FILE

OCC EXHIBIT NO _____

BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of Vectren Energy Delivery of Ohio, Inc., for Authority to Amend its Filed Tariffs to Increase the Rates and Charges for Gas Services and Related Matters.	)	Case No. 07-1080-GA-AIR
In the Matter of the Application of Vectren Energy Delivery of Ohio, Inc., for Approval of An Alternative Rate Plan for a Distribution Replacement Rider to Recover the Costs of a Program for the Accelerated Replacement of Cast Iron Mains and Bare Steel Mains and Service Lines, a Sales Reconciliation Rider to Collect Difference Between Actual and Approved Revenues, and Inclusion in Operating Expense of the Costs of Certain Reliability Programs.	)	Case No. 07-1081-GA-ALT

DIRECT TESTIMONY
Of
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ON BEHALF OF THE
OFFICE OF THE OHIO CONSUMERS' COUNSEL
10 West Broad Street, Suite 1800
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July 23, 2008

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ATTACHMENTS

I. INTRODUCTION

Q1. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND OCCUPATION FOR THE RECORD, PLEASE.

A1. My name is William H. Novak. My business address is 19 Morning Arbor Place, The Woodlands, TX, 77381. I am the President of WHN Consulting, a utility consulting and expert witness services company.

Q2. PLEASE PROVIDE A SUMMARY OF YOUR BACKGROUND AND PROFESSIONAL EXPERIENCE.

A2. A detailed description of my educational and professional background is provided in Attachment WHN-1 to my testimony. Briefly, I have both a Bachelors degree in Business Administration with a major in Accounting, and a Masters degree in Business Administration from Middle Tennessee State University. I am a Certified Management Accountant, and am also licensed to practice as a Certified Public Accountant.

My work experience has centered on regulated utilities for over 25 years. Before establishing WHN Consulting, I was Chief of the Energy & Water Division of the Tennessee Regulatory Authority where I had either presented testimony or advised the Authority on a host of regulatory issues for over 19 years. In addition, I was previously the Director of Rates & Regulatory Analysis for two years with Atlanta Gas Light Company, a natural gas distribution utility with operations in Georgia

and Tennessee, where I was responsible for defending the utility's gas cost recovery and rate filings at a time when it was completely exiting the gas merchant function in Georgia, and employing a straight fixed variable ("SFV") rate design for each of its individual customers. I also served for two years as the Vice President of Regulatory Compliance for Sequent Energy Management, a natural gas trading and optimization company in Texas, where I was responsible for ensuring the firm's compliance with state and federal regulatory requirements.

Q3. ON WHOSE BEHALF ARE YOU TESTIFYING?

A3. I am testifying on behalf of the Office of the Ohio Consumers' Counsel ("OCC").

Q4. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A4. My testimony will support certain OCC Objections to the Staff Report and address issues raised by those objections. Specifically I will address the following aspects of the Company's case:

- The process used to normalize test period sales for weather;
- The forecast of revenues under current rates for all customer classes;
- The allocation of the proposed rate increase to different customer classes;
- The rate design for the residential customer class;
- The Distribution Rate Rider ("DRR"); and
- The Sales Reconciliation Rider ("SRR").

Q5. WHAT DOCUMENTS HAVE YOU REVIEWED IN PREPARATION OF YOUR TESTIMONY?

A5. I have reviewed the Vectren Energy Delivery of Ohio ("Vectren" or "the Company") Rate Case Application, along with the testimony and exhibits presented with their filing. In addition, I have reviewed the Company's workpapers related to the cost of service and revenue calculations supporting their filings. I have also reviewed the Company's responses to the data requests submitted by the Staff and Eagle Energy, as well as the OCC in these same areas. Finally, I have reviewed the Staff Report and the Eagle Report along with workpapers provided to the OCC in support of their conclusions.

II. WEATHER NORMALIZATION

Q6. PLEASE EXPLAIN THE PROCESS OF WEATHER NORMALIZATION.

A6. Generally speaking, gas sales to the residential and small commercial customer classes are highly dependent upon changes in weather. In addition, weather normalization can often be appropriate to individual industrial customers that use natural gas solely for heating load as opposed to a process load.

To the extent that any of these customer classes use gas for heating, then the severity of weather impacts their demand for gas. That is to say that during colder than normal periods, the Company will generally increase their sales to the residential and small commercial customer classes. Likewise in periods of

warmer than normal weather, the Company's sales will generally decrease to the same customer classes.

Weather normalization in a rate case represents an adjustment to the actual historical gas sales volumes to account for the impacts of the differences between actual and normal weather. In other words, the historical values of the residential and small commercial customer classes are adjusted to what they ***would have been*** if normal weather had occurred. This adjustment to "normal" is necessary because we don't know precisely what any future years' weather will be; therefore we assume in a rate case that weather will be normal and we adjust accordingly.

Q7. ***HOW IS NORMAL WEATHER DETERMINED?***

A7. In the United States, the most widely relied upon source of weather data is from the National Oceanic and Atmospheric Administration ("NOAA"). To my knowledge, NOAA has always calculated normal weather as a 30 year average of the actual daily weather observed. NOAA recalculates this normal weather average every 10 years, with the last calculation taking place for the 30 year period ended December 31, 2000. The NOAA calculation of normal weather has traditionally been accepted and utilized by public utility commissions in gas distribution rate cases.

Q8. HAS THE COMPANY ADOPTED A 30 YEAR AVERAGE AS NORMAL IN ITS RATE CASE?

A8. No. Instead of the 30 year average, the Company has proposed using a 10 year average of actual weather as a proxy for normal weather. NOAA has calculated the 30 year average of weather to be 5,690 heating degree days ("HDD") whereas the Company has adopted a 10 year average of 5,388 HDD for a difference of 302 HDD or 5.3%. The impact of this change in computing normal weather from 30 years to 10 years results in an increase in the Company's revenue requirements of approximately $1.7 million.

As shown on Schedule WHN-1, during the 10 year period used by the Company to calculate normal weather, the deviation of actual heating degree days experienced from normal weather for both 10 year and 30 year averages produced the following results:

	10 Year Average	**30 Year Average**
Years Warmer Than Normal	4	7
Years Colder Than Normal	6	3

As expected, both the 10 year average and the 30 year average produced results that were on both sides of the normal average. As a result, there appears to be very little evidence in support of the Company's conclusions that 30 year weather

is no longer appropriate since the evidence shows that during the last 10 years the actual weather experienced was both warmer and colder than the 30 year average. It therefore appears that Vectren has elected to use a 10 year average of weather in order to increase the Company's revenue requirement. I doubt that such an action would be requested if the actual weather experienced had been materially colder than the normal during this 10 year period.

Q9. WHAT IS THE COMPANY'S BASIS FOR USING A 10 YEAR AVERAGE FOR NORMAL WEATHER?

A9. The Company's sole basis for adopting a 10 year average for normal weather appears to be contained within the four page testimony of Company witness Michael F. Gorman who states very clearly that his analysis "* * * is purely statistical and in no way either climatological or meterological in nature."[1] However, the source weather data used by Mr. Gorman as the basis for his analysis is completely climatological. Mr. Gorman then concludes in his analysis that "* * * from a statistical perspective, a 30 year weather history provided less accuracy (and therefore greater bias) than shorter historical periods."[2] This conclusion appears to be the Company's complete rationale for adopting a 10 year average of weather as normal.

[1] Gorman Prefiled Direct Testimony at 2.

[2] Id. at 3.

Q10. IS MR. GORMAN'S CONCLUSION THAT 30 YEAR WEATHER IS LESS ACCURATE THAN A 10 YEAR PERIOD CORRECT?

A10. From a strictly statistical point of view a shorter time period may be more accurate than a longer period. However, Mr. Gorman's analysis is simply a self-fulfilling prophecy. If one calculates the average weather for a 10 year period, one would expect that 10 year average to be closer to the most recent weather actually realized than a 30 year average of weather. Under this logic, a five year, three year or even one year average would be more "accurate" than the 30 year average. However, this does not mean that there is any "predictive" value in using a shorter average. Weather is not something that is readily predicted from the results of the previous year or even the most recent 10 years. While we can make observations based on historic periods that take into account both recent and long term trends, it would not be reasonable to focus too much on either the most recent or the long term past. Instead, some form of combination is necessary. The NOAA 30 year average provides that combination because it reflects the recent past while at the same time recognizing any recent anomalies that need to be mitigated. Otherwise a stretch of 2 or 3 years of extremely cold or warm weather could seriously skew the analysis. The best method for determining what is "normal" is to use a longer term average as NOAA does, since this longer period takes into account many of the anomalies that a shorter period would miss. In fact, the Company actually puts their sales budget together using a 30-year average of weather. The NOAA 30-year average is far less volatile than the Company's choice of the most recent

10-year average, which appears to have been chosen for the sole purpose of increasing the Company's revenue requirement.

Q11. DID THE STAFF ADOPT A 30 YEAR AVERAGE FOR NORMAL WEATHER?

A11. No. The Staff recommended the adoption of the Company's 10 year average for normal weather. Page 8 the Staff Report states that Staff "* * * agree[s] with normalizing test year sales volumes to recognize the average use per customer ("AUPC") based on a ten year actual heating degree day average." This is a policy departure from past practice of the Staff, and there is no further mention in the Staff Report as to how they reached this conclusion.

I have reviewed other recent Staff Reports in gas distribution rate cases with respect to weather normalization and noted that in the following cases weather normalization was not even addressed, and I am therefore assuming that a 30 year average was used:

Case	Company
94-0987	Columbia Gas of Ohio
95-0488	Eastern Natural Gas Company
95-0656	Cincinnati Gas & Electric
97-1724	Northeast Ohio Gas Company
07-0194	Waterville Gas Company
07-0689	Suburban Gas Company

However, weather normalization was specifically mentioned in the Staff Report for these other recent cases with recommendations as noted:

Case	Company
01-1228	Cincinnati Gas & Electric *Staff recommended a10 year average*
03-2170	Northeast Ohio Gas Company *Staff recommended a 30 year average*
07-0829	East Ohio Gas Company *Considered as part of a decoupling mechanism*

Of special interest, the only time that the Staff recommended a 10 year average for normal weather, in the 2001 CG&E rate case noted above, the case was ultimately settled by the parties through a stipulation presented to and accepted by the Commission. Therefore the Commission has not previously made a specific decision on the policy issue of using a 10 year average for normal weather.

However, the method and analysis utilized by the Staff to calculate VEDO's normal residential sales volumes and average sales per customer are in error. I believe that these errors contributed to the Staff's recommendation that the Commission adopt the Company's proposed 10-year average for normal weather.

Q12. PLEASE IDENTIFY THE ERRORS CONTAINED IN THE STAFF'S CALCULATION.

A12. On page 33 of the Staff Report, a presentation is made of residential weather normalized use per customer and weather normalized sales since 1990. I was able

to obtain the Staff's workpapers supporting this calculation, which I have included in Attachment WHN-2 to my testimony, and discovered two errors in the Staff's analysis.

First, as shown on pages 1 – 4 of Attachment WHN-2, although the Staff obtained the correct 30 year monthly normal heating degree days from NOAA, they were incorrectly totaled to 5,388 normal degree days instead of 5,690 per the NOAA report. This error produced a 5.5% error in the Staff's calculation of normal use per customer.[3]

The second error involved the Staff's methodology for the calculation of normal sales. The Staff began by taking the percentage difference between the annual actual heating degree days and the incorrectly calculated normal heating degree days of 5,388. The Staff then applied this percentage change in heating degree days to the actual sales and actual sales per customer to get the normalized use per customer and normalized sales contained on page 33 of the Staff Report.

[3] While 5,388 heating degree days equals the 10 year average used by the Company, the individual monthly amounts used by the Staff in their analysis do not total to this amount.

Q13. IS THE STAFF'S METHODOLOGY OF COMPUTING THE NORMAL SALES PRESENTED ON PAGE 33 OF THE STAFF REPORT CORRECT?

