

# CHAPTER 9 – WINTER WEATHER

Updates to the Wicomico County Chapter 9 – Winter Weather included the following:

- Updated Event Tables 9.1 & 9.2 for additional recorded Extreme Cold and Winter Weather Events.
- Integrated aspects of the Wicomico County Extreme Temperatures Preparedness and Response Plan.
- Added pre-event mitigation triggers and actions.
- Reviewed social vulnerability index and incorporated into chapter.
- Updated conclusions and identified potential outstanding generator needs and recommendations for updates to the 2016 *Wicomico County Preparedness and Response Plan for Extreme Temperatures Version 2.4 including recent amendments*.

## CHAPTER 9 – WINTER WEATHER

### 9.1 HAZARD CHARACTERIZATION

Winter weather can cause a wide variety of impacts including school, government and business closings, traffic accidents, power outages, loss of communication, and damage to buildings such as a roof collapsing due to the amount of snow pack. Sleet, freezing rain, snow, and extremely cold temperatures are all associated with winter storms and winter weather. Flooding and flash flooding may also occur from warming temperatures that result in rapid snowmelt and subsequent runoff.

A winter storm warning is issued when snowfall is expected to accumulate more than four (4) inches in twelve (12) hours. The most significant snowstorms in Maryland history have had accumulations ranging from 12 to over 50 inches, and typically tend to occur in the months of January or February.

### 9.2 HAZARD RISK & HISTORY

Historic record winter storm events, i.e. blizzards, occurred in Wicomico County in January of 1996, February of 2010 and January of 2018; areas of the County reported between six (6”) and thirteen (13”) inches of snow.

The *National Oceanic and Atmospheric Administration (NOAA), National Centers for Environmental Information (NCEI)* reported one (1) extreme cold event and seventy four (74) significant winter storm or winter weather events (including events categorized as a blizzard or ice storm) for the County from the period of 1996-2020; selected event details and descriptions are provided in Tables 9.1 and 9.2, respectively. While many of the winter storm/weather events are provided in the previous HMP and in the *NCEI*, only past events that indicated accumulations of five (5) inches or greater are provided herein; however, all winter storm/weather events listing in the *NCEI* since the previous HMP update are included.

**Table 9.1: Extreme Cold Events**

| Date  | Event Narrative   |
|---|---|
| February 5-7, 1996  | An arctic air mass settled over the mid-Atlantic states resulting in record breaking cold across the lower Maryland eastern shore. The temperature dropped to 1 below zero at the Salisbury airport on the morning of the 5 <sup>th</sup> . |
| <b>2021 HMP Update</b>  |   |
| No Extreme Cold events were reported in the NCEI database since the 2016 HMP Plan Update. |   |

Source: NOAA NCEI



Source: [www.delmarvanow.com](http://www.delmarvanow.com) – January 4, 2018 – Picture from Susan Parker video

