JOB HAZARD ANALYSIS (JHA)

Business name

Document: JHA-001 Rev 1
Prepared: Nov 9, 2026
Review by: Dec 9, 2026
Highest risk after controls: Medium

1. BUSINESS AND JOB DETAILS

Job	Solar panel installation on a pitched roof	**Start date**	Nov 9, 2026
Working hours	7:00 am to 3:30 pm	**Trade**	Solar

2. JOB STEPS, HAZARDS AND CONTROLS

#	Job step	Hazards	Risk before	Controls	Risk after	Responsible
1	Check the roof for asbestos, brittle tiles and power lines	Disturbing asbestos Falling through a fragile roof or skylight Contact with overhead power lines Rules: 29 CFR 1926.1101 and 40 CFR 61 Subpart M (NESHAP); 29 CFR 1926 Subpart M; 29 CFR 1926.1408 and 1926.416	**Critical Possible / Fatality**	1.1 Treat insulation, surfacing and resilient flooring in buildings built before 1981 as asbestos unless testing shows otherwise, and get the owner's asbestos survey before you start. [Elimination] 1.2 Seal off the work area and keep everyone else out. [Engineering (guarding)] 1.3 If asbestos must be disturbed, keep it wet, use hand tools not power tools, and clean up with a HEPA vacuum. [Engineering] 1.4 Follow 29 CFR 1926.1101: competent person, work class, regulated area and exposure monitoring. [Administrative] 1.5 Commercial renovation and any demolition need a NESHAP asbestos inspection first, and demolition needs written notice to the state or EPA 10 working days before work starts (40 CFR 61 Subpart M). [Administrative] 1.6 Roofing felts, cement shingles and siding, roof coatings and old panel backboards can also contain asbestos. Test them or treat them as asbestos; asbestos roofing is removed intact with hand tools by trained workers (29 CFR 1926.1101(g)(8)). [Administrative] 1.7 Stop work straight away if you find suspect asbestos. Do not touch it and tell your supervisor. [Administrative] 1.8 Wear a fit-tested NIOSH-approved respirator suited to the work class, and disposable coveralls. [PPE] 1.9 Work from underneath or from an aerial lift so nobody stands on the fragile roof. [Elimination] 1.10 Cover every skylight with a fixed, marked cover that can hold at least twice the weight it may carry, or guard it with a guardrail. [Engineering (guarding)] 1.11 Use crawl boards or staging to spread the load on fragile or rotten decking, and cover or guard any hole left where decking is removed (29 CFR 1926.501(b)(4)). [Engineering] 1.12 Use fall arrest on rated anchors when working near	**Medium Rare / Fatality**	Site supervisor

#	Job step	Hazards	Risk before	Controls	Risk after	Responsible
				fragile areas. [Engineering] 1.13 Treat all roof sheets as fragile until a competent person confirms they are not. Old fiber cement and plastic sheets are fragile. [Administrative] 1.14 Ask the utility to de-energize, move or insulate the lines before work starts. [Elimination] 1.15 Use non-conductive (fiberglass) ladders near any power lines. [Substitution] 1.16 Mark the safe distance with flags, tape or warning lines and keep all equipment and people outside it. [Engineering (guarding)] 1.17 Keep equipment at least 10 feet from lines up to 50 kV once the utility confirms the voltage, more for higher voltages, and 20 feet when the voltage is unknown (29 CFR 1926.1408). [Administrative] 1.18 Use a dedicated spotter whenever equipment moves or raises anything near lines. [Administrative] 1.19 Treat all lines as energized. If equipment touches a line, the operator stays in the cab and everyone else keeps well away. [Administrative]		
2	Set up edge protection or harness anchors and a secured ladder	Falling from a roof edge Falling from a ladder Rules: 29 CFR 1926 Subpart M; 29 CFR 1926 Subpart X	**Critical Likely / Fatality**	2.1 Do what you can from the ground or from a scaffold at the gutter line, for example pre-assemble parts on the ground. [Elimination] 2.2 Install edge protection or guardrails on all open roof edges before work starts. [Engineering (guarding)] 2.3 Use a perimeter scaffold with handrails and toe boards along the eaves where practical. [Engineering] 2.4 Where guardrails cannot be fitted, use fall restraint on certified roof anchors so workers cannot reach the edge. [Engineering] 2.5 Low-slope roofs: guardrails, safety nets, personal fall arrest, or a warning line combined with one of these or with a safety monitor (a safety monitor alone only on roofs 50 feet wide or less). Steep roofs: guardrails with toe boards, safety nets or personal fall arrest (29 CFR 1926.501(b)(10), (11)). [Administrative] 2.6 Use one safe, controlled access point and keep others off the roof. [Administrative] 2.7 Stop roof work in strong wind or rain, and when the roof is wet, icy or covered in dust or frost. [Administrative] 2.8 Wear a harness clipped to a rated anchor when using restraint or fall arrest, and soft-soled non-slip boots. [PPE] 2.9 Use a platform ladder, mobile scaffold or aerial lift for longer jobs instead of a straight ladder. [Substitution] 2.10 Use Type I, IA or IAA ladders in good condition. Tag and remove any damaged ladder. [Engineering] 2.11 Set extension ladders at a 4 to 1 angle on firm, level ground, secured, and reaching 3 feet above the landing. [Engineering]	**Medium Unlikely / Serious injury**	Site supervisor

