Using a "User's Group" to Save Electric Dollars

Frank J. Richards, PE, CEP
The Richards Energy Group

ABSTRACT

Group purchasing has become a widely used method for various and sundry groups to save money in many areas. This presentation will describe the development of an electric users' group, its uniqueness from other types of groups, savings members of the group have achieved, problems encountered along the way, opportunities seized and prospects for the future.

REAP (Richards' Energy Affinity Program) is an electric users' group made up of diverse industrial, commercial and institutional electricity consumers in Pennsylvania. The group currently has over 60 members consuming 180 million kWh/year, with electric bills totaling approximately $12 million/year. When Pennsylvania began allowing electric shopping in January, 1999, REAP already had contracts in place with a supplier, so savings for the group began immediately. Overall, REAP members have been able to save 3% to 32% annually. The large spread is due to different rate structures, different economic credits, and different load patterns.

DEREGULATION

Deregulation of electricity in Pennsylvania has provided a real alternative to end users who are willing to shop for electricity instead of taking total supply from the utility. Unlike some other states, actual savings for end users has been attainable since January, 1999, by

purchasing the commodity from any supplier licensed by the Pennsylvania Public Utility Commission. The savings are based on a comparison of the supplier's price for generation and transmission with the "price to compare" or "shopping credit," determined by individual calculations for each billing period.

STAKEHOLDER ACRONYMS

Deregulation of electricity has developed a new industry with its own set of acronyms, which will be used throughout this article. Following is a list defining many of them with descriptions.

EDC… Electric Distribution Company. This is the regulated part of the electric utility. Charges from this part of the utility remain in the utility bill even after deregulation is fully implemented.

EGS… Electric Generation Supplier. These are the deregulated suppliers of electricity as a commodity. Many of these are newly created subsidiaries of the old electric utilities.

PUC… Public Utility Commission. This is what Pennsylvania calls its government oversight agency for both regulated utilities and deregulation activities.

End User. No acronym here… this is the ultimate consumer who has to pay the electric bill, whether it's deregulated or not.

REAP… Richards' Energy Affinity Program. This is the electric users' group formed by Richards' Energy Group to bind many end users into one market force.

AGGREGATION VS AFFINITY

The users' group developed by REG is called REAP, or Richards' Energy Affinity Program. This acronym would be more descriptive if "Affinity" were "Aggregation." However, Pennsylvania's laws define aggregators as those who purchase energy for a group, then redistribute it to the group. Since REAP does not take title to the power, it cannot be called an aggregator, by Pennsylvania's definition.

DOES BUYING AS A GROUP MAKE SENSE?

Buying groups are fairly common for many business applications, from trade organizations who buy large quantities of paper towels to a local Chambers of Commerce which offers a health benefits plan to its members. So the concept of banding together to purchase electricity would seem to make sense. My initial idea, however, was to band together a group of industrial, commercial and institutional electric consumers in an electric utility in central eastern Pennsylvania, for the purpose of NOT shopping for electricity.

The idea was to approach the utility, requesting that they provide favorable long-term contracts for our group to keep us from participating with anyone else in deregulation. A major advantage of this plan was immediate implementation—deregulation was not to occur in Pennsylvania for another 2 years… entering into "nonshopping" contracts would start savings immediately, and would eliminate the uncertainty of whether and how much savings might occur with deregulation.

However, as happens with some ideas, this one was not to come to fruition. The utility ultimately decided not to honor our group's offer, but rather to solicit each end user to eventually take deregulated service individually from their newly emerging deregulated subsidiary. As a result, the loose knit group dispersed.

FORMATION OF REAP

The failure of this group served a very useful purpose… it showed REG how considerable market clout could be developed by a group… but it needed to be a "strong" group with a well-defined structure… one that could survive the ups and downs of moving forward in an emerging, volatile market.

What ultimately developed was an electric users' group that could bargain as one unit for electric power to achieve pricing better than each could achieve individually. The vision was that putting together diverse loads that would "sink or swim" together would improve the competitive advantage we would have when shopping.

