NatGasWeather.com Live HDD/CDD Data Frequently Asked Questions

If you have a question that isn't answered here, send us an email to helpdesk@natgasweather.com and we will include it.

What time does the data start showing up in the tables? For Standard Time:

GFS Operational Run (upper far left button): 4 times per day. 1030 am/pm EST & 430 am/pm EST

GFS Ensemble: 4 times per day. 1130 am/pm EST & 530 am/pm EST

Canadian & NAEFS: 2 times per day. 130 am/pm EST.

European Control & Ensemble: 2 times per day. 140 am/pm EST.

How do I read the tables?

The most recent forecast is always the left most column. The second left most column takes the values and compares it to the 30-year normal and then color codes it. Colder than normal is blue. Warmer than normal is red. The columns for 6, 12, 18, and 24 hour ago forecast are just the values of previous forecasts from that model, and then color coded compared to normal. This can be helpful in seeing major trends. The far right two columns show models trend compared to 12 and 24-hours ago for each forecast day. Red colors show warmer trends. Blue colors show colder trends. The bottom row takes all the values of the model forecast and then totals them to show total forecast HDD/CDD totals, how they compare to normal, and then also gives 12 and 24-hour HDD/CDD run total changes. ***Most important is the latest forecast values and how they compare to the 30-year normal, and what are the trends compared to 12 & 24-hours ago.***

What do the values in the tables represent? The values in each square of the table represent daily national forecast HDD+CDD Totals or what we refer to as Total Degree Days. Heating Degree Days (HDD's) are greatest in the winter months where demand for heating is greatest. There will be almost zero national daily CDD's mid-November through March. CDD's are greatest during the summer months and show when demand for cooling is needed. During the shoulder seasons there will be a mix of HDD and CDD's to make up TDD's. The table shows TDD's but a new version that shows both will be available soon. You can see the break out of the HDD's and CDD's for each EIA storage week by clicking on the EIA Week 1, 2, and 3 tabs under the tables.

What are the model buttons on the far left vs ensembles on the right?

The left most button for the GFS, European, and CFS models are referred to as either the operational or the control run. The operational GFS is one single outcome based on the initial conditions. Since its only one outcome, the results will be jumpy and can vary significantly from one run to the next. The European left button is referred to the control run, very similar to the GFS operational run with only one outcome, but this run is used as the initial conditions dataset used to run the ensembles. The Ensemble runs take the initial conditions, tweaks them slightly, and then reruns the model. This is done 20+ times for the GFS and then all of the runs are averaged together and more than 50 times for the European ensemble. By taking an ensemble approach, it provides less jumpiness in the output and also washes the outliers to both the cold and warm sides. Most important, the ensembles are a better representation of the totality of each weather model or mean and what the nat gas markets will focus on most.

How can I tell what the trend is?

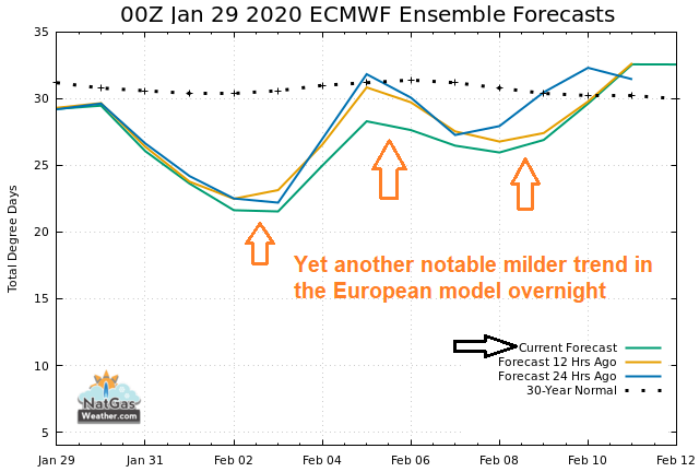
In the table below for the European Ensemble for 0z January 29th, the data trended milder when compared to its runs 12 & 24-hours ago. The red box highlights the milder trend throughout the run vs 12-hours ago, as milder is losing demand/HDD's. The bottom line is the total loss or gain in HDD's over the 15-day run. In this case the European model lost 12.05 HDD vs 12-hours ago. The trend vs 24-hours ago, purple box, was more extreme with warmer trends as HDD's dropped 18.7 over the 15-day run. You can also view trends in our graphs, as shown below for the same day with HDDs below previous below previous forecasts and the 30-year.

