VERMONT FUEL PRICE REPORT

AUGUST 2015

EIA-Short-Term Energy Outlook – Highlights

- North Sea Brent crude oil prices averaged $57/barrel (b) in July, a $5/b decrease from June. Brent crude oil spot prices fell further in early August, settling at $48/b on August 7. The recent price declines reflect concerns about lower economic growth in emerging markets, expectations of higher oil exports from Iran, and continuing actual and expected growth in global inventories.

- EIA forecasts that Brent crude oil prices will average $54/b in 2015 and $59/b in 2016, $6/b and $8/b lower than in last month's STEO, respectively. Forecast West Texas Intermediate (WTI) crude oil prices in both 2015 and 2016 average $5/b less than the Brent price. The current values of futures and options contracts for November 2015 delivery (*Market Prices and Uncertainty Report*) suggest the market expects WTI prices to range from $34/b to $64/b (at the 95% confidence interval) in November 2015.

- On July 14, the P5+1 (the five permanent members of the United Nations Security Council and Germany) and Iran announced an agreement that could result in relief from United States and European Union nuclear-related sanctions (which include some oil-related sanctions). If the agreement is implemented and sanctions relief occurs, it will put additional Iranian oil supplies on a global market that has already seen oil inventories rise significantly over the past year. This forecast assumes sanctions relief occurs in 2016, contributing to an annual average increase in Iranian crude oil production of 0.3 million b/d from 2015 to 2016, with most of the increase coming in the second half of 2016.

- U.S. regular gasoline monthly average retail prices averaged $2.79/gallon (gal) in July, a decrease of 1 cent/gal from June and 82 cents/gal lower than in July 2014. EIA expects monthly average gasoline prices to decline from their July level to an average of $2.11/gal during the fourth quarter of 2015. EIA forecasts U.S. regular gasoline retail prices to average $2.41/gal for all of 2015.

- EIA estimates total U.S. crude oil production declined by 100,000 barrels per day (b/d) in July compared with June. Production is expected to continue decreasing through mid-2016 before growth resumes late in 2016. Projected U.S. crude oil production averages 9.4 million b/d in 2015 and 9.0 million b/d in 2016, 0.1 million b/d and 0.4 million b/d lower, respectively, than in July's STEO.

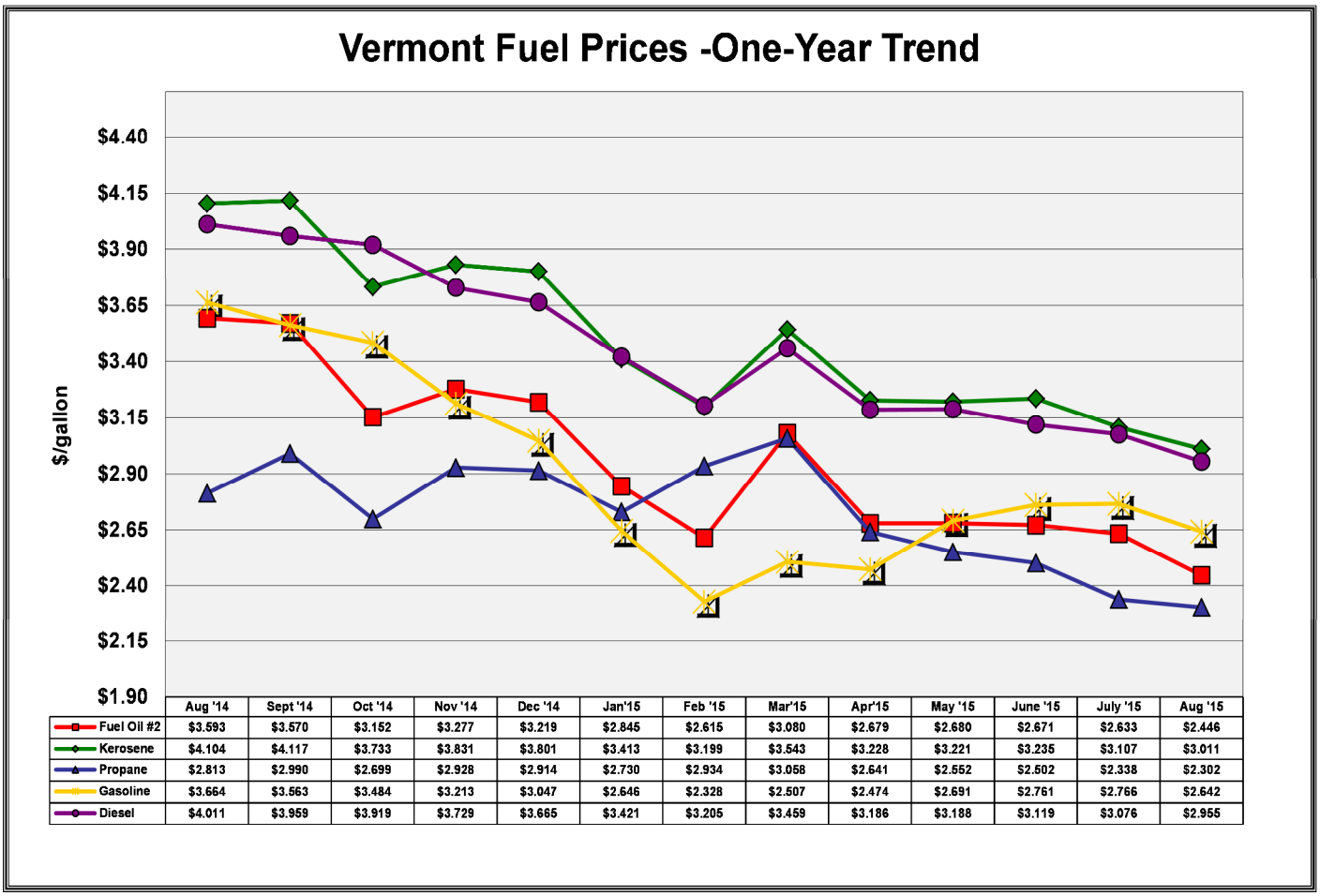
- Natural gas working inventories were 2,912 billion cubic feet (Bcf) on July 31, which was 23% higher than a year earlier and 2% higher than the previous five-year average (2010-14). EIA projects inventories will close the injection season at the end of October at 3,867 Bcf, which would be the second-highest end-of-October level on record.

