MONTGOMERY COUNTY HISTORIC PRESERVATION COMMISSION
STAFF REPORT

Address:	104 Water Street, Brookeville	**Meeting Date:**	9/9/2020
Resource:	Secondary (Post 1940) Resource **(Brookeville Historic District)**	**Report Date:**	9/2/2020
		Public Notice:	8/26/2020
Applicant:	Garrett Anderson		
		Tax Credit:	Partial
Review:	HAWP	**Staff:**	Michael Kyne
Case Number:	23/65-20E		
PROPOSAL:	New fence, new roof and solar panel installation		

STAFF RECOMMENDATION:

Staff recommends that the HPC **approve** the HAWP application.

ARCHITECTURAL DESCRIPTION:

SIGNIFICANCE: Secondary (Post 1940) Resource within the Brookeville Historic District
DATE: 2003

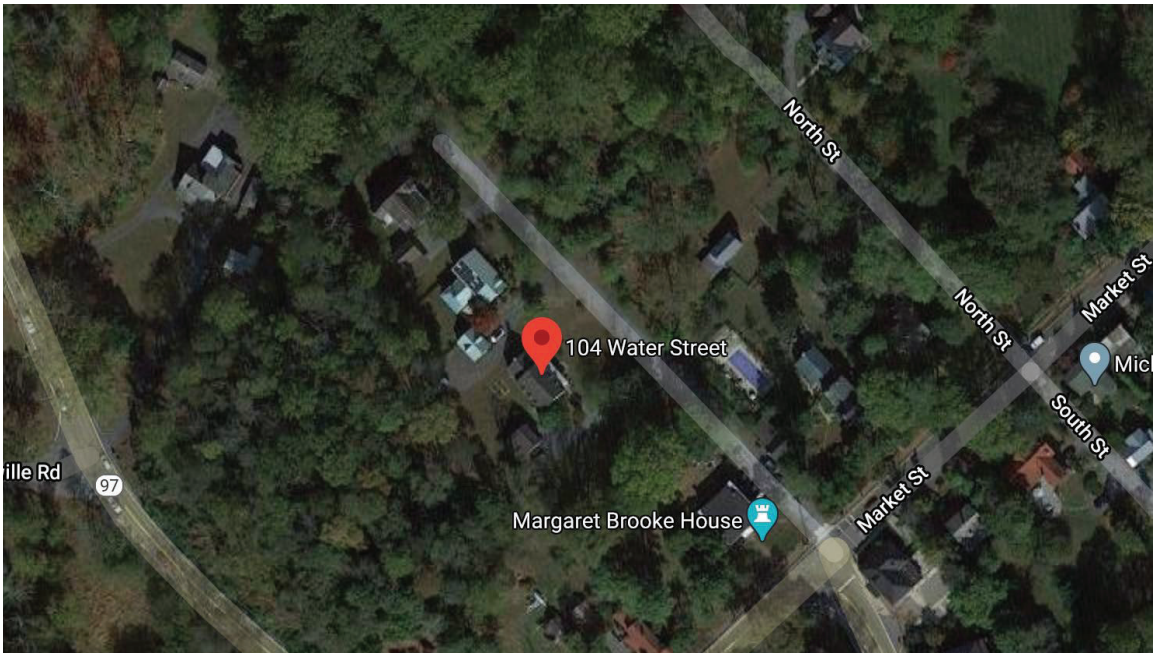


Fig. 1: Subject property.

BACKGROUND:

The applicant previously appeared before the Commission at the July 29, 2020 HPC meeting for a preliminary consultation.[1]

PROPOSAL:

The applicant proposes to install a new fence, replace the existing cedar shingle roofing on the house and detached garage with architectural asphalt shingles, and install six (6) solar panels on the rear roof plane of the house.

APPLICABLE GUIDELINES:

When reviewing alterations and new construction within the Brookeville Historic District several documents are to be utilized as guidelines to assist the Commission in developing their decision. These documents include the *Brookeville Historic District Master Plan Amendment*, *Montgomery County Code Chapter 24A-8 (Chapter 24A-8)*, the *Secretary of the Interior's Standards for Rehabilitation (Standards)*, and *Historic Preservation Commission Policy No. 20-01: ADDRESSING EMERGENCY CLIMATE MOBILIZATION THROUGH THE INSTALLATION OF ROOF-MOUNTED SOLAR PANELS (Policy No. 20-01).* The pertinent information in these documents is outlined below.

Montgomery County Code; Chapter 24A-8

(a) The commission shall instruct the director to deny a permit if it finds, based on the evidence and information presented to or before the commission that the alteration for which the permit is II.D 3 sought would be inappropriate, inconsistent with or detrimental to the preservation, enhancement or ultimate protection of the historic site or historic resource within an historic district, and to the purposes of this chapter.

(b) The commission shall instruct the director to issue a permit, or issue a permit subject to such conditions as are found to be necessary to ensure conformity with the purposes and requirements of this chapter, if it finds that:

(1) The proposal will not substantially alter the exterior features of an historic site or historic resource within an historic district; or

(2) The proposal is compatible in character and nature with the historical, archeological, architectural or cultural features of the historic site or the historic district in which an historic resource is located and would not be detrimental thereto or to the achievement of the purposes of this chapter; or

(3) The proposal would enhance or aid in the protection, preservation and public or private utilization of the historic site or historic resource located within an historic district in a manner compatible with the historical, archeological, architectural or cultural value of the historic site or historic district in which an historic resource is located; or

[1] Link to July 29, 2020 HPC meeting audio/video transcript: http://mncppc.granicus.com/MediaPlayer.php?publish_id=fc70ce7d-d290-11ea-b5c3-0050569183fa
Link to July 29, 2020 preliminary consultation staff report: https://montgomeryplanning.org/wp-content/uploads/2020/07/II.D-104-Water-Street-Brookeville.pdf

(4) The proposal is necessary in order that unsafe conditions or health hazards be remedied; or

(5) The proposal is necessary in order that the owner of the subject property not be deprived of reasonable use of the property or suffer undue hardship; or

(6) In balancing the interests of the public in preserving the historic site or historic resource located within an historic district, with the interests of the public from the use and benefit of the alternative proposal, the general public welfare is better served by granting the permit.

(c) It is not the intent of this chapter to limit new construction, alteration or repairs to any 1 period or architectural style.

(d) In the case of an application for work on an historic resource located within an historic district, the commission shall be lenient in its judgment of plans for structures of little historical or design significance or for plans involving new construction, unless such plans would seriously impair the historic or architectural value of surrounding historic resources or would impair the character of the historic district. (*Ord. No. 9-4, § 1; Ord. No. 11-59.*)

Secretary of Interior's Standards for Rehabilitation

The Secretary of the Interior defines rehabilitation as "the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features, which convey its historical, cultural, or architectural values." The *Standards* are as follows:

2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.

9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.

Historic Preservation Commission Policy No. 20-01: ADDRESSING EMERGENCY CLIMATE MOBILIZATION THROUGH THE INSTALLATION OF ROOF-MOUNTED SOLAR PANELS

On December 5, 2017, the Montgomery County Council adopted an Emergency Climate Mobilization resolution (Resolution No.: 18-974) which declared a climate emergency and charged the County Executive, Montgomery County Public Schools, and the Maryland-National Capital Park and Planning Commission to advise the Council on methods to reduce greenhouse gas emissions.

As a body established by the County Executive, it is incumbent on the Historic Preservation Commission (HPC) to undertake steps to achieve the goals of the Emergency Climate Mobilization resolution.

