

ComEd Summer Peak Load Forecast: 2007 – 2021

This memorandum summarizes ComEd's peak load forecast for the years 2007 to 2021 and its weather-adjusted peak for 2006. The forecasted peaks and the 2006 weather-adjusted peak are based on a peak load model developed over many years along with supporting analysis and judgment.

The ComEd peak load model reflects the following refinements since the last forecast:

- Economic variables (Chicago Gross Metro Product and number of households) are from Economy.com as of 02/15/07. GMP reflects the Chicago metro division plus Lake, Rockford and Kankakee divisions.
- The model is no longer based on log-transformations but on linear regression. The results are very similar between the two versions and a linear relationship is preferred (all of ComEd's other forecasting models reflect a linear relationship).
- The model now starts in 1990 (instead of 1988) to reflect more recent usage patterns and air conditioning saturation.
- The previous model had six dummy variables to reflect the observations with the largest residuals (typically very extreme temperature years) to prevent those observations from unduly influencing the model. The current model has only four dummy variables.

The final peak load model has very good statistics and the results are in Attachment A.

ComEd's 2006 weather-adjusted summer peak is 23,175 MW. The peak load includes the City of Geneva, which became part of the ComEd zone on 01/01/06. The summer of 2006 had the highest average peak hour temperatures since 1995. Usually, the weather adjusted peak is based on the highest peak load for the year, but in 2006 the peak day (August 1st) had extremely high temperatures (97 degrees) and curtailments that result in it being one of the four days with a dummy variable. Thus, the average of the weather-adjusted peak loads for the second highest peak load (August 2nd) and the third highest peak load (July 31st) were used instead of the peak day in determining the 2006 weather adjusted peak load. The 23,175 MW weather-adjusted 2006 summer peak is 2.7% greater than the 2005 weather-adjusted peak of 22,575 MW. Adjusting for the City of Geneva and some additional QF facilities being added to the ComEd zone in 2006, results in a 2.3% increase in the 2006 peak compared to 2005. The average annual peak load growth rate for the past six years is 1.8%. Thus, the 2006 peak load growth is higher than the average growth rate, but within the growth rates experienced in the past (Attachment B). In terms of forecast performance, the 2006 weather adjusted peak of 23,175 is within 0.3% of the 2006 forecasted peak of 23,100 MW.

The 2007 forecasted peak load is 23,525 MW and the forecasted peak for other years is contained in Attachment B. The forecasted growth rate for 2007 is 1.5% to reflect a slight reduction in load growth from the 2007 increase in residential rates. The annual growth rates for the next couple of years are very consistent with the historical growth rates during the past few years and forecasted peak loads obtained from the model. The growth rates decline in latter years because of a slowing Chicago economy; anticipated efficiency improvements and air conditioning saturation being a less important component of growth.

Another useful point of reference in preparing the annual peak load is to review the annual load factors that result from the peak load forecast and the previously approved 2007 Budget/LRP zone energy sales. The combined peak and energy projections should produce an annual load factor that is consistent with past load factors and future expectations, which is the case with the current forecast (Attachment C). ComEd's annual load factors have been declining over time as the manufacturing sector, with its high load factors, has become a smaller percentage of ComEd sales. The weather-adjusted load factors for 2004 and 2005 are approximately 51.2%. For 2006 the load factor is 50.5% as energy sales increased considerably slower than the peak load growth. Given that the peak load is more inelastic than energy sales the events of 2006 (e.g., the spike in gasoline prices to over \$3.00 per gallon) would have more influence on energy sales than peak load usage. The annual load factor continues to decline slowly over time as residential sale growth continues to be the major contributor to peak and energy sales growth.

EED Load Forecasting
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ComEd Summer Peak Load Model Description of the 2007 Forecast Version

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This is a summary of ComEd's system peak load model used in part to produce the 2006 weather adjusted peak load and forecasted peak loads.