**Table 9.2: Winter Storms – Winter Weather – Blizzard – Significant Snow and Ice Events**

| <b>Date</b>            | <b>Event</b>   | <b>Event Narrative</b>  |
|------------------------|----------------|---|
| January 6, 1996        | Winter Storm   | A major winter storm (popularly known as the "blizzard of 96") affected much of the mid-Atlantic region during the weekend of January 6-8, 1996.  |
| February 2, 1996       | Winter Storm   | Winter storm tracked northeast from the gulf coast states to off the Virginia coast. It spread heavy snow across the lower Maryland eastern shore from early Friday morning into Sunday afternoon. Snow amounts generally ranged from 12 to 24 inches.  |
| January 20, 2000       | Winter Storm   | Four to six inches of snow fell across the area as an area of low pressure passed to the south of the region. The heaviest totals were recorded in Somerset and northern Wicomico counties. Snow briefly fell heavily during the early morning hours, creating hazardous driving conditions on area highways.   |
| January 25, 2000       | Winter Storm   | Wicomico county including Salisbury received 6 to 9 inches, and Somerset county picked up 6 inches. Winds gusted over 30 mph, producing blowing and drifting snow during the late afternoon and evening hours.  |
| February 22, 2001      | Winter Storm   | A winter storm produced 3 to 6 inches of snow across the Lower Maryland Eastern Shore. The specific snow total for Salisbury Airport in Wicomico county 5-6 inches. Schools were dismissed early and most were closed the following day due to slippery road conditions.  |
| February 15, 2003      | Winter Storm   | 6 inches fell in Delmar. Local law enforcement agencies reported numerous accidents. Schools were closed Monday, February 17th due to very slippery road conditions.  |
| December 18, 2009      | Winter Storm   | Snowfall amounts were generally between four and fourteen inches across the county.   |
| January 30, 2010       | Winter Storm   | Snowfall amounts were generally between seven and eleven inches across the county. Salisbury reported 11.0 inches of snow. Parsonsburg reported 10.2 inches of snow. Sharptown reported 8.0 inches of snow. Low pressure moving off the coastal Carolinas produced between six and thirteen inches of snow across the Lower Maryland Eastern Shore from Saturday morning into Saturday night January 30th.  |
| February 9-10, 2010    | Blizzard       | Snowfall amounts were generally between five and ten inches across the county. Sharptown reported 10.0 inches of snow. Salisbury reported 8.0 inches of snow. Snow, heavy at times, occurred with northwest winds 30 to 40 mph with gusts to 50 mph, resulting in poor visibilities and even whiteout conditions.   |
| February 5-6, 2010     | Winter Storm   | Snowfall amounts were generally between twelve and twenty inches across the county. Pittsville reported 20.0 inches of snow. Sharptown reported 19.0 inches of snow. Mardela Springs reported 18.0 inches of snow. Salisbury Airport reported 14.0 inches of snow. Fruitland reported 12.0 inches of snow. Low pressure moving off the coastal Carolinas produced between six and twenty inches of snow across the Lower Maryland Eastern Shore from Friday afternoon, February 5th, through Saturday afternoon February 6th. |
| December 25-27, 2010   | Winter Storm   | Snowfall amounts were generally between eight and thirteen inches across the county. Pittsville reported 12.5 inches of snow. Fruitland reported 11.8 inches of snow. Low pressure moving north just off the Mid Atlantic Coast produced between four and fifteen inches of snow across the Lower Maryland Eastern Shore from Saturday evening, December 25th, into early Monday morning December 27th. Also, the storm produced near blizzard conditions over portions of the area.  |
| March 16-17, 2014      | Winter Storm   | Snowfall amounts between 5.0 inches and 7.0 inches occurred across the county, with 7.0 inches of snowfall reported in Mardela Springs and 1 mile east of Salisbury. A complex area of low pressure developed along a stalled cold front across the Southeast United States with weak high pressure over New York, creating snow across the Lower Maryland Eastern Shore.   |
| <b>2021 HMP Update</b> |                |   |
| February 16-17, 2015   | Winter Storm   | Snowfall amounts were generally between five inches and eight inches across the county. Salisbury and Pittsville reported 8.0 inches of snow. Parsonsburg reported 6.0 inches of snow.  |
| February 26, 2015      | Winter Storm   | Snowfall amounts were generally between three inches and seven inches across the county. Fruitland reported 7.0 inches of snow. Salisbury and Delmar reported 5.0 inches of snow.   |
| March 1, 2015          | Winter Weather | Ice accumulations ranged from a trace to .15 inch. Mardela Springs reported .15 inch of ice.  |
| March 5, 2015          | Winter Storm   | Snowfall amounts were generally between two inches and five inches across the county. Sharptown reported 4.5 inches of snow. Salisbury (2 N) and Pittsville Manor reported 4.0 inches of snow. Delmar reported 3.5 inches of snow.  |