- U.S. population-weighted cooling degree days through the end of July were 14% more than in the same period last year. The hotter temperatures contribute to an EIA estimate that the typical residential electricity customer will use 3,134 kilowatthours in the months of June, July, and August this year, which is 4% more than during the same period in 2014.

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

VERMONT FUEL PRICE REPORT

AUGUST 2015



	Aug '14	Sept '14	Oct '14	Nov '14	Dec '14	Jan'15	Feb '15	Mar'15	Apr'15	May '15	June '15	July '15	Aug '15
Fuel Oil #2	$3.593	$3.570	$3.152	$3.277	$3.219	$2.845	$2.615	$3.080	$2.679	$2.680	$2.671	$2.633	$2.446
Kerosene	$4.104	$4.117	$3.733	$3.831	$3.801	$3.413	$3.199	$3.543	$3.228	$3.221	$3.235	$3.107	$3.011
Propane	$2.813	$2.990	$2.699	$2.928	$2.914	$2.730	$2.934	$3.058	$2.641	$2.552	$2.502	$2.338	$2.302
Gasoline	$3.664	$3.563	$3.484	$3.213	$3.047	$2.646	$2.328	$2.507	$2.474	$2.691	$2.761	$2.766	$2.642
Diesel	$4.011	$3.959	$3.919	$3.729	$3.665	$3.421	$3.205	$3.459	$3.186	$3.188	$3.119	$3.076	$2.955

Vermont Average Retail Petroleum Prices (per gallon)					
	Aug '15	July '15	%change	Aug '14	%change
No. 2 Fuel Oil	$2.446	$2.633	-7.11%	$3.593	-31.92%
Kerosene	$3.011	$3.107	-3.11%	$4.104	-26.64%
Propane	$2.302	$2.338	-1.52%	$2.813	-18.15%
Reg. Unleaded Gasoline	$2.642	$2.766	-4.48%	$3.664	-27.88%
Diesel	$2.955	$3.076	-3.93%	$4.011	-26.33%

Comparing the Cost of Heating Fuels							
Type of Energy	BTU/unit	Typ Effic	$/unit	$/MMBtu		High Efficiency	$/MMBtu
Fuel Oil, gallon	138,200	80%	$2.45	$22.12		95%	$18.63
Kerosene, gallon	136,600	80%	$3.01	$27.55			
Propane, gallon	91,600	80%	$2.30	$31.42		93%	$27.03
Natural Gas, therm	100,000	80%	$1.43	$17.91	*	95%	$15.08
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 5/6/15. *Wood green and Pellets updated 9/19/14.							

