NEBRASKA CITY UTILITIES

Nebraska City, Nebraska

Final Report - February 13, 2017

2016 INTEGRATED RESOURCE PLAN

Prepared by:

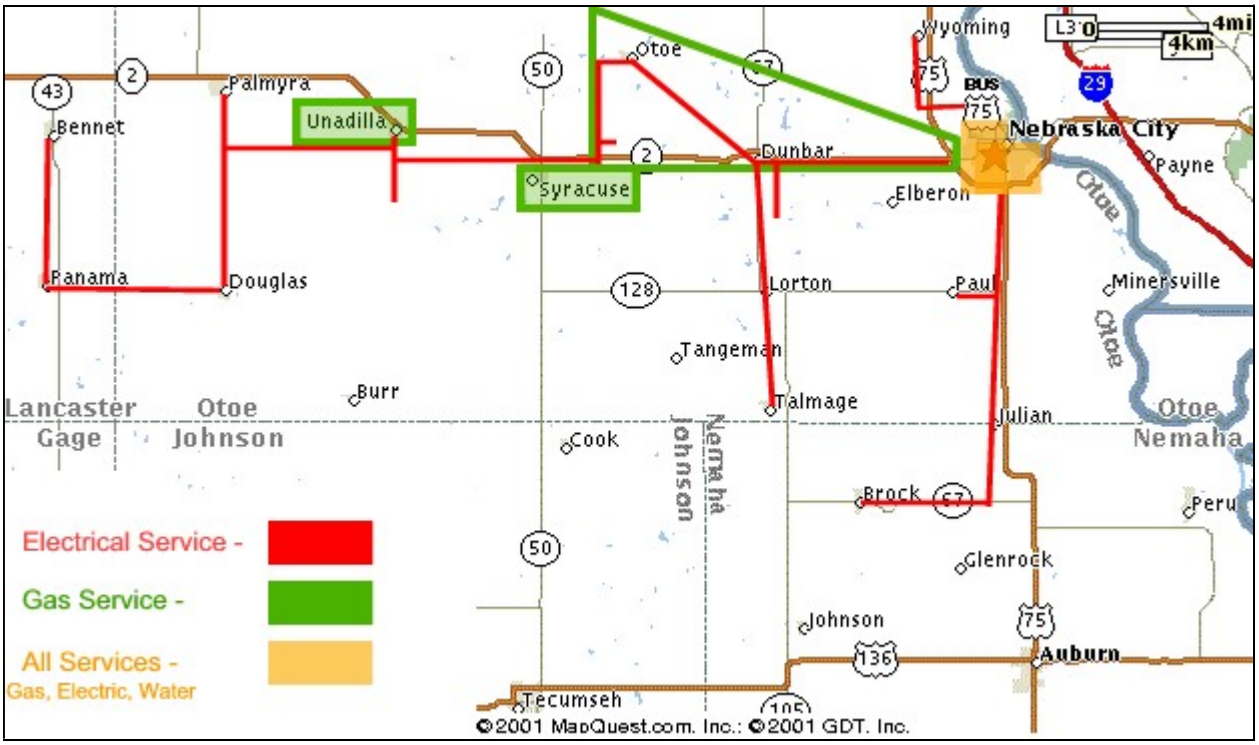
Municipal Energy Agency of Nebraska

SECTION I. INTRODUCTION

The Municipal Energy Agency of Nebraska was retained by Nebraska City Utilities (NCU) to prepare an Integrated Resource Plan (IRP) for the 2016 submission year. This IRP is developed to identify NCU's resource requirements for the 10-year period beginning fiscal year 2016 through fiscal year 2025.

A. PURPOSE

NCU is responsible for serving Nebraska City with electricity, gas, water, and sanitary sewer services. NCU's electric service territory includes the City, as well as several villages in Otoe County, Lancaster County, and Nemaha County, Nebraska. The villages located in Otoe County include: Dunbar, Lorton, Otoe, Unadilla, Palmyra, and Douglas. The village of Bennet is located in Lancaster County and the villages of Julian and Brock are located in Nemaha County. In addition, NCU serves at wholesale the village of Talmage, located in Otoe County. NCU also serves many farm customers along its rural distribution lines between its villages and has various radial distribution circuits within the counties. A map of the NCU service territory is shown below.



Western Area Power Administration (WAPA) instituted a program called the Energy Planning and Management Program (EPAMP). EPAMP became effective on November 20, 1995. EPAMP includes a provision that requires its customers to prepare and submit an IRP to WAPA as a requirement to maintain their current allocations of power and energy from WAPA. This IRP is written to satisfy EPAMP / WAPA's requirements.

As part of NCU's ongoing obligation under EPAMP, it periodically prepares and updates its IRP. The purpose of this IRP is to develop two- and five-year implementation plans to serve NCU's power supply requirements at the lowest reasonable cost consistent with prudent financial and technical principles used in the Electric Utility Industry.

B. DISCUSSION OF PAST IRP STUDIES

The 2012 IRP Report submitted found that that NCU has, in addition to 37 MWs of local oil and gas fueled generation for emergency and peaking purposes, adequate base-load generation and access to the SPP market for purchases, to satisfy its load and reserve requirements for the next 15 years.

In 2009 NCU's 11.39 MW participation share of OPPD's Nebraska City Unit II (NC-2), which has a total nameplate capacity of 682 MW, came on-line. In 2011 NCU's 10.1 MW participation share of PPGA's Whelan Energy Center Unit 2 (WEC-2), which has a total nameplate capacity of 220 MW, came on line. Both NC-2 and WEC-2 are coal fired facilities that comply under all current EPA regulations. NCU can receive non-firm energy from the Municipal Energy Agency of Nebraska (MEAN) via the SPP Market.

The 2012 2- and 5- year IRP plans recommended the consideration of wind generation resources to supplement and offset some fossil fueled supply-side resources. On October 13th, 2015 NCU executed a purchase and sell agreement with the Grand Island Utility Department (GI) for about 7.0 MW or a 19.55 % share of Prairie Breeze III Wind Project, (PB-3). NCU's share of PB-3 energy is not delivered to NCU load and thus is not shown as a supply side resource. PR-3 energy is delivered to the SPP market, and NCU pays GI the contract price for monthly energy produced. NCU receives revenue from GI determined at SPP's average daily Day-Ahead Market Value. NCU also receives its share of Renewable Energy Credits (RECs) as a provision of the contract. The estimated annual energy for the first year is approximately 27,000 MWh (or 27,000 RECs). The annual capacity factory is about 44%, which is similar to a project adjacent to Prairie Breeze III.

NCU continues to promote the following Demand-Side Management Programs, as recommended in the 2012 IRP:

- Tree Planting Programs
    - NCU and National Arbor Day Foundation's "Three Free Trees," which provides up to three trees of 2 to 4 foot in height at no cost to the customer. NCU will also reimburse a customer for one half of the cost (up to $75) for a more mature tree. See Attachment A for annual program emission impact reports.
    - National Arbor Day Foundation's "Ten Free Trees" program, which provides 10 free seedling trees with Arbor Day Foundation membership.
    - Through these programs NCU also provides information to customers through the "Right Tree in the Right Place" program that is designed to strategically place

trees for reducing future air conditioning costs for customers. Tree Planting and other energy savings tips are promoted using billing inserts, newspaper ads, radio ads and online at http://www.nebraskacityutilities.com/
See Attachment B for examples.

- Promotion of partnerships with the Nebraska Energy Office (NEO) for viable programs such as energy saving loans. NCU promotes partnerships with the NEO via a link on its website. NCU received a grant from the NEO in 2010 to replace 102 street lights with LED fixtures, saving 65% in energy usage. This grant stimulated the funding of 2014 and 2015 phases of LED re-lamping projects. The total conversion in the 4 years is 154 fixtures at a cost of $66,130. Currently LED fixtures are used for most new or replacement City-owned lights.

    - Low cost DSM programs such as promotion of energy efficiency via the billing inserts, newspaper ads, radio ads and the NCU Web-site http://www.nebraskacityutilities.com/ See Attachment B for samples.

- The program for recycling of older Refrigerators and Freezers was started in 2011. A $35 bounty is paid to customers who offer working units to be picked up and hauled to a local certified recycler that removes the refrigerants and oils for resale or proper disposal and then recycles the metals, plastic and glass. See Attachment B for samples.

- Below is a table summarizing the programs provided and metrics generated by each of the DSM programs from FYE 2011 to 2016.

Table A
Nebraska City Utilities
5 year Demand Side Resources for FY 2011- 2016

Program or Measure (#)	KW Saved	KWH Saved	Expenses	Customers
NCU's Tree Planting Program	47	51,048	$ 2,879	670
Arbor Day Foundation Tree Planting Program	15	15,990	$ 8,411	210
Business Heating Programs (12)	7	25,000	$ 1,800	1
Business Lighting Measures (17) Cust. = Street Light fixtures	61	150,923	$ 98,060	272
Business Load Mangement Programs (18) City accounts	60	235,746	$ 34,350	5
Residential Refrigerator Recycle Measures (28)	11	51,600	$ 5,338	43
Total FY 2011- 2016	**200**	**530,308**	**$ 150,838**	**1,201**

C. METHODOLOGY

This IRP was prepared consistent with EPAMP's suggested methodology and is consistent with prior NCU IRPs. The methodology used to prepare this IRP is summarized by the following list of tasks:

- Prepared NCU peak demand and energy requirements forecast;

- Compared forecasted peak demand and energy requirements to existing NCU power supply resources to estimate future resource needs;
- Conducted a customer survey to solicit public opinion regarding resource options;
- Screened DSM options to identify economical and technically feasible options that could be included in the integration analysis;
- Integrated DSM options with supply resources to develop an optimal IRP;
- Considered environmental impacts and costs of each option selected;
- Developed recommendations based on economic and non-economic considerations;
- Solicited public comments to this draft report and incorporated comments in the final IRP.

D. GENERAL OBJECTIVES

NCU's goal is to provide the best possible electric service at the lowest practical cost. To achieve this stated goal, NCU focused on the following objectives in developing the IRP:

- Maintain local control of the utilities system
- Focus on being customer-oriented
- Focus on service reliability
- Maintain lowest practical cost
- Maintain financial and rate stability
- Promote energy efficiency and conservation

E. BACKGROUND/UTILITY PROFILE & HISTORY

NCU is a not-for-profit municipally owned electric utility located in southeastern Nebraska. Nebraska City purchased the natural gas and water systems in 1941, and the electrical system in 1944. The resulting Board of Public Works was created by the City Commission to operate the combined electric, gas and water utility system. In 1963, the operation of the sanitary sewer system was also assigned to the Board of Public Works.

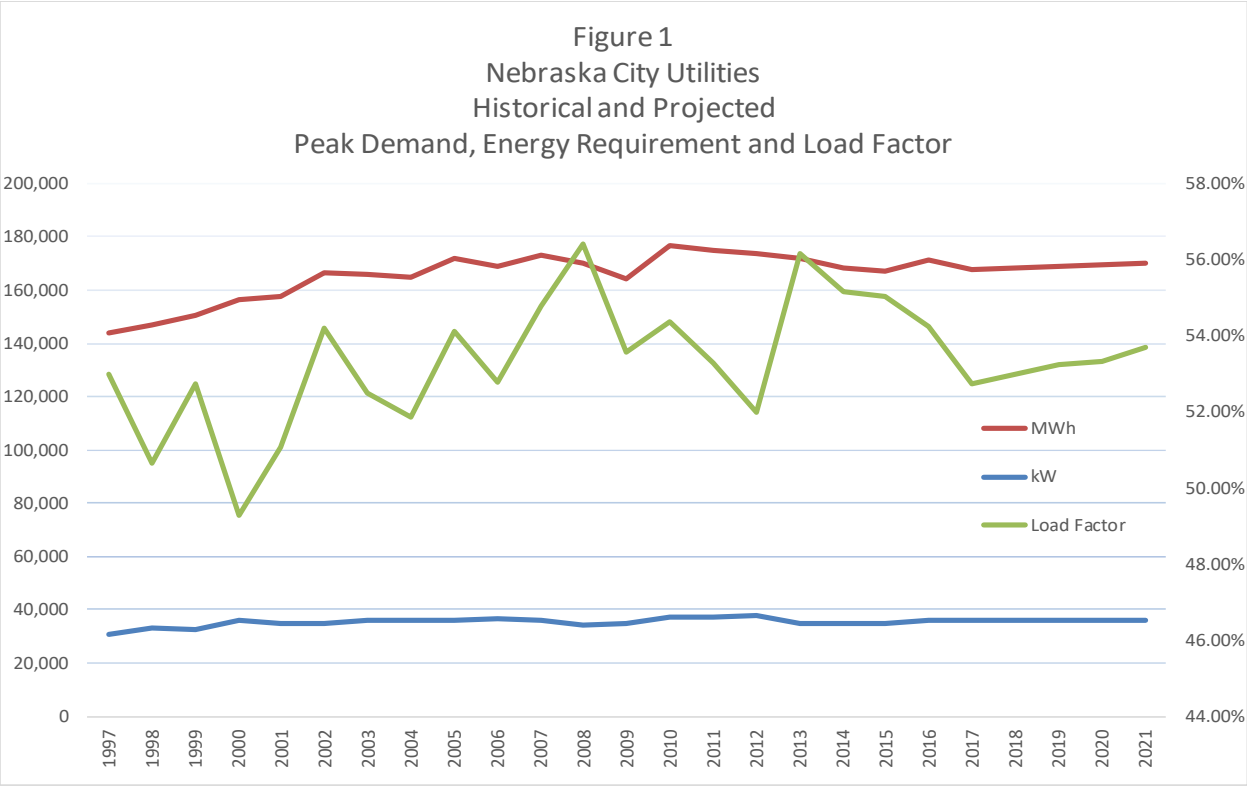
F. NEBRASKA CITY UTILITIES STATISTICS:

In 2016, the electric customers were segmented in the following customer classes:

• Residential	4,759
• Commercial	922
• Industrial	34
• Wholesale	1
• Total Electric Customers:	5,716

NCU is a summer peaking utility with a system peak of 35,918 kW in 2016. NCU's annual energy consumption was 171,095 MWh in 2016, for an annual load factor of 54.2%. NCU's load factor

historically ranges from 49% to 56% and is showing a slight improving trend as shown in Figure 1.



SECTION II. LOAD FORECAST

A. INTRODUCTION

Based on historical analysis and consideration of any known changes in load and effects of weather, an annual growth rate of -0.11% was determined for peak demand, and an annual growth rate of 0.34% was determined for energy. The forecast is presented in Table B below.

Historical and Projected Peak Demand and Energy Requirements

	Net System Peak	Percent	Net System Energy	Percent	Load Factor
Year	kW	Change	MWh	Change	%
1997	30,970		143,811		53.01%
1998	33,100	6.88%	146,857	2.12%	50.65%
1999	32,510	-1.78%	150,242	2.30%	52.76%
2000	36,170	11.26%	156,509	4.17%	49.26%
2001	35,175	-2.75%	157,355	0.54%	51.07%
2002	35,115	-0.17%	166,673	5.92%	54.18%
2003	36,112	2.84%	166,015	-0.39%	52.48%
2004	36,156	0.12%	164,708	-0.79%	51.86%

2005	36,284	0.35%	172,050	4.46%	54.13%
2006	36,575	0.80%	169,183	-1.67%	52.80%
2007	36,069	-1.38%	173,141	2.34%	54.80%
2008	34,298	-4.91%	169,943	-1.85%	56.41%
2009	35,002	2.05%	164,310	-3.31%	53.59%
2010	37,052	5.86%	176,493	7.41%	54.38%
2011	37,525	1.28%	175,154	-0.76%	53.28%
2012	38,091	1.51%	173,928	-0.70%	51.98%
2013	34,910	-8.35%	171,711	-1.27%	56.15%
2014	34,843	-0.19%	168,341	-1.96%	55.15%
2015	34,682	-0.46%	167,219	-0.67%	55.04%
2016	35,918	3.56%	171,095	2.32%	54.23%
2017	36,309	1.09%	167,794	-1.93%	52.75%
2018	36,270	-0.11%	168,369	0.34%	52.99%
2019	36,230	-0.11%	168,944	0.34%	53.23%
2020	36,191	-0.11%	169,520	0.34%	53.32%
2021	36,152	-0.11%	170,095	0.34%	53.71%
2022	36,112	-0.11%	170,670	0.34%	53.95%
2023	36,073	-0.11%	171,245	0.34%	54.19%
2024	36,034	-0.11%	171,821	0.34%	54.43%
2025	35,995	-0.11%	172,396	0.33%	54.67%

SECTION III. SUPPLY SIDE RESOURCE ANALYSIS

A. CURRENT POWER SUPPLY ARRANGEMENTS

The NCU system includes owned and purchased power supply resources, DSM programs and transmission system arrangements.

