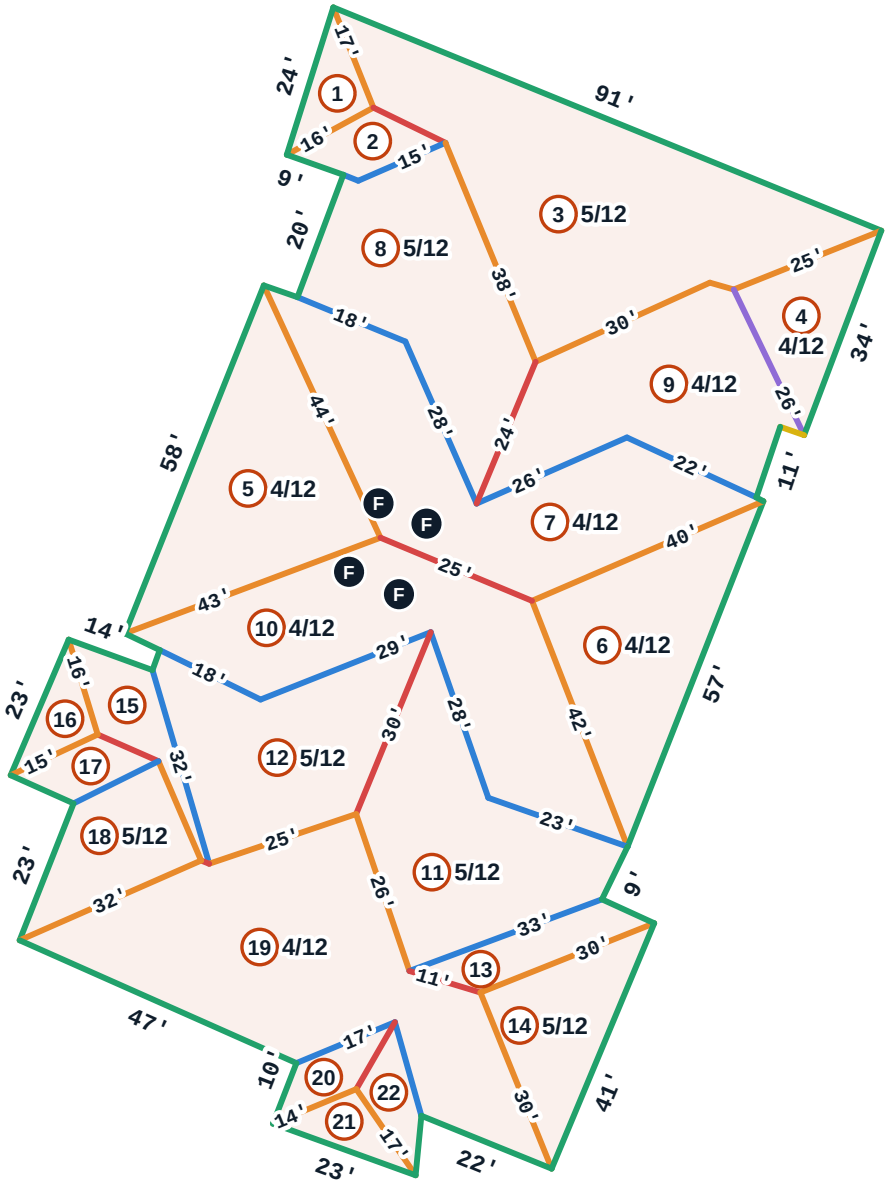
Sample: public building, Oldsmar, FL

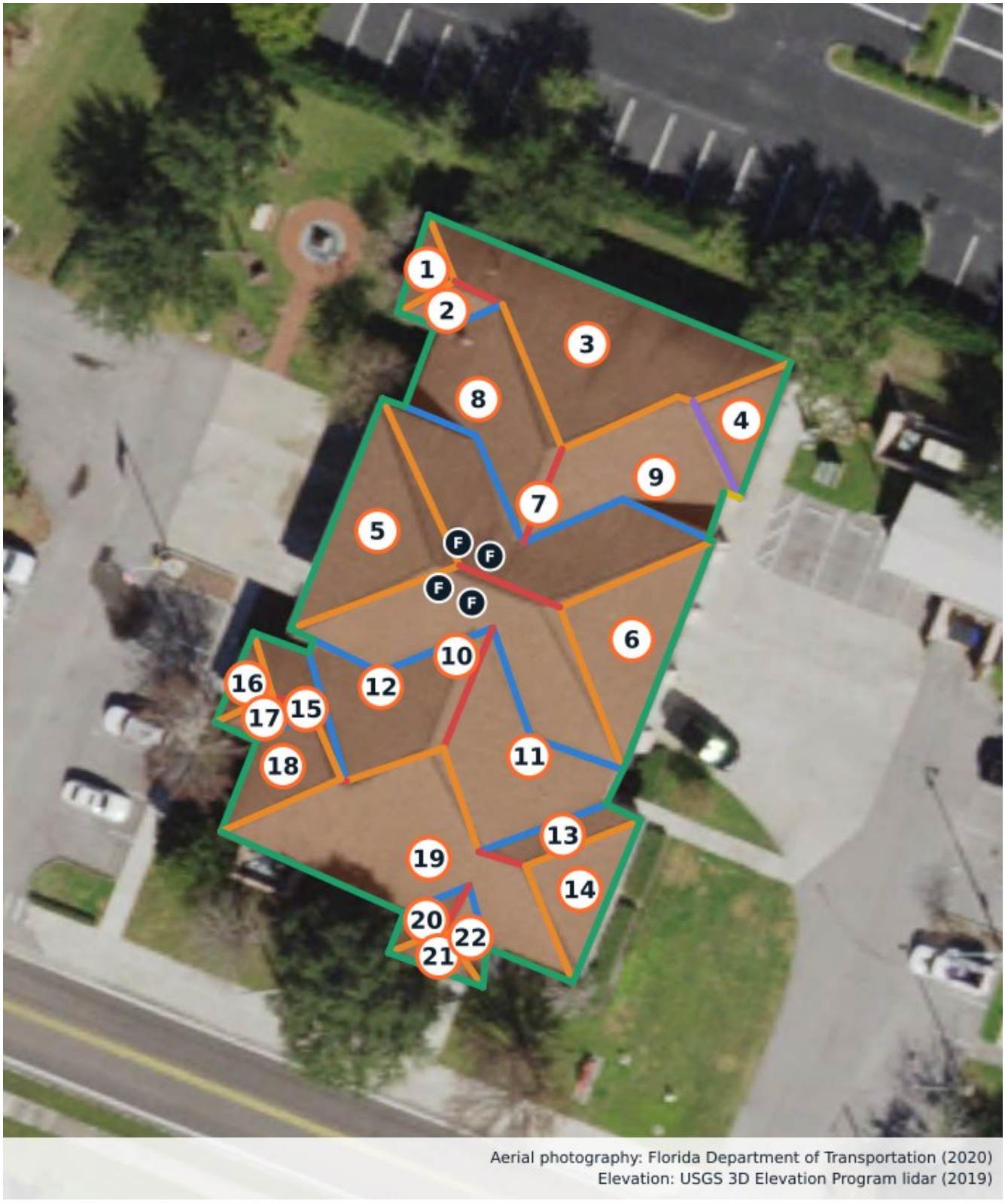
Sample · Roof report, 11/9/2026

14,365 sq	143.6	165.2	4.5/12	22	11 yrs
Total roof area	Squares	Squares with 15% waste	Main pitch	Slopes	Roof age (installed 2015)

