

ORIGINAL Columbus Electric Coopera
P.O. BOX 631 • 900 NORTH GOLD • DEMING, NEW MEXICO 886



RECEIVED

2013 JUN 10 A 10:21

CORP COMMISSION
DOCKET CONTROL

June 4, 2013

Docket Control Center
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

Arizona Corporation Commission
DOCKETED
JUN 10 2013

DOCKETED BY *ZM*

RE: Docket No. E-01851A-09-0305

To Whom It May Concern:

Enclosed for filing is an original and thirteen (13) copies of the Energy Management and Conservation Plan for Columbus Electric Cooperative, Inc., as filed with the New Mexico Public Regulation Commission in compliance with the above referenced Docket Number. A copy has also been sent under separate cover to the Compliance Section of the Arizona Corporation Commission.

Should you have any questions or require further information please do not hesitate to contact our office.

Sincerely,

Rachel Marrufo
Office Manager

RECEIVED

2013 JUN 10 A 10: 21

Docket No. E-01851A-09-0305

NEW MEXICO
PUBLIC UTILITIES
COMMISSION
DOCKET CONTROL

ENERGY MANAGEMENT AND CONSERVATION PLAN

Columbus Electric Cooperative, Inc.

April 2013

17.7.2.16NMAC Compliance Filing

Box 631
Deming, New Mexico 88030
Telephone 575-546-8838

I. Table of Contents

I.	Table of Contents.....	2
II.	Executive Summary.....	3
II.	N.M.A.C. 17.7.2.16.....	4
III.	Retail Class Discussion.....	5
IV.	Seasonal Peak Demands.....	6-7
V.	Load Shape Objectives.....	8-10
VI.	2013 Residential Customer Survey.....	11-14
VI.	Technology Matrix.....	15
VII.	Energy Management and Conservation Plan Strategies.....	19
VII.	2012-2013 Energy Management and Marketing Programs.....	17-20
VII.	2012 Program Cost and Savings.....	21
VIII.	Action Plan.....	22
IX.	Review.....	23

II. Executive Summary

This purpose of this report is to comply with 17.7.2.16 NMAC. This rule requires Cooperatives to assist consumers in reducing energy consumption or peak demand. Based on these studies the Cooperative shall implement cost effective energy efficiency and load management programs that are economical and feasible for members and consumers.

Columbus Electric (CEC) purchases its power from Tri-State Generation and Transmission Association, Inc. (Tri-State) under a long-term wholesale power contract. The power bill consists of two rate components, an energy rate and a demand rate.

In order to plan effectively we must understand two things.

1. Our electric system load characteristics. What do our load shapes look like? What is our Load factor? Understanding the current load shapes helps to determine if they can be improved.
2. Understanding the consumer is the foundation of an effective program. This understanding allows the Cooperative to offer the highest level of services while ensuring financial integrity. To be effective in today's environment, we must respond to our member's desire for energy that is safe and convenient at the least cost.

The retail class discussion contained in this report is provided as a base from which the impact of new or modified DSM or conservations programs can be evaluated.

THE GOAL

Is to provide current and future members with appropriate, cost effective technologies, products and services designed to maintain or enhance quality of life in an energy efficient cost effective manner.

17.7.2.16 NMAC RURAL ELECTRIC COOPERATIVES:

- A.** Distribution cooperative utilities shall within 24 months after the effective date of this rule and every 24 months thereafter, examine the potential to assist their customers in reducing energy consumption or peak electricity demand in a cost-effective manner. Based on these studies, distribution cooperative utilities shall implement cost-effective energy efficiency and load management programs that are economically feasible and practical for their members and customers. Approval for such programs shall reside with the governing body of each distribution cooperative utility and not with the commission.
- B.** Each distribution cooperative utility shall file with the commission concurrently with its annual report, filed by May 1st, a report that describes the cooperative's examination of efficiency potential described in Subsection A of 17.7.2.16 NMAC as well as all of the distribution cooperative utility's programs or measures that promote energy efficiency, conservation or load management. The report shall set forth the costs of each of the programs or measures for the previous calendar year and the resulting effect on the consumption of electricity. In offering or implementing energy efficiency, conservation or load management programs, a distribution cooperative utility shall attempt to minimize any cross-subsidies between customer classes.
- C.** Each distribution cooperative utility shall include in the report required by Subsection B of 17.7.2.16 NMAC a description of all programs or measures to promote energy efficiency, conservation or load management that are planned and the anticipated date for implementation.
- D.** Costs resulting from programs or measures to promote energy efficiency, conservation or load management may be recovered by the distribution cooperative utility through its general rates. In requesting approval to recover such costs in general rates, the distribution cooperative utility may elect to use the procedure set forth in NMSA 1978, Section 62-8-7(G).
- E.** The commission may develop a form which the cooperatives shall use to comply with this section.

[17.7.2.16 NMAC - N, 3-1-07]

III. Retail Class Discussion

This section contains a brief discussion of each of the retail classes being served by the Cooperative. The RUS Form 7 is the primary source for all data pertaining to accounts, use per account, energy and the average price of electricity.

Residential

The residential class is primarily composed of rural residential housing and includes stock well service accounts. In 2012 the residential class made up 75% of the total retail accounts and was responsible for approximately 25.8% of the total retail sales. Historically residential account have increased at an average annual growth rate of 2.2% over the last fifteen-year period.