The *Comparing the Cost of Heating Fuels* table 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.

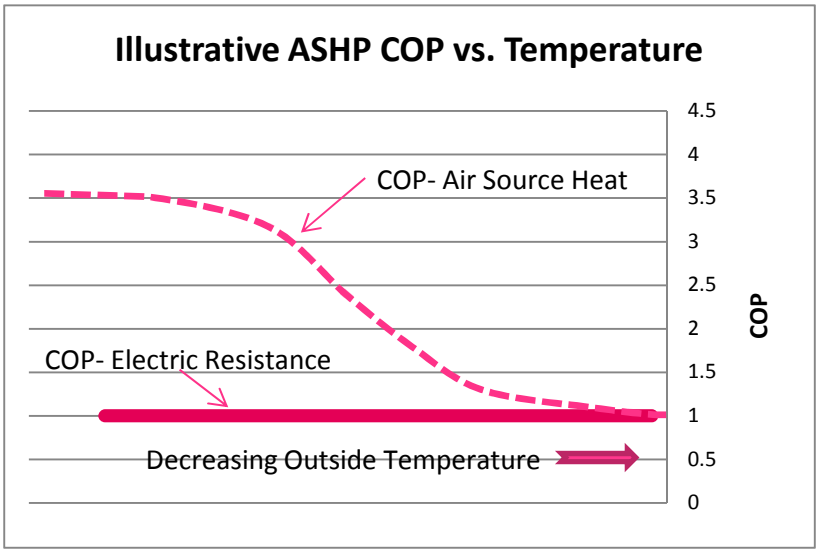
Since the Fuel Price Report's *Comparing the Cost of Heating Fuels* section began including information on heat pumps, the Department has received a number of comments and suggestions concerning the value of the Coefficient of Performance (COP) for air source heat pumps (ASHP). A COP over 1 means that 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.

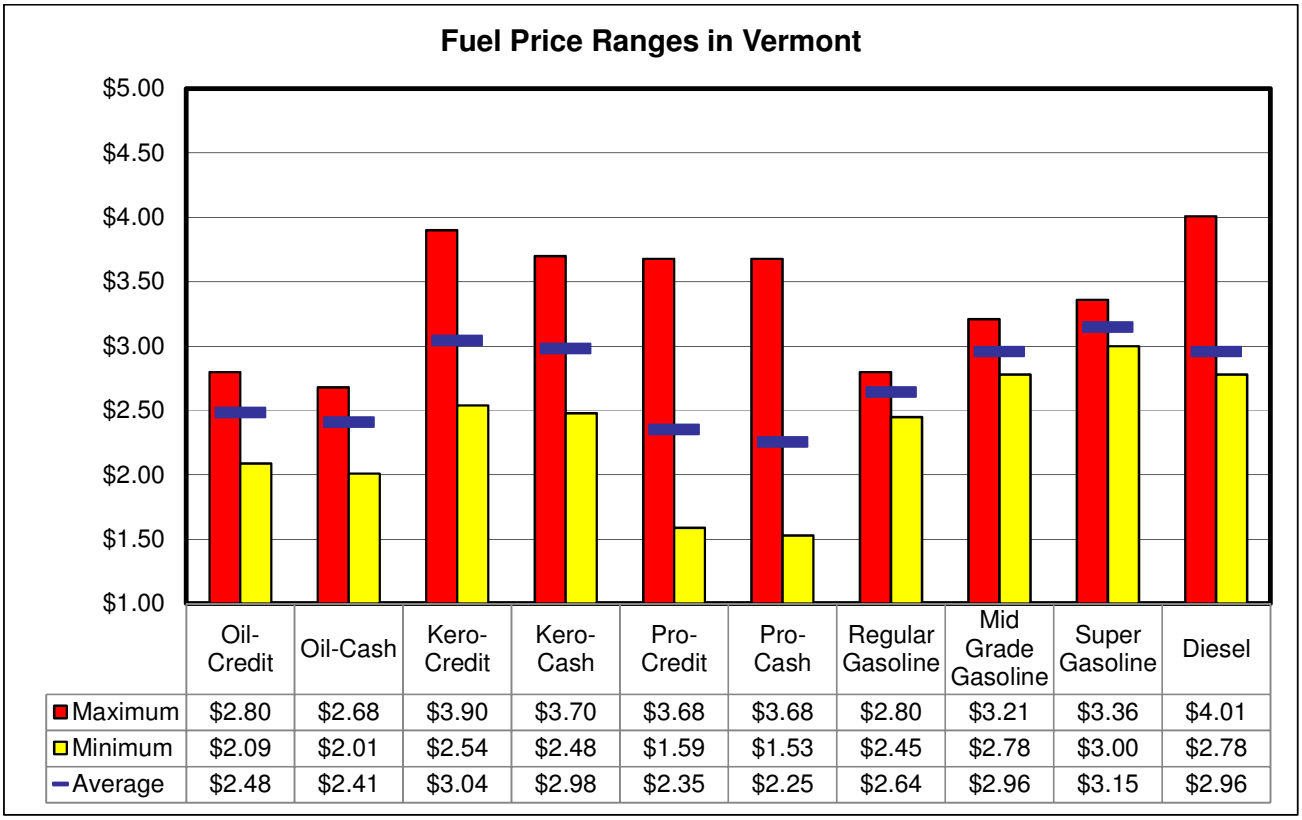
In recent years manufacturers have developed air source "cold climate" heat pumps which have improved performance over a larger temperature range, due in part to the introduction of new refrigerants and more advanced compressors. These ASHPs have the potential to displace other heating sources down to 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.