B. EXISTING SUPPLY SIDE RESOURCES

NCU's system, internal to the distribution system, currently generates 27.1 MW capacity and energy, purchases 8.2 MW of capacity and energy from WAPA, and has ownership rights for 21 MW of baseload resources. Table C summarizes Nebraska City's existing supply side resources.

Table C

Nebraska City Utilities

Existing Generating Resources - 2016

Source	Capacity (MW)	Energy (MWh)	Capacity Factor
Local Generation	27.1	107	0%
Nebraska City Unit #2 (NC-2)	11.4	84,727	85%
WAPA	8.2	39,452	55%
Whelan Energy Center Unit #2 (WEC-2)	10.6	41,683	45%
Market Purchases net of sales	0.0	5,126	1%
Total	**57.30**	**171,095**	**34%**

1. LOCAL GENERATION

NCU owns and operates three diesel engine generator plants and its own natural gas utility. The generation is fueled by natural gas and/or oil. NCU staff has analyzed the Reciprocating Internal Combustion Engine National Emission Standard for Hazardous Air Pollutants (RICE NESHAP) Rules which were issued in February 2010 by the EPA with compliance required by May 2013. NCU had the old engine mufflers replaced with new diesel oxidation catalysts which reduce exhaust emissions. NCU also contracted for the placement of engine crankcase gas capture and recycling equipment to reduce the blow-by gas emissions as required by RICE rules. These modifications were applied to eight of the 12 generating units (approximate operating capacity of 27.1 MW) to become EPA compliant production units. The remaining four units (approximate operating capacity of 10.0 MW) are now operated for emergency supply as allowed for under RICE rules. The project was completed by the end of March 2012.

2. WAPA

WAPA delivers firm electric service to Nebraska City. This agreement terminates in 2020. WAPA presented a 2021 Power Marketing Initiative (PMI) Proposal which extended the Marketing Plan with amendments to the Contract Term and Resource Pools principals. The 2021 PMI Proposal (Amended Principal) contains a contract term of 30 years for firm electric customers (January 1, 2021 through December 31, 2050), and a Resource Pool of up to one percent of the marketable resource under contract at the time for eligible new preference entities at the beginning of the contract term (January 1, 2021) and again every 10 years (January 1, 2031, and January 1, 2041). Nebraska City executed a new contract from WAPA on November 5th, 2012 that extends the current agreement to December 31, 2050 with potential 1.0% reductions in deliveries over each of the ten-year periods of 2021, 2031, and 2041.

3. MUNICIPAL ENERGY AGENCY OF NEBRASKA (MEAN)

MEAN provides scheduling, purchasing, marketing and transmission agent services for Nebraska City. This contract continues until terminated by 60-days prior written notice by either party. No notices have been given at this time.

4. OPPD NEBRASKA CITY UNIT #2 (NC-2)

NCU has a contract with OPPD for 1.67% of 682 MW (or 11.39 MW) of NC-2 which came online in May 2009. This contract has an initial term of 40 years with optional renewals that could extend to the life of the unit.

5. PUBLIC POWER GENERATION AGENCY (PPGA)

NCU has entered into a Participation Agreement with PPGA for 4.55% of 220 MW (or 10.1 MW) of WEC-2 which came online in May 2011. The existing contract expires at the later of the maturity of the bonds or the decommissioning of WEC-2.

6. RENEWABLE ENERGY CREDITS

On October 13th, 2015 NCU executed a purchase and sell agreement with Grand Island Utility Department (GI) for about 7.0 MW or a 19.55 % share of the Prairie Breeze III Wind Project. The NCU share of energy from this agreement is delivered to the SPP market, and NCU pays GI the contract price for monthly energy produced and receives their share at the average daily SPP Market value for the energy and Renewable Energy Credits (RECs) from GI. The estimated annual energy is approximately 30,000 MWH based on the capacity factor of about 50%, similar to a project adjacent to Prairie Breeze III.

7. TRANSMISSION

Nebraska City is interconnected at 69 kV with OPPD at both Nebraska City and Syracuse, Nebraska. OPPD provides transmission service for WAPA purchases, NC-2, and WEC-2 under firm point-to-point transmission arrangements. NPPD provides transmission service for WEC-2 under firm point-to-point transmission arrangements. Southwest Power Pool (SPP) provides the regional transmission pricing and tagging service under FERC jurisdiction. MEAN serves as the scheduling agent for all transmission service.

C. COMPARISON OF LOAD AND RESOURCES

Forecasted peak demand and energy requirements were summarized and compared to existing capacity and energy resources to determine future need for resources. Table D below summarizes the comparison of peak demand to resource capacity throughout the ten-year study period. Figure 1 below is the graphical presentation of the comparison of peak demand to resource capacity during this same period.

Table D
Comparison of Peak Demand to Resources

Demand	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Peak Demand Obligation (1) (2)	37.9	39.2	39.7	39.6	39.6	39.5	39.5	40.4	40.4	40.4	40.3
Capacity Resources	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3
Surplus/(Deficit)	**19.4**	**18.1**	**17.6**	**17.7**	**17.7**	**17.8**	**17.8**	**16.9**	**16.9**	**16.9**	**17.0**

Notes:
(1) Included forecast demand and 12.00% SPP required reserves.
(2) Nebraska City Utilities is a summer peaking utility.

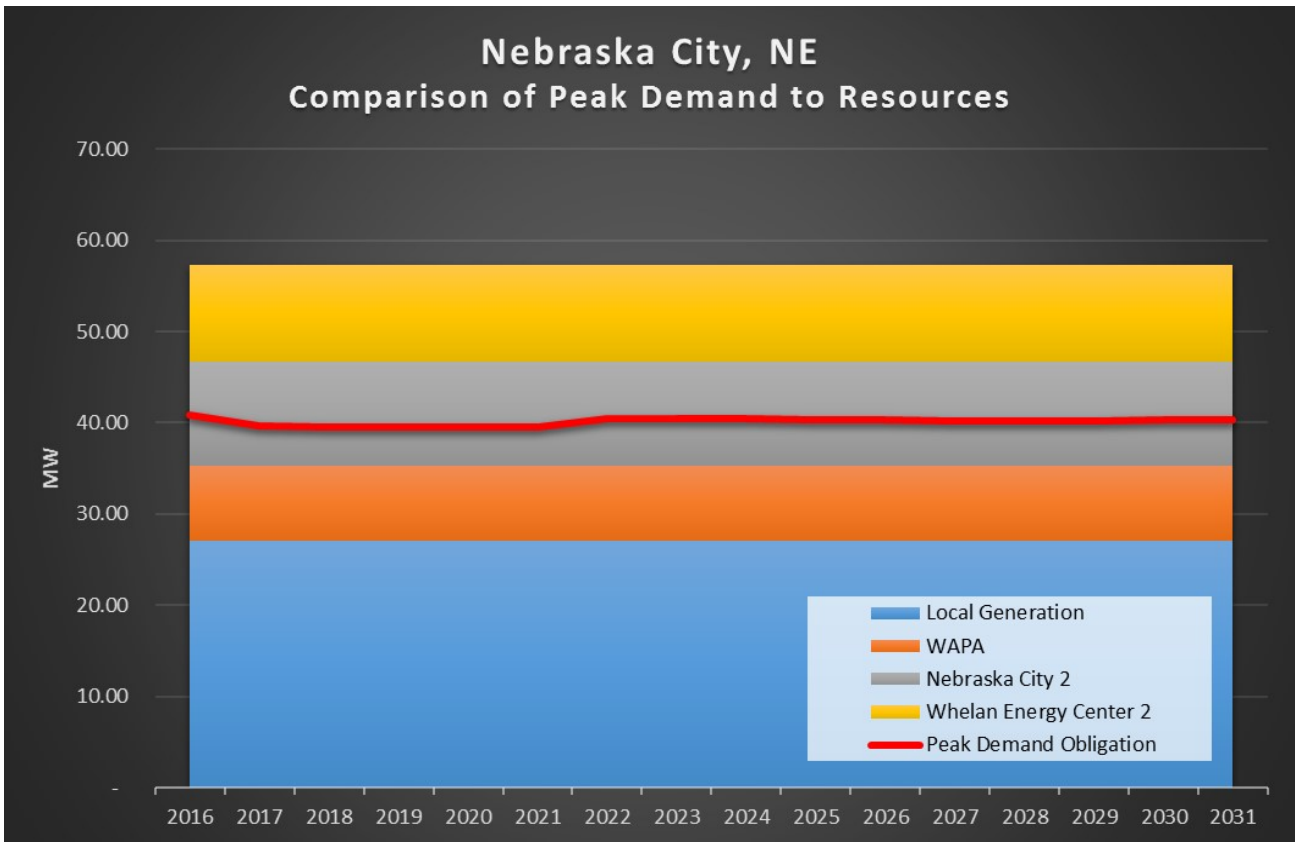


Figure 2

The reserve margin was calculated using the Southwest Power Pool (SPP) Reserve Sharing Group reserve requirement of 12.00% of peak demand.

Based on the Comparison of Peak Demand and Energy Requirements to Resources, the following was concluded:

- NCU has sufficient capacity throughout the study period and likely to 2031.
- NCU may need outage replacement energy during scheduled outages of NC-2 and WEC-2.
- NCU operates local generation that for peaking, back-up and generation for emergencies to supply energy needs; however, it has often been more economic to purchase non-firm energy from the SPP market for these needs. It is possible that market purchases will continue to be less expensive than the operating costs of peaking generation.

This local generation operated by NCU has been used minimally in recent years because the cost of energy from these resources is usually greater than the cost of energy in the SPP market. However, the reliability benefit for these units in emergency conditions provides a high value to NCU customers.

D. FUTURE SUPPLY SIDE RESOURCES

NCU participates in a statewide joint planning effort through the Nebraska Power Association (NPA). Utilities in NPA jointly coordinate long-term power supply plans to meet the electric power needs of the state of Nebraska. NCU participates in NPA's resource planning process and contributed to the last report published in July 2016.

E. IDENTIFICATION OF RESOURCE OPTIONS

The following is a description of the supply options that were reviewed.

1. RENEWABLE RESOURCES

In addition to the Grand Island Wind participation agreement, NCU has many options to acquire renewable energy through ownership, purchased energy or renewable energy credit (REC) markets.

NCU, through its membership in MEAN, has the option to take wind from MEAN's wind resource pool, including the MEAN-owned wind project in Kimball, Nebraska and MEAN's contracted purchases from NPPD-owned wind resources.

Based on customer interest and market value, additional renewable resources are likely to be developed under the concept of a Community Solar Project similar to the one being offered by LES and other regional utilities. These projects allow customers to purchase shares in a Utility-operated facility in amounts selected by the customer. See Attachment C on how a regional utility developed a similar community solar project.

2. UNIT PARTICIPATION AND ENERGY PURCHASES.

Unit participation purchases in generating facilities owned by other utilities are an option for long-term resources. NCU is involved in the following:

- OPPD Nebraska City 2 (NC-2).
- PPGA Whelan Energy Center 2 (WEC-2).

F. PUBLIC OPINION ON RESOURCE OPTIONS

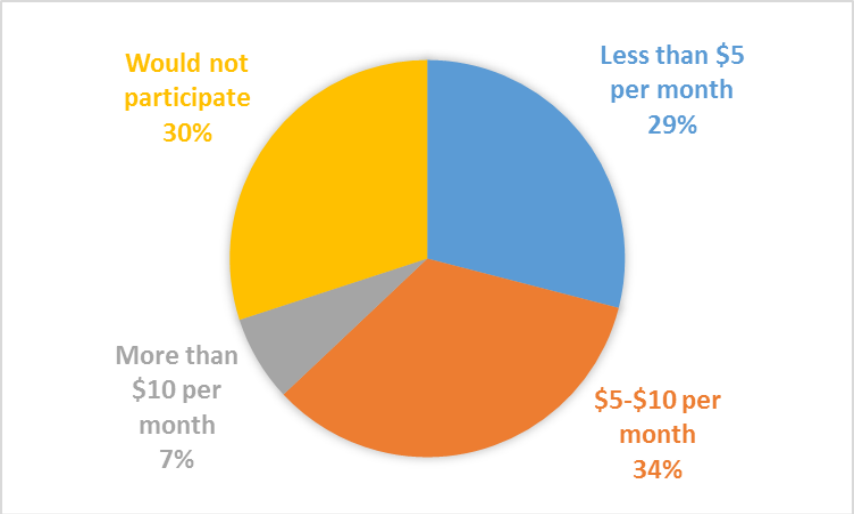
From time to time NCU conducts a customer survey to determine service satisfaction levels and Energy Saving Program awareness. In October 2016 a survey was conducted to seek customer input. The first question in the survey asked customers to rank a list of potential future resource options according to their preference. The results are listed in order below and a bar graph shown to illustrate the relative preference of each (lower number indicates higher rank):

ENERGY SOURCE RANKED BY CUSTOMERS	
1st	Reduce Energy Usage with Efficiency and Conservation Programs
2nd	Construction New Renewable Generation (Wind)
3rd	Construction of New Fossil Fuel Generation (Natural Gas)
4th	Construction of New Renewable Generation (Solar)
5th	Customer Owned Renewable Generation (Solar)
6th	Purchase Power from the Market

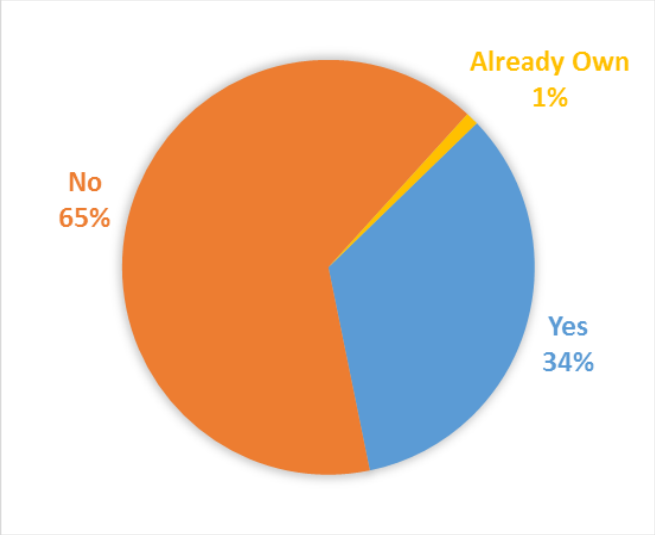
These results indicate a preference for demand side solutions for energy efficiency and conservation in comparison to the supply side options, both renewable and fossil-fueled.

Next, to gauge the willingness of customers to invest in future renewable generation, the survey asked the following questions, with the survey results shown.