Irrigation

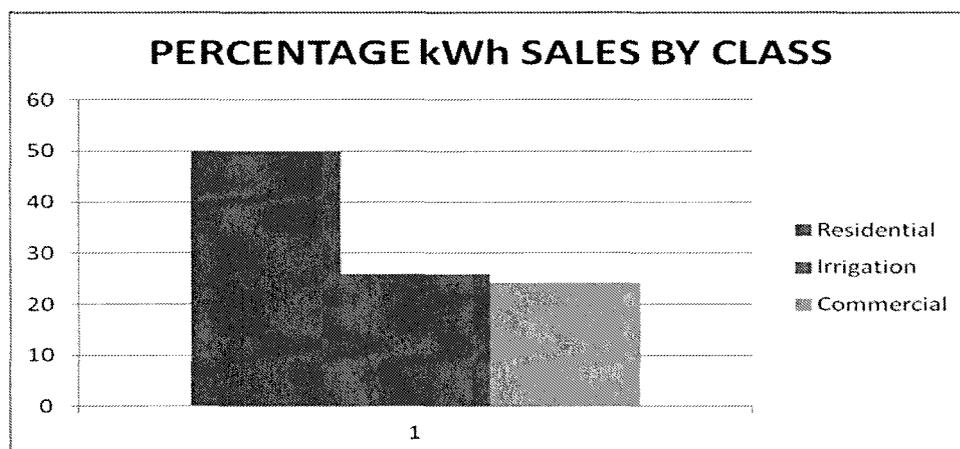
In 2010, the irrigation class made up 6% of the total retail accounts and was responsible for approximately 49.8% of the total retail sales. Historically irrigation accounts have increased at an average growth rate of .40% over the last fifteen-year period.

Small Commercial

The small commercial class is composed of retail and commercial accounts with load less than 350kw in magnitude. In 2010, the small commercial class made up approximately 18.4% of the total retail accounts and was responsible for 24.2% of the total sales. Historically small commercial user per account has increased at an average annual growth rate of 0.9% over the last fifteen year period.

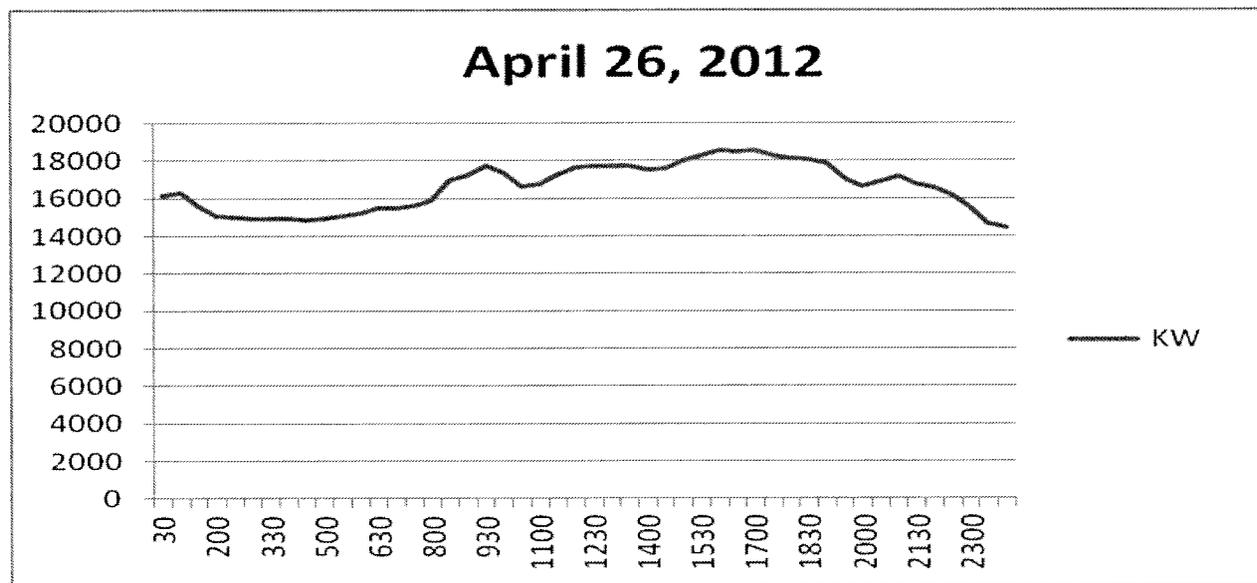
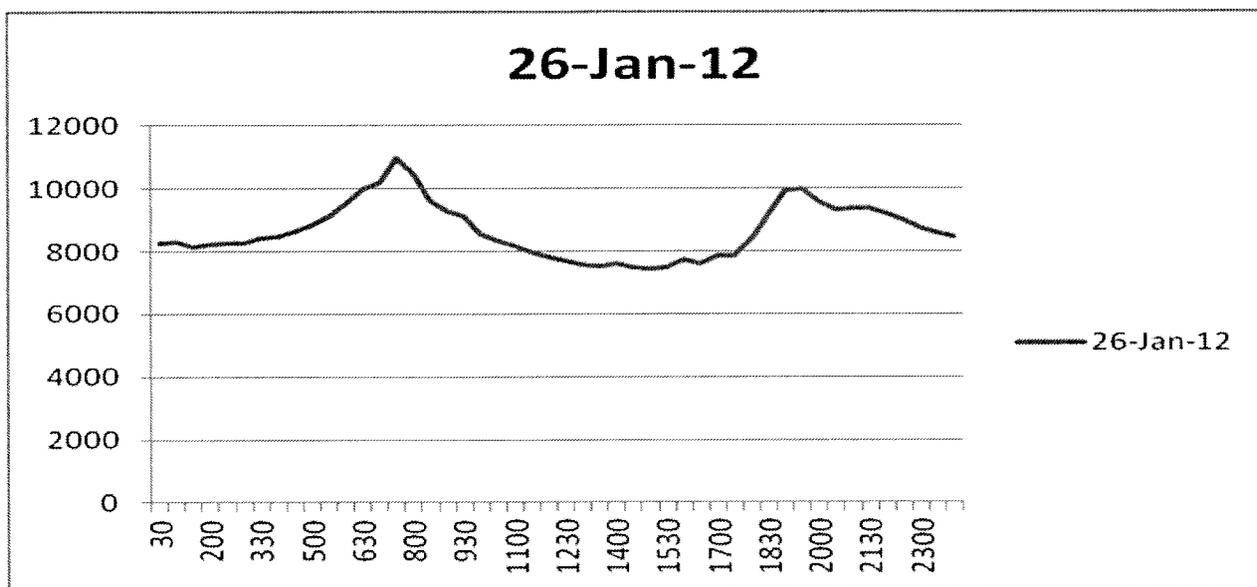
Purchased Energy

