May 20, 2005
ICC Staff - 2nd Data Request; Dated May 11, 2005
RE: Weather Normalization Adjustment (WNA) Mechanism; Docket 05-0288

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Question No. 1:
In Docket No. 95-0032, Peoples Gas used 30-year normal weather data effective July 1993 in developing its rates. Please provide the 30-year average HDDs as of July 1993.

Response:
The *n*on-leap year HDDs effective July 1993 are *as follows:*

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Month	HDD
August	19
September	84
October	391
November	750
December	1,190
January	1,364
February	1,109
March	862
April	492
May	235
June	35
July	5
Total	6,536

Question No. 2:
Given the fact that in Docket No. 01-0707, a Peoples Energy Company internal audit noted several internal control weaknesses (see ICC Staff Exhibit 9.00, Attachment E) what assurances is Peoples willing to provide that 1) the proposed WNA charge is computed correctly and 2) the related revenues are accounted for in accordance with the USOA?

Response:
Peoples Gas does not agree with the assumptions underlying the question, for the reasons stated below. However, with respect to the requested assurances, under its proposal, Peoples Gas will submit reports to the Commission from which a determination can be made as to the correctness of the computation of the WNA. Much of the information supporting the calculation -- notably normal and actual degree days -- is publicly available information that the Commission can verify independently. *Some o*ther key factors in the calculation will be fixed in the tariff. With respect to dollars associated with the credits or surcharges under the WNA, Peoples Gas can provide copies of journal entries as part of its reporting, and these journal entries would show compliance with the applicable uniform system of accounts (USOA) requirements.

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With respect to the premise of the question, Peoples Gas notes the following. First, the referenced audit was of enovate, LLC ("enovate") and not of Peoples Gas. The audit did not review and made no recommendations regarding the internal controls at Peoples Gas. enovate was a start up company that, at the time the audit report was issued, had been in business less than one and one-half years. Peoples Gas is very differently situated. Unlike enovate, Peoples Gas is subject to various SEC requirements applicable to internal controls; it is subject to the Commission's regulation, including the

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Commission's uniform system of accounts; and it has been in business for 150 years. Second, the referenced audit did not conclude that there were "several internal control weaknesses" at enovate. In fact, the conclusion of the auditors stated, in relevant part, that: "The audit found that the general management of enovate's business processes was very good, and exceeded that of many entities that had been in business for several years. Our review of enovate found the trading activity to be well monitored with adequate segregation of duties between the trading, management and support functions."

Question No. 3:
Line 63 – 64 of Petition: Provide the tariffs for WNA Riders and Clauses effective in the other states that were studied. If the tariffs effective in some states were not studied, provide rationale for why the tariffs were not studied and provide a copy of the tariff.

Response:
Attachment Q-3 is a zip file that is comprised of the tariff sheets of each utility that was reviewed and included on Exhibit B to the WNA Petition.

Question No. 4:
Provide any analysis of the review of the tariffs used in other states that was documented.

Response:
An analysis of the review of tariffs used in states was included in the Companies' petitions as Exhibit B. This Exhibit, which summarizes specifics associated with the Weather Normalization Adjustment Mechanisms for 37 utilities, includes the following information:

1. Company
2. State
3. Tariff Available (Yes or No)
4. Mechanism Type (1 or 2) Type 1 = Real Time, Type 2 = Deferred
5. Year Approved
6. Rate Class or Customer Specific
7. Applicable Rate Classes
8. Effective Billing Months
9. Applicable Rate(s)

Question No. 5:
Lines 145 -150 of Petition: Provide further explanation why weather impacts usage in September differently than weather impacts usage in April and May.

Response:
Weather and its impact on customer usage are more consistent in April and May than in September. This can be attributed to two factors. First, weather is more prevalent in April and May than September. The number of HDDs in April (503) and May (224) are almost 5 times and 2 times, respectively, higher than in September (112). Second, April and May represent months after the winter period when customers are typically still

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operating their heating appliances. On the other hand, September precedes the winter period, with customers operating their heating appliances sparingly and intermittently, if at all.

Question No. 6:
Lines 202 – 236 of Petition: Provide a further explanation of the differences between the actual degree days, NOAA thirty-year normal degree days, and the simple average of the monthly actual heating degree days. Provide an explanation as to why NOAA adjusts the average by statistical methods. Provide a further explanation as to why the NOAA thirty-year normal degree days should not be considered in the proposed WNA.

Response:
Attachment Q-6 is a white paper entitled "United States Climate Normals, 1971-2000: Degree Day Computation Methodology". This document, dated January 15, 2003 and authored by two divisions of NOAA – the National Climatic Data Center and the National Environmental Satellite, Data and Information Service (NESDIS), provides a summary of the methodologies utilized by NOAA. *This* document can also be accessed by the following web site link:

http://www.ncdc.noaa.gov/oa/climate/normals/normdegdmeth.pdf

As stated in Lines 209-210 of the Peoples Gas Petition and 208-209 of the North Shore Petition, the Companies are proposing to use the current NOAA thirty-year normal degree days.

Question No. 7:
Do the Companies intend on making a monthly tariff filing with the Commission that reports the rate to be effective each month? If so, where in the tariff language is this indicated?