One method for reducing greenhouse gas emissions is to replace carbon-heavy methods of energy production, like coal and natural gas power plants, with renewable sources like wind and solar power. Current historic preservation best practice is to limit the locations solar panels may be installed to preserve the character of the building above all other considerations. Chapter 24A-8(b)(6) of County Code establishes a balancing test for approval of a HAWP where there is an apparent conflict between the desired impact on the historic resource compared to the public benefit of the proposal. Because the widespread use of solar panels, both for hot water and for electricity production, will reduce greenhouse

gases in the county, it is the position of the HPC that solar panels may be installed on all roof elevations of historic sites or historic resources located within a historic district provided:

1. The identified preferred location (on the rear of the property, building additions, accessory structures, or ground-mounted arrays) is not feasible due to resource orientation or other site limitations and;

2. The roof is not either architecturally significant or a slate or tile roof unless it can be demonstrated that the solar array will be installed without damaging the historic character of the resource or historic fabric; and

3. A Historic Area Work Permit (HAWP) is required for all work referenced in this policy.

Now, THEREFORE:

WHEREAS, Historic Area Work Permit decisions are guided by the criteria in Section 24A, The Secretary of the Interior's Standards for Rehabilitation, and pertinent guidance from applicable master plan amendments and/or site or district-specific studies;

WHEREAS, The Secretary of the Interior's Standards for Rehabilitation as interpreted by the National Park Service limit the placement of rooftop solar panels under Standards 2, 9, and 10 to less conspicuous locations;

WHEREAS, the County Council has established a Climate Emergency;

WHEREAS, the Historic Preservation is a body established by the County Executive and County Council;

WHEREAS, Section 24-8(b)(6) states, "In balancing the interest of the public in preserving the historic site or historic resource located within an historic district, with the interests of the public from the use and benefit of the alternative proposal, the general public welfare is better served by granting the permit;"

WHEREAS, the widespread use of solar panels, both for hot water and for electricity production, will reduce greenhouse gases in the county, in accordance with the aims of the Emergency Climate Mobilization resolution (Resolution No.: 18-974), it shall be the policy of the Historic Preservation Commission that:

1. The preferred locations for solar panel installation(s) on a designated historic site or an historic resource located within an historic district is a) on the rear of the property, b) on non-historic building additions, c) on accessory structures, or d) in ground-mounted arrays;

2. If it is not feasible to install solar panels in one of the identified preferred locations due to resource orientation or other site limitations; and,

3. The roof is determined to be neither architecturally significant, nor a character-defining feature of the resource, nor is it a slate or tile roof, that unless it can be demonstrated that the solar array will be installed without damaging the historic character of the resource or historic fabric; then

4. The public welfare is better served by approving a Historic Area Work Permit for solar panels on all visible side or front roof slopes under Section 24A-8(b)(6).

5. A Historic Area Work Permit (HAWP) is required for all work referenced in this policy.

PROPOSAL:

At the July 29, 2020 preliminary consultation, the HPC expressed the following:

- This Commission was generally supportive of the proposal to replace the existing cedar shingles with asphalt shingles; however, the Commission did not support the proposed asphalt shingles. It was recommended that the applicant explore alternative asphalt shingles, which successfully simulate wood or slate.
- The Commission was also supportive of in-kind cedar shingle replacement.
    - It was noted that the existing cedar shingles were likely installed incorrectly, contributing to their deterioration in a relatively short amount of time (17 years).
- The majority (7 to 1) voiced no objection to matching asphalt shingles on the accessory structure, and one Commissioner specifically stated that matching roofing materials would be the most appropriate treatment.
    - One Commissioner stated that they preferred metal or cedar shingle roofing for the accessory structure.
- The Commission was supportive of the applicant's proposal for solar panels.

The applicant has returned with a HAWP application and the following revisions:

- The applicant proposes to replace the existing cedar shingles on the house and detached garage with CertainTeed Landmark Premium Series Asphalt Shingles (color Weathered Wood).

Regarding the quality of the proposed shingles, staff finds the following:

- The quality of asphalt shingles can be measured in the impregnated weight of asphalt per 100 square feet of roofing (weight/square). This weight also effects the lifespan and thickness of the shingles. Thicker shingles give more definition and shadow line.

- The proposed asphalt shingles (CertainTeed Landmark Premium Series) are a dimensional "architectural" shingle. The Landmark Premium Series represents the highest price point and quality available in CertainTeed's Landmark product line. The weight/square is 300lb. For comparison, the Landmark PRO Series has a weight/square of 240-267lb, and the Landmark Series has weight/square of 219 to 238lb.

- Shape of shingle: while the shape (exposed portion) of shingles does not factor into material quality, it does factor into visual quality. [*The majority of Commissioners found the shape of the previously proposed GAF-Grand Sequoia shingles inappropriate at the preliminary consultation, and they recommended a simpler shape with thickness and dimensions that closely simulate cedar shingles.*]

Based upon this evaluation, staff supports the applicant's revised proposal, finding that it responds appropriately to the Commission's recommendations at the July 29, 2020 preliminary consultation.

New proposed work items include the following:

- Installation of a 4' high wood picket fence at the rear of the house.

- The proposed fence will be a total of 229 linear feet.

After full and fair consideration of the applicant's submission staff finds the proposal as being consistent with the Criteria for Issuance in Chapter 24A-(b) 1 and 2, and (d), having found the proposal is consistent with the *Secretary of the Interior's Standards for Rehabilitation #2, #9,* and *#10* outlined above.

STAFF RECOMMENDATION:

Staff recommends that the Commission approve the HAWP application under the Criteria for Issuance in Chapter 24A-8(b), having found that the proposal will not substantially impact the historic resource(s) and is compatible in character with the district and the purposes of Chapter 24A;

and with *the Secretary of the Interior's Standards for Rehabilitation #2, #9,* and *#10*;

and with the general condition that the applicant shall present the 3 permit sets of drawings, if applicable to Historic Preservation Commission (HPC) staff for review and stamping prior to submission for the Montgomery County Department of Permitting Services (DPS) building permits;

and with the general condition that final project design details, not specifically delineated by the Commission, shall be approved by HPC staff or brought back to the Commission as a revised HAWP application at staff's discretion;

and with the general condition that the applicant shall notify the Historic Preservation Staff if they propose to make any alterations to the approved plans. Once the work is completed the applicant will contact the staff person assigned to this application at 301-563-3400 or michael.kyne@montgomeryplanning.org to schedule a follow-up site visit.

FOR STAFF ONLY:
HAWP#_____
DATE ASSIGNED_____

APPLICATION FOR HISTORIC AREA WORK PERMIT

HISTORIC PRESERVATION COMMISSION
301.563.3400

APPLICANT:

Name: Garrett Anderson E-mail: garrettdrewanderson@gmail.com

Address: 104 Water St City: Brookeville Zip: 20833

Daytime Phone: 301-706-9506 Tax Account No.: _____

AGENT/CONTACT (if applicable):

Name: _____ E-mail: _____

Address: _____ City: _____ Zip:_____

Daytime Phone: _____ Contractor Registration No.: _____

LOCATION OF BUILDING/PREMISE: MIHP # of Historic Property_____

Is the Property Located within an Historic District? __Yes/District Name Town of Brookeville
__No/Individual Site Name_____

Is there an Historic Preservation/Land Trust/Environmental Easement on the Property? If YES, include a map of the easement, and documentation from the Easement Holder supporting this application.

Are other Planning and/or Hearing Examiner Approvals /Reviews Required as part of this Application? (Conditional Use, Variance, Record Plat, etc.?) If YES, include information on these reviews as supplemental information.

