

Site Baselines: Snow, Storms, Heat, Wind, Sun, and Building Values

Prairie Plants · Mountain Prairie Acres, Prairie, Idaho · about 4,750 ft · reference numbers from the nearest stations, models, and county documents

Reference numbers for the site that the site climate page does not hold: snow and rain, design storms, heat and chill, wind, sun and humidity, the county's building values, and hail. They come from stations, models, and county documents near the lot, not from the lot itself. Once the weather station has run for a year, its readings can be compared with these baselines. Open questions about these numbers are under Still to Check on the site climate page.

SNOWPACK PEAK

5.8 in

of water, typically Feb 20;
2026 peaked at 1.1 in

PRECIPITATION

21.2 in

in a typical water year; 1
year in 10 has under 15.8
in

25-YEAR, 24-HOUR
STORM

2.55 in

of rain; 90% interval 2.29
to 2.83 in

DEGREE DAYS, BASE 50 °F

2,104

in a typical year by the
hourly method; base 43 °F
gives 3,190

CHILL, 32 TO 45 °F

872 h

November to February;
the winters ranged from
612 to 1,338

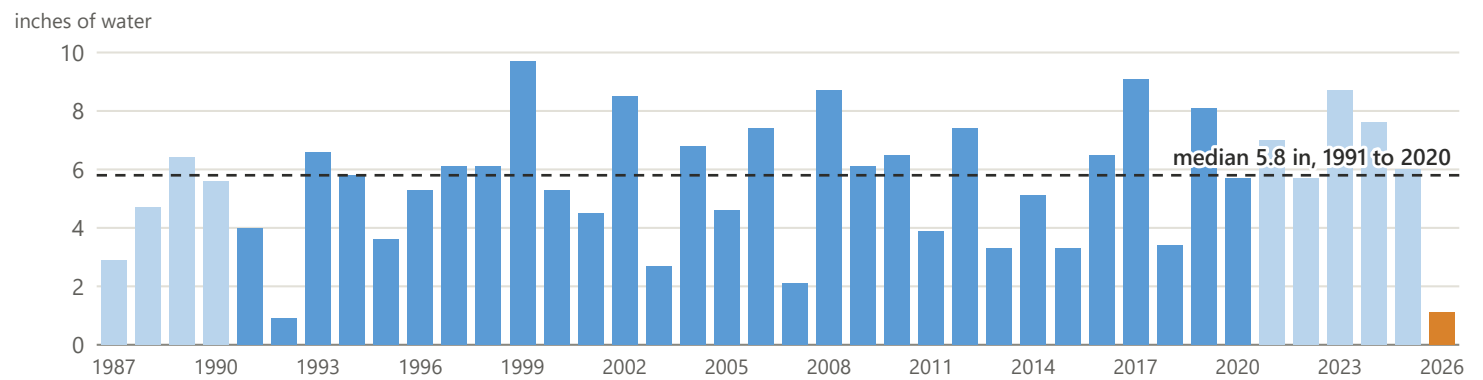
COUNTY SNOW LOAD

120 lb/sq ft

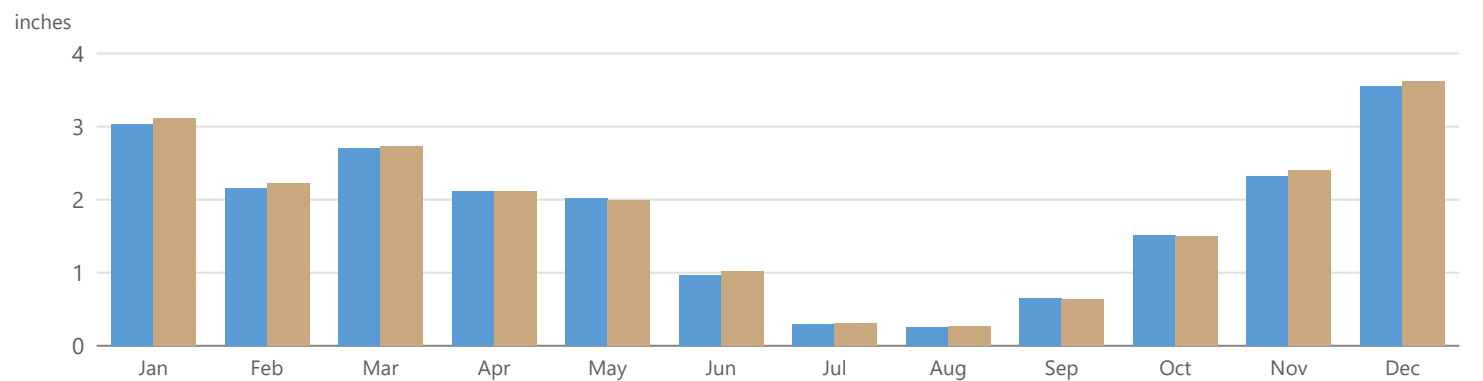
on the county map for
Prairie; confirm for a
building here

