EIA-Short-Term Energy Outlook – Highlights

- January was the seventh consecutive month in which monthly average North Sea Brent crude oil prices decreased, reaching $48/barrel (bbl), the lowest since March 2009. The price decline reflects continued growth in U.S. tight oil production and strong global supply, amid weaker global oil demand growth, which contributed to rising global oil inventories. In January, estimated Organization for Economic Cooperation and Development (OECD) total commercial oil inventories reached their highest level since August 2010.

- EIA forecasts that Brent crude oil prices will average $58/bbl in 2015 and $75/bbl in 2016, with 2015 and 2016 annual average West Texas Intermediate (WTI) prices expected to be $3/bbl and $4/bbl, respectively, below Brent. This price outlook is unchanged from last month's forecast. The current values of futures and options contracts continue to suggest very high uncertainty in the price outlook (Market Prices and Uncertainty Report). WTI futures contracts for May 2015 delivery, traded during the five-day period ending February 5, averaged $52/bbl while implied volatility averaged 52%, establishing the lower and upper limits of the 95% confidence interval for the market's expectations of monthly average WTI prices in May 2015 at $33/bbl and $81/bbl, respectively. The 95% confidence interval for market expectations widens over time, with lower and upper limits of $32/bbl and $108/bbl for prices in December 2015.

- Total U.S. crude oil production averaged an estimated 9.2 million barrels per day (bbl/d) in January. Forecast total crude oil production averages 9.3 million bbl/d in 2015. Given EIA's price forecast, projected crude oil production averages 9.5 million bbl/d in 2016, close to the highest annual average level of production in U.S. history of 9.6 million bbl/d in 1970.

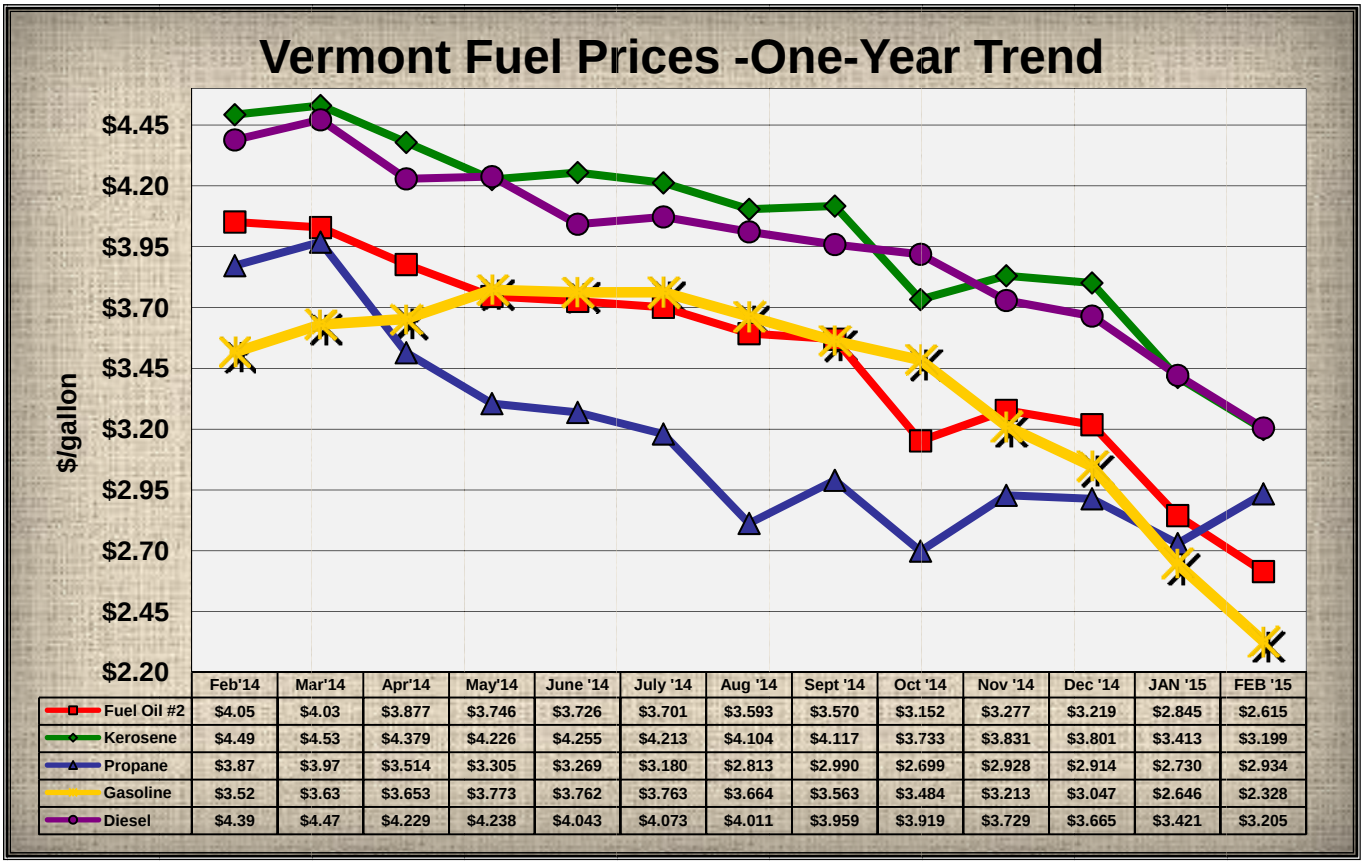
- Driven largely by falling crude oil prices, U.S. weekly regular gasoline retail prices averaged $2.04/gallon (gal) on January 26, the lowest since April 6, 2009, before increasing to $2.19/gal on February 9. EIA expects U.S. regular gasoline retail prices, which averaged $3.36/gal in 2014, to average $2.33/gal in 2015. The average household is now expected to spend about $750 less for gasoline in 2015 compared with last year because of lower prices. The projected regular gasoline retail price increases to an average of $2.73/gal in 2016.

