

**ENERGY ANALYSIS  
GRAND FORKS PUBLIC LIBRARY  
Grand Forks, ND**

**Xcel Energy:**

**Account Number: 51-4562773-8**

**Analysis Performed By: Joe Burton  
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The purpose of this Energy Analysis is to compare the actual energy use of Grand Forks Public Library with data provided by Xcel Energy to buildings of similar type in North Dakota (provided by the EPA Energy star guide). From this we are able to determine if the target building is within an appropriate energy use range compared to a typical building of this type and use within the North Dakota region.

### Energy Analysis Charts

	Energy use (kBtu/Ft <sup>2</sup> )	Average Energy Use (Kbtu/year)	Annual Cost (1)
<b>Current System</b>	<b>143</b>	<b>3,816,798</b>	<b>\$ 60,327</b>
<b>McFarlane Expectations</b>	<b>90</b>	<b>2,394,450</b>	<b>\$ 37,856</b>
<b>Savings</b>		<b>1,422,348</b>	<b>\$ 22,471</b>

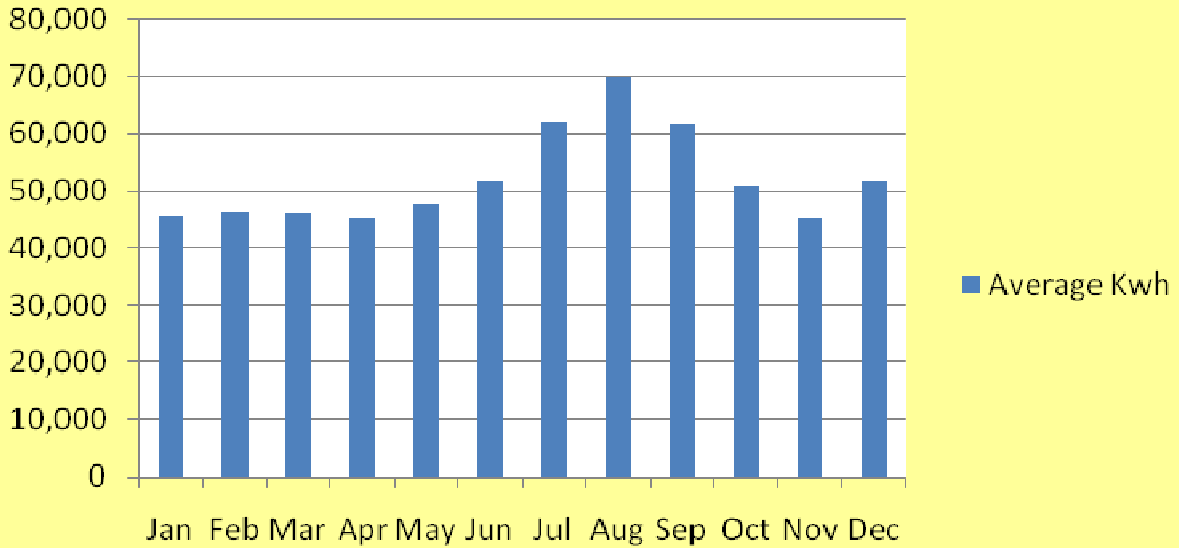
(1) Average energy costs are based on average usage for the past three years with current energy costs per unit (\$0.05/kWh, \$0.97/therm, \$6.86/demand and \$10.21/summer demand)

Our analysis has discovered that the complex is using roughly 58% more energy than recommended by the Environmental Protection Agency (EPA) for a building of similar occupancy within the North Dakota region.