Snow and Precipitation

At the Prairie SNOTEL station the snowpack typically peaks at 5.8 inches of water around Feb 20 and has melted out by about Mar 26; 1 year in 10 peaks under 3.2 inches and 1 in 10 over 8.5. Water year 2026 peaked at only 1.1 inches on Feb 17, 2026, the second lowest of the 40 years since 1987; the lowest was 0.9 inches in 1992. The heaviest pack, 9.7 inches in 1999, weighed about 50 pounds per square foot. Snow was still on the pillow on April 1 in 37% of the 30 years from 1991 to 2020.



The most water the snow on the pillow held in each water year (October to September, named for the year it ends). Dark blue bars are the 30 years of the 1991 to 2020 normals, light blue are the years around them, and orange is water year 2026. The pillow weighs the snow, so this is water, not depth.



Blue is the station's gauge, averaged over 1991 to 2020 (21.5 inches a year); tan is the PRISM model that the water-harvesting plan uses (21.9 inches). They agree within 0.1 inch in every month. 64% of the year's water falls from November to March, mostly as snow, so snowmelt and spring rain are the main harvest. A gauge catches less snow when it is windy, so the true total may be somewhat higher.

Measure, water years 1991 to 2020	Lowest or earliest	1 year in 10 below	Median	1 year in 10 above	Highest or latest
Peak snow water (inches)	0.9	3.2	5.8	8.5	9.7
Snow water on April 1 (inches)	0.0	0.0	0.0	4.2	8.0
Water-year precipitation (inches)	13.8	15.8	21.2	26.8	31.2
Date of the peak	Dec 29	Jan 16	Feb 20	Mar 10	Mar 19
Melt-out: first zero after the peak	Feb 13	Mar 10	Mar 26	Apr 10	Apr 27
Last day with 0.1 inch or more of snow water	Feb 12	Mar 12	Mar 26	Apr 13	Apr 26

Design Storms

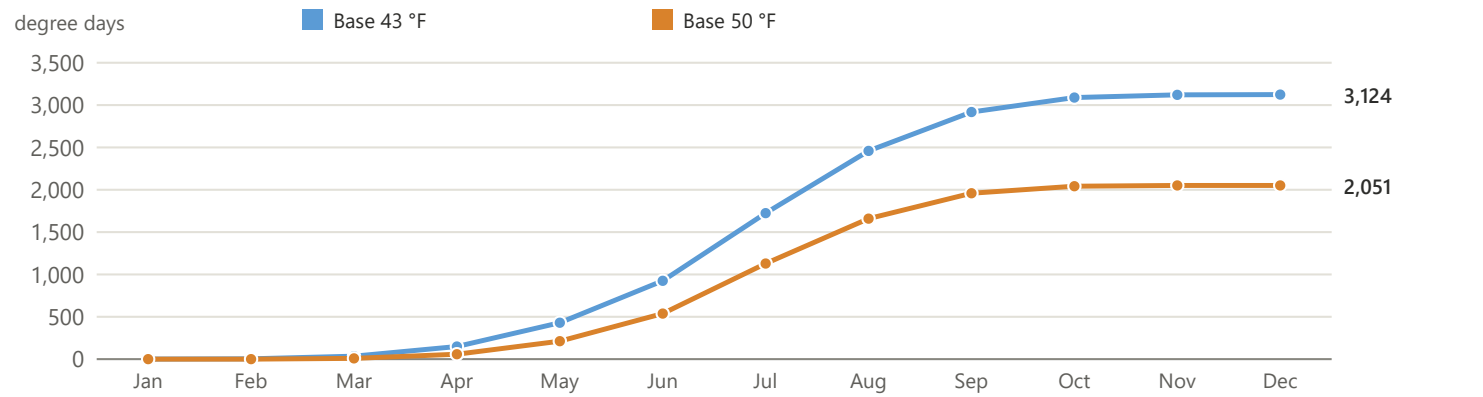
NOAA's Atlas 14 gives the most rain expected at the lot in a stated time, on average once per return period. A 25-year, 24-hour storm drops 2.55 inches, and a 100-year, 24-hour storm 3.09; in a cloudburst the 25-year, one-hour storm falls at 1.21 inches an hour. These are rain only, so they do not cover snowmelt. For scale, the water-harvesting plan sets basin spillways 3 to 4 inches above the basin floor.