Response:
No, the Companies' do not propose to make monthly filings. The rate adjustments *will be determined by the companies billing system for each* billing cycle and *are* not *a single rate that would be effective each* month. *The second paragraph on page 1 of 3 of proposed Rider WNA states: "The Company shall determine, for each billing cycle that includes days from the months of October through May, a Weather Normalization Adjustment to be applied to bills rendered for such Billing Cycle."* As an *example, Peoples Gas* has 20 billing cycles that bill within a 3-day window on the front and back end of the cycle*. T*here could be potentially 180 rate adjustments (20 x 9) for each month for each applicable class, *and* 540 rate adjustments (180 x 3) for monthly billed customers.

The *C*compan*ies* propose to provide a report to the Commission on an annual basis that would show monthly amounts billed to or credited to customers under each applicable rate class for the previous October through May period *(see page 3 of 3 of proposed Rider WNA, Section D)*. The report would also include normal heating degree days and actual heating degree days for the same period. However, the *C*compan*ies are* willing to work with the Commission to provide more frequent reporting if necessary.

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As stated in Lines 208-209 of the Petition, the Company is proposing to use the current NOAA thirty-year normal degree days.¶
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Question No. 8:
Is it the Companies' intent to provide the rate to be effective and supporting schedules with the Rider 11, Adjustment for Incremental Costs of Environmental Activities, that is filed monthly on or before the sixth day of the prior effective month? Will the rate attributable to the WNA be reflected separately?

Response:
See the response to Staff 2nd Data Request, Question No. 7. As discussed *in that response,* the rate adjustments will be computed *by the Companies' billing system* for each billing cycle. The *Companies are* willing to work with the Commission on the appropriate level of reporting.

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Question No. 9:
The tariff language indicates that the WNA will be applied to "bills rendered for such Billing Cycle" and "to all therms billed". Are these two terms synonymous?

Response:
The two terms are not synonymous. The first term, "bills rendered for such Billing Cycle" is used to identify the bills, which will include a Weather Normalization Adjustment. The second term, "to all therms billed" is used to identify the therms on those bills to which a Weather Normalization Adjustment will be applied.

Question No. 10:
For financial reporting purposes, will the revenues attributable to the WNA be segregated from revenues attributable to Rider 11? Provide a description of the accounting for these revenues.

Response:
Yes, the revenues attributable to the WNA will be segregated from revenues attributable to Rider 11 *in the details of the Companies' accounting system*. T*he ICC accounts for these revenues are the same* as the accounts utilized to record Rider 11 revenues. The normal monthly accounting for revenues attributable to Rider WNA will be recorded as:

> *Debit:* Customer Accounts Receivable (ICC Account 142-Customer Accounts Receivable)
>
> *Credit:* Gas Revenues by customer class (ICC Account 480-Residential Sales; ICC Account 481-Commercial & Industrial Sales, etc.)

Question No. 11:
Theoretically, is it correct that, for bills rendered for the first billing cycle in October, the billed therms will represent usage for one day in October and 29 days in September? So, does the proposed WNA apply to usage after the 2nd billing cycle in September through the last billing cycle in May? If not, explain why not.

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Response:
It is correct that if the first billing cycle in October is for a 30-day billing period ending October 1, it will most likely include one day in October and 29 days in September. However, since the proposed WNA only normalizes weather for the months of October through May, any sales occurring from June 1st to September 30th will not be adjusted for weather. The WNA will not apply to any billing cycle in September (including the 2nd billing cycle in September) since none of the billing cycles in September include usage in October-May. A WNA would be applicable to any billing cycle in October – June, as long as the billing cycle includes usage from the months October – May.

Question No. 12:
Does the proposed WNA bill the difference between the prior period's actual usage and the "normal" usage of the prior period? If so, is it correct that the first billing cycle in November would true up actual usage for 29 days in October and 1 day in November to the weather adjusted normal for 29 days in October and 1 day in November?

Response:
If "prior period" refers to the billing period of the customer's current bill, then it is correct that the first billing cycle in November would most likely true up actual usage for 29 days in October and 1 day in November. (Note: Depending on when the meter is read or estimated, the number of days included in October and/or November may vary by 1 *to 3* days.)

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The WNA uses the difference between Normal Degree Days (NDD) and Actual Degree Days (ADD) for a billing cycle in its computation of a charge or credit that is then applied to all therms billed in that cycle.

For the first billing cycle in November, the WNA would be calculated using the following steps:

1. Multiply the rate class specific Heat Factor by the difference between NDD and ADD for 29 days in October and 1 day in November.
2. Divide Step 1 by the sum of the rate class specific Base Load and the product of the rate class specific Heat Factor and the ADD for 29 days in October and 1 day in November.
3. Multiply the results of Step 3 by the rate class specific Base Rate.

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Question No. 13:
Will the WNA be prorated over the billing periods? Indicate in the response, where the derivation of the response is provided in the tariff language.

Response:
As defined in Section B of the proposed WNA tariff, the WNA formula makes it unnecessary to pro-rate over billing periods. The factors that are used to calculate the WNA: Heat Factor (HF_i), Base Load Sales (BL_i) and Base Rate (R_i) for each applicable rate class, are the same for the months October through May. The only factors that change within the formula are the normal (NDD) and actual (ADD) degree days. A unique WNA is calculated for each billing period based on the Base Rate, Base Load

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and Heat Factors for the applicable rate class, the actual degree days experienced in the billing period and the NOAA Normal degree days for the billing period. For billing periods that include billing days in months June through September, the NDD and ADD are set at zero for any day in these non-heating months, resulting in a zero adjustment for weather for any billing day in June, July, August or September.

Question No. 14:
In the formula to derive the effective rate, the denominator is represented by Base Load Sales plus an adjusted actual billing cycle heating degree days. What time period will the denominator represent?