A13. No. The Staff's methodology assumes a one-to-one relationship between the percentage change in weather to the percentage change in residential sales. Since other anomalies can and do impact residential sales (conservation, smaller houses, etc.) this one-to-one relationship rarely occurs. In my opinion, weather normalization is best calculated by using linear regression on the monthly sales per customer with the actual weather experienced over multiple 12-month periods. An equation from this regression analysis can then be applied to normal monthly weather. This type of analysis also provides a coefficient of correlation statistic that measures the change in sales per customer that can be explained by changes in weather.

Q14. HAVE YOU PERFORMED SUCH A REGRESSION ANALYSIS?

A14. Yes. The summary results of my weather normalization using linear regression are presented on Schedule WHN-2. As can be seen from this data, over the latest six year period from 2002 – 2007, residential weather normalized use per customer has actually increased.

The results of the weather normalization for commercial customers have not been finished, due to a delay in data previously requested from the Company and provided to the OCC on July 18. The results from the analysis of this information will be presented to the Commission in supplemental testimony.

Q15. WHAT CONCLUSIONS DO YOU MAKE FROM THIS ANALYSIS?

A15. I conclude that the apparent basis for the Staff's support of the Company's proposal to adopt a ten year average for normal weather based on declining normalized usage per customer is in error. As a result, there is no independently valid basis for the Staff's acceptance of the Company's ten year proposal. I certainly don't oppose a change in policy when new data indicate a change should be made, however there is no corroborating data in this case to suggest that a change from a 30 year average of weather to a 10 year average should be made.

Q16. DO YOU EXPECT WEATHER NORMALIZED RESIDENTIAL SALES PER CUSTOMER TO REMAIN CLOSE TO THE LEVELS CALCULATED HERE IN THE FUTURE?

A16. At least for the short term future, (representing the first 12 to 18 months that any rates set by the Commission would be in effect), I do expect the residential weather normalized sales per customer to remain close to the levels presented above. As shown by the data in Schedule WHN-1, the residential normal sales per bill over the last six years has only varied minimally from the test period with a low of 0.0070 MMcf per bill in 2006 to a high of 0.0079 per MMcf per bill in 2004.

However, over longer periods of time, normal residential sales per customer may well decline. Erosion of average sales per customer is nothing new, and has been

experienced by gas utilities since long before current concerns about weather. Because natural gas is a scarce commodity, simple economics dictate that better technology will always be deployed to make its use more efficient. We've seen this in the past with better insulated homes and more efficient energy appliances. However, these changes have very little to do with weather, since approximately 99%[4] of total residential sales can be explained by changes in weather.

Another consideration that can cause erosion of average sales per customer is the Company's annual expansion of plant in service. This is especially true when the average use per customer from new customers is less than the embedded average use from the existing customers. However, for the last four years the Company's addition to plant in service has averaged $20.7 million while its average depreciation expense has been over $26.4 million during this same period.[5] This means that the Company has limited its plant expansion to only a portion of those dollars provided from internally generated funds.

Q17. WHAT DO YOU RECOMMEND THE COMMISSION ADOPT FOR PURPOSES OF CALCULATING NORMALIZED TEST YEAR VOLUMES IN THIS CASE?

[4] Regression correlation factors from Schedule WHN-1.

[5] Company filing, Schedule C-11.1, Line 6 and Schedule C-11.2, Line 6.

A17. I recommend that the Commission reject the 10 year average for normal weather proposed by the Company and accepted by the Staff, and instead continue to utilize a 30 year average for normal weather as calculated by NOAA since it provides a more reasonable basis for analyzing the Company's normal sales per customer. I therefore recommend that the Commission adopt the test period weather normalized sales per bill of 0.0074 MMcf per bill for the residential customer class as shown on Schedule WHN-2. A recommendation for weather normalized sales per bill for the commercial customer class will be made available in supplemental testimony.

III. REVENUE FORECAST

Q18. HAVE YOU REVIEWED THE COMPANY'S REVENUE CALCULATION?

A18. Yes. The Company began its revenue calculation from its revenue budget. However, starting the revenue calculation from the Company's budget requires an acceptance of the Company's budgeting process -- and the assumptions that underlie that process -- which I find to be unreasonable. I conclude this because the individual components making up the Company's complete operating budget have not been identified and verified. As a result, I experienced significant delays in obtaining historical sales and customer data needed to enable me to put together my own analysis.[6]

[6] This same dilemma was also noted on page 31 of the Eagle Energy Report which states as follows: "While there seems to be adequate budget documentation for capital and operating expenses, similar documentation does not appear to exist for the revenue or margin budgeting process."

For the residential and commercial customer classes, my approach was to first normalize the actual test period volumes for 30-year average weather as previously noted, in order to compute the normal sales per customer. I then increased the test period number of customers by the four year annual average increase in customers actually experienced. The adjusted test period sales volumes and customers were then priced out at current rates to arrive at the revenues under present rates.

For the industrial customer class, I began with the actual test period sales volumes and bills, and then made adjustments for known changes. These known changes typically included the new customers and closings that were specifically identified by the Company. Again, the adjusted test period sales volumes and customers were then priced out at current rates to arrive at the revenues under present rates.

The result of my revenue forecast is shown on Schedule WHN-3. In addition, a comparison of the OCC's revenue forecast with the Company and the PUCO Staff can be found on Schedule WHN-4. At this time, only the results of the revenue forecast for the residential customer class has been completed. The revenue forecast for commercial and industrial customers has not been finished, due to a delay in data previously requested from the Company and later provided to the OCC on July 18. The results from the analysis of this information for commercial

and industrial customers will be presented to the Commission in supplemental testimony.

IV. RATE INCREASE ALLOCATION

Q19. HAVE YOU REVIEWED THE COMPANY'S PROPOSED RATE INCREASE ALLOCATION?

A19. Yes. The residential customer class currently provided 64.27%[7] of the Company's base rate revenue during the test period. The Company has proposed that 84.68% of their proposed increase be allocated to the residential customer class consisting of the sales, transportation and dual fuel tariffs. As derived from Table 1a of the Staff Report and presented on Schedule WHN-5, the Staff has proposed that 62.03% of their proposed rate increase be allocated to the residential customer class.

Q20. DO YOU AGREE WITH THE STAFF RECOMMENDATION?

A20. While I don't agree with the Staff's methodology for the rate increase allocation, I do agree with the end results produced by it for the residential customer class. Generally, I believe that any increase in revenue requirements approved by the Commission should be allocated equally to **all** customer classes based on the test period gross margin. When such an adjustment is made, it results in roughly the same rate increase allocation as the Staff has proposed. I therefore support the Staff's recommendation of the rate increase allocation for this case.

[7] Excluding miscellaneous revenues.

V. RESIDENTIAL RATE DESIGN

Q21. HAVE YOU REVIEWED THE COMPANY'S PROPOSED CHANGES TO ITS RESIDENTIAL (RATE 310 AND 315) TARIFFS?

A21. Yes. The Company has asked to recover its entire base rate increase allocated to the residential customer class through an increase in the fixed monthly customer charge. This type of rate design is generally known as a straight fixed variable ("SFV") rate design. Under the Company's proposal, the residential monthly customer charge would initially be increased from its present fixed rate of $7.00 per customer per month to $10.00 per customer per month during the summer months (from May to October) and from $7.00 per customer per month to $16.75 per customer per month during the winter heating season (from November to April). The Company then went further, and proposed a second stage (revenue neutral) increase in the fixed residential monthly customer charge from $10.00 per customer per month to $11.96 per customer per month during the summer months and from $16.75 per customer per month to $20.04 per customer per month during the winter heating season that would take place on November 1, 2010. Finally, the Company proposes to move to complete recovery of costs allocated to the residential class through a fixed monthly customer charge (with no volumetric rate) in its next rate case.

Q22. DOES THE STAFF AGREE WITH THE COMPANY'S PROPOSAL FOR THIS CHANGE IN THE RESIDENTIAL MONTHLY CUSTOMER CHARGE?

A22. Yes, the Staff appears to accept the SFV rate design. Staff, however, has proposed a lower volumetric charge that reflects their adjustment to the Company's case. The Staff is basically proposing the same changes to the residential customer's monthly customer charge, as proposed by the Company.

Q23. WHAT RATIONALE DOES THE STAFF AND COMPANY CITE FOR THIS CHANGE IN THE MONTHLY RESIDENTIAL CUSTOMER CHARGE?

A23. Both the Staff[8] and Company[9] point to the continuing decline in sales per customer as the biggest reason for the change. The Staff goes on to further point out that the Company "* * * has seen the recovery of distribution costs deteriorate as the volume of gas used by residential customers has decreased."[10] The Staff also points out that recovery of allocated residential costs through a fixed charge will levelize the distribution component of a customers' bill providing rate certainty.

Q24. DO YOU AGREE WITH THE STAFF'S RATIONALE FOR THIS CHANGE?

[8] Staff Report at 30.

[9] Benkert Direct Testimony at 9.

[10] Staff Report at 30.

A24. No. As pointed out in Section I of my testimony, the Staff's analysis of declining weather normalized use per customer for the residential customer class is in error. While actual sales per customer have declined, the average weather normalized residential usage per customer has held steady between 7 to 8 Mcf per bill for the last six years. It is important to distinguish between actual and weather normalized usage since rates are set on weather normalized sales volumes. There is simply no corroborating evidence in the record for this rate case supporting a decline in residential weather normalized use per customer. In fact, as shown on Schedule WHN-2, just the opposite has occurred; weather normalized residential average use per customer has actually increased during the test period from the preceding year.

In addition, the Staff's point that a flat monthly distribution charge for residential customers will somehow provide customers with price certainty is also faulty. The distribution charge is relatively minor in comparison to a customer's total bill that includes gas costs which fluctuate monthly and other surcharges. I doubt if any residential customers would perceive an added benefit to price certainty from a fixed monthly distribution charge.

Q25. ARE THERE OTHER REASONS THAT YOU OPPOSE THE MOVE TO A FIXED MONTHLY CUSTOMER CHARGE?

A25. Yes. First, I have never witnessed any residential customers requesting a change in their rate structure to a flat monthly distribution charge. For better or for worse, residential customers are accustomed to paying for gas service as gas is consumed. Such a significant change in residential rate design is likely to cause customer confusion as well as a negative reaction, especially during periods of low usage in the summer months.

Second, adoption of a flat monthly distribution charge for residential service removes an important future rate design tool from the Commission's discretion. A typical change to volumetric rates is more akin to "fine tuning" a rate change while a change to the monthly customer charge is similar to rate design by sledge hammer. It may well be that future costs are better recovered through volumetric rates, but only if they are blended with other existing costs.

Third, it is inappropriate that the move towards a fixed monthly distribution charge is only applied to residential and small general service customers. Other gas utilities have applied separate demand charges to recover their fixed costs from industrial customers with a corresponding offset to the volumetric rate. However, no such rate design has been suggested for the industrial customer class by either the Staff or the Company. From a policy perspective, it appears inappropriate to apply the cost recovery principles of SFV to one class without applying it to all other customer classes.

Fourth, the immediate adoption of SFV rate design adversely impacts low income, non-Percentage of income Payment Plan ("PIPP"), customers with the largest percentage increase in rates. It also transfers costs from higher volume customers to these same lower volume customers. These are the very customers who can least afford this change in rate design policy. A rate increase of any kind always presents an undue hardship for these customers. However, a change to SFV rate design presents non-PIPP, low income customers with a second rate increase on top of an increase in revenue requirements.

Finally, from a policy perspective, SFV rate design sends inaccurate pricing signals to the customer and negatively impacts conservation efforts by reducing the volumetric rates, which then lengthens the payback period of conservation investments. In this case, the Company has proposed spending an additional $2.9 million annually on conservation programs.[11] The full benefits of these conservation programs will be diluted by a rate design that fails to recognize or reward customers for conservation – which is a state policy objective.

Q26. ARE YOU AWARE OF THE OHIO COMMISSION'S RECENT DECISION REGARDING FIXED MONTHLY DISTRIBUTION CHARGES FOR

[11] Direct Prefiled Testimony of Company witness Rose at14 and Staff Report at 48.