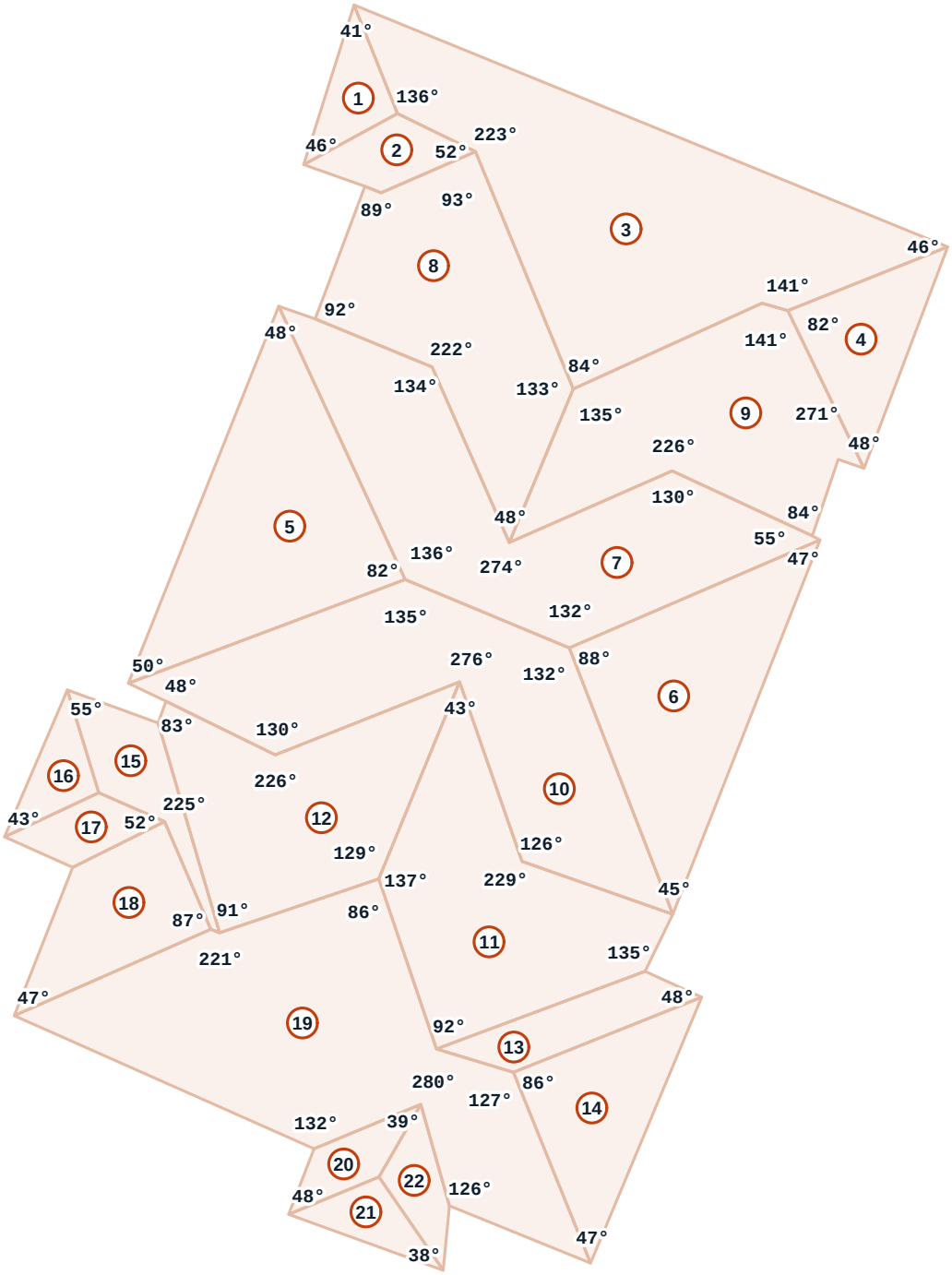


Lengths are along the slope, in feet. North is up.

