

ARACS

October 23, 2025

About the system

ARACS (Automated Rooftop Area Calculating System) turns any address into accurate, pitch-aware rooftop area estimates. It fetches high-resolution imagery from Google Maps and Nearmap, segments the roof with AI, and captures oblique views via Google Earth Pro. The user then draws over the rake or hip line in the oblique images; ARACS then calculates the pitch based on the angles, assigns it to the correct roof sections, and computes their areas. Built for more efficiency and reliability, ARACS preserves a clear trail of images, polygons, angles, and calculations, and exports clean visuals and reports for quotes, inspections, and planning.

Before you start

- **Requirements:**
 - **Google Earth Pro** installed on your computer (keep it open in the background).
 - **GEConnector.exe** downloaded and installed on your laptop (you'll click *Open GE Connector* when prompted in the later step).
 - **System requirements:** Windows laptop, stable internet, mouse (Optional but recommended).
- **Flow at a glance:**

Enter address → Segment roof → Connect to Google Earth → Draw pitch lines → Review results → Generate PDF.

1. Enter Address

Type the property's U.S. address and press Start.

Get your Rooftop Area

Enter a full address to kick off the pipeline.

Address

Start Open status (manual)

Tip: Press **Enter** to submit.

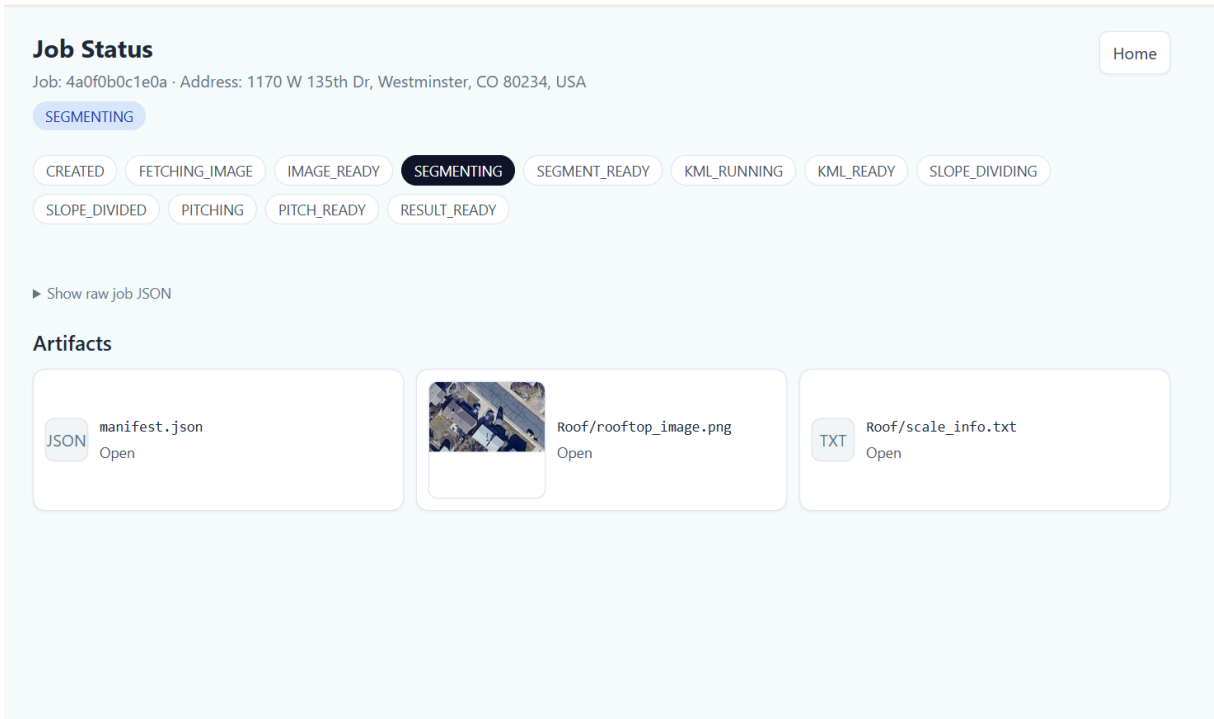
2. Preparing Google Earth

Make sure Google Earth Pro is already open on your computer and leave it running in the background



