

**Today: United States is gripped in jaws of a Polar Vortex  
extreme cold weather event in Midwest and Northeast**

**December 27, 2017: nighttime low  
temperature in Duluth, Minnesota hit  
bone-chilling 41 degrees below zero F**

“The rising sun colors the fog over Lake Superior in warm tones that contrasts with the chill blue of ice-coated rocks along the shore of Brighton Beach”

Wednesday morning, Dec. 27, 2017

Image credit: Bob King / Forum News Service

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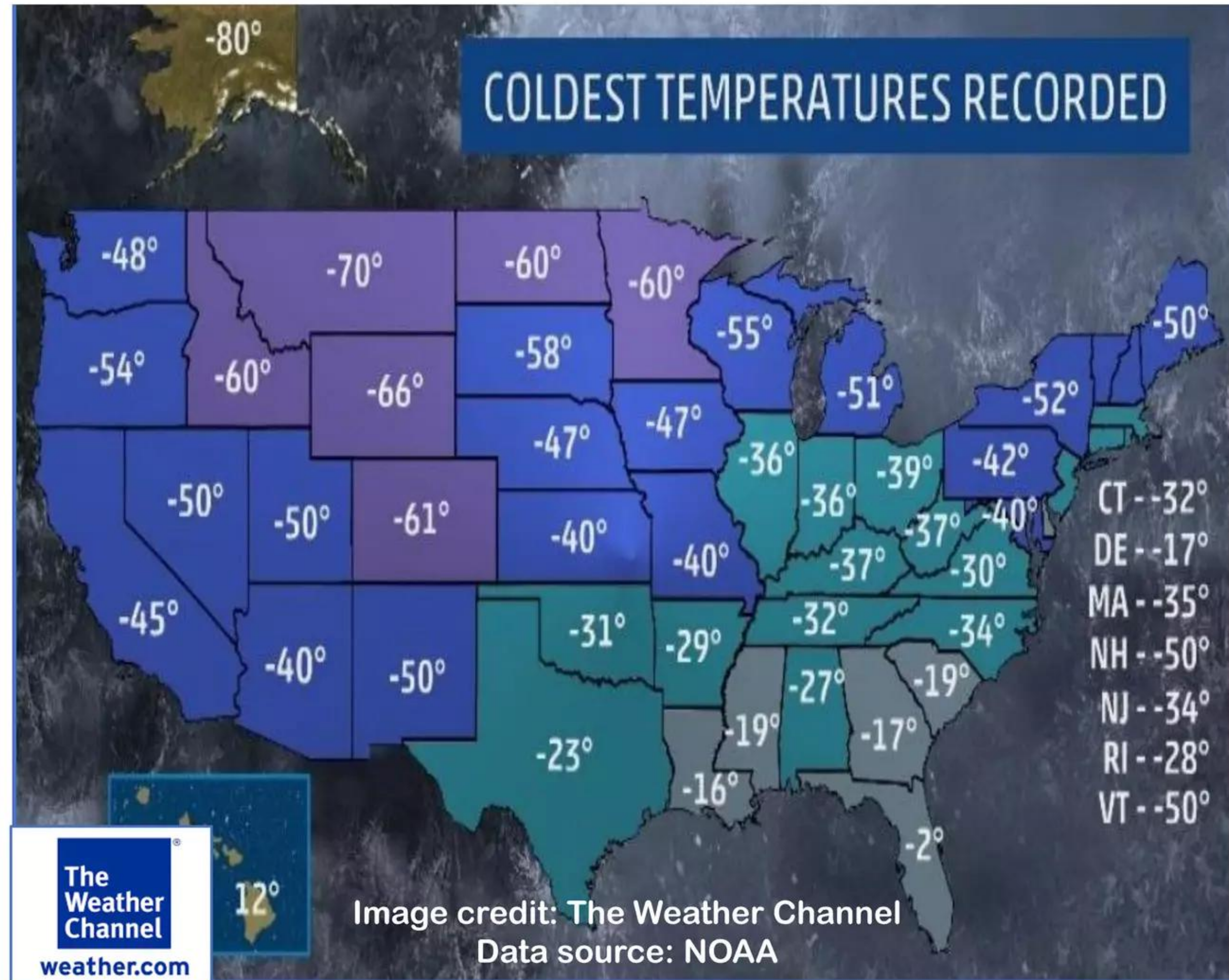