The roof from above

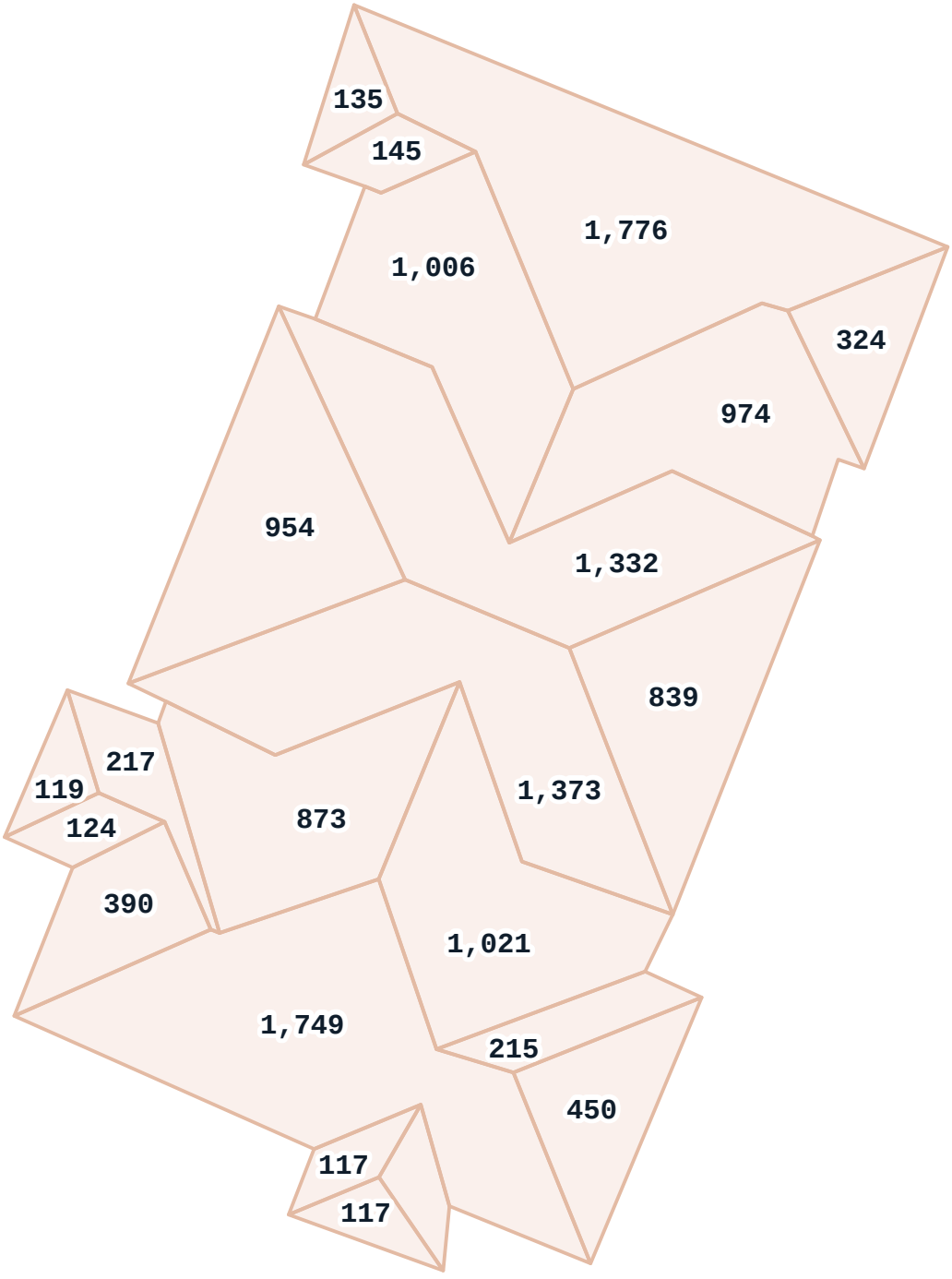


Corner angles



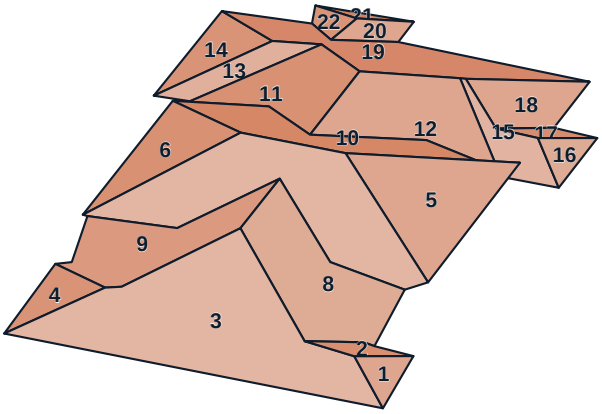
Corner angles, measured on each slope, so a corner on a steep slope can read differently from how it looks from above. Numbers match the slope table.

Slope areas

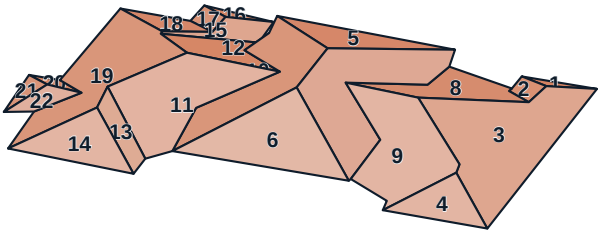


Each slope's roof area in square feet, measured along the slope.