3. Segmentation

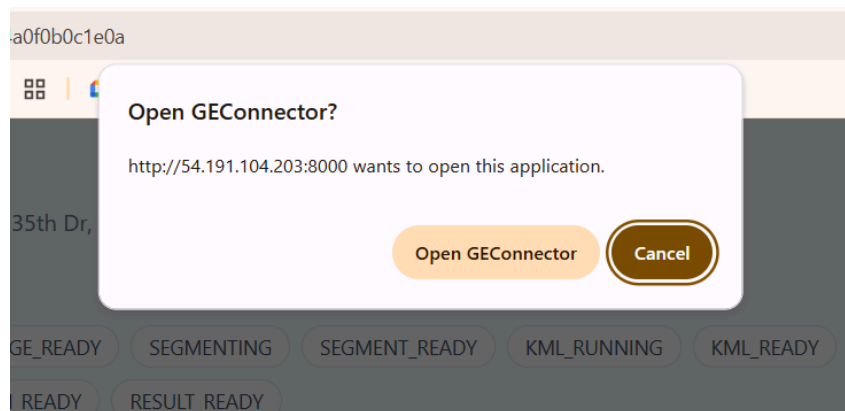
ARACS will analyze the roof automatically. This can take a moment, just let it finish.



The screenshot shows the 'Job Status' page for a job with ID 4a0f0b0c1e0a. The address is 1170 W 135th Dr, Westminster, CO 80234, USA. The current status is 'SEGMENTING', which is highlighted in a dark blue pill. Other status pills include CREATED, FETCHING_IMAGE, IMAGE_READY, SEGMENT_READY, KML_RUNNING, KML_READY, SLOPE_DIVIDING, SLOPE_DIVIDED, PITCHING, PITCH_READY, and RESULT_READY. Below the status pills is a link to 'Show raw job JSON'. The 'Artifacts' section displays three items: a JSON file named 'manifest.json', a PNG image named 'Roof/rooftop_image.png', and a TXT file named 'Roof/scale_info.txt'. Each artifact has an 'Open' button.

4. Open Google Earth

When the pop-up appears, click **Open GEConnector** to link ARACS with Google Earth.



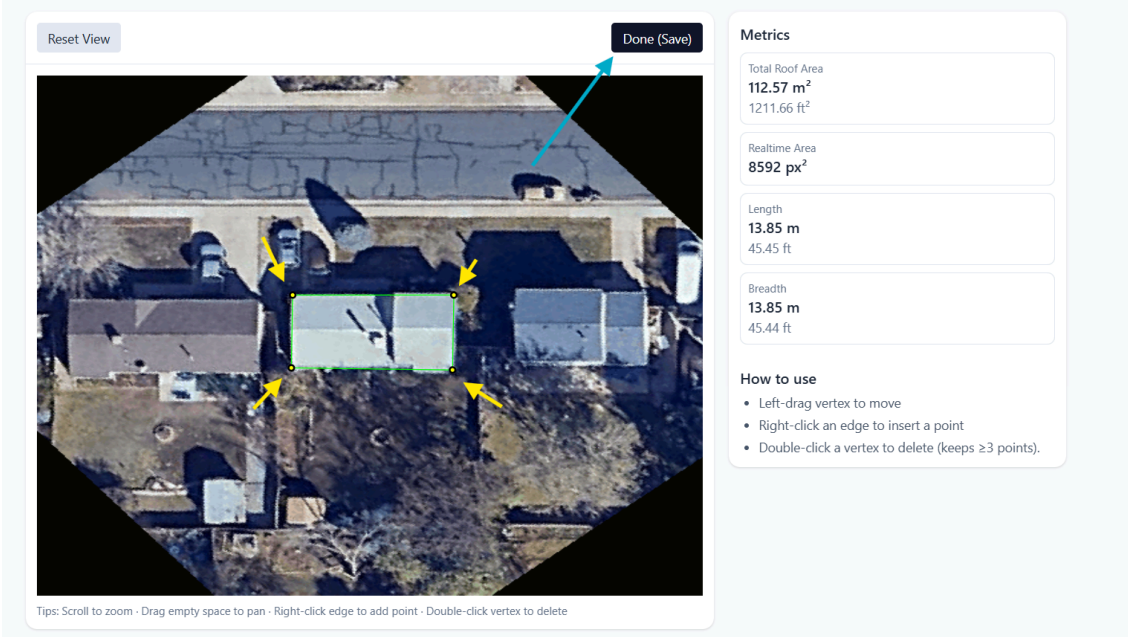
The screenshot shows a browser window with a pop-up dialog box. The dialog box is titled 'Open GEConnector?' and contains the text 'http://54.191.104.203:8000 wants to open this application.' Below the text are two buttons: 'Open GEConnector' and 'Cancel'. The background of the browser window shows the same job status interface as the previous screenshot, with the 'SEGMENTING' status pill highlighted.