Rain in	2-year storm	5-year storm	10-year storm	25-year storm	50-year storm	100-year storm
1 hour	0.48 0.41 to 0.57	0.74 0.62 to 0.91	0.95 0.77 to 1.19	1.21 0.93 to 1.56	1.39 1.03 to 1.82	1.56 1.08 to 2.09
3 hours	0.69 0.61 to 0.80	0.98 0.84 to 1.15	1.20 1.01 to 1.44	1.48 1.20 to 1.84	1.69 1.31 to 2.13	1.88 1.38 to 2.45
6 hours	0.89 0.80 to 1.01	1.18 1.04 to 1.36	1.41 1.21 to 1.64	1.71 1.42 to 2.04	1.92 1.55 to 2.36	2.13 1.65 to 2.70
12 hours	1.19 1.09 to 1.31	1.49 1.34 to 1.66	1.74 1.54 to 1.95	2.06 1.79 to 2.36	2.30 1.96 to 2.70	2.53 2.10 to 3.06
24 hours	1.57 1.45 to 1.71	1.91 1.75 to 2.08	2.18 1.98 to 2.39	2.55 2.29 to 2.83	2.82 2.51 to 3.18	3.09 2.72 to 3.57
2 days	2.01 1.85 to 2.19	2.43 2.21 to 2.65	2.76 2.49 to 3.03	3.21 2.86 to 3.58	3.55 3.14 to 4.02	3.88 3.39 to 4.51
10 days	3.63 3.30 to 4.00	4.39 3.94 to 4.86	5.00 4.44 to 5.58	5.80 5.08 to 6.61	6.41 5.54 to 7.44	6.99 5.94 to 8.35

Inches of rain, with the 90% interval under each depth: the true value probably lies inside it. Partial-duration series, NOAA Atlas 14 Volume 12 version 2, at the lot center. The database holds all 19 durations from 5 minutes to 60 days and every return period from 1 to 1,000 years (design_storms).

Heat: Degree Days

Degree days add up how much warmth a growing season delivers. Counted from every hourly reading at the Prairie SNOTEL, a typical year holds 2,104 degree days above 50 °F and 3,190 above 43 °F (20 years, 2005 to 2025); 1 year in 10 has under 1,788 at base 50. In the average year the base-50 total stands at 538 by the end of June, 1,659 by the end of August, and 1,959 by the end of September. The daily-average shortcut that many charts use gives 1,806 at base 50, 14% lower, so check which method and base a chart uses before comparing it with these.

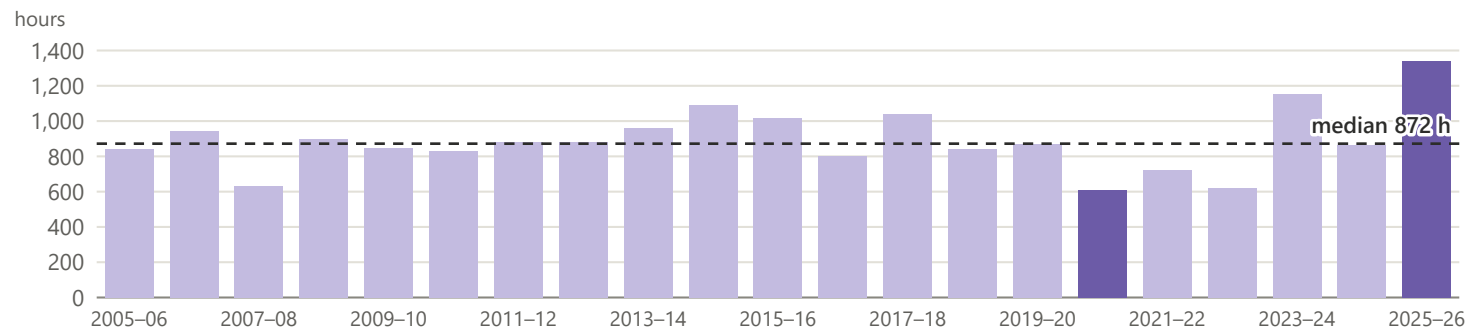


Average of 20 years of hourly readings, 2005 to 2025 (2023 is left out because more than 1% of the hours were not recorded). Each hour counts the degrees above the base, capped at 86 °F and divided by 24.

Degree days in a year, 2005 to 2025	Lowest	1 year in 10 below	Median	1 year in 10 above	Highest
Hourly method, base 50 °F	1,659	1,788	2,104	2,248	2,263
Hourly method, base 43 °F	2,656	2,774	3,190	3,370	3,464
Daily-average shortcut, base 50 °F	1,376	1,518	1,806	1,976	1,984
Daily-average shortcut, base 43 °F	2,446	2,547	2,952	3,128	3,247

