



# Severe Weather

What Constitutes Severe Weather in Whitman County?

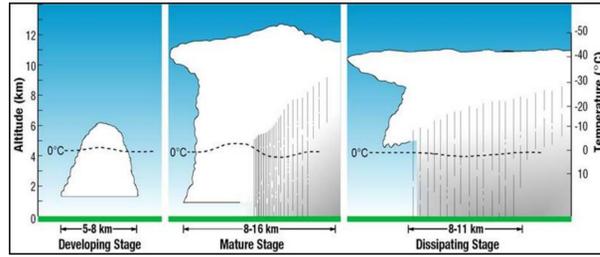
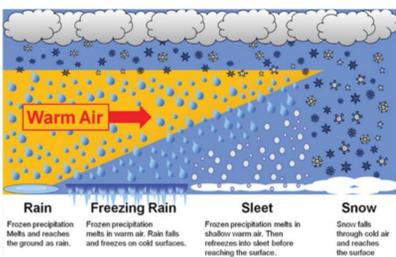


## Hazard Description

Severe weather refers to any dangerous meteorological phenomena with the potential to cause damage, social disruption, or loss of human life. Severe weather differs from extreme weather, which refers to unusual weather events at the extremes of the historical distribution.

General severe weather covers wide geographic areas; localized severe weather affects more limited areas. While the entire County is susceptible to severe weather events, storm systems can stall, impacting one area more than others. The severe weather event(s) that most typically impact the planning area is a damaging windstorm, accompanied by heavy rains which cause flooding and increase the risk of landslides.

Types of Precipitation Impacting Whitman County



Life-cycle of Thunderstorm

## Types of Severe Weather Occurring in Whitman County

**Freezing Rain**—The result of rain occurring when the temperature is below the freezing point. The rain freezes on impact, resulting in a layer of glaze ice up to an inch thick. In a severe ice storm, an evergreen tree 60 feet high and 30 feet wide can be burdened with up to six tons of ice, creating a threat to power and telephone lines and transportation routes.

**Hailstorm**—Any thunderstorm which produces hail that reaches the ground is known as a hailstorm. Hail has a diameter of 0.20 inches or more. Hail is composed of transparent ice or alternating layers of transparent and translucent ice at least 0.04 inches thick. Although the diameter of hail is varied, in the United States, the average observation of damaging hail is between 1 inch and golf ball-sized 1.75 inches. Stones larger than 0.75 inches are usually large enough to cause damage.

**Severe Local Storm**—“Microscale” atmospheric systems, including tornadoes, thunderstorms, windstorms, ice storms and snowstorms. These storms may cause a great deal of destruction and even death, but their impact is generally confined to a small area. Typical impacts are on transportation infrastructure and utilities.

**Thunderstorm**—A storm featuring heavy rains, strong winds, thunder and lightning, typically about 15 miles in diameter and lasting about 30 minutes. Hail and tornadoes are also dangers associated with thunderstorms. Lightning is a serious threat to human life. Heavy rains over a small area in a short time can lead to flash flooding.

**Tornado**— Most tornadoes have wind speeds less than 110 miles per hour are about 250 feet across and travel a few miles before dissipating. The most extreme tornadoes can attain wind speeds of more than 300 miles per hour, stretch more than two miles across, and stay on the ground for dozens of miles. They are measured using the Enhanced Fujita Scale, ranging from EF0 to EF5.

**Windstorm**—A storm featuring violent winds. Southwesterly winds are associated with strong storms moving onto the coast from the Pacific Ocean. Southern winds parallel to the coastal mountains are the strongest and most destructive winds. Windstorms tend to damage ridgelines that face into the winds. See illustrations below of previous wind events to impact the area.

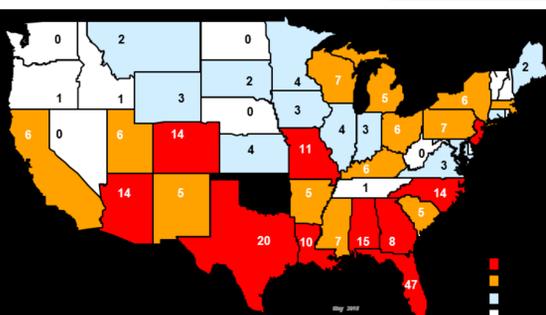
**Winter Storm**—A storm having significant snowfall, ice, and/or freezing rain; the quantity of precipitation varies by elevation.

Relative Humidity (%)	40	45	50	55	60	65	70	75	80	85	90	95	100
40	80	81	82	83	84	85	86	87	88	89	90	91	92
45	81	82	83	84	85	86	87	88	89	90	91	92	93
50	82	83	84	85	86	87	88	89	90	91	92	93	94
55	83	84	85	86	87	88	89	90	91	92	93	94	95
60	84	85	86	87	88	89	90	91	92	93	94	95	96
65	85	86	87	88	89	90	91	92	93	94	95	96	97
70	86	87	88	89	90	91	92	93	94	95	96	97	98
75	87	88	89	90	91	92	93	94	95	96	97	98	99
80	88	89	90	91	92	93	94	95	96	97	98	99	100
85	89	90	91	92	93	94	95	96	97	98	99	100	100
90	90	91	92	93	94	95	96	97	98	99	100	100	100
95	91	92	93	94	95	96	97	98	99	100	100	100	100
100	92	93	94	95	96	97	98	99	100	100	100	100	100