- Natural gas working inventories on January 30 totaled 2,428 Bcf, 468 Bcf (24%) above the level at the same time in 2014 and 29 Bcf (1%) below the previous five-year (2010-14) average. EIA expects the Henry Hub natural gas spot price to average $3.34/million British thermal units (MMBtu) this winter (2014-15) compared with $4.53/MMBtu last winter (2013-14), reflecting both lower-than-expected space heating demand and higher natural gas production this winter. EIA expects the Henry Hub natural gas spot price, which averaged $4.39/MMBtu in 2014, to average $3.05/MMBtu in 2015 and $3.47/MMBtu in 2016, $0.39/MMBtu lower for both years than in last month's STEO.

VERMONT FUEL PRICE REPORT

FEBRUARY 2015

Editor's Note: Data presented in the Vermont Fuel Price Report as in the past, is collected on the first Monday of the month.



	Feb'14	Mar'14	Apr'14	May'14	June '14	July '14	Aug '14	Sept '14	Oct '14	Nov '14	Dec '14	JAN '15	FEB '15
Fuel Oil #2	$4.05	$4.03	$3.877	$3.746	$3.726	$3.701	$3.593	$3.570	$3.152	$3.277	$3.219	$2.845	$2.615
Kerosene	$4.49	$4.53	$4.379	$4.226	$4.255	$4.213	$4.104	$4.117	$3.733	$3.831	$3.801	$3.413	$3.199
Propane	$3.87	$3.97	$3.514	$3.305	$3.269	$3.180	$2.813	$2.990	$2.699	$2.928	$2.914	$2.730	$2.934
Gasoline	$3.52	$3.63	$3.653	$3.773	$3.762	$3.763	$3.664	$3.563	$3.484	$3.213	$3.047	$2.646	$2.328
Diesel	$4.39	$4.47	$4.229	$4.238	$4.043	$4.073	$4.011	$3.959	$3.919	$3.729	$3.665	$3.421	$3.205