RESIDENTIAL CUSTOMERS IN THE DUKE ENERGY OHIO RATE CASE?[12]

A26. Yes. In that case, the Commission adopted a fixed monthly distribution charge for residential customers based largely on the evidence presented showing a declining use per residential customer. However, the Commission must make a decision in this case based on the specific facts and information presented in the record. Here, unlike in the Duke case, there is no corroborating evidence presented showing that the average weather normalized customer usage is declining. Having said that however, even if there was corroborating evidence presented demonstrating that the average weather normalized customer usage had declined, that would not have been in and of itself a sufficient reason to alter the rate design in such a radical manner.

Q27. WHAT TYPE OF RATE DESIGN DO YOU PROPOSE FOR RESIDENTIAL CUSTOMERS?

A27. I recommend limiting any increase in the existing fixed monthly customer charge from $7.00 per customer per month to $10.00 per customer per month. This change equals the monthly customer charge adjustment ($7.00 - $4.00) approved in the Company's last rate case.[13] This change also equals the monthly charge

[12] PUCO Case No. 07-589-GA-AIR.

[13] Case 04-0571-GA-AIR.

($10.00) that the Company has proposed for the summer months. I would then propose that the balance of the increase allocated to the residential customer class be placed on a single volumetric rate of $0.08046/Ccf as shown on Schedule WHN-5. A single volumetric rate should help create greater conservation incentives for more residential customers than the existing two-tier declining block rate structure. Schedule WHN-5 provides an illustration of my recommended rate design for residential customers.

Q28. WHAT ARE THE ADVANTAGES OF YOUR RATE DESIGN?

A28. First, it is a rate design structure that the Company's residential customers are already familiar with. As a result, there should not be the same type of confusion with this rate design as would be seen with the Company's proposed shift to an SFV rate design. Secondly, the increase from this rate design to individual customers likely meets their expectations based on how their bill has changed from past rate cases. In addition, this rate design also preserves volumetric rates to allow for fine tuning of any future cost recovery by the Commission. Finally, it is a rate design that sends more accurate price signals to the customer and encourages conservation.

Q29. DO YOU HAVE ANY COMMENTS TO MAKE IF THE COMMISSION SHOULD ELECT TO ADOPT SFV RATE DESIGN IN SPITE OF YOUR ARGUMENTS?

A29. Yes. If the Commission is committed to the policy concept of an SFV rate design, which the OCC does not support, then I would urge it to gradually implement its impact over several periods instead of all at once in a single rate case. The Company has proposed to partially implement SFV immediately and then proposed a second revenue neutral rate change on November 1, 2010, which would increase the current monthly residential customer charge from $7.00 per customer per month to $20.04 per customer per month. This change is simply too large to consider in a single rate case.

Instead of this rapid pace, I would recommend that the Commission consider limiting an annual change of no more than $1.00 to $2.00 every year until the Company's next rate case. Slowly changing the current rate design from volumetric cost recovery to a fixed cost recovery would allow the Commission to gauge the customer's reaction to SFV implementation and make adjustments accordingly. However, I want to emphasize that this level of increase in the customer charge is not supportable and from a policy perspective is not a good direction to take. I would urge the Commission to hold the line on keeping customer charges low and retaining the volumetric charge.

VI. DISTRIBUTION RATE RIDER

Q30. DO YOU SUPPORT CONTINUING THE COMPANY'S PROPOSED DISTRIBUTION RATE RIDER ("DRR")?

A30. No. While I do recognize the safety concerns expressed by the Commission Staff regarding the need for accelerated bare steel and cast iron main replacement, the DRR has effectively become a single issue ratemaking mechanism. The DRR also represents by far the single biggest rider ever proposed by the Company. According to the Staff Report, the cost of the DRR will be approximately $338 million[14] over 20 years which is significantly larger than the Company's existing rate base of approximately $228 million.[15] The annual revenue requirements from such an increase would be approximately $42 million, and spread out over 20 years the DRR will result in an average increase in rates of approximately $2.1 million each year. I have been advised by OCC Counsel that single issue ratemaking is inconsistent with Ohio's general ratemaking provisions of Chapter 4909 of the Revised Code.

Additionally, I have concerns with certain other aspects of the DRR program that center on the approval process for a substantial and material rate increase outside of the normal rate case process. This accelerated process that is proposed to implement DRR rates cuts short the time that any stakeholder would normally have to scrutinize the changes if made within the rate case process. Moreover the

[14] Staff Report at 41.
[15] OCC Exhibit RCS-1.

DRR examines only one distinct expense item without considering whether there are separate and offsetting adjustments negating the need for the rider, either in part or in whole.

Notwithstanding my previously stated concerns, if the Commission stands ready to approve the DRR, which I am not recommending, I would support in part the Commission Staff's recommendations with certain modifications.

The Staff's first recommendation extends the DRR for eight years, or until a subsequent rate case, whichever occurs first. However, I recommend that any extension be limited to four years, since this is typically the length of time between rates cases for the Company. This modification gives me some assurance that the DRR won't become a "runaway train" without the ability to modify its terms or eliminate it entirely. For example, the DRR could have an impact on other areas of the Company's income statement that have not yet been contemplated. It is impossible for these changes to be considered in base rates outside of the normal rate case process. A four-year time limit on the DRR extension will give intervening parties an opportunity to timely examine the progress and impact of the DRR on all phases of the Company's operations.

The Staff's second recommendation caps the DRR charge, including riser replacements at $0.90 per month. I support the concept of a limit on any DRR charge. This cap provides the OCC with assurance that the total DRR charge won't get out of control, and provides customers with a known upper bound of base charges that can be applied to them.

VII. SALES RECONCILIATION RIDER

Q31. HAVE YOU REVIEWED THE SALES RECONCILIATION RIDER ("SRR") PROPOSAL CONTAINED IN THE ALT REG PLAN APPLICATION?

A31. Yes. The Company's existing SRR-A was approved in Case No. 05-1444-GA-UNC. The intended use of the SRR-A which was developed in that proceeding, was to decouple the link between gas consumption and the utility's opportunity to earn a fair return on the basis that this linkage was counterproductive to energy efficiency. In that proceeding, the Commission found "it is in the public interest, **in order to promote energy efficiency**, to decouple the link between gas consumption and the Company's ability to meet its revenue requirements."[16] In the present proceeding, the Company has proposed to implement SRR-A on the rate effective date, followed by a second SRR-B in order to "* * * track changes in base revenue recovery resulting from abnormal weather as well as other causes such as declining use per customer."[17]

[16] Opinion and Order at 18, Case No. 05-1444-GA-UNC.
[17] Direct testimony of Company witness Ulrey, at 10.

SRR-A was designed to protect the Company from the effects of declining use per customer. SRR-B as proposed by the Company, goes one step further and also protects the Company from changes in sales volumes caused by abnormal weather in addition to the effects of declining use per customer not directly attributable to weather. In other words, SRR-B provides a ***guarantee*** (as opposed to the opportunity) for the Company to fully recover the revenues approved by the Commission.

Q32. WHAT RECOMMENDATION HAS BEEN MADE BY THE STAFF WITH REGARD TO SRR-A AND SRR-B?

A32. Staff appears to support the implementation of SRR-A, and concurs with the Company proposal to collect SRR-A deferrals over a one year period beginning with the rate effective date in this order. The Staff proposes to eliminate the SRR-B in favor of SFV rate design.[18]

Q33. WHAT ISYOUR POSITION WITH RESPECT TO SRR-A?

A33. My position is that the SRR-A is unreasonable and unlawful as a result of the process used to implement the rider and the lack of sufficient Demand Side Management (DSM) required for its implementation. As a result, the $5,152,213 in deferrals that the Company is now seeking to collect through the SRR-A are

[18] Staff Report at 34.

unreasonable and unlawful based upon this same reasoning. My position reflects the OCC position taken in Case No. 05-1444-GA-UNC.

However, notwithstanding these objections to the contrary, if the Commission should decide to adopt the SRR-A, I would recommend that the deferrals created be recovered over a two year period, as opposed to the one year recovery supported by the Staff and the Company. Since the SRR-A deferrals were originally developed over a two year period, it only seems reasonable that they should be recovered over this same period of time.

Q34. WHAT ISYOUR POSITION WITH RESPECT TO SRR-B?

A34. While I do not agree with the Company's proposed changes to implement SRR-B, I do agree that the impact of SRR-B is preferable to the implementation of SFV rate design. I understand that decoupling is a measure that should only be adopted when appropriate procedures are followed (within the context of a full rate proceeding under R.C. 4929.05) and when comprehensive DSM is being proposed. I also understand that appropriate procedures have been followed in this proceeding related to the filing of the SRR-B proposal, and that the commitment to DSM by the Company in this case may warrant the use of this regulatory mechanism.

However, I disagree with the Company's proposal to add the effect of weather recovery to SRR-B. Abnormal weather in the gas distribution industry represents just one of the risks of doing business. Under the Company's proposal, the risk is shifted to Vectren's customers. I understand that the Company makes no adjustment to the equity return to account for this. Therefore, absent any adjustment to the Company's equity return, there should be no need for adjustment of the SRR to include the impact of abnormal weather.

Q35. DOES THIS CONCLUDE YOUR TESTIMONY?

A35. Yes it does. However I reserve the right to incorporate any new information that may subsequently become available. I also reserve the right to supplement my testimony in the event that the PUCO Staff fails to support the recommendations made in the Staff Report and /or changes in any position in the Staff Report.

Vectren Energy Delivery of Ohio
Comparison of 30 Year Average vs. 10 year average of Normal Heating Degree Days

Schedule WHN-1

Month	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	10 Year Average
January	1,209	891	1,119	1,264	1,134	933	1,364	1,281	1,124	796	1,112
February	833	717	814	798	860	843	1,122	974	879	927	877
March	712	735	903	616	856	787	707	677	894	791	768
April	520	382	340	409	311	376	343	379	372	312	374
May	287	63	91	89	101	234	172	93	243	222	160
June	32	59	16	24	31	16	59	12	3	20	27
July	2	0	0	0	7	0	0	4	0	0	1
August	10	0	3	4	0	0	0	21	0	0	4
September	70	29	63	116	117	34	97	48	23	105	70
October	381	294	320	258	321	440	391	343	345	449	354
November	781	588	521	731	486	751	550	595	629	822	625
December	983	862	976	1,372	856	1,057	978	1,056	1,190	832	1,016
Total	5,820	4,620	5,166	5,681	5,080	5,471	5,783	5,483	5,702	5,076	5,388
Ten Year Analysis:											
10 Year Average	5,388	5,388	5,388	5,388	5,388	5,388	5,388	5,388	5,388	5,388	
Difference	432	-768	-222	293	-308	83	395	95	314	-312	
% Difference	8.01%	-14.26%	-4.12%	5.43%	-5.72%	1.54%	7.33%	1.76%	5.82%	-5.79%	
Warmer/Colder than Normal	Colder	Warmer	Warmer	Colder	Warmer	Colder	Colder	Colder	Colder	Warmer	
Years Warmer than Normal	4										
Years Colder than Normal	6										
Thirty Year Analysis:											
30 Year Average	5,690	5,690	5,690	5,690	5,690	5,690	5,690	5,690	5,690	5,690	
Difference	130	-1,070	-524	-9	-610	-219	93	-207	12	-614	
% Difference	2.28%	-18.80%	-9.21%	-0.16%	-10.72%	-3.85%	1.63%	-3.64%	0.21%	-10.79%	
Warmer/Colder than Normal	Colder	Warmer	Warmer	Warmer	Warmer	Warmer	Colder	Warmer	Colder	Warmer	
Years Warmer than Normal	7										
Years Colder than Normal	3										