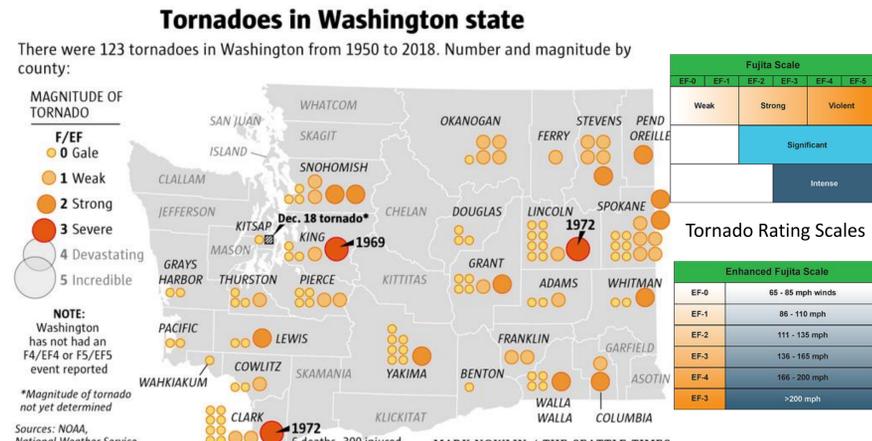
Wind Speed (mph)	0	5	10	15	20	25	30	35	40
40	0	0	0	0	0	0	0	0	0
35	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0

Air Temperature (°F)	40	45	50	55	60	65	70	75	80	85	90	95	100
40	0	0	0	0	0	0	0	0	0	0	0	0	0
45	0	0	0	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0	0	0	0
65	0	0	0	0	0	0	0	0	0	0	0	0	0
70	0	0	0	0	0	0	0	0	0	0	0	0	0
75	0	0	0	0	0	0	0	0	0	0	0	0	0
80	0	0	0	0	0	0	0	0	0	0	0	0	0
85	0	0	0	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	0	0	0	0

Did you know that heat impacts the young and elderly differently? These two heat indices identify potential risk. The top chart is for adults. The one beneath is for children.



Fatalities Associated with Lightning Strikes



**Interesting Fact:** Guess whose childhood home was wrecked by Seattle's first recorded tornado in 1962? Bill Gates, who was 6 at the time. According to the Seattle Times archives, Gates was very concerned about his bicycle. The tornado uprooted trees, throwing a 30-foot tree into a swimming pool, smashed car windows, and ripped roofs off homes. Thankfully, no one was injured.

Wind (mph)	5	10	15	20	25	30	35	40	45
5	36	31	25	19	13	7	1	-5	-11
10	34	27	21	15	9	3	-4	-10	-16
15	32	25	19	13	6	0	-7	-13	-19
20	30	24	17	11	4	-2	-9	-15	-22
25	29	23	16	9	3	-4	-11	-17	-24
30	28	22	15	8	1	-5	-12	-19	-26
35	28	21	14	7	0	-7	-14	-21	-27
40	27	20	13	6	-1	-8	-15	-22	-29
45	26	19	12	5	-2	-9	-16	-23	-30
50	26	19	12	4	-3	-10	-17	-24	-31
55	25	18	11	4	-3	-11	-18	-25	-32
60	25	17	10	3	-4	-11	-19	-26	-33

**Frostbite Times**

- 30 minutes
- 10 minutes
- 5 minutes

**Wind Chill (°F) = 35.74 + 0.6215T - 35.75(V<sup>0.16</sup>) + 0.4275T(V<sup>0.16</sup>)**

Where: T= Air Temperature (°F) V= Wind Speed (mph) Effective 11/01/01

**Wind Chill** – Do you know what wind speed and temperature can cause frost bite? A temperature of 5° (F) and a wind speed of 30 mph equals a wind chill of -19, producing frostbite in 30 minutes.



Nationwide Fatalities for Weather Events

Loss Potential for the Severe Weather Hazard				
City	Assessed Value	10% Damage	30% Damage	50% Damage
Albion	\$61,042,000	\$6,104,200	\$18,312,600	\$30,521,000
Colfax	\$416,691,000	\$41,669,100	\$125,007,300	\$208,345,500
Colton	\$40,960,000	\$4,096,000	\$12,288,000	\$20,480,000
Endicott	\$29,886,000	\$2,988,600	\$8,965,800	\$14,943,000
Farmington	\$14,796,000	\$1,479,600	\$4,438,800	\$7,398,000
Garfield	\$79,634,000	\$7,963,400	\$23,890,200	\$39,817,000
LaCrosse	\$31,443,000	\$3,144,300	\$9,432,900	\$15,721,500
Lamont	\$8,538,000	\$853,800	\$2,561,400	\$4,269,000
Malden	\$21,099,000	\$2,109,900	\$6,329,700	\$10,549,500
Oakesdale	\$51,441,000	\$5,144,100	\$15,432,300	\$25,720,500
Palouse	\$88,970,000	\$8,897,000	\$26,691,000	\$44,485,000
Pullman	\$2,853,404,000	\$285,340,400	\$856,021,200	\$1,426,702,000
Rosalia	\$54,020,000	\$5,402,000	\$16,206,000	\$27,010,000
St. John	\$65,786,000	\$6,578,600	\$19,735,800	\$32,893,000
Tekoa	\$80,876,000	\$8,087,600	\$24,262,800	\$40,438,000
Uniontown	\$38,648,000	\$3,864,800	\$11,594,400	\$19,324,000
Unincorporated	\$855,689,000	\$85,568,900	\$256,706,700	\$427,844,500
<b>Total</b>	<b>\$4,792,923,000</b>	<b>\$479,292,300</b>	<b>\$1,437,876,900</b>	<b>\$2,396,461,500</b>

Potential Losses Based on 10/ 30 /50 Percent of Building and Content Value