angle, the panels are more noticeable, yet the historic character of the building is not significantly diminished.

Next Example



The visual prominence of the two solar collectors installed on this project is further minimized by the complexity of this side elevation.

King's Daughters Home, North Carolina

It is often easier to accommodate solar hot water systems than photovoltaic systems on historic properties because fewer panels are necessary. Solar hot water can often operate utilizing only a few panels, while photovoltaic systems often require multiple arrays to produce enough electricity to be worth the investment.

Several specific circumstances made it possible to install solar collectors on a street-facing slope of this gable roof. The panels were flush-mounted on a low-pitch roof, and only two were required. They were installed on a portion of the roof that is set back from the face of the building behind a prominent pediment. Thus, the solar collectors are visible but not conspicuous, and this installation meets the Standards in the context of the overall project.



The front of the King's Daughters Home. The solar panels are installed on the facade that faces the street at the right edge of this photograph.

Gothic Revival House, Vermont

This is another example of a minimally intrusive installation of a solar hot water system. The solar collectors are located on a new roof sheltering an access ramp added to the rear of the residence. In some instances, new additions may provide opportunities to incorporate solar panels on a historic property in a sensitive way.



This view of the historic house from the front shows that it retains its historic character (above), because the solar collectors were installed on the sloped roof over a new access ramp at the rear of the property and are not visible from the street (below).





Locating solar arrays off-site allowed for the preservation of the historic character of the buildings and cultural landscape as well as the important vistas within San Juan Island National Historical Park.

San Juan Island National Historical Park, Washington

It can be extremely difficult to find an appropriate location for solar panels for large historic sites where the cultural landscape is as important as the historic structures. The National Park Service found an innovative solution to such a problem at San Juan Island NHP in Washington state by partnering with a local utility company to create a renewable energy system off site. The utility company provided land at a customer service center, and the park purchased and installed a photovoltaic system. Under the agreement, the park is credited with the energy production of the solar panels, and visitors still enjoy the National Historical Park without the visual intrusion of modern-day technology.



This large solar array serves the National Historical Park, but it is located outside park boundaries.