If NCU offered a Community Participation Solar Generation Project, how much would you be willing to pay (in addition to your current utility bill) to participate?



Do you have interest in installing a photovoltaic solar energy system on your home?

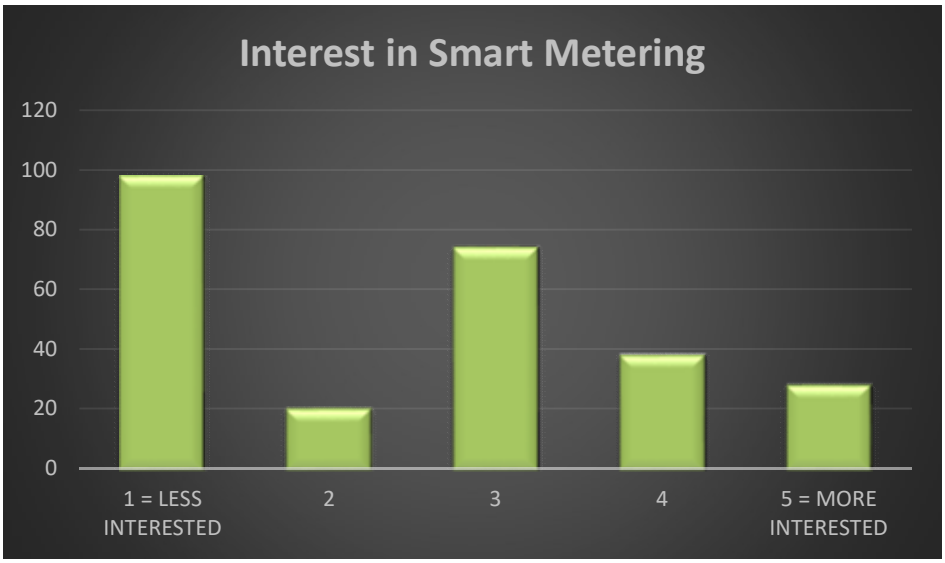


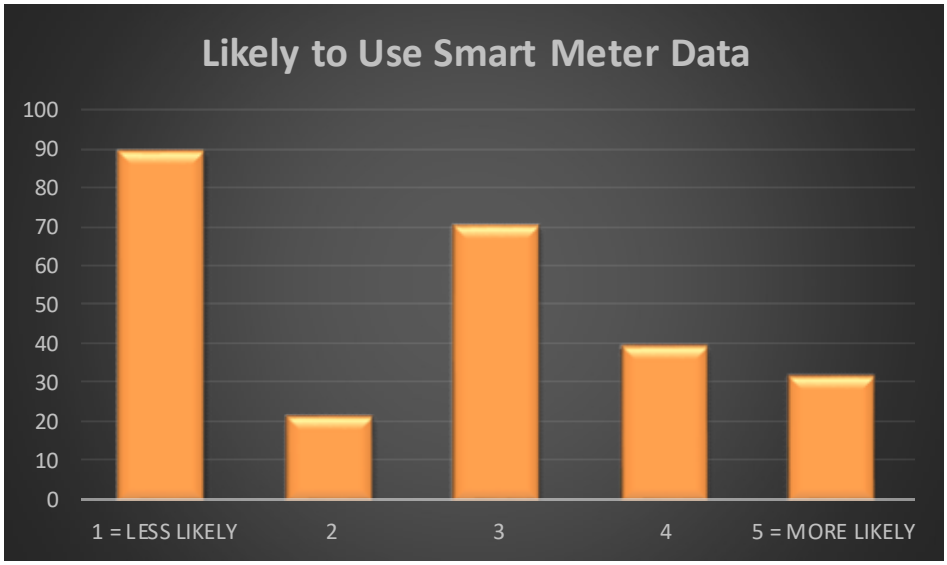
These responses show that 70% of respondents would be willing to pay a premium for ownership of a community solar resource, and over one-third of respondents express an interest in personal ownership of solar energy assets.

The survey asked customers to rate their interest in the installation of a Smart Meter at their home or owned business with a score of 1 indicating no interest and a score of 5 indicating high interest. The average rating was 2.55.

In conjunction with this question, the survey asked customers to rate how likely they would be to utilize data collected by a Smart Meter at their home or business. Again, 1 represented the customer was less likely, and a 5 that the customer was more likely.

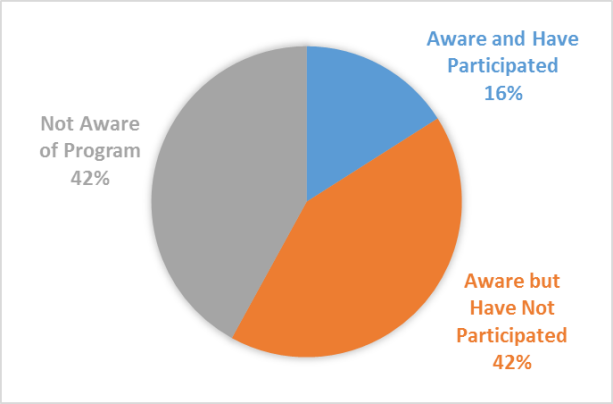
The distribution of customer rankings is shown in the charts below.



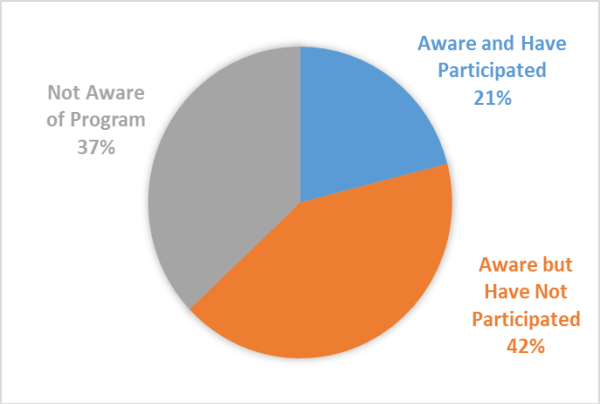


Next, the survey aimed to determine the effectiveness of NCU's efforts to promote existing demand side management programs. The questions and responses are listed below.

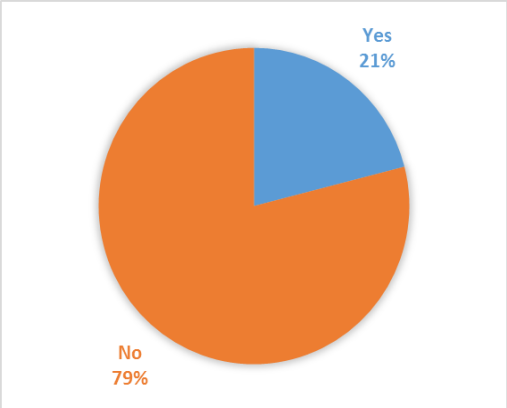
Are you aware of NCU's "Energy Saving Tree" Planting Program?



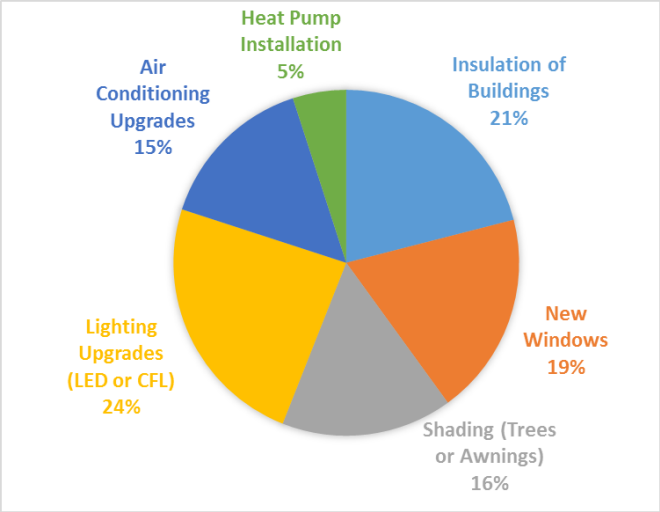
Are you aware of Arbor Day Free "Energy Saving Trees" Program?



Are you aware of the Refrigerator Rebate program?



Which energy conservation or efficiency solutions you have applied in your home or place of business?



The 2016 survey results of customer opinion support the continuation of NCU policy of moving towards regional development of renewable generation and advancing the type of current DSM programs offered.

G. EVALUATION OF NEW RESOURSE PROJECTS AND CRITERIA FOR RANKING

Evaluation criteria were established for the power supply resources in previous studies. The criteria included:

- Ability to meet NCU's resource needs.
- Reliability and availability of the resources.
- Operational flexibility of the resource.
- Environmental impacts and compliance costs.
- Total delivered cost of the resource.

H. SUPPLY SIDE RESOURCES SELECTED FOR SCREENING

NCU has sufficient capacity resources throughout the study period. As a result, supply-side resource alternatives focused on NCU's energy needs.

The supply-side resource alternatives are listed as follows:

- Continued non-firm energy purchase with MEAN.
- Other non-firm renewable energy and REC purchases.

SECTION IV. DEMAND SIDE ANALYSIS

A. REVIEW OF LOAD SHAPE OBJECTIVES

The Electric Power Research Industry (EPRI) developed six industry accepted load shape objectives. These objectives are as follows:

1. STRATEGIC LOAD GROWTH

Strategic Load Growth involves promoting increased loads in all hours for utilities with surplus capacity for all periods of the year. A new example is Electric Vehicle Charging Stations promotions

2. PEAK CLIPPING

Peak Clipping is the reduction of system peak loads in order to reduce the reliance on peaking units with high fuel costs. Air conditioning load cycling is an example of a peak clipping program.

3. STRATEGIC CONSERVATION

Strategic conservation is directed at reducing end-use consumption through the conservation of energy and environmental resources. Strategic conservation has a leveling effect on end-use consumption, and thus has a minimal effect on peak load. An example of strategic conservation is an appliance efficiency program and promotion of Gas Assist Heat Pumps to replace older less efficient Air Conditioners.

4. VALLEY FILLING

Valley filling is a load management program that involves increasing off-peak loads. Street lighting is an example of a program that may build evening loads which are normally off-peak.

5. LOAD SHIFTING

Load shifting involves shifting load from peak to off-peak periods. Irrigation load control and thermal energy storage systems are examples of daily load shifting. The promotion of heat pumps is an example of seasonal Load Shifting, Strategic Load Growth and Valley Filling.

6. FLEXIBLE LOAD SHAPE

Flexible load shape programs modify the load shape on short notice to meet demand requirements without modifying load during periods when it is not needed. Interruptible rates are an example of flexible load shape.

B. DSM PROGRAM EVALUATIONS

Demand Side Management (DSM) options were considered as a means of deferring supply side capacity acquisitions or improving the efficient use of existing infrastructure. DSM options modify the customer or end use load shape to increase the utilization of facilities. Fifteen types of DSM programs were evaluated in the 2012 Study using screening analysis and economic feasibility. The Screening of utility controlled options were not conducted again in 2016 because NCU rejected many on the basis of being non-cost and the current Cost and Benefits assumptions used in 2012 have effective changed significantly. Also in light of the current NCU excess of both base and peaking resources DMS measures have benefits limited to SPP Market prices that continue to be low compared to historic values. NCU's current educational and soft DSM programs are providing adequate opportunities for NCU customers and are affecting positive changes in system efficiency through improved Load Factor and off-system sales. Therefore, the findings of the analysis in 2012 are used in this study to recommend the expansion of the existing DSM programs.

Below are the projects evaluated in 2012.

1. RESIDENTIAL CENTRAL AIR CONDITIONING LOAD CYCLING

This DSM program requires the installation of a load-control device that will turn off the air conditioner for a short time (5-15 minutes) during summer peak-load periods. The customer incentive to participate is estimated to be $23 per year with an average load reduction of 0.85 kW per control device on residential homes.

2. RESIDENTIAL ELECTRIC WATER HEATER LOAD SHEDDING

A customer incentive of $10 per year would be given to customers already participating in the air conditioner load cycling program and who also have their electric water heater cycled off for periods of time during summer peak-load hours.

3. RESIDENTIAL HIGH EFFICIENCY CENTRAL AIR CONDITIONERS

This program is for customers replacing an existing air conditioner. NCU must agree to the size of the replacement air conditioner. The requirements include that the unit's size will not be more than 125% of design heat gain according to Manual J standards, and the unit will have a minimum SEER of 13. Local contractors market high efficiency equipment. Rebates or incentives may be provided from distributors or manufacturers.

4. ROOM AND WINDOW AIR CONDITIONER RECYCLING EDUCATION PROGRAM

This program is for customers replacing or discarding an existing room or window air conditioner. A $10 payment is made to the customer for old working units.

5. HIGH EFFICIENCY REFRIGERATOR/FREEZER EDUCATION PROGRAM

This program is for customers purchasing an Energy Star© Rated refrigerator/freezer. The old refrigerator must be disposed of by the dealer for proper recycling of refrigerator/freezer components.

6. OLD REFRIGERATOR PICK-UP PROGRAM

The purpose of this program is to remove operating refrigerators from homes and the used appliance market. The program educates residential customers about the costs of operating a second refrigerator and offers a $35 payment for a qualifying operating refrigerator or freezer. A regional contractor picks up the units and delivers them to a de-manufacturing facility. The total cost is about $165 per unit.

7. LOAN PROGRAM FOR A/C REPLACEMENT

This program provides a loan subsidy to customers installing properly sized high-efficiency air conditioning equipment. NCU makes a payment directly to a participating bank granting the loan, or may direct customers to the Nebraska Energy Office loans via the NCU website. NEO Loans are from a revolving loan fund and may include a performance contracting element to assure that the systems are built to specification and expected energy reductions are satisfied.

8. ENERGY STAR© HOME CONSTRUCTION

Customers receive incentives in the form of a rebate, rate discount or a loan subsidy from NCU for building a new home that meets Energy Star© Home Construction efficiency standards. This program requires high efficiency and right-sized central air conditioners and furnaces. This program also includes points for additional insulation, infiltration reduction measures like 'wraps', efficient windows, efficient lighting and reduction of heat gain or loss.

9. EXISTING LOW-INCOME HOME WEATHERIZATION

Energy efficient improvements for existing homes including additional insulation, day-lighting, reduction of infiltration, and full basement insulation are eligible for customer grants. NCU includes information about energy efficiency improvements through its web site and also promotes through bill stuffers.

10. RESIDENTIAL TREE PLANTING EDUCATION PROGRAM

This program is based on a recent analysis on the effect of urban trees on the air conditioning requirements of residential homes. The analysis notes that trees planted on the west side of homes that provide shade during the peak-load hours reduce air conditioning needs. Although air conditioning savings are postponed by an average of 10 years while trees grow to sufficient size, the long-term air conditioning savings are estimated to equal half of the cost of the program. The existing home market is nearly saturated, but NCU continues to offer customers a partial reimbursement on the cost of an energy saving tree. NCU will provide up to three free trees that are 2 to 4 foot in height. NCU, in participation with the National Arbor Day Foundation, pays a total of $15 for all three trees, and the customer gets the trees for no cost. NCU also reimbursed customers for one half of the cost (up to $75 previously and then $100 effective 2016) for a more mature tree.

11. COMMERCIAL HIGH-EFFICIENCY LIGHTING CONVERSIONS

This program provides incentives, rebates or loans for commercial and industrial customers who increase the efficiency of their existing lighting systems. Permanent fixtures are replaced with approved high efficient fixtures. Examples include converting from T-12 to T-5 or LED lights with electronic ballasts, high bay metal halide conversions to T-8 or T-5 or LED fixtures, and adding day-light harvesting controls.

12. COMMERCIAL HIGH-EFFICIENCY AIR CONDITIONER EDUCATION

Commercial customers would receive incentives for replacing existing air conditioners with high-efficiency air conditioners. Examples of qualifying equipment are packaged terminal units, rooftop units, and split systems.