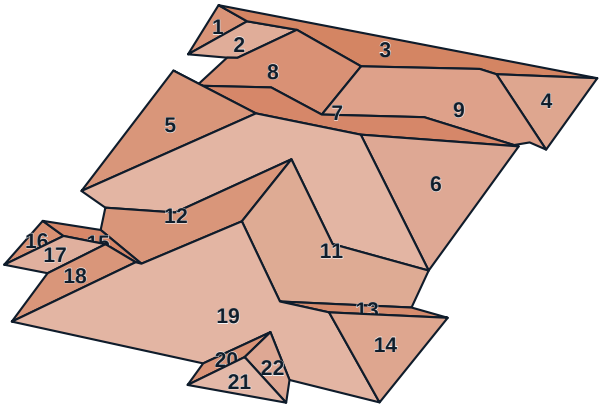
The roof from each side



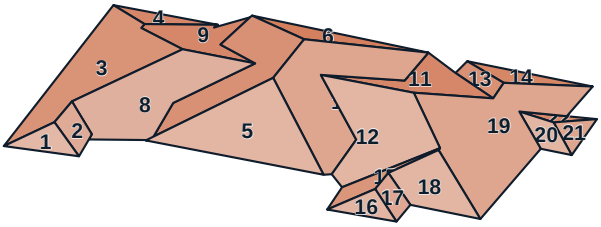
From the north, 30° up



From the east, 30° up



From the south, 30° up



From the west, 30° up

Measurements

Slopes

#	Plane	Pitch	Faces	Flat area	Roof area
1	Plane 1	4.8/12 (22°)	west	125 sq ft	135 sq ft
2	Plane 2	4.6/12 (21°)	south	135 sq ft	145 sq ft
3	Plane 3	4.5/12 (21°)	north	1,663 sq ft	1,776 sq ft
4	Plane 4	4.5/12 (21°)	east	303 sq ft	324 sq ft
5	Plane 5	4.4/12 (20°)	west	895 sq ft	954 sq ft
6	Plane 6	4.5/12 (21°)	east	786 sq ft	839 sq ft
7	Plane 7	4.5/12 (20°)	north	1,248 sq ft	1,332 sq ft
8	Plane 8	4.5/12 (21°)	west	942 sq ft	1,006 sq ft
9	Plane 9	4.5/12 (21°)	east	912 sq ft	974 sq ft
10	Plane 10	4.5/12 (21°)	south	1,285 sq ft	1,373 sq ft
11	Plane 11	4.5/12 (21°)	east	955 sq ft	1,021 sq ft
12	Plane 12	4.5/12 (21°)	west	817 sq ft	873 sq ft
13	Plane 13	4.5/12 (20°)	north	201 sq ft	215 sq ft
14	Plane 14	4.5/12 (21°)	east	420 sq ft	450 sq ft
15	Plane 15	4.5/12 (20°)	north	203 sq ft	217 sq ft
16	Plane 16	4.4/12 (20°)	west	112 sq ft	119 sq ft
17	Plane 17	4.4/12 (20°)	south-west	117 sq ft	124 sq ft
18	Plane 18	4.5/12 (21°)	west	365 sq ft	390 sq ft
19	Plane 19	4.5/12 (21°)	south	1,637 sq ft	1,749 sq ft
20	Plane 20	4.5/12 (21°)	west	110 sq ft	117 sq ft
21	Plane 21 Uncertain fit: check this plane on site	4.7/12 (21°)	south	109 sq ft	117 sq ft
22	Plane 22	4.3/12 (20°)	south-east	111 sq ft	118 sq ft

Roof area by pitch

By pitch	Roof area	Share
4/12	8,454 sq ft	59%
5/12	5,911 sq ft	41%

Edges

Edge	Length
Ridge	126 ft
Hip	521 ft
Valley	322 ft
Eave	558 ft
Rake	4 ft
Transition (pitch change)	26 ft

Squares with waste

Waste	Squares
0%	143.6
5%	150.8
10%	158.0
12%	160.9
15% (suggested)	165.2
17%	168.1
20%	172.4

On the roof

On the roof	Count
F · Exhaust fan or turbine	4

Attic ventilation

Net free vent area	1/300	1/150
Attic floor (estimated)		13,451 sq ft
Total	6,457 sq in	12,913 sq in
Exhaust (high)	3,228 sq in	6,457 sq in
Intake (low)	3,228 sq in	6,457 sq in

Ventilation products at 1/300

At 1/300	Needed	On this roof
Ridge vent	180 ft	126 ft of ridge
or box vents	65	
Soffit vent	359 ft	558 ft of eave

Waste and ventilation figures are guidance; check them on site and against the products you install. Edge types were set from each slope's measured fall and may have been corrected by hand.