VERMONT FUEL PRICE REPORT

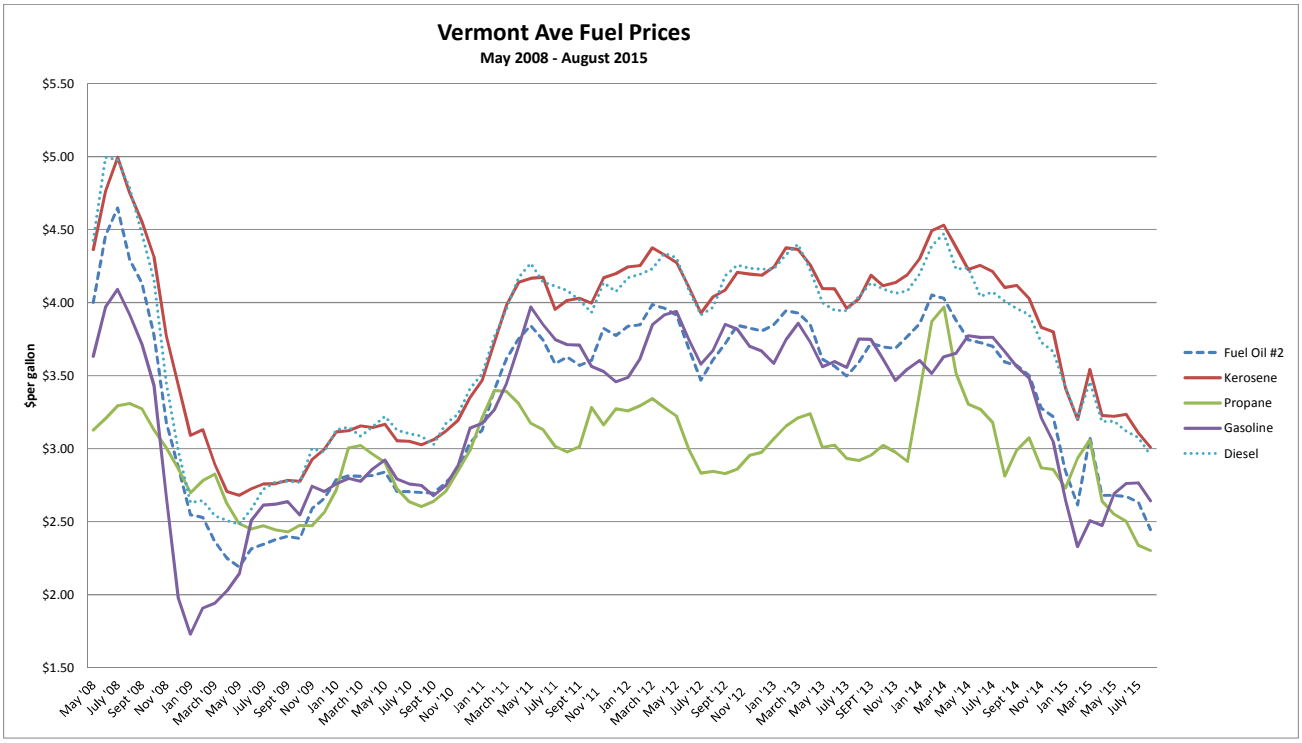
AUGUST 2015



	Oil-Credit	Oil-Cash	Kero-Credit	Kero-Cash	Pro-Credit	Pro-Cash	Regular Gasoline	Mid Grade Gasoline	Super Gasoline	Diesel
Maximum	$2.80	$2.68	$3.90	$3.70	$3.68	$3.68	$2.80	$3.21	$3.36	$4.01
Minimum	$2.09	$2.01	$2.54	$2.48	$1.59	$1.53	$2.45	$2.78	$3.00	$2.78
Average	$2.48	$2.41	$3.04	$2.98	$2.35	$2.25	$2.64	$2.96	$3.15	$2.96

Fuel Price Ranges in Vermont

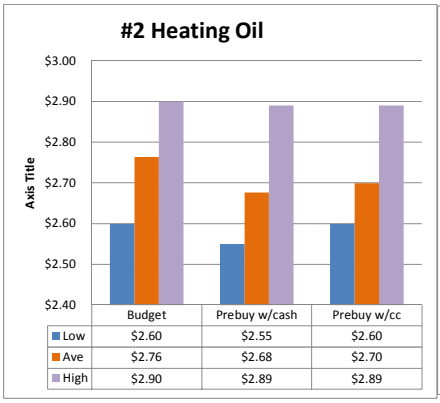
	Oil-Credit	*Oil-Cash*	*Kero-Credit*	*Kero-Cash*	*Pro-Credit*	*Pro-Cash*	*Regular Gasoline*	*Mid Grade Gasoline*	*Super Gasoline*	*Diesel*
Stan.Dev $	$0.20	$0.19	$0.26	$0.25	$0.46	$0.49	$0.26	$0.94	$0.24	$0.42
Stan.Dev%	8.11%	7.91%	8.67%	8.55%	19.60%	21.79%	2.05%	5.88%	1.93%	2.22%



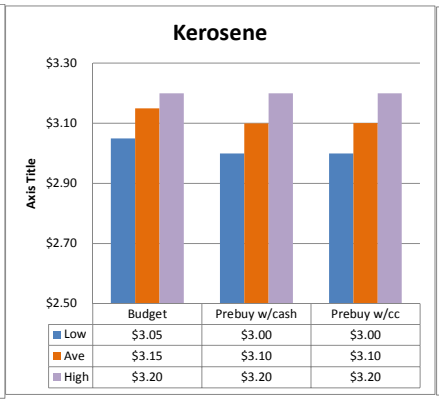
PRICE PROTECTION PROGRAMS

This past winter's combination of colder weather and supply constraints resulted in pretty significant spikes in prices. Here are some suggestions for mitigating some impact caused by the spikes. Around this time of the year many fuel dealers offer their customers "price protection" programs. Such as "Pre-Buy" programs, in which participating