#	Job step	Hazards	Risk before	Controls	Risk after	Responsible
				2.12 Use ladders only for short, light work. Do not carry heavy or awkward loads up a ladder. [Administrative] 2.13 Keep three points of contact and your belt buckle between the stiles. Do not overreach. [Administrative] 2.14 Do not stand on the top three rungs of an extension ladder or the top step of a stepladder. [Administrative] 2.15 Check the ladder before each use: feet, rungs, side rails and locks. [Administrative] 2.16 Wear non-slip safety boots with clean soles. [PPE]		
3	Lift panels with a hoist, not up a ladder	Lifting and carrying heavy loads Falling tools and materials Strong wind and storms Rules: 29 CFR 1926.501(c)	**High Likely / Recordable / lost time**	3.1 Plan to avoid carrying: have materials delivered, and old items picked up, as close as possible to where they are used. [Elimination] 3.2 Use lighter or smaller loads: order smaller bags and shorter lengths, and drain or break down old items before moving them. [Substitution] 3.3 Use trolleys, pallet jacks, hoists, vacuum lifters or plant instead of carrying by hand. [Engineering] 3.4 Use a two-person lift for anything heavy, long or awkward. Plan the route first and clear it. [Administrative] 3.5 Keep the load close, back straight and no twisting. Turn with your feet. [Administrative] 3.6 Barricade and sign the drop zone under overhead work so nobody walks beneath. [Engineering (guarding)] 3.7 Fit toe boards, kick plates and mesh screens on scaffolds and edges. [Engineering] 3.8 Use catch fans, debris netting or covered walkways where people pass below. [Engineering] 3.9 Tether hand tools when working at height. [Engineering] 3.10 Keep platforms tidy. Do not stack materials near edges or above toe board height. [Administrative] 3.11 Check the forecast each morning and plan work at height and lifting around the weather. [Elimination] 3.12 Tie down or weigh down loose sheets, panels, boards and rubbish at the end of each shift. [Engineering] 3.13 Set wind limits for roof work, platforms and cranes, using the manufacturer's limits, and stop when they are reached. [Administrative] 3.14 Stop work and get down in lightning. Wait 30 minutes after the last thunder before going back up. [Administrative] 3.15 Check scaffold, fencing and edge protection after strong wind before anyone uses them. [Administrative]	**Medium Unlikely / Serious injury**	Site supervisor
4	Fit rails and brackets, cutting tiles with dust control	Silica dust from concrete, brick, stone and tiles Angle grinder injuries Injury from power tools Rules: 29 CFR 1926.1153; 29 CFR 1926 Subpart I	**Critical Likely / Fatality**	4.1 Order materials cut to size, or use low-dust methods such as score and snap or a block splitter. [Substitution] 4.2 Cut outdoors or in a separate area, with other people well away and upwind. [Engineering (guarding)] 4.3 Use wet cutting or on-tool dust collection with a HEPA vacuum, as set out in Table 1 of 29 CFR 1926.1153. [Engineering]	**Medium Unlikely / Serious injury**	Site supervisor