Peak Load Model

Dependent Variable: PEAKLOAD (3 highest peak loads within a calendar year in MW)

Independent Variables:

Gross Metro Product in 3rd Qtr: Gross Metro Product of Chicago metro area in 3rd Qtr of each year, using Economy.com projections;

THI 8 a.m.: THI data for O'Hare International Airport using PJM THI definition:

$THI = (0.55 * \text{Dry Bulb}) + (0.2 * \text{Dew Point}) + 17.5;$

THI lagged: Weighted average THI of peak hour of peak day and same hour in previous three days:

$THI \text{ lagged} = (0.55 * THI) + (0.2 * THI_{t-1}) + (0.15 * THI_{t-2}) + (0.1 * THI_{t-3});$

Households: Chicago metro area households in 3rd Qtr of each year; also using Economy.com projections;

Peak Temp Average: average hourly temperature of peak hour and previous two hours;

Households * Peak Temp Average: interactive variable of product of households and Peak Temp Average.

Method: Linear Regression

Time Period: 1990 through 2006 (i.e., 51 observations)

<u>Independent Variable</u>	<u>Coefficient</u>	<u>T-Stat</u>
Constant	-26,938.92	-13.99
Gross Metro Product -Chicago	0.03	12.42
THI 8 a.m.	79.62	2.80
THI lagged	185.48	5.38
Households * Peak Temp Avg.	0.04	6.06
Day of the Year	16.56	8.24
Dummy 1996	609.55	1.95
Dummy 2000	-919.67	-2.96
Dummy 2004	-786.29	-2.42
Dummy 2006	499.98	1.59

Adjusted R-squared: 0.98

The projected 2007 peak load is based on a 2.7% increase in Gross Metro-Product and normal peak-making weather design.

**ComEd Historical and Forecasted
Summer Peaks
(System Net Hourly Load - MW)**

<u>Year</u>	<u>Actual</u>	<u>Weather Adjusted</u>	<u>Growth Rate</u>	<u>Date & Time</u>
1990	17,272	17,272		9/6 4-5 p.m.
1991	17,733	17,600	1.9%	7/22 3-4 p.m.
1992	15,994	17,600	0.0%	8/10 4-5 p.m.
1993	17,771	17,900	1.7%	8/27 3-4 p.m.
1994	17,928	18,250	2.0%	7/5 3-4 p.m.
1995	19,212	18,700	2.5%	8/14 3-4 p.m.
1996	18,916	19,300	3.2%	8/7 3-4 p.m.
1997	18,497	19,500	1.0%	7/14 2-3 p.m.
1998	19,012	19,700	1.0%	6/25 3-4 p.m.
1999	21,243	20,350	3.3%	7/30 2-3 p.m.
2000	20,143	21,000	3.2%	8/15 3-4 p.m.
2001	21,547	21,400	1.9%	8/9 3-4 p.m.
2002	21,804	21,800	1.9%	8/1 3-4 p.m.
2003	22,054	22,075	1.3%	8/21 3-4 p.m.
2004	19,794	22,200	0.6%	8/3 3-4 p.m. (1)
2005	21,635	22,575	1.7%	8/9 4-5 p.m.
2006	23,613	23,175	2.7%	8/1 4-5 p.m. (2)
Forecasted Peaks				
2007		23,525	1.5%	
2008		23,950	1.8%	
2009		24,375	1.8%	
2010		24,825	1.8%	
2011		25,275	1.8%	
2012		25,700	1.7%	
2013		26,125	1.7%	
2014		26,525	1.5%	
2015		26,925	1.5%	
2016		27,325	1.5%	

(1) ComEd entered PJM on May 1, 2004. Zone loads after that date represent PJM methodology, which differs from the previous years.

(2) City of Geneva became part of the ComEd zone in Jan06.

ComEd Projected Annual Load Factors using 2007 Budget Assumptions and Feb07 Peak Forecast

<u>Year</u>	<u>Zone Peak (MW)</u>	<u>Growth Rate</u>	<u>Annual Increase (MW)</u>	<u>Actual and Forecasted Zone (GWh)</u>	<u>Growth Rate</u>	<u>Annual Load Factor</u>
2004	22,200			99,478		51.0%
2005	22,575	1.7%	375	101,704	2.2%	51.4%
2006	23,175	2.7%	600	102,608	0.9%	50.5%
2007	23,525	1.5%	350	103,719	1.1%	50.3%
2008	23,950	1.8%	425	105,351	1.6%	50.1%
2009	24,375	1.8%	425	106,678	1.3%	50.0%
2010	24,825	1.8%	450	108,158	1.4%	49.7%
2011	25,275	1.8%	450	109,504	1.2%	49.5%

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