Vermont Average Retail Petroleum Prices (per gallon)					
	FEB '15	JAN '15	%change	Feb'14	%change
No. 2 Fuel Oil	$2.615	$2.845	-8.09%	$4.052	-35.46%
Kerosene	$3.199	$3.413	-6.26%	$4.493	-28.79%
Propane	$2.934	$2.730	7.50%	$3.872	-24.22%
Reg. Unleaded Gasoline	$2.328	$2.646	-12.00%	$3.515	-33.77%
Diesel	$3.205	$3.421	-6.32%	$4.389	-26.98%

Comparing the Cost of Heating Fuels							
Type of Energy	BTU/unit	Typ Effic	$/unit	$/MMBtu		High Efficiency	$/MMBtu
Fuel Oil, gallon	138,200	80%	$2.61	$23.65		95%	$19.92
Kerosene, gallon	136,600	80%	$3.20	$29.27			
Propane, gallon	91,600	80%	$2.93	$40.04		93%	$34.45
Natural Gas, therm	100,000	80%	$1.48	$18.55	*	95%	$15.62
Electricity, kWh (resistive heat)	3,412	100%	$0.15	$43.46			
Electricity, kWh (cold climate heat pump)	3,412		$0.15			240%	$18.32
Wood, cord (green)	22,000,000	60%	$ 227.14	$17.21	*		
Pellets, ton	16,400,000	80%	$294.00	$22.41	*		
* The natural gas price is based on the rate effective 11/1/14. *Wood green and Pellets updated 9/19/14.							

The *Comparing the Cost of Heating Fuels* table now includes two additional columns "High Efficiency" and $/MMBTU HF. The new furnaces which are manufactured to meet higher efficiency standards can result in savings on energy for the customer. If you are in need of or thinking of replacing your current system contact your dealer for information on high efficiency systems.

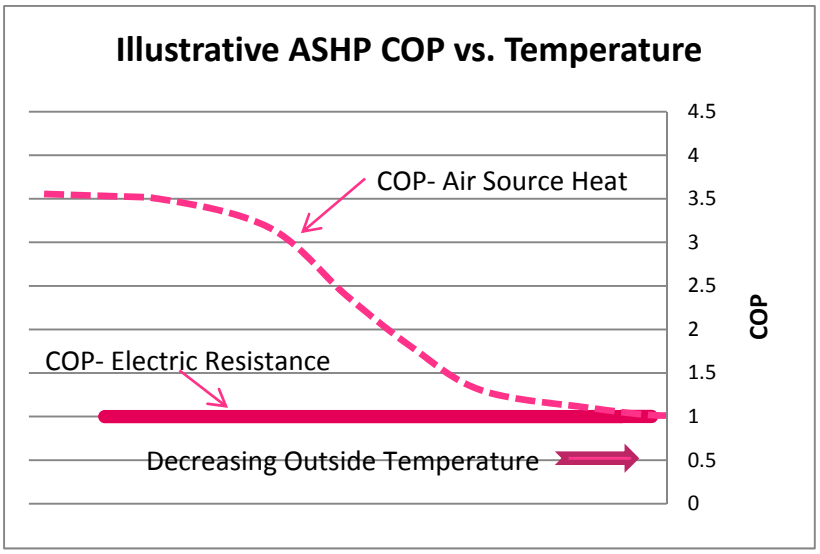
Since the Fuel Price Report's *Comparing the Cost of Heating Fuels* section began including information on heat pumps, the Department has received a number of comments and suggestions concerning the value of the Coefficient of Performance (COP) for air source heat pumps (ASHP). A COP over 1 means that occupants of a home receive more heat than is contained in the electricity delivered to run the ASHP.