Response:
The denominator represents *the customer's billing period*.

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The baseline average time period is utilized in 2 of the 3 total denominator items - Base Load Sales and the Heat Factor. Each one of these is comprised of the average of their respective factors for the annual period October – May over the time period October 2000 – May 2004. Therefore, the Base Load Sales and the Heat Factor are each the average of 4 annual factors. ¶
¶
The current billing cycle is represented by the third denominator item, Actual Degree Days.

Question No. 15:
Provide an explanation of the "Predetermined Weather Normalization Adjustment Factors". When are these to be used?

Response:
The "Predetermined Weather Normalization Adjustment Factors" are the factors (Base Rate, Heat Factor and Base Load Sales) *that will be* used *each billing cycle* to determine the Weather Normalization Adjustment. See the response to Staff 2nd Data Request, Question No. 22 for an explanation of the determination of the Base Rates. See the responses to Staff 2nd Data Request, Question No*s. 16 and 17* for explanations of the determination of the Heat Factor and Base Load Sales.

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Question No. 16:
In regard to "Base Load Sales", why is the time period from 2000 to 2004 as opposed to some other time period? How is "Base Load Sales" determined?

Response:
The time period 2000 to 2004 was used as opposed to another period because:

- This time period reflects a period where the Companies' service territories experienced actual weather that included 2 warmer than normal years and 2 colder than normal years.
- The rate class specific Base Loads, Heat Factors, and Base Rates are derived from homogenous data using the Companies' Customer Information System that was implemented February 2000.

The Base Load is an average Base Load per customer over 4 fiscal years (2001-2004) that is determined as follows:

1. For each fiscal year (2001, 2002, 2003, 2004), add the actual usage for the applicable rate class (Rate 1 Non-Heating, Rate 1 Heating, or Rate 2 Heating) for the months of June, July and August.
2. Divide Step 1 by 92 days [the sum of the number of days in June (30 days), July (31 days) and August (31 days)].

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3. Multiply Step 3 by the number of days in the month to determine the monthly base load.
4. Add the monthly base loads for Oct-May.
5. Divide Step 4 by the number of days from October – May.
6. Divide Step 5 by 30.42 days [30.42 days represents the average number of days in a month (365 days per year ÷ 12 months per year)] to determine the year's monthly base load.
7. For each year, divide Step 6 by the applicable rate class' average number of customers (to derive the Base Load per customer for the applicable rate class for each year).
8. Calculate the Base Load by adding the Base Load per customer for the applicable rate class for each year and divide by 4.

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Attachment Q-16 is a slide that was presented at the March 30, 2005 Stakeholders Workshop to illustrate the above calculation.

Question No. 17:
How is the Heat Factor determined?

Response:
The Heat Factor is an average Heat Factor per customer over 4 fiscal years (2001-2004) that is determined as follows:

1. For each fiscal year (2001-2004), calculate the monthly October – May heat load by deducting the monthly base load (as determined in Step 3 of the Staff's 2nd Data Request, Question No. 16) from the actual heating period (October – May) usage for the applicable rate class (Rate 1 Non-Heating, Rate 1 Heating, or Rate 2 Heating).
2. For each fiscal year, sum the monthly heat loads for October - May for the applicable rate class.
3. For each fiscal year, divide the results from Step 2 by the actual October– May degree days.
4. For each fiscal year, divide the results from Step 3 by the October – May average number of customers (to derive the Heat Factor per customer for the applicable rate class).
5. Calculate the Heat Factor by adding the Heat Factor per customer for the applicable rate class for each fiscal year and divide by 4.

Attachment Q-17 is a slide that was presented at the March 30, 2005 Stakeholders Workshop to illustrate the above calculation.

Question No. 18:
Since the tariffs do not provide for Commission oversight of the WNA, would the Companies agree to the submission of an annual internal audit report of the WNA to the Commission?

Response:
As the WNA would be provided under the Companies' tariffs, the Commission would maintain the same oversight that it has with other rates and riders in the same tariff.

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Section D, Reporting *Requirements,* describes the *Rider WNA* report that would be provided to the Commission. However, the *Companies are willing* to work with the Commission on the appropriate level of reporting.

Question No. 19:
Section D of the tariffs provide that an annual report will be postmarked by September 30, but does not indicate to whom the report will be submitted. Would the Companies agree to revise the tariff language to require the submission of the report to the Chief Clerks Office as a compliance filing of the docket established by this filing and a copy to the Director of the Energy Division and the Director of the Financial Analysis Division?

Response:
Yes.

Question No. 23:
Within the information provided by the Company in the March 30 meeting in Chicago, there is information which states that the base load therms for residential heating customers is 28.73656 therms/month/customer (BL 1h). What is the value for the base load therms for residential non-heat customers and for commercial heat customers (S.C. No. 2) on Exhibit C?

Response:
The values for the base load therms for residential non-heat customers (S.C. No. 1) and for commercial heat customers (S.C. No. 2), which can be found on Exhibit A, page 4 of 5 of *each* Petition, are as follows:

	PGL	NSG
Rate 1 Non-Heating	**5.74674**	**13.50741**
Rate 2 Heating	**254.27435**	**292.73350**

Question No. 26:
Please indicate whether the NDD to be used in calculating the WNA factor is the current 30-year NOAA average or the 30-year NOAA average that was used in setting the company's rates 10 years ago.