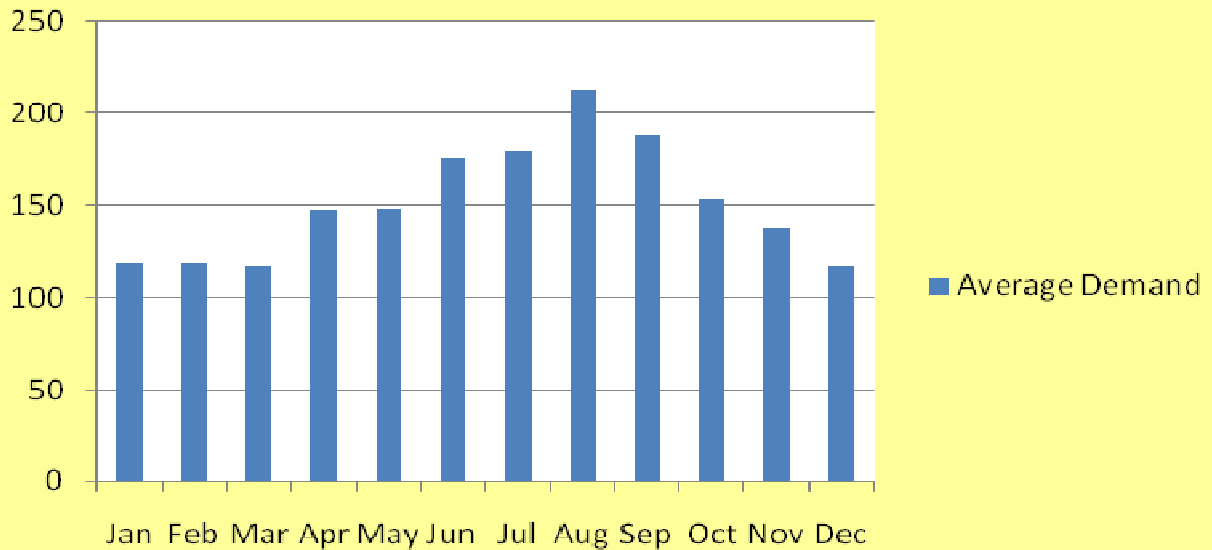
The main issues addressed by this energy analysis are:

- The current annual energy cost of the building (kBtu/ft<sup>2</sup>).
- The EPA recommendations for energy cost for similar buildings (kBtu/ft<sup>2</sup>).
- McFarlane's estimate of the energy usage for this building.
- Potential savings the owner may receive.

