

The PTO packet

NorthWestern Energy · Montana

Everything between "I want panels" and "I'm allowed to flip the switch": the exact order of operations, the forms, the diagram reviewers expect, the requirements people fail inspections on, and the citations behind every claim.

WORKED EXAMPLE · PUBLISHED FREE

This is a complete, real packet for one territory, published in full. The same structure resolves to **any** US utility, county, and system type: permit desk, fees, forms, and inspection quirks included.

Read this first

This packet exists because the cheapest order of operations is not the obvious one. Most expensive DIY mistakes in NorthWestern territory are sequence mistakes: hardware bought before approval, installs energized before sign-off, disconnects mounted ten feet too far from the meter. The steps below are ordered so that every dollar you spend is spent after the approval that protects it.

Every claim is tagged: documented from the utility's or state's own documents reported from a dated, credited community report verify locally varies by county, confirm for your address

The whole thing at a glance

Interconnection agreement	\$25, systems up to 100 kW reported 9/2025 executed agreement
Adding panels or batteries later	\$25 agreement update, plus a new county permit reported
Who may install	You. Montana allows homeowner electrical permits for your own residence. A licensed electrician is needed for the inspection signature, not the labor documented
Netting	1:1 retail net metering, agreement without expiration reported 9/2025 agreement
When you may export	Only after NorthWestern has your signed electrician form and your signed county permit. Not at mechanical completion documented
Typical out of pocket, paperwork	Roughly \$50 to \$100 plus hardware: \$25 agreement, county permit fee verify locally
The requirement that fails inspections	AC and DC disconnects must be labeled as such and within 10 ft of the meter reported 9/2025

THE ONE RULE THAT PAYS FOR THIS DOCUMENT

Do not buy hardware before interconnection approval. The application costs \$25 and wants your equipment's cut sheets, which manufacturers publish for free. If NorthWestern asks for changes, you want to be editing a PDF, not returning an inverter.

This packet covers NorthWestern Energy's Montana electric territory. Community credit: the executed-agreement details and field sequence were contributed by u/rwright07 (r/SolarDIY, September 2025) and cross-checked against NorthWestern's published interconnection material.

The order of operations

Ten steps, in the sequence that spends money last. Steps 1 through 4 happen at a desk and cost \$25 total.

1

Freeze your design on paper

cost \$0 · time an evening

Pick modules, inverter, and array size. Size to your annual usage: net metering pays you nothing extra for overproduction, so the economic ceiling is what you consume. Confirm the inverter is UL 1741 listed, NorthWestern will check the listing, not your word for it. [documented](#)

2

Collect cut sheets before you own anything

cost \$0 · time an hour

Download the manufacturer specification sheets (cut sheets) for every listed component: modules, inverter, and any battery. These attach to the application. [reported](#) 9/2025

TRIPS PEOPLE UP A screenshot of a product page is not a cut sheet. Reviewers want the manufacturer's spec PDF with the UL listing visible.

3

Draw the single-line diagram and site plan

cost \$0 · time an evening · template on page 5

One page each. The single-line diagram shows the electrical path from array to grid. The site plan shows where equipment sits on the property, with the AC and DC disconnects labeled as such and located within 10 ft of the meter. [reported](#) 9/2025

TRIPS PEOPLE UP This is the disconnect-placement trap. Plan the 10 ft on paper now, not with conduit in your hands later.

4

Submit the interconnection application, then stop

cost \$25 · time days to a few weeks

Application plus cut sheets, single-line diagram, and site plan go to NorthWestern. \$25 covers systems up to 100 kW, which is every residential system. Wait for written approval before purchasing or installing anything. [reported](#) 9/2025

5

Pull the homeowner electrical permit

cost varies by county · time same week

Montana lets you pull your own electrical permit for your own residence, through your county. Fee and desk vary by county. [verify locally](#)

TRIPS PEOPLE UP "Homeowner permit" means you did the work, not that inspection is waived. Both inspections in steps 7 and 8 still happen.

The order of operations, continued

6

Install, exactly to the approved drawings

cost your hardware · time your pace

Build what NorthWestern approved. If reality forces a change (different inverter, moved disconnect), update the drawings and notify before proceeding, a mismatch between field and paper is an inspection failure waiting on step 7. Keep the system de-energized toward the grid.

7

Licensed electrician inspects and signs the NorthWestern form

cost an electrician's hour or two · time a visit

This is the one professional you must hire, and it's for a signature, not the install. The electrician verifies the work and signs NorthWestern's form. reported 9/2025

TRIPS PEOPLE UP Book this before you need it. In rural counties the wait for a visit can exceed the wait for utility approval.

8

County electrical inspection, permit gets signed

cost included in permit · time days to weeks, county dependent

The county inspector reviews against code and signs off your permit. Disconnect labeling and placement from step 3 is what gets checked here. reported 9/2025 verify locally

9

Send both signatures to NorthWestern

cost \$0 · time minutes

The signed electrician form and the signed county permit go back to NorthWestern. This is the trigger for interconnection, nothing happens until they have both. reported 9/2025

