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SOLAR SHADE ANALYSIS REPORT

1922 11TH ST NW

REPORT DATE	October 6, 2026
SUBJECT PROPERTY	1922 11th st NW — existing solar PV system
ADJACENT PROPERTY	1920 11th st NW — proposed addition
PREPARED FOR	David Orange, Home Owner
PREPARED BY	Margo Ricks, Lead Engineer — Solar Solution DC LLC

1. PURPOSE AND SCOPE

Solar Solution DC was retained to evaluate the shading impact of a proposed addition at 1920 11th st NW on the existing rooftop solar photovoltaic system located at 1922 11th st NW. The purpose of this report is to quantify the change in annual solar access at the existing array and to determine whether the resulting impact exceeds the maximum allowable annual shade impact of 5%.

The scope of this analysis is limited to solar access modeling of the existing array under existing and proposed adjacent-structure conditions.

2. EXISTING SYSTEM DESCRIPTION

- Location: 1922 11th st NW
- System size: 4.42 kW-DC (13 modules × 340 W)
- Module type: Hanwha 340W

3. METHODOLOGY

A three-dimensional site model was constructed from aerial imagery and LiDAR, including the subject roof, the existing array plane, adjacent structures, and surrounding vegetation. Solar access is reported as the percentage of annual available irradiance received at the array surface relative to an unobstructed condition at the same orientation and tilt.

Board of Zoning Adjustment
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CASE NO. 21552
EXHIBIT NO. 16

Two studies were performed under identical model settings, weather data, and array geometry. The only variable between them is the presence of the proposed addition at 1920 11th st NW:

- Study #1 — Existing conditions, modeling the site as currently built.
- Study #2 — Proposed conditions, modeling the site with the new addition at 1920 11th st NW as shown on the drawings dated [Date].

4. STUDY #1 — EXISTING CONDITIONS

Under existing conditions, the solar system at 1922 11th st NW receives an annual solar access of 98.2%. The model and the resulting solar access report are shown in Figures 1 and 2.