Response:
The NDD used in calculating the WNA factor is the current 30-year NOAA average*, which is equal to* 6,498 *annual normal heating degree days*. This is lower than the NOAA average *NDD* of 6,536 *annual normal heating degree days* used in setting the *existing rates of each* company.

For the period October – May, there are 71 *fewer* HDD in the current average than in the average used in setting the rates. This *is* more likely to provide a benefit to the *c*ustomer because it sets a lower threshold for colder-than-normal weather. *See lines 227-236 of Peoples Gas' Petition and lines 226-235 of North Shore's Petition.*

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Deleted: **Question No. 20:**¶ Line 176 of the Petition indicates that the WNA would be applied to the same billing therms as the Rider 11 is applied. Rider 11 states that "it shall be billed over an annual billing cycle". The proposed tariff language of the WNA appears to indicate that the WNA would be applied to actual therms for a period less than an annual billing cycle. Please reconcile.¶ ¶ ***Response:***¶ The WNA will be applied to therms from October – May. These are the same therms as Rider 11 is applied to, but Rider 11 is applied throughout the year. Therefore, the same therm quantities would be subject to both mechanisms during billing cycles from October – May, and only to Rider 11 for June – September cycles.¶ ¶ ¶ **Question No. 21:**¶ The company's response dated April 27 to Staff's first set of questions indicates that: "The company's rates were determined 10 years ago using normal heating degree days (HDDs) that are higher than that being ... [1]
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Question No. 27:
Is the ADD input in calculating HF based on an average ADD from Oct 2000 to May 2004? If not, please indicate the time period for this input.

Response:
Yes. *See the response to Staff 2nd Data Request, Question No. 17.*

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Question No. 31:
Attached to Staff's May 11 email is a separate document prepared by staff that displays the NWA effect on revenues, by heating season. The data used to prepare this document was provided by Peoples during meetings with Staff and parties.

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For the heating seasons beginning with the 1996-1997 period and continuing through the recent heating season, Staff's analysis suggests that, if a weather tariff would have been in place since the Company's last rate case, the Company would have applied a surcharge to customers totaling $108,572,444 for five of those eight periods. For the remaining three periods, the Company would have credited customers $20,226,076.

The following questions pertain to the information in that document:

a) Does the Company agree that Staff's analysis provides a valid approximation of the effects of a weather adjustment tariff it one would have been in effect during those years?
b) Provide an analysis of what the Company believes the results would have been if a weather adjustment tariff were in effect during those years.
c) Based on the results of those years, what is the Company's expectation regarding tariff surcharges and refunds for the next three years?

Response:
The Companies do not disagree with the arithmetic underlying the Staff's analysis. However, the analysis is not consistent with the premise underlying the Companies' proposals. The Companies' rates are based on thirty-year normal weather data. The WNA proposal is to use current thirty-year normal data. As explained in the Petitions, the use of current data, rather than the weather data included in the Companies' current base rates, is beneficial to customers. Over time, weather is normal, with approximately the same number of years having colder than normal as warmer than normal weather. As stated in the Petitions, the Companies' planning is based on normal weather because it cannot predict what weather will be like for the next three years or any other time period. It can only assume that, over time, weather will be normal and credits and surcharges will be roughly equal.

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Question No. 20:
Line 176 of the Petition indicates that the WNA would be applied to the same billing therms as the Rider 11 is applied. Rider 11 states that "it shall be billed over an annual billing cycle". The proposed tariff language of the WNA appears to indicate that the WNA would be applied to actual therms for a period less than an annual billing cycle. Please reconcile.

Response:
The WNA will be applied to therms from October – May. These are the same therms as Rider 11 is applied to, but Rider 11 is applied throughout the year. Therefore, the same therm quantities would be subject to both mechanisms during billing cycles from October – May, and only to Rider 11 for June – September cycles.

Question No. 21:
The company's response dated April 27 to Staff's first set of questions indicates that: "The company's rates were determined 10 years ago using normal heating degree days (HDDs) that are higher than that being proposed based on the last four years".

If the Company's current rates reflect higher heating degree days (that is, a colder avg. normal temperature) than the average of the last four years, and the company believes that this difference substantially affects its revenues, then why isn't the company requesting to have its rate re-set to reflect more current weather trends, costs, etc?

Response:

Question No. 22:
Please explain columns (c) and (e) in Exhibit C of the filing. What is the basis for those percentages? How were they calculated? Provide the data upon which the percentages are based.

Response:

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Question No. 24:
Pertaining to Exhibit C, for each customer class of residential heating, residential non-heat and commercial heat, please provide additional explanation as to why a weighted average base rate factor is a more correct value than a base rate factor based on only the tail block; i.e. for residential the first block applicable % would be 0% and the second block would be 100%.

Response:

Question No. 25:
Does the Company intend to update the pre-determined factors of R, HF, and BL?

If the response is positive, please indicate how often such factors will be updated (e.g., annually, monthly), what aspects of the factors will be updated (e.g., measurement period), and the basis for such changes..

If the response is negative, please explain why not.

Response:

BLOCKED FILE ALERT 1

A file has been blocked due to the 'created blocked file extensions' rule. See your system administrator for further information.

Context: 'Attachment Q-3; Question No. 3 - Tariffs.zip'
Disallowed due to filename

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United States Climate Normals, 1971-2000
Degree Day Computation Methodology

National Climatic Data Center/NESDIS/NOAA
January 15, 2003

The 1971-2000 degree day normals are computed using a new methodology. Previously, degree days were computed using the Thom rational conversion formulae (Thom 1954, 1966). The Thom method allows a monthly degree day total to be estimated from input average temperature means and standard deviations.