ECMWF 00Z | ECMWF Ensemble 00Z

Model Comparison | Model Graphic | Model Daily Graphics | Model Loop

Last update: 0741Z	Current Forecast	Compared to Normal	Forecast 12 Hrs Ago	Forecast 24 Hrs Ago	Trend vs 12-Hours Ago	Trend vs 24-Hours Ago
Wed Jan 29 2020	29.24	-1.96	29.32	29.21	-0.08	0.03
Thu Jan 30 2020	29.48	-1.32	29.67	29.64	-0.19	-0.16
Fri Jan 31 2020	26.07	-4.53	26.40	26.65	-0.33	-0.58
Sat Feb 01 2020	23.64	-6.76	23.78	24.20	-0.14	-0.56
Sun Feb 02 2020	21.64	-8.76	22.50	22.52	-0.86	-0.88
Mon Feb 03 2020	21.55	-9.05	23.15	22.21	-1.60	-0.66
Tue Feb 04 2020	24.99	-6.01	26.56	26.99	-1.57	-2.00
Wed Feb 05 2020	28.31	-2.89	30.85	31.84	-2.54	-3.53
Thu Feb 06 2020	27.65	-3.75	29.73	30.08	-2.08	-2.43
Fri Feb 07 2020	26.48	-4.72	27.55	27.28	-1.07	-0.80
Sat Feb 08 2020	25.97	-4.83	26.79	27.95	-0.82	-1.98
Sun Feb 09 2020	26.91	-3.49	27.43	30.49	-0.52	-3.58
Mon Feb 10 2020	29.63	-0.57	29.79	32.32	-0.16	-2.69
Tue Feb 11 2020	32.58	2.38	32.67	31.46	-0.09	1.12
Wed Feb 12 2020	32.57	2.57	M	M	M	M
Totals	406.71	-53.69	386.19	392.84	-12.05	-18.70

BULLISH (cold vs normal, or cold trending) — BEARISH (mild vs normal, or mild trending)



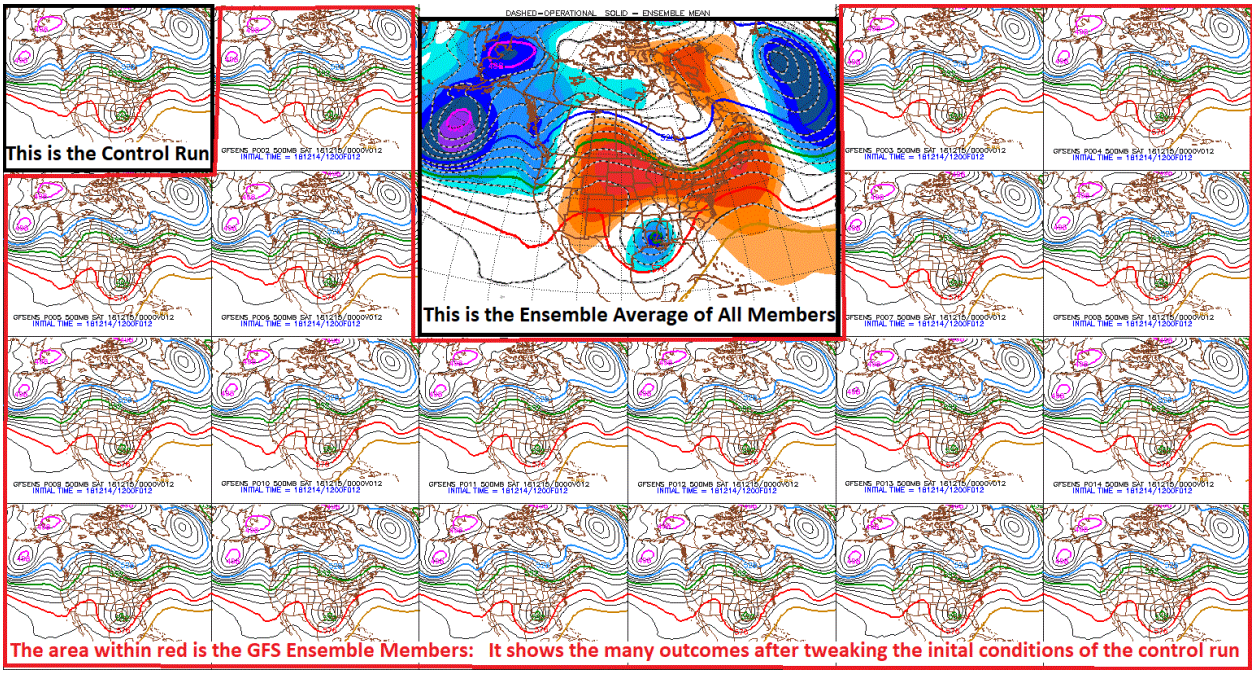
What is the GFS Ensemble Bias-Corrected?

