

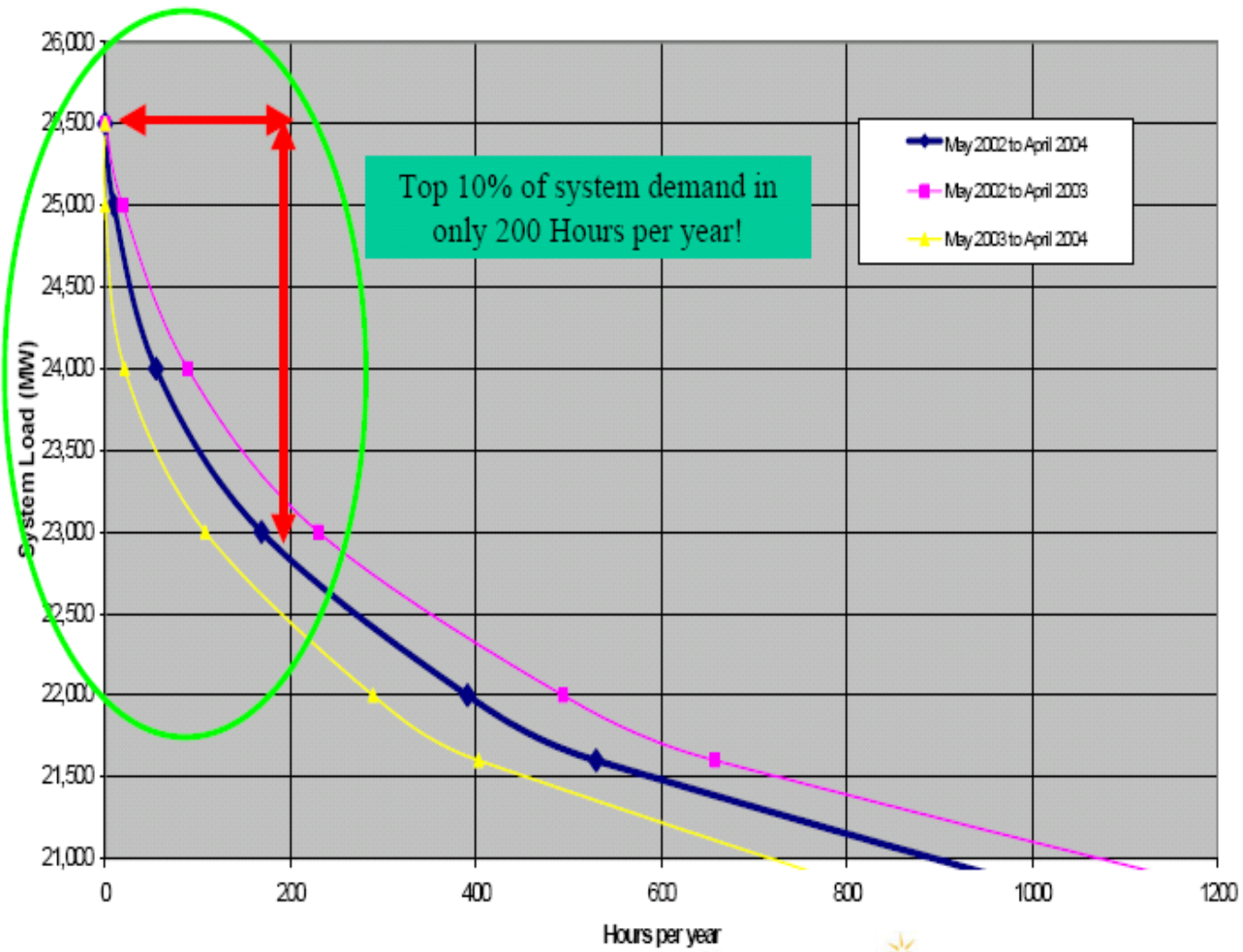
Wahoo Load Control Program

Load Control Devices save \$\$

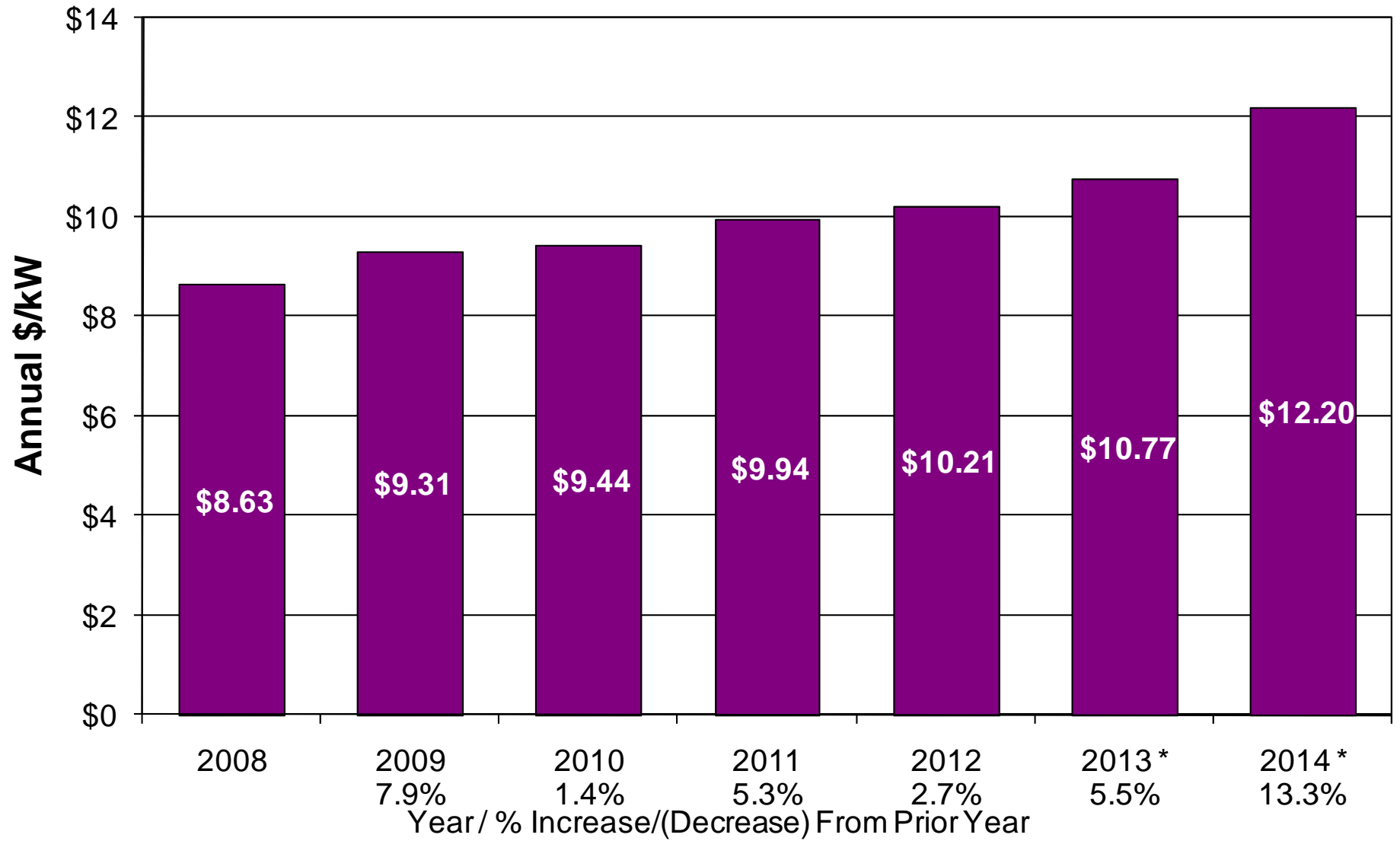
- Wahoo Utilities currently has some of the lowest electric rates in the state/nation. One of the ways of controlling costs is by the implementation of our load control program. By reducing our peak demand, with air conditioner and irrigation control, Wahoo Utilities customers help keep our rates low!

Demand Response: State of the Business

- Existing utility infrastructure strained by worsening load factor
- Peak demand continues to grow faster than supply
 - Total nationwide energy 1.4%/Yr
 - System peak nationwide growing at 2%/Yr
 - Total supply nationwide dropped 0.1% in 2006
- Demand response is the lowest total cost solution
 - \$250-350/KW base generation vs. \$700-850/KW for peak generation
 - Improved system reliability (reserve margin)
 - Reduced marginal supply costs



Forecasted Average Annual GFPS Demand \$/kW



*Includes cost associated with the installation and operation of wet scrubbers on both Gentlemen Units

Air Conditioner and Irrigation load control

- NPPD sends out billable demand message for their anticipated peak days.
- At a locally determined threshold, Wahoo implements 3 groups of AC control.
- Typical hours are from 4:00 P.M-6:00 P.M. Monday-Friday.
- 40% control of 2 hours=48 minutes/day
- 6 different days of control in 2007
- 1kW=\$70 demand savings/year
- 1kW=1 AC Central or 1kW=1HP
- 1000 kW=\$70,000 savings/year
- \$700,000 savings in 10 years