customers can purchase a specified volume of fuel at a discounted price by paying for the heating season's fuel in advance. In "Fixed Price" programs, a pre-determined price per unit is set for all of the fuel delivered during the heating season. In "Cap" programs, the fuel price will not exceed a pre-determined value and may go down based on market conditions at time of delivery. Cap and Fixed Price programs may be part of "Budget" programs, in which the customer agrees to make equal monthly payments, often for 10 to 12 months. Price protection programs can be beneficial, as they provide a degree of certainty, and customers are better able to budget their finances and thus are not caught short during the heating season. However, price protection programs don't guarantee savings, so consumers need to consider their options carefully.

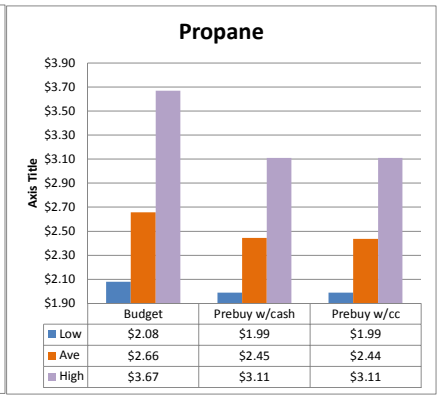
In the coming months we will be reporting a sampling of dealer's offerings for price protection programs.. The above charts are based on relatively small sample of programs and are illustrative only. Contact your Dealer for up to date terms and conditions of their "price protection" programs.