The GFS Ensemble Bias-Corrected is going to be very similar in values to the GFS Ensemble, but NOAA/NCEP does corrections on it based on depending on how forecast temperatures have been performing or verifying, i.e. has the model been forecasting too hot or too cold with this type of pattern and then applies minor corrections. This data is very valuable during times of big temperatures anomalies vs normal as it can improve the accuracy. Use the GFS Ensemble but look at GFS Ensemble Bias-Corrected to see if shows the data as hotter or colder than the GFS Ensemble. Use the GFS Ensemble Bias-Corrected during record heat or cold.

What is the NAEFS?

The North American Ensemble Forecast System. It's a collaboration model run by the Canadian Weather Service and NOAA. The goal is to take the best parts of both the Canadian and GFS ensemble physic packages and combine them in attempt to make a more accurate prediction. We view the NAEFS as more accurate than the Canadian Ensemble, but not quite as good as the GFS Ensemble or European Ensemble. The NAEFS is very helpful to see if it is also catching trends of the European and GFS data.

I'm not quite getting what an ensemble is. Can you give an example?



The above image shows example output from the GFS Ensemble. It starts with a control run in the upper left corner. This control run initial conditions are then tweaked in a plethora of ways and then the model is rerun. After more than 20 tweaks to the control run initial conditions, the model is rerun to see how the forecasted outcomes have changed. Each new run is what we call members (all panels within the red box). When all the outcomes are very similar, that's typically considered favorable and suggests the forecast is stable, more accurate, and not likely to change much. When all the outcomes after tweaking the initial conditions vary drastically, it suggests the model is struggling and where a slight change to the initial conditions are leading to big differences in the output over time, giving a lower confidence forecast. The large center box is the ensemble mean, averaging all of the panels together.

What is the CFS?

The CFS is a climate model run by NOAA that predicts daily weather out 45 days. It's a lower resolution model, so is subject to lower accuracy compared to the shorter range weather models. But it does have great value in showing weather prediction out much longer in time. It can be jumpy since it goes out much further in time where accuracy tends to decrease.

Why does the CFS have an Ensemble and Super-Ensemble?

The CFS Ensemble takes the most recent data from the most recent run and averages all the output together to get forecast values for each day. It shows the most recent model run trend well. The CFS Super Ensemble takes the all the CFS data over the past 24-hours and averages it together. The CFS Ensemble may catch a trend sooner, but the CFS Super Ensemble will be less jumpy and more accurate overall. Both are very valuable, but since the accuracy of weather forecast data quickly drops off after 15-20 days, the more data that's averaged together, the better it will be. This is why the CFS Super Ensemble will perform better than the GFS Ensemble over time and be less jumpy.

Why are the model runs named 0z, 6z, 12z, and 18z?