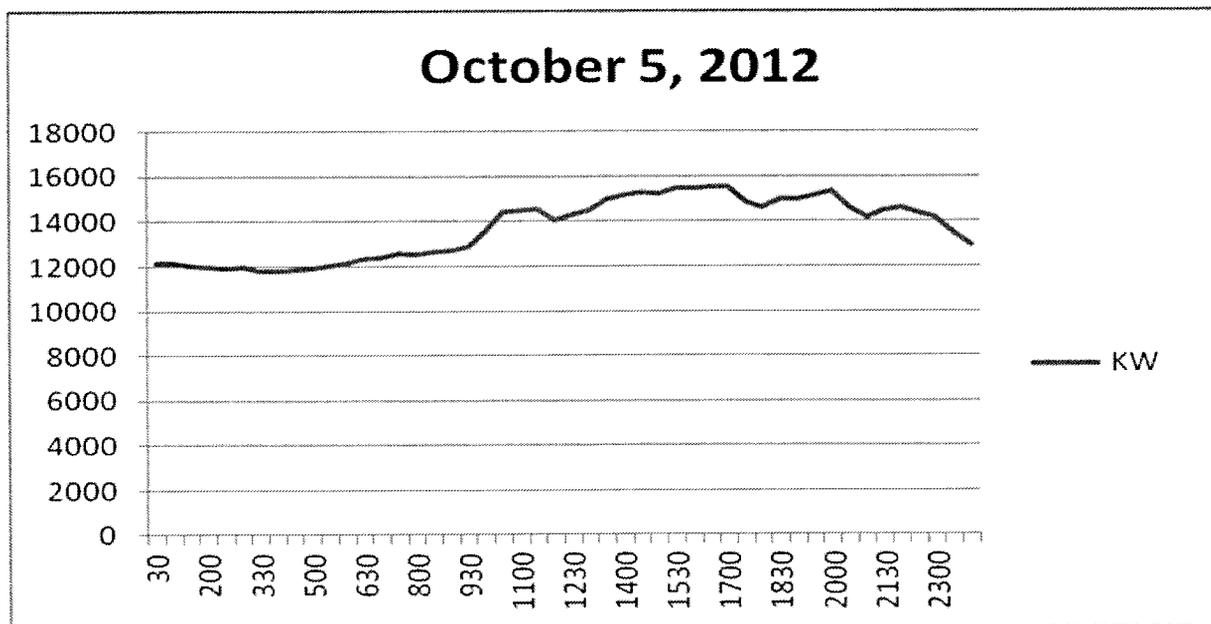
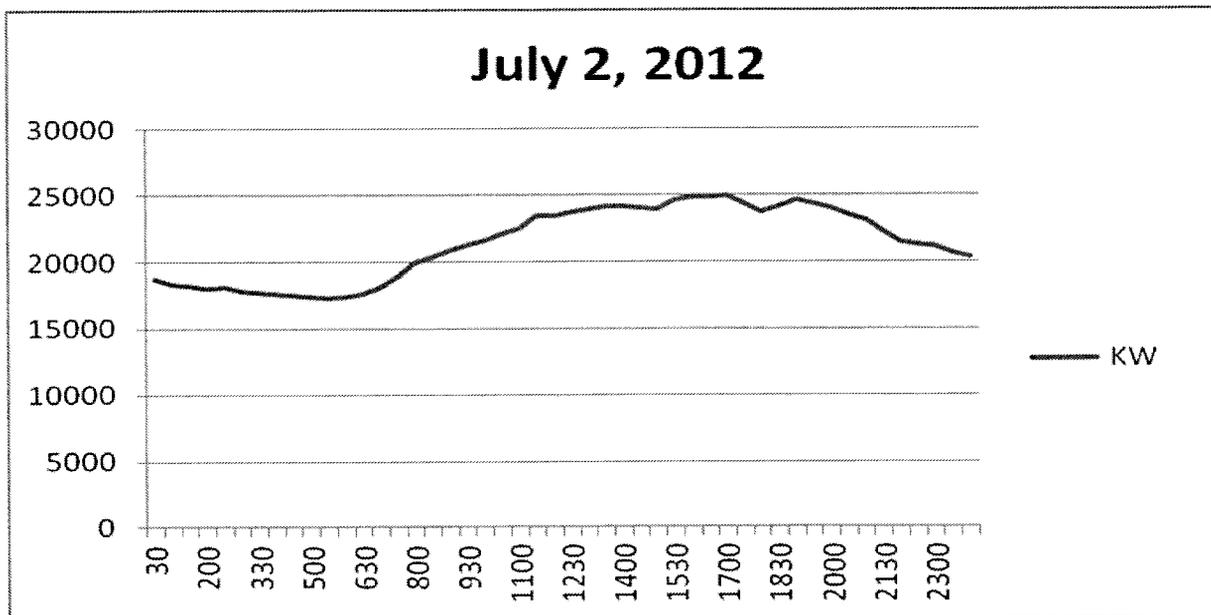
Purchased energy is composed of total retail sales and distribution system losses. Based on projection of total retail sales and distribution system losses, purchased energy is predicted to increase at an average annual growth rate of .7% over the next twenty years.



IV. Seasonal Peak Demands

Based on historical load shapes, the summer and winter system peak demands are projected to increase at average annual grow rates of 0.70% and 0.88% respectively over the next twenty years. The X axis in the following graphs is based on 30 minute integrated demand data.





V. Load Shape Objectives

An objective is a quantifiable measure of operation that a utility hopes to achieve. The desire load shape for a utility would be a flat line. The difference between our seasonal load shapes and a flat line determines our load shape objective. The industry defines five load shape objectives:

1. **Peak Clipping** or reduction of load during peak periods
2. **Valley Filling** or building load during off-peak periods is desirable when the long run incremental cost is less than the average price of electricity. Adding properly priced off-peak load under those circumstances can decrease the average price.
3. **Load Shifting** accomplishes many of the goals of both peak clipping and valley filling, involves shifting load from on-peak to off-peak periods allowing the most efficient use of capacity.
4. **Strategic Conservation** involves a reduction in sales, often including a change in the pattern of use.
5. **Strategic Load Growth** is a targeted increase in sales. This would include programs that would encourage the efficient use of energy for future consumers of the Cooperative.

