

Section 12. Winter Storms

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Why Winter Storms Are a Threat

A severe winter storm includes snow, ice, freezing rain, or some combination of these – any one of which could cause significant problems. Winter storms that threaten Central Texas usually start out as powerful cold fronts that push south from Canada.

Hazard Profile

The severity of impact of winter storms is generally minor, although they can cause injuries, completely shut down facilities for more than a week, and destroy or damage more than ten percent of affected properties. A heavy accumulation of ice can topple power and telephone lines, television towers, and trees. Highways become impassable, and even stepping outdoors can be an extremely risky undertaking. Utility disruptions from winter storms can severely impact the delivery of services. Water pipes can freeze and crack in sub-freezing temperatures. Ice can build up on power





GUADALUPE-BLANCO RIVER AUTHORITY

lines and cause them to break under the weight, or ice on trees can cause tree limbs to fall on the lines. These events can disrupt electric service for long periods.

Warning time for winter storms is generally six to twelve hours.

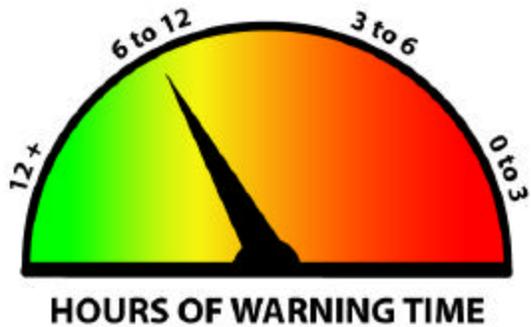
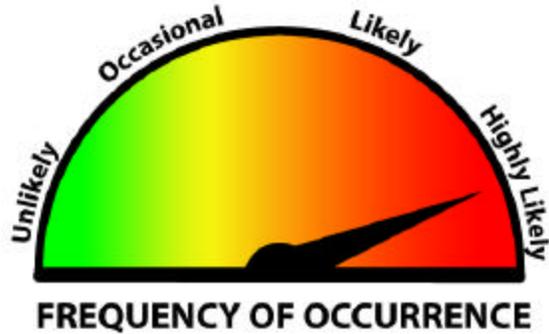
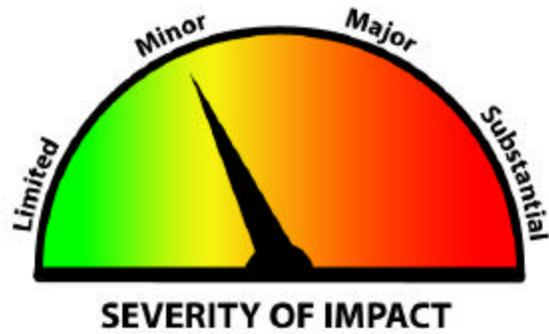