BASIS FOR INITIAL TARGET GROUP

Our initial target group was mid-size industrials, and large commercial/institutional loads. Very large industrials were omitted, since these usually have substantial bargaining power on their own. The thinking was that diverse loads would actually improve the load profile we provided to suppliers, for two reasons… improved overall load factor and reduced overall peak demand.

IMPROVED LOAD FACTOR

An electric user's load factor is defined by how much of the time this user is consuming electricity at peak levels… the more time he is at or near his peak, the higher his load factor. As a simple example, if a user is at 1000 kW for 8 hours a day and at 0 kW for the remaining 16 hours, his load factor will be

$$\frac{1000\,\text{kW} \times 8\,\text{hrs} \times 100\%}{1000\,\text{kW} \times 24\,\text{hrs}} = 33\%$$

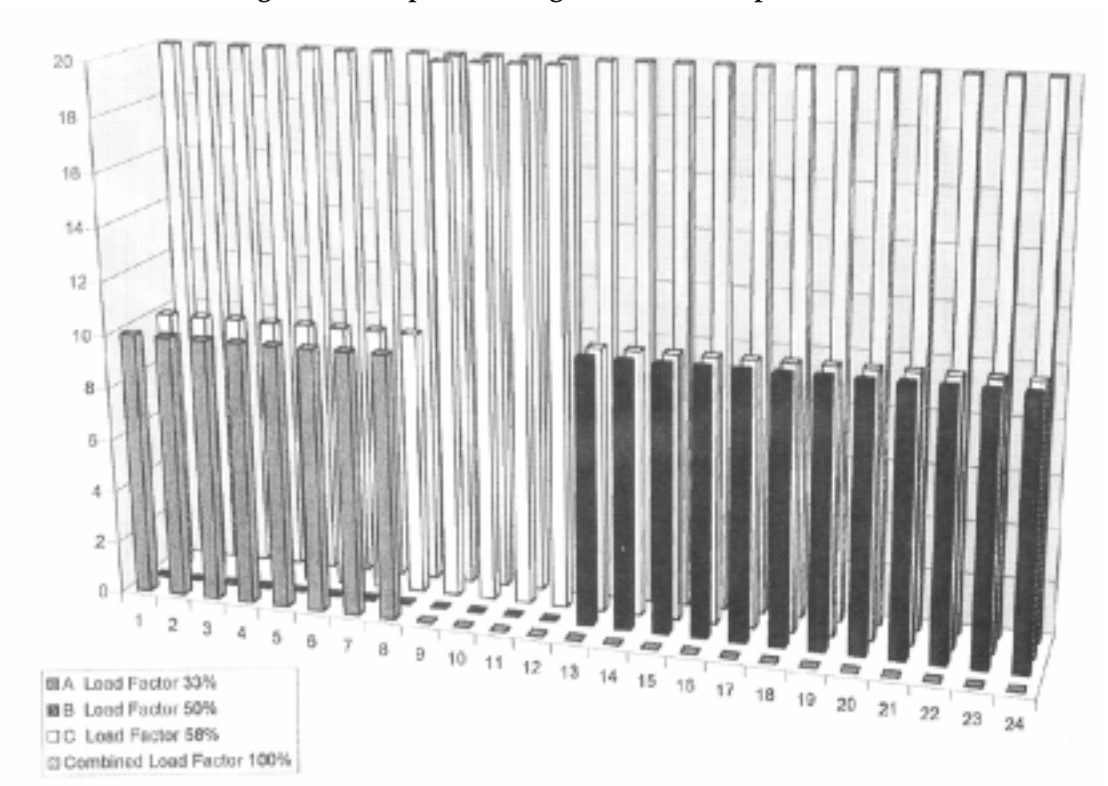
This is shown graphically in Figure 1. If the group is diverse, the combined load factor of the group will be greater than the individual load factors. As illustrated on the graph, the individual load factors are 33%, 60% and 58%, but the combined load factor is 100%. This example was designed to illustrate the point, and of course is somewhat unrealistic.