For the 1971-2000 normals, degree day totals were computed in *two* distinct ways. For stations that are not first-order National Weather Service locations, the rational conversion formulae developed by Thom (1954, 1966) was *modified* by using inputs of daily spline-fit (rather than monthly) means and standard deviations of average temperature. This modification improved consistency of the estimated degree day totals by eliminating month-by-month 'steps' in the inputs. For first-order stations, where daily data sets are largely devoid of missing values, monthly degree day totals were derived directly from daily values.

Computation of First-Order Monthly Degree Day Totals:

Based on comments from the climate research community and energy groups, monthly degree day totals were derived directly from daily average temperature values for first-order sites for the 1971-2000 period. Appendix A lists the first-order stations subjected to direct computation. These stations are also identified with an asterisk '*' in the HDD/CDD section of the monthly normals (CLIM81) PDF publication.

The computation of first-order monthly degree day totals began with the computation of average daily temperatures for the 1971-2000 period (with a precision of 0.5 degree Fahrenheit). Daily HDD/CDD (base 65) values were then computed with a precision of 0.5. The summation of these daily degree day values yielded 360 monthly totals for the 1971-2000 period. From the respective 30 monthly totals for a given month, the preliminary monthly degree day normal was computed using a simple average.

Monthly average temperature normals were computed based on a sequential record adjusted for inhomogeneities (due to changes in station locations, instrumentation, time of observation, surrounding environment, observing practice, sensor drift, *etc*). Such adjustments yielded a time series and normals representative of the observing practices as of the end of the normals period (*i.e.*, December 2000), since these are the conditions under which future observations will likely be compared. This adjustment was not accounted for in the preliminary monthly degree day normals, so they were subsequently adjusted for compatibility with the monthly average temperatures.

Daily normals of temperature, degree days, and precipitation were interpolating based upon the monthly normals. Each element was interpolated independently using a cubic spline fit function (Greville, 1967). To eliminate discontinuities between December 31 and January 1, the spline interpolation was performed on a series of 24 monthly values (included a repetition of values for the six months preceding and following the twelve monthly values). The resultant smooth curve of daily values for an element averaged or totaled up to the respective monthly normal.

Given the independent computation of each element, adjustments were performed on the daily data to remove spurious inflection points caused by rounding and to ensure adherence to functional relationships among the elements. Adjustments were based upon achieving climatologically reasonable inflection points, daily consistency between elements, monthly consistency between daily and monthly values by element, and close adherence of temperature and degree day values to the formula $T - 65 + H - C = 0$, where T = mean temperature, H = heating degree days, and C = cooling degree days. The preliminary degree day normals were adjusted in the context of these consistency checks to arrive at the final degree day normal for a given month.

In limited cases, preliminary degree day normals, when spline fit, resulted in daily values of 1 that were separated from the major rise and fall of non-zero daily degree day values over the course of a heating/cooling degree day season. These spurious daily degree day values are indicated with a '-99' (or an asterisk in non-digital printouts). Their presence assures consistency between the monthly total and the sum of the daily total (when values are considered equal to 1).

An example of the computation of first-order monthly degree day normals is shown in Table 1. The monthly average temperature values for both Buffalo, New York and Erie, Pennsylvania were adjusted for inhomogeneities, with an average adjustment of +0.1 and +1.0 degrees Fahrenheit, respectively. With positive average temperature adjustments, the expected adjustments to the preliminary monthly degree day normals would be downward for HDD and upward for CDD. This is the case here, as the preliminary HDD annual total of 6697 is adjusted downward by a modest 5 degree days to 6692 at Buffalo, while the preliminary CDD annual total of 539 is adjusted upward just 9 degree days to 548. With a larger average temperature adjustment at Erie, the adjustments to the preliminary degree days are more pronounced, from 6402 downward to 6243 for HDD and from 571 upward to 620 for CDD.

In evaluating the degree day adjustments on a month-by-month basis, it should be noted that the magnitude of the average temperature adjustment generally, but not strictly, correlates to the magnitude of the degree day adjustment. The variability is due to the constraint of assuring daily consistency between elements as well as day-to-day consistency within elements in the daily normals.

The computation of degree days for first-order stations for the 1971-2000 normals brings together the benefits of direct computation of values (versus estimation) with the need for degree day totals that are consistent with the homogeneity-adjusted monthly

temperatures. As data sets are refined and improved, there is an expectation that homogeneity adjustments will be performed on the daily data itself, eliminating the two-step process inherent in the present methodology.

Table 1. Degree Day Computations for Buffalo, NY and Erie, PA.