13. COMMERCIAL HVAC EFFICIENCY IMPROVEMENT PROGRAM

Commercial and Industrial customers with large cooling systems would be eligible for incentives, rebates or loans when they reduce their electrical energy consumption of their HVAC systems by adding cooling tower capacity, variable speed drives on motors, and energy management controls to reduce peak hour loading.

14. LARGE CUSTOMER CUSTOMIZED REBATE PROGRAM

This program would provide incentives to commercial and industrial customers who save energy in ways that are not covered by other DSM programs. Examples of eligible energy-efficiency improvements include non-HVAC energy-efficient motors, variable speed motor controls and energy management systems providing long-term and fixed energy savings.

15. INTERRUPTIBLE LOAD PURCHASE PROGRAM

Large Industrial customers receive payments for interrupting all or part of their load during peak periods when requested by NCU. The customer signs a contract before the peak season starts, and is obligated to interrupt a certain amount of their load for a limited number of times during a year for periods of eight hours or less.

Energy conservation and safety tips broadcast on local radio station(s) three times daily on the “Community Calendar” program.

Based on NCU’s resources and load profile, the types of DSM most suitable are:

- Strategic conservation (summer season) to reduce end-use consumption during peak periods such that base load generation may be sold on the SPP market and transmission cost can be reduced.
- Strategic load building (winter season) to build loads during periods of surplus capacity increasing the system Load Factor.
- Peak clipping (summer season) to reduce peaking energy needs such that base load generation may be sold on the SPP market and transmission cost can be reduced.

C. SCREENING ANALYSIS

The screening analysis consisted of two steps. The first step, Qualitative Screening, ranked the potential DSM options according to subjective criteria, such as customer preference, market potential, and ease of implementation. A score was assigned to each DSM option and the options were ranked. This narrowed the list of options to be economically further evaluated.

The DSM options in this narrowed list were then evaluated for economic feasibility. The avoided costs for capacity and energy calculated in the supply side resource evaluation were used to calculate the costs and benefits of each DSM option.

Much of the DSM screening utilized information from the WAPA Resource Planning Guide (RPG). The WAPA RPG provided a process for evaluating DSM options and provided reference data for use in the economic evaluation of DSM options.

D. QUALITATIVE SCREENING

The DSM technologies which satisfy NCU's load shape objectives were subjected to qualitative screening. The qualitative screening involved the use of six criteria, called "second tier criteria," to identify those technologies most relevant to NCU's objectives. According to the WAPA RPG, the second tier criteria are:

- Costs: This includes start-up, marketing and equipment costs.
- Customer Preferences: A customer's acceptance of a technology is determined by such factors as the customer's cost perspective, comfort level with the technology, and willingness to use the option.
- Environmental Impacts: DSM technologies can postpone the need to add supply-side resources that emit pollutants into the environment, but some DSM options also have environmental impacts. For example, hazardous waste disposal will be an issue when disposing of old refrigerator compressors containing CFC's.
- Market Potential: In order for the program to realize its maximum potential, intended markets and end-uses must be identified.
- Ease of Implementation: A program's success will be heavily dependent on the relative ease of implementation. Some programs may require the simple replacement of lights or appliances, while others require major changes in the building structure.
- Availability: The DSM technology must be commercially available and reliable.

All technologies were scored from 0 to 3 (with 3 being the lowest cost and/or highest value) according to their ability to satisfy each of the preceding criteria. Those technologies with higher total scores were considered to be more successful in achieving NCU's load shape objectives than those with lower scores. Tables 4 and 5 show the scores for each technology applicable to a particular customer class.

Table 4
Qualitative Screening
Residential Demand Side Options

DSM Option	Cost	Customer Preference	Environmental Impact	Market Potential	Ease of Implementation	Commercial Availability/ Reliability	Total
1. Central Air Conditioning Load Cycling	1	2	3	3	2	3	14
2. Electric Water Heater Load Shedding	1	3	3	2	2	3	14
3. High Efficiency Central Air Conditioners	3	3	3	3	2	3	17
4. Room and Window Air Conditioner Education	1	3	3	3	3	2	15
5. High Efficiency Refrigerator Education Program	3	3	3	3	3	3	18
6. Old Refrigerator Pick-up Program	2	3	3	3	3	3	17
7. Loan Program for AC replacement	2	3	3	3	3	3	17
8. Energy Star © Home Construction	2	2	3	2	2	2	13
9. Existing Low-Income Home Weatherization	2	2	3	2	0	1	10
10. Tree Planting Education Program	2	1	3	2	1	2	11

Scoring: 3 = lowest cost and/or highest value, 1 = highest cost and/or lowest value

Table 5
Qualitative Screening
Commercial/Industrial Demand Side Options

DSM Option	Cost	Customer Preference	Environmental Impact	Market Potential	Ease of Implementation	Commercial Availability/ Reliability	Total
11. Commercial High-Efficiency Lighting Conversions	3	3	3	3	3	3	18
12. Commercial High-Efficiency Air Conditioner Education	3	3	3	2	2	3	16
13. Commercial HVAC Efficiency Improvement Program	2	2	3	2	2	3	14
14. Large Customer Customized Rebate Program	2	2	3	1	2	3	13
15. Interruptible Load Purchase Program	3	1	3	1	2	3	13

Scoring: 3 = lowest cost and/or highest value, 1 = highest cost and/or lowest value

All applicable technologies were ranked from high to low for each customer class. The options that passed the qualitative screening included 10 residential options, and five commercial/industrial options. This pre-screening only used qualitative factors to narrow the list of technologies that would be further evaluated. These 15 options were then subjected to an economic evaluation.

E. ECONOMIC EVALUATION

Once the technical data for each DSM option was collected, an economic evaluation was completed. The projected annual cost for each option was compared to the projected power cost savings to calculate the net present value of the cost or savings of each option.

The following assumptions were used in the economic evaluation:

- The evaluation was done on a "per-unit' basis, meaning the analysis evaluated one installation of the given option.
- Technical information for the options was based on past experience, when possible. When information from past experience was not available, the WAPA RPG Reference Data for the Southern Region was used.
- Avoided demand and energy costs from the Supply Side Resource Evaluation were used. It was assumed that peak demand savings were used to reduce seasonal capacity purchases, with the summer season being defined as June-September, and the winter season as October-May.
- A discount rate of 3.0% was used.
- The Total Resource Cost (TRC) test was used. This compared the total costs of the option, including costs incurred by NCU or the end user, to the total cost savings realized by NCU.

1. DSM OPTION ANALYSIS

Using these assumptions, the 15 DSM options were evaluated over a ten-year study period. The evaluation considered all of the installation, operation and maintenance, and administrative and general expenses that would be incurred over the ten-year period. The expenses were compared to NCU's avoided capacity and energy cost. The net cost or savings to NCU was calculated on an annual basis and discounted to 2012 Dollars. Options with a positive net present value were considered economically feasible. A summary of the economic evaluations is shown in Table 6. The analysis of each individual DSM option was shown in Appendix A of the 2011 IRP Report.

Table 6
Summary of DSM Measures
Projected Costs and Savings
(2012 $)

DSM Measure	Present Value of Annual Savings (Costs) per unit (1)
Residential	
1. Central Air Conditioning Load Cycling	($277.97)
2. Electric Water Heater Load Shedding	($258.05)
3. High Efficiency Central Air Conditioners	($105.16)
4. Room and Window Air Conditioner Education	($33.26)
5. High Efficiency Refrigerator Education Program	($62.23)
6. Old Refrigerator Pick-up Program	($233.83)
7. Loan Program for AC Replacement	($1,079.36)
8. Energy Star © Home Construction	($48.11)
9. Existing Low-Income Home Weatherization	($1,697.91)
10. Tree Planting Education Program	($21.65)
Commercial/Industrial	
11. Commercial High-Efficiency Lighting Conversions	($1,017.56)
12. Commercial High-Efficiency Air Conditioner Education	($666.08)
13. Commercial HVAC Efficiency Improvement Program	($820.54)
14. Large Customer Customized Rebate Program	($9,062.36)
15. Interruptible Load Purchase Program	($15,390.08)

(1) Discount rate of 5.0% was used.

In the 2012 study the only DSM options that are economically feasible are Room and Window Air Conditioner Education, and Tree Planting Education Program; primarily because NCU's wholesale costs are low but not always competitive in the SPP Market.

2. DSM OPTION RECOMMENDATIONS

NCU should continue low-cost DSM options, such as promoting energy efficiency via the NCU website (Attachment B), customer flyers and a message line on monthly bills which can include energy conservation messages. NCU should also continue the tree planting program, as it is already established and popular with customers.

A refrigerator and freezer recycling program has been conducted by other major power suppliers in Nebraska using a national de-manufacturing and recycling vendor. NCU has set up a program with a local recycler to keep the jobs in the city and offers the program to its total service area of 9 retail

communities. NCU will evaluate the possibility of offering to collect window air conditioners such that they can be also properly disposed and replaced with current, more efficient equipment.

NCU is also seeking grants to purchase new backup diesel-fueled power generators for the power plant, water and sewer pumping facilities. These generators will be EPA compliant and can potentially be operated as peak load reduction equipment.

NCU has a practice to purchase LED fixtures for most replacement lighting and selects Variable Speed drives where practical for motor replacements in City facilities.

NCU does and will continue to attempt to comply with all applicable EPA regulations.

SECTION V: SUPPLY/DEMAND SIDE RESOURCE INTEGRATION

A. DEVELOPMENT OF INTEGRATED RESOURCE PLAN

Existing supply resources are adequate for the next 10 years. These existing Supply Side Resources combined with Demand Side Resource practices already in place and the addition of the Preferred Demand Side Resource Programs as evaluated above defines the NCU optimal Integrated Resource Plan.

B. PREFERRED PROGRAMS

Based on the analyses prepared, NCU plans to take the following steps:

- Continue non-firm energy purchase from the SPP market.
- Expand promotion by advertising on the NCU website and establishing a larger presence with social media outlets (Facebook, Twitter, etc.) for the following:
  - NCU and Arbor Day Foundation sponsored shade tree planting programs
  - Nebraska Energy Office Loan Program for residential and business energy efficiency improvements
  - Refrigerator/freezer recycle rebate program
    - Consider the addition of window air conditioners
  - Rebates for electric to natural gas conversions of water heaters, stoves and dryers
  - Promotion of natural gas assisted heat pumps

- Continue NCU policies:
  - to replace failed streetlight fixtures with LED fixtures, where practical, and area conversions to LED fixtures
  - to replace failed motors with VFD motors where practical
  - to replace office, power plant, maintenance and water and waste water treatment facilities lighting with LED fixtures where practical

- Continue to monitor customer preferences to purchase or participate in renewable resources such as a Community Solar Project (See Example at Attachment D)

C. ENVIRONMENTAL IMPACT

- The NCU purchase of Prairie Breeze III output generates 30,000 RECs for the City annually.
- The city complies with applicable provisions of the Clean Air Act and Clean Water Act at its power plants. NCU has modified eight of its 12 diesel engine generators to become EPA compliant production units. Four units are now classified for Emergency Only use. These modifications were complete by mid-summer 2012, well in advance of the May 2013 RICE NESHAP Rules deadline.
- The tree planting program emissions offsets for CO_2 sequestration are shown in Attachment A.
- CO_2 is also used at NCU's water treatment plant for PH adjustment.
- Proposed projects will include Best Available Control Technology (BACT) to help reduce environmental impacts.
- Encouraging DSM through no cost or low cost methods will reduce energy usage and emissions.

SECTION VI: ACTION PLANS

Based on the assumptions used, analyses completed and conclusions reached, the following action plans are recommended.

A. TWO YEAR ACTION PLAN

Based on the assumptions used, analyses completed and preferred programs sited above, the following Two Year Action Plan is recommended. To the extent that resources, DSM and transmission costs change, NCU should review and modify this action plan accordingly.

- NCU has adequate base load and emergency generation resources and access to the SPP Energy Market and thus has no current need for additional supply-side resources.
- Expand the promotion of the Tree Planting Programs
  - NCU and National Arbor Day Foundation's "Three Free Trees" which provides up to three trees 2 to 4 foot in height at no cost to the customer. NCU will also reimburse a customer for one half of the cost (up to $100) for a more mature tree. See Attachment A for annual program emission impact reports.
  - National Arbor Day Foundation's "Ten Free Trees" offering.
  - Through these programs NCU also provides information to customers through the "Right Tree in the Right Place" program that is designed to strategically place trees for reducing future air conditioning costs for customers.

- Expand the promotion and partnerships with the Nebraska Energy Office (NEO) for viable programs such as energy saving loans. NCU promotes partnerships with the NEO via a link on its website.
- Expand the pick-up and rebate for old working refrigerators and freezers to include window air conditioners such that these old and inefficient appliances are environmentally recycled and disposed.
- Monitor other utilities' experience with Community Solar Projects for potential ideas for a similar NCU project.

B. FIVE YEAR ACTION PLAN

Based on the assumptions used, analyses completed and findings in this study, the following Five Year Action Plan is recommended. To the extent that resources, DSM and transmission costs change, NCU should review and modify this action plan accordingly.

- Continuation of Two Year Action Plan.
- Review other options as they become available.

C. PUBLIC PARTICIPATION

Part of the IRP implementation process involves public participation. NCU has sought involvement of the public in developing the IRP, first through a customer survey, and additionally at two public meetings.

1. IRP PROCESS INTRODUCTION MEETING #1

The Integrated Resource Plan (IRP) was presented in a public meeting of the NCU Board of Public Works on November 15, 2016. The purpose of this meeting was to provide information on the process and objectives of the IRP Study and Report and to present the Preliminary results of the October 2016 Customer Survey. The meeting also provided an opportunity for the Board and the public to ask questions and make suggestions regarding NCU's Integrated Resource Plan (IRP). A Notice of the public meeting was given to Nebraska City's local newspaper, the NC News Press and the KNCY radio station on November 8, 2016 and was posted at the four NCU office locations. Attendees of the public hearing included:

1. Jeanette Eilers – NCU Board Member
2. John Hogeland – NCU Board Member
3. John V. James – NCU Board Member
4. Kiel Vanderveen- NCU Board Member
5. Stephanie Shrader – NCU Board Member
6. Leroy Frana – NCU General Manager
7. Jeff Kohrs – NCU
8. Daniel L. Patton – NCU
9. Teresa Runkles – NCU

10. Phil Euler – NMPP
11. Carol Brehm – NMPP
12. Gen Li --NMPP

The minutes of the meeting and the Power Point presentation slides are included in Attachment E.

1. IRP CONSIDERATION BY CITY COMMISSIONERS MEETING #2

The preliminary draft of the Integrated Resource Plan was presented in a public meeting to the NCU Board of Public Works on January 23, 2017. The purpose of this hearing was to provide information to and gather input from groups and individuals with an interest in NCU's Integrated Resource Plan. A presentation reviewed the contents of the preliminary draft version of the IRP document. Hard copies of the draft report and the presentation slides were made available to attendees. A Notice of the public hearing appeared in Nebraska City's local newspaper, the NC News Press on January 17, 2017 and January 20, 2017, announced on KNCY radio, and posted at the NCU office. Attendees of the public hearing included:

1. Jeanette Eilers – NCU Board Member
2. John Hogeland – NCU Board Member
3. John V. James – NCU Board Member
4. Kiel Vanderveen- NCU Board Member
5. Stephanie Shrader – NCU Board Member
6. Leroy Frana – NCU General Manager
7. Jeff Kohrs – NCU
8. Daniel L. Patton – NCU
9. Teresa Runkles – NCU
10. Phil Euler – NMPP
11. Shannon Coleman – NMPP

Summary of meeting:

The Public Hearing was called to order by Nebraska City Utilities' (NCU) Board of Public Works Chairman John Hogeland at 6:31 pm. Board members present: Jeanette Eilers, Kiel Vanderveen, Stephanie Shrader and John James. Others in attendance included City Finance Commissioner Gloria Glover, City Attorney David Partsch, General Manager Leroy Frana, Operations Superintendent Dan Patton, Water Plant Superintendent Cathy Meyer, Detail Clerk/Cashier Karen Tift and Office Manager/Accountant Jeff Kohrs. Members from the public included: Ted Beilman, and Hayden Cline

Phil Euler and Shannon Coleman of NMPP Energy of Lincoln NE the Consultants hired by the Board of Public Works to work with Staff to develop the 2017 Integrated Resource Plan for the City Utilities made the presentation. Euler and Coleman presented a Power Point presentation.