Yearly Demand Charge

2007

	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTALS
On Peak Production kWh:	2779312	2652025	2311184	2144875	2338578	2391251	2733201	2958497	2025859	2368918	2449030	2850128	30002858
Off Peak Production kWh:	2464639	2284025	1828096	1761554	1757374	2249017	2846303	2772768	2246807	1742581	2117487	2748727	26819378
On Peak Production kWh:	\$ 53,585	\$ 53,041	\$ 46,224	\$ 42,898	\$ 46,772	\$ 64,899	\$ 74,179	\$ 80,294	\$ 54,982	\$ 47,378	\$ 48,981	\$ 57,003	\$ 670,233
Off Peak Production kWh:	\$ 24,375	\$ 23,434	\$ 18,756	\$ 18,074	\$ 18,031	\$ 36,816	\$ 46,594	\$ 45,390	\$ 36,780	\$ 17,879	\$ 21,725	\$ 28,202	\$ 336,057

\$ 1,006,290 Energy

Production Demand:	9355	9433	7046	6943	8235	11131	10980	11070	11070	7640	7769	8638	
Transmission Demand:	11434	11434	11434	11434	11434	11434	11434	11213	11213	11213	11213	11213	
Transmission Sub:	11434	11434	11434	11434	11434	11434	11434	11213	11213	11213	11213	11213	
Production Demand:	\$ 65,391	\$ 65,937	\$ 49,252	\$ 48,532	\$ 57,563	\$ 115,651	\$ 114,082	\$ 115,017	\$ 115,017	\$ 53,404	\$ 54,305	\$ 60,380	\$ 914,530
Transmission Demand:	\$ 23,897	\$ 23,897	\$ 23,897	\$ 23,897	\$ 23,897	\$ 23,897	\$ 23,897	\$ 23,435	\$ 23,435	\$ 23,435	\$ 23,435	\$ 23,435	\$ 284,455
Transformation Demand:	\$ 3,773	\$ 3,773	\$ 3,773	\$ 3,773	\$ 3,773	\$ 3,773	\$ 3,773	\$ 3,700	\$ 3,700	\$ 3,700	\$ 3,700	\$ 3,700	\$ 44,914