Once connected, ARACS will move the camera and capture the needed views. **Do not click or interact with Google Earth while this is happening.** When it's done, you will return to ARACS automatically for the next steps.

5. Roof Image

You'll see the house with an editable roof outline on top. Drag the points to draw the outline roughly around the house (don't worry about perfect edges or small details).

When it looks right, click DONE to continue.



The screenshot shows the ARACS interface. On the left, there is a 'Reset View' button. The main area displays an aerial view of a house with a green roof outline. A blue arrow points to a 'Done (Save)' button in the top right corner. To the right of the image is a 'Metrics' panel with the following data:

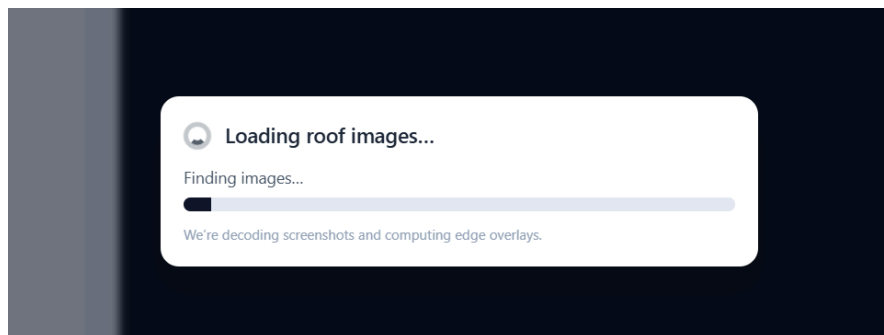
Metrics	
Total Roof Area	112.57 m ² 1211.66 ft ²
Realtime Area	8592 px ²
Length	13.85 m 45.45 ft
Breadth	13.85 m 45.44 ft

Below the metrics panel is a 'How to use' section with the following instructions:

- Left-drag vertex to move
- Right-click an edge to insert a point
- Double-click a vertex to delete (keeps ≥3 points).

At the bottom of the image area, there are tips: 'Tips: Scroll to zoom · Drag empty space to pan · Right-click edge to add point · Double-click vertex to delete'.

Wait for images to load. This may take a while.



6. Pitch calculation

/jobs/b4f78a945ace/artifact/screenshot
[GABLE] Angle: 17.20° → pitch: 4/12
[GABLE] Angle: 18.07° → pitch: 5/12

Structure: GABLE ▾ Next Reset Done Flat Roof Enter pitch manually Show edge overlay

Zoom:

Left-drag: draw line · Right-drag: pan (when zoomed in) · Use the slider to zoom · Overlay = Sobel edges (50% blend).