However, the graph in Figure 2 shows actual data for 7 users on a specific Monday, either in the spring or fall. This same data is represented in chart form in Figure 3. The daily load factor for each user ranges from 83% to 90%, while the combined load factor for the group is 90%. Therefore, by "aggregating" these 7 loads, the overall load factor either increases or at worst stays the same. This means that careful selection of group members can help the whole group's load factor.

LOAD FACTOR SAVINGS

Although commodity charges vary dramatically, my discussions with several suppliers have yielded some general guidelines that should prove accurate on a relative basis, as follows:

Figure 1. Sample showing load factor improvement.



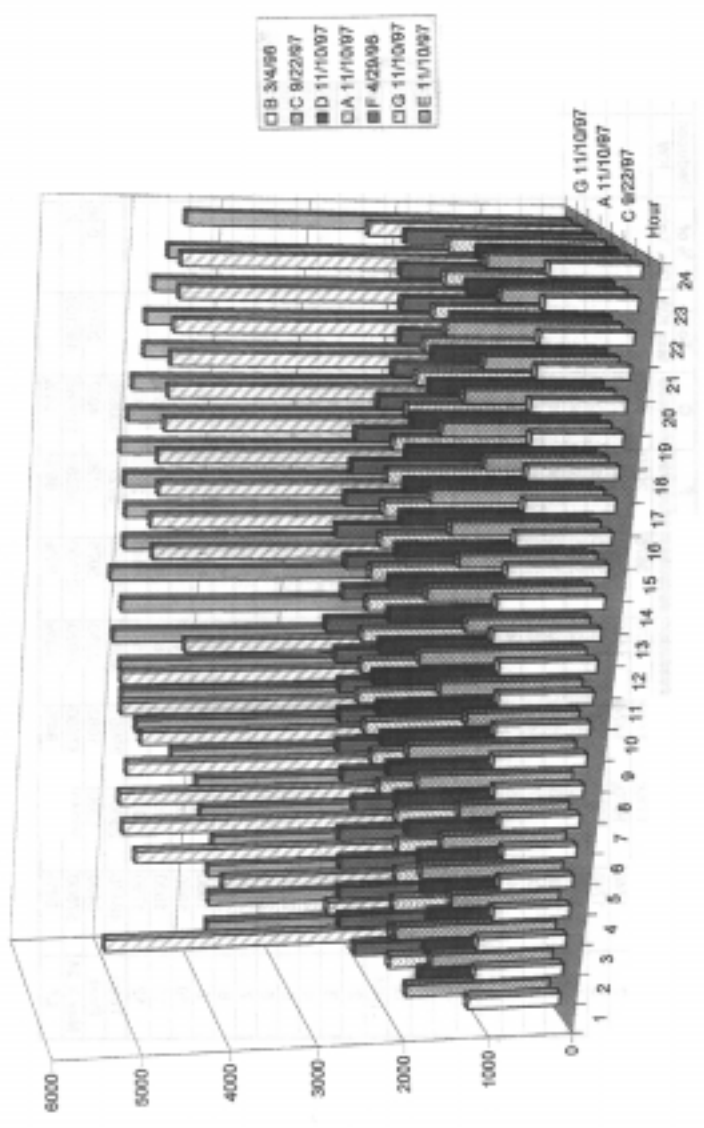


Figure 2. REAP 24 hour data for 7 end user example.

Figure 3. REAP 24 hour data for 7 end user example.