Materials

Bundles to order	GAF Timberline HDZ	Owens Corning Duration	CertainTeed Landmark
Shingle bundles, 0% waste	431	438	438
Shingle bundles, 5% waste	453	460	460
Shingle bundles, 10% waste	475	482	482
Shingle bundles, 12% waste	483	491	491
Shingle bundles, 15% waste (suggested)	496	504	504
Shingle bundles, 17% waste	505	513	513
Shingle bundles, 20% waste	518	526	526
Starter, 562 ft of eaves and rakes	5 Pro-Start	6 Starter Strip Plus	5 SwiftStart
Hip and ridge cap, 647 ft	26 Seal-A-Ridge	20 ProEdge	22 Shadow Ridge

Item	Quantity	Covers
Synthetic underlayment, 10-square rolls	17	roof area plus 5% for cuts, at 940 sq ft a roll after laps
or self-adhered membrane over the whole deck, 2-square rolls	84	the same area at 180 sq ft a roll
Self-adhered membrane in the valleys, 2-square rolls	6	a 36 in strip along 322 ft of valley
Drip edge, 10 ft	58	562 ft of eaves and rakes
Valley metal, 10 ft	33	322 ft of valley, for open metal valleys
Ridge vent, 4 ft	32	126 ft, from the attic ventilation below
or box vents instead	65	the attic's exhaust at 50 sq in each

Gutters, if wanted	Quantity	Covers
Gutter, by the foot	559 ft	every eave, in 1 run
Corners	21	where a run turns
Downspouts, 3 × 4 in	19	one per 30 ft of gutter, at least one a run

Bundles are counted from each maker's published coverage; a line's other products, or a colour packed differently, can differ, so check the bundle label. Florida's code (R905.1.1.1) allows self-adhered membrane over the whole deck, or underlayment with the deck's joints sealed; the roofer and the permit decide which. Nails, underlayment fasteners and sealant aren't counted, and decking that needs replacing can't be seen from the air. Gutter runs and corners follow the eaves as measured; for Florida's downpours, guidance goes as tight as one downspout per 20 ft.

Solar estimate

The roof is about 11 years old. With Florida shingles lasting about 15 to 25 years, it likely has 4 to 14 left, less than the panels' 25. Re-roofing first is often cheaper than taking the panels off later; at the least, have a roofer check it before installing.

79
Panels to cover the home's use (420 W)

33.2 kW
System size

50,436
kWh a year, 101% of the home's use

$8,063
Worth a year

Sized to the home's 50,000 kWh a year, best-facing slope first: on the east slope (6) a panel makes about 621 kWh a year where it's placed (1,479 kWh per kW at this tilt and direction, × 420 W); on the south slope (10) a panel makes about 654 kWh a year where it's placed (1,559 kWh per kW at this tilt and direction, less 0.1% to shade, × 420 W); on the south slope (19) a panel makes about 635 kWh a year where it's placed (1,559 kWh per kW at this tilt and direction, less 3.0% to shade, × 420 W). So 79 panels make 50,436 kWh; 78 would make about 49,801, short of it.

What it's worth a year

	kWh a year	Per kWh	A year
Off the electricity bill	50,000	$0.161	$8,050
Surplus sold to the utility	436	$0.030	$13
Total saved	50,436		$8,063
Bill without solar	50,000	$0.161	$8,050
Bill with solar			$13 credit

Sized to the home's yearly use of 50,000 kWh. Power up to that takes kWh off the bill; anything more is surplus, which the utility buys once a year at its much lower avoided-cost rate. Bills are energy charges only: the utility's fixed monthly charge stays. Filling the roof instead (286 panels, drawn faintly) would make 164,390 kWh, worth $11,482 a year: $3,419 more for 207 more panels, since all of the extra is surplus.

Cost and payback

Installed price	33.2 kW at $2.50 a watt	$82,950
Saved in the first year		$8,063
Pays for itself in		9.2 years
Saved over 25 years		$276,748
Ahead after 25 years	savings less the price	$193,798

Florida installs cost about $2.10–$2.70 a watt in 2026, before incentives (EnergySage and SolarReviews averages). A system the homeowner buys gets no federal tax credit if it's installed after 2025: the 30% credit ended on December 31, 2025 (leases and power purchase agreements work differently). Assumes power prices rise 3% a year and panels lose 0.5% of their output a year; an inverter replacement or repairs aren't counted.