LOAD FACTOR (LF) is the ratio of average demand to peak or maximum demand occurring during a period of time (one month or 730 hours).

$$\text{Load Factor} = \frac{\text{kWh}}{\text{KW} \times 730^*} \quad (\text{monthly})$$

*Average number of hours per month

CEC Load Shape Objectives

Peak Clipping

The Cooperative monthly load factor rarely drops below 70%. This provides little opportunity for Peak Clipping as the duration of the peak periods would require controlling consumer equipment for extended durations of time. Members would be inconvenienced and soon lose interest in program participation.

In the mid 1990's Columbus offered interruptible rates to irrigation customers. During that time Plains Electric G. & T. was the Cooperatives' power supplier and they offered interruptible rates to members. That rate was market based, intended to pass through lower power cost and interrupt if necessary during periods when the market price exceed Plains firm power rate. One of the lessons learned during that period was that if the irrigation motors were interrupted, the technology on the member equipment did not allow auto restart. If we were to interrupt, the member would have to manually restart their motor. Having no remote notification program the member might not know his service had been interrupted. Those members preferred firm energy over lower price.

The residential and small commercial retail classes lack the numbers and controllable equipment to economically justify a utility operation load control system.

Valley Filling

Valley filling is building load during the off-peak period. Adding properly priced off-peak load under our circumstances can decrease the average wholesale price of power by increasing our monthly system load factors.

Renewable energy opportunities may exist in solar applications whereby the member may generate their on-peak energy and use CEC's off-peak energy. This would only be the case during the summer months. During other seasons it has the effect of decreasing system load factor. This is due in part to solar generation curves not matching the system energy use patterns in non-summer months.

Load Shifting

This objective accomplishes many of the goals of both peak clipping and valley filling. It involves shifting load from on-peak to off-peak periods, allowing the most efficient use of capacity.

CEC currently offers time-of-use rates for all customer classes. Most rates are designed to offer members a breakeven point at 70% on peak and 30% off peak consumption ratio. The on peak time is 6am-9pm and off peak is 9pm-6am mountain standard time.

Strategic Conservation

This objective involves a reduction the average user per member and may include a change in the pattern of use. We must consider what conservation actions would occur naturally and then evaluate the cost-effectiveness of program intended to accelerate or stimulate conservation actions.

Strategic Load Growth

The price of competing fuels may result in increases in sales, as well as the increase in the number of members served by the Cooperative. We must also consider greater electrification such as electric or hybrid vehicles. Programs must be developed that influence how energy is consumed by future members.

VI. Residential Customer Survey

Early 2013 CEC and Tri-State conducted a Residential End Use Survey. The two largest consumers of energy in a residence are space and water heating systems.

Heating and Cooling

The survey indicates that 16.4% of our customers heat their homes with electricity, 33.8% propane, 13.3% with natural gas, 14.5% provided no response and 22.0% heat with other forms of fuel. The data also indicates that a significant number of all the heating systems are over ten years old.

The replacement of these units provides an excellent opportunity for replacement with more efficient units.

Water Heating

Heating water systems are second only to space heating in terms of household energy consumption. Our survey indicates that 33.3 of the water heating systems are electric and 15.5% natural gas, 32.4 LP. In addition 25% of all residential water heaters are at least ten years old. Water heater life cycles are usually fifteen years.

Large Appliances

The majority of our members have refrigerators; in addition 51.2% have food freezers. Twenty-six percent of the refrigerators are over ten years old.

Residential Lighting

A large number of residential consumer are using either CFL or LED lighting in their homes.

TRI-STATE GENERATION & TRANSMISSION
2012 RESIDENTIAL END-USE SURVEY RESULTS

1

<< COLUMBUS ELECTRIC COOPERATIVE, INC. >>

1,711 Surveys Mailed 420 Surveys Returned 24.5% Weighted Response Rate

3. How many houses are on this electric meter? 4. How many houses are occupied?

7.9% 0	10.2% 0
84.5% 1	82.6% 1
2.9% 2	1.4% 2
1.0% 3 or more	1.2% 3 or more
0 % Invalid Response	0.5% Invalid Response
3.6% No Response	4.0% No Response

5. How would you describe this residence?

21.2% Town, village or suburb
5.5% Farm or ranch house only
5.5% Seasonal
43.3% Rural, non-farm
7.9% Farm or ranch house and operation
1.9% Other
1.7% Invalid Response
13.1% No Response

6. What type of house is this?

46.9% One-story, single family
3.6% Two or more story, single family
9.0% Mobile home (with wheels)
24.3% Manufactured home (no wheels)
0 % Townhouse/Condominium
0.2% Apartment
1.7% Other
1.2% Invalid Response
12.9% No Response

7. How old is this house?

6.2% Less than 5 years	1.0% Invalid Response
15.5% 5-9 years	13.3% No Response
23.3% 10-15 years	
16.4% 20-29 years	
22.4% 30+ years	
1.9% Don't know	

8. Do you own or rent this house?

78.6% Own	0 % Invalid Response
5.2% Rent	16.2% No Response

9. What is the approximate size of this house, including basement?

14.5% Less than 1,000 sq ft	0.5% Invalid Response
56.6% 1,000 - 2,500 sq ft	17.4% No Response
8.3% 2,500 - 3,500 sq ft	
2.4% More than 3,500 sq ft	

10. How many square feet are heated?

21.2% Less than 1,000 sq ft	0.5% Invalid Response
19.3% 1,000-1,499 sq ft	15.5% No Response
23.6% 1,500-1,999 sq ft	
13.3% 2,000-2,999 sq ft	
2.4% 3,000+ sq ft	
4.6% Don't know	

11. Do you have outdoor lights (other than porch lights)?

57.1% Yes	13.1% No Response
29.2% No	0 % Invalid Response

12. If yes, how many?

7.1% 1	70.2% No Response
10.0% 2	0 % Invalid Response
12.6% 3 or more	

TRI-STATE GENERATION & TRANSMISSION
2012 RESIDENTIAL END-USE SURVEY RESULTS
<< COLUMBUS ELECTRIC COOPERATIVE, INC. >>

13. Please indicate each kind of air conditioning system you have. (MARK ALL THAT APPLY)

5.5%	None	3.6%	No Response
39.3%	Evaporative cooler		
6.9%	Heat pump: air source		
28.8%	Central air conditioning		
13.3%	Window/wall AC		
1.0%	Heat pump: ground source		
1.7%	Other		

