

Duke Energy Carolinas, LLC & Duke Energy Progress, LLC  
Docket NO. M-100, Sub 163  
PSDR No. 2-14. Company View of Pending Storm – Wind and Cold Weather Event  
Period: December 19, 2022 through December 24, 2022

#### Duke Meteorology Weather

#### **Monday, December 19<sup>th</sup>:**

*Regarding the temperature forecasts:*

The daily weather forecast discussion was sent at 5:54am on 12/19:

An area of low pressure will lift north across the eastern Carolinas Wed night into Thursday. Not much agreement in the models regarding the timing of precipitation, which will have significant impacts on the temperatures. So, confidence is low in Thursday's temps.

Looks like this will be mainly a rain event. Could see some wintry mix over the higher elevations across the NC mountains on Wed night. May also get a brief period of wintry mix at onset across northeastern NC. The current forecast calls for DEC temps on Thursday starting in the upper 30s and only reaching the middle 40s. For DEP, starting out in the mid 40s and reaching the mid 50s. Again, low confidence.

A powerful cold front will move quickly across the region on Friday. The models differ on the exact timing of this front and the arrival of the much colder air mass behind it. However, in general, expecting temperatures to be warmer in the morning than the afternoon and turning much colder by evening. Could see mid-upper 20s across the DEC region by early evening.

The faster European model has temps mild in the morning then falling through the day. The slower American model has mild temps through midday then temps crashing in the afternoon. Our forecast more closely aligns with the European model solution. AM temps from the mid 40s west to mid 50s east, then late afternoon temps from the low 30s west to mid 40s east. Low confidence. Friday afternoon will be breezy along with the falling temperatures.

Very cold conditions are forecast for Saturday – Monday. Saturday and Sunday will both features morning lows in the middle teens to lower 20s and highs in the 30s. Monday will be slightly warmer with lows in the upper teens and lower 20s followed by highs in the upper 30s and lower 40s. Temperatures will continue to slowly moderate through the of next week, then above normal temperatures are forecast for the 11-15 day period.

Note: At this time, Duke Meteorology is forecasting a DEC system average low temperature of 17 degrees on the morning of Saturday 12/24 and a DEP system average low temperature of 21 degrees on the morning of Saturday 12/24. For Sunday 12/25, Duke Meteorology is forecasting a DEC system average temperature of 18 degrees and a DEP system average low temperature of 20 degrees.

*Regarding the threat of outage-producing winds on Friday:*

The daily weather outlook was sent at 7:18am on 12/19:

With the strong cold front coming through the region later this week, we are expecting very gusty winds (in excess of 40 mph) on Friday. The main uncertainty is the timing of the cold front, which would determine the timing of the peak wind gusts. This would determine whether the strongest wind gusts occur in the morning or in the afternoon. Widespread to significant power outages are possible due to the threat of wind gusts 40-50 mph.

With the "faster" European model solution with the front arriving Thursday night, the winds increase across the Carolinas 1am-7am on Friday. If this model solution is correct, by daybreak on Friday, we would be looking at wind gusts of 40-50mph across Carolinas-West and 35-40 mph across Carolinas-East. On Friday morning, wind gusts of 35-50 mph in the West; strongest along and east of I-77 and then 40-50 mph in the East. On Friday afternoon, wind gusts 30-35 mph in the West, 35-40 mph in the East.

The "slower" American model solution shows similar winds, just arriving a bit later. The winds don't increase until daybreak on Friday. By mid-morning, wind gusts of 35-40 mph for the western/central Carolinas. By early afternoon, gusts of 40-50 mph across the Carolinas-West and 35-45 mph across Carolinas-East. Then, in the afternoon, widespread wind gusts of 40-50 mph. By early afternoon, the gusts drop off in the West, but the East remains gusty. By mid-evening, wind gusts should be generally less than 40 mph area-wide.

Right now, the faster European model is preferred, which would produce strong, gusty winds across the region, especially Carolinas-West, prior to daybreak on Friday.