Building Number: _____ Street: _____

Town/City: _____ Nearest Cross Street: _____

Lot: _____ Block: _____ Subdivision: _____ Parcel: _____

TYPE OF WORK PROPOSED: See the checklist on Page 4 to verify that all supporting items for proposed work are submitted with this application. Incomplete Applications will not be accepted for review. Check all that apply:

- ☐ New Construction
- ☐ Addition
- ☐ Demolition
- ☐ Grading/Excavation
- ☐ Deck/Porch
- ☐ Fence
- ☐ Hardscape/Landscape
- ☑ Roof
- ☐ Shed/Garage/Accessory Structure
- ☐ Solar
- ☐ Tree removal/planting
- ☐ Window/Door
- ☐ Other:_____

I hereby certify that I have the authority to make the foregoing application, that the application is correct and accurate and that the construction will comply with plans reviewed and approved by all necessary agencies and hereby acknowledge and accept this to be a condition for the issuance of this permit.

_____ _____

Signature of owner or authorized agent Date

Description of Work Proposed: Please give an overview of the work to be undertaken:

We would like to replace the house and detached garage roofs with asphalt shingles and install solar panels on the rear facing portion of our house.

Proposed Shingle: Landmark Premium Series - Weathered Wood
Spec Sheet Attached.

Work Item 1: House Roof

Description of Current Condition:	Proposed Work:
Warped shingles, leaking, shingles falling off, breaking shingles, 17 years old.	Replace with asphalt shingles. Landmark Premium - Weathered Wood

Work Item 2: Detached Garage

Description of Current Condition:	Proposed Work:
Moldy and leaking. Shingles are falling off with every storm. Needs to be replaced IMMEDIATELY .	Replace with Asphalt Shingles. Landmark Premium - Weathered Wood

Work Item 3: Solar Panels

Description of Current Condition:	Proposed Work:
None currently. Unable to be installed on current roof due to current conditions. Not recommended to be installed over cedar.	Solar panels to be installed on the rear facing roof of our house.

Permit application number: 912039.

Description of work:

The original roofs of our home and detached garage are 17 years old and failing. The home was built in 2003. There are multiple leaks, shingles are falling off, and many shingles are warped due to uneven drying time. Although installed in accordance to 2003 building practices, the issues are likely due to shingles being installed directly over plywood instead of skip sheathing. The garage and garage port are in the worst shape and in immediate need of replacement.

Proposal:

After looking into many available roofing options, including cedar and synthetic cedar, we are proposing to replace the existing cedar shingles on both the home and garage with CertainTeed Landmark Premium Series Asphalt Shingles (color Weathered Wood). Based on feedback from our preliminary meeting, we believe this material satisfies the weight, style, and color of the recommendations we have received. We are also proposing to install (6) solar panels on the rear roof of the house. We considered installing solar on our detached garage, but it does not get adequate sun exposure.

Roofing Material Estimates Received so far:

1. Asphalt – Landmark Series (30 year warranty)
    1. $17,000 - $20,000 (multiple companies)
2. Cedar Shingle (10 year warranty)
    1. $40,000 – $50,000 (multiple companies and variations)
3. Brava Roof Tile – Synthetic Cedar (50 year warranty)
    1. $60,000 - $70,000 (multiple companies)

Reasons for asphalt roof:

1. The existing roof does not breathe properly for cedar shingles. The cost to redesign the roof to breathe properly is not included in the estimates. We would not like to reinstall cedar only to have this issue again in 17 years and unfortunately redesigning our roof with skip sheathing is not within our growing family's budget.
2. The existing roof only lasted 17 years. The average lifespan of a cedar roof is approximately 30-40 years (https://www.skroofing.com/roofing-maryland/cedar-roofing-faqs/)
3. We would like to install solar panels; cedar is not recommended for solar panel installation.

Background:

My wife and I cherish historic towns and homes. In 2017, we were presented the Montgomery County Award for Historic Preservation – Restoration of a Historic Residence for our work on our previous home in town, the historic residence of 2 High St. When we purchased our home at 104 Water St in 09/2018, it was a neglected home listed on short sale and we have since invested a great deal of money and time into making it habitable for our growing family and no longer an eye-sore in town. Our family would greatly appreciate the ability to replace this roof with asphalt shingles and install solar panels. Our property is one acre, most of which is conservation easement. There are no homes facing the front of our house, and our neighbor to the right faces Market Street. The neighbor to the left was also built in 2003.

Additional Details about Home, Town Homes, and Sub-division:

Our home was built as part of a 3 home sub-division within the historic town of Brookeville. Within town, there are 2 other Dutch Colonial style homes. Both have asphalt roofs and are not historic resources. Many homes in town have installed solar panels including two adjacent neighbors. Asphalt is a common roof material within town. One of the latest homes built on North Street was permitted to use asphalt and a home located on South Street recently built a detached garage with an asphalt roof.

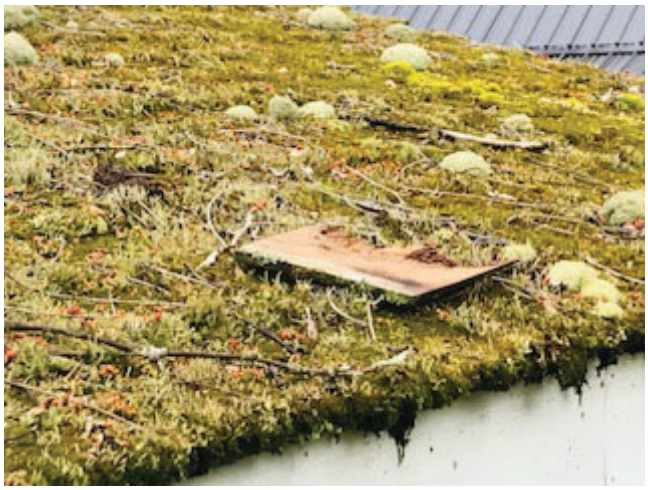
Properties abutting 104 Water St property line:

106 Water St, Brookeville, MD 20833	307 Market St Brookeville, MD 20833
301 Market St, Brookeville, MD 20833	309 Market St, Brookeville, MD 20833
211 Market St, Brookeville, MD 20833	311 Market St, Brookeville, MD 20833

House - Front

House - Back

Detached Garage



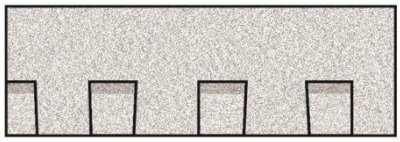
HISTORIC AREA WORK PERMIT
CHECKLIST OF
APPLICATION REQUIREMENTS

	Required Attachments						
Proposed Work	I. Written Description	2. Site Plan	3. Plans/ Elevations	4. Material Specifications	5. Photographs	6. Tree Survey	7. Property Owner Addresses
New Construction	*	*	*	*	*	*	*
Additions/ Alterations	*	*	*	*	*	*	*
Demolition	*	*	*		*		*
Deck/Porch	*	*	*	*	*	*	*
Fence/Wall	*	*	*	*	*	*	*
Driveway/ Parking Area	*	*		*	*	*	*
Grading/Excavation/Landscaing	*	*		*	*	*	*
Tree Removal	*	*		*	*	*	*
Siding/ Roof Changes	*	*	*	*	*		*
Window/ Door Changes	*	*	*	*	*		*
Masonry Repair/ Repoint	*	*	*	*	*		*
Signs	*	*	*	*	*		*

Technical Data Sheet

Landmark®, Landmark® Premium, Landmark® Pro Shingles, Landmark® Pro/Architect 80 (NW Region Only) Shingles

PRODUCT INFORMATION



Landmark shingles reflect the same high manufacturing standards and superior warranty protection as the rest of CertainTeed's line of roofing products. Landmark Premium (and Algae Resistant-AR), Landmark PRO (and AR) and Landmark (and AR) are built with the industry's toughest fiber glass mat base, and their strict dimensional tolerance assures consistency. Complex granule color blends and subtle shadow lines produce a distinctive color selection. Landmark is produced with the unique NailTrak® nailing feature. ***Please see the installation instruction section below for important information regarding NailTrak.***

In the Northwest Region Landmark PRO (AR) is double-branded as Landmark PRO/Architect 80 (AR).