Chill Hours

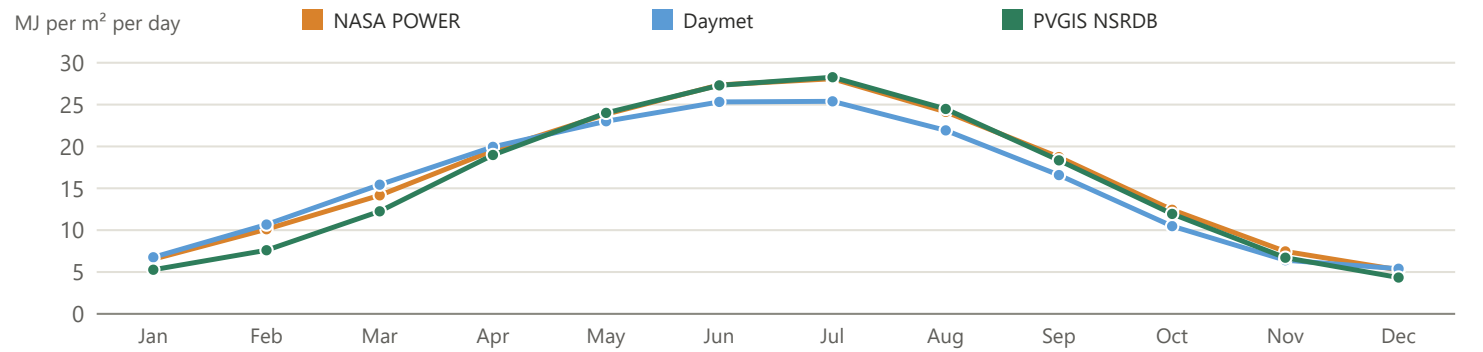
Chill hours are the cold hours that let a fruit tree finish its winter rest. Counting November 1 to the end of February, the station logged a median 872 hours between 32 and 45 °F (the winters ranged from 612 to 1,338) and a median 2,778 hours at or below 45 °F (2,469 to 2,878). Nursery and extension sources count chill in one of those two ways, so check which a cultivar's rating uses. The mildest winter, 2025–26, had the fewest hours at or below 45 °F (2,469) and the most between 32 and 45 °F. It was also the winter of a snowpack that was the second smallest on record.



Each bar is one winter, named for the year it starts. The darker bars are the lowest and the highest. Hours not recorded are not counted, and a winter is used only if at least 97% of its hours were recorded.

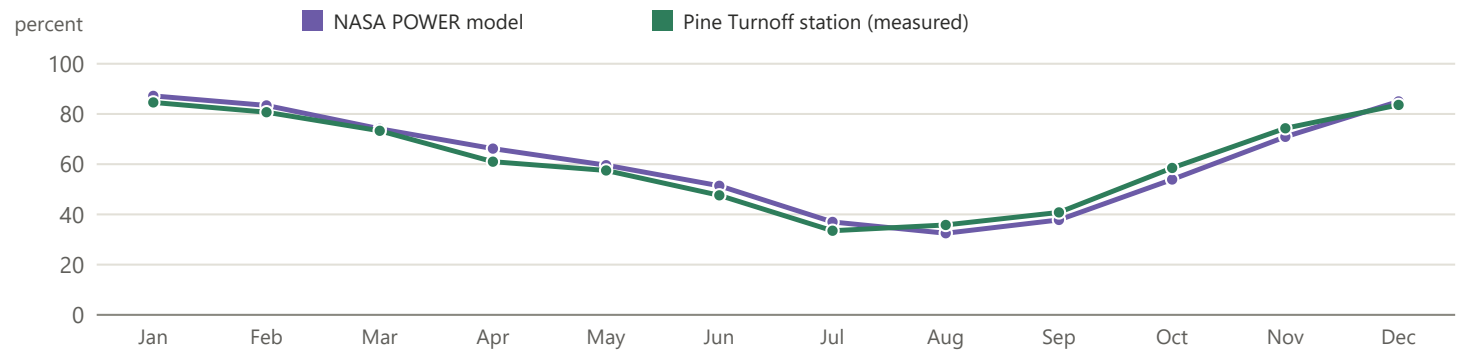
Sun and Humidity

Three independent estimates of the sunshine reaching a flat surface at the lot agree within 6% on the year's average: 16.5, 15.6, and 15.8 MJ per square meter per day (4.6, 4.3, and 4.4 kilowatt-hours). July is the sunniest month (about 28 MJ) and December the dimmest (about 5 MJ), so the sunniest month gets about 5 times as much. The sources differ most in March, by 3.2 MJ.



MJ per square meter per day, on a flat surface, averaged over each month. One kilowatt-hour is 3.6 MJ. Periods: NASA POWER 2001 to 2025, Daymet 1991 to 2020, and PVGIS NSRDB 2005 to 2015. A weather station's light sensor reports watts per square meter, and a day's average of that, times 0.0864, gives MJ per square meter per day.