Normals Computations, 1971-2000
BUFFALO NIAGARA INTL AP New York COOP: 301012

				Heating Degree Days		
Month	UnrndMean	AdjustMean	MeanDiff	Computed	Adjustment	Official
01	24.4	24.5	-0.1	1257	-1	1256
02	25.8	25.9	-0.1	1108	2	1110
03	34.2	34.3	-0.1	954	7	961
04	45.3	45.3	0.0	595	-1	594
05	57.2	57.0	0.2	268	0	268
06	66.1	65.8	0.3	66	-1	65
07	71.1	70.8	0.3	9	-1	8
08	69.4	69.1	0.3	22	-1	21
09	61.7	61.5	0.2	150	-1	149
10	50.9	50.7	0.2	440	2	442
11	40.4	40.2	0.2	739	-2	737
12	29.9	29.8	0.1	1089	-8	1081
Annual			0.1	6697	-0.4	6692
				Cooling Degree Days		
Month	UnrndMean	AdjustMean	MeanDiff	Computed	Adjustment	Official
01	24.4	24.5	-0.1	0	0	0
02	25.8	25.9	-0.1	0	0	0
03	34.2	34.3	-0.1	0	0	0
04	45.3	45.3	0.0	3	1	4
05	57.2	57.0	0.2	27	1	28
06	66.1	65.8	0.3	100	1	101
07	71.1	70.8	0.3	199	4	203
08	69.4	69.1	0.3	156	2	158
09	61.7	61.5	0.2	50	0	50
10	50.9	50.7	0.2	4	0	4
11	40.4	40.2	0.2	0	0	0
12	29.9	29.8	0.1	0	0	0
Annual			0.1	539	0.8	548

Normals Computations, 1971-2000
ERIE INTERNATIONAL AP Pennsylvania COOP: 362682

				Heating Degree Days		
Month	UnrndMean	AdjustMean	MeanDiff	Computed	Adjustment	Official
01	26.1	26.9	0.8	1207	-11	1196
02	27.2	28.2	1.0	1069	-23	1046
03	35.4	36.5	1.1	919	-19	900
04	45.6	46.8	1.2	585	-18	567
05	56.8	58.1	1.3	285	-25	260
06	66.0	67.4	1.4	75	-17	58
07	70.8	72.1	1.3	13	-9	4
08	69.8	70.9	1.1	18	-3	15
09	63.0	64.0	1.0	123	-7	116
10	52.4	53.3	0.9	397	-11	386
11	42.2	42.9	0.7	686	-7	679
12	32.0	32.7	0.7	1025	-9	1016
Annual			1.0	6402	-13.3	6243
				Cooling Degree Days		
Month	UnrndMean	AdjustMean	MeanDiff	Computed	Adjustment	Official
01	26.1	26.9	0.8	0	0	0
02	27.2	28.2	1.0	0	0	0
03	35.4	36.5	1.1	1	0	1
04	45.6	46.8	1.2	5	0	5
05	56.8	58.1	1.3	31	-1	30
06	66.0	67.4	1.4	106	9	115
07	70.8	72.1	1.3	194	14	208
08	69.8	70.9	1.1	165	18	183
09	63.0	64.0	1.0	63	8	71
10	52.4	53.3	0.9	6	1	7
11	42.2	42.9	0.7	0	0	0
12	32.0	32.7	0.7	0	0	0
Annual			1.0	571	4.1	620

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Appendix A. Stations with Directly Computed Monthly Degree Day Totals

(COOP ID/ WBAN ID/ Name / State Abbreviation)