Landmark algae-resistant (AR) shingles are algae-resistant and help protect against dark or black discoloration, sometimes called staining or streaking, caused by blue-green algae. AR shingles are not available in all regions.

Colors: Please refer to the product brochure or CertainTeed website for the colors available in your region.

Limitations: Use on roofs with slopes greater than 2" per foot. Low-slope applications (2:12 to < 4:12) require additional underlayment. In areas where icing along eaves can cause the back-up of water, apply CertainTeed WinterGuard® Waterproofing Shingle Underlayment, or its equivalent, according to application instructions provided with the product and on the shingle package.

Product Composition: Landmark Series shingles are composed of a fiber glass mat base. Ceramic-coated mineral granules are tightly embedded in carefully refined, water-resistant asphalt. Two pieces of the shingle are firmly laminated together in a special, tough asphaltic cement. All Landmark shingles have self-sealing adhesive strips.

Applicable Standards

ASTM D3018 Type I
ASTM D3462
ASTM E108 Class A Fire Resistance
ASTM D3161 Class F Wind Resistance
ASTM D7158 Class H Wind Resistance
UL 790 Class A Fire Resistance
ICC-ES ESR-1389 and ESR-3537
CSA Standard A123.5 (Regional)
Miami-Dade Product Control Approved
Florida Product Approval # FL5444
Meets TDI Windstorm Requirements

Technical Data:

	Landmark (and AR)	**Landmark PRO* (and AR)**	**Landmark Premium (and AR)**
Weight/Square (approx.)	219 to 238 lb **	240 to 267 lb **	300 lb
Dimensions (overall)	13 1/4" x 38 3/4"	13 1/4" x 38 3/4"	13 1/4" x 38 3/4"
Shingles/Square (approx.)	66	66	66
Weather Exposure	5 5/8"	5 5/8"	5 5/8"

*Includes Landmark PRO AR/Architect 80
**Dependent on manufacturing location

INSTALLATION

Detailed installation instructions are supplied on each bundle of Landmark shingles and must be followed. Separate application sheets may also be obtained from CertainTeed.

Hips and Ridges: For capping hip and ridge apply CertainTeed Shadow Ridge®, Cedar Crest® or Mountain Ridge® shingles of a like color.

MAINTENANCE

These shingles do not require maintenance when installed according to manufacturer's application instructions. However, to protect the investment, any roof should be routinely inspected at least once a year. Older roofs should be looked at more frequently.

WARRANTY

Landmark Premium (and AR), Landmark PRO/Architect 80 AR, Landmark PRO (and AR), and Landmark (and AR) shingles carry a lifetime limited, transferable warranty to the consumer against manufacturing defects when applied to stated CertainTeed application instructions for this product. In addition, Landmark Premium (and AR), Landmark PRO (and AR), Landmark PRO/Architect 80 AR, and Landmark (and AR) carry 10-years of SureStart™ Protection. Landmark AR shingles carry a 10-year algae resistance warranty. Landmark Premium AR, Landmark PRO AR, and Landmark PRO/Architect 80 AR shingles carry a 15-year algae resistance warranty. For specific warranty details and limitations, refer to the warranty itself (available from the local supplier, roofing contractor or on-line at www.certainteed.com).

FOR MORE INFORMATION

Sales Support Group: 800-233-8990
Web site: www.certainteed.com
See us at our on-line specification writing tool, CertaSpec®, at www.certainteed.com/certaspec.

CertainTeed
20 Moores Road
Malvern, PA 19355

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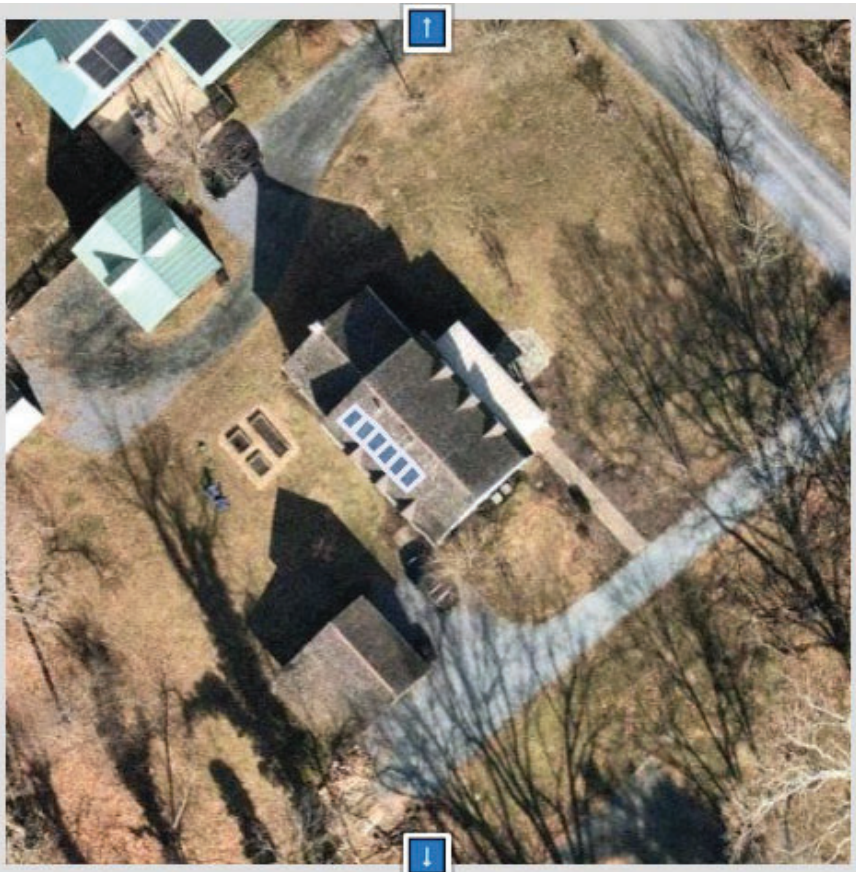
Solar Panel Location



Number of Panels

6

Annual Production (kWh)

2,367

25 Year Electric Bill Savings

$19,196

LUMINA SOLAR

Agenda

- Lumina Solar
- Current Utility Costs
- System Design
- Warranties and Process
- Financials

Prepared for:

Anderson Residence
104 Water Street Brookeville, MD
USA 20833

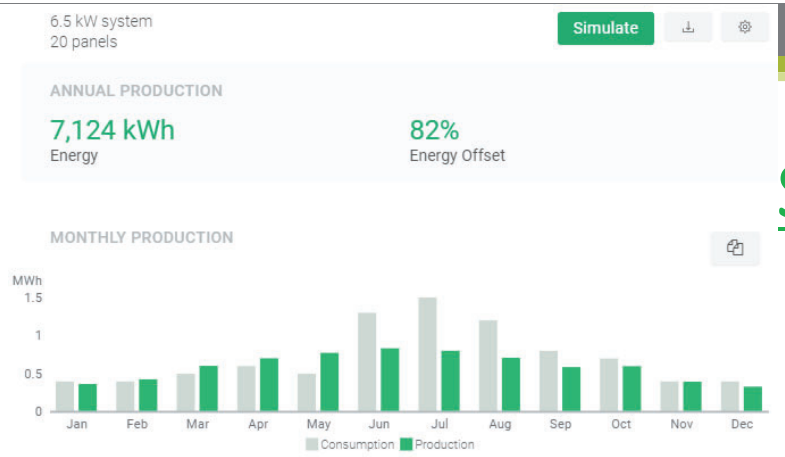
Consultant: **Alexander Fegley**

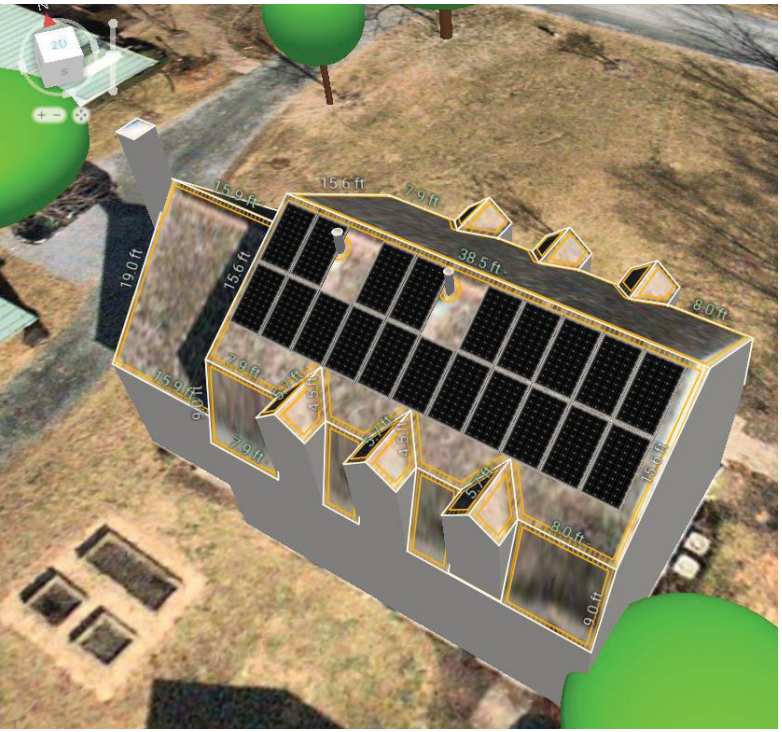
Lumina Solar

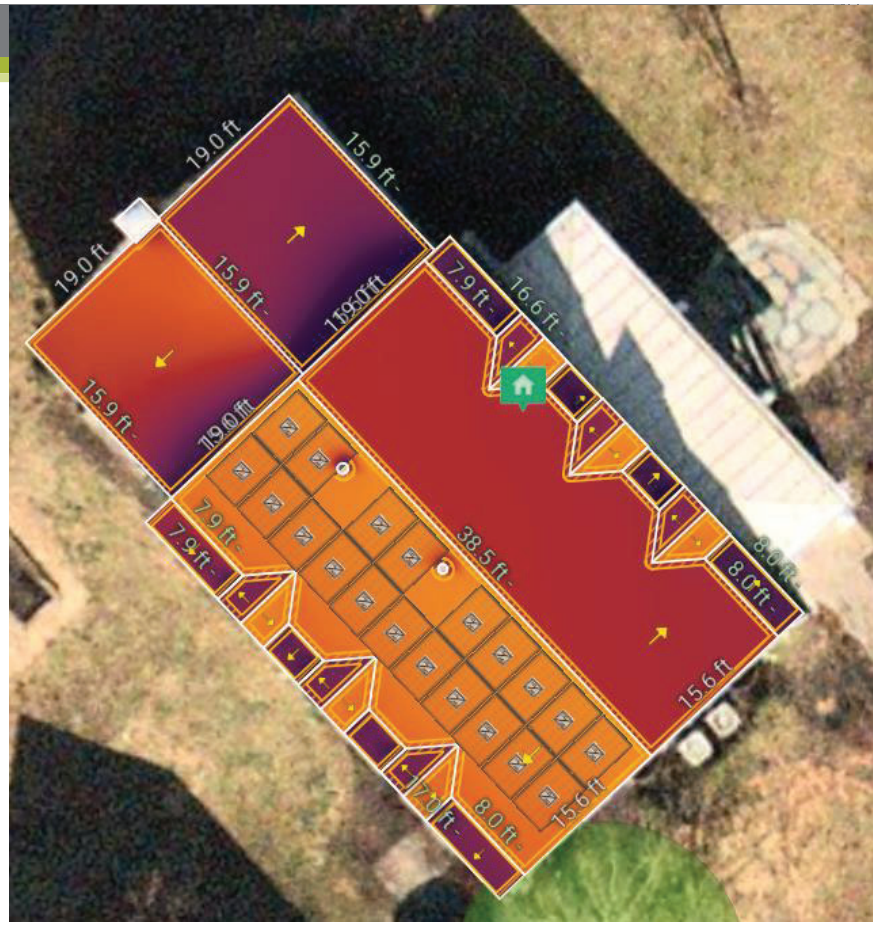
- Founding and Management team with 45 years in residential solar
- Directly and indirectly involved in management of 8,000+ installations over 8 states
- Ops Management team with 30+ years of solar experience
- Lumina was founded to build a profitable, Next Generation Solar Company to thrive through the 2020's
- Designed to deliver a streamlined, consumer friendly experience, based on cutting out the negatives and highlighting the positives of the solar industry over the last decade.
- 5 Star reviews across multiple review websites
- Average of 40 installations per month

LUMINA SOLAR

Primary System Design (6.5kW)