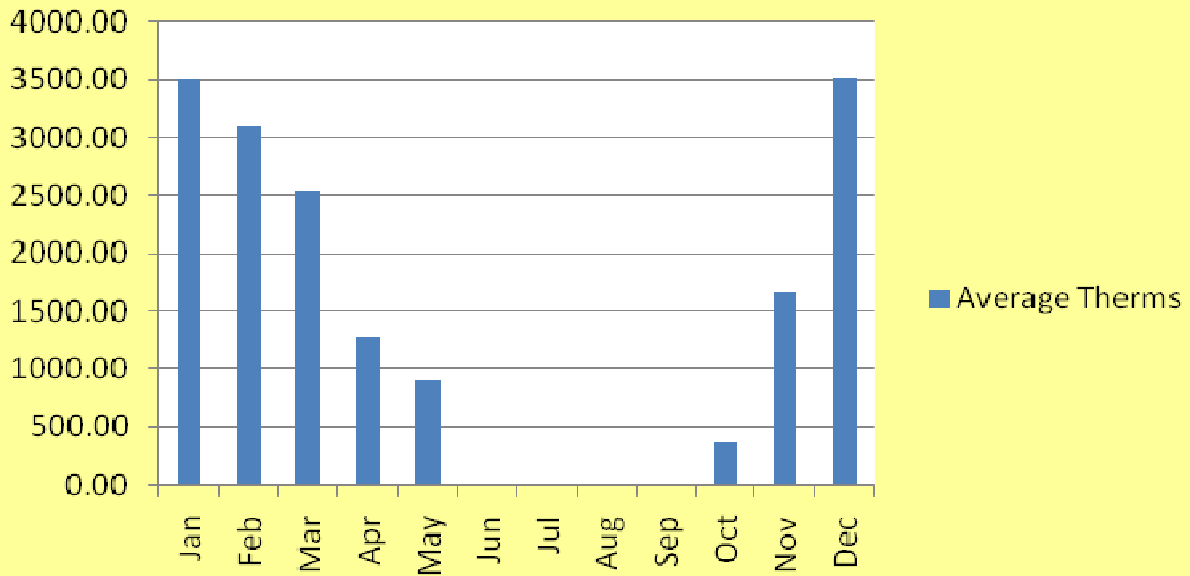
### 3 yr. Average Kwh Usage



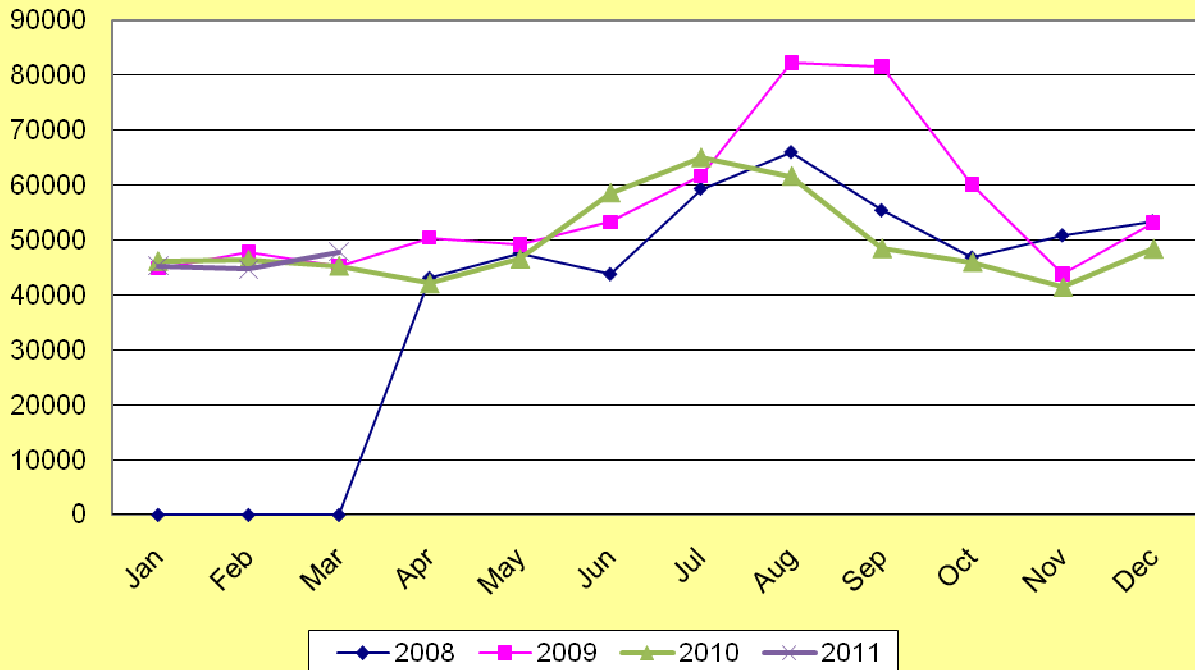
### 3 yr. Average Demand Usage

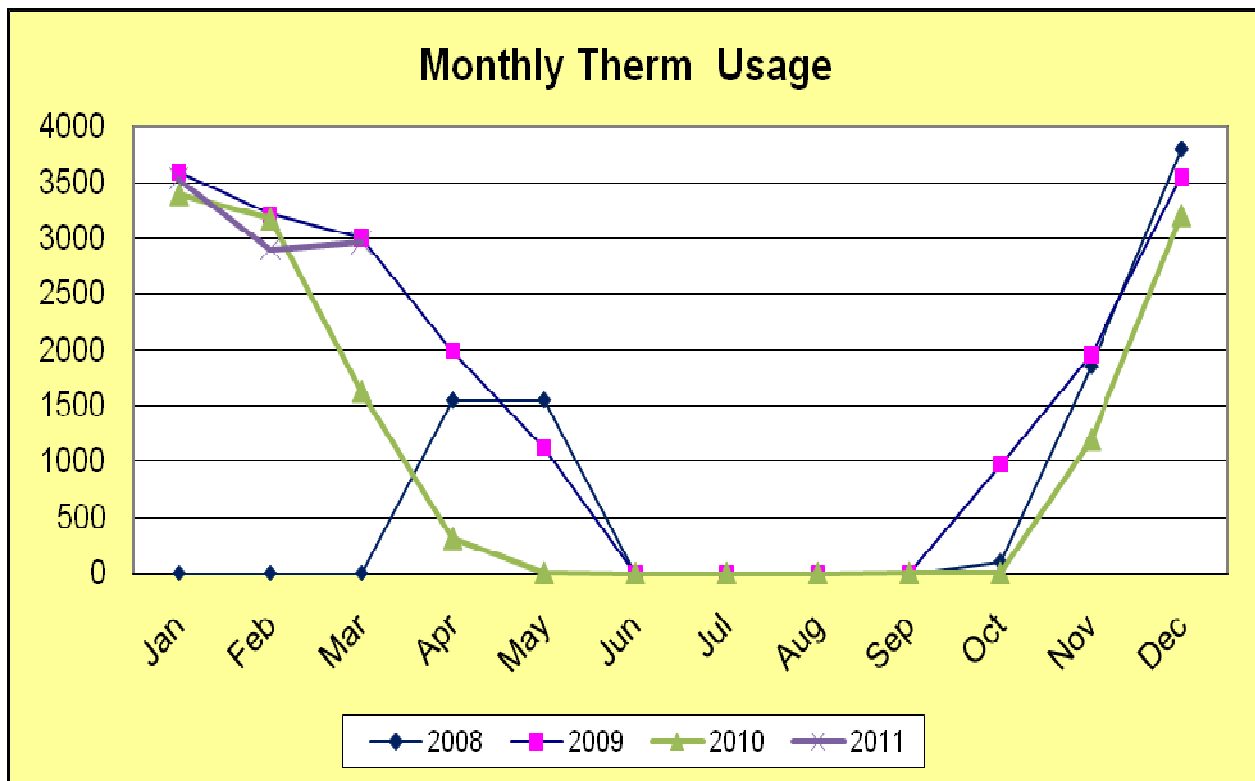
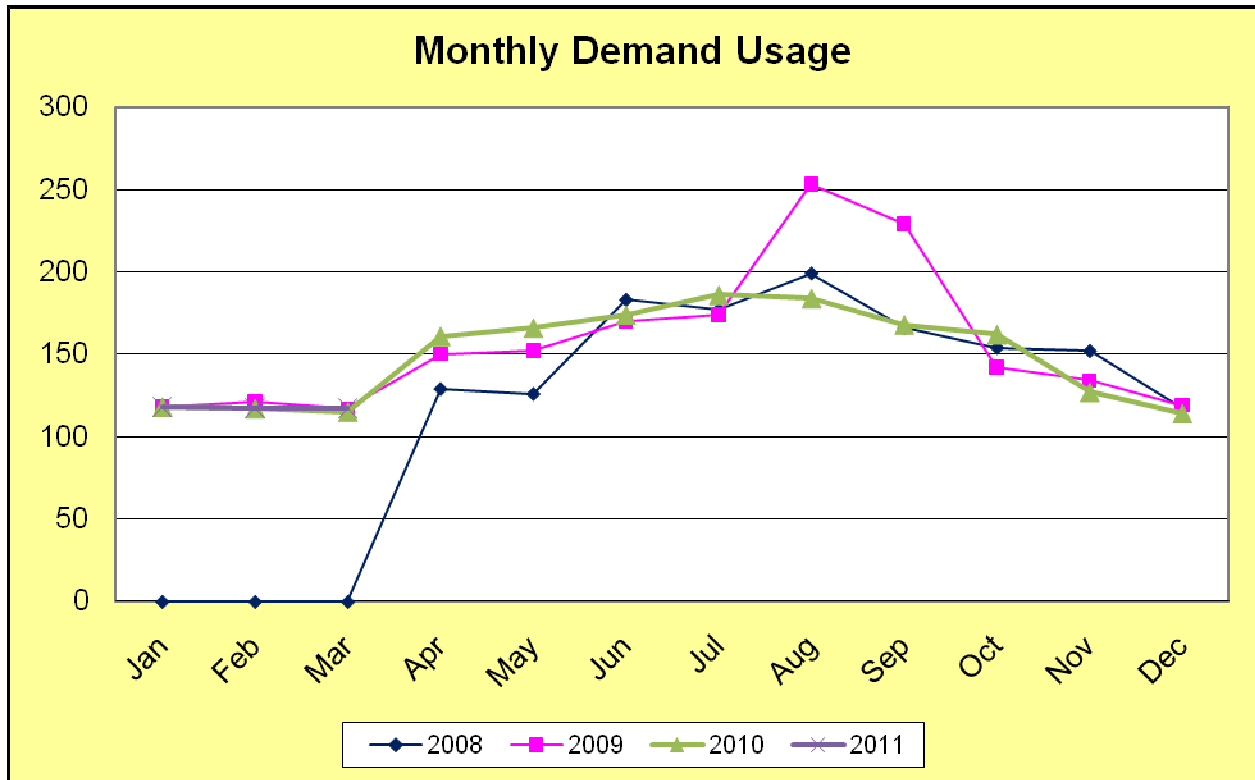


### 3 yr. Average Therms Usage



### Monthly Kwh Usage





Month	KwH	Electric Cost	Therms	Therms Cost	Demand	Demand Cost
Apr-08	43,040	\$2,152.00	1547.00	\$1,503.68	129.000	\$884.94
May-08	47,520	\$2,376.00	1549.00	\$1,505.63	126.000	\$1,295.28
Jun-08	43,760	\$2,188.00	0.00	\$0.00	183.000	\$1,881.24
Jul-08	59,280	\$2,964.00	1.00	\$0.97	177.000	\$1,819.56
Aug-08	65,920	\$3,296.00	0.00	\$0.00	199.000	\$2,045.72
Sep-08	55,360	\$2,768.00	0.00	\$0.00	166.000	\$1,138.76
Oct-08	46,800	\$2,340.00	102.00	\$99.14	154.000	\$1,056.44
Nov-08	50,800	\$2,540.00	1850.00	\$1,798.20	152.000	\$1,042.72
Dec-08	53,360	\$2,668.00	3793.00	\$7,479.80	117.000	\$802.62