The air is humid in winter and dry in summer. The model puts the monthly average relative humidity between 33% (August) and 87% (January); the measured station 20 miles away, between 34% (July) and 85% (January). Dry summer air pulls water out of leaves and soil quickly, and damp winter and spring air favors fungal disease.

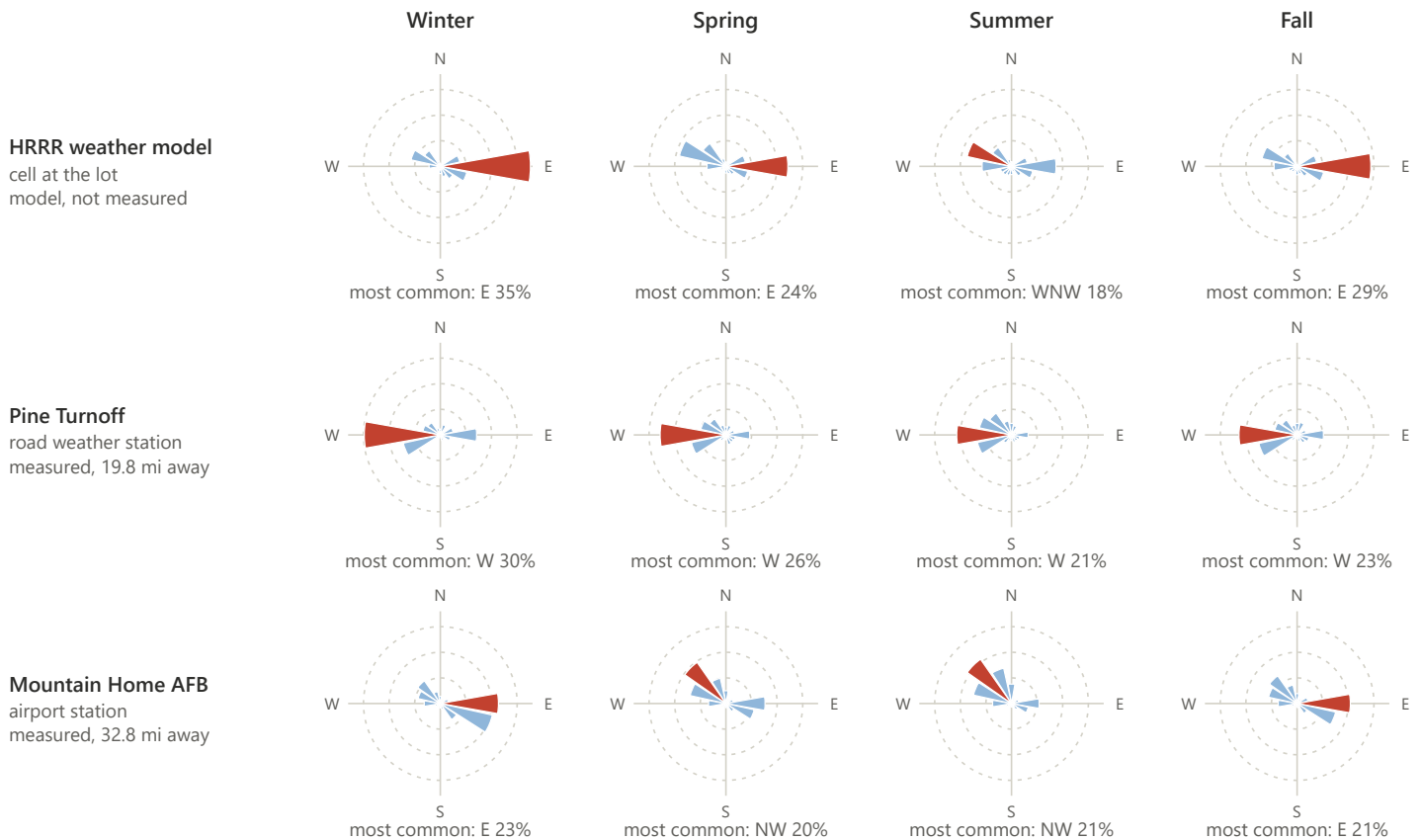


percent relative humidity, averaged over each month. The model is a grid roughly 50 km wide; the station is at 5,463 ft, about 700 ft above the lot. They stay within 6 points of each other in every month.

Wind

No wind has been measured at the lot. These are the nearest measured stations and one weather model, and they disagree about winter wind direction, so treat them as a guess until the weather station has run for a year.

Each rose shows how the wind is spread over the compass in a season: the longer the wedge, the larger the share of windy hours (calm hours under 3 knots are left out) that the wind blew from that direction, and the red wedge is the most common one. In winter the most common direction, as a share of windy hours, is E (35%) in the weather model at the lot, E (23%) at Mountain Home Air Force Base, and W (30%) at Pine Turnoff, the measured station closest in height. They disagree, which matters for where a windbreak and snow fence help, and only a wind sensor at the lot can settle it. In summer it is WNW (18%) in the model, NW (21%) at Mountain Home, and W (21%) at Pine Turnoff, all from the west or northwest.