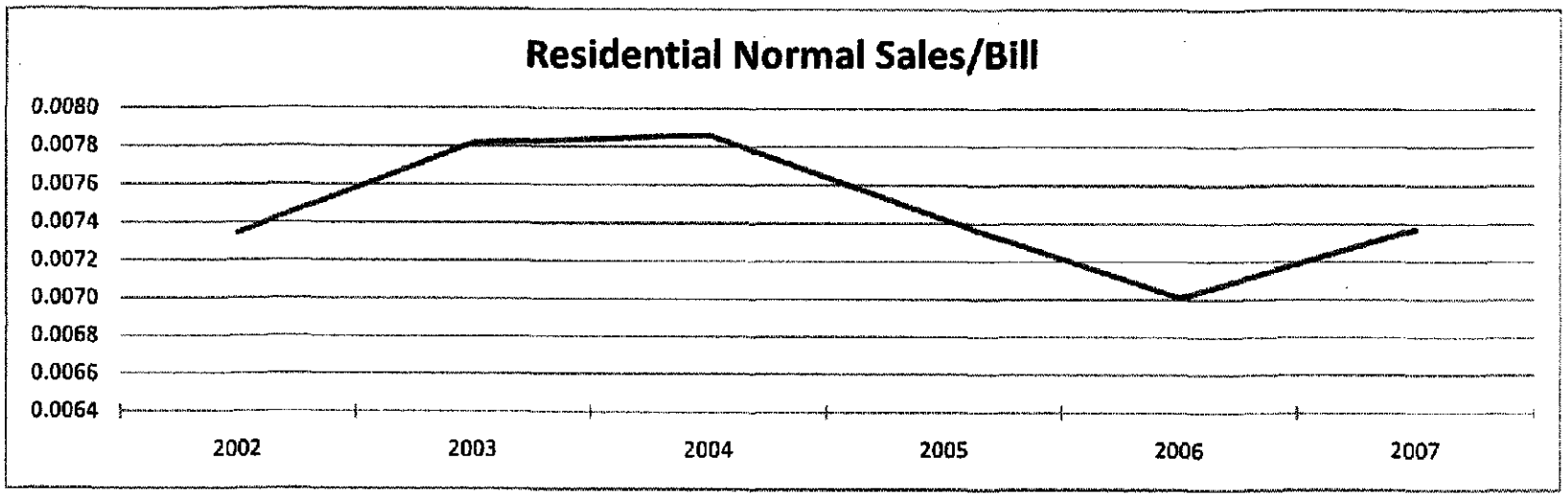
Per Ccf - All Consumption

258,099,759 0

0

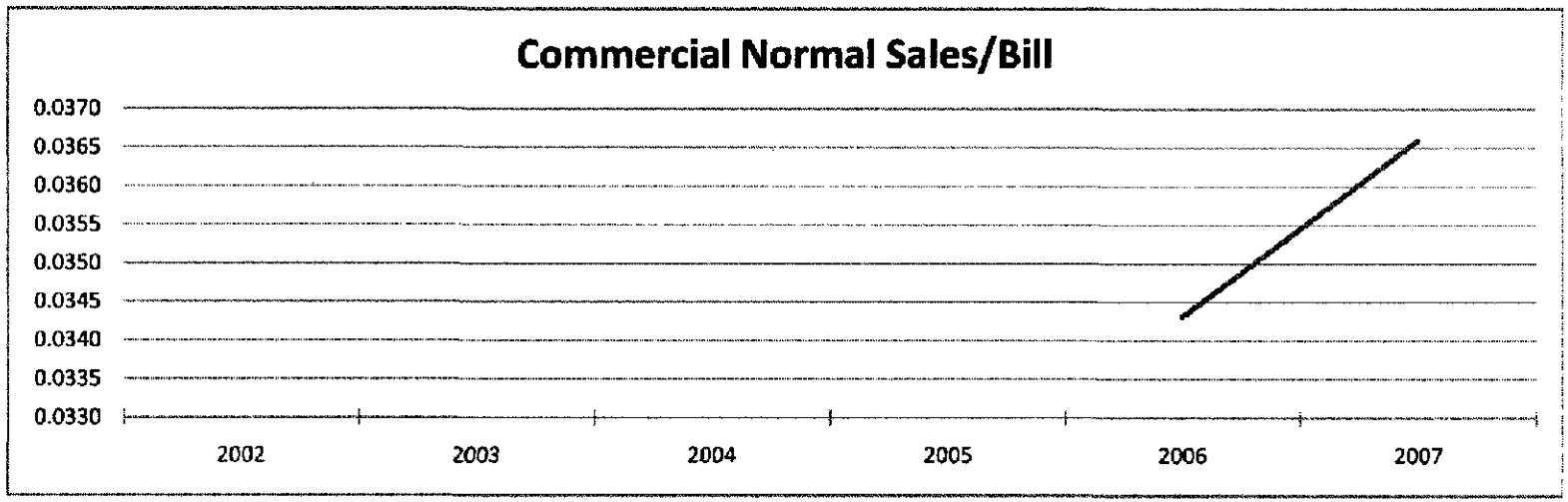
Vectren Energy Delivery of Ohio
Residential (Rates 310 and Rates 315) Weather Normalization - Summary Results

12 Months Ended August	Actual Sales (MMcf)	Bills Rendered	Actual Sales/Bill	Normal Sales	Weather Adjustment	R^2 Regression Correlation	Normal Sales/Bill
2002	22,570	3,431,983	0.0066	25,210	2,640	87.88%	0.0073
2003	28,301	3,425,692	0.0083	26,774	-1,527	98.43%	0.0078
2004	26,139	3,438,504	0.0076	27,031	892	98.99%	0.0079
2005	25,151	3,457,831	0.0073	25,666	515	98.65%	0.0074
2006	22,795	3,475,915	0.0066	24,368	1,573	98.95%	0.0070
2007	24,784	3,489,328	0.0071	25,721	937	99.17%	0.0074



Vectren Energy Delivery of Ohio
Commercial (Rates 320 and Rates 325) Weather Normalization - Summary Results

12 Months Ended August	Actual Sales (MMcf)	Bills Rendered	Actual Sales/Bill	Normal Sales	Weather Adjustment	R^2 Regression Correlation	Normal Sales/Bill
2002							
2003							
2004							
2005							
2006	9,496	294,593	0.0322	10,108	612	98.30%	0.0343
2007	10,473	295,468	0.0354	10,813	340	98.41%	0.0366



Vectren Energy Delivery of Ohio
OCC Forecast of Base and Rider Revenue
Current Rates

Schedule WHN-3

		Base Revenue	PIPP Revenue	Uncollectible Revenue	MCF Tax Revenue	GR Tax Revenue	Total
1	310 - Residential Sales Service	$40,829,551	$4,683,704	$3,708,343	$3,136,556	$13,575,945	$65,934,109
2	315 - Residential Choice Transportation Service	12,620,861	1,451,327	1,149,094	972,440	789,719	16,983,442
3	320 - General Service Sales - Non-Federal	13,433,221	2,157,126	1,707,915	1,193,076	5,978,335	24,469,675
4	320 - General Service Sales - Federal	68,616	10,934	8,657	0	0	88,207
5	325 - General Service Choice Transport - Non-Federal	2,672,628	407,418	322,575	229,306	172,241	3,704,168
6	325 - General Service Choice Transport - Federal	3,469	475	376	0	0	4,320
7	330 - Large General Sales Service - Non-Federal	523,677	124,312	98,425	39,925	330,903	1,117,242
8	330 - Large General Sales Service - Federal	107,848	28,128	22,271	7,346	0	165,593
9	330 - Large General Sales Service - Non-Federal	161,330	53,724	42,537	10,494	140,484	428,569
10	330 - Large General Sales Service - Federal	292,912	81,746	64,723	18,314	0	457,695
11	341 - Dual Fuel Sales Service	2,428	1,145	907	281	2,928	7,689
12	345 - Large General Transportation Service - Non-Federal	3,606,938	0	0	272,787	189,203	4,068,928
13	345 - Large General Transportation Service - Federal	0	0	0	0	0	0
14	345 - Large General Transportation Service - Non-Federal	4,845,789	0	0	305,457	251,211	5,402,457
15	345 - Large General Transportation Service - Federal	161,164	0	0	0	0	161,164
16	**Subtotal (Lines 1 - 15)**	**$79,250,432**	**$9,000,041**	**$7,125,823**	**$6,185,992**	**$21,430,969**	**$122,993,258**
17	Miscellaneous Revenue	3,479,308					3,479,308
	Other Revenue						
18	Special Contracts	2,573,440					2,573,440
19	Schools	1,767,780	291,807	231,040	24,553	112,904	2,428,084
20	**Total Other Revenue (Lines 18 + 19)**	4,341,220	291,807	231,040	24,553	112,904	5,001,524
21	**Grand Total (Lines 16 + 17 + 20)**	**$87,070,960**	**$9,291,848**	**$7,356,863**	**$6,210,545**	**$21,543,873**	**$131,474,090**
	Per Ccf - All Consumption	258,099,759	0				
				0			

Vectren Energy Delivery of Ohio
Comparison of Base and Rider Revenue
Current Rates

Schedule WHN-4

		Customer Bills			Sales (Ccf)			Revenues		
		Company	Staff	OCC	Company	Staff	OCC	Company	Staff	OCC
1	310 - Residential Sales Service	2,674,136	2,705,020	2,675,778	182,007,826	182,007,826	197,042,670	$60,435,159	$62,645,935	$65,934,109
2	315 - Residential Choice Transportation Service	796,530	805,517	825,620	53,667,214	53,667,214	61,057,089	15,456,061	15,522,043	16,983,442
3	320 - General Service Sales - Non-Federal	238,026	247,396	247,052	86,720,695	86,785,967	90,750,000	22,522,101	23,582,425	24,469,675
4	320 - General Service Sales - Federal	1,174	1,166	1,164	1,004,674	511,714	460,000	169,013	96,038	88,207
5	325 - General Service Choice Transport - Non-Federal	49,581	47,882	47,815	26,373,734	16,331,502	17,140,000	5,335,283	3,567,721	3,704,168
6	325 - General Service Choice Transport - Federal	96	96	96	19,980	19,980	20,000	4,377	4,377	4,320
7	330 - Large General Sales Service - Non-Federal	178	233	233	3,516,064	5,229,803	5,229,803	723,593	1,117,242	1,117,242
8	330 - Large General Sales Service - Federal	24	32	32	690,399	1,183,359	1,183,359	90,795	165,593	165,593
9	330 - Large General Sales Service - Non-Federal	12	12	12	2,260,180	2,260,180	2,260,180	201,178	428,569	428,569
10	330 - Large General Sales Service - Federal	60	60	60	3,439,052	3,439,052	3,439,052	292,912	457,695	457,695
11	341 - Dual Fuel Sales Service	23	33	33	23,210	48,187	48,187	3,800	7,689	7,689
12	345 - Large General Transportation Service - Non-Federal	2,354	2,327	2,327	35,635,299	33,939,248	33,939,248	4,235,351	4,068,928	4,068,928
13	345 - Large General Transportation Service - Federal	0	0	0	0	0	0	0	0	0
14	345 - Large General Transportation Service - Non-Federal	708	708	708	57,313,101	57,313,101	57,313,101	5,402,457	5,402,457	5,402,457
15	345 - Large General Transportation Service - Federal	12	12	12	1,997,977	1,997,977	1,997,977	161,164	161,164	161,164
16	**Subtotal (Lines 1 - 15)**	**3,762,912**	**3,810,493**	**3,806,942**	**454,569,405**	**444,735,110**	**471,880,666**	**$115,033,244**	**$117,227,876**	**$122,993,258**
17	Miscellaneous Revenue							3,026,036	3,479,308	3,479,308
	Other Revenue									
18	Special Contracts								2,573,440	2,573,440
19	Schools								2,428,084	2,428,084
20	**Total Other Revenue (Lines 18 + 19)**	995	4,448	4,448	82,569,184	72,403,477	72,403,477	3,056,430	5,001,524	5,001,524
21	**Grand Total (Lines 16 + 17 + 20)**	**3,763,907**	**3,814,941**	**3,805,390**	**517,138,589**	**517,138,587**	**544,284,143**	**$121,115,710**	**$125,708,708**	**$131,474,090**
	Per Ccf - All Consumption		##	0						

Schedule WHN-3.