LUMINA SOLAR

Model 1: 12 year, 2.99% Solar Loan

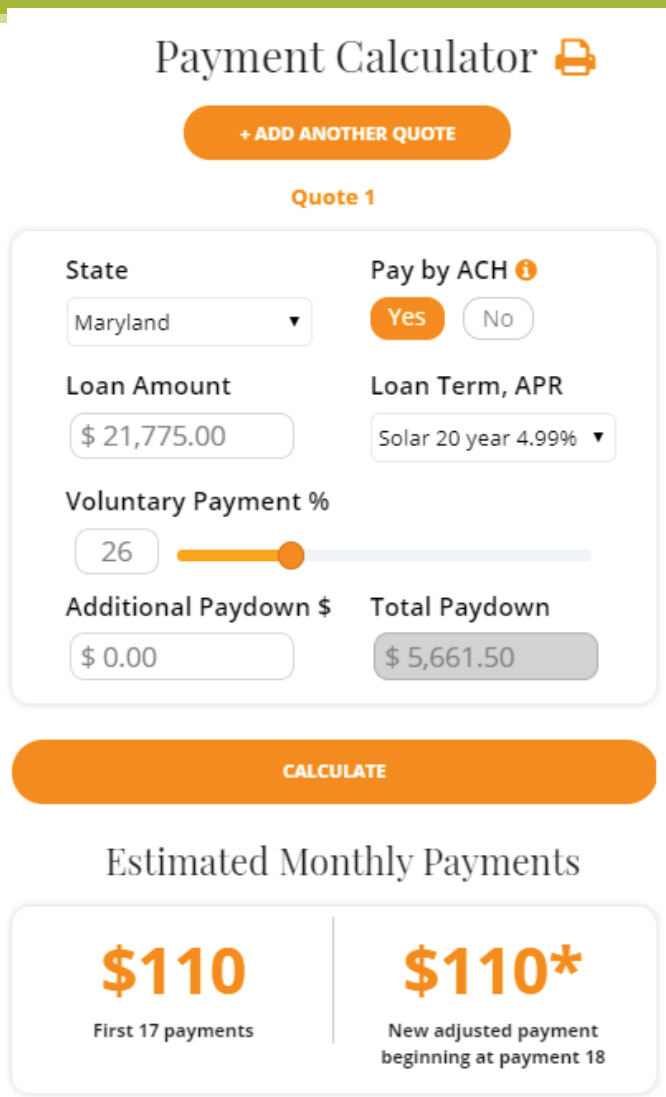
Payback Period								
Year	kWh Production	Utility Rate	Electricity Savings	SREC Revenue	Total Revenue	Loan Payment	Annual Cash Flow	Cumulative Cash Flow
1	7124	$ 0.152	$ 1,083	$ 534	$ 1,617	$ 1,636	$ 981	$ 981
2	7088	$ 0.158	$ 1,121	$ 534	$ 1,655	$ 1,636	$ 19	$ 1,000
3	7053	$ 0.164	$ 1,160	$ 534	$ 1,694	$ 1,636	$ 58	$ 1,058
4	7018	$ 0.171	$ 1,200	$ 534	$ 1,734	$ 1,636	$ 98	$ 1,157
5	6983	$ 0.178	$ 1,242	$ 534	$ 1,776	$ 1,636	$ 140	$ 1,297
6	6948	$ 0.185	$ 1,285	$ 534	$ 1,819	$ 1,636	$ 183	$ 1,480
7	6913	$ 0.192	$ 1,330	$ 534	$ 1,864	$ 1,636	$ 228	$ 1,708
8	6878	$ 0.200	$ 1,376	$ 356	$ 1,732	$ 1,636	$ 96	$ 1,804
9	6844	$ 0.208	$ 1,424	$ 356	$ 1,780	$ 1,636	$ 144	$ 1,948
10	6810	$ 0.216	$ 1,473	$ 356	$ 1,829	$ 1,636	$ 194	$ 2,142
11	6776	$ 0.225	$ 1,525	$ 142	$ 1,667	$ 1,636	$ 31	$ 2,173
12	6742	$ 0.234	$ 1,578	$ 142	$ 1,720	$ 1,636	$ 84	$ 2,257
13	6708	$ 0.243	$ 1,632	$ -	$ 1,632	$ -	$ 1,632	$ 3,889
14	6675	$ 0.253	$ 1,689	$ -	$ 1,689	$ -	$ 1,689	$ 5,579
15	6641	$ 0.263	$ 1,748	$ -	$ 1,748	$ -	$ 1,748	$ 7,327
16	6608	$ 0.274	$ 1,809	$ -	$ 1,809	$ -	$ 1,809	$ 9,136
17	6575	$ 0.285	$ 1,872	$ -	$ 1,872	$ -	$ 1,872	$ 11,008
18	6542	$ 0.296	$ 1,937	$ -	$ 1,937	$ -	$ 1,937	$ 12,945
19	6509	$ 0.308	$ 2,004	$ -	$ 2,004	$ -	$ 2,004	$ 14,949
20	6477	$ 0.320	$ 2,074	$ -	$ 2,074	$ -	$ 2,074	$ 17,023
21	6444	$ 0.333	$ 2,146	$ -	$ 2,146	$ -	$ 2,146	$ 19,169
22	6412	$ 0.346	$ 2,221	$ -	$ 2,221	$ -	$ 2,221	$ 21,390
23	6380	$ 0.360	$ 2,298	$ -	$ 2,298	$ -	$ 2,298	$ 23,689
24	6348	$ 0.375	$ 2,378	$ -	$ 2,378	$ -	$ 2,378	$ 26,067
25	6317	$ 0.390	$ 2,461	$ -	$ 2,461	$ -	$ 2,461	$ 28,528

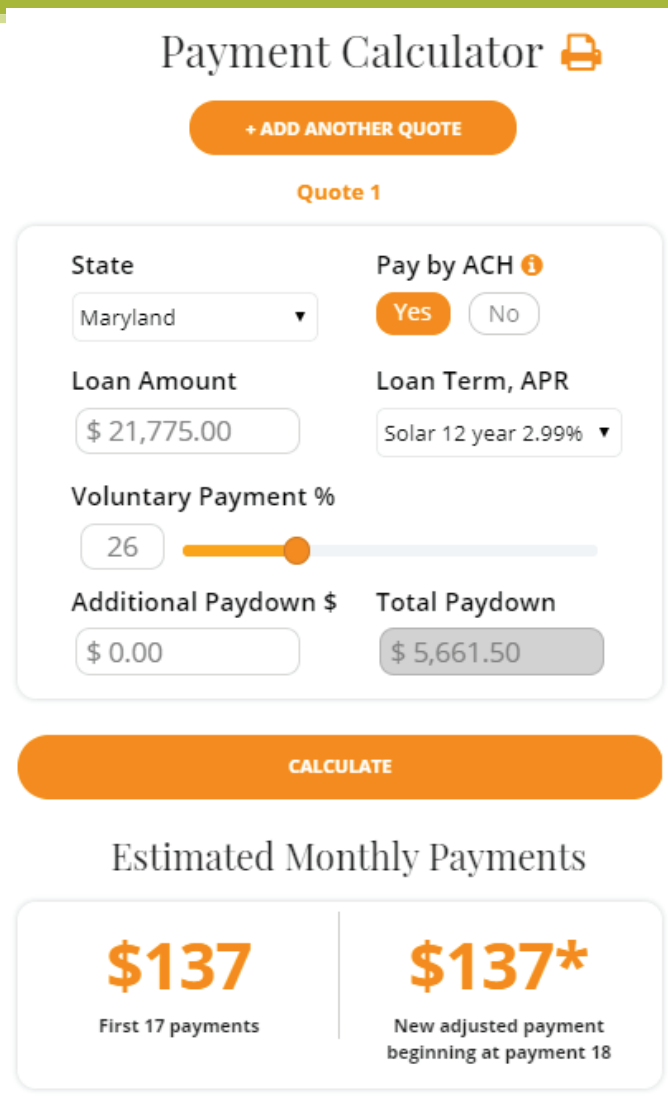
System Specs		
Number of Panels		20
Wattage		325
System Size		6500
PPW		$3.35
System Cost	$	21,775.00
Purchase Price	$	21,775.00
Federal Tax Credit	$	5,661.50
State Grant	$	1,000.00
Property Tax Credit	$	-
Net Cost	$	15,113.50
ITC 18 Month Prepayment Amount	$	5,661.50
Monthly Payment	$	136.32
Site Quality		1096
Year 1 kWh Production		7124
kWh Degradation Rate		0.5%
Year 1 Utility Rate	$	0.152
Annual Escalator		4%
20 Year Average Annual Value	$	1,782.67
20 Year ROI		9%

Model 1: 20 year, 4.99% Solar Loan

Payback Period								
Year	kWh Production	Utility Rate	Electricity Savings	SREC Revenue	Total Revenue	Loan Payment	Annual Cash Flow	Cumulative Cash Flow
1	7124	$ 0.152	$ 1,083	$ 534	$ 1,617	$ 1,320	$ 1,298	$ 1,298
2	7088	$ 0.158	$ 1,121	$ 534	$ 1,655	$ 1,320	$ 335	$ 1,633
3	7053	$ 0.164	$ 1,160	$ 534	$ 1,694	$ 1,320	$ 374	$ 2,007
4	7018	$ 0.171	$ 1,200	$ 534	$ 1,734	$ 1,320	$ 415	$ 2,422
5	6983	$ 0.178	$ 1,242	$ 534	$ 1,776	$ 1,320	$ 456	$ 2,878
6	6948	$ 0.185	$ 1,285	$ 534	$ 1,819	$ 1,320	$ 500	$ 3,378
7	6913	$ 0.192	$ 1,330	$ 534	$ 1,864	$ 1,320	$ 544	$ 3,922
8	6878	$ 0.200	$ 1,376	$ 356	$ 1,732	$ 1,320	$ 412	$ 4,334
9	6844	$ 0.208	$ 1,424	$ 356	$ 1,780	$ 1,320	$ 460	$ 4,795
10	6810	$ 0.216	$ 1,473	$ 356	$ 1,829	$ 1,320	$ 510	$ 5,305
11	6776	$ 0.225	$ 1,525	$ 142	$ 1,667	$ 1,320	$ 347	$ 5,652
12	6742	$ 0.234	$ 1,578	$ 142	$ 1,720	$ 1,320	$ 400	$ 6,053
13	6708	$ 0.243	$ 1,632	$ -	$ 1,632	$ 1,320	$ 313	$ 6,365
14	6675	$ 0.253	$ 1,689	$ -	$ 1,689	$ 1,320	$ 370	$ 6,735
15	6641	$ 0.263	$ 1,748	$ -	$ 1,748	$ 1,320	$ 428	$ 7,164
16	6608	$ 0.274	$ 1,809	$ -	$ 1,809	$ 1,320	$ 489	$ 7,653
17	6575	$ 0.285	$ 1,872	$ -	$ 1,872	$ 1,320	$ 552	$ 8,205
18	6542	$ 0.296	$ 1,937	$ -	$ 1,937	$ 1,320	$ 617	$ 8,823
19	6509	$ 0.308	$ 2,004	$ -	$ 2,004	$ 1,320	$ 685	$ 9,508
20	6477	$ 0.320	$ 2,074	$ -	$ 2,074	$ 1,320	$ 755	$ 10,262
21	6444	$ 0.333	$ 2,146	$ -	$ 2,146	$ -	$ 2,146	$ 12,408
22	6412	$ 0.346	$ 2,221	$ -	$ 2,221	$ -	$ 2,221	$ 14,629
23	6380	$ 0.360	$ 2,298	$ -	$ 2,298	$ -	$ 2,298	$ 16,928
24	6348	$ 0.375	$ 2,378	$ -	$ 2,378	$ -	$ 2,378	$ 19,306
25	6317	$ 0.390	$ 2,461	$ -	$ 2,461	$ -	$ 2,461	$ 21,767