Mr. Euler gave an overview of the objectives and topics that would be covered during this hearing as well as the purpose and necessity to prepare an IRP every 5 years with2 year and 5

Ms. Coleman presented Electric Load Forecasts for 2012 and2017 which were compared and a future load forecast was also presented. The current load is lower than what was projected in 2012. Several reasons were sighted for the difference. Slides were presented showing previous IRP plan actions and results of those efforts. Other actions that have been taken by NCU were also listed. Euler and Colman answered questions as the meeting progressed.

Recommendations for a preliminary 2-year plan as shown on page 26 of this report were presented as follows:

- Continue non-firm energy purchase from SPP market.
- Expand promotion by advertising on the Website and having a larger presence with Social Media vendors (Facebook, Twitter, etc.) for the following:
    - the NCU and Arbor Day Foundation sponsored Shade Tree Planting programs
    - the Nebraska Energy Office Loans program for residential and business Energy Efficiency Improvements
    - continue to rebate to Recycle Refrigerator/Freezer and consider the addition of window Air Conditioners
    - continue rebates for Electric to NG conversions of water heaters, Stoves and Dryers
    - start Promotion of NG Assisted heat pumps
- Continue NCU policy to replace:
    - failed streetlight fixtures with LED fixtures, where practical and area LED conversions projects to LED fixtures
    - failed motors with VFD motors where practical
    - office, power plant, maintenance and water and waste water treatment facilities lighting with LED fixtures where practical
- Continue to monitor Customer preferences for purchase or participate in renewable resources such as a Community Solar Project

Following the presentation of the Recommended 2- and 5-year plans the meeting was open to public comment. No comments from the public sought to change or add to the recommend plan. Detail comments from the public and are shown in Attachment E of this report *Minutes of Public Meetings*.

D. VALIDATION OF PREDICTED PERFORMANCE

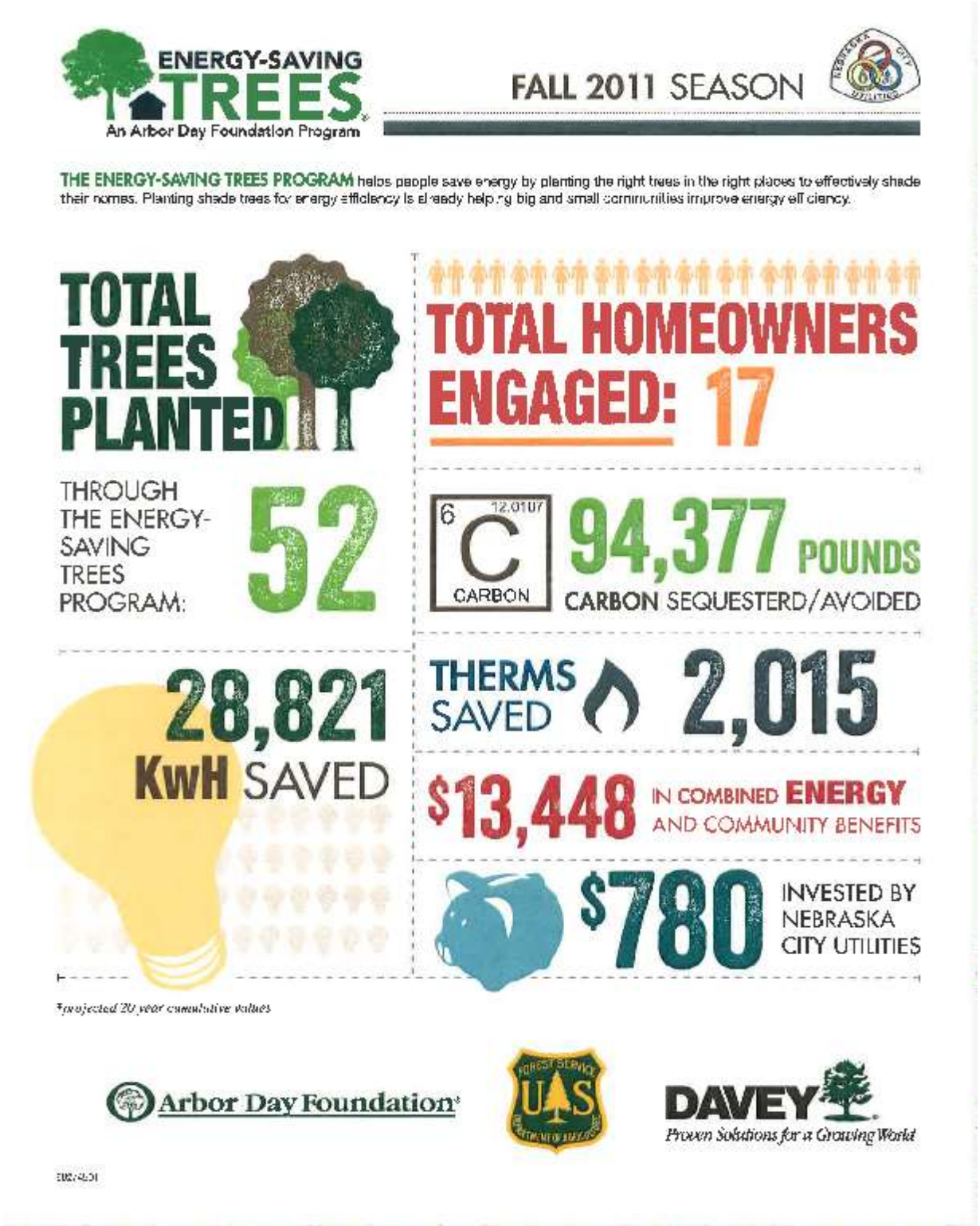
Using the 2016 IRP Final Report as a baseline, NCU compares its load forecasts to actual usage on an annual and monthly basis, estimates growth trends, and records significant load changing events and effectiveness of DSM. This comparison will be continually updated in the future. In addition, NCU will continue to verify the effectiveness of the employed demand-side options by quantifying the costs and savings of such measures in its annual progress reports to this IRP.

E. ANNUAL PROGRESS REPORTS

Annual progress reports to this IRP will be prepared and submitted on the anniversary of this IRP due date. The annual reports will provide comparisons of actual and predicted power supply costs, comparisons of actual and projected demand-side management activity, and planned changes in power supply resources or demand-side management options. The annual reports will also identify changes to the two- and five-year plans outlined in this IRP. Changes to the IRP may be caused by load changes or changes in the costs of purchased power or demand-side options.

Attachment A

The tree planting program emissions offsets for CO_2 sequestration 2011-2016



ENERGY-SAVING TREES
An Arbor Day Foundation Program

SPRING 2012 SEASON

THE ENERGY-SAVING TREES PROGRAM helps people save energy by planting the right trees in the right places to effectively shade their homes. Planting shade trees for energy efficiency is already helping big and small communities improve energy efficiency.

TOTAL TREES PLANTED

THROUGH THE ENERGY-SAVING TREES PROGRAM: **98**

TOTAL HOMEOWNERS ENGAGED: 32

6 12.0107 C CARBON **177,864 POUNDS** CARBON SEQUESTERD/AVOIDED

54,317 KwH SAVED

THERMS SAVED **3,797**

$25,344 IN COMBINED ENERGY AND COMMUNITY BENEFITS

$1,470 INVESTED BY NEBRASKA CITY UTILITIES

**projected 20 year cumulative values*

Arbor Day Foundation

DAVEY
Proven Solutions for a Growing World

90274501

ENERGY-SAVING TREES®
An Arbor Day Foundation Program

SPRING 2013 SEASON

THE ENERGY-SAVING TREES PROGRAM helps people save energy by planting the right trees in the right places to effectively shade their homes. Planting shade trees for energy efficiency is already helping big and small communities improve energy efficiency.

TOTAL TREES PLANTED

THROUGH THE ENERGY-SAVING TREES PROGRAM: **10**

TOTAL HOMEOWNERS ENGAGED: 4

6 C 12.0107 CARBON

18,149 POUNDS CARBON SEQUESTERD/AVOIDED

5,543 KwH SAVED

THERMS SAVED **387**

$2,586 IN COMBINED ENERGY AND COMMUNITY BENEFITS

$178 INVESTED BY NEBRASKA CITY UTILITIES

**projected 20 year cumulative values*

Arbor Day Foundation®

DAVEY® *Proven Solutions for a Growing World*

90274501

ENERGY-SAVING TREES
An Arbor Day Foundation Program

SPRING 2014 SEASON

NEBRASKA CITY UTILITIES

THE ENERGY-SAVING TREES PROGRAM helps people save energy by planting the right trees in the right places to effectively shade their homes. Planting shade trees for energy efficiency is already helping big and small communities improve energy efficiency.

TOTAL TREES PLANTED

THROUGH THE ENERGY-SAVING TREES PROGRAM: **66**

TOTAL HOMEOWNERS ENGAGED: 23

6 C 12.0107 CARBON

43,789 POUNDS CARBON SEQUESTERD/AVOIDED

66,108 KwH SAVED

THERMS SAVED 5,018

$33,016 IN COMBINED **ENERGY** AND COMMUNITY BENEFITS

$1,175 INVESTED BY NEBRASKA CITY UTILITIES

**projected 20 year cumulative values*

Arbor Day Foundation

FOREST SERVICE U S DEPARTMENT OF AGRICULTURE

DAVEY
Proven Solutions for a Growing World

90274501

ENERGY-SAVING TREES
An Arbor Day Foundation Program

SPRING 2015 SEASON

THE ENERGY-SAVING TREES PROGRAM helps people save energy by planting the right trees in the right places to effectively shade their homes. Planting shade trees for energy efficiency is already helping big and small communities improve energy efficiency.

TOTAL TREES PLANTED

THROUGH THE ENERGY-SAVING TREES PROGRAM: **92**

TOTAL HOMEOWNERS ENGAGED: 35

6 C 12.0107 CARBON

461,648 POUNDS CARBON SEQUESTERD/AVOIDED

95,793 KwH SAVED

THERMS SAVED **4,867**

$42,060 IN COMBINED ENERGY AND COMMUNITY BENEFITS

$2,208 INVESTED BY NEBRASKA CITY UTILITIES

**projected 20 year cumulative values*

Arbor Day Foundation

DAVEY
Proven Solutions for a Growing World

90274501

ENERGY-SAVING TREES®
An Arbor Day Foundation Program

SPRING 2016 SEASON

THE ENERGY-SAVING TREES PROGRAM helps people save energy by planting the right trees in the right places to effectively shade their homes. Planting shade trees for energy efficiency is already helping big and small communities improve energy efficiency.

TOTAL TREES PLANTED

THROUGH THE ENERGY-SAVING TREES PROGRAM: **99**

TOTAL HOMEOWNERS ENGAGED: 99

6 C 12.0107 CARBON

251,393 POUNDS CARBON SEQUESTERD/AVOIDED

69,224 KwH SAVED

THERMS SAVED **6,270**

$32,765 IN COMBINED ENERGY AND COMMUNITY BENEFITS

$2,600 INVESTED BY NEBRASKA CITY UTILITIES

**projected 20 year cumulative values*

Arbor Day Foundation®

DAVEY
Proven Solutions for a Growing World

90274501

ENERGY-SAVING TREES
An Arbor Day Foundation Program

TOTAL (CUMULATIVE)

THE ENERGY-SAVING TREES PROGRAM helps people save energy by planting the right trees in the right places to effectively shade their homes. Planting shade trees for energy efficiency is already helping big and small communities improve energy efficiency.

TOTAL TREES PLANTED

THROUGH THE ENERGY-SAVING TREES PROGRAM: **417**

TOTAL HOMEOWNERS ENGAGED: 210

6 12.0107 C CARBON **1,047,220 POUNDS** CARBON SEQUESTERD/AVOIDED

319,804 KwH SAVED

THERMS SAVED **22,355**

$149,219 IN COMBINED ENERGY AND COMMUNITY BENEFITS

$8,411 INVESTED BY NEBRASKA CITY UTILITIES

**projected 20 year cumulative values*

Arbor Day Foundation

DAVEY *Proven Solutions for a Growing World*

90274501

Attachment B

Nebraska City Utilities

NEW REBATES

Refrigerator/Freezer Recycling Program

Old and Inefficient Units:
-Must be in operating condition

Contact Service Department at (402)873-3353 to schedule a free pick-up.

$35

* Limit two appliances per customer
* There are only 100 rebates available.

Natural Gas Appliance Rebate

Replacing:
-Electric hot water heater with a Natural Gas hot water heater ($150)
-Electric range/oven with a Natural Gas range/oven ($50)

New Construction:
-Natural Gas hot water heater ($150)
-Natural Gas range/oven ($50)

Up to $200

*** Provide a copy of your receipt and NCU will inspect installation at no cost.**

"Plant the Right Tree in the Right Place"

You can be reimbursed half the cost of your "Energy Saving Tree" (up to $100). Location of the tree must be pre-approved to qualify for reimbursement.

"All rebates relative to services are applied to customer account."

For more information contact us:
100 Central Avenue, Nebraska City, NE 68410
402-873-3353 www.nebraskacityutilities.com

Nebraska City Resident Guide • *2016-'17* Page 5

Examples and Links to Energy Savings Tips from Office Display, Billing Inserts, Newspaper Ads, and Radio Ads

Link for Energy Saving Tips. http://www.nebraskacityutilities.com/energy_tips.html

Link for NCU Tree Planting Rebate Program. http://www.nebraskacityutilities.com/tree_pr.html

Link for ADF Free Tree Program. http://www.nebraskacityutilities.com/pdf/1883_001.pdf

Link for Plant the Right Tree in the Right Place. http://www.nebraskacityutilities.com/tree_pl.html

Link to Natural Gas Appliance Rebates.
http://www.nebraskacityutilities.com/pdf/NG%20Appliance%20Rebate.pdf

Link to Refrigerator and Freezer Rebates. http://www.nebraskacityutilities.com/pdf/Frig%20Recycling.pdf

Link to NEO Loans etc. http://www.neo.ne.gov/loan/index.html

Link to Tree Benefit Calculator. https://www.arborday.org/calculator/

Link to NEO. http://www.neo.ne.gov/

Link to Energy.gov https://energy.gov/eere/office-energy-efficiency-renewable-energy

Link to EnergyStar. https://www.energystar.gov/

NEBRASKA CITY UTILITIES
PUBLIC POWER
NEBRASKA
IT'S YOUR POWER.
Nebraska City Utilities
NEW REBATES

Public Power and Gas Week

Nebraska City Utilities
Refrigerator/Freezer Recycling Program

Nebraska City Utilities would like to encourage the responsible and efficient use of electricity by providing its Refrigerator and Freezer Recycling Program which pays residents $35.00 to recycle old, inefficient refrigerators and freezers.

This Program is being funded by the Nebraska City Utility Electric Department and its Program to develop wise conservation and efficiencies as part of its Integrated Resource Plan for the Electric Department. The Rebate Program, is available to all current Residential Electric customers of Nebraska City Utilities and is limited to two appliances per customer.