\$ 1,243,900 Demand

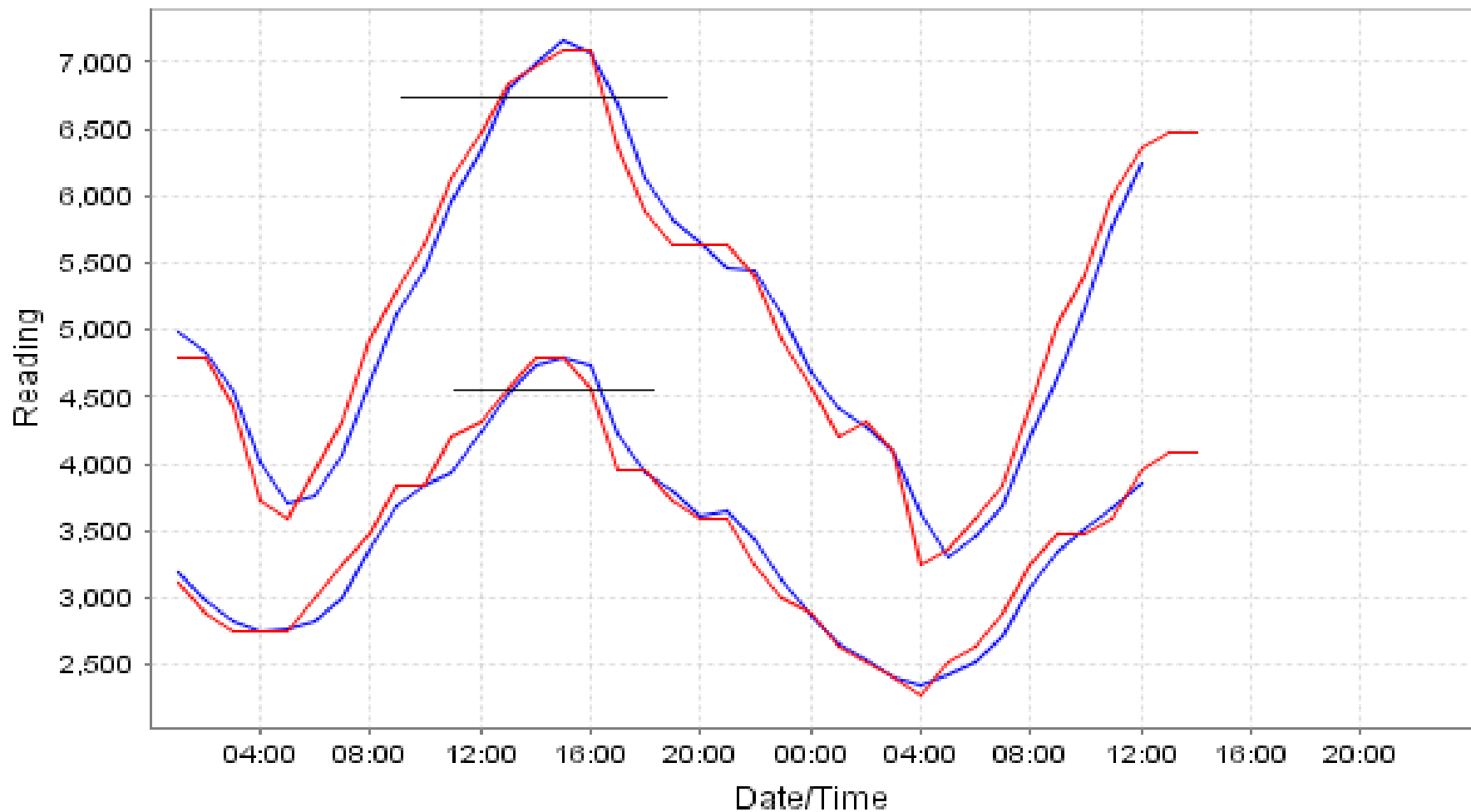
Gen. Station Production x 4 highest days	1	x	\$ 10.39	=	\$ 10.39	
					\$ 42	Gen Station Demand
<u>Ancillary Service Charges:</u>						
Gen. Station Reg & Frequency	1	x	0.21	=	\$ 0.21	
Gen. Station Spinning Reserve	1	x	0.11	=	\$ 0.11	
Gen. Station Supplemental Reserve	1	x	0.02	=	\$ 0.02	
Gen. Station Reactive Supply	1	x	0.09	=	\$ 0.09	
Transmission Line	1	x	1.66	=	\$ 1.66	
Transmission Substation	1	x	0.33	=	\$ 0.33	
					\$ 2.42	
		x	12 months		\$ 29	Ancillary Service Charges
Total Savings / kW of DEMAND					\$ 71	

Monthly Peak kW Demand is used in bill calculations by NPPD for the next 12 months.

<i>2007 Load Control</i>	Approximate			Approximate		
	kW			Savings		
(6 days for 6 hours total)						
196 AC Load Control	200					
(8 days for 53 hours total)						
13 Irrigation Wells	800					
Total Control	1000	x	\$ 10.39	=	\$ 10,390.00	
					x4(months)	
					\$ 41,560.00	Demand
					+	
	1000	x	\$ 2.42	x12	\$ 29,040.00	Ancillary
					x12(months)	&Substation
					=	
	Total Yearly Savings				\$ 70,600.00	