#	Job step	Hazards	Risk before	Controls	Risk after	Responsible
				4.4 Clean up with a vacuum or wet methods. Never dry sweep or use compressed air. [Administrative] 4.5 Have a written exposure control plan and a competent person for silica (29 CFR 1926.1153). [Administrative] 4.6 Workers who must wear a respirator 30 or more days a year get a free medical exam every 3 years (29 CFR 1926.1153(h)). [Administrative] 4.7 Wear the respirator Table 1 lists for the task: APF 10 (a fit-tested N95 or half mask) for most tasks, APF 25 (such as a loose-fitting PAPR) for tuckpointing with a handheld grinder for more than 4 hours a shift. [PPE] 4.8 Use a guarded saw or a different tool where you can. [Substitution] 4.9 Keep the guard on and use the side handle. Never remove the guard. [Engineering] 4.10 Use the right disc for the job, rated for the grinder's speed. Check it for cracks first. [Administrative] 4.11 Only trained people change discs, with the grinder unplugged or the battery out. [Administrative] 4.12 Keep both hands on the grinder and let the disc stop before putting it down. [Administrative] 4.13 Keep all guards fitted and working. Never tie back or remove a guard. [Engineering] 4.14 Clamp or secure the work piece. Do not hold it by hand. [Engineering] 4.15 Only trained, competent people use power tools, following the maker's instructions. [Administrative] 4.16 Check tools before use. Unplug or remove the battery before changing blades or bits. [Administrative] 4.17 No loose clothing, jewelry or long hair near spinning parts. [Administrative]		
5	Mount panels, remembering they make power in daylight	Electric shock from live wiring Lifting and carrying heavy loads Rules: 29 CFR 1926 Subpart K	**Critical Possible / Fatality**	5.1 Isolate the power before any work. Do not work live. [Elimination] 5.2 Lock out and tag the disconnecting means with your own personal lock and tag so the circuit cannot be energized (29 CFR 1926.417). [Engineering (guarding)] 5.3 Test before you touch: prove dead at the point of work with a tested voltage tester. [Engineering] 5.4 Only qualified persons work on or near exposed energized parts. [Administrative] 5.5 Check for back feeds from solar, batteries and generators that can keep a circuit live after the main switch is off. [Administrative] 5.6 If energized work cannot be avoided, use an energized work permit, a safety observer and insulated tools, following NFPA 70E. [Administrative] 5.7 Wear insulated gloves, arc-rated clothing and a face shield when testing or working near live parts. [PPE] 5.8 Rotate tasks and take breaks on long lifting jobs.	**Medium Unlikely / Recordable / lost time**	Site supervisor

#	Job step	Hazards	Risk before	Controls	Risk after	Responsible
				[Administrative] 5.9 Wear gloves for grip and safety boots to protect your feet. [PPE] 5.10 Lifting and carrying heavy loads: see step 3 for the full controls [Administrative]		
6	Run DC cabling and test, then clean up the roof	Electric shock from live wiring Heat stress Sun exposure (UV) Poor housekeeping and waste Rules: 29 CFR 1926 Subpart K; OSH Act Section 5(a)(1) General Duty Clause; state heat rules where they apply (Cal/OSHA T8 3395, WA WAC 296-62-095, OR OAR 437-002-0156, MD COMAR 09.12.32)	**Critical Possible / Fatality**	6.1 Electric shock from live wiring: see step 5 for the full controls [Administrative] 6.2 Schedule heavy work for the cooler part of the day. [Elimination] 6.3 Provide shade over work and rest areas, and fans or cooling in attics. [Engineering] 6.4 Supply cool drinking water close by and drink a cup every 15 to 20 minutes. [Administrative] 6.5 Take regular rest breaks in the shade, more often as it gets hotter. [Administrative] 6.6 In California, Washington, Oregon and Maryland, follow the state heat illness rule: written plan, shade, water, rest and high-heat procedures. [Administrative] 6.7 Plan outdoor work for early morning or late afternoon when UV is lower. [Elimination] 6.8 Put shade covers over fixed work areas. [Engineering] 6.9 Check the UV index each day. Use sun protection when it is 3 or higher. [Administrative] 6.10 Check your skin regularly and see a doctor about any new or changing spots. [Administrative] 6.11 Order materials to size and send packaging back where you can. [Elimination] 6.12 Put dumpsters and waste chutes close to the work. [Engineering] 6.13 Clean as you go, and do a full clean up at the end of each day. [Administrative] 6.14 Keep exits, stairs and walkways clear at all times. [Administrative]	**Medium Unlikely / Serious injury**	Site supervisor

Risk key: risk = likelihood x consequence on a 5 x 5 matrix. Low, Medium, High, Critical. Work must not start while the risk after controls is high or above. Controls are listed in order of the hierarchy of controls: Elimination, Substitution, Engineering (guarding), Engineering, Administrative, PPE.