Recycling older, inefficient refrigerators and freezers accomplishes multiple benefits:

1. Reduces electricity use by removing inefficient and under used appliances from the Electrical Distribution Grid with Homeowners saving about $125.00 per year per refrigerator or freezer on their electric bills according to Industry estimates.
2. Eliminates inefficient electricity usage as many of these appliances are in uncontrolled elements such as garages and on porches.
3. Eliminates toxic materials such as mercury, Freon and PCB's from older capacitors in an environmentally responsible way.
4. Recycles metals, plastics and other usable materials.

The Program makes it easy for residents to get rid of old, inefficient refrigerators and freezers that are no longer being fully utilized. All it takes is a phone call from residents. The old unit must be in operating condition and the customer is rewarded with a $35.00 one-time credit on their Utility Billing Statement per appliance. Nebraska City Utility customers may call our Service Department at (402) 873-3353 to schedule a free pick-up. Once again, the appliance must be in working order to qualify for the $35.00 incentive rebate and it is available only while funds last ($35 x 100=$3,500). Should you have any questions, please contact Nebraska City Utilities at (402) 873-3353.

Brought to you by Nebraska City Utilities...Reminding you to limit your use of portable heaters, They're great for spot heating but can be expensive to run all the time.

May 2015
WATER HEATERS
:30
LET'S TALK WATER HEATERS. WATER HEATING IS THE SECOND LARGEST UTILITY EXPENSE IN YOUR HOME. THE NEBRASKA CITY UTILITIES HAS THESE ENERGY SAVING TIPS, THAT WILL HELP SAVE YOU MONEY: INSULATE YOUR ELECTRICE WATER HEATER TANK, JUST BE CAREFUL NOT TO COVER THE THERMOSTAT. INSULUATE THE FIRST 6 FEET OF HOT AND COLD WATER PIPES CONNECTE TO THE WATER HEATER AND FINALLY SET THE THEROMOSTAT TO 120 DEBREES TO GET COMFORTABLE HOT

WATER FOR MOST USES. NEBRASKA CITY UTLITIES OFFERS A COMPLETE LIST OF ENERGY SAVING TIPS AT NEBRASKA CITY UTILITIES DOT COM....KEEPING YOU INFORMED

WINDOWS AND COLD WEATHER
:30
WINDOWS PROVIDE VIEWS, DAYLIGHT AND HEAT FROM THE SUN DURING THE WINTER, BUT THEY CAN ALSO ACCOUNT FOR 10-25 PERCENT OF YOUR HEATING BILL BY LETTING HEAT OUT. NEBRASKA CITY UTILITIES HAS THESE TIPS TO KEEP WARM AIR IN! IF POSSIBLE REPLACE SINGLE PANE WINDWS WITH DOUBLE PAIN GLASS BUT IF REPLACEMENT IS NOT IN THE NEAR FUTURE... USE A HEAVY DUTY CLEAR PLASTIC FILM ON THE INSIDE OF YOUR WINDOW FRAMES TO REDUCE DRAFTS, INSTALL TIGHT FITTING SHADES, AND CLOSE CURTAINS AND SHADES AT NIGHT. FIND THESE TIPS AND MORE AS NEBRASKA CITY UTILITIES DOT COM.... KEEPING YOU INFOMED

June 2015
Cooling tips #1
:30
did you know that buying a bigger room air conditioner won't necessarily keep you cooler during hot summer months? Nebraska City Utilities wants you to know that an air conditioner that's too large for the room can actually be less efficient and less effective. Central air conditioning systems should be sized by professionals. You should also set the thermostat on your AC unit at eight degrees higher to help you save money on you monthly bill. You'll find more energy saving tips at Nebraska City Utilities dot com

Cooling Tip #2
Nebraska City Utilities wants you to be informed, here are few things you can do this summer to help save energy. Turn off your air conditioner when the weather is breezy and cool or when the sun goes down. Open windows and doors and turn on fans to circulate air. fans cost less to run than AC units. Get a tune up for your air conditioner to prolong the life of your equipment. Nebraska City Utilities has a list of energy saving tips available in the office or for more information visit Nebraska City Utilities dot com.

December 2015
Heating
:30
WINDOWS PROVIDE VIEWS, DAYLIGHT AND HEAT FROM THE SUN DURING THE WINTER, BUT THEY CAN ALSO ACCOUNT FOR TEN TO TWENTY-FIVE PERCENT OF YOUR HEATING BILL BY LETTING HEAT OUT. NEBRASKA CITY UTILITIES HAS A FEW TIPS TO TRAP THAT WARM AIR INSIDE! IF POSSIBLE REPLACE SINGLE PANE WINDWS WITH DOUBLE PAIN GLASS. IF REPLACEMENT IS NOT IN THE NEAR FUTURE, USE A HEAVY DUTY CLEAR PLASTIC ON THE INSIDE OF YOUR FRAMES TO REDUCE DRAFTS, CLOSE CURTAINS AND SHADES AT NIGHT AND INSTALL TIGHT FITTING SHADES. FOR MORE ENERGY SAVIGN TIPS VISIT AS NEBRASKA CITY UTILITIES DOT COM.

:30
Before cold weather sets in for good, Nebraska City Utilities reminds you to get a maintenance check up on your furnace. Have a contractor make sure it's operating at peak performance to prevent future problems, and unwanted costs. You also need to change your furnace filters once a month or as recommended by the manufacturer. A dirty filter can increase energy costs and damage your equipment, leading to more problems down the road. check the thermostat for proper temperature setting and you're ready for a cold day in Nebraska. For more energy saving tips visit NebraskaCityUtilities.com.

Brought to you by Nebraska City Utilities...reminding you to limit use of portable heaters, while great from spot heating they can be expensive to run all the time.
Brought to you by Nebraska City Utilities...change your furnace filters once a month for best efficiency.
Brought to you by Nebraska City Utilities... do not black air vents with drapes and furniture.

January 2016
Nebraska City Utilities

space heaters
:30

Space heaters can warm up a chilly room, but did you know that they account for one third of all home heating fires? Nebraska City Utilities has these tips for running space heaters: place them at least three feet away from curtains, bedding and anything flammable. You should always plug them directly into a socket, do not use an extension cord. Space heaters are perfect for a little extra heat, but using them too much can raise your utility bill. Nebraska City Utilities provides a full list of energy and cost saving tips at Nebraska city utilities dot com.

carbon monoxide detectors
:30
Some common sources of carbon monoxide are: furnaces or boilers, gas stoves and ovens, water heaters, clothes dryers, wood stoves and both gas and wood burning fireplaces. Nebraska city Utilities has these tips to protect your family from carbon monoxide poisoning: properly vent and maintain any fuel burning appliances, install a carbon monoxide detector within ten feet of every sleeping room, and know the symptoms of carbon monoxide poisoning for early warning signs. Your safety is top priority at Nebraska City utilities.

April Apple Jack Promotion April 22 to April 30
Recycling Program Script:

Do you have an old refrigerator or freezer that needs to be recycled? Contact Nebraska City Utilities to learn more about how you can earn a $35 credit on your next utility bill. Customers can recycle their old, inefficient refrigerators or freezers by calling 873-3353 to schedule a free pick up. This program is being funded by the Nebraska City Utility Electric Department encouraging the responsible and efficient use of electricity. For more information, visit nebraskacityutilities.com

Natural Gas Rebate Script:
Want to know how you can save more on your next bill with Nebraska City Utilities? Upgrading your home with natural gas appliances can earn you up to $200.00 in rebates. Conserving energy through the use of Natural Gas provides significant savings today and for the future. Contact Nebraska City Utilities at 873-3353 or online at nebraskacityutilities.com for more information on wise and efficient use of energy and to start saving today.

June 2016
Air Conditioning and Summer Tips

:30

Nebraska City Utilities would like to remind you to have your Air Conditioning units checked and serviced! Changing any filters once a month will help your equipment to provide peak performance and save you money. Did you know that you can cut your cooling consumption by 3 to 4 percent for every degree you raise your air conditioning thermostat between the 70 and 80-degree mark? Every degree and every penny saved matters so start by saving energy today and be sure to have that AC unit serviced. For more tips on saving energy this summer visit Nebraska city utilities.com.

:10

Nebraska City Utilities reminding you to Shrink Your Bills and Not Your Clothes; by washing with cooler water and during cooler parts of the day you'll be saving significant amounts of energy and money.

Nebraska City Utilities reminding you to use ceiling fans to cool off. Ceiling fans use no more electricity than a standard light bulb. But, be sure to turn fans off when you leave – they only cool people not rooms.

Nebraska City Utilities encourages you to unplug what's not being used, even chargers use electricity when they aren't charging. It may be easier but it's a guaranteed way to waste energy. So pull the plug to save.

August 2016
Recycling Program Script: August 2016

30 sec ads

Do you have an old refrigerator or freezer that needs to be recycled? Contact Nebraska City Utilities to learn more about how you can earn a $35 credit on your next utility bill. Customers can recycle their old, inefficient refrigerators or freezers by calling 873-3353 to schedule a free pick up. This program is being funded by the Nebraska City Utility Electric Department encouraging the responsible and efficient use of electricity. For more information, visit nebraskacityutilities.com

Natural Gas Rebate Script:
Want to know how you can save more on your next bill with Nebraska City Utilities? Upgrading your home with natural gas appliances can earn you up to $200.00 in rebates. Conserving energy through the use of Natural Gas provides significant savings today and for the future. Contact Nebraska City Utilities at 873-3353 or online at nebraskacityutilities.comfort more information on wise and efficient use of energy and to start saving today.

10 sec ads
Here's a tip from Nebraska City Utilities, put a few drops of food dye in the tank of your toilet and wait 15 minutes. If the color appears in the bowl you have a leak. Don't let water leaks drain your wallet.

Nebraska City Utilities encourages you to adjust your lawn mower to a higher setting. Longer grass shades roots and holds moisture better than a closely clipped lawn. In the long run saving you more money by not having to water as often.

Did you know you could save hundreds of gallons of water a year by using a layer of organic mulch around plants to reduce evaporation? Nebraska City Utilities wants to encourage you to be wise about water usage and continue to save.

September 2016

Energy Saving Tips

:30
Are you wanting to save money on your next electric bill? How about on all your electric bills to come? You can do so by planting the right tree in the right place. Nebraska City Utilities recognizes the importance that tress place providing shade that cools you and your living environment. Using the method of "Plant the Right Tree in the Right Place" Nebraska City Utilities can help you create comfort and save energy. Call 873.3353 to find out more about the right location for your "energy saving tree" and how you can start saving today.

:10

Nebraska City Utilities encourages you to adjust your lawn mower to a higher setting. Longer grass shades the roots and holds moisture better than a closely clipped lawn. In the long running saving you more money by not having to water as often.

Did you know you could save hundreds of gallons of water a year by using a layer of organic mulch around plants to reduce evaporation? Nebraska City Utilities wants to encourage you to be wise about water usage and continue to save.

Nebraska City Utilities wants to ask for your help: if you notice that a street light fails to come on in the evening or if it is not performing properly to contact the Nebraska City Utilities Service Department to report the outage.

October 2016

Cooler weather energy tips

:30
Cooler weather is approaching and boy does it feel good. Nebraska City Utilities wants to remind you before the cold weather sets in to schedule your maintenance check up on your furnace to ensure it's operating at peak performance. This will prevent future problems and unwanted costs. You may also need to change your filter, as a dirty filter can increase your costs and damage your equipment, leading to more unwanted problems. So Check your thermostat for the proper temperature setting, get the furnace checked and filter changed and you are ready to go. For more energy saving tips visit NebraskaCityUtilities.com

:10
Windows provide a great view, daylight, and heat from the sun during the winter. But they also account for 10 to 25 percent of your heating bill by letting the heat out. For more energy saving tips visit Nebraska City Utilities.com

Limit the use of portable space heaters to save money. They are great for heating specific areas but can be expensive to run all the time. For more energy saving tips visit Nebraska City Utilities.com

Nebraska City Utilities wants to remind you to change your furnace filters at least once a month or as recommended by the manufacturer. For more energy saving tips visit Nebraskacityutilities.com

December 2016 to Jan 8th 2017

Carbon monoxide detectors

:30
Furnaces, boilers, gas stoves and ovens, water heaters, clothes dryers, wood stoves and both gas and wood burning fireplaces are all common sources of carbon monoxide. Nebraska city Utilities wants to protect your family from carbon monoxide poisoning by reminding you to properly vent and maintain any fuel burning appliances and install a carbon monoxide detector within ten feet of every sleeping room. Be sure to know the symptoms of carbon monoxide poisoning as your safety is top priority at Nebraska City utilities.

10:
Brought to you by Nebraska City Utilities... reminding you to limit the use of portable space heaters, while they are great for spot heating, they can be expensive to run all the time.

10:
Brought to you by Nebraska City Utilities... Change your furnace filter once a month for best efficiency

10:
Brought to you by Nebraska City Utilities... All items use electricity when they are plugged in. Be sure to unplug items when not in use to save energy

Running Jan 9th to 22nd 2017
Public Hearing Announcement

:30
Save the date and let your voice be heard Monday, January 23rd at 6:30 p.m. Nebraska City Utilities is working on their preliminary report on the 5-year electric integrated resource plan and we want to hear from you. Join us at Rowe Memorial Safety Complex at 1518 Central Ave to hear more about recent input from customer surveys, customer incentives, and to give us your input on electric supply in the future. Don't forget Monday, January 23rd at 6:30 p.m. Come out and let Nebraska City Utilities hear from you.

:10
Nebraska City Utilities wants your voice to be heard at the Rowe Safety Complex on January 23rd at 6:30 pm for the 5-year electric integrated resource plan!

January 24 to February 28, 2017

30 sec
Did you know increasing the humidity in your home could help you save money on your next utility bill? Running a humidifier adds moisture to the air holding heat in better and making you feel warmer. So get that humidifier running, turn that thermostat down and start saving money today. For more information on how to keep yourself warm through these cold winter days and save money visit Nebraska city utilities.com. You can also like us on Facebook for other weekly energy saving tips.

10 sec
Brought to you by Nebraska City Utilities... reminding you to close the flue in your fireplace, when not in use, to keep in warm air.
Brought to you by Nebraska City Utilities... reminding you to use a heavy duty clear plastic film on the inside of window frames to reduce drafts.

Did you know opening the cupboard under your sinks in the kitchen and bathroom can help prevent pipes from freezing.

Attachment C

Member Spotlight: Cedar Falls Utilities Solar Project

By Joanna Schroeder

Cedar Falls has been known as a progressive community. So when the idea of building Iowa's first community solar project began to take shape, Cedar Falls Utilities (CFU) thought their town would be the ideal location. Working with University of Northern Iowa (UNI) who has installed its own solar panels, along with some research in the form of the solar array located in Kalona, Iowa, CFU took a leap and launched the state's largest community solar project: Simple Solar. The solar array is 1,500 kilowatts and consists of more than 6,500 Hanwha fixed panels and went online April 1, 2016.

The CFU Simple Solar project team included Steve Bernard, Director of Customer Service, Erin Buchanan, Project Manager and Ken Kagy, Project Engineer. The first step was to identify a site for the solar project with the goal of either using land already owned by the utility or by the city and in an area that has good southern exposure. The location selected was an eight-acre site in Prairie Lakes Park that Cedar Falls allowed CFU to use at no cost.

"That was very helpful because one of the objectives of this project was to be able to price this solar project for our customers at an affordable price so a lot of people could participate," notes Bernard. "We've been asked about why we didn't put the solar panels on rooftops but it was not cost effective. If we were to scatter the solar systems around town, it would have been much more expensive to tie back into our electrical system."