| Date                | Event          | Event Narrative   |
|---------------------|----------------|---|
| January 22, 2016    | Winter Storm   | Snowfall totals were generally between 3 inches and 8 inches across the county. Salisbury reported 6.0 inches of snow. Westbury Acres reported 4.8 inches of snow.  |
| February 15, 2016   | Winter Storm   | Snowfall totals were generally between 3 inches and 5 inches across the county. Delmar, Maple Plains, and Pittsville reported 5.0 inches of snow. Salisbury reported 4.0 inches of snow.  |
| March 3-4, 2016     | Winter Storm   | Snowfall totals were generally between 4 inches and 6 inches across the county. Salisbury reported 5.2 inches of snow. Hebron reported 4.5 inches of snow.  |
| January 30, 2017    | Winter Weather | Snowfall totals were generally between 0.5 inch and 2 inches across the county. Hebron reported 1.5 inches of snow. Salisbury Airport (SBY) reported 0.5 inch of snow.  |
| January 3-4, 2018   | Blizzard       | Snowfall totals ranged between six inches and thirteen inches across the county. Very strong north to northwest winds of 30 to 45 mph affected the area, producing blowing snow and poor visibilities. Pittsville reported 13.0 inches of snow. Salisbury Wicomico Airport reported 12.5 inches of snow. Hebron reported 9.0 inches of snow. Parsonsburg reported 6.4 inches of snow. Travel and clean up were severely hampered by significant drifting of snow. |
| March 21-22, 2018   | Winter Weather | Snowfall totals ranged between one inch and three inches across the county. Pittsville reported 1.5 inches of snow. Parsonsburg reported 1.0 inch of snow.  |
| December 9, 2018    | Winter Weather | Snowfall totals generally ranged between one half inch and two inches across the county.  |
| January 12-14, 2019 | Winter Storm   | Snowfall totals generally ranged between three inches and four inches across the county. Delmar reported 4.0 inches of snow. Parsonsburg (2 WNW) reported 3.7 inches of snow. Salisbury-Wicomico Airport reported 3.5 inches of snow.   |
| February 1, 2019    | Winter Weather | Snowfall totals generally ranged between one half inch and one inch across the county. Delmar reported 1.0 inch of snow. Salisbury reported 0.9 inch of snow.   |

Source: NOAA NCEI

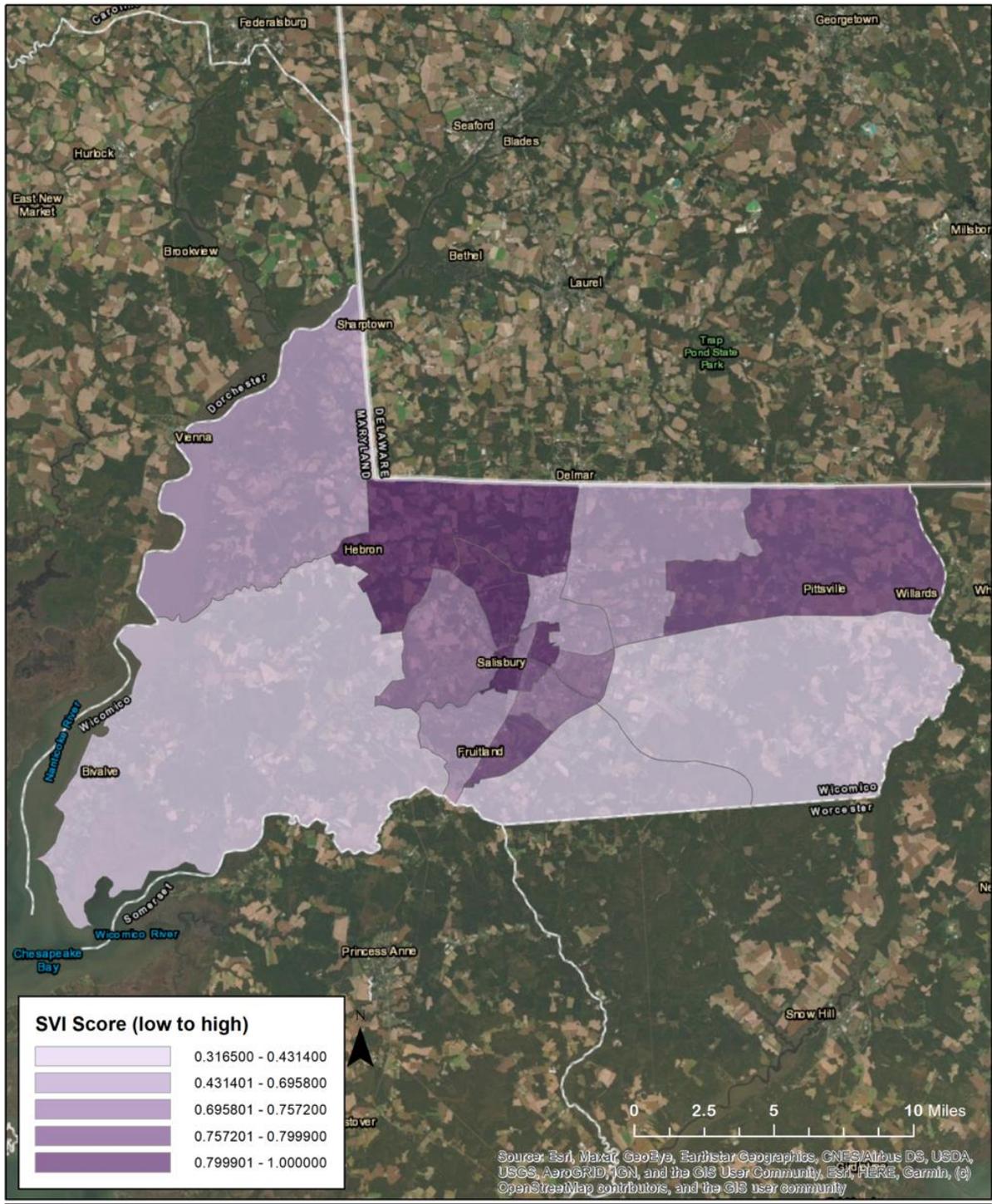
In terms of number of occurrences, the NOAA NCEI listed a total of 75 winter storm and/or winter weather events affecting Wicomico County from the period of 1996-2020. Therefore, Wicomico County experiences, on average, approximately 3.0 substantial winter storm or winter weather events per year.