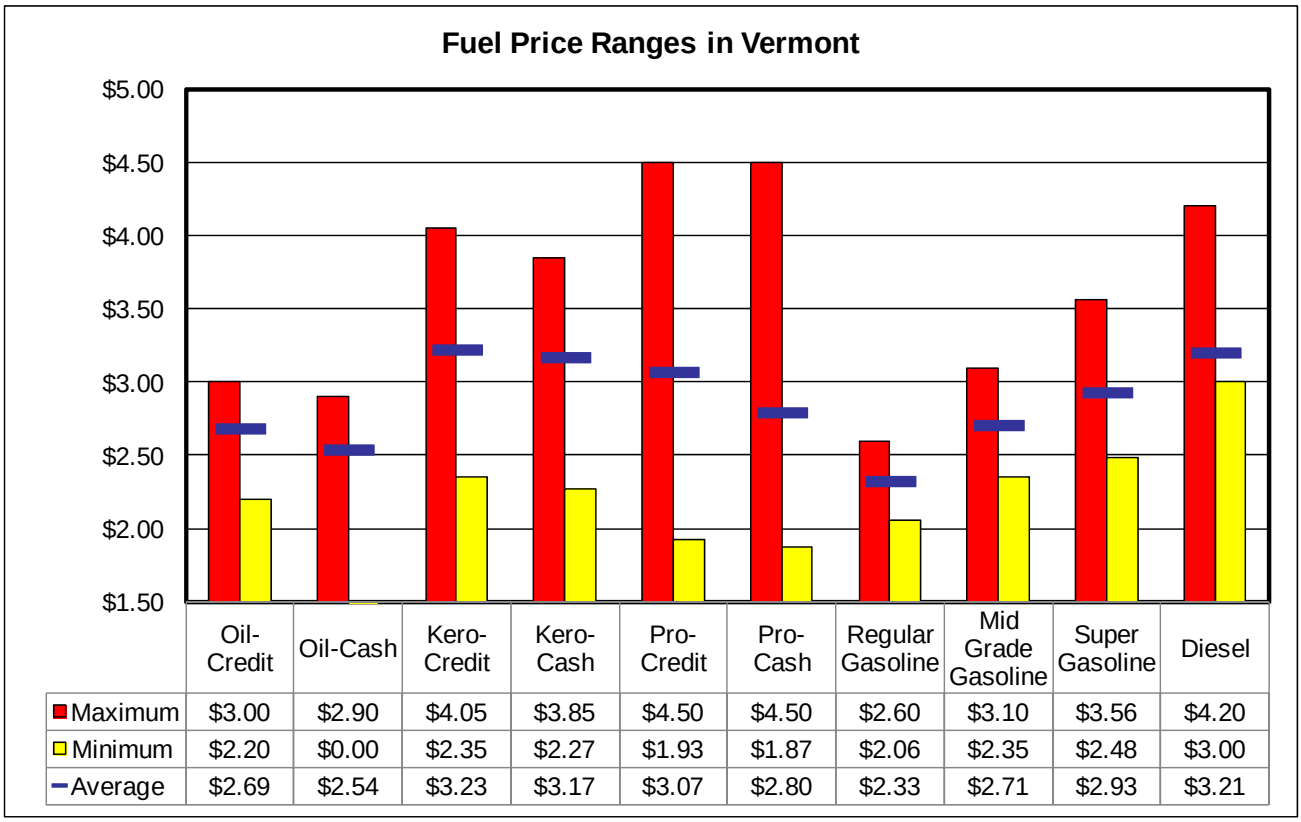
$$Heat\ Pump\ Efficiency = \frac{Quantity\ of heating\ or\ cooling\ delivered}{Electricity\ required\ by\ the\ heat\ pump}$$

Historically, the use of heat pumps has been concentrated in areas with temperate climates which rarely see temperatures much below freezing. This is because the performance of these systems tended to decline significantly at temperatures below freezing. These systems' COPs remain high as temperature varies through cool, but not cold, weather. As ambient temperatures begin declining from the optimal operation range the operational efficiency begins to decline as well. At some point, depending on the refrigerant and configuration of the heat pump, the COP = 1 which is the same as for electric resistance heating. At that level the heat pump alone cannot supply enough heat to maintain a comfortable interior temperature and requires that a supplemental source of heat be available.