010831	13876	BIRMINGHAM INTL AP	AL
014064	03856	HUNTSVILLE INTL AP	AL
015478	13894	MOBILE RGNL AP	AL
015550	13895	MONTGOMERY DANNELLY AP	AL
023010	03103	FLAGSTAFF PULLIAM AP	AZ
026481	23183	PHOENIX SKY HRBR INTL AP	AZ
028820	23160	TUCSON INTL AP	AZ
029439	23194	WINSLOW AP	AZ
032574	13964	FORT SMITH RGNL AP	AR
034248	13963	LITTLE ROCK ADAMS AP	AR
040442	23155	BAKERSFIELD KERN CO AP	CA
040822	23157	BISHOP AP	CA
043257	93193	FRESNO YOSEMITE INTL	CA
045085	23129	LONG BEACH AP	CA
045114	23174	LOS ANGELES INTL AP	CA
045115	93134	LOS ANGELES DOWNTOWN USC	CA
047740	23188	SAN DIEGO LINDBERGH AP	CA
047769	23234	SAN FRANCISCO INTL AP	CA
047946	23273	SANTA MARIA AP	CA
048558	23237	STOCKTON AP	CA
050130	23061	ALAMOSA BERGMAN FIELD	CO
051778	93037	COLORADO SPRINGS MNPL AP	CO
053488	23066	GRAND JUNCTION WALKER AP	CO
056740	93058	PUEBLO AP	CO
060806	94702	BRIDGEPORT SIKORSKY AP	CT
063456	14740	HARTFORD BRADLEY INTL AP	CT
079595	13781	WILMINGTON NEW CASTLE AP	DE
082158	12834	DAYTONA BEACH INTL AP	FL
083186	12835	FORT MYERS (PAGE AP)	FL
083326	12816	GAINESVILLE RGNL AP	FL
084358	13889	JACKSONVILLE INTL AP	FL
084570	12836	KEY WEST INTL AP	FL
085663	12839	MIAMI INTL AP	FL
086997	13899	PENSACOLA RGNL AP	FL
088758	93805	TALLAHASSEE MUNICIPAL AP	FL
088788	12842	TAMPA INTL AP	FL
089525	12844	WEST PALM BEACH INTL AP	FL
090435	13873	ATHENS BEN EPPS AP	GA
090451	13874	ATLANTA HARTSFIELD AP	GA
090495	03820	AUGUSTA BUSH FIELD AP	GA
092166	93842	COLUMBUS METRO AP	GA
095443	03813	MACON MIDDLE GA RGNL AP	GA
097847	03822	SAVANNAH MUNICIPAL AP	GA
101022	24131	BOISE AIR TERMINAL	ID
105241	24149	LEWISTON AP	ID
107211	24156	POCATELLO RGNL AP	ID
111549	94846	CHICAGO OHARE INTL AP	IL
115751	14923	MOLINE QUAD CITY AP	IL
116711	14842	PEORIA GTR PEORIA AP	IL
117382	94822	ROCKFORD AP	IL
118179	93822	SPRINGFIELD CAPITAL AP	IL
122738	93817	EVANSVILLE INTL AP	IN
123037	14827	FORT WAYNE BAER AP	IN
124259	93819	INDIANAPOLIS INTL AP	IN
128187	14848	SOUTH BEND RGNL AP	IN
132203	14933	DES MOINES AP	IA
132367	94908	DUBUQUE AP	IA
137708	14943	SIOUX CITY AP	IA
138706	94910	WATERLOO MUNICIPAL AP	IA
141767	13984	CONCORDIA BLOSSER AP	KS
142164	13985	DODGE CITY RGNL AP	KS
143153	23065	GOODLAND RENNER AP	KS
148167	13996	TOPEKA BILLARD MNCPL AP	KS
148830	03928	WICHITA MID-CONTINENT AP	KS
151855	93814	CINCINNATI COVINGTON AP	KY
154746	93820	LEXINGTON BLUE GRASS AP	KY
154954	93821	LOUISVILLE STANDIFORD AP	KY
156110	03816	PADUCAH BARKLEY RGNL AP	KY
160549	13970	BATON ROUGE RYAN AP	LA
165078	03937	LAKE CHARLES AP	LA
166660	12916	NEW ORLEANS INTL AP	LA
168440	13957	SHREVEPORT AP	LA
171175	14607	CARIBOU MUNICIPAL AP	ME
176905	14764	PORTLAND INTL AP	ME
180465	93721	BALTIMORE-WASHINGTON AP	MD
190736	14753	BLUE HILL OBS MILTON	MA
190770	14739	BOSTON LOGAN INTL AP	MA
200164	94849	ALPENA COLLINS AP	MI
202103	94847	DETROIT METRO AP	MI
202846	14826	FLINT BISHOP INTL AP	MI
203333	94860	GRAND RAPIDS INTL AP	MI
203936	94814	HOUGHTON LAKE ROSCOMMON	MI
204641	14836	LANSING CAPITAL CITY AP	MI
205712	14840	MUSKEGON COUNTY AP	MI
207366	14847	SAULT STE MARIE AP	MI
212248	14913	DULUTH INTL AP	MN
214026	14918	INTL FALLS AP	MN
215435	14922	MINNEAPOLIS INTL AP	MN
217294	14926	ST CLOUD MUNICIPAL AP	MN
224472	03940	JACKSON THOMPSON AP	MS
225776	13865	MERIDIAN KEY AP	MS
229003	93862	TUPELO RGNL AP	MS
231791	03945	COLUMBIA RGNL AP	MO
237455	13994	ST LOUIS INTL AP	MO
237976	13995	SPRINGFIELD REG AP	MO
240807	24033	BILLINGS INTL AP	MT
243558	94008	GLASGOW INTL AP	MT
243751	24143	GREAT FALLS INTL AP	MT
243996	94012	HAVRE CITY CO AP	MT
244055	24144	HELENA AP	MT
244558	24146	KALISPELL GLACIER PK AP	MT
245745	24153	MISSOULA INTL AP	MT
253395	14935	GRAND ISLAND CTR NE AP	NE
254795	14939	LINCOLN AP	NE
255995	14941	NORFOLK AP	NE
256065	24023	NORTH PLATTE RGNL AP	NE
256255	14942	OMAHA EPPLEY AP	NE
257665	24028	SCOTTSBLUFF AP	NE
258760	24032	VALENTINE MILLER AP	NE
262631	23154	ELY	NV
264436	23169	LAS VEGAS AP	NV
266779	23185	RENO CANNON INTL AP	NV
269171	24128	WINNEMUCCA MUNICIPAL AP	NV
271683	14745	CONCORD MUNICIPAL AP	NH
280311	93730	ATLANTIC CITY AP	NJ
286026	14734	NEWARK INTL AP	NJ
290234	23050	ALBUQUERQUE INTL AP	NM
300042	14735	ALBANY INTL AP	NY
300687	04725	BINGHAMTON BROOME CO AP	NY
301012	14733	BUFFALO NIAGARA INTL	NY
305801	94728	NEW YORK CITY CENTRAL PK	NY
305803	94789	NEW YORK JFK INTL AP	NY
305811	14732	NEW YORK LA GUARDIA AP	NY
307167	14768	ROCHESTER MONROE CO AP	NY
308383	14771	SYRACUSE HANCOCK INTL AP	NY
310300	03812	ASHEVILLE RGNL AP	NC
311458	93729	CAPE HATTERAS NWS BLDG	NC
311690	13881	CHARLOTTE DGLAS INTL AP	NC
313630	13723	GREENSBORO RGNL AP	NC
317069	13722	RALEIGH DURHAM AP	NC
319457	13748	WILMINGTON NEW HANVR AP	NC
320819	24011	BISMARCK MUNICIPAL AP	ND