System Specs		
Number of Panels		20
Wattage		325
System Size		6500
PPW		$3.35
System Cost	$	21,775.00
Purchase Price	$	21,775.00
Federal Tax Credit	$	5,661.50
State Grant	$	1,000.00
Property Tax Credit	$	-
Net Cost	$	15,113.50
	$	15,113.50
ITC 18 Month Prepayment Amount	$	5,661.50
Monthly Payment	$	109.96
Site Quality		1096
Year 1 kWh Production		7124
kWh Degradation Rate		0.5%
Year 1 Utility Rate	$	0.152
Annual Escalator		4%
20 Year Average Annual Value	$	1,782.67
20 Year ROI		7%


Payment Calculator
+ ADD ANOTHER QUOTE
Quote 1
State
Maryland
Pay by ACH
Yes
No
Loan Amount
$ 21,775.00
Loan Term, APR
Solar 20 year 4.99%
Voluntary Payment %
26
Additional Paydown $
$ 0.00
Total Paydown
$ 5,661.50
CALCULATE
Estimated Monthly Payments
$110
First 17 payments
$110*
New adjusted payment beginning at payment 18


Payment Calculator
+ ADD ANOTHER QUOTE
Quote 1
State
Maryland
Pay by ACH
Yes
No
Loan Amount
$ 21,775.00
Loan Term, APR
Solar 12 year 2.99%
Voluntary Payment %
26
Additional Paydown $
$ 0.00
Total Paydown
$ 5,661.50
CALCULATE
Estimated Monthly Payments
$137
First 17 payments
$137*
New adjusted payment beginning at payment 18

Model 1: Upfront Purchase

Payback Period						
Year	kWh Production	Utility Rate	Electricity Savings	SREC Revenue	Total Revenue	Payback
1	7124	$ 0.152	$ 1,083	$ 534	$ 1,617	$ (12,293.85)
2	7088	$ 0.158	$ 1,121	$ 534	$ 1,655	$ (10,639)
3	7053	$ 0.164	$ 1,160	$ 534	$ 1,694	$ (8,945)
4	7018	$ 0.171	$ 1,200	$ 534	$ 1,734	$ (7,211)
5	6983	$ 0.178	$ 1,242	$ 534	$ 1,776	$ (5,435)
6	6948	$ 0.185	$ 1,285	$ 534	$ 1,819	$ (3,616)
7	6913	$ 0.192	$ 1,330	$ 534	$ 1,864	$ (1,752)
8	6878	$ 0.200	$ 1,376	$ 356	$ 1,732	$ (20)
9	6844	$ 0.208	$ 1,424	$ 356	$ 1,780	$ 1,760
10	6810	$ 0.216	$ 1,473	$ 356	$ 1,829	$ 3,589
11	6776	$ 0.225	$ 1,525	$ 142	$ 1,667	$ 5,256
12	6742	$ 0.234	$ 1,578	$ -	$ 1,578	$ 6,834
13	6708	$ 0.243	$ 1,632	$ -	$ 1,632	$ 8,466
14	6675	$ 0.253	$ 1,689	$ -	$ 1,689	$ 10,156
15	6641	$ 0.263	$ 1,748	$ -	$ 1,748	$ 11,904
16	6608	$ 0.274	$ 1,809	$ -	$ 1,809	$ 13,713
17	6575	$ 0.285	$ 1,872	$ -	$ 1,872	$ 15,584
18	6542	$ 0.296	$ 1,937	$ -	$ 1,937	$ 17,521
19	6509	$ 0.308	$ 2,004	$ -	$ 2,004	$ 19,526
20	6477	$ 0.320	$ 2,074	$ -	$ 2,074	$ 21,600
21	6444	$ 0.333	$ 2,146	$ -	$ 2,146	$ 23,746
22	6412	$ 0.346	$ 2,221	$ -	$ 2,221	$ 25,967
23	6380	$ 0.360	$ 2,298	$ -	$ 2,298	$ 28,266
24	6348	$ 0.375	$ 2,378	$ -	$ 2,378	$ 30,644
25	6317	$ 0.390	$ 2,461	$ -	$ 2,461	$ 33,105

System Specs		
Number of Panels		20
Wattage		325
System Size		6500
PPW		$3
System Cost	$	20,150.00
Purchase Price	$	20,150.00
Federal Tax Credit	$	5,239.00
State & EV Charger Grant	$	1,000.00
Property Tax Credit	$	-
18 Month Net Cost	$	13,911.00
Site Quality		1096
Year 1 kWh Production		7124
kWh Degradation Rate		0.5%
Year 1 Utility Rate	$	0.152
Annual Escalator		4%
20 Year Average Annual Value	$	1,775.55
20 Year ROI		13%