14. How old is your primary air conditioning unit?

22.9%	0-4 years	1.0%	Invalid Response
27.4%	5-9 years	20.5%	No Response
19.5%	10-19 years		
2.9%	20-29 years		
2.4%	30+ years		
3.6%	Don't know		

15. Approximately what size is your primary air conditioning unit?

24.8%	Less than 2 tons	0.2%	Invalid Response
8.6%	2-2.5 tons	30.5%	No Response
7.4%	3-3.5 tons		
4.3%	4-4.5 tons		
1.7%	5+ tons		
22.6%	Don't know		

16. Please indicate your primary heating system. (MARK ONLY ONE)

1.0%	Electric baseboard	33.8%	Propane
5.5%	Electric air to air heat pump	13.3%	Natural gas
0.5%	Electric ground source heat pump	10.5%	Wood
0.5%	Electric storage heat (ETS)	0.2%	Fuel Oil
0%	Electric hot water boiler	0%	Coal
7.1%	Electric forced air furnace	3.8%	Other
0.2%	Electric ceiling/cove	7.4%	Invalid Response
1.7%	Electric other (slab, etc.)	14.5%	No Response
16.4%	SUBTOTAL Electric		

17. Please indicate ALL heating systems installed in your residence and their approximate age.

	0-4 years	5-9 years	10-19 years	20-29 years	30+ years	
4.8%	Electric baseboard	1.4%	1.2%	1.4%	0.2%	0.5%
11.2%	Electric forced air furnace	1.9%	4.5%	2.1%	1.0%	1.7%
6.2%	Electric air to air heat pump	2.9%	2.6%	0.5%	0%	0.2%
1.9%	Electric ground source heat pump	1.2%	0.5%	0.2%	0%	0%
1.2%	Electric storage heat (ETS)	0.7%	0%	0.2%	0.2%	0%
1.0%	Electric ceiling/cove	0.7%	0%	0%	0%	0.2%
7.4%	Electric hot water boiler	3.6%	1.2%	1.7%	0.2%	0.7%
2.9%	Electric other (slab, etc)	1.7%	1.0%	0%	0%	0.2%
41.7%	Propane	8.3%	9.3%	14.0%	5.2%	4.8%
15.7%	Natural gas	3.3%	6.7%	3.3%	1.0%	1.4%
0.5%	Fuel oil	0.5%	0%	0%	0%	0%
21.2%	Wood	5.5%	3.6%	5.7%	4.0%	2.4%
1.0%	Coal	0.5%	0%	0.2%	0.2%	0%
7.9%	Other	3.6%	2.1%	1.4%	0.5%	0.2%
15.5%	No Response					

TRI-STATE GENERATION & TRANSMISSION
2012 RESIDENTIAL END-USE SURVEY RESULTS

<< COLUMBUS ELECTRIC COOPERATIVE, INC. >>

18. If ETS is used is your ETS a whole-house system or room unit?

4.5%	Whole-house	0 %	Invalid Response
3.3%	Room Unit	92.1%	No Response

19. If ETS is used, what is the total combined size of all ETS units in KW?

1.2%	Less than 4.0 KW	0 %	Invalid Response
0.2%	4.0-7.9 KW	91.4%	No Response
0.2%	8.0-11.9 KW		
0 %	12.0 KW or More		
6.9%	Don't know		

20. Is natural gas available to you?

19.8%	Yes	0 %	Invalid Response
62.9%	No	17.4%	No Response

21. If you are planning to replace or add to your heating system, what system would you choose?

70.7%	Not planning to replace	0.2%	Invalid Response
3.3%	Electric	16.2%	No Response
0 %	Fuel oil		
2.4%	Natural gas		
0 %	Coal		
3.1%	Propane		
2.9%	Wood		
1.2%	Other		

22. Why would you choose this system? (all that apply)

3.8%	Ease of replacement	88.3%	No Response
1.4%	Safety		
6.2%	Convenience/cleanliness		
0.5%	Maintenance/warranty		
0.7%	Repair costs		
6.2%	Fuel costs		

23. Please indicate each of these major appliances you have. (MARK ALL THAT APPLY)

35.2%	Electric range/oven	62.6%	Electronic video equipment
44.0%	Gas or LP range/oven	54.0%	Flat Screen Television
78.6%	Microwave oven	5.5%	Hot tub
42.1%	Dishwasher	3.8%	Swimming pool pump
76.0%	Washing machine	0 %	Tanning bed
56.9%	Electric clothes dryer	31.2%	Electric water pump
11.7%	Gas or LP clothes dryer	3.3%	Gas water pump
47.1%	Office equipment	1.2%	Water bed heater
62.4%	Computer		
15.5%	No Response		

24. How many CFLs and LEDs are used in your home?

16.9%	None	0.5%	Invalid Response
22.4%	1% - 25%	20.7%	No Response
12.4%	26% - 50%		
9.3%	51% - 75%		
12.1%	76% - 99%		
5.7%	100%		

TRI-STATE GENERATION & TRANSMISSION
 2012 RESIDENTIAL END-USE SURVEY RESULTS
 << COLUMBUS ELECTRIC COOPERATIVE, INC. >>

25a. Refrigerator Number and Age?

50.0%	One	16.0%	No Response
13.8%	Two or More		
24.8%	0-4 years		
32.6%	5-9 years		
20.5%	10-19 years		
4.8%	20-29 years		
1.7%	30+ years		

25b. Freezer (upright or chest type) Number and Age?

28.3%	One	48.8%	No Response
11.2%	Two or More		
13.8%	0-4 years		
17.4%	5-9 years		
15.0%	10-19 years		
2.4%	20-29 years		
1.0%	30+ years		

25c. Water Heater Number and Age?