Hour	A	B	C	D	E	F	G	Total	% of	Reduced	Total
	########	########	########	########	########	########	########	Max KW	Div. Total	KW	
1	1730	1110	1740	1470	3675	2050	4987				16762
2	1740	1070	1474	1440	3675	2270	2318				13987
3	1745	1075	1927	1425	3710	2300	3613				15795
4	1745	920	1300	1525	3675	2320	4681				16166
5	1760	883	1695	1600	3850	2360	4849				16997
6	1800	877	1484	1785	3920	2210	4907				16983
7	2040	945	1308	1940	4240	2380	4846				17699
8	2160	1055	1838	2070	4680	2460	4697				18960
9	2270	1103	1983	2175	4870	2470	4946				19817
10	2380	1118	1332	2250	4900	2500	4966				19446
11	2380	1120	1674	2330	5005	2575	4248				19332
12	2400	1150	1949	2295	4930	2720	1429				16873
1PM	2370	1260	1448	2220	5075	2550	1307				16230
2	2360	1245	1928	2245	4940	2550	4686				19954
3	2280	1172	1595	2200	4940	2690	4725				19602
4	2275	1105	1723	2175	4970	2610	4658				19516
5	2260	1050	1985	2165	5040	2570	4688				19758
6	2220	1050	1414	2180	4970	2550	4632				19016
7	2100	1050	1929	2145	4940	2320	4610				19094
8	2020	1090	1710	1985	4830	2180	4605				18420
9	1960	1060	1524	1980	4830	2130	4585				18069
10	1890	1063	1977	1800	4760	2150	4551				18191
11	1800	1052	1414	1665	4620	2190	4556				17297
12	1790	1038	1603	1575	4445	2170	2479				15100
Total	49475	25661	39951	46640	109490	57275	100569				429061
Peak	2400	1260	1983	2330	5075	2720	4987	20755	0.96	801	19954
Max X 24	57600	30240	47580	55920	121800	65280	119688	498108	23	19222	478887
LF	**86%**	**85%**	**84%**	**83%**	**90%**	**88%**	**84%**				**90%**

Load Factor (%)	Commodity ¢/kWh
100	2.7
90	2.8
80	2.9
70	3.0
60	3.1
50	3.2

For one particular user with a load factor of 70%, and assuming the overall group load factor is 80%, the energy charge will be .1¢ kWh less in the group than alone. For this user's annual consumption of 19,200,000 kWh, this results in annual savings of $19,200. Keep in mind that if this user could not aggregate loads with others, this $19,200 savings would not exist.

CAPACITY REQUIREMENTS

When diverse loads are combined, the concept of "non-coincident" demand becomes important. Simply put, one user's peak is not likely to occur at the same time as another user's peak (or the peaks are non-coincident). This means that the peak demand with all users combined will be less than the sum of individual user's peak demands. Thus the electrical capacity which has to be purchased to meet the peak is lower for the group than it is for the sum of each individual.

This can be seen in the chart in Figure 3 with the actual 24 hour data for 7 users. Individual and group peaks for the day are shown boxed-in. The sum of the individual peaks is 20,755 kW, but the group peak is 19,954, for a peak reduction of 801 kW. Also notice that the time of the group peak occurs at a different time than any of the individual peaks.

CAPACITY REQUIREMENTS SAVINGS

Based on this, REAP's targeted 50,000 kW of individual loads would combine to about 48,000 kW diversified demand for the group, or a 2,000 kW reduction. Charges for capacity requirements are based on demand,

and amount to approximately $.005/kW on an hourly basis,

50,000kW × $.005/kWh capacity = $250/hr
48,000kW × $.005/kWh capacity = $240/hr
Savings $10/hr ×
8760 hr/year =
Annual Savings $87,600

The user in the example above has a demand of 3000 kW. Thus, this user's capacity savings would be proportionate to the savings for the whole 50,000 kW group, or 3,000/50,000 × $87,600 = $5,300/yr. Again as mentioned before, this $5,300 savings would not exist without aggregating this end user's loads with others in the group.

TOTAL SAVINGS

Totaling the savings above for this example, this end user would save approximately $24,500/year, or 2.2% of his annual billing just through aggregation with the group.

EARLY EXPERIENCE

REAP's actual experience found some suppliers who supported our load factor and capacity findings, some who understood, but did not have the level of sophistication available yet to deal with them, and some who just didn't understand at all. In addition, many of the accounts within the group do not have the advanced metering capability to get the hourly load data essential for this type of analysis.

However, after receiving pricing quotes from several suppliers, it was found that while the larger users with high load factors and availability of hourly load data were in fact getting better overall prices, the percentage savings for smaller accounts with poor load factors was up to 32%, while some larger users were saving as little as 3%.

This phenomenon has been attributed to several factors:

- The large users are already using their "large power" rate structure very efficiently, meaning the overall ¢/kWh are already low, which leaves little room for savings.