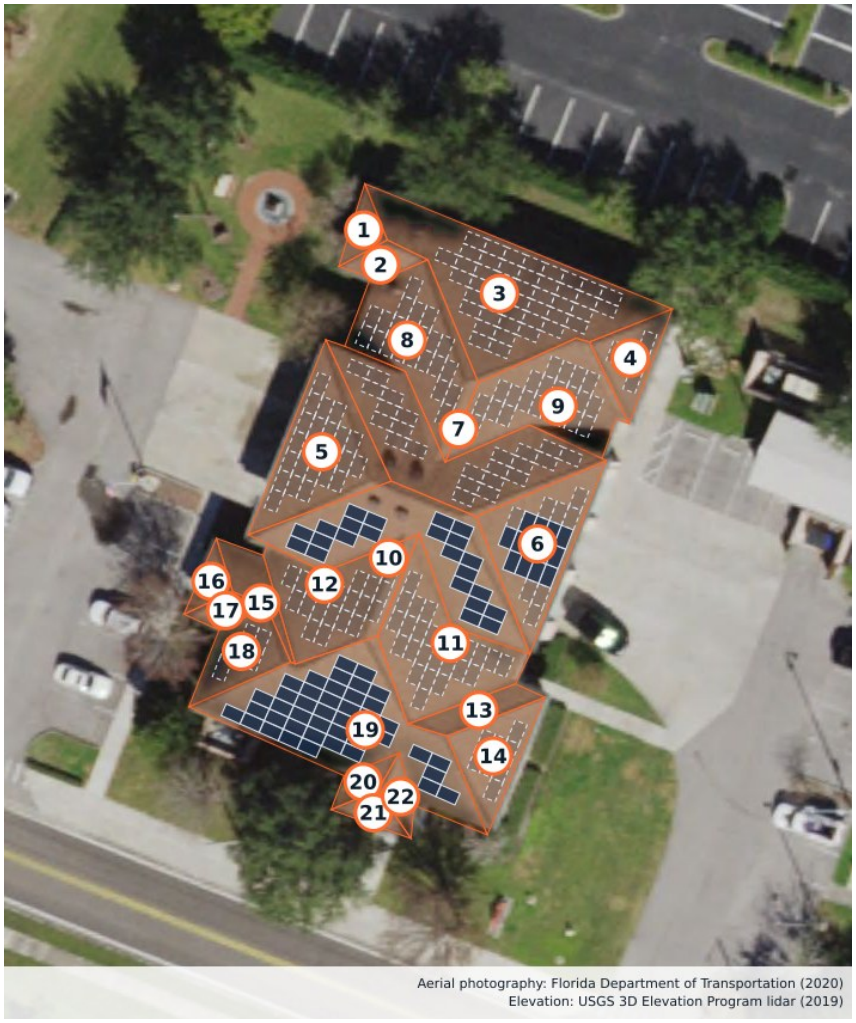
Hurricane backup

Pick what has to keep running and for how long; the battery is sized for it, with and without these panels.

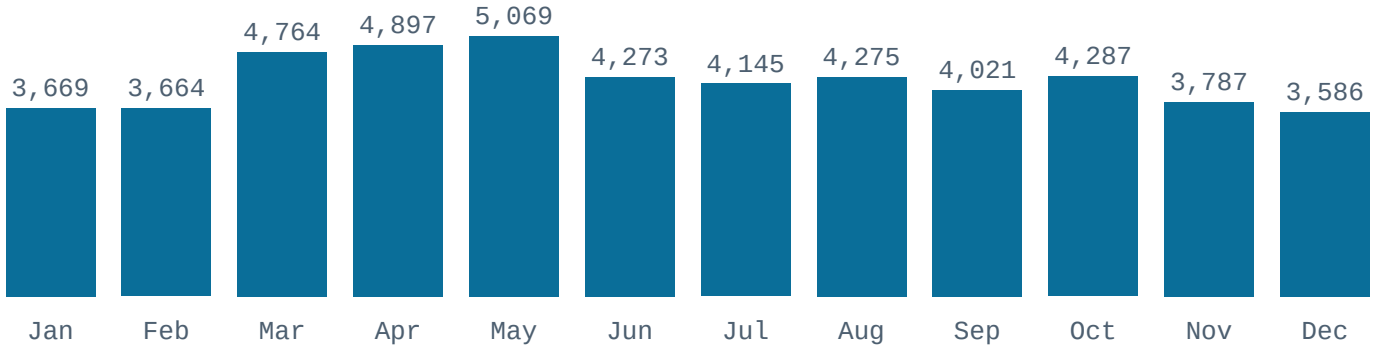
3.4 kWh
Battery for 3 days, with the solar panels above recharging it each day: 1 Tesla Powerwall 3 or 1 Enphase IQ Battery 5P

10.2 kWh
Battery alone, with no solar: 1 Tesla Powerwall 3 or 3 Enphase IQ Battery 5P

For 3.4 kWh a day (Refrigerator, Internet and phone charging, LED lights in the evening, Three ceiling fans); the panels make about 136.7 kWh on an average August to October day. The storm day is counted with no sun; cloudy days after a storm make less. The battery must start full and run with the grid down, and well pumps and AC need its surge rating checked.