50.5%	One	23.6%	No Response
5.5%	Two or More		
17.4%	0-4 years		
28.6%	5-9 years		
21.4%	10-19 years		
3.1%	20-29 years		
1.7%	30+ years		

26. What type is your primary water heater?

33.3%	Electric	1.4%	Invalid Response
15.5%	Natural gas	16.4%	No Response
32.4%	Propane		
1.0%	Other		

27. Is your water heater solar assisted?

1.4%	Yes	0 %	Invalid Response
78.3%	No	20.2%	No Response

28. What size is your water heater (gallons)?

6.4%	20 or less	1.0%	Invalid Response
19.5%	30-39	21.7%	No Response
24.3%	40-49		
18.6%	50		
1.9%	51-75		
0.2%	More than 75		
6.4%	Tankless		

TRI-STATE GENERATION & TRANSMISSION
2012 RESIDENTIAL END-USE SURVEY RESULTS

<< COLUMBUS ELECTRIC COOPERATIVE, INC. >>

29. Please indicate in the appropriate column what you have done in the last three years to improve the efficiency of energy consumption and what you plan to do in the next three years.

(MARK ALL THAT APPLY)	Done within last 3 years	Plan to do within next 3 years
Nothing.....	24.3%	9.5%
Add insulation	15.0%	2.6%
Caulk or weatherstrip windows or doors.....	28.6%	4.8%
Install more efficient windows or doors	11.4%	4.5%
Stop heating/cooling unused rooms.....	28.1%	2.9%
Turn down heating thermostat in winter	35.2%	3.8%
Turn up cooling thermostat in summer.....	25.2%	2.6%
Turn down water heater thermostat	20.2%	2.6%
Use appliances or lights less frequently.....	34.0%	4.8%
Install more energy efficient appliances	18.3%	4.8%
Install more efficient heating or A/C.....	9.8%	3.8%
Install more efficient water heater	10.5%	4.5%
Install water heater wrap insulation or pipe insulation..	18.3%	3.8%
Install low-flow showerhead or faucets, sink aerators, etc	20.2%	3.8%
Add solar heating features, such as greenhouse, water hter	1.2%	4.5%
Perform home energy audit	1.7%	2.1%
Install more efficient lighting (CFLs or LEDs).....	30.7%	6.1%
Install programmable thermostat	11.0%	2.1%
Install ceiling fans.....	25.7%	1.9%
Clean or replace furnace/ductwork filters	29.3%	4.3%
Seal leaks in ductwork.....	7.1%	2.1%
Use online service or purchase in-home display to track home electric use	0.7%	1.9%
18.6% No Response		

30. Have you done any of the following in past three years? (MARK ALL THAT APPLY)

17.9% Eat at restaurant offpeak for discount
19.0% Attend movies offpeak for discount
18.3% Offpeak phone discount plan
13.3% Stay at Resorts off-season for discount
53.8% None of these
8.8% No Response

31. Would you allow cooperative to cycle any of following during peak times for a discount? (MARK ALL THAT APPLY)

21.4% Yes, electric water heater
12.9% Yes, heating system
19.3% Yes, air conditioning
53.3% No
15.2% No Response

TRI-STATE GENERATION & TRANSMISSION
2012 RESIDENTIAL END-USE SURVEY RESULTS

<< COLUMBUS ELECTRIC COOPERATIVE, INC. >>

32. Please indicate the number of people living at your residence, by age group.

	1	2	3	4 or more
0- 5 yrs	2.9%	0.7%	0 %	0.5%
6-12 yrs	3.6%	0.2%	0 %	0 %
13-20 yrs	4.5%	1.7%	0 %	0.2%
21-30 yrs	3.1%	1.9%	0.5%	0 %
31-50 yrs	6.7%	9.8%	0 %	0.5%
51-65 yrs	17.9%	16.2%	0.5%	0.2%
Over 65 yrs	24.0%	27.4%	0.2%	0.2%
9.8% No Response				

33. How long have you received electric service from your rural electric system?

2.1%	Less than 1 year	1.2%	Invalid Response
16.2%	1-5 years	5.2%	No Response
21.2%	6-10 years		
16.2%	11-15 years		
10.0%	16-20 years		
10.0%	21-30 years		
17.9%	More than 30 years		

34. What type of occupation is the primary source of your household income? (only one)

8.1%	Blue Collar (Manufacturing, Construction, etc.)	4.8%	Invalid Response
4.8%	White Collar (Office, Retail, Sales, Etc.)	6.9%	No Response
56.9%	Retired		
8.6%	Farming or agriculture		
6.0%	Professional (advanced degree or training)		
4.0%	Unemployed or disabled		

35. What is the highest level of education the head of your household has completed? (only one)

5.5%	Less than high school	5.5%	Invalid Response
23.8%	High school graduate	7.9%	No Response
6.0%	Trade or technical school		
19.8%	Some college		
19.8%	College graduate		
11.9%	Graduate or professional school		

36. Please indicate your gross total household annual income from all sources.

29.5%	\$30,000 or less	1.4%	Invalid Response
18.3%	\$30,001-\$50,000	10.5%	No Response
11.4%	\$50,001-70,000		
6.0%	\$70,001-100,000		
4.0%	\$100,001-\$200,000		
1.0%	\$Over \$200,000		
0.5%	Don't know		
17.4%	Prefer not to respond		