Figure 12-1. Severe Winter Storm Hazard Profile Summary



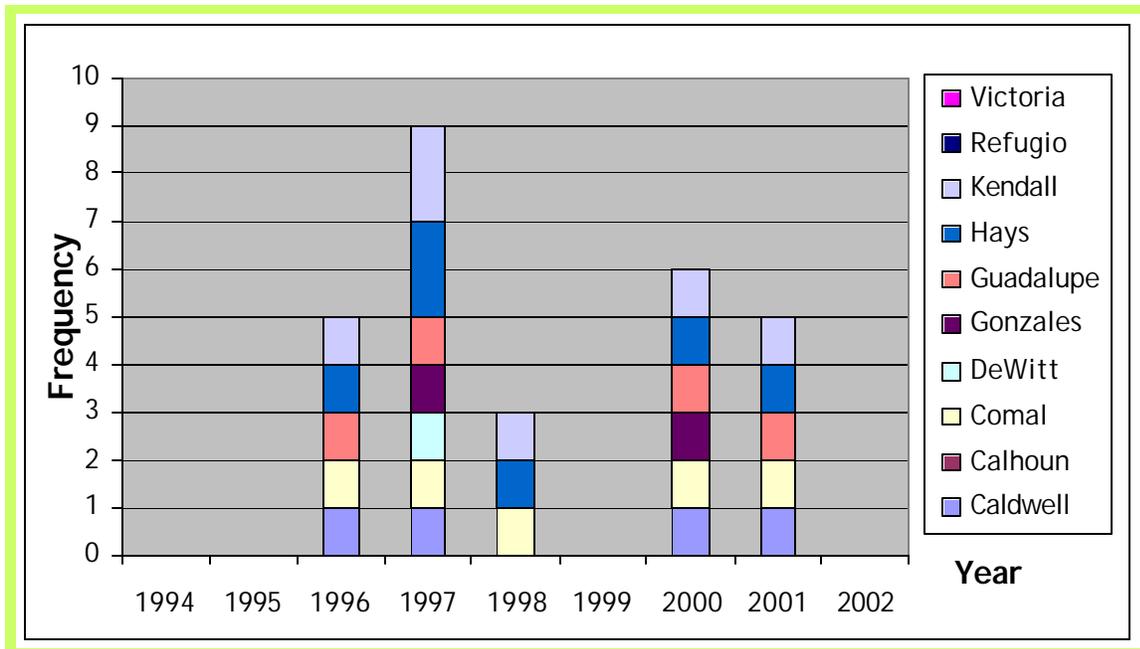
Table 12-1. Winter Weather Alerts

Winter weather advisory	This alert may be issued for a variety of severe conditions. Weather advisories may be announced for snow, blowing or drifting snow, freezing drizzle, freezing rain, or a combination of weather events.
Winter storm watch	Severe winter weather conditions may affect your area (freezing rain, sleet or heavy snow may occur separately or in combination).
Winter storm warning	Severe winter weather conditions are imminent.
Freezing rain or freezing drizzle	Rain or drizzle is likely to freeze upon impact, resulting in a coating of ice glaze on roads and all other exposed objects.
Sleet	Small particles of ice usually mixed with rain. If enough sleet accumulates on the ground, it makes travel hazardous.
Blizzard warning	Sustained wind speeds of at least 35 mph are accompanied by considerable falling or blowing snow. This alert is the most perilous winter storm with visibility dangerously restricted.
Frost/freeze warning	Below freezing temperatures are expected and may cause significant damage to plants, crops and fruit trees.
Wind chill	A strong wind combined with a temperature slightly below freezing can have the same chilling effect as a temperature nearly 50 degrees lower in a calm atmosphere. The combined cooling power of the wind and temperature on exposed flesh is called the wind-chill factor.

History of Winter Storms

Figure 12-2 plots the frequency of historical winter storms as reported to the National Oceanic and Atmospheric Administration.

Figure 12-2. Frequency of Historical Winter Storms Reported in the Guadalupe River Basin



A list of specific winter storms events is shown in Table 12-2 below.



Table 12-2. Historical Winter Storms Reported in the Guadalupe River Basin

Lower Basin

No snow and ice storms were reported for the Lower Basin.

Middle Basin

Event	Year	Date	Injuries	Deaths	County/ Community
CALDWELL COUNTY					
Winter storm	1996	1 Feb	0	0	
Winter storm	1997	11 Jan	0	0	
Winter storm	2000	12 Dec	0	0	
Winter storm	2001	28 Nov	0	0	
Total Number of Storms: 4					
DEWITT COUNTY					
Winter storm	1997	01 Jan	0	0	
Total Number of Storms: 1					
GONZALES COUNTY					
Winter storm	1997	11 Jan	0	0	
Winter storm	2000	12 Dec	0	0	
Total Number of Storms: 2					

Source: National Climatic Data Center, National Oceanic and Atmospheric Administration.





Upper Basin

Event	Year	Date	Injuries	Deaths	County/ Community
GUADALUPE COUNTY					
Winter storm	1996	1 Feb	0	0	Guadalupe
Winter storm	1997	11 Jan	0	0	Guadalupe
Winter storm	2000	12 Dec	0	0	Guadalupe
Winter storm	2001	28 Nov	0	0	Guadalupe
Total Number of Storms: 4					
HAYS COUNTY					
Winter storm	1996	1 Feb	0	0	Hays
Winter storm	1997	7 Jan	0	0	Hays
Winter storm	1997	11 Jan	0	0	Hays
Winter storm	1998	23 Dec	0	0	Hays
Winter storm	2000	12 Dec	0	0	Hays
Winter storm	2001	28 Nov	0	0	Hays
Total Number of Storms: 6					
KENDALL COUNTY					
Winter storm	1996	1 Feb	0	0	Kendall
Winter storm	1997	7 Jan	0	0	Kendall
Winter storm	1997	11 Jan	0	0	Kendall
Winter storm	1998	23 Dec	0	0	Kendall
Winter storm	2000	12 Dec	0	0	Kendall
Winter storm	2001	28 Nov	0	0	Kendall
Total Number of Storms: 6					

Source: National Climatic Data Center, National Oceanic and Atmospheric Administration.



People and Property at Risk

Winter storms usually impact large geographical areas, thus all the population, buildings, critical facilities, infrastructure and lifelines, and hazardous materials facilities are considered exposed to the hazard and could potentially be affected.

Table 12-3. Exposure to Severe Winter Storms, by Occupancy Class and County

Jurisdiction	Exposed Population (2000)	Residential Buildings Exposed		Commercial Building Exposed		Critical Facilities Exposed
		Number	Value (\$)	Number	Value (\$)	
Caldwell	32,194	11,374	2,387,436,000	60	285,885,000	33
Calhoun	20,647	9,835	2,171,890,000	78	281,066,000	75
Comal	78,021	42,027	10,237,572,000	214	927,348,000	70
DeWitt	20,013	6,983	1,530,674,000	50	249,433,000	33
Gonzales	18,628	6,510	1,315,844,000	45	208,323,000	26
Guadalupe	89,023	39,668	8,760,265,000	232	950,030,000	77
Hays	97,589	45,837	12,655,070,000	333	1,433,860,000	64
Kendall	23,743	12,844	3,164,217,000	85	391,066,000	23
Refugio	7,828	2,953	640,396,000	11	54,484,000	22
Victoria	84,088	36,206	9,418,849,000	348	1,548,383,000	69
TOTALS	471,774	214,237	52,282,213,000	1,456	6,329,878,000	492

Potential Damages and Losses

A detailed risk assessment and loss estimation was not completed for this hazard due to the infrequency of winter storms in the area. Data are not available, therefore, on annualized losses from winter storms.

GBRA facilities (described on pages 4-18 and 4-19) are also at risk from this hazard. However, no estimate is currently available of potential damages and losses to those facilities.