### 9.3 SOCIAL VULNERABILITY INDEX

According to the CDC, “Social Vulnerability” refers to the potential negative effects on communities caused by external stresses on human health. Such stresses include natural or human-caused disasters, or disease outbreaks. Reducing social vulnerability can decrease both human suffering and economic loss.

Therefore, it is important to identify areas or populations within any community that may be more vulnerable to external environmental factors such as extreme cold and winter weather. Map 9.1 provides a broad illustration of the Social Vulnerability Index (SVI) for Wicomico County. Understanding the SVI within Wicomico County can facilitate the implementation of mitigation measures to address impacts to communities when extreme cold and winter weather events occur. Areas shown as having the highest SVI score are depicted in dark purple and include the Towns of Hebron, Willards, Pittsville and the City of Salisbury.

Map 9.1: Wicomico County Social Vulnerability Index





**SP&D**  
Spatial Planning and Design

## Wicomico County - Social Vulnerability Index - 2018

Source: CDC/ATSDR SVI 2018, ACS 5-year Estimates



## 9.4 VULNERABILITY

The impacts associated with winter storms and winter weather are described in the hazard characterization of this chapter. The main impact that winter storms and/or winter weather can have on critical and/or public facilities is the closure of operations and power outages. Generators are necessary for critical facilities in order to continue operations during power outages. Facilities such as emergency management, police, fire, and EMS stations must be able to operate during winter storm power outages in order to provide necessary services to the public.

Winter storms and winter weather's underlying hazards can significantly affect the environment and everyday lives for many individuals. Potential impacts may include:

- **Roads** – Roadways are impacted by freezing rain, sleet, and black ice can dramatically worsen the driving hazard by creating dangerously slick, icy road conditions. The melting/refreezing process can occur for many days after a storm, and will only end once all moisture is melted and evaporated, and roads are dry.
- **Ice Accrual** – Freezing rain accumulation on trees can cause large limbs or whole trees to snap and possibly fall on homes, cars, and powerlines. This can create a very dangerous environment outdoors as well as widespread power outages.
- **Visibility** – Heavy snow can create dangerous driving conditions commonly referred to as “white out” conditions. The lack of visibility combined with slick, snow covered roads greatly increases the probability of an accident.
- **Loss of Power (Heating Hazards)** – As a result of power outages during very cold conditions, residents may be forced to find alternative means to heat their homes. Carbon monoxide poisoning is a concern due to improperly ventilated heating sources from space or kerosene heaters, furnaces, gas water heaters, gas stoves, fireplaces, and blocked chimneys.
- **Dangerously Cold Temperatures** – When temperatures fall into the teens and single digits, it becomes more dangerous to be outside for prolonged periods of time. Some major threats include wind chill, frostbite, and hypothermia.
- **Aircraft Icing** – Icing poses a major threat to air travel, resulting in lengthy flight delays and cancellations.

Wicomico County has developed and approved a plan to address and respond to extreme temperature events. An Excerpt from the Cold Weather Section is provided below that address and describe pre- event (mitigation) triggers and actions.

### Phase 1: Pre-Event (Mitigation)

- **Triggers:**
  - The NWS has predicted a weather system that will impact the county with colder than normal temperatures, which may or may not be accompanied with precipitation and/or including a Wind Chill Advisory or Warning.
    - DES will monitor weather forecasts for temperature and precipitation. Multiple resources will be used for the most reliable forecast for Wicomico County and may include: National Weather Service Wakefield Va. or other reliable resources.

- Conditions could potentially meet the definition of an **Extreme Cold Event** as defined in this plan.

**Extreme Cold Event-** an extreme cold event is a weather condition with excessively low temperatures or a combination of cold temperatures and wind that has the potential to cause cold-related illnesses or injuries. An extreme cold event is defined in hours, a day, or series of days when:

- The minimum temperature or wind chill is forecasted to be approximately -5 degrees Fahrenheit or lower.
- Weather or environmental conditions are such that a high incidence of cold-related illnesses or injuries can reasonably be expected.

- **Actions:**

- DES will schedule a routine conference call and brief partners on the potential weather impact of an extreme cold event and review current plans and response measures that would be taken, should additional actions be warranted during the storm or immediately after.
- Identify sheltering resources available in the community to manage populations greater than the resources that are normally available, including American Red Cross and Salvation Army.
- Identify transportation assets for individuals unable to self-transport.
- Identify roles and expectations of agencies, should an Incident Command Structure be put forth and/or sheltering operations are put in-place.
- Distribution of Press Releases to managing health and decreasing risk during cold weather.

## 9.5 CONCLUSION

Continuous power at facilities used for shelter operations and as warming centers are a priority. Continuity of operations at designated critical facilities is necessary to meet community needs and resiliency goals.

To that end, emergency generator back-up power at Wicomico County critical facilities listed within Appendix D were reviewed by the Hazard Mitigation Planning Committee (HMPC) for this plan update. This review yielded the following updates:

- Since the implementation of the 2016 Wicomico County HMP Update, several facilities have upgraded their generator capabilities. The previously identified facilities of James M. Bennett High School and the Wicomico Youth and Civic Center have received updated and /or new generators.
- Additionally, plans are ongoing to install new generators at Salisbury Middle and Parkside High Schools.
- The recommendation for generators at the Wicomico County Solid Waste Complex is on-going and partially complete.
- Finally, the installation of generators at high priority pumping locations in Salisbury: Waverly Drive, College Avenue, and Cherokee Lanes have been completed.

The *Wicomico County Preparedness and Response Plan for Extreme Temperatures Version 2.4* with recorded amendments was reviewed for this plan update. The following recommendations have been included in Chapter 14 Mitigation Strategies.

- Review and update extreme cold weather press release templates from December 2016.
- Review and update 2019 Partner Notifications List- Attachment C.
- Review 2016 Warming Center Information. Review Social Vulnerability Index- Figure 9.1 for areas shown as having the highest Social Vulnerability Index (SVI) score which include the Towns of Hebron, Willards, Pittsville, and the City of Salisbury. Ensure that warming centers are located within or near those areas shown as having the highest SVI scores.