Month	KwH	Electric Cost	Therms	Therms Cost	Demand	Demand Cost
Jan-09	44,800	\$2,240.00	3,592	\$3,491.42	118	\$788.24
Feb-09	47,840	\$2,392.00	3,214	\$3,124.01	121	\$808.28
Mar-09	45,200	\$2,260.00	3,003	\$2,918.92	117	\$781.56
Apr-09	50,400	\$2,520.00	1,991	\$1,935.25	150	\$1,002.00
May-09	49,200	\$2,460.00	1,124	\$1,092.53	152	\$1,015.36
Jun-09	53,280	\$2,664.00	0	\$0.00	170	\$1,735.70
Jul-09	61,680	\$3,084.00	1	\$0.97	174	\$1,776.54
Aug-09	82,240	\$4,112.00	0	\$0.00	253	\$2,583.13
Sep-09	81,600	\$4,080.00	1	\$0.97	229	\$2,338.09
Oct-09	60,080	\$3,004.00	977	\$949.64	142	\$948.56
Nov-09	43,760	\$2,188.00	1,955	\$1,900.26	134	\$895.12
Dec-09	53,120	\$2,656.00	3,548	\$3,448.66	119	\$794.92

Month	KwH	Electric Cost	Therms	Therms Cost	Demand	Demand Cost
Jan-10	46,160	\$2,308.00	3398.00	\$3,302.86	118	\$809.48
Feb-10	46,400	\$2,320.00	3179.00	\$3,089.99	117	\$802.62
Mar-10	45,280	\$2,264.00	1632.00	\$1,586.30	115	\$788.90
Apr-10	42,080	\$2,104.00	315.00	\$306.18	161	\$1,104.46
May-10	46,560	\$2,328.00	2.00	\$1.94	166	\$1,138.76
Jun-10	58,560	\$2,928.00	0.00	\$0.00	174	\$1,776.54
Jul-10	64,960	\$3,248.00	0.00	\$0.00	186	\$1,899.06
Aug-10	61,600	\$3,080.00	0.00	\$0.00	184	\$1,878.64
Sep-10	48,480	\$2,424.00	1.00	\$0.97	168	\$1,715.28
Oct-10	46,000	\$2,300.00	1.00	\$0.97	162	\$1,111.32
Nov-10	41,440	\$2,072.00	1202.00	\$1,168.34	127	\$871.22
Dec-10	48,400	\$2,420.00	3211.00	\$3,121.09	114	\$782.04

Month	KwH	Electric Cost	Therms	Therms Cost	Demand	Demand Cost
Jan-11	45,280	\$2,264.00	3,532	\$3,433.10	118	\$809.48
Feb-11	44,640	\$2,232.00	2,902	\$2,820.74	117	\$802.62
Mar-11	47,840	\$2,392.00	2,965	\$2,881.98	117	\$802.62

### 3 Year Energy Monthly Averages

Month	KwH	Electric Cost	Therms	Therms Cost	Demand	Demand Cost
Jan-10	45,413	\$2,270.67	3,507	\$3,409.13	118	\$802.40
Feb-10	46,293	\$2,314.67	3,098	\$3,011.58	118	\$804.51
Mar-10	46,107	\$2,305.33	2,533	\$2,462.40	116	\$791.03
Apr-10	45,173	\$2,258.67	1,284	\$1,248.37	147	\$997.13
May-10	47,760	\$2,388.00	892	\$866.70	148	\$1,149.80
Jun-10	51,867	\$2,593.33	0	\$0.00	176	\$1,797.83
Jul-10	61,973	\$3,098.67	1	\$0.65	179	\$1,831.72
Aug-10	69,920	\$3,496.00	0	\$0.00	212	\$2,169.16
Sep-10	61,813	\$3,090.67	1	\$0.65	188	\$1,730.71
Oct-10	50,960	\$2,548.00	360	\$349.92	153	\$1,038.77
Nov-10	45,333	\$2,266.67	1,669	\$1,622.27	138	\$936.35
Dec-10	51,627	\$2,581.33	3,517	\$4,683.18	117	\$793.19



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