- The smaller users are on "general service" rates (which are higher than large power rates).
- The smaller users are using their rate structure very inefficiently, often not getting into the bottom step of the declining block rates. This means the ¢/kWh rates are high, with significant room for savings.
- Utility rate cases are sometimes proportioned away from rate classes which traditionally have a major presence in the proceedings (such as the Consumer Advocate for Residential, and lobbyists for large power consumers), and toward rate classes that aren't well-represented (such as general service). When the generation portion of these rates is deregulated, prices are based on what the suppliers think the actual cost is, so it's payback time for the general service rate payer.

FUTURE DIRECTION

As advanced metering data becomes more available and less expensive, smaller accounts will be able to justify its cost. When that happens, we will see additional benefits for smaller users by improving overall load factor and reducing coincident demand.

For now, REG emphasis is on growing the REAP group and continually searching out suppliers in this volatile market where many suppliers are dropping out.

WHAT IS REAP?

The Richards' Energy Group (REG) has built a strong electric users' group, named REAP, for various industrial and commercial businesses. It presently has over 60 members of varying sizes and types. REAP's membership spectrum ranges from manufacturers, hospitals and retirement communities, to car dealers, restaurants and shoe stores. This diverse group has one thing in common—savings on electric bills.

HOW REAP WORKS

Evaluation

The Richards' Energy Group (REG) evaluates an end users electric usage to determine projected savings, and whether they would benefit by joining REAP.

Membership

Based upon those projected savings, the company joins REAP and becomes one member in a block of members for which REG negotiates the best electric rates available. The annual membership fee for each member is based on total annual electric consumption.

Shopping

REG acquires and assembles detailed load and billing data for each member, then collates the data to benefit each member. REG solicits suppliers and evaluates their qualifications, requests proposals from qualified suppliers, then selects the best for the group. After contract terms are negotiated and approved by REG, contracts are executed between the supplier and REAP member.

Follow-up

Once contracts are in place, REG selectively audits members' electric bills to ensure that contract terms are being met. REG keeps all members informed of various deregulation issues and developments. There is an annual meeting of all REAP members.

WHY REAP WORKS

Size

The REAP group is growing, with over 60 members who collectively consume more than 180 million kWh of electricity each year, and save over $700,000 each year on their electric bills.

Strong Group

Each member of the group gives REG the exclusive right to solicit, evaluate, negotiate and maintain favorable pricing and terms from any and all electric suppliers. When REG presents a group of electric accounts to suppliers for bid, the suppliers know that they will win all the accounts if they are the successful bidder.

Data

Providing electric suppliers the maximum amount of load data in a consistent, professional format enables REG to obtain better rates for REAP members.

Qualified Professionals

All of the hassle and details involved in bidding, evaluating, negotiating the contracts and pricing are handled by REG. Since REG is working only for the users who have enrolled in REAP, you can have confidence that opportunities with electric deregulation are being managed for your benefit. You can then channel your energies toward your own area of expertise, for which your business is intended.

Focus and Independence

REAP members commit to shop with the group. Our members aren't testing the waters to see if a good rate might float to the surface. REAP was formed for the sole purpose of banding together diverse types of electrical loads, to reduce electricity rates for all members. REG is paid by REAP members, and is not beholden to any electric supplier.

ABOUT THE AUTHOR

Frank J. Richards, P.E., established The Richards' Energy Group in Landisville, PA, in 1995, after 27 years' experience with PA Power & Light and Eastman Kodak. His firm concentrates on reducing electric and gas utility bills for clients through rate options, audits and common sense. To maximize the savings from electric deregulation in Pennsylvania, his firm has successfully developed a strong industrial/commercial users' group—wielding an electric load of 44,000 kW ($12 million annual electric billing).

Beyond his BSEE from Lehigh University, Frank is a licensed PE in PA and HI, is a Certified Energy Procurement Professional, and holds memberships in NSPE, IEEE and AEE. His firm is now a licensed Electric Supplier in PA.

The Richards' Energy Group, 1325 Crown Vetch Drive, Landisville, PA 17538; phone: (717) 898-6330; fax: (717) 898-6331; e-mail: frichards@richardsenergy.com; website: www.richardsenergy.com