# Weather Channel's graphic shows all-time low temperatures

## Compare to slide showing forecast temps for Jan. 1, 2018 in Polar Vortex

### The Coldest Temperatures Ever Recorded in All 50 States

By Linda Lam · November 03 2016 02:00 PM EDT · weather.com



<https://weather.com/news/climate/news/coldest-temperature-recorded-50-states>



# Today: United States is gripped in jaws of a Polar Vortex extreme cold weather event in Midwest and Northeast

Long-standing records for low temperatures being broken at some locations

**The Washington Post**  
*Democracy Dies in Darkness*

Capital Weather Gang

## From Minneapolis to New York City, nation faces frigid New Year's Eve and start to 2018

By Jason Samenow for *The Washington Post* on December 28, 2017 at 10:12 AM

[https://www.washingtonpost.com/news/capital-weather-gang/wp/2017/12/27/from-minneapolis-to-new-york-city-nation-faces-frigid-new-years-eve-and-start-to-2018/?utm\\_term=.329a683850d4](https://www.washingtonpost.com/news/capital-weather-gang/wp/2017/12/27/from-minneapolis-to-new-york-city-nation-faces-frigid-new-years-eve-and-start-to-2018/?utm_term=.329a683850d4)

How will wind & solar renewable energy sources and commercial natural gas pipelines perform during this latest Polar Vortex event in U.S.? It will be interesting to see what happens between today and mid-January of 2018.

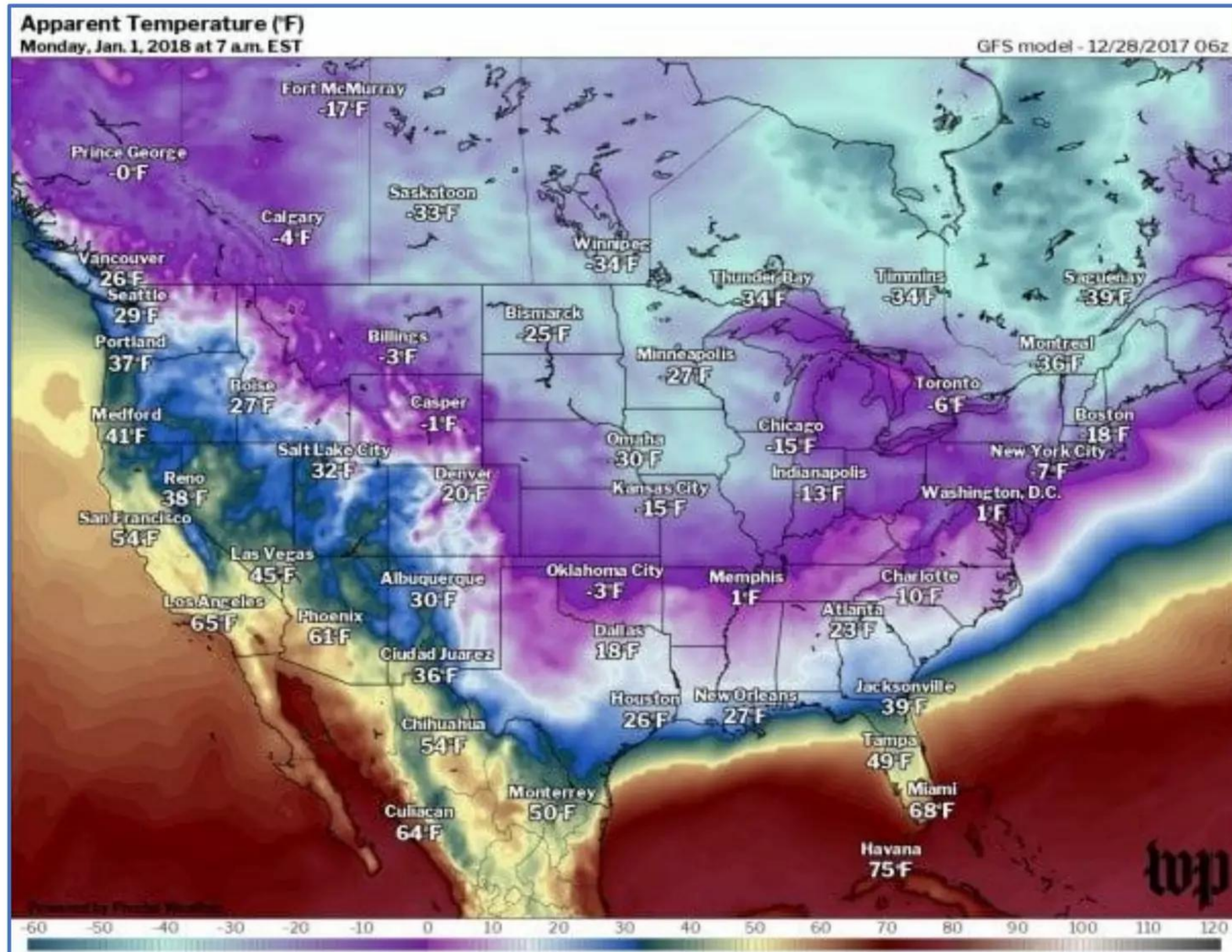
See 77-slide Lattice PowerPoint dated November 16, 2017 for in-depth discussion of vital role for effectively uninterruptible grid power sources with onsite fuel storage that can operate nonstop during extreme weather events:

<https://www.slideshare.net/lewisglarsen/lattice-energy-llc-fossil-fuels-and-nuclear-vs-renewables-for-powering-electricity-grids-during-process-of-ongoing-climate-change-nov-16-2017>



# Washington Post: 12/28 forecast - low temps January 1, 2018

See next slide: shows actual temps for Jan. 7, 2014 during Polar Vortex



[https://www.washingtonpost.com/news/capital-weather-gang/wp/2017/12/27/from-minneapolis-to-new-york-city-nation-faces-frigid-new-years-eve-and-start-to-2018/?utm\\_term=.329a683850d4](https://www.washingtonpost.com/news/capital-weather-gang/wp/2017/12/27/from-minneapolis-to-new-york-city-nation-faces-frigid-new-years-eve-and-start-to-2018/?utm_term=.329a683850d4)



# Mesonet: actual low temps Jan. 7, 2014 during Polar Vortex

Slide #41 - Nov. 16, 2017 PowerPoint: not as bad as Jan, 1, 2018 forecast

**Temperatures at 7:00 AM on Jan. 7, 2014 during polar vortex**  
**Extremely cold air temperatures affected almost the entire United States**  
**Significant probability that similar or even worse event could happen in near-term**

**Air Temperature (°F)**  
7:00 AM January 7, 2014 CST  
Data provided by NOAA's National Weather Service. Created 7:25:32 AM January 7, 2014 CST. © Copyright 2014

**Mesonet**

November 16, 2017

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# Climate change increases risk for severe Polar Vortex events

Slide #59 - Nov. 16, 2017 PowerPoint: earlier warnings this might happen

Like dire warning to TEPCO in 2006 re serious vulnerability of Fukushima reactor complex to Black Swan tsunamis ...

**Recent extreme weather events have issued warnings!**

**Excessive % of renewables in power grids reduces resilience**



2014: short-lived icy cold Polar Vortex event nearly caused blackout of U.S. Northeastern grid

2015: 6-month wind 'drought' across U.S. West Coast reduced wind power output by ~ 20%



2016 - December: Germany's renewable electric power output was slashed twice during same month for 100 hrs and 50 hrs, respectively

2017 - January (Europe): one month with almost no sun or wind; on January 24, Germany narrowly avoided a national electric power blackout by dispatching last-available coal power plant



2018 - Due to climate change, significant chance for extremely cold Polar Vortex events this winter and heat extremes in summer; PV-killer Black Swan volcanic eruptions are possible anytime



November 16, 2017

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<https://www.slideshare.net/lewisglarsen/lattice-energy-llc-fossil-fuels-and-nuclear-vs-renewables-for-powering-electricity-grids-during-process-of-ongoing-climate-change-nov-16-2017>



# Present Polar Vortex event confined mainly to United States

Will be interesting to see what happens between today and mid-January