322859	14914	FARGO HECTOR AP	ND
323616	14916	GRAND FORKS INTL AP	ND
329425	94014	WILLISTON SLOULIN AP	ND
330058	14895	AKRON CANTON AP	OH
331657	14820	CLEVELAND HOPKNS INTL AP	OH
331786	14821	COLUMBUS INTL AP	OH
332075	93815	DAYTON INTL AP	OH
334865	14891	MANSFIELD LAHM AP	OH
338357	94830	TOLEDO EXPRESS AP	OH
339406	14852	YOUNGSTOWN MUNICIPAL AP	OH
346661	13967	OKLAHOMA CITY AP	OK
348992	13968	TULSA INTL AP	OK
350328	94224	ASTORIA CLATSOP CO AP	OR
352709	24221	EUGENE MAHLON SWEET AP	OR
355429	24225	MEDFORD AP	OR
356546	24155	PENDLETON MUNICIPAL AP	OR
356751	24229	PORTLAND INTL AP	OR
357500	24232	SALEM MCNARY AP	OR
360106	14737	ALLENTOWN LEHIGH VLY AP	PA
362682	14860	ERIE AP	PA
366889	13739	PHILADELPHIA INTL AP	PA
366993	94823	PITTSBURGH INTL AP	PA
369705	14777	WILKES BRE SCTN AP AVOCA	PA
369728	14778	WILLIAMSPORT LYCOMING AP	PA
376698	14765	PROVIDENCE GREEN AP	RI
381544	13880	CHARLESTON INTL AP	SC
381939	13883	COLUMBIA METRO AP	SC
383747	03870	GRNVL SPART AP GREER	SC
390020	14929	ABERDEEN RGNL AP	SD
394127	14936	HURON AP	SD
396937	24090	RAPID CITY RGNL AP	SD
397667	14944	SIOUX FALLS AP	SD
401094	13877	BRISTOL TRI CITY AP	TN
401656	13882	CHATTANOOGA AP	TN
404950	13891	KNOXVILLE AP	TN
405954	13893	MEMPHIS INTL AP	TN
406402	13897	NASHVILLE INTL AP	TN
406750	03841	OAK RIDGE ATDD	TN
410016	13962	ABILENE MUNICIPAL AP	TX
410211	23047	AMARILLO INTL AP	TX
410428	13958	AUSTIN CITY (CAMP MABRY)	TX
411136	12919	BROWNSVILLE AP	TX
412015	12924	CORPUS CHRISTI INTL AP	TX
412244	13960	DALLAS LOVE AP	TX
412360	22010	DEL RIO INTL AP	TX
412797	23044	EL PASO INTL AP	TX
414300	12960	HOUSTON BUSH INTL AP	TX
415411	23042	LUBBOCK RGNL AP	TX
415890	23023	MIDLAND INTL AP	TX
417174	12917	PORT ARTHUR AP BEAUMONT	TX
417943	23034	SAN ANGELO MATHIS AP	TX
417945	12921	SAN ANTONIO INTL AP	TX
419364	12912	VICTORIA RGNL AP	TX
419419	13959	WACO RGNL AP	TX
419729	13966	WICHITA FALLS SHEPPRD AP	TX
427598	24127	SALT LAKE CITY INTL AP	UT
431081	14742	BURLINGTON INTL AP	VT
445120	13733	LYNCHBURG MUNICIPAL AP	VA
446139	13737	NORFOLK INTL AP	VA
447201	13740	RICHMOND BYRD INTL AP	VA
447285	13741	ROANOKE WOODRUM AP	VA
448903	93738	WASHINGTON DULLES INTL	VA
448906	13743	WASHINGTON REAGAN NTL AP	VA
456114	24227	OLYMPIA AP	WA
456858	94240	QUILLAYUTE AP	WA
457473	24233	SEATTLE TACOMA AP	WA
457938	24157	SPOKANE AP	WA
459465	24243	YAKIMA MUNICIPAL AP	WA
460582	03872	BECKLEY AP	WV
461570	13866	CHARLESTON YEAGER AP	WV
462718	13729	ELKINS AP	WV
464393	03860	HUNTINGTON TRI STATE	WV
473269	14898	GREEN BAY STRBL INTL AP	WI
474370	14920	LA CROSSE MUNICIPAL AP	WI
474961	14837	MADISON DANE CO AP	WI
475479	14839	MILWAUKEE MITCHELL AP	WI
481570	24089	CASPER NATRONA CO AP	WY
481675	24018	CHEYENNE MUNICIPAL AP	WY
485390	24021	LANDER AP	WY
488155	24029	SHERIDAN AP	WY

C-first Methodology for Calculating Base Load and Heat Factors

PEOPLES ENERGY

BASE LOAD

$$BL_i = \frac{(JUN_i + JUL_i + AUG_i) / 92 \text{ Days} \times 30.42 \text{ days}}{CUST_i}$$

where:

BL_i = Monthly Base Load for the applicable service classification

JUN_i = Jun. Sales for the applicable service classification

JUL_i = Jul. Sales for the applicable service classification

AUG_i = Aug. Sales for the applicable service classification

30.42 = Avg # of days in month (365 days / 12 months)

$CUST_i$ = Avg # of customers for the applicable service classification

C-first Methodology for Calculating Base Load and Heat Factors

PEOPLES ENERGY

HEAT FACTOR

$$HF_i = \frac{[(OCT_i \text{ thru } MAY_i) - (BL_i \times 8 \text{ mos.})] / ADD_{Oct\text{-}May}}{CUST_i}$$

where:

HF_i = *Heat Factor for the applicable service classification*

OCT_i = *Actual Oct. Sales for the applicable service classification*

MAY_i = *Actual May Sales for the applicable service classification*

BL_i = *Base Load for the applicable service classification*

$ADD_{Oct\text{-}May}$ = *Actual Degree Days for the period October through May*

$CUST_i$ = *Avg. # of Customers for the applicable service classification*