System Totals

Thu July 17 2008 - Sat July 19 2008



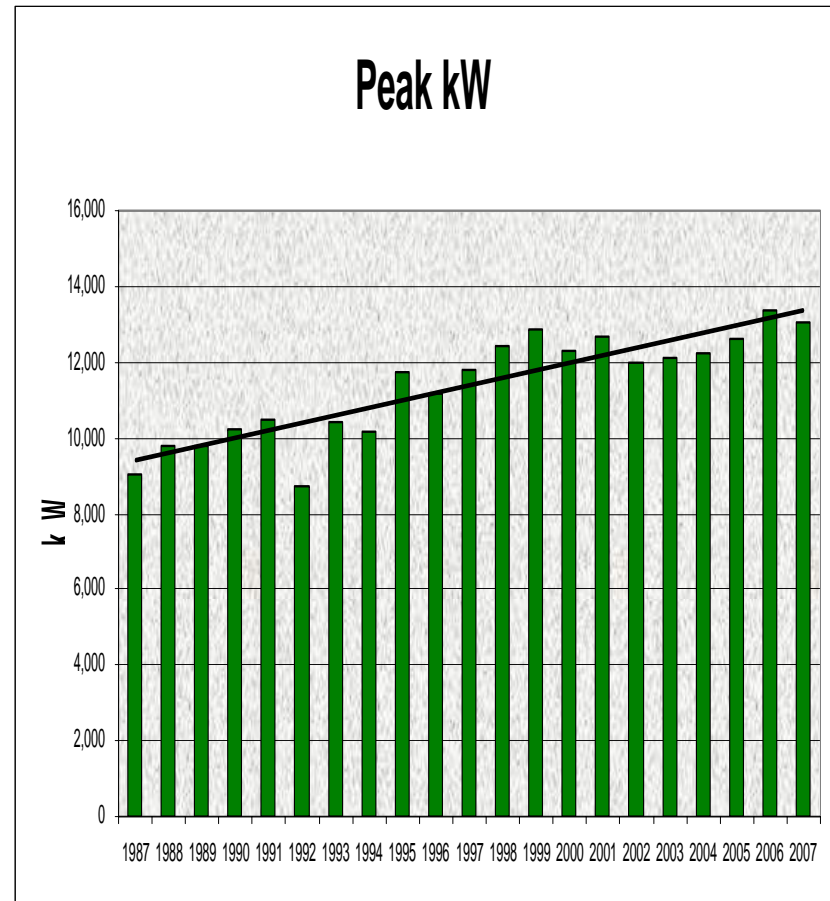
- ▲ kW / SUB NPP1 L
- ▲ kW / SUB NPP2 L
- ▲ kW-LP / SUB NPP1 L
- ▲ kW-LP / SUB NPP2 L

2007- Wahoo

*Air Conditioner customers were controlled 6 different days, with 5 hours of total control time.

*Irrigation customers were controlled 8 different days for a total of 53 hours of control time.

- As of August 4, there have been 3 hours of AC control in 2008.
- Wahoo's load control program is designed to help keep customers electric utility costs down.



Vendor Background

- Wahoo's load control vendor serves nearly 400 electric utilities across North America. It's systems are used by many of the country's largest utilities to manage peak load, improve system power factor and improve substation reliability. They have systems at utilities of all sizes and have a staff of seasoned professionals who are expert in the field of power systems, metering and energy management.

Sample Cannon Customers

- Pacific Gas & Electric (CA)
- Alabama Power (AL)
- Dakota Electric (MN)
- WE Energies (WI)
- Indianapolis P&L (IN)
- Xcel Energy (MN, CO, TX)
- Progress Energy (NC)
- Idaho Power (ID)
- HECO (HI)
- City of Shakopee (MN)
- Alliant Energy (IA, WI)
- Toronto Hydro (Ont)
- Norris PPD (NE)
- 13 PPDs in Nebraska
- BG&E (MD)
- HydroOne (Ont)
- Nevada Power (NV)
- Consumers Energy (MI)
- Wabash Valley Power (IN)
- Com Ed (IL)
- LG&E (KY)
- San Antonio CPS (TX)
- Duke (NC, OH, IN & KY)
- Alabama Power (AL)
- Enersource (Ont)
- MidAmerican Energy (IA)
- Butler County PPD (NE)

Wahoo City Ordinance

- **AIR CONDITIONERS**
- **§ 52.60 PERMIT REQUIRED.**
- (A) No person shall install an air conditioner within the city or its environs where supplied with electric current from the city electric system without first having procured a permit therefore from the Building Inspector, or to use such air conditioner during the period that a permit may be revoked.
- (B) The person making an application for and procuring a permit shall thereby consent that the Board of Public Works or its designated agent may check and inspect any air conditioner and its electric connections installed under such permit at any reasonable time without request of the permit holder or previous notice to such permit holder.
- ('72 Code, § 3-9 17) (Am. Ord. 1340, passed 4-19-90; Am. Ord. 1493, passed 4-13-95;
- Am. Ord. 1815, passed 10-24-02) Penalty, see § 10.99

Wahoo City Ordinance

- **§ 52.62 INSTALLATION REQUIREMENTS.**
- No unit of three-fourths horsepower or larger may be installed on less than 240 volts service.
- No air conditioner with a motor exceeding three horsepower actual rating shall be connected to a single phase service unless a special permit is granted by Utility Board or its Agent.
- Any user requiring three phase power for an air conditioner shall be subject
- at all times to any and all regulations of the city applicable to other three phase electric power users.
- All central air conditioners installed after April 15, 1990 must have a load
- control device approved by the Utility connected and operating. The load control device must not be disconnected there from without prior permission of the Utility.

- ('72 Code, § 3-919) (Am. Ord. 1340, passed 4-19-90) Penalty, see § 10.99