10

Interconnection and export, only now

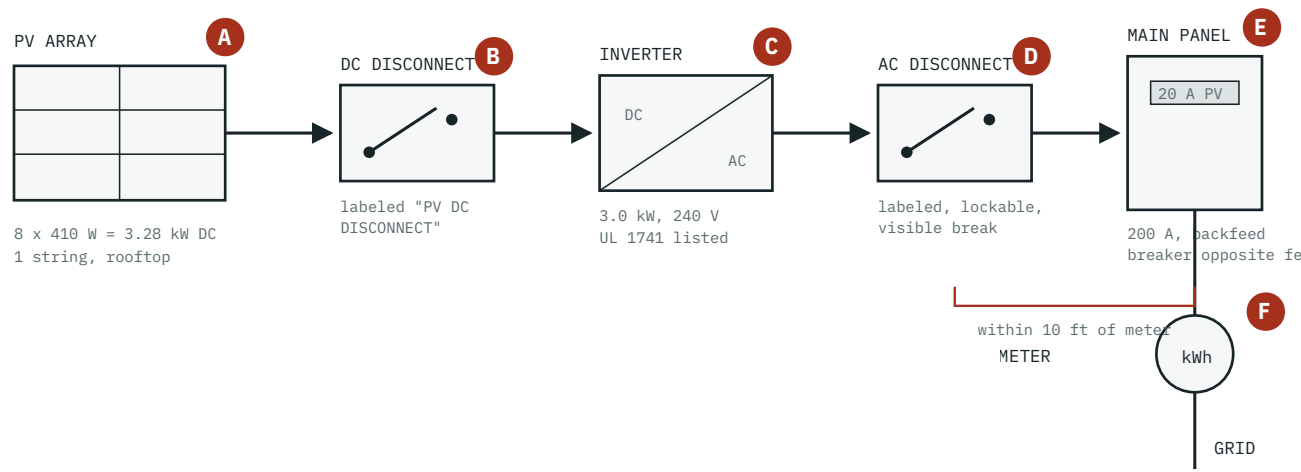
cost \$0 · time on NorthWestern's schedule

NorthWestern authorizes interconnection and your 1:1 net metering begins under an agreement with no expiration date, per a September 2025 executed agreement. reported Expect the first normal-looking bill after a full billing cycle.

Adding capacity later: more panels or a battery is a \$25 agreement update with NorthWestern plus a fresh county permit, the same two-signature loop in miniature. reported 9/2025

The single-line diagram, worked example

The values below describe an example 3.28 kW system. Replace them with yours, the topology and labels are what reviewers check.



What the reviewer checks, keyed to the callouts

A • Array	Module count, wattage, string arrangement matching your cut sheets
B • DC disconnect	Present and labeled as such reported 9/2025
C • Inverter	Make, model, and UL 1741 listing matching the attached cut sheet
D • AC disconnect	Labeled, lockable, utility-accessible visible break
E • Backfeed breaker	Dedicated breaker, rating shown, positioned per code (120% rule)
F • Placement	Both disconnects labeled and within 10 ft of the meter, the single most reported failure point reported 9/2025

Document checklist

DOCUMENT	WHERE IT COMES FROM	FEEDS INTO
☐ Interconnection application	NorthWestern Energy, net metering pages	Step 4
☐ Cut sheets, every component	Manufacturer websites, free PDFs	Step 4
☐ Single-line diagram	You, template on page 5	Step 4
☐ Site plan with disconnect placement	You, one page, top-down sketch	Step 4
☐ Homeowner electrical permit	Your county verify locally	Step 5
☐ Electrician certification form, signed	NorthWestern's form, electrician signs	Steps 7, 9
☐ County permit, inspector-signed	County inspection	Steps 8, 9

Rates and sizing, what the agreement gets you

- 1:1 retail net metering, kWh out cancels kWh in. reported 9/2025 agreement
- Agreement carries no expiration date, per that same executed agreement, which matters: several states now sunset or step down net metering for new customers, Montana's current terms do not. reported
- Size to annual usage. Overproduction earns no premium, so every panel past your consumption has the worst payback on the roof.

Resolving the verify-locally tags

Every verify locally tag above is a county-level fact, and each is resolvable on request: the county's permit desk, form, and fee, the inspection scheduling reality in the area, equipment cut sheets checked against the utility's requirements, and the application walked line by line for a given system type, grid-tied, zero-export, or battery-first. Same evidence tags, same citations, resolved to any address in any US territory.

GridRules · the maintained dataset behind this document · sunheap.com/gridrules · hello@sunheap.com

Sources and evidence

Every claim in this packet carries a tag. Documented claims trace to the utility's or state's own material. Reported claims trace to the dated community contribution below, which in this packet is unusually strong evidence: an executed agreement and a completed, inspected, interconnected system.

SOURCE	WHAT IT SUPPORTS	CHECKED
NorthWestern Energy, net metering and interconnection pages	Application requirements, UL 1741 listing check, export-after-signatures rule	2026-07-03
Executed NorthWestern interconnection agreement, September 2025, contributed by u/rwright07 (r/SolarDIY)	\$25 fee and 100 kW threshold, \$25 update fee, 1:1 netting without expiration, field sequence, disconnect labeling and 10 ft placement	2026-07-03
Montana homeowner electrical permit provisions, administered per county	Owner-pulled permits, county fee variance	2026-07-03 verify locally

Corrections

Utilities change this material constantly. If any claim here no longer matches what NorthWestern or your county tells you, use the request-update button on the row at sunheap.com/gridrules, or email hello@sunheap.com. Corrections ship to everyone who holds this packet.

What this document is not

Research, not legal or engineering advice, and not a substitute for NorthWestern's current tariff or your county's code office. The evidence tags exist so you can verify every claim yourself before spending money, please do.

GridRules is a one-person research project from sunheap, a small independent workshop. PTO packet, worked example, NorthWestern Energy (MT), v1.1, 2026-07-09.