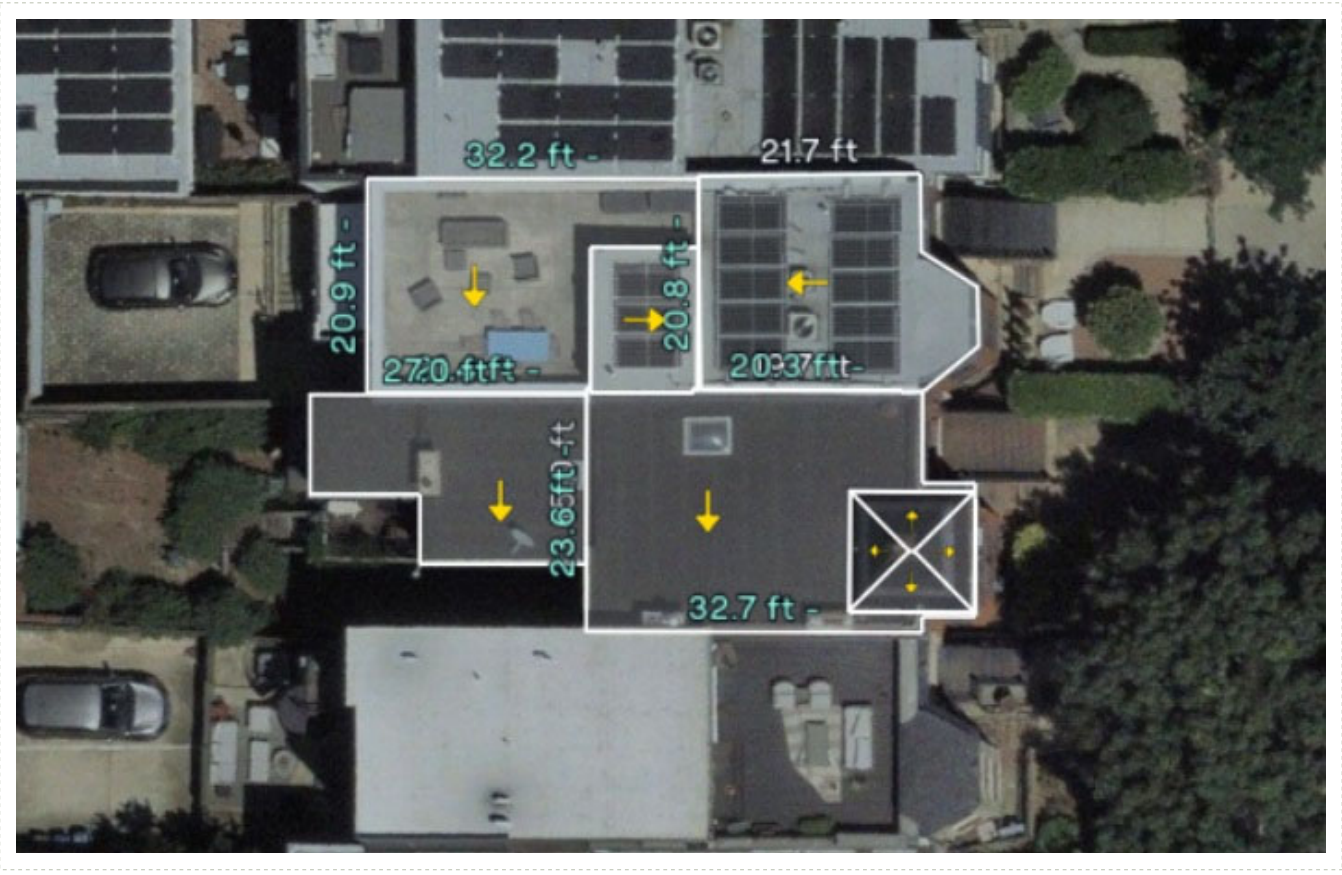

Figure 1 — Study #1: three-dimensional site model, existing conditions.

Annual irradiance



Summary

Array ID	Panel count	Azimuth	Pitch	Annual TOF	Annual solar access	Annual TSRF
1	3	90°	20°	84%	99%	83%
2	10	269°	5°	87%	98%	85%
			Weighted average by panel count:		98.2%	84.5%

Monthly solar access % across arrays

Array ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	95	98	99	99	99	99	99	99	99	99	95	93
2	95	97	98	98	99	99	99	99	98	98	95	94

Figure 2 — Study #1: annual solar access report, existing conditions.

5. STUDY #2 — PROPOSED CONDITIONS

With the proposed addition at 1920 11th st NW included in the model, the annual solar access at the existing system reduces to 97%. The model and the resulting solar access report are shown in Figures 3 and 4.

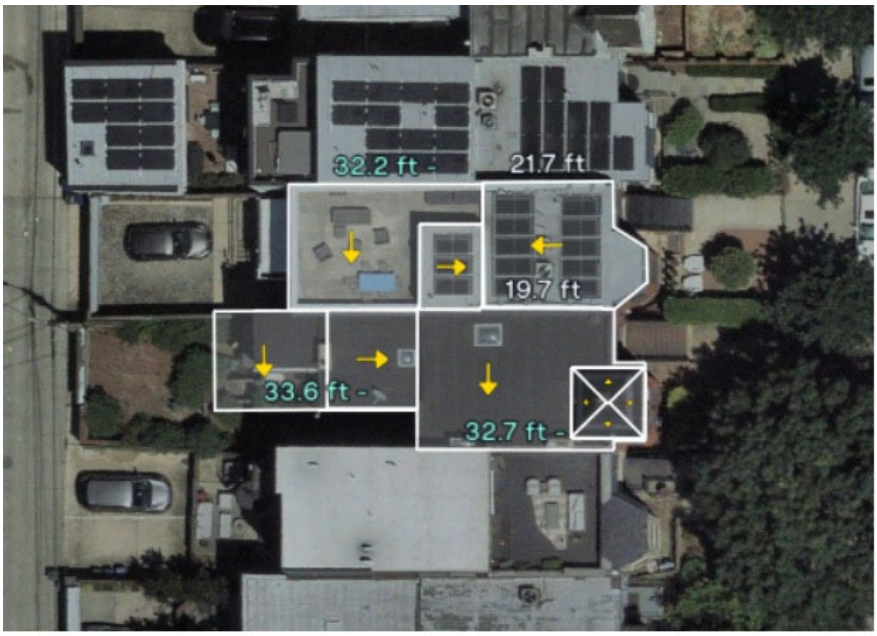

Figure 3 — Study #2: three-dimensional site model with the proposed addition.

Annual irradiance



Summary

Array ID	Panel count	Azimuth	Pitch	Annual TOF	Annual solar access	Annual TSRF
1	3	90°	20°	84%	97%	82%
2	10	269°	5°	87%	97%	84%
			Weighted average by panel count:		97%	83.5%

Monthly solar access % across arrays

Array ID	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	91	96	98	99	99	99	99	99	98	97	92	89
2	91	95	97	98	98	98	99	98	98	95	93	91

Figure 4 — Study #2: annual solar access report with the proposed addition.

6. RESULTS SUMMARY

STUDY	CONDITION MODELED	ANNUAL SOLAR ACCESS
STUDY #1	Existing conditions — no addition at 1920 11th st NW	98.2%
STUDY #2	Proposed conditions — with new addition at 1920 11th st NW	97%
IMPACT	**Reduction in annual solar access attributable to the addition**	**1.2%**
THRESHOLD	**Maximum allowable annual shade impact**	**5%**

Annual shade impact is calculated as the difference in annual solar access between Study #1 and Study #2.

7. CONCLUSION

A solar shade study was conducted on the existing solar system at 1922 11th st NW. The existing solar system has an annual solar access of 98.2%, which is shown in Study #1. Study #2 is conducted with the new addition at 1920 11th st NW. Study #2 shows that the annual solar access for the system at 1922 11th st NW reduces to 97%. This concludes that the total annual impact of the new addition is 1.2%, which is below the required maximum of 5% annual shade impact.

PREPARED BY

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Margo Ricks, Lead Engineer
Solar Solution DC
Date: October 6, 2026