The location was also ideal because it was fairly close to their Cedar Falls electric distribution system. CFU only had to build a short transmission line to connect to the distribution system and the solar power flows right into their distribution center in Cedar Falls. As with other decisions, this also helped to keep the costs low.

Next, the team began the bidding process and RER Energy Group was selected. Although based in Pennsylvania, the company has an Iowa presence and their project manager lives locally in Cedar Falls.

Once the project size and size was determined, the next step was to begin selling shares to the community. The 1,500 kilowatt units were split into 170 watts per unit giving CFU 8,700 units to sell. A homeowner or business was only allowed to purchase up to 100 percent of their energy use.

Bernard says they tried to design the project so it would only impact those who participated. So a participant who bought units in the project gets a credit back on his or her utility bill for 20 years.

"In other words, the energy we are buying off this solar array replaces energy we would have been buying off the electricity market, so we're passing out customers the equivalent of our avoided costs—what that energy would have cost us had we been buying it from the market," says Bernard. This, he adds, was a key element to the success of the project, which sold out for approximately $270 per unit.

The University of Iowa purchased 20 percent of the solar output and other homeowners or business could purchase one unit or up to 50 units. "We had a whole slew of customers, as you might imagine, buying one unit or two units. They just wanted to participate a little; they thought it was a neat project and wanted to be part of it," says Bernard. Ultimately, 1,250 homeowners and businesses bought into the inaugural community solar project.

Bernard notes that it's important to understand that participants don't actually own a piece of the array- they own rights to a credit on their utility bill. "In actuality, CFU doesn't own this array. As a municipal entity, we can't take advantage of the tax credits," says Bernard. "There are major federal tax credits for building renewable energy, so we had a third party build and own the array and they sell us the energy. They can take the tax credits so in theory they can lower the cost of the energy they sell to us lower than if we built it ourselves." In the future, once the tax credits have been exhausted, CFU has the option, but not the obligation, to purchase Simple Solar.

During the enrollment phase, CFU's marketing department deployed a media campaign that included advertisements, articles in newspapers, blogs and radio. They held community meetings and hosted open houses. "One of the best things we did is had yard signs made up. We were amazed at how many people wanted to put yard signs in their yards when they signed up," says Bernard.

"We designed the project this way to be simple. That's why we called it Simple Solar," Bernard explains. "What we're trying to do is remove barriers for customers to participate. So an important element to success was to keep the costs low. Another part of keeping it simple is that we're allowing customers to pay for their units either in one lump sum up front, or the option to spread the payment over 12 months. And if they move off of our system, or pass away, or are no longer a CFU customer, we buy the units back at a discounted rate."

Steve Bernard - Director of Customer Service, Cedar Falls Utilities (CFU)

Simple Solar customers recognized that they wouldn't see an immediate return on the investment but they will get a credit for 20 years. Bernard said they estimate customers will get their money back within 15 years depending on the future costs of energy.

At this time Bernard says there are no plans to build a second community solar project. However, if customer demand dictates the need for another project, then CFU will deliver.

The project has been a huge success and other cities across the country have been calling CFU to get information and advice. "We've been asked to do presentations to other utilities in and outside of Iowa and we're happy to assist cities who are considering offering community solar projects to their communities." ❀

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E-MAIL: power@hkscholz.com

Attachment D
APPA Electric Car Charging Station Article

WASHINGTON REPORT

APPA Joins DOE to Advance Electric Vehicles

By David Blaylock, Integrated Media & Communications Manager, APPA

The American Public Power Association and the U.S. Department of Energy will pursue collaborative efforts to advance electric vehicle adoption and charging infrastructure construction in public power communities across the United States.

APPA and the DOE signed a memorandum of understanding making this pledge in July in Washington, D.C.

In signing the memorandum, APPA President and CEO Sue Kelly and DOE Acting Assistant Secretary for Energy Efficiency and Renewable Energy David Friedman said they would work to develop information and resources to increase education and awareness of the benefits of EVs to public power utilities and local officials in a partnership called "EV Everywhere — Public Power Charged."

"Given our strong commitment to environmental stewardship, public power is honored to partner with the DOE to promote increased use of electric vehicles," Kelly said. "We want to be responsive to changing customer preferences and help our members prepare for the future of transportation."

"Given our strong commitment to environmental stewardship, public power is honored to partner with the DOE to promote increased use of electric vehicles,' Kelly said. "We want to be responsive to changing customer preferences and help our members prepare for the future of transportation."

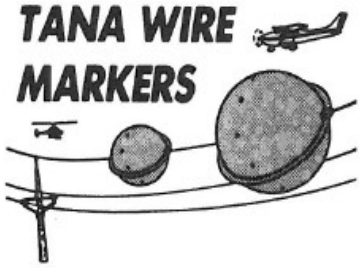
One major part of this agreement is the development of a community action plan that focuses on communities with fewer than 200,000 electri customers. There are almost 2,000 public power communities. Educatior materials such as webinars and guidebooks will be created with many different audiences in mind, including utility employees, boards of directors, city council members, mayors, and state-level representatives.

The hope is that this education will lead to increased efforts to construct workplace charging facilities at utilities and community businesses and allow for the study of the impacts of EVs in public power communities, their utility infrastructure, and the modern grid. APPA will be able to share updates from the broader EV Everywhere utility partnership and give industry input on EV-related policy and technical issues through the Quadrennial Energy Review and the Quadrennial Technology Review.

"With the clean energy revolution accelerating and the electric vehicle market growing, it is critical that we expand cooperation as part of our EV Everywhere Grand Challenge," said Friedman. "APPA has shown tremendous leadership in promoting EVs among its network of public utilities, and with this MOU, we are eager to work together to electrify transportation with clean and renewable power in our biggest cities and smallest towns, ensuring that EVs truly are everywhere."

The partnership came a day after President Barack Obama's announcement of a federal-private plan to accelerate EV adoption in the U.S. This plan came with the announcement of $4.5 billion in loan guarantees to support innovative charging facilities, the development of EV charging corridors, a proposed plan for a national network of fast charging stations, and an emphasis on state, county, and municipal EV procurement.

TANA WIRE MARKERS



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Attachment E
Minutes of Public meetings

BOARD OF PUBLIC WORKS

NEBRASKA CITY, NE

MINUTES OF MEETING

Date of Present Meeting November 15, 2016 Date of Last Meeting October 12, 2016

Called to Order by Chairman Hogeland Time 11:30 a.m.

Members Present Hogeland, Vanderveen, Eilers and Shrader

Members Absent James

Radio and Press were notified.

Notices were posted in the Arbor Bank, Premier Bank, American National Bank and City Hall of Nebraska City on Tuesday, November 8, 2016 stating the time and place of the meeting and stating that the known subjects on the agenda were on file and available for public inspection at the Utilities Office, 100 Central Avenue, Nebraska City, Nebraska. Copies of the acknowledgement of receipt of notice and posting on November 8th are attached to these minutes.

Also in attendance at the meeting was, Leroy Frana – General Manager, Jeff Kohrs – Office Manager/Accountant, Tom Liesemeyer – Gas & Water Superintendent, Paul Davis, Incoming Public Works Commissioner, Erv Friesen, Public Works Commissioner, Phil Euler and Gen Li with NMPP Energy, Carol Brehm with NMPP Energy and Teresa Runkles – Recording Secretary.

Meeting was called to order by Chairman John Hogeland at 11:30.A.M.

The following opening statement was read: This meeting is subject to the Open Meetings Law and Availability of the Agenda pursuant to Nebr. Rev. Stat. Chapter 84, Article 14. A current copy of the Open Meeting Act is posted in the meeting room and the Agenda is available to the public.

It was moved by Shrader seconded by Eilers, to amend the Agenda moving the NMPP/MEAN Presentation and the Integrated Resource Plan Board Discussion with NMPP Energy Staff to the beginning of New Business. Voting aye were, Vanderveen, Eilers, Shrader and Hogeland. Voting nae, none. Motion carried.

The Financial Report for September 2016, the 12th month of Fiscal Year 2015-2016 was presented in preliminary form. Jeff Kohrs, Office Manager/Accountant indicated that the reports are preliminary in form with possible year-end adjustments. He indicated that the Audit is underway and that he expects the Reports to become final prior to the next meeting. After discussion it was moved by Vanderveen seconded by Eilers, to accept the Reports as presented. Voting aye were, Vanderveen, Eilers, Shrader and Hogeland. Voting nae, none. Motion carried.

Jeff Kohrs presented the Claims for the month of October 2016, the 1st month of new Fiscal Year 2016-2017. It was moved by Hogeland seconded by Vanderveen, to approve the Claims as

Meeting adjourned by ..... Time .....

Signed by ..... John V. James

Chairman Secretary

BOARD OF PUBLIC WORKS

NEBRASKA CITY, NE

MINUTES OF MEETING

Date of Present Meeting November 15, 2016 Date of Last Meeting October 12, 2016

Called to Order by Chairman Hogeland Time 11:30 a.m.

Members Present Hogeland, Vanderveen, Eilers and Shrader

Members Absent James

presented. Voting aye were, Vanderveen, Eilers, Shrader and Hogeland. Voting nae, none. Motion carried.

It was moved by Eilers seconded by Vanderveen, to approve the Minutes of the last regular meeting of the Board of Public Works of October 12, 2016 as mailed. Voting aye were, Vanderveen, Eilers, Shrader and Hogeland. Voting nae, none. Motion carried.

Frana presented an Update on Unfinished Business as well as Updates on Projects with the Report presented to all Members. He highlighted the fact that there have now been a total of 11 refrigerator/freezers recycled through the Rebate Program and four Natural Gas Appliance Rebates given. Additionally he reported on the Proposed Fairbanks Morse/Hope Creek Nuclear Plant Generator Swap from Unit #13. He stated that Fairbanks Morse has indicated that the Project is expected to be approved with P.O.'s issued sometime that week. Frana stated that the Nebraska Department of Roads at the South Interchange Project approved 100% reimbursement on the relocation of the sewer line to serve the mall property which was being affected by the wall being installed at the intersection. Frana stated that a Contract was presented for 100% reimbursement by the Nebraska Department of Roads and was approved by the City Commissioners at their last meeting. Frana went on to report that City Attorney Partsch is working on the necessary Easements for the Arborview/Maplecrest Drives Sewer Extension Project along with the necessary Ordinances required for this Extension Project. A brief discussion was held concerning a possible USDA RedLg Grant Application with Member Shrader and Frana stating they would acquire the necessary documents in order to facilitate that Application should the non-profit wish to pursue it. Frana also provided information on the recent Water Well #11 failure and discussions with various parties including the design engineering firm and an Update on Forestry Truck #35. Also distributed was a list of various other projects, miscellaneous in nature that are ongoing.

Carol Brehm, Member Relations Representative with the Municipal Energy Agency of Nebraska (MEAN) was present to provide an Overview to familiarize the Board of Public Works with MEAN and emphasize the role of its Member Owners. Brehm presented a Power Point Presentation showing NMPP Energy Companies, how they interact, the services they provide, the services they provide for the Utilities Department, a brief history of MEAN, the energy that they supply by fuel type, the vast area represented by the Member Owners, as well as the various Boards and Committees that operate under MEAN. No action was required.

Meeting adjourned by ..... Time .....

Signed by ..... John V. James

Chairman Secretary

BOARD OF PUBLIC WORKS

NEBRASKA CITY, NE

MINUTES OF MEETING

Date of Present Meeting November 15, 2016 Date of Last Meeting October 12, 2016

Called to Order by Chairman Hogeland Time 11:30 a.m.

Members Present Hogeland, Vanderveen, Eilers and Shrader

Members Absent James

Phil Euler and Gen Li were present to provide the Integrated Resource Plan Informational Discussion for the Board of Public Works in order to gather their input as required by the Western Area Power Administration. Mr. Euler presented a Power Point Presentation, going over what is required of an Integrated Resource Plan, what went into gathering information from customers and a future Public Hearing and of course, Board comments and direction. Mr. Euler went on to provide information on the previous 2012 Integrated Resource Plan (IRP) load forecast, as well as the 2017 IRP load forecast. Also presented were the 2012 and 2017 IRP energy forecasts and comparisons. Gen Li presented background on the modeling that was used to provide for the 2017 IRP load and energy forecast methodology. Mr. Euler went on to provide information on the history of IRPs and what takes place between the time that it is developed and the next IRP is due five years later. Euler reviewed Survey results as ranked by NCU customers and as shown from a Supply side and a Demand side Energy viewpoint. All Survey results were shared with Members which indicated their receptiveness to various plans being offered by the Utilities or that may be offered in the future. Finally, new Demand Side Management Options were presented. Euler stated that he is receptive to any suggestions that may come either from Staff, the Board of Public Works or the Public. He stated that a Public Hearing likely would be held in January with the final Report completed and bound and delivered no later than March 1st. No action was required at this time.

Member Vanderveen left the meeting at this time.

Mona Kuhlenengel was present to provide an Update on the Employee Insurance Package. She presented comparisons of the existing Health Insurance, its renewal and a Proposal of an insurance product called a Captive. Discussion ensued. Frana stated that the City Commissions of Nebraska City will make a decision on Monday, November 21st for the Health Insurance Package. Kuhlenengel also presented an Overview of the Employee Dental and Vision Insurance. She stated that it's City Staff and Utility Staff's Recommendation to renew the existing insurance with Guardian and to survey all employees at both entities prior to the renewal the next year to determine where employees are obtaining their services to determine the need for contracted providers specific to our community. No action was required.

Frana provided an Overview of the "Futures" Price of Natural Gas for the month of December Upcoming as well as the historical review of pricing in the last 12 months. Frana stated that prices remain reasonable and storage at the National level remains full with the Utilities as required by tariff beginning to withdraw from its storage which was full.

Meeting adjourned by ..... Time .....

Signed by ..... John V. James

Chairman Secretary

BOARD OF PUBLIC WORKS

NEBRASKA CITY, NE

MINUTES OF MEETING

Date of Present Meeting November 15, 2016 Date of Last Meeting October 12, 2016

Called to Order by Chairman Hogeland Time 11:30 a.m.

Members Present Hogeland, Vanderveen, Eilers and Shrader

Members Absent James

Frana once again stated that the Easement work for the Sewer Main Extension for the Arborview and Maplecrest Drives Sewer Extension is underway with the Project at NDEQ for review and the Project out for Bid effective November 15th with an opening on December 6th, with all Bid pricing proposals to be held for a minimum of 60 days.

Frana reported that he and Chris Koperski, of Utility's Staff were going to meet very soon to determine the information needed for the dropdown menus on the proposed new Utilities Website. After all information is finalized, the information will be submitted to B.COM for a quote. Frana stated that Koperski has been through every link on the Utilities present website and there is a great amount of information and Management in various departments has been contacted to determine what additional information they would like to see on the site.

Frana reported that he and Dan Patton met with NDOR Staff concerning the lighting on the south intersection. He stated that the City had signed two Agreements obligating as required by State Statute, the City to be responsible for the operation and maintenance of the operation of the roadway lighting from South 3rd Street west to South 63rd Road and South and North on #75 as required. He stated that there would be the relocation of 18 existing lights and the addition of 59 new lights as well as a traffic controller and the traffic control lights. These lights will be 250 watt high pressure sodium lights. The installation is provided for in the Project with Utilities responsible for all future operation and maintenance with the exception of the programming of the traffic control system.

Frana led discussion on a proposal to light the north side road off of Highway 2 and 75 as it intersects with Steinhart Park Road. Frana stated that there is a dusk to dawn light on a pole south of that intersection and a similar light could be installed on the pole north of that intersection. Even though this light is not an intersection light, it would give an indication of where the road meets the highway as this is considered a safety issue. After discussion, it was moved by Shrader seconded by Eilers, to direct Staff to install a dusk to dawn light on the pole north of that intersection of Steinhart Park Road with Highways 2 and 75. Voting aye were, Vanderveen, Eilers, Shrader and Hogeland. Voting nae, none. Motion carried.