3. PPE AND PERMITS

Required PPE	Permits and plans
Safety-toe boots (ASTM F2413) Personal fall arrest system (harness) Cut-resistant gloves Safety glasses (ANSI Z87.1) Sun protection (sunscreen, hat, long sleeves) Hard hat (ANSI Z89.1) Half-face respirator (P100 cartridges)	Written fall protection plan (only where guardrails, nets or personal fall arrest are not feasible, 1926.502(k)) Lockout/tagout (1926.417)

Required PPE	Permits and plans
Coveralls Work gloves Hearing protection (earmuffs or plugs) Face shield (ANSI Z87.1) Rubber insulating gloves Arc flash PPE (NFPA 70E)	

4. PLANT AND EQUIPMENT

Plant / equipment	License or training needed	Inspection needed	Rego / ID	Last inspected	Certificate / report
Supported scaffold	Erected under a competent person (29 CFR 1926.451)	Inspected by a competent person for visible defects before each work shift and after any occurrence that could affect its integrity (29 CFR 1926.451(f)(3))			
Extension ladder		Inspected by a competent person for visible defects periodically and after any event that could affect safe use (29 CFR 1926.1053(b)(15))			
Material hoist					
Power drill		Visual check of cord, plug and guards before each day's use; if you run an assured equipment grounding program instead of GFCIs, test every 3 months (29 CFR 1926.404(b)(1))			
Angle grinder		Visual check of cord, plug and guards before each day's use; if you run an assured equipment grounding program instead of GFCIs, test every 3 months (29 CFR 1926.404(b)(1))			
Electrical test meter		Rated for the voltage and category (CAT III or IV), inspected before each use, and checked on a known source before and after testing (NFPA 70E)			

5. TRAINING REQUIRED FOR THIS WORK

- Asbestos awareness training, plus class-specific training for Class I to III work (29 CFR 1926.1101(k)(9)); respirator fit test and medical evaluation (29 CFR 1910.134)
- Fall protection training by a competent person, with a written certification record (29 CFR 1926.503)
- Ladder safety training by a competent person (29 CFR 1926.1060)
- Silica training on the exposure control plan and Table 1 controls (29 CFR 1926.1153(i)); respirator fit test and medical evaluation (29 CFR 1910.134)
- Qualified person training for work on or near exposed energized parts (29 CFR 1926.416, NFPA 70E)

6. CREW TRAINING AND CERTIFICATIONS

Crew listed at sign-on below, with ticket and licence numbers.

7. EMERGENCY ARRANGEMENTS

Emergency number	911	**First aid kit**	In the work vehicle
Fire extinguisher	In the work vehicle	**Alarm and evacuation**	Shout for help and stop work. Make the area safe and go to the assembly point. Call the emergency number and send someone to meet the ambulance.

Reporting incidents	Report a fatality to OSHA within 8 hours, and an in-patient hospitalization, amputation or eye loss within 24 hours.		

8. MONITORING, REVIEW AND LEGAL BASIS

A competent person inspects the job site, materials and equipment before work each day and as conditions change (29 CFR 1926.20(b)(2)). Any time this JHA is revised, the affected crew is re-briefed and signs again.

Legal basis: OSH Act Section 5(a)(1) and 29 CFR 1926, Safety and Health Regulations for Construction (incl. 1926.20 and 1926.21). OSHA requires employers to find and fix hazards and to train workers on them. A JHA breaks the job into steps, lists the hazards in each step and the controls that protect the crew. General contractors often require one before you start.

Keep this JHA on site during the job, and keep it with the training and inspection records for at least 1 year after the job (longer if your state plan or general contractor requires it). OSHA does not set a retention period for JHAs themselves.

9. REVISION HISTORY

Rev	Date	By	What changed
1	Nov 9, 2026		First issue

10. SIGN-OFF

	Name	Signature	Date	
Prepared by				
Supervisor				
General contractor review				Accepted for use: Yes / No

By signing below, each crew member confirms they were trained on the hazards and controls in this JHA before work started, and will follow it. Stop work and tell the supervisor if conditions change.

Name	Role / company	Tickets / licences	Signature	Date

Name	Role / company	Tickets / licences	Signature	Date