In recent years manufacturers have developed air source "cold climate" heat pumps which have improved performance over a larger temperature range, due in part to the introduction of new refrigerants and more advanced compressors. These ASHPs have the potential to displace other heating sources down to zero F or below, resulting in displacement of a significant fraction of Vermont winter heating. Here in Vermont several programs are currently in the process of collecting actual operational data from ASHPs; their goal is to determine real world annual COP under Vermont's annual temperature range of over 120 degrees. The average yearly heating COP is expected to lie somewhere at a value between 1 and 3 with 2.4 being a reasoned guesstimate based on average winter temperatures and product specifications. As information becomes available we will update the table accordingly.

The figure below is for illustrative purposes only and does not represent actual operational data.

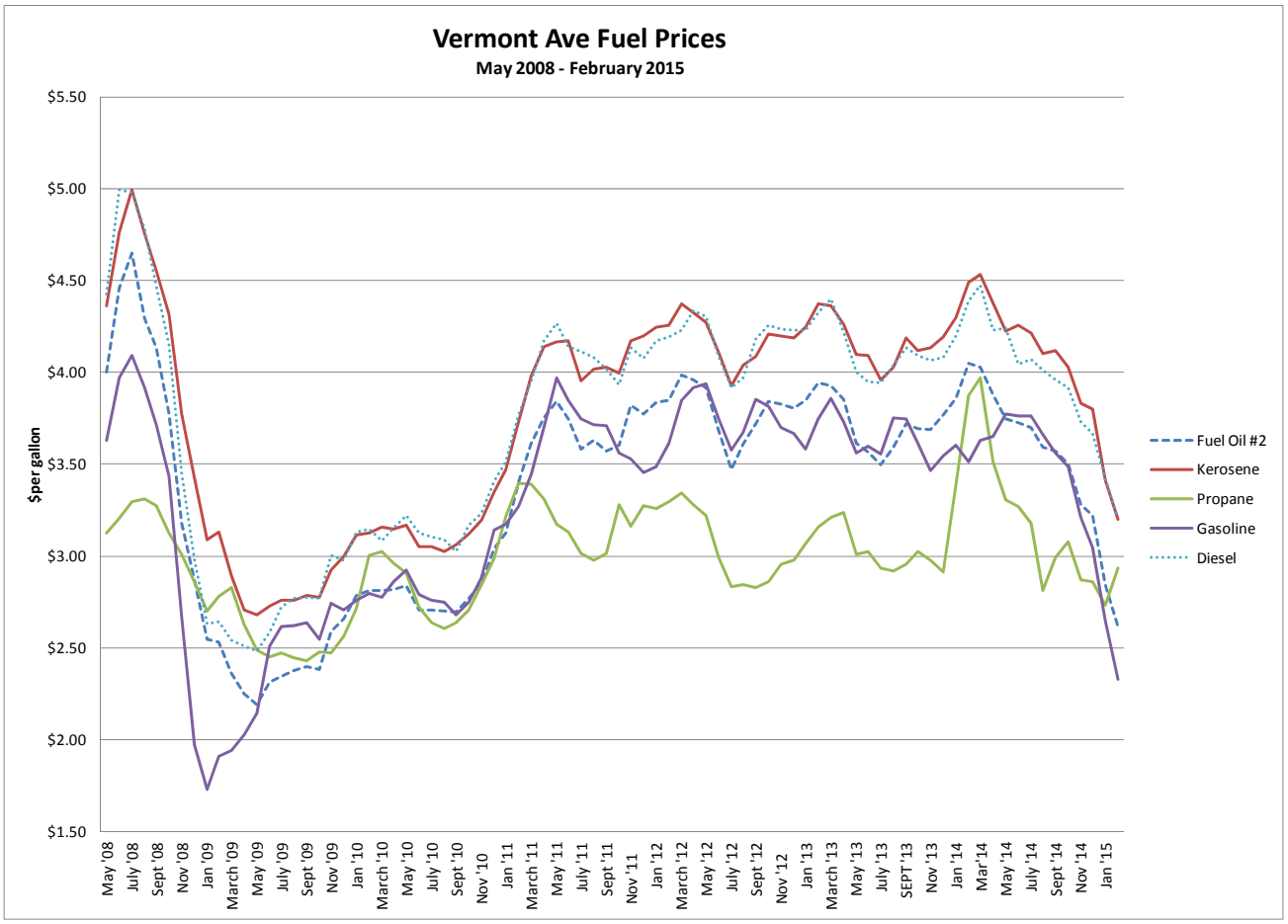




	Oil-Credit	Oil-Cash	Kero-Credit	Kero-Cash	Pro-Credit	Pro-Cash	Regular Gasoline	Mid Grade Gasoline	Super Gasoline	Diesel
Maximum	$3.00	$2.90	$4.05	$3.85	$4.50	$4.50	$2.60	$3.10	$3.56	$4.20
Minimum	$2.20	$0.00	$2.35	$2.27	$1.93	$1.87	$2.06	$2.35	$2.48	$3.00
Average	$2.69	$2.54	$3.23	$3.17	$3.07	$2.80	$2.33	$2.71	$2.93	$3.21

Fuel Price Ranges in Vermont

	Oil-Credit	Oil-Cash	Kero-Credit	Kero-Cash	Pro-Credit	Pro-Cash	Regular Gasoline	Mid Grade Gasoline	Super Gasoline	Diesel