Lumina Solar Warranty

❑ Purchase

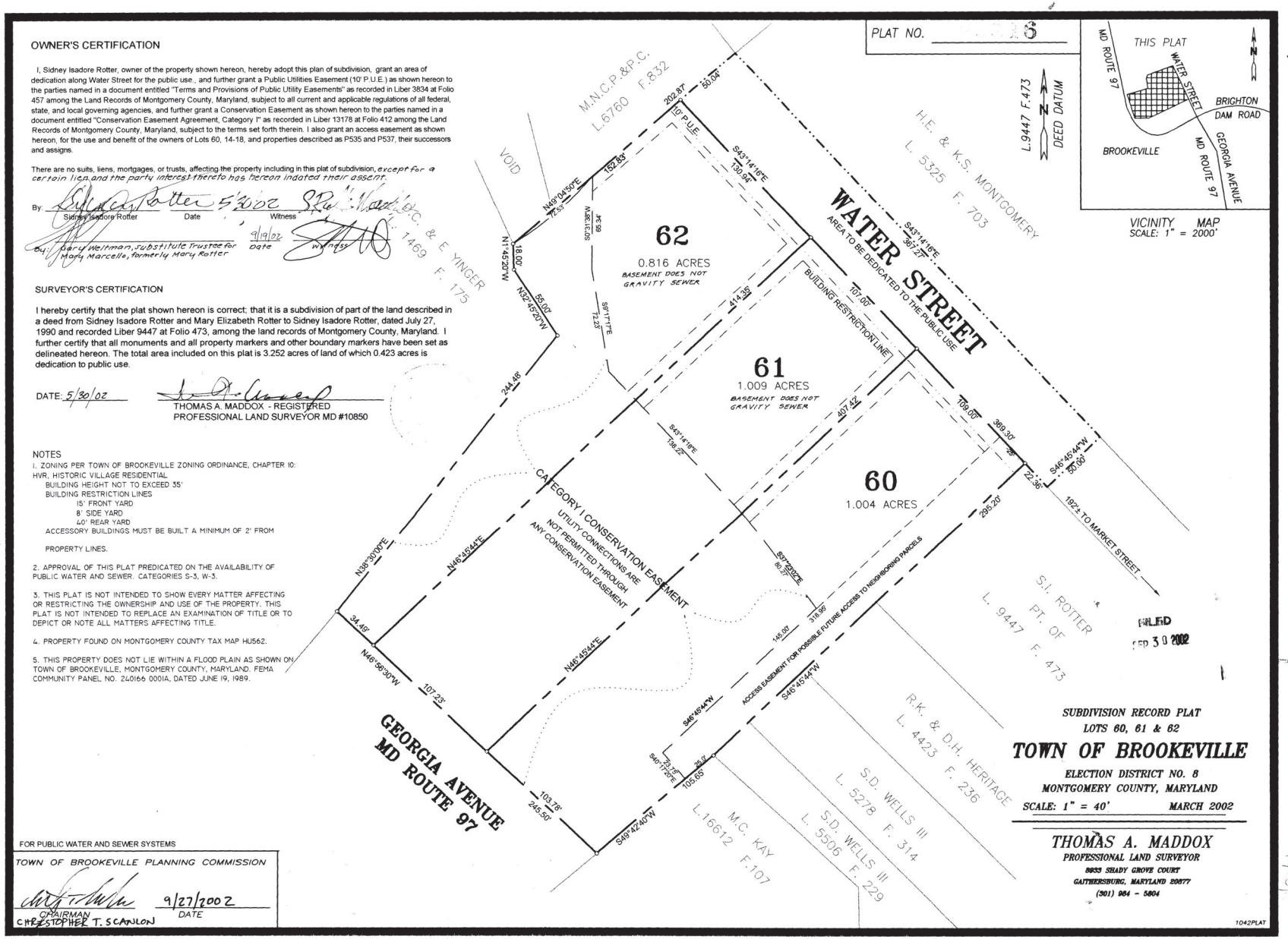
- 10 year Workmanship Warranty(labor warranty)
- 25 year Warranty on Enphase Microinverters
- 25 year Panel Product Warranty
- 30 year Panel Performance Warranty
- 10 year roof penetration Warranty
- Should add to HOI to protect against Force Majure(weather)

LUMINA SOLAR

Project Outline and Next Steps

Proposal and Agreement	• Contract and Related Paperwork • Credit Check • Deposit
On-site Evaluation	• Engineering Verification • Final Design Approval
Final System Design & Approval	• Interconnection Submission • Permit Applications • HOA Application
Project Construction	• Array Installation • Utility Connection and Approvals
Project Close Out	• Incentive Submissions• Warranty Registration

LUMINA SOLAR



MSA SSU 1247-28188

MONTGOMERY COUNTY CIRCUIT COURT (Subdivision Plats, MO) Plat 22316, MSA_s1249_028188. Date available 2002/09/30. Printed 08/20/2020.

WATER ST

Benson Fence

24224 Log House Road • Gaithersburg, MD 20882

Ron@BensonFence.net — 240-401-7645 — MHIC#128215

www.BensonFence.net

We propose subject to acceptance, to sell and to install on your property the fencing materials described below:

Owner's Name: Garrett Anderson Job Address: ______ Date: 8/10/20

Address: 104 Water St. Tel.: (H) 301-706-9506 (C) ______

City, State, Zip: Brookeville, MD 20832 Email: g.anderson@lpl.com

Customer is Responsible for: ______ [ ] Ok to trim trees and bushes

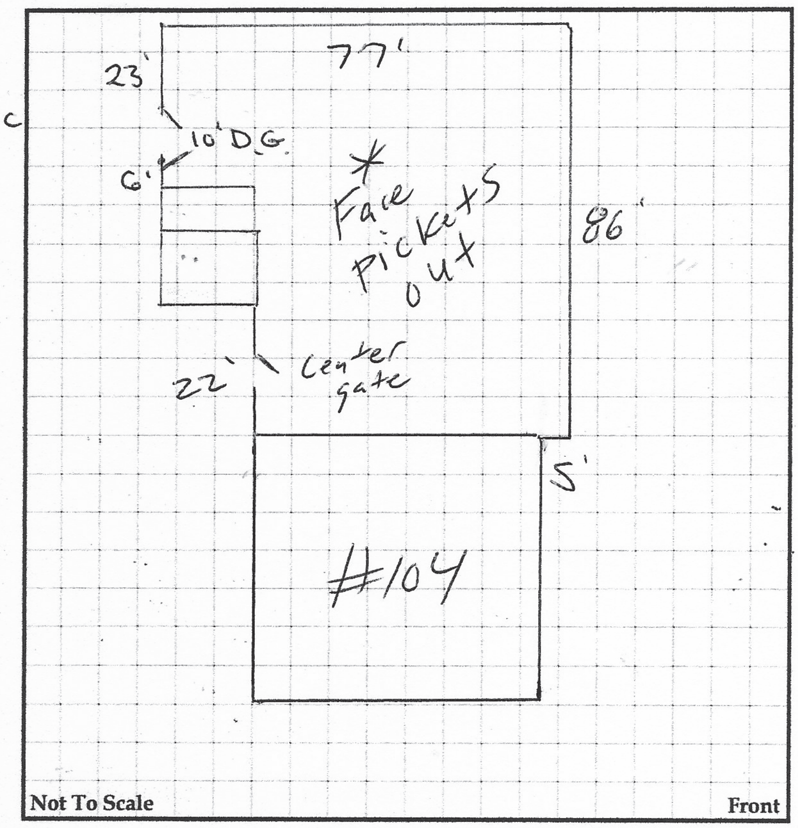
Existing Fence: N/A Sprinkler System: [ ] Yes [X] No

Specifications: 229' of 1x4x4' concave top spaced picket fence on 4x4x8' Colonial Gothic post dry packed with concrete

1-42" wide walk gate and 1-10' wide double drive gate on 6x6x10' Colonial Gothic post dry packed with concrete.

*All lumber is pressure treated pine

post - 4x4 (3 1/2" x 3 1/2")
frame - 2x4 (1 1/2" x 3 1/2")
pickets - 1x4 (3/4" x 3 1/2")
hinges & latches black powder coated Steel



Post Tops: Col. Gothic Picket Type: 1x4x4' p.t. Fence Top: Concave

Frame: (2) 2x4x8' p.t. Teco Brackets: — ~~Face Framed:~~ toe nail

Attempt to Permit: TBD ? Benson Fence to Contact Miss Utility: yes

Contract Price for materials and services described above $ 4,387

Deposit (not to exceed 33% of contract): $ 1,400 Balance Due Upon Completion: $ 2,987

Name on Credit Card: ______ Acct #: ______ Exp. Date: ______ Vcode: ______

*please add 3% for all credit card payments

Acceptance of Proposal: The price, specifications and conditions are satisfactory and are herby accepted. You are authorized to do the work as outlined above. Buyer may cancel this transaction at any time prior to midnight of the third business day after the date of this transaction. All home improvement contractors and subcontractors must be approved by the Maryland Home Improvement Commission.

Benson Fence: [signature] Customer/Owner: ______

MHIC# 82900 Date of Acceptance: ______

This proposal is good for 30 days, incorporated the terms and conditions overleaf and is not binding on Benson Fence until accepted at the Benson Fence office.