CATEGORY	TECHNOLOGY ALTERNATIVES	LOAD SHAPE OBJECTIVES				
		PEAK CLIPPING	VALLEY FILLING	LOAD SHIFTING	STRATEGIC CONSERVATION	STRATEGIC LOAD GROWTH
BUILDING ENVELOPE OPTIONS	INSULATION (CEILING, WALL, FLOOR)				●	
	STORM/MULTIPANE WINDOWS AND STORM DOORS				●	
	WINDOW TREATMENTS				●	
	DUCT AND PIPE INSULATION				●	
	WATER HEATER BLANKET				●	
	INFILTRATION/EXFILTRATION CONTROL MEASURES				●	
	PASSIVE SOLAR DESIGN		●		●	
	DAYLIGHTING				●	
EFFICIENT EQUIPMENT AND APPLIANCE OPTIONS	AIR-SOURCE CENTRAL HEAT PUMP				●	●
	GROUNDWATER SOURCE HEAT PUMP				●	●
	GROUND-COUPLED HEAT PUMP				●	●
	ROOM HEAT PUMP				●	●
	DUAL-FUEL HEATING SYSTEMS	●	●			●
	ADD-ON HEAT PUMP	●	●			●
	ACTIVE SOLAR SPACE HEATING	●		●	●	
	TASK HEATING				●	●
	ZONED RESISTANCE HEATING				●	●
	WATER HEATING		●	●		●
	SOLAR DOMESTIC WATER HEATING	●		●	●	●
	HIGH-EFFICIENCY AIR CONDITIONER				●	
	ENERGY-EFFICIENT COOKING APPLIANCES				●	●
	ENERGY-EFFICIENT CLOTHES WASHERS AND DISHWASHERS				●	
	ENERGY-EFFICIENT REFRIGERATORS AND FREEZERS				●	●
EFFICIENT LIGHTING FIXTURES AND LAMPS				●		
RESIDENTIAL SECURITY LIGHTING					●	
THERMAL STORAGE EQUIPMENT	CERAMIC HEAT STORAGE		●	●		●
	SLAB HEATING		●	●		●
ENERGY AND DEMAND CONTROL EQUIPMENT OPTIONS	DOMESTIC WATER HEATING CYCLING CONTROL	●		●		
	AIR CONDITIONER CYCLING CONTROL	●		●		
	AUTOMATIC CONTROLS	●		●	●	
	LOAD MANAGEMENT THERMOSTATS	●		●	●	
	SWIMMING POOL PUMP CONTROL	●		●	●	

VII. Energy Management and Conservation Plan Strategies

The energy use patterns and loads of the three customer classes previously defined in this report make up the total energy requirements of the Cooperative. The residential and small commercial customer class, have a similar matrix for meeting our objectives. The irrigation customer class consists of motor load that is seasonal.

Rates establish value of and can provide incentive for the most efficient consumption of energy. Rebates or incentives are used to reduce the cash outlay or reduce the payback period to make an investment more attractive.

Rates

Time-of-Use Rates are available to residential, commercial and irrigation customer classes. These are variable rates with higher unit cost to the consumer for use during the Cooperatives peak periods and lower during the off-peak periods.

Demand Rates for customer with greater than a 50kva transformation requirement are based on the maximum kilowatt usage of a customer, thus providing an incentive for customers to improve their load factor.

Agricultural Service Rate is available to consumers who are engaged in agricultural activities related to the production of food and/or fiber. This rate has a minimum monthly load factor requirement of 30%. It is designed to provide an incentive for members to improve their load factor.

2010-2011 MARKETING PROGRAM

2012 MARKETING PROGRAMS	2013 MARKETING PROGRAMS	PROPOSED CHANGES
<p>Electric Space Heating</p> <p>Heat Pump –</p> <p>\$125/Ton Central Air Source w/Electric Resistance Back Up</p> <p>\$150/Ton Central Air Source with non-Electric Back-up</p> <p>\$150/Ton Central Ground or Water Source</p> <p>\$85/Ton for Terminal Units</p> <p>\$150/Unit additional for Energy Star Rating (minimum 3 Ton)</p>	<p>Electric Space Heating</p> <p>Heat Pump –</p> <p>\$125/Ton Central Air Source w/Electric Resistance Back Up</p> <p>\$150/Ton Central Air Source with non-Electric Back-up</p> <p>\$150/Ton Central Ground or Water Source</p> <p>\$85/Ton for Terminal Units</p> <p>\$150/Unit additional for Energy Star Rating (minimum 3 Ton)</p>	<p>No Proposed Changes</p> <p>All rebate monies come from Tri-State G & T</p> <p>Central – Air Source Equal or higher than 8.2 HSPF/ 14 SEER/ and 11.5 EER* for split systems Equal or higher than 8.0 HSPF/ 14 SEER/ and 11 EER* for single package equipment</p> <p>Central – Ground Water Source Equal or higher than 3.6 COP and 16.2 EER</p> <p>Central – Ground Source Closed-Loop Equal or higher than 3.3 COP and 14.1 EER</p> <p>Central – Water Source No Energy Star rating at this time</p>

<p>Air Conditioners</p> <p>Energy Star air-conditioners</p> <p>\$150/unit rebate</p>	<p>Air Conditioners</p> <p>Energy Star air-conditioners</p> <p>\$150/unit rebate</p>	<p>No Proposed Changes</p> <p>All rebate monies come from TSGT</p> <p>Energy Star Rating – The following Energy Star rating criteria shall be used to qualify split system air-conditioners for an efficiency incentive. A complete list of qualified equipment is available at www.energystar.gov (Products - >heating and cooling).</p> <p>Central – Air Source 3 ton or larger Equal or higher than 14 SEER and 11.5 EER* for split systems</p>
<p>Electric Motors Premium Efficiency</p> <p>Motors up to 200 HP</p> <p>\$12/HP from Tri-State</p> <p>\$ 2/HP from CEC</p> <p>Motors 201HP to 500HP</p> <p>\$ 8/HP from Tri-State</p> <p>\$ 2/HP from CEC</p> <p>Motors above 500HP</p> <p>\$ 8/HP Capped at \$8000 TSGT</p> <p>\$ 2/HP Capped at \$1000 CEC</p>	<p>Electric Motors Premium Efficiency</p> <p>Motors up to 200 HP</p> <p>\$12/HP from Tri-State</p> <p>\$ 2/HP from CEC</p> <p>Motors 201HP to 500HP</p> <p>\$ 8/HP from Tri-State</p> <p>\$ 2/HP from CEC</p> <p>Motors above 500HP</p> <p>\$ 8/HP Capped at \$8000 TSGT</p> <p>\$ 2/HP Capped at \$1000 CEC</p>	<p>No Proposed Changes</p> <p>Efficiency ratings for general purpose motors conform to NEMA Publication MG 1, revised in 2003. The minimum standards for energy efficient motors are located in the appendices in Table 12-11 and the minimum standards for premium efficiency electric motors are printed in Tables 12-12 and 12-13. The minimum standards for premium efficiency special purpose motors, i.e. vertical hollow shaft and submersible, are printed in the Special Purpose Motor Table.</p>