0

Vectren Energy Delivery of Ohio
Residential Rate Design

Schedule WHN-5

	Staff Proposed Allocation of Rate Increase		OCC Proposed Rate Increase
	Amount	Percentage	
Residential Service:			
Residential Sales Service	$13,048,804		
Residential Transportation Service	3,903,515		
Total Residential Revenues	**$16,952,319**	**62.03% A/**	$2,330,872
Commercial Service:			
Commercial Sales Service	$5,661,030		
Commercial Transportation Service	1,346,104		
Total Commercial Revenues	**$7,007,134**	**25.64% A/**	963,451
Industrial Service:			
Industrial Sales Service	-$333,589		
Industrial Transportation Service	3,704,501		
Total Industrial Service	**$3,370,912**	**12.33% A/**	463,486
Dual Fuel Service	**$87**	**0.00% A/**	12
Other Service	**-$400**	**0.00% A/**	-55
Total Sales & Transportation Revenues	**$27,330,052**	**100.00%**	**$3,757,767 B/**

	Base Revenue
Current Residential Class Revenues:	
Residential Sales Service (Rate 310)	$40,829,551 C/
Residential Transportation Service (Rate 315)	12,620,861 C/
Total Current Base Residential Revenue	**$53,450,412**
Rate Increase	2,330,872
Total Proposed Base Residential Revenue	**$55,781,284**

Proposed Residential Rate Design:

	Determinant	Rate	Revenues
Customer Charge:			
Residential Sales Service (Rate 310)	2,675,778 D/	$10.00	$26,757,783
Residential Transportation Service (Rate 315)	825,620 D/	10.00	8,256,202
Total	3,501,399		**$35,013,985**
Volumetric Charge:			
Per Ccf - All Consumption	258,099,759 D/	$0.08046	**$20,766,707**
Total Calculated Base Residential Revenue			**$55,780,692**
Total Proposed Base Residential Revenue			**$55,781,284**
Difference			**-$593**

A/ Staff Report, Table 1 and Table 1a.
B/ Exhibit RCS-1, Schedule A-1.
C/ Schedule WHN-3.
D/ Schedule WHN-4.

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Areas of Specialization

Over twenty-five years of experience in regulatory affairs and forecasting of financial information in the rate setting process for electric, gas, water and wastewater utilities. Presented testimony and analysis for state commissions on regulatory issues in four states and has presented testimony before the FERC on electric issues.

Relevant Experience

WHN Consulting – September 2004 to Present

In 2004, established WHN Consulting to provide utility consulting and expert testimony for energy and water utilities. Complete needs consultant to provide the regulatory and financial expertise that enabled a number of small gas and water utilities to obtain their Certificate of Public Convenience and Necessity (CCN) that included forecasting the utility investment and income. Also provided the complete analysis and testimony for utility rate cases including revenues, operating expenses, taxes, rate base, rate of return and rate design for utilities in Tennessee. Assisted American Water Works Company in preparing rate cases in Ohio and Iowa. Provided commercial and industrial tariff analysis and testimony for an industrial intervenor group in a large gas utility rate case. Industry spokesman for water utilities dealing with utility commission rulemaking. Consultant for the North Carolina and Illinois Public Utility Commissions in carrying out their oversight functions of Duke Energy and Peoples Gas Light and Coke Company through focused management audits. Also provide continual utility accounting services and preparation of utility commission annual reports for water and gas utilities.

Sequent Energy Management – February 2001 to July 2003

Vice-President of Regulatory Compliance for approximately two years with Sequent Energy Management, a gas trading and optimization affiliate of AGL Resources. In that capacity, directed the duties of the regulatory compliance department, and reviewed and analyzed all regulatory filings and controls to ensure compliance with federal and state regulatory guidelines. Engaged and oversaw the work of a number of regulatory consultants and attorneys in various states where Sequent has operations. Identified asset management opportunities and regulatory issues for Sequent in various states. Presented regulatory proposals and testimony to eliminate wholesale gas rate fluctuations through hedging of all wholesale gas purchases for utilities. Also prepared testimony to allow gas marketers to compete with utilities for the transportation of wholesale gas to industrial users.

Atlanta Gas Light Company – April 1999 to February 2001

Director of Rates and Regulatory Analysis for approximately two years with AGL Resources, a public utility holding company serving approximately 1.9 million customers in Georgia, Tennessee, and Virginia. In that capacity, was instrumental in leading Atlanta Gas Light Company through the most complete and comprehensive gas deregulation process in the country that involved terminating the utility's traditional gas recovery mechanism and instead allowing all 1.5 million AGL Resources customers in Georgia to choose their own gas marketer. Also responsible for all gas deregulation filings, as well as preparing and defending gas cost recovery and rate filings. Initiated a weather normalization adjustment in Virginia to track adjustments to company's revenues based on departures from normal weather. Analyzed the regulatory impacts of potential acquisition targets.

Tennessee Regulatory Authority – Aug. 1982 to Apr 1999; Jul 2003 to Sep 2004

Employed by the Tennessee Regulatory Authority (formerly the Tennessee Public Service Commission) for approximately 19 years, culminating as Chief of the Energy and Water Division. Responsible for directing the division's compliance and rate setting process for all gas, electric, and water utilities. Either presented analysis and testimony or advised the Commissioners/Directors on policy setting issues, including utility rate cases, electric and gas deregulation, gas cost recovery, weather normalization recovery, and various accounting related issues. Responsible for leading and supervising the purchased gas adjustment (PGA) and gas cost recovery calculation for all gas utilities. Responsible for overseeing the work of all energy and water consultants hired by the TRA for management audits of gas, electric and water utilities. Implemented a weather normalization process for water utilities that was adopted by the Commission and adopted by American Water Works Company in regulatory proceedings outside of Tennessee.

Education

B.A, Accounting, Middle Tennessee State University, 1981
MBA, Middle Tennessee State University, 1997

Professional

Certified Public Accountant (CPA), Tennessee Certificate # 7388
Certified Management Accountant (CMA), Certificate # 7880
Former Vice-Chairman of National Association of Regulatory Utility Commission's Subcommittee on Natural Gas

Vectren

Month	Year	Actual Ddays	Normal Ddays	Residential Sales Tariff	Residential Sales Transport	Residential Sales Total	Residential Customers Tariff	Residential Customers Transport	Residential Customers Total	Normal use per Customer	Mcf Use Per Customer	Normal Sales
1	1990		1,185	5,332		5,332	254,154		254,154		21	
2	1990		973	3,802		3,802	254,350		254,350		15	
3	1990		760	3,441		3,441	254,432		254,432		14	
4	1990		427	2,837		2,837	254,448		254,448		11	
5	1990		167	1,545		1,545	254,222		254,222		6	
6	1990		24	928		928	253,992		253,992		4	
7	1990		2	594		594	253,734		253,734		2	
8	1990		7	543		543	253,714		253,714		2	
9	1990		90	663		663	253,654		253,654		3	
10	1990		358	1,051		1,051	254,021		254,021		4	
11	1990		670	2,192		2,192	254,696		254,696		9	
12	1990		1,027	3,212		3,212	255,546		255,546		13	
		4820	5,388			26,140			254,247	114.93	103	29,220,398
1	1991		1,185	4,656		4,656	256,006		256,006		18	
2	1991		973	4,501		4,501	256,272		256,272		18	
3	1991		760	3,873		3,873	256,371		256,371		15	
4	1991		427	2,514		2,514	256,333		256,333		10	
5	1991		167	1,270		1,270	256,026		256,026		5	
6	1991		24	642		642	255,755		255,755		3	
7	1991		2	563		563	255,618		255,618		2	
8	1991		7	523		523	255,680		255,680		2	
9	1991		90	577		577	254,661		254,661		2	
10	1991		358	1,161		1,161	256,356		256,356		5	
11	1991		670	2,395		2,395	257,304		257,304		9	
12	1991		1,027	3,707		3,707	258,092		258,092		14	
		5107	5,388			26,382			256,206	108.64	103	27,833,604
1	1992		1,185	4,601		4,601	258,586		258,586		18	
2	1992		973	4,585		4,585	258,879		258,879		18	
3	1992		760	3,535		3,535	258,970		258,970		14	
4	1992		427	3,312		3,312	258,971		258,971		13	
5	1992		167	1,560		1,560	258,756		258,756		6	
6	1992		24	989		989	258,683		258,683		4	
7	1992		2	623		623	258,668		258,668		2	
8	1992		7	581		581	258,599		258,599		2	
9	1992		90	616		616	258,744		258,744		2	
10	1992		358	1,286		1,286	259,161		259,161		5	
11	1992		670	2,513		2,513	259,962		259,962		10	
12	1992		1,027	3,904		3,904	260,471		260,471		15	
		5431	5,388			28,105			259,038	107.64	108	27,882,478
1	1993		1,185	4,617		4,617	260,784		260,784		18	
2	1993		973	4,405		4,405	261,039		261,039		17	
3	1993		760	5,210		5,210	261,278		261,278		20	
4	1993		427	3,053		3,053	261,242		261,242		12	
5	1993		167	1,327		1,327	260,987		260,987		5	
6	1993		24	899		899	260,745		260,745		3	
7	1993		2	572		572	260,675		260,675		2	
8	1993		7	533		533	260,595		260,595		2	
9	1993		90	577		577	260,832		260,832		2	
10	1993		358	1,231		1,231	261,349		261,349		5	
11	1993		670	2,480		2,480	262,181		262,181		9	
12	1993		1,027	3,448		3,448	262,834		262,834		13	
		5798	5,388			28,352			261,212	100.86	108	26,347,116
1	1994		1,185	5,914		5,914	263,365		263,365		22	
2	1994		973	5,592		5,592	263,666		263,666		21	

3	1994		760	4,152	4,152	263,850	263,850		16	
4	1994		427	2,903	2,903	263,761	263,761		11	
5	1994		167	1,499	1,499	263,698	263,698		6	
6	1994		24	795	795	263,549	263,549		3	
7	1994		2	536	536	263,554	263,554		2	
8	1994		7	540	540	263,620	263,620		2	
9	1994		90	609	609	263,657	263,657		2	
10	1994		358	948	948	264,382	264,382		4	
11	1994		670	1,758	1,758	265,277	265,277		7	
12	1994		1,027	3,054	3,054	266,116	266,116		11	
		5487	5,388		28,300		264,041	105.25	107	27,789,393
1	1995		1,185	4,848	4,848	266,724	266,724		18	
2	1995		973	5,148	5,148	267,084	267,084		19	
3	1995		760	3,757	3,757	267,252	267,252		14	
4	1995		427	2,581	2,581	267,429	267,429		10	
5	1995		167	1,597	1,597	267,341	267,341		6	
6	1995		24	734	734	267,266	267,266		3	
7	1995		2	552	552	267,215	267,215		2	
8	1995		7	520	520	267,280	267,280		2	
9	1995		90	584	584	267,617	267,617		2	
10	1995		358	989	989	268,019	268,019		4	
11	1995		670	2,531	2,531	268,882	268,882		9	
12	1995		1,027	4,221	4,221	269,694	269,694		16	
		5844	5,388		28,062		267,650	96.66	105	25,872,357
1	1996		1,185	6,034	6,034	270,215	270,215		22	
2	1996		973	5,467	5,467	270,576	270,576		20	
3	1996		760	4,608	4,608	270,682	270,682		17	
4	1996		427	3,425	3,425	270,746	270,746		13	
5	1996		167	1,719	1,719	270,598	270,598		6	
6	1996		24	915	915	270,420	270,420		3	
7	1996		2	578	578	270,213	270,213		2	
8	1996		7	511	511	270,220	270,220		2	
9	1996		90	570	570	270,459	270,459		2	
10	1996		358	1,033	1,033	271,016	271,016		4	
11	1996		670	2,418	2,418	271,870	271,870		9	
12	1996		1,027	4,093	4,093	272,816	272,816		16	
		6085	5,388		31,371		270,803	102.58	116	27,777,841
1	1997		1,185	5,232	5,232	273,017	273,017		19	
2	1997		973	5,126	5,126	273,210	273,210		19	
3	1997		760	3,622	3,622	273,373	273,373		13	
4	1997		427	2,937	2,937	273,406	273,406		11	
5	1997		167	1,988	1,988	275,573	275,573		7	
6	1997		24	986	986	273,406	273,406		4	
7	1997		2	567	567	273,406	273,406		2	
8	1997		7	515	515	273,032	273,032		2	
9	1997		90	570	570	272,674	272,674		2	
10	1997		358	933	933	274,135	274,135		3	
11	1997		670	2,585	2,585	274,995	274,995		9	
12	1997		1,027	3,884	3,884	287,189	287,189		14	
		5820	5,388		28,945		274,785	97.52	105	26,796,505
1	1998		1,185	4,504	4,504	276,859	276,859		16	
2	1998		973	4,140	4,140	277,047	277,047		15	
3	1998		760	3,851	3,851	277,468	277,468		14	
4	1998		427	2,469	2,469	277,468	277,468		9	
5	1998		167	1,244	1,244	277,351	277,351		4	
6	1998		24	671	671	277,172	277,172		2	
7	1998		2	530	530	277,218	277,218		2	
8	1998		7	503	503	277,117	277,117		2	
9	1998		90	516	516	277,467	277,467		2	
10	1998		358	868	868	277,976	277,976		3	
11	1998		670	1,994	1,994	278,690	278,690		7	
12	1998		1,027	2,776	2,776	279,784	279,784		10	
		4620	5,388		24,066		277,635	101.09	87	28,066,582