Directions are where the wind comes from, so a west wind blows toward the east. Rings mark 10, 20, and 30 percent of windy hours, and all roses share one scale so they can be compared.

Source	Distance from the lot	Height, ft	Years (hours recorded)	Mean, mph	Calm hours	Hours at 10 mph or more	At 15 mph or more	At 25 mph or more
HRRR weather model cell at the lot	0.9 mi, bearing 20°	4,744	2021 to 2025 (100%)	7.4	23%	25%	9%	0.6%
Pine Turnoff road weather station	19.8 mi, bearing 124°	5,463	2010 to 2025 (89%)	7.5	29%	30%	11%	0.7%
Mountain Home AFB airport station	32.8 mi, bearing 205°	2,996	2010 to 2025 (93%)	9.7	10%	42%	18%	2.3%

Average wind speed by month, mph

Source	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
HRRR weather model	7.0	7.3	7.7	7.9	8.3	7.1	7.2	7.6	7.3	7.1	6.7	7.2
Pine Turnoff	6.8	8.3	8.1	9.0	8.4	7.8	7.0	7.0	6.7	7.0	6.9	7.2
Mountain Home AFB	9.4	10.5	11.0	11.3	10.7	10.2	9.2	8.8	8.2	8.6	9.2	9.5
NASA POWER	6.2	6.5	6.8	6.9	6.6	6.5	6.3	6.2	6.2	6.3	6.4	6.4

County Building Values

Elmore County Land Use and Building Department, Mountain Home, Idaho, sets these design values for new buildings. On both zone maps the marked community of Prairie lies several miles from any zone line, inside the zone that the map labels 30 inch frost depth and 120 pounds per square foot. The permit application names Prairie only for a seasonal permit extension, and neither it nor the permit page says which snow load applies at the lot. For scale, 120 pounds per square foot is the weight of about 23 inches of snow water, and the heaviest pack in the station's 40-year record, 9.7 inches in 1999, weighed about 50 pounds per square foot.

Value	For Prairie	County documents	What to ask the county
Frost depth zone	30 in	Elmore County, Frost Depth Zones map Elmore County, Building Permit Requirements, Local Design Requirements	The permit page words this as a footing depth '30 in below frost line'. Ask the department whether the footing bottom must be 30 inches below grade or 30 inches below the frost line.
Ground snow load	120 lb per sq ft	Elmore County, Ground Snow Load Zones map Elmore County, Building Permit Requirements, Local Design Requirements Elmore County, Building Permit Application (June 3, 2026 version)	The snow map puts Prairie in the 120 zone, and the permit page says that zone must be designed by an Idaho engineer. The permit application ties the requirement to buildings above Tollgate, 'approximately 5,000 ft', and the lot is at about 4,750 ft, so confirm which load applies to a building at the lot.
Design wind speed	115 mph	Elmore County, Building Permit Requirements, Local Design Requirements Elmore County, Building Permit Application (June 3, 2026 version)	115 mph is the residential figure (International Residential Code). Commercial buildings use 95 to 120 mph (International Building Code).
Seismic design zone	Zone C	Elmore County, Building Permit Requirements, Local Design Requirements	The county's line is Featherville: zone C to the south and zone D to the north. Prairie lies south of Featherville on the county maps.

These are the county's own design values for new buildings. They say nothing about fences, tanks, or other things that need no permit; ask the department when in doubt. Retrieved Oct 19, 2026. What each document says, word for word, is under Sources and Method.

Hail

The weather service has 9 hail reports within 25 miles of the lot in the 30 years from 1996 to 2025. Two were at Prairie itself (Jul 9, 2019 and Aug 10, 2019). The largest was 1.75 inches (golf ball sized), at Prairie on Aug 10, 2019. One of the Prairie reports says the hail shredded trees. Hail can break blossoms and bruise fruit, so a report in bloom or harvest season matters most.