	Budget	Prebuy w/cash	Prebuy w/cc
Low	$2.60	$2.55	$2.60
Ave	$2.76	$2.68	$2.70
High	$2.90	$2.89	$2.89



	Budget	Prebuy w/cash	Prebuy w/cc
Low	$3.05	$3.00	$3.00
Ave	$3.15	$3.10	$3.10
High	$3.20	$3.20	$3.20



	Budget	Prebuy w/cash	Prebuy w/cc
Low	$2.08	$1.99	$1.99
Ave	$2.66	$2.45	$2.44
High	$3.67	$3.11	$3.11

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

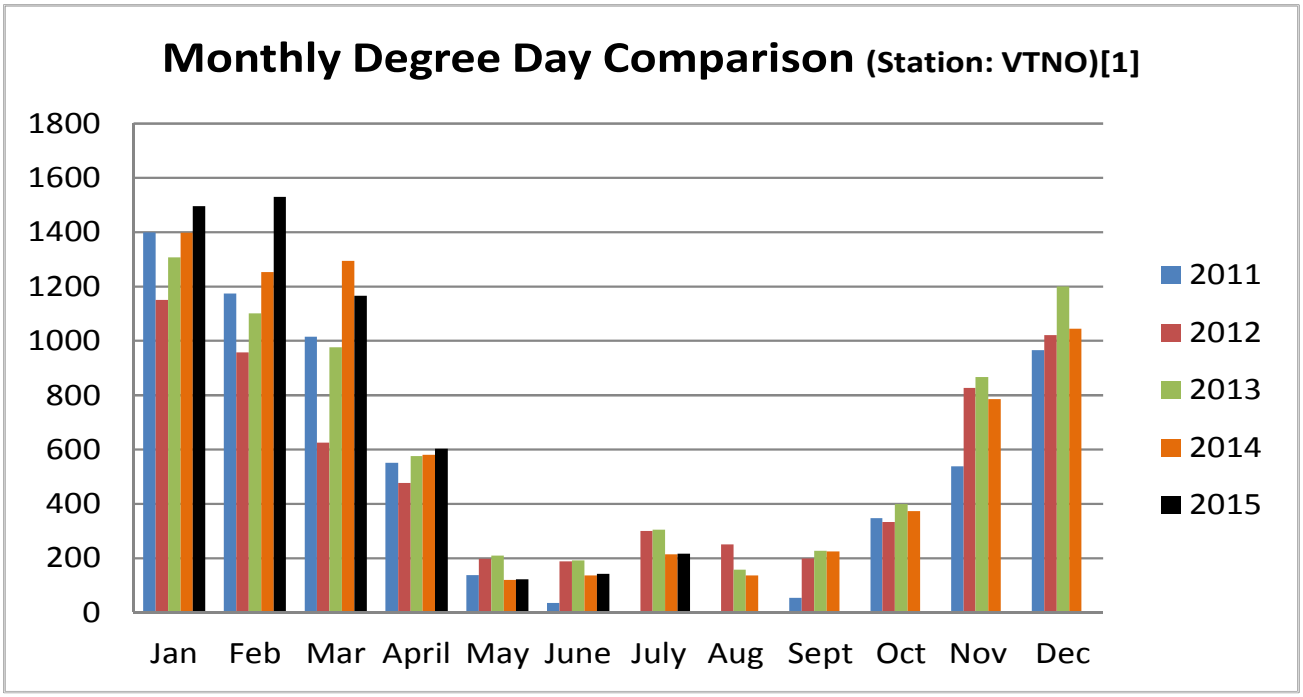
[1] http://www.consumersenergy.com/content.aspx?id=4582

VERMONT FUEL PRICE REPORT

AUGUST 2015

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	1530	0	1530	22%		22%
March	1294	0	1294	1166	0	1166	-9%		-9%
April	580	0	580	603	0	603	3%		3%
May	197	23	220	122	98	220	-38%		0%
June	28	109	137	71	71	142		-34%	3%
July	1	212	213	7	210	217		0%	1%
August	8	128	136			0			
September	163	62	225			0			
October	357	16	373			0			
November	786	0	786			0			
December	1044	0	1044						
Through April	4525	0	4525	4995	379	5374	4%	326%	6%
Annual Total	7109	550	7659						



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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.