1	1999		1,185	5,477		5,477	280,519		280,519		20	
2	1999		973	3,954		3,954	280,517		280,517		14	
3	1999		760	4,512		4,512	280,945		280,945		16	
4	1999		427	2,705		2,705	280,800		280,800		10	
5	1999		167	1,254		1,254	280,492		280,492		4	
6	1999		24	695		695	280,252		280,252		2	
7	1999		2	523		523	280,232		280,232		2	
8	1999		7	491		491	280,105		280,105		2	
9	1999		90	535		535	279,949		279,949		2	
10	1999		358	930		930	280,445		280,445		3	
11	1999		670	1,908		1,908	281,327		281,327		7	
12	1999		1,027	3,054		3,054	282,706		282,706		11	
		5166	5,388			26,038			280,691	96.75	93	27,156,938
1	2000		1,185	5,169		5,169	283,393		283,393		18	
2	2000		973	5,174		5,174	283,701		283,701		18	
3	2000		760	3,274		3,274	283,920		283,920		12	
4	2000		427	2,545		2,545	283,624		283,624		9	
5	2000		167	1,305		1,305	283,953		283,953		5	
6	2000		24	636		636	283,734		283,734		2	
7	2000		2	519		519	283,383		283,383		2	
8	2000		7	501		501	283,532		283,532		2	
9	2000		90	540		540	283,507		283,507		2	
10	2000		358	1,068		1,068	283,811		283,811		4	
11	2000		670	2,673		2,673	283,932		283,932		9	
12	2000		1,027	4,262		4,262	285,150		285,150		15	
		5657	5,388			27,666			283,803	92.85	97	26,350,435
1	2001		1,185	6,217		6,217	285,952		285,952		22	
2	2001		973	4,706		4,706	286,267		286,267		16	
3	2001		760	3,999		3,999	286,671		286,671		14	
4	2001		427	2,529		2,529	286,759		286,759		9	
5	2001		167	983		983	286,491		286,491		3	
6	2001		24	711		711	286,042		286,042		2	
7	2001		2	495		495	285,305		285,305		2	
8	2001		7	459		459	285,211		285,211		2	
9	2001		90	485		485	284,697		284,697		2	
10	2001		358	879		879	284,834		284,834		3	
11	2001		670	1,938		1,938	286,013		286,013		7	
12	2001		1,027	2,465		2,465	286,736		286,736		9	
		5080	5,388			25,866			285,915	95.95	90	27,434,254
1	2002		1,185	4,798		4,798	287,452		287,452		17	
2	2002		973	3,996		3,996	287,855		287,855		14	
3	2002		760	3,766		3,766	288,045		288,045		13	
4	2002		427	1,644		1,644	287,436		287,436		6	
5	2002		167	1,472		1,472	286,815		286,815		5	
6	2002		24	858		858	285,366		285,366		3	
7	2002		2	454		454	284,032		284,032		2	
8	2002		7	499		499	282,702		282,702		2	
9	2002		90	444		444	282,179		282,179		2	
10	2002		358	1,942		1,942	283,746		283,746		7	
11	2002		670	2,982		2,982	286,485		286,485		10	
12	2002		1,027	4,591		4,591	287,388		287,388		16	
		5473	5,388			27,446			285,792	94.54	96	27,019,742
1	2003		1,185	6,459	16	6,475	286,823	1,496	288,319		22	
2	2003		973	4,869	28	4,897	287,249	1,798	289,047		17	
3	2003		760	3,128	26	3,154	279,185	1,788	280,973		11	
4	2003		427	1,865	17	1,882	284,160	1,776	285,936		7	
5	2003		167	542	9	551	279,275	5,397	284,672		2	
6	2003		24	592	9	601	270,032	14,033	284,065		2	
7	2003		2	368	32	400	260,801	22,110	282,911		1	
8	2003		7	369	40	409	245,158	29,022	274,180		1	
9	2003		90	621	76	697	249,441	32,906	282,347		2	
10	2003		358	1,206	176	1,382	247,772	36,265	284,037		5	
11	2003		670	2,092	323	2,415	239,743	46,921	286,664		8	
12	2003		1,027	3,939	600	4,539	231,698	56,649	288,347		16	

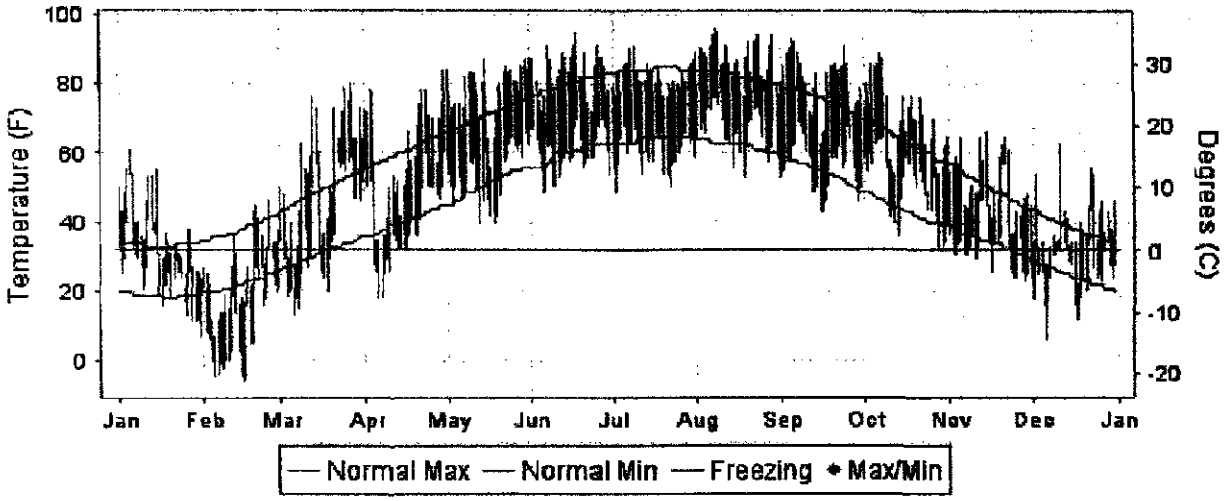
		5792	5,388			27,402			284,292	89.66	96	25,490,673
1	2004		1,185	4,821	900	5,721	232,871	56,682	289,553		20	
2	2004		973	3,530	925	4,455	234,408	55,353	289,761		15	
3	2004		760	2,393	750	3,143	234,944	54,447	289,391		11	
4	2004		427	1,218	557	1,775	234,342	53,917	288,259		6	
5	2004		167	353	270	623	233,598	53,333	286,931		2	
6	2004		24	371	114	485	232,400	53,150	285,550		2	
7	2004		2	359	87	446	231,705	52,907	284,612		2	
8	2004		7	367	81	448	227,928	55,124	283,052		2	
9	2004		90	427	95	522	219,672	63,257	282,929		2	
10	2004		358	1,141	178	1,319	218,449	67,357	285,806		5	
11	2004		670	1,873	375	2,248	219,603	69,017	288,620		8	
12	2004		1,027	3,013	1,589	4,602	222,159	68,379	290,538		16	
		5498	5,388			25,787			287,084	88.03	89	25,271,072
1	2005		1,185	3,773	1,108	4,881	224,105	67,423	291,528		17	
2	2005		973	2,904	849	3,753	224,389	67,263	291,652		13	
3	2005		760	2,884	877	3,761	224,047	67,486	291,533		13	
4	2005		427	1,249	395	1,644	223,470	66,724	290,194		6	
5	2005		167	778	256	1,034	222,134	66,367	288,501		4	
6	2005		24	417	114	531	221,232	65,768	287,000		2	
7	2005		2	321	116	437	220,168	65,282	285,450		2	
8	2005		7	305	112	417	218,775	65,285	284,060		1	
9	2005		90	356	128	484	218,547	65,772	284,319		2	
10	2005		358	853	358	1,211	221,427	65,567	286,994		4	
11	2005		670	2,051	630	2,681	225,939	64,681	290,620		9	
12	2005		1,027	3,625	1,082	4,707	225,631	67,048	292,679		16	
		5702	5,388			25,541			288,711	83.00	88	24,134,498
1	2006		1,185	2,453	835	3,288	226,486	66,392	292,878		11	
2	2006		973	2,812	896	3,708	227,692	65,572	293,264		13	
3	2006		760	2,433	729	3,162	227,912	65,214	293,126		11	
4	2006		427	961	287	1,248	227,277	64,626	291,903		4	
5	2006		167	714	214	928	225,167	64,580	289,747		3	
6	2006		24	441	82	523	223,042	64,913	287,955		2	
7	2006		2	347	78	425	221,622	65,118	286,740		1	
8	2006		7	316	112	428	220,363	65,327	285,690		1	
9	2006		90	462	125	587	218,556	67,109	285,665		2	
10	2006		358	1,255	454	1,709	221,358	67,715	289,073		6	
11	2006		670	2,097	577	2,674	224,067	67,591	291,658		9	
12	2006		1,027	2,657	741	3,398	224,659	68,126	292,785		12	
		5070	5,388			22,078			290,040	80.42	76	23,462,774
1	2007	1008	1,185	3,368	1,027	4,395	224,819	68,834	293,653		15	
2	2007	1296	973	4,311	1,207	5,518	224,974	69,289	294,263		19	
3	2007	583	760	1,859	604	2,463	224,559	69,023	293,582		8	
4	2007	469	427	1,623	513	2,136	223,014	69,500	292,514		7	
5	2007	85	167	400	174	574	221,595	69,264	290,859		2	
6	2007	4	24	380	144	524	220,820	68,874	289,694		2	
7	2007	2	2	209	172	381	219,698	68,681	288,378		1	
8	2007	0	7	300	125	425	218,435	68,768	287,203		1	
9	2007	39	90	319	80	399	217,335	69,138	286,473		1	
10	2007	210	358	833	262	895	218,016	70,179	288,195		3	
11	2007	664	670	1,884	706	2,570	219,253	71,862	291,115		9	
12	2007	994	1,027	3,137	1,021	4,158	219,541	72,896	292,437		14	
		5354	5,388	18,403	6,035	24,438			290,697	84.07	84	24,593,191