Date	Place	Size	Miles from the lot	Reported by	What was reported
Jul 29, 1997	Mountain Home, Elmore County	0.75 in (penny)	20.8	not given	no description
May 18, 2004	Boise, Ada County	1.00 in (quarter)	17.0	Trained Spotter	No know damage
May 18, 2004	Mountain Home, Elmore County	1.00 in (quarter)	22.6	General Public	No know damage
Aug 27, 2013	Mountain Home, Elmore County	0.75 in (penny)	24.9	Trained Spotter	A trained spotter reported penny sized hail in Mountain Home, Idaho. Damage to a local business and power outages was also reported.
Jul 9, 2019	Prairie, Elmore County	1.25 in (half dollar)	2.0	COOP Observer	The COOP observer at Prairie reported large hail up to 1.25 inches. The hail shredded trees and damaged vehicles.
Aug 10, 2019	Prairie, Elmore County	1.75 in (golf ball)	2.0	Social Media	A video report was posted on Facebook.
Jun 5, 2022	Mayfield, Elmore County	1.00 in (quarter)	19.0	Public	A member of the public posted this photo on Facebook.
Jun 5, 2022	Mayfield, Elmore County	1.00 in (quarter)	20.7	NWS Employee	There was a layer of inch deep quarter size hail on Interstate 84.
Aug 12, 2022	Steirman, Boise County	1.00 in (quarter)	22.4	Public	A member of the public submitted this report via social media.

Hail reports with a start latitude and longitude within 25 miles of the lot. A report exists only if someone saw the hail and told the weather service, so the list undercounts, and hail falls in narrow swaths, so a miss nearby proves nothing.

Sources and Method

Each source was retrieved on the date it gives, and the exact request is kept in `data/site_baselines.json` beside the numbers it produced. Unless a line says measured, it is a model or a statistical estimate, and none of them is a reading from the lot.

- **Prairie SNOTEL**, NRCS station 704: NRCS Air and Water Database REST service (wcc.sc.egov.usda.gov/awdbRestApi), station 704:ID:SNL, daily snow water equivalent (WTEQ), precipitation accumulation (PREC), and precipitation increment (PRCP), retrieved 2026-10-19. The same station as the main temperature record on the site climate page: 2.4 miles from the lot and 50 ft higher. Its snow pillow weighs the snow, so it reports snow water equivalent, not depth. The record is complete for every water year from 1987 on.
- **NOAA Atlas 14**, Volume 12, Version 2 (Interior Northwest): NOAA National Weather Service Hydrometeorological Design Studies Center, Precipitation Frequency Data Server (hdsc.nws.noaa.gov), point 43.4737 N, 115.5942 W, partial duration series in inches, retrieved 2026-10-19. Depth is the most rain expected in the stated time, on average once per return period: a 25-year storm has about a 4 percent chance of happening in any one year. The 90 percent interval says where the true depth probably lies (lower_in to upper_in). The atlas covers rain, not snowmelt.
- **Prairie SNOTEL**, NRCS station 704, hourly and daily air temperature: NRCS Air and Water Database REST service, station 704:ID:SNL, observed air temperature (TOBS) every hour and daily maximum and minimum (TMAX, TMIN), retrieved 2026-10-19. Hourly readings are complete from 2005 on. Before 2005 the station logged about every third hour or less, so those years are not used here.
- **NOAA HRRR model cell at the lot**: Open-Meteo historical forecast archive, model `ncep_hrrr_conus`, hourly 10 m wind for 43.4737 N, 115.5942 W, retrieved 2026-10-19. A 3 km weather model, so it smooths hills and valleys and can miss local wind patterns. The cell is 0.9 mile north-northeast of the lot at nearly the same elevation.
- **Pine Turnoff**, Idaho Transportation Department road weather station ITD51: Iowa Environmental Mesonet archive, network ID_RWIS, station ITD51, the first reading of each hour from 2010 through 2025, retrieved 2026-10-19. Measured wind at 5,463 ft, 19.8 miles southeast of the lot and about 700 ft higher. It has readings for 89 percent of the hours in 2010 to 2025.
- **Mountain Home Air Force Base airport weather station (ASOS KMUO)**: Iowa Environmental Mesonet archive, network ID_ASOS, station MUO, routine hourly reports from 2010 through 2025, retrieved 2026-10-19. Measured wind on the Snake River plain at 2,996 ft, 32.8 miles south-southwest of the lot and about 1,750 ft lower, so its winds are shaped by the plain more than by the hills near Prairie. It has reports for 93 percent of the hours in 2010 to 2025.
- **NASA POWER wind at 10 m**: NASA POWER climatology API, parameter WS10M, community AG, point 43.4737 N, 115.5942 W, climatological period January 2001 to December 2025, retrieved 2026-10-19. A global model on a grid roughly 50 km wide. It is too coarse to say anything about direction or gusts, so only its monthly average speed is kept.
- **NASA POWER, all-sky surface shortwave downward irradiance**: NASA POWER climatology API, parameter ALLSKY_SFC_SW_DWN, community AG, point 43.4737 N, 115.5942 W, period January 2001 to December 2025, retrieved 2026-10-19. A satellite-and-model product on a grid roughly 50 km wide. It is not a measurement at the lot.
- **Daymet version 4**, daylight-average shortwave radiation times day length: ORNL Daymet single-pixel API, variables `srad` and `dayl`, 43.4737 N, 115.5942 W, daily 1991 to 2020, retrieved 2026-10-19. A 1 km model built from weather stations and terrain, and the same product the site climate page uses for temperature. It is not a measurement at the lot.
- **PVGIS with the NREL National Solar Radiation Database**: European Commission PVGIS version 5.2, monthly radiation tool, database PVGIS-NSRDB, horizontal irradiation, 43.4737 N, 115.5942 W, 2005 to 2015, retrieved 2026-10-19. A satellite-based estimate averaged over 11 years. It is not a measurement at the lot.
- **NASA POWER, relative humidity at 2 m**: NASA POWER climatology API, parameter RH2M, community AG, point 43.4737 N, 115.5942 W, period January 2001 to December 2025, retrieved 2026-10-19. A model on a grid roughly 50 km wide. It is not a measurement at the lot.
- **NOAA National Centers for Environmental Information, Storm Events Database**: NCEI Storm Events bulk files (`StormEvents_details`, Idaho, event type Hail), 1996 through 2025, retrieved 2026-10-19. Hail reports with a start latitude and longitude within 25 miles of the lot. A report exists only if someone saw the hail and told the weather service, so the list undercounts, and hail falls in narrow swaths, so a miss nearby proves nothing.
- **Elmore County, Building Permit Requirements, Local Design Requirements** (retrieved Oct 19, 2026). It says: *"Footing Depth: 24" below frost line — Areas below Tollgate; 30" below frost line — Tollgate to Featherville; 36" below frost line — Above Featherville. Snow Load: Recreation area: 120 lbs ground snow load (Must be designed by an Idaho State Engineer (R.301.1.3 & R.301.2.3)); Remaining areas: 30 lbs ground snow load. Wind Load: 115 MPH (IRC) (Residential); 95–120 MPH (IBC) (Commercial). Seismic Design: Zone C — South of Featherville; Zone D — North of Featherville."*
- **Elmore County, Frost Depth Zones map** (retrieved Oct 19, 2026). It says: *"30" frost depth zone"*
- **Elmore County, Ground Snow Load Zones map** (retrieved Oct 19, 2026). It says: *"120 lb. per sq. ft. zone"*
- **Elmore County, Building Permit Application** (June 3, 2026 version) (retrieved Oct 19, 2026). It says: *"Building Plans for elevations above 5,000ft: Any plans for any building above Tollgate (areas above approximately 5,000ft in elevation) will require an engineer/design professional report ... stamped by an engineer showing the structure will withstand 120lbs per sq.ft snow load and wind speeds of 115mph. This requirement is due to the extreme snow load in the mountain areas."*