The dark haze on the roof is shade: the darker it is, the more of the year's direct sun that spot loses to trees, neighbouring buildings and chimneys. Spots losing 20% or more get no panel, and panels go on the sunniest part of each slope. Panels keep clear of chimneys, vents, skylights and dishes marked on the roof, and of anything we found standing above a slope, such as a chimney, a dormer or a branch. Solid panels are the system; the faint dashed ones show the rest of the room, for later or a bigger system.



#	Plane	Faces	Shade	Each panel, a year (vs best slope)	Panels	kW	kWh / year
1	Plane 1 Left out: room for fewer than 3 panels	west (292°)	0.4% lost	535 kWh (82%)	1	0.0	–
2	Plane 2 Too small once edges are kept clear	south (200°)	0.3% lost	–	0	0.0	–
3	Plane 3	north (22°)	0.4% lost	492 kWh (75%)	0 of 44	0.0	0
4	Plane 4	east (112°)	1.9% lost	609 kWh (93%)	0 of 5	0.0	0
5	Plane 5	west (292°)	0.0% lost	545 kWh (83%)	0 of 24	0.0	0
6	Plane 6	east (112°)	0.0% lost for the 13 panels shown, 0.0% across the slope	621 kWh (95%)	13 of 21	5.5	8,075
7	Plane 7	north (22°)	0.0% lost	500 kWh (76%)	0 of 23	0.0	0
8	Plane 8	west (292°)	1.0% lost	536 kWh (82%)	0 of 22	0.0	0
9	Plane 9	east (112°)	0.3% lost	619 kWh (95%)	0 of 22	0.0	0
10	Plane 10	south (202°)	0.1% lost	654 kWh (100%)	23	9.7	15,051
11	Plane 11	east (111°)	0.2% lost	620 kWh (95%)	0 of 25	0.0	0
12	Plane 12	west (292°)	0.4% lost	539 kWh (82%)	0 of 20	0.0	0
13	Plane 13 Too small once edges are kept clear	north (21°)	–	–	0	0.0	–
14	Plane 14	east (112°)	0.2% lost	620 kWh (95%)	0 of 8	0.0	0
15	Plane 15 Left out: room for fewer than 3 panels	north (21°)	1.5% lost	493 kWh (75%)	1	0.0	–
16	Plane 16 Too small once edges are kept clear	west (291°)	–	–	0	0.0	–
17	Plane 17 Too small once edges are kept clear	south-west (205°)	–	–	0	0.0	–
18	Plane 18	west (292°)	6.4% lost	506 kWh (77%)	0 of 6	0.0	0
19	Plane 19	south (202°)	3.0% lost; 1 spot too shaded	636 kWh (97%)	43	18.1	27,310
20	Plane 20 Too small once edges are kept clear	west (291°)	–	–	0	0.0	–
21	Plane 21 Too small once edges are kept clear	south (201°)	–	–	0	0.0	–
22	Plane 22 Too small once edges are kept clear	south-east (114°)	–	–	0	0.0	–

Which way a roof faces, here

Faces	kWh / year per kW	Compared with south
south	1,581	100%
south-east	1,543	98%
south-west	1,505	95%
east	1,413	89%
west	1,360	86%
north-east	1,247	79%
north-west	1,209	76%
north	1,149	73%

For a roof at 21° (about 5/12), this roof's typical pitch, with this site's typical-year weather. The midday sun is to the south, so south faces make the most; east and west faces catch the morning or afternoon sun, and do best in summer, when it rises and sets furthest north. The flatter the roof, the less the direction matters. A plane that makes under 75% of this roof's best plane (the percentage beside each slope's output per panel, above) is left out of the estimate.

An estimate for a first conversation, not a design. Output is from PVWatts v8 (National Laboratory of the Rockies) with typical-year weather for this site and 14% system losses. Panels are 420 W, 1.722 × 1.134 m (54-cell, most home panels today), kept 18 in from every roof edge. Shade from trees, buildings and the roof's own chimneys within 60 m is worked out from USGS lidar flown in 2019, for every daylight hour of a typical year. Trees planted, grown or cut down since 2019 aren't reflected. The picture shows shade as a dark haze, and spots losing more than 20% of the year get no panel. Local fire codes may need wider clearances. Savings use the rates above and ignore the utility's fixed monthly charges.