2007
LOCAL CLIMATOLOGICAL DATA
ANNUAL SUMMARY WITH COMPARATIVE DATA

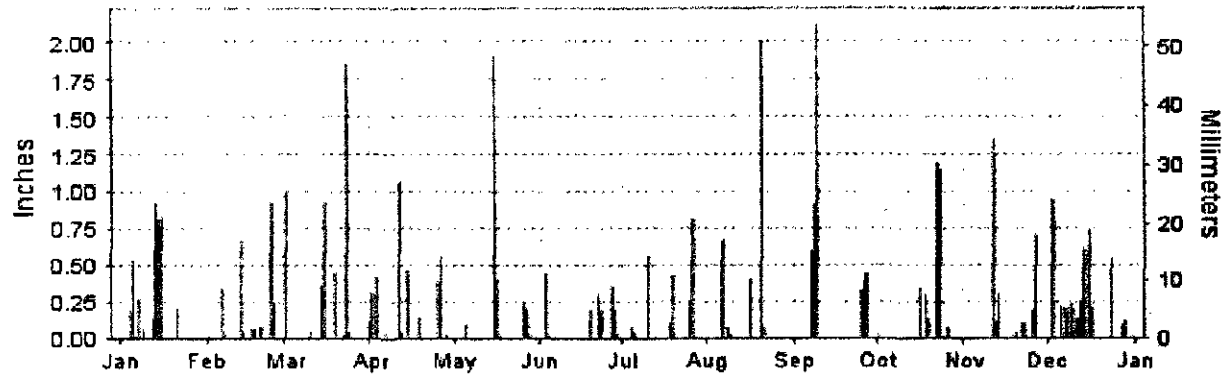
ISSN 0198-3970

DAYTON,
OHIO (KDAY)

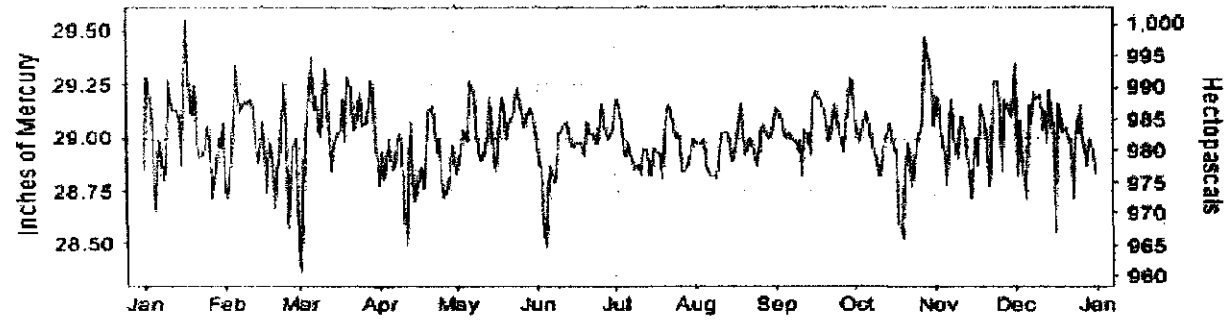
Daily Max/Min Temperature



Daily Precipitation



Daily Station Pressure



I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, AND IS COMPILED FROM RECORDS ON FILE AT THE NATIONAL CLIMATIC DATA CENTER.

Thomas R. Karl

DIRECTOR
NATIONAL CLIMATIC DATA CENTER

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

NATIONAL ENVIRONMENTAL SATELLITE, DATA AND INFORMATION SERVICE

NATIONAL CLIMATIC DATA CENTER
ASHEVILLE, NORTH CAROLINA

METEOROLOGICAL DATA FOR 2007
DAYTON (KDAY)

LATITUDE: 39 ° 54'N LONGITUDE: -84 ° 13'W ELEVATION (FT): GRND: 994 BARO: 1004 TIME ZONE: EASTERN (UTC -5) WBAN: 93815

	ELEMENT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F	MEAN DAILY MAXIMUM	38.7	26.4	55.7	59.3	77.7	83.0	82.6	87.6	81.0	69.5	51.2	39.1	62.7
	HIGHEST DAILY MAXIMUM	61	46	80	84	87	95	91	96	93	89	66	63	96
	DATE OF OCCURRENCE	05	25	27	30	15+	18	09	08	05	07	14	11	AUG 08
	MEAN DAILY MINIMUM	25.8	10.4	36.7	39.7	53.5	60.4	60.5	66.1	56.5	50.6	34.0	26.3	43.4
	LOWEST DAILY MINIMUM	7	-6	13	18	40	49	49	53	43	33	23	6	-6
	DATE OF OCCURRENCE	31	16	06	07+	13+	06	02	31+	16+	29+	28	06	FEB 16
	AVERAGE DRY BULB	32.3	18.4	46.2	49.5	65.6	71.7	71.6	76.9	68.8	60.1	42.6	32.7	53.0
	MEAN WET BULB	30.4	17.0	41.2	42.9	57.1	62.6	63.2	68.0	60.1	53.6	37.9		
	MEAN DEW POINT	26.2	11.8	34.4	35.9	49.6	56.2	57.5	63.4	53.8	48.2	31.9		
	NUMBER OF DAYS WITH:													
	MAXIMUM >= 90°	0	0	0	0	0	4	2	13	4	0	0	0	23
	MAXIMUM <= 32°	11	18	2	0	0	0	0	0	0	0	0	3	34
	MINIMUM <= 32°	24	27	15	9	0	0	0	0	0	0	15	25	115
	MINIMUM <= 0°	0	9	0	0	0	0	0	0	0	0	0	0	9
H/C	HEATING DEGREE DAYS	1008	1296	583	469	85	4	2	0	39	210	664	994	5354
	COOLING DEGREE DAYS	0	0	9	12	111	214	212	377	161	64	0	0	1160
RH	MEAN (PERCENT)	79	73	66	64	59	60	64	67	62	68	69	80	68
	HOUR 01 LST	82	76	69	71	71	72	76	80	75	77	75	82	76
	HOUR 07 LST	84	79	73	72	67	67	72	76	74	79	78	85	76
	HOUR 13 LST	72	67	59	53	43	44	49	48	44	53	58	74	55
	HOUR 19 LST	77	74	64	62	55	57	58	64	60	67	69	78	65
S	PERCENT POSSIBLE SUNSHINE													
W/O	NUMBER OF DAYS WITH:													
	HEAVY FOG(VISBY <= 1/4 MI)	2	4	0	1	1	0	0	0	0	0	0	0	8
	THUNDERSTORMS	0	0	6	7	4	8	4	7	4	0	1	1	42
CLOUDNESS	SUNRISE-SUNSET: (OKTAS)													
	CEILOMETER (<= 12,000 FT.)													
	SATELLITE (> 12,000 FT.)													
	MIDNIGHT-MIDNIGHT: (OKTAS)													
	CEILOMETER (<= 12,000 FT.)													
	SATELLITE (> 12,000 FT.)													
	NUMBER OF DAYS WITH:													
	CLEAR													
	PARTLY CLOUDY													
	CLOUDY													
PR	MEAN STATION PRESS. (IN.)	29.05	28.95	29.04	28.89	29.05	29.06	28.95	28.95	29.06	29.00	29.03	29.02	29.00
	MEAN SEA-LEVEL PRESS. (IN.)	30.13	30.09	30.14	29.96	30.12	30.11	30.01	30.01	30.12	30.06	30.12	30.11	30.08
WINDS	RESULTANT SPEED (MPH)	8.0	4.6	2.8	4.7	0.9	1.4	2.0	1.4	1.5	3.3	5.2	3.0	2.9
	RES. DIR. (TENS OF DEGS.)	23	25	22	27	18	23	29	27	20	20	25	21	24
	MEAN SPEED (MPH)	12.4	10.9	11.5	12.6	8.2	7.5	7.4	7.1	6.3	8.6	9.8	10.0	9.4
	PREVAIL.DIR.(TENS OF DEGS.)	26	26	20	26	19	22	23	24	20	18	20	11	26
	MAXIMUM 2-MINUTE WIND													
	SPEED (MPH)	37	38	40	43	36	31	32	45	30	36	32	40	45
	DIR. (TENS OF DEGS.)	27	26	24	26	29	24	27	33	19	17	30	24	33
	DATE OF OCCURRENCE	08	03	02	03	15	18	19	16	08	18	05	23	AUG 16
	MAXIMUM 5-SECOND WIND:													
	SPEED (MPH)	46	46	49	51	62	38	47	56	41	45	43	56	62
	DIR. (TENS OF DEGS.)	26	24	24	25	29	23	23	32	19	17	29	23	29
	DATE OF OCCURRENCE	08	03	02	03	15	18	19	16	08	18	05	23	MAY 15
PRECIPITATION	WATER EQUIVALENT:													
	TOTAL (IN.)	4.08	2.52	4.87	3.52	2.93	1.78	2.34	3.28	4.81	3.31	3.00	4.45	40.89
	GREATEST 24-HOUR (IN.)	1.47	1.18	1.86	1.10	2.32	0.46	1.08	2.01	3.04	2.36	1.36	0.96	3.04
	DATE OF OCCURRENCE	14-15	24-25	23	11-12	15-16	27-28	25-26	20	08-09	22-23	11	15-16	SEP 08-09
	NUMBER OF DAYS WITH:													
	PRECIPITATION 0.01	16	11	10	12	7	10	8	6	6	11	11	15	123
	PRECIPITATION 0.10	8	4	6	7	5	6	5	3	6	5	7	12	74
	PRECIPITATION 1.00	0	0	2	1	1	0	0	1	1	2	1	0	9
SNOWFALL	SNOW,ICE PELLETS,HAIL													
	TOTAL (IN.)	4.0	11.7	T	0.4	T	0.0	0.0	0.0	0.0	0.0	0.3	7.7	24.1
	GREATEST 24-HOUR (IN.)	2.4	5.1	T	0.3	T	0.0	0.0	0.0	0.0	0.0	0.2	3.5	5.1
	DATE OF OCCURRENCE	21	13	15+	06	15						22	15	FEB 13
	MAXIMUM SNOW DEPTH (IN.)	3	7	T	0	0	0	0	0	0	0	T	3	7
	DATE OF OCCURRENCE	22	18	03								23+	07	FEB 18
	NUMBER OF DAYS WITH:													
	SNOWFALL >= 1.0	1	3	0	0	0	0	0	0	0	0	0	3	7

NORMALS, MEANS, AND EXTREMES
DAYTON (KDAY)