How the numbers are counted

- **Water year**. A water year runs from October 1 to September 30 and is named for the year it ends: water year 2026 began on October 1, 2025.
- **Peak snow water equivalent (SWE)**: the most water the snow on the pillow held on any day from October 1 to July 31, in inches. One inch of water weighs about 5.2 pounds per square foot.
- **Water-year precipitation**: the gauge's running total on September 30, in inches. A gauge catches less snow when the wind blows, so the true total may be somewhat higher.
- **Monthly precipitation**. Average precipitation in each calendar month over the 30 water years 1991 to 2020, from the gauge's daily increments.
- **Degree days, hourly method**. Degree days from every hourly reading: each hour counts how far the temperature stood above the base, up to a cap of 86 F, divided by 24. An hour the station did not record counts as zero, and a year is used only if at least 99 percent of its hours were recorded.
- **Degree days, daily-average shortcut**. The common shortcut: the day's high plus its low, divided by 2, minus the base, never below zero, added up over the year. It uses the station's daily high and low; a day with none takes the highest and lowest of its hourly readings if at least 20 were recorded, and counts nothing otherwise. It ignores the warm part of a cool day, so here it comes out 7 to 14 percent lower than the hourly method.
- **Degree-day bases**. Published tree-fruit and insect charts use a base of either 43 F or 50 F, so both are given. Check which method and base a chart uses before comparing it with these.
- **Chill hours, 32 to 45 °F**. Hours from November 1 through the end of February with a reading from 32 F to 45 F. Nursery and extension sources count chill hours in one of two ways, so both are given.
- **Chill hours, 45 °F or below**. Hours from November 1 through the end of February at or below 45 F, including the hours below freezing.
- **Seasons**. Winter is December to February, spring March to May, summer June to August, and fall September to November.
- **Percentiles**. "1 year in 10 below" is the 10th percentile and "1 year in 10 above" the 90th, over the years each table names. The data check recomputes every summary from the yearly rows, so a hand edit that disagrees fails the build.

Prairie Plants · Site baselines · created October 19, 2026 · data in `data/site_baselines.json` and the SQLite tables built from it (`snow_years`, `design_storms`, `site_baseline_months`).