Stan.Dev $	$0.20	$0.19	$0.28	$0.26	$0.35	$0.31	$0.26	$0.94	$0.24	$0.42
Stan.Dev%	6.87%	6.80%	8.11%	7.80%	12.58%	11.78%	2.05%	5.88%	1.93%	2.22%



Vermont Historical Weather and Degree Day Data

CDD's are used during summer months to compare the current day's average temperature against the 65ºF standard to determine the energy demands of cooling your home through air conditioning or fans. For example, if the current day's high is 85ºF and the low is 65ºF, the day's average temperature will be 75ºF. Since 75ºF-65ºF is 10ºF, this day would have 10 cooling degree days. Adding the degree days together for the whole month provides a way to compare previous months or years.

HDD's are used the same way during winter months to determine the energy demands of heating your home. The 65ºF standard still is used; however, the day's average temperature is subtracted instead of added to the standard. For example, if the current day's high is 30ºF and the low is 10ºF, the day's average temperature will be 20ºF. Since 65ºF-20ºF is 45ºF, this day would have 45 heating degree days.

Just like cooling degree days, heating degree days may be added together for the entire month to compare to previous months or years.[1]

The primary online source for historical weather and degree day data is available from the NOAA - National Climatic Data Center (NCDC) web site at:
http://www7.ncdc.noaa.gov/CDO/CDODivisionalSelect.jsp#