LATITUDE: 39 ° 54'N LONGITUDE: -84 ° 13'W ELEVATION (FT): GRND: 994 BARO: 1004 TIME ZONE: EASTERN (UTC -5) WBAN: 93815

	ELEMENT	POR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
TEMPERATURE °F	NORMAL DAILY MAXIMUM	30	33.7	38.2	49.3	60.7	71.2	80.1	84.2	82.3	75.6	63.5	50.1	38.5	60.6
	MEAN DAILY MAXIMUM	73	35.5	38.3	49.5	61.3	72.1	80.6	84.9	83.4	76.3	65.0	50.4	39.0	61.4
	HIGHEST DAILY MAXIMUM	64	71	73	82	89	93	102	102	102	101	89	79	72	102
	YEAR OF OCCURRENCE		1950	2000	1986	1962	1962	1988	1988	1988	1954	2007	1975	1998	AUG 1988
	MEAN OF EXTREME MAXS.	88	57.4	61.3	72.7	80.9	86.1	92.1	93.7	92.6	89.2	80.9	70.3	60.6	78.2
	NORMAL DAILY MINIMUM	30	19.0	22.4	31.2	40.4	51.1	60.2	64.4	62.2	54.6	43.5	34.3	24.4	42.3
	MEAN DAILY MINIMUM	73	20.3	22.1	31.0	40.8	51.4	60.3	64.6	63.0	55.0	44.5	34.0	24.5	42.6
	LOWEST DAILY MINIMUM	64	-25	-16	-7	15	27	40	44	39	32	21	-2	-20	-25
	YEAR OF OCCURRENCE		1994	1951	1980	1972	1947	1990	1972	2001	1974	1962	1958	1989	JAN 1994
	MEAN OF EXTREME MINS.	88	-2.2	1.9	12.0	24.7	35.5	47.3	52.9	50.5	39.4	29.2	17.9	3.7	26.1
	NORMAL DRY BULB	30	26.3	30.3	40.2	50.6	61.2	70.2	74.3	72.3	65.1	53.5	42.2	31.4	51.5
	MEAN DRY BULB	73	27.9	30.2	40.3	51.1	61.8	70.6	74.7	73.2	65.7	54.8	42.2	31.8	52.0
	MEAN WET BULB	24	26.1	28.2	35.6	45.3	54.9	63.1	66.7	65.8	58.7	48.3	38.8	29.4	46.7
	MEAN DEW POINT	24	22.2	23.8	30.4	39.7	50.3	59.1	63.3	62.6	54.9	43.9	34.6	25.6	42.5
	NORMAL NO. DAYS WITH:														
	MAXIMUM >= 90	30	0.0	0.0	0.0	0.0	0.3	3.2	6.8	4.0	1.3	0.0	0.0	0.0	15.6
	MAXIMUM <= 32	30	13.3	9.2	2.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.9	8.2	34.2
	MINIMUM <= 32	30	27.2	22.3	17.9	6.2	0.3	0.0	0.0	0.0	*	3.3	14.2	24.0	115.4
	MINIMUM <= 0	30	3.0	1.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	5.9
H/C	NORMAL HEATING DEG. DAYS	30	1185	973	760	427	167	24	2	7	90	358	670	1027	5690
	NORMAL COOLING DEG. DAYS	30	0	0	2	9	62	194	305	246	105	11	1	0	935
RH	NORMAL (PERCENT)	30	76	73	70	65	67	68	70	73	72	70	73	77	71
	HOUR 01 LST	30	78	76	75	72	75	78	80	83	82	78	77	80	78
	HOUR 07 LST	30	80	79	79	76	78	80	83	88	88	84	81	82	82
	HOUR 13 LST	30	71	68	61	55	55	56	56	58	57	57	65	72	61
	HOUR 19 LST	30	74	71	65	58	58	59	60	64	65	65	71	76	66
S	PERCENT POSSIBLE SUNSHINE	53	40	44	48	52	58	66	66	67	65	59	40	36	53
W/O	MEAN NO. DAYS WITH:														
	HEAVY FOG (VISBY <= 1/4 MI)	44	3.0	2.4	1.6	0.7	1.2	0.9	1.1	1.6	1.9	1.4	1.5	2.8	20.1
	THUNDERSTORMS	60	0.5	0.6	2.1	4.3	6.3	7.2	7.3	5.9	3.1	1.5	0.9	0.3	40.0
CLOUDNESS	MEAN:														
	SUNRISE-SUNSET (OKTAS)														
	MIDNIGHT-MIDNIGHT (OKTAS)														
	MEAN NO. DAYS WITH:														
	CLEAR				4.0		1.0								
	PARTLY CLOUDY						1.0								
	CLOUDY	1	2.0	3.0	7.0		1.0	1.0							
PR	MEAN STATION PRESSURE (IN)	24	29.01	29.00	28.97	28.91	28.93	28.94	28.96	28.99	29.01	29.02	29.02	29.03	28.98
	MEAN SEA-LEVEL PRES. (IN)	24	30.12	30.11	30.06	29.98	29.99	29.99	30.01	30.05	30.07	30.10	30.10	30.13	30.06
WINDS	MEAN SPEED (MPH)	24	11.0	10.7	10.8	10.6	9.2	8.2	7.5	7.0	7.7	8.8	10.4	10.5	9.4
	PREVAIL.DIR (TENS OF DEGS)	39	28	27	30	21	23	22	23	23	21	21	21	21	21
	MAXIMUM 2-MINUTE:														
	SPEED (MPH)	12	43	45	49	49	54	43	61	45	43	43	44	49	61
	DIR. (TENS OF DEGS)		25	28	27	25	24	24	29	33	22	24	22	22	29
	YEAR OF OCCURRENCE		1997	2001	2002	2000	1999	2002	1998	2007	2000	2004	1998	2006	JUL 1998
	MAXIMUM 5-SECOND														
	SPEED (MPH)	12	53	55	58	59	62	68	74	56	53	53	53	58	74
	DIR. (TENS OF DEGS)		25	22	27	25	29	20	30	32	24	24	17	23	30
	YEAR OF OCCURRENCE		1997	1997	2002	2002	2007	2000	1998	2007	2000	2004	2001	2006	JUL 1998
PRECIPITATION	NORMAL (IN)	30	2.60	2.29	3.29	4.03	4.17	4.21	3.75	3.49	2.65	2.72	3.30	3.08	39.58
	MAXIMUM MONTHLY (IN)	64	9.86	5.77	7.65	9.20	9.05	10.89	8.55	8.03	7.37	6.25	8.07	10.04	10.89
	YEAR OF OCCURRENCE		1950	1990	1964	1996	1995	1958	1990	1974	2005	1986	1985	1990	JUN 1958
	MINIMUM MONTHLY (IN)	64	0.30	0.14	1.07	0.56	1.55	0.32	0.47	0.03	0.27	0.10	0.48	0.36	0.03
	YEAR OF OCCURRENCE		1981	1947	1966	1962	1964	1962	1974	1996	1963	1944	1949	1955	AUG 1996
	MAXIMUM IN 24 HOURS (IN)	64	4.30	2.79	2.87	3.10	3.64	3.76	4.54	3.62	4.59	3.75	2.93	2.86	4.59
	YEAR OF OCCURRENCE		1959	1959	1964	1977	1989	1981	1990	1974	2005	1986	1955	1990	SEP 2005
	NORMAL NO. DAYS WITH:														
	PRECIPITATION >= 0.01	30	13.6	11.7	12.5	12.8	12.5	10.7	10.1	9.6	8.4	9.2	11.8	12.6	135.5
	PRECIPITATION >= 1.00	30	0.2	0.4	0.4	0.8	0.9	0.9	1.3	1.0	0.7	0.4	0.8	0.6	8.4
SNOWFALL	NORMAL (IN)	30	9.9	6.5	4.8	0.8	0.*	0.0	0.0	0.0	0.0	0.4	1.4	5.4	29.2
	MAXIMUM MONTHLY (IN)	63	40.2	21.2	13.8	4.9	T	0.0	T	T	T	5.8	12.7	17.0	40.2
	YEAR OF OCCURRENCE		1978	2003	1984	1974	2007		1995	2000	2006	1989	1950	2004	JAN 1978
	MAXIMUM IN 24 HOURS (IN)	63	12.2	7.7	11.3	4.7	T	0.0	T	T	T	5.0	10.0	11.5	12.2
	YEAR OF OCCURRENCE		1978	1984	1968	1974	1995		1995	2000	2006	1989	1950	2004	JAN 1978
	MAXIMUM SNOW DEPTH (IN)	58	22	14	11	6	0	0	0	0	0	4	12	16	22
	YEAR OF OCCURRENCE		1978	1978	1963	1987						1989	1950	2004	JAN 1978
	NORMAL NO. DAYS WITH:														
	SNOWFALL >= 1.0	30	3.0	2.0	1.4	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.4	1.6	8.7

HEATING DEGREE DAYS (base 65°F) 2007 DAYTON (KDAY)

YEAR	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
1978-79	1	11	47	396	597	942	1372	1281	634	445	166	15	5907
1979-80	7	23	91	397	649	923	1145	1217	901	495	139	49	6036
1980-81	0	0	44	487	764	1043	1289	894	792	305	252	9	5879
1981-82	0	2	119	398	638	1089	1362	1039	766	546	27	22	6008
1982-83	1	9	102	320	630	782	1105	851	706	538	258	28	5330
1983-84	8	0	104	345	649	1331	1351	827	1051	493	263	2	6424
1984-85	7	8	142	191	756	824	1406	1104	660	294	128	34	5554
1985-86	0	1	107	255	516	1271	1109	939	699	343	118	15	5373
1986-87	0	32	42	317	732	991	1134	858	664	411	98	6	5285
1987-88	2	10	44	505	551	916	1200	1091	759	425	106	35	5644
1988-89	2	3	56	549	635	1052	881	1043	700	445	241	14	5621
1989-90	0	5	114	347	713	1419	858	772	628	450	199	29	5534
1990-91	3	1	101	359	534	886	1138	835	678	304	59	1	4899
1991-92	0	0	111	281	765	935	1078	828	735	427	187	26	5373
1992-93	2	10	110	392	658	988	1011	1076	837	444	129	47	5704
1993-94	0	2	121	413	672	1046	1391	1011	790	350	239	7	6042
1994-95	0	8	76	278	492	845	1112	1025	676	436	164	3	5115
1995-96	4	0	102	275	861	1186	1227	1001	955	491	218	14	6334
1996-97	2	0	97	316	856	908	1209	833	712	520	287	32	5772
1997-98	2	10	70	381	781	983	891	717	735	382	63	59	5074
1998-99	0	0	29	294	588	862	1119	814	903	340	91	16	5056
1999-00	0	3	63	320	521	976	1233	816	601	416	89	24	5062
2000-01	0	4	113	258	731	1372	1134	860	856	311	101	31	5771
2001-02	7	0	117	321	486	856	933	843	787	376	234	16	4976
2002-03	0	0	34	442	751	1057	1364	1123	706	343	172	59	6051
2003-04	0	0	98	391	552	984	1278	992	677	379	93	12	5456
2004-05	4	21	48	343	595	1056	1124	879	894	372	243	3	5582
2005-06	0	0	23	345	629	1190	796	927	785	312	222	20	5249
2006-07	0	0	105	449	622	832	1008	1296	583	469	85	4	5453
2007-	2	0	39	210	664	994							

WBAN : 93815

COOLING DEGREE DAYS (base 65°F) 2007 DAYTON (KDAY)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1978	0	0	0	1	66	219	265	210	184	0	0	0	945
1979	0	0	1	12	63	179	260	234	87	18	0	0	854
1980	0	0	0	0	61	148	373	378	164	6	0	0	1130
1981	0	0	1	11	17	221	321	251	76	5	0	0	903
1982	0	0	0	0	123	78	316	191	75	29	3	1	816
1983	0	0	0	1	8	180	369	339	148	10	0	0	1055
1984	0	0	0	5	25	233	169	218	72	7	0	0	729
1985	0	0	3	36	63	101	253	190	152	25	1	0	824
1986	0	0	4	23	88	211	335	186	161	21	0	0	1029
1987	0	0	0	5	148	238	331	270	122	0	5	0	1119
1988	0	0	1	4	64	232	423	387	73	3	0	0	1187
1989	0	0	5	7	55	189	350	235	94	17	0	0	952
1990	0	0	12	27	5	192	263	215	111	7	4	0	836
1991	0	0	0	11	199	284	355	277	149	28	0	0	1303
1992	0	0	0	11	51	127	293	138	94	0	0	0	714
1993	0	0	0	0	44	195	376	323	58	4	0	0	1000
1994	0	0	0	18	46	293	321	220	81	11	0	0	990
1995	0	0	0	3	26	243	349	410	66	4	0	0	1101
1996	0	0	0	6	69	208	228	263	87	0	0	0	861
1997	0	0	0	0	7	163	262	164	66	46	0	0	708
1998	0	0	19	0	102	229	272	293	203	10	0	3	1131
1999	0	0	0	5	54	248	423	207	123	1	0	0	1061
2000	0	0	0	1	84	202	223	199	99	17	0	0	825
2001	0	0	0	45	63	175	268	271	66	14	0	0	902
2002	0	0	0	40	41	245	390	342	178	33	0	0	1269
2003	0	0	0	10	22	116	229	255	48	6	1	0	687
2004	0	0	0	11	120	149	231	153	103	4	0	0	771
2005	0	0	0	7	14	257	322	316	134	25	0	0	1075
2006	0	0	0	8	65	133	337	275	27	10	0	0	855
2007	0	0	9	12	111	214	212	377	161	64	0	0	1160

CERTIFICATE OF SERVICE

It is hereby certified that a true copy of the foregoing *Direct Testimony of William H. Novak* was served upon the persons listed below by regular U.S. Mail, postage prepaid, this 23rd day of July, 2008.

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