Weather model data is typically described by z time, which is the abbreviation for Zulu. It's also referred to as GMT, for Greenwich Mean Time, and UTC. All reference the same time, but GMT originated from the time in Greenwich, England. So when it's 0z in Greenwich, England, that refers to midnight or the start of the new day there. 12z would be exactly 12 hours later or noon in Greenwich. For NYC, it's always 5 hours earlier during standard time. So 18z, 6 pm Greenwich time, would be 1 pm in NYC and 10 am on the West Coast. 0z Greenwich would be 7 pm NYC and 4 pm L.A. During Daylight Savings Time, the time gap increases to 6 hours.

So why are models called 0z, 6z, 12z, and 18z when the data doesn't come out for many hours after?

Weather data is sampled all around the world at very close to 0z, 12z, 18z, and 0z times. It's then compiled and used to initialize the weather models. So the 0z run refers to the weather observations that were taken at the 0z time. It then takes 1-2 hours to configure the data for the models and another 1-2 hours to initialize the models and run them. Therefore, the data doesn't come out at exactly the listed times by the weather model run name and why it always comes out hours after. But again, it's the time the weather data across the world is sampled.

Are some models run more often than others?

The GFS and CFS models are run every 6-hours. The rest of the models are run every 12-hours based on 0z and 12z weather data. The GFS and CFS runs at 6 and 18z can be very valuable for showing trends between model runs, although the nat gas markets put much more weight into the 0z and 12z data since it has a much denser data network used to initialize the weather models.

Why would the nat gas markets put more weight in the 0z and 12z weather data and less so with the 6z and 18z data?

There is more data available to initialize the weather models at 0z and 12z. As an example, a majority of the weather balloons around the world are launched near the 0z and 12z times, so there's a greater network/density of weather data input into the weather models during these times, which makes them more accurate. Essentially, the better the snapshot of the atmosphere used to initialize the weather models, the more accurate the outcome typically will be.

Be sure to click on the links in the yellow boxes to see maps and graphs!

GFS 12Z | GFS Ensemble 06Z | GFS Ensemble-Bias Corrected

Model Comparison | Model Graphic | Model Daily Graphics | Model Loop

Last update: 1145Z	Current Forecast	Compared to Normal	Forecast 6 Hrs Ago	Forecast 12 Hrs Ago	Forecast 18 Hrs Ago	Forecast 24 Hrs Ago	Trend vs 12-Hours Ago	Trend vs 24-Hours Ago
Sat Dec 15	21.51	-7.09	21.51	21.56	21.75	21.69	-0.05	-0.18
Sun Dec 16	22.68	-6.12	22.66	22.56	22.63	22.57	0.12	0.11
Mon Dec 17	25.61	-3.79	25.34	25.21	25.12	24.85	0.40	0.76
Tue Dec 18	26.45	-3.55	26.26	26.34	26.34	26.15	0.11	0.30
Wed Dec 19	23.26	-7.14	23.32	23.40	23.49	23.38	-0.14	-0.12
Thu Dec 20	21.79	-9.01	21.73	21.73	21.76	21.49	0.06	0.30
Fri Dec 21	22.98	-8.02	22.65	22.21	23.15	23.38	0.77	-0.40
Sat Dec 22	25.81	-5.19	25.11	24.48	25.69	25.29	1.33	0.52
Sun Dec 23	27.15	-4.05	27.15	27.71	27.82	27.18	-0.56	-0.03
Mon Dec 24	27.77	-3.83	28.28	30.96	29.54	30.43	-3.19	-2.66
Tue Dec 25	27.94	-3.66	29.11	31.37	30.78	31.99	-3.43	-4.05
Wed Dec 26	27.14	-4.26	28.31	31.56	30.65	32.39	-4.42	-5.25
Thu Dec 27	26.70	-4.30	27.10	31.29	29.89	31.95	-4.59	-5.25
Fri Dec 28	27.32	-3.28	27.13	30.08	28.24	32.06	-2.76	-4.74
Sat Dec 29	28.31	-2.09	27.73	30.04	28.30	32.23	-1.73	-3.92
Sun Dec 30	29.52	-0.88	28.62	30.18	M	M	-0.66	M
Totals	411.93	-76.27	412.01	430.68	395.15	407.03	-18.74	-24.61

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