Choose the **roof structure** from the dropdown (e.g., gable or hip). Then draw a line along the visible rake/hip on the image to measure that side's pitch (as shown in the image above).

Use **Next** to move through the house's four sides. Draw a pitch line only where needed, and you can change the structure for each if it's different.

Turn on **Show edge overlay** to make roof edges stand out while you draw.

Already know a side's pitch? Enter it **manually** instead of drawing.

7. Refine Slopes

Selected slope

Slope 2
Gross: **4197** px²
Minus chimneys: **0** px²
Net: **4197** px²
Net 54.98 m²
Net 591.80 ft²

Scale
Meters per pixel: 0.114461
Feet per pixel: 0.375528

Controls

- +

Unselect slope Delete slope Done

Draw Chimney



Click a roof **slope** to select it, then drag the outline to **fit that slope precisely**. Each slope is edited separately.

When you finish one, click **Unselect Slope** and then click the next slope to adjust it.

If there's a chimney, click **Draw Chimney** and drag a rectangle over it.

Selected slope
Click a slope to see its area.


Scale
Meters per pixel: 0.114461
Feet per pixel: 0.375528

Controls

- +

Unselect slope Delete slope Done

Draw Chimney



When all slopes look right, click **Done**.

8. Review Slope Positions

Controls

Zoom: 1.00×

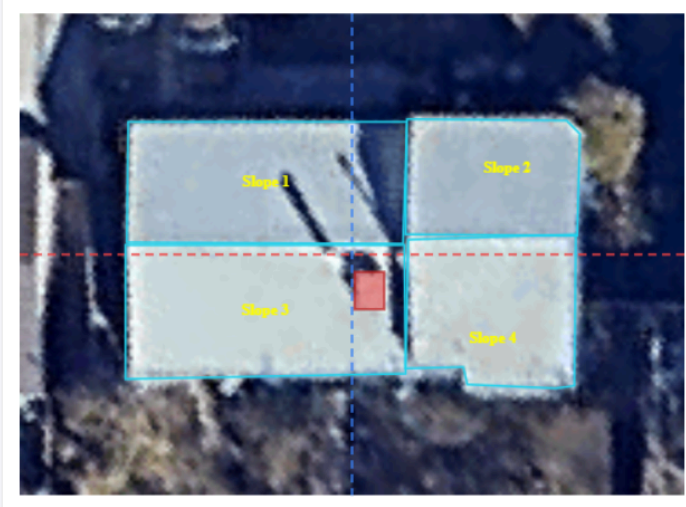
Classification

Slope	Position
Slope 1	up
Slope 2	right
Slope 3	down, left
Slope 4	right

Done

Legend

- Horizontal roof center
- Vertical roof center
- Roof boundary
- Slope polygons



The image shows an aerial view of a roof with four distinct slope areas. A red dashed horizontal line and a blue dashed vertical line intersect at the center of the roof. The four slope areas are labeled 'Slope 1' in yellow text. The top-left and top-right areas are labeled 'Slope 1'. The bottom-left and bottom-right areas are labeled 'Slope 3' and 'Slope 4' respectively. The roof boundary is outlined in green, and the slope polygons are outlined in blue.

This screen simply shows your roof outline, slope areas, and their labeled positions. You don't need to edit anything here. Use the zoom if you would like a closer look, then click **Done** to continue.

9. Results & Report

Address
1170 W 135th Dr, Westminster, CO 80234, USA

Pitches
3/12, 5/12

Per-slope

Slope	Pitch	Final ft ²
1	5/12	385.27
2	5/12	226.38
3	3/12	387.97
4	3/12	261.79

Total Roof Area (ft²): 1261.42

Total Roof Area **12.61 SQ**

Generate PDF

Total roof area is shown prominently. Click **Generate PDF** to download a clean report with the address, labeled slopes, pitches, final area and architecture drawing.