Frana presented a Power Point Presentation of the Lincoln Electric System Holdrege Solar Center. No action was required as it was for information only.

Frana shared with the Board of Public Works discussions with Olsson Associates concerning updating the 2008 Water Master Plan and how to serve outlying areas beyond the Beltway as

Meeting adjourned by ..... Time .....

Signed by ..... John V. James

Chairman Secretary

BOARD OF PUBLIC WORKS

NEBRASKA CITY, NE

MINUTES OF MEETING

Date of Present Meeting November 15, 2016 Date of Last Meeting October 12, 2016

Called to Order by Chairman Hogeland Time 11:30 a.m.

Members Present Hogeland, Vanderveen, Eilers and Shrader

Members Absent James

well as JEO Consulting and how to serve areas outside of the Beltway. Frana stated that JEO provided a Report to the Board of Public Works on possible upgrades however another area needs to be studied and the Olsson Study needs to be updated because of the age of the Report as well as possible need to plan for future water growth should an industry or business need arise. Frana stated that after receiving these Proposals, he expects to make application to the Nebraska Department of Economic Development for Grant Funds. Member Shrader stated that an Application to USDA may be a more appropriate Grant provider. Frana stated that he would provide an Update to the Board of Public Works when all information on proposals were completed.

Frana presented Work Order #114, an Electric Work Order to bury a 4160 volt power line and set transformer for a new home on South 60th Road in the amount of $20,309.89 with the customer to provide $7,412.70 plus cost of service line according to Nebraska City Utility Policy. Also Work Order #294, a Natural Gas Work Order to provide for capitalizing the relocating/replacement of Natural Gas Lines in conjunction with the South 11th Street Improvement Project in the amount of $27,779.37. It was moved by Shrader seconded by Hogeland, to approve and recommend to the City Commissioners Work Orders #114 and #294. Voting aye were, Vanderveen, Eilers, Shrader and Hogeland. Voting nae, none.

It was moved by Shrader seconded by Eilers, to approve Natural Gas Retirement Work Order #295R, retiring parts of the 3" Natural Gas Mains relocated or replaced on the South 11th Street Project in the amount of $3,565.00. Voting aye were, Vanderveen, Eilers, Shrader and Hogeland. Voting nae, none. Motion carried.

Frana introduced Work Orders #112, an Electric Work Order to bury a single phase 4160 volt power line to two new homes at 21st Street and 2nd Corso (Deer Trail Subdivision) in the amount of $11,638.38 with the customer to provide for $4,823.59 plus the cost of service lines in accordance with Nebraska City Utility Policy and Work Order #298, a Natural Gas Work Order to provide for the extension of approximately 3,000' of 2" Natural Gas Main on South 60th Road for three new customers in the amount of $13,190.50 with the three customers to pay a total of approximately $5,957.10 according to Nebraska City Utility Policy and Work Order #386 and #388 to provide for the assignment of a Work Order to record the purchase of a 2017 F550 chassis with CNG Conversion as provided by the Nebraska Environmental Trust Grant to replace Truck #17 in the amount of $54,935.87 and the removal, repair and reinstallation of the fiber boxes equipped with an air compressor and hose reel for this Truck #17 in the amount of $18,824.00. It was moved by Hogeland seconded by Eilers, to approve Work Orders #112,

Meeting adjourned by ..... Time .....

Signed by ..... John V. James

Chairman Secretary

BOARD OF PUBLIC WORKS

NEBRASKA CITY, NE

MINUTES OF MEETING

Date of Present Meeting November 15, 2016 Date of Last Meeting October 12, 2016

Called to Order by Chairman Hogeland Time 11:30 a.m.

Members Present Hogeland, Vanderveen, Eilers and Shrader

Members Absent James

#298, #386 and #388 as presented. Voting aye were, Vanderveen, Eilers, Shrader and Hogeland. Voting nae, none. Motion carried.

It was agreed that the next regular meeting of the Board of Public Works would be held on Thursday, December 15, 2016 at 11:30 a.m.

There being no further business to be brought before the Board of Public works, the meeting was adjourned.

Meeting adjourned by ..... Time .....

Signed by ..... Chairman ..... Secretary

January 23, 2017 Public Meeting
NCU Integrated Resource Plan

BOARD OF PUBLIC WORKS

NEBRASKA CITY, NE

MINUTES OF MEETING

Date of Present Meeting....January 23, 2017.....Date of Last Meeting...January 19, 2017...

Called to Order by....Chairman Hogeland.....Time....6:30 p.m.....

Members Present....Hogleand, James, Vanderveen, Eilers and Shrader.....

Members Absent....None.....

Radio and Press were notified.

Notices were posted in the Arbor Bank, Premier Bank, American National Bank and City Hall of Nebraska City on January 18, 2017 stating the time and place of the meeting and stating that the known subjects on the agenda were on file and available for public inspection at the Utilities Office, 100 Central Avenue, Nebraska City, Nebraska. A special advertisement in the Nebraska City News-Press advertising the Public Hearing and the purpose of it was published on January 17, 2017 and January 20, 2017. Copies of the acknowledgement of receipt of notice and posting on January 18th are attached to these minutes.

The following opening statement was read: This meeting is subject to the Open Meetings Law and Availability of the Agenda pursuant to Nebr. Rev. Stat. Chapter 84, Article 14. A current copy of the Open Meeting Act is posted in the meeting room and the Agenda is available to the public .

The Public Hearing was called to order by Nebraska City Utilities' (NCU) Board of Public Works Chairman John Hogeland at 6:31 pm. Board members present: Jeanette Eilers, Kiel Vanderveen, Stephanie Shrader and John James. Others in attendance included City Finance Commissioner Gloria Glover, City Attorney David Partsch, General Manager Leroy Frana, Operations Superintendent Dan Patton, Water Plant Superintendent Cathy Meyer, Detail Clerk/Cashier Karen Tift and Office Manager/Accountant Jeff Kohrs. Members from the public included: Ted Beilman, and Hayden Cline

Phil Euler and Shannon Coleman of NMPP Energy of Lincoln NE the Consultants hired by the Board of Public Works to work with Staff to develop the 2017 Integrated Resource Plan for the City Utilities made the presentation. Euler and Coleman presented a Power Point presentation.

Mr. Euler gave an overview of the objectives and topics that would be covered during this hearing as well as the purpose and necessity to prepare an IRP every 5 years with 2 year and 5 year goals or actions.

Ms. Coleman presented Electric Load Forecasts for 2012 and 2017 which were compared and a future load forecast was also presented. The current load is lower than what was projected in 2012. Several reasons were sighted for the difference including the loss of load due to American Meter moving some of their production to a different facility, mild weather and decrease in usage by customer utilization of more energy efficient appliances and light bulbs as

Meeting adjourned by.....Time.....

Signed by..... .....

Chairman Secretary

BOARD OF PUBLIC WORKS

NEBRASKA CITY, NE

MINUTES OF MEETING

Date of Present Meeting January 23, 2017 Date of Last Meeting January 19, 2017

Called to Order by Chairman Hogeland Time 6:30 p.m.

Members Present Hogeland, James, Vanderveen, Eilers and Shrader

Members Absent None

well as better insulation and more energy friendly building materials. Ted Beilman asked if Nebraska City households had similar electric usage compared to other households. Mr. Euler commented that the usages would be similar for those in our region. Usages would be higher in the winter time for those north of Nebraska for instance Minnesota and North Dakota, and usage would be higher in the summer time for customers in Texas or more southern state.

Slides were presented showing previous IRP plan actions and results of those efforts. Other actions that have been taken by NCU were listed. Ted Beilman asked if NCU had enough capacity to handle additional load if American Meter were to bring back the manufacturing process that had been relocated. Mr. Euler indicated that NCU had made a number of improvements to its generation equipment and was in good shape and would have the capacity to supply power if that process was moved back.

Discussion was held on how costs vary depending on source, coal, wind, solar and nuclear.

It was noted that NCU surveyed its customers and results of the survey were presented on several slides.

Meeting NCU objectives through Demand Side and Supply Side options were presented.

Recommendations for a preliminary 2 year plan were presented.

A time for public comment was made available. One of the comments was that LED lights were a good start to reduce energy usage.

The public hearing was adjourned at 7:45 pm.

Meeting adjourned by ..... Time .....

Signed by ....

Chairman Secretary

NOTICE OF PUBLIC HEARING
For Public Input
& Information
Nebraska City
Utilities'
Preliminary Report
on 5 Year Electric
Integrated
Resource Plan
****
Rowe Memorial
Safety Complex
1518 Central Ave.
Jan. 23, 2017
6:30 pm

Public Hearing to here the report of the Draft Intigrated Resource Plan Report

	NAME	ADDRESS
1	Cathy Meyer	Nebraska City
2	Karen Tift & Hayden Cline	Nebraska City
3	Ted J Beilman	Nebraska City
4	Gloria G Glover	Nebraska City
5	Dan Patton	Nebr City
6	Jeff Kohrs	Nebr. City
7	Daniel Partsch	Nebr. City
8	Stephen Snyder	Nebr City
9	John Hoagland	NC
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NEWS-PRESS

823 Central Avenue
NEBRASKA CITY, NEBRASKA

NEBRASKA CITY UTILITIES RECEIVED JAN 30 2017 NEBRASKA CITY, NEBR.

PROOF OF PUBLICATION

The State of Nebraska,} SS.
County of Otoe,

Tammy Schumacher...being first duly sworn, says that she is General Manager for the NEWS-PRESS, a legal newspaper which is published and is in general circulation in Otoe County, Nebraska, and is printed Bi-weekly at its office in Nebraska City, Nebraska; that said newspaper has been so published for more than fifty-two consecutive weeks prior to the publication of the annexed notice, and has a bona fide circulation of more than three hundred copies each issue.
That to affiant's personal knowledge the annexed notice was published in said newspaper 1 consecutive weeks, beginning with the issue of January 20 20 17, and in every subsequent issue of said newspaper up to and including the issue of January 20, 20 17

Publisher's fee at legal rate is $. 95.00

Tammy Schumacher

Subscribed and sworn to before me this 25th Day of January, 20 17

Erin Johnson
Notary Public

My Commission expires June 9, 20 19

A GENERAL NOTARY - State of Nebraska
ERIN JOHNSON
My Comm. Exp. June 9, 2019

CITY OF NEBRASKA CITY, NEBRASKA
MINUTES OF CITY COUNCIL REGULAR MEETING
February 20, 2017

Pursuant to due call and notice thereof, a Regular Meeting of the City Council of the City of Nebraska City was conducted in the William F. Davis Room at City Hall, 1409 Central Avenue, on February 20, 2017. Notice of the meeting was given in advance thereof by posting in at least three public places, the designated method for giving notice, as shown by the Certificate of Posting Notice attached to these minutes. Availability of the agenda was communicated in advance to the media, Mayor and Commissioners of this proceeding and said meeting was open to the public.

Mayor Bequette called the meeting to order at 6:00 p.m. The Mayor publicly stated to all in attendance that a current copy of the Nebraska Open Meetings Act was available for review and indicated the location of such copy posted in the room where the meeting was being held. Mayor Bryan Bequette then led in the Pledge of Allegiance. Upon roll call the following answered present: Paul Davis, Patrick Wehling, Vic Johns, Gloria Glover and Mayor Bequette. Absent: None. The following City Officials were present: City Administrator Grayson Path, City Attorney David Partsch, Police Chief David Lacy, Utilities Director Leroy Frana, Utilities Treasurer Jeff Kohrs, Construction and Facility Manager Marty Stovall and City Clerk-Treasurer Randy Dunster.

Mayor Bequette moved to approve the following consent items:
Approve minutes from the February 6, 2017 City Council Meeting.
Approve publication for three-year renewal of alfalfa/hay ground lease west of cemetery.
Approve First Addendum to Access and Hold Harmless Agreement with Terracon Consulting Inc.
Approve the relocation of the NCTC Street sign auction item to 10th St and 1st Ave.
Approve SDL request for Nebraska City Lourdes High School fund raiser event to be held March 18, 2017 as organized by the Knights of Columbus. Motion seconded by Commissioner Johns. Upon roll call the following voted YES: Davis, Wehling, Glover, Johns and Mayor Bequette. Voting NO: None. Motion carried

Mayor Bequette proclaimed March as Problem Gambling Awareness Month.

Mayor Bequette opened the Public Hearing on the use of $25,000 of City Economic Growth Funds for Nebraska City Tourism & Commerce. Dan Mauk and Amy Allgood spoke to explain the request. Mayor Bequette moved to close the Public Hearing, seconded by Commissioner Wehling. Upon roll call the following voted YES: Johns, Wehling, Glover, Davis and Mayor Bequette. Voting NO: None. Motion carried.

Treasurer's report was given, as of January 31, 2017, Total Nebraska City funds of $6,561,349.61. Total Cash and Reserve for Nebraska City Utilities of $15,499,797.43. Total City of Nebraska City and Utility funds $22,061,147.07.
Council acknowledged receipt of City Administrator Report. Grayson Path spoke regarding his report.
Council acknowledged receipt of Utility Financial Report for period ending December 2016.
Council acknowledged receipt of Utility Claims for period ending January 2017.

Moved by Commissioner Glover and seconded by Johns to accept the report of new claims against the City and approving disposition of claims set for the period of February 7, 2017 to February 20, 2017. Upon roll call the following voted YES: Davis with abstention on the claim pertaining to West Lake Ace Hardware, Wehling, Johns, Glover and Mayor Bequette. Voting NO: None. Motion carried.

Moved by Commissioner Johns and seconded by Wehling to approve **Resolution 2740-17** on the use of $25,000 of City Economic Growth Funds for Nebraska City Tourism & Commerce. Amy Allgood spoke to explain the request. Upon roll call the following voted YES: Johns, Wehling, Glover, Davis and Mayor Bequette. Voting NO: None. Motion carried.

Moved by Mayor Bequette and seconded by Johns that the statutory rule requiring reading on three different days be suspended. Upon roll call the following voted YES: Johns, Wehling, Glover, Davis and Mayor Bequette. Voting NO: None. Motion carried. Mayor Bequette declared that the motion adopted by three fifths vote of the council and the statutory rule suspended for the consideration of said ordinance.
Moved by Mayor Bequette and seconded by Johns for final passage of **Ordinance 2987-17** to issue bonds to pay off the 2016-01 BANS used to build the South 11th Street Project. John Tresec and Grayson Path spoke to explain the request. Upon roll call the following voted YES: Johns, Wehling, Glover, Davis and Mayor Bequette. Voting NO: None. Motion carried.

ORDINANCE NO. 2987-17

AN ORDINANCE AUTHORIZING THE ISSUANCE OF GENERAL OBLIGATION VARIOUS PURPOSE BONDS, SERIES 2017, OF THE CITY OF NEBRASKA CITY, NEBRASKA, IN THE PRINCIPAL AMOUNT OF ONE MILLION NINE HUNDRED TEN THOUSAND DOLLARS ($1,910,000) ISSUED FOR THE PURPOSE OF PAYING THE COST OF CONSTRUCTING PAVING IMPROVEMENTS IN STREET IMPROVEMENT DISTRICT NO. 2016-1; PRESCRIBING THE FORM OF SAID BONDS; PROVIDING FOR A SINKING FUND AND FOR THE LEVY AND COLLECTION OF TAXES TO PAY SAID BONDS; PROVIDING FOR THE SALE OF THE BONDS; AUTHORIZING THE DELIVERY OF THE BONDS TO THE PURCHASER; PROVIDING FOR THE DISPOSITION OF THE BOND PROCEEDS AND ORDERING THE ORDINANCE PUBLISHED IN PAMPHLET FORM

Bruce Kreifels