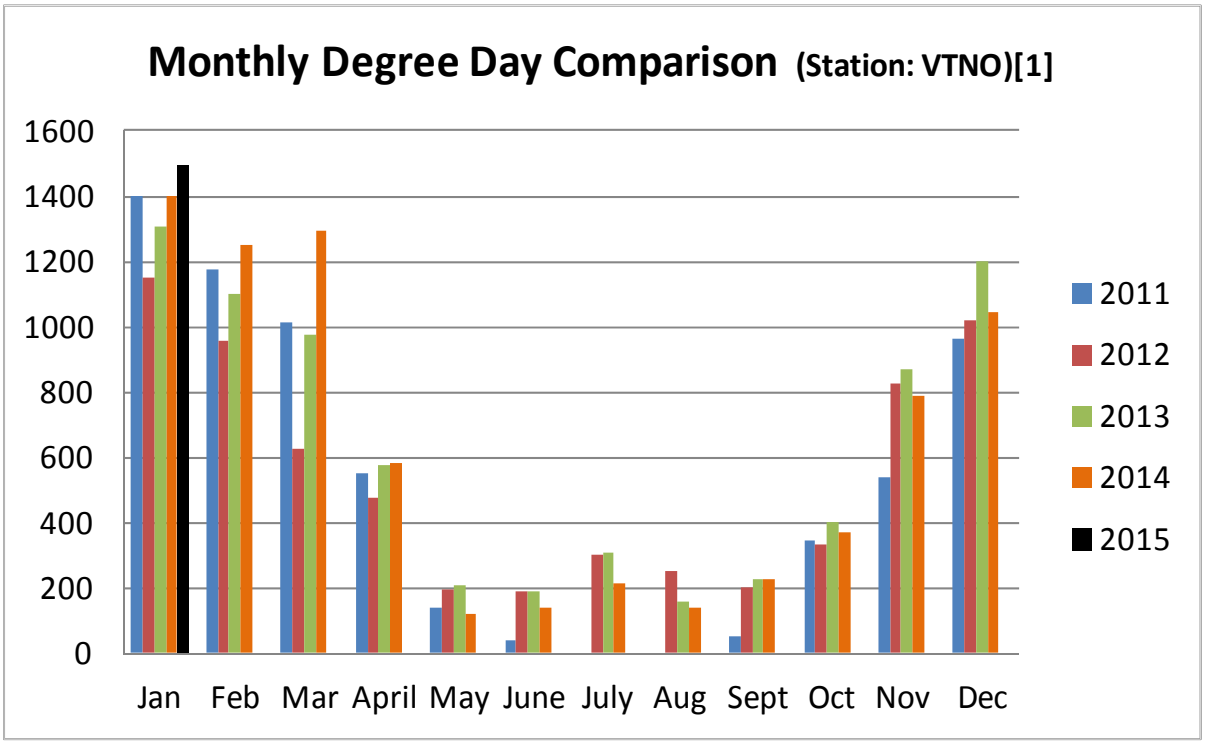
NCDC maintains the world's largest climate data archive and provides climatological services. Records in the archive range from paleoclimatic data to centuries-old journals to data less than an hour old.

Another source is the Weather Data Depot web site. The data collection is not as extensive as the NOAA collection only covering the years from 1993 forward. But the site is more user friendly.
http://www.weatherdatadepot.com/?pi_ad_id=8426228665&gclid=CIaZvMf8krQCFQqk4AodFRYArQ

A negative percentage means the Comparison Year was milder than the Base Year. A positive percentage means the Comparison Year was more severe than the Base Year. When the monthly degree days in either the base year or the comparison year are less than 30, a percentage comparison is not calculated. However, the Annual Total comparison percentages include all heating and cooling degree days.

Monthly Degree Day Comparison (Station: VTNO)									
	Base Year (2014)			Comparison Year (2015)			Comparison Percentages		
Month	HDD	CDD	TDD	HDD	CDD	TDD	HDD	CDD	TDD
January	1398	0	1398	1496	0	1496	7%		7%
February	1253	0	1253						
March	1294	0	1294						
April	580	0	580						
May	197	23	220						
June	28	109	137						
July	1	212	213						
August	8	128	136						
September	163	62	225						
October	357	16	373						
November	786	0	786						
December	1044	0	1044						
Through January	1398	0	1398	1496	0	1496	7%		7%
Annual Total	7109	550	7659						

[1] http://www.consumersenergy.com/content.aspx?id=4582



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NOTE: The Vermont Fuel Price Report is published monthly by the Vermont Department of Public Service. Prices are collected on or about the first Monday of each month and reflect dealer discounts for cash or self-service, except propane prices, which are an average of the credit and discount price. Propane prices are based on 1,000 + gallons. For more information please contact Mike Kundrath at (802) 828-4081 or by email at michael.kundrath@state.vt.us.