<p>Motor Wiring Credit</p> <p>\$ 1.50/HP for new motor installations capped at \$1500 TSGT</p>	<p>Motor Wiring Credit</p> <p>\$ 1.50/HP for new motor installations capped at \$1500 TSGT</p>	
<p>Appliances</p> <p>Refrigerator - \$40</p> <p>Freezer - \$40</p> <p>Clothes Washer \$40</p> <p>Dish Washer \$30</p>	<p>Appliances</p> <p>Refrigerator - \$40</p> <p>Freezer - \$40</p> <p>Clothes Washer \$40</p> <p>Dish Washer \$30</p>	<p>No Proposed Changes</p> <p>All Rebate monies come from TSGT</p> <p>Energy Star Rating – Equipment shall be listed as Energy Star rated. A complete list of qualified equipment is available at www.energystar.gov , specifically http://www.energystar.gov/index.cfm?fuseaction=refrig.display_products_excel</p>
	<p><u>VARIABLE SPEED DRIVE RETROFIT</u></p> <ul style="list-style-type: none"> • The lesser of 50% of the cost of the VSD unit or • Motor Nameplate hp Incentive • Less than 25 no incentive • 25 \$1,600 • 30 \$1,750 • 40 \$2,050 • 50 \$2,350 • 60 \$2,650 • 75 \$3,100 • 100 \$3,800 • 125 \$4,600 • 150 \$5,300 • 200 \$6,800 • 250 \$6,800 • Larger than 250 \$6,800 <p>Program Capped at \$20,000 per year</p>	

<p>Water Heaters</p> <p>40 gallon – free</p> <p>\$50/TSGT</p> <p>\$221/CEC</p> <p>50 gallon – free</p> <p>\$50/TSGT</p> <p>\$235/CEC</p> <p>6 year replacement time limit</p> <p>Results from 2010</p> <p>Electric to Electric = 72</p> <p>Gas to Electric = 60</p> <p>New Construction = 13</p> <p>Program Cost = \$32,625</p> <p>New Annual Revenue = \$5949</p> <p>ROI = 5.48 years not including delivery and inspection</p> <p>Eligibility 6 years replacement</p>	<p>Water Heaters</p> <p>40 gallon</p> <p>\$50/TSGT</p> <p>\$197.80/CEC</p> <p>\$50/Consumer</p> <p>50 gallon</p> <p>\$50/TSGT</p> <p>\$203.19/CEC</p> <p>\$60/Consumer</p> <p>8 year replacement time limit</p>	<p>Proposed Changes</p> <p>Add two years to replacement time limit</p> <p>Requiring \$50-\$60 Contribution From Cooperative members reduces payback approximately 7 months for new load.</p> <p>2009 Pricing</p> <p>40 Gal = \$224.47</p> <p>ROI = 25.21 months</p> <p>50 Gal = \$232.34</p> <p>ROI = 26.34 months</p> <p>2010 Pricing</p> <p>40 Gal = \$271.00</p> <p>ROI =31.94</p> <p>50 Gal = \$285.00</p> <p>ROI =33.96 Months</p> <p>2011 Pricing</p> <p>40 Gal = \$297.80</p> <p>ROI=35.81 months</p> <p>50 Gal = \$313.19</p> <p>ROI=38.03 months</p>

RUS Energy Efficiency Worksheet Columbus Electric Cooperative, Inc."Part P" - 2012 Summary

B

1/22/2012

Operating Report Energy Efficiency Programs		Borrower:					
		Reporting Year		2012			
Line #	Classification	2012 Program Total			Summary Program Total		
		Number of Consumers* (a)	Amount Invested (b)	ESTIMATED MMBTU Saving (c)	Number of Consumers* (d)	Amount Invested (e)	ESTIMATED MMBTU Savings (f)
1.	Residential Sales (excluding seasonal)	79	\$20,625	66.2	138	\$41,100	159
2.	Residential Sales - Seasonal					\$0	-
3.	Irrigation Sales	2	\$3,100	20.0	5	\$7,988	55
4.	Commercial and Ind. 1000 kVa or Less		\$0	-		\$0	-
5.	Commercial and Ind. Over 1000 kVa					\$0	-
6.	Public Street & Highway Lighting		\$0	-		\$0	-
7.	Other Sales to Public Authorities					\$0	-
8.	Sales for Resale - RUS Borrowers					\$0	-
9.	Sales for Resale - Other					\$0	-
TOTAL:		81	\$23,725	86	143	\$49,088	213

VIII. Action Plan

This section covers specific activities in sales, promotion and delivery. Its goal is to maximize direct contact with members to: inform members about rates and rebates being offered and their benefits; influence the decision to participate in our program; increase the perceived value of service; inform customers of the eligibility requirements for program participation; increase the customer's knowledge of program products; and generally improve customer relations.

The Cooperative periodically surveys our members to determine their preferred method for receiving information about new projects or programs. The majority prefer direct mail and most of them read either our monthly newsletter or the Enchantment magazine. Our employees come into contact daily with members while reading meters, establishing new services or members paying bills in our office.

Our customer education programs include:

1. DIRECT CUSTOMER CONTACT – One-on-one communications between members and the Cooperative representatives will encourage greater customer acceptance. This method will provide the opportunity to obtain feedback from the member, providing the opportunity to identify and respond to concerns. It shall be the responsibility of department supervisors to provide an understanding of this program to employees under their supervision.
2. DIRECT MAIL – The Cooperative will promote the programs in both the Enchantment Magazine and the Columbus Currents, our monthly newsletter. To date this has been our most effective means of communication with members. Many of the programs offered in past have succeeded in part to due to the number of readers of these two publications.
3. Internet – The Cooperative offers e-billing to our members. Concurrent with program development we have improved our web site to include access to information regarding all products, services and rates.

IX. Review

The Energy Management and Conservation Plan is reviewed and updated by the Cooperative Staff on a annual. The Plan and any updates shall be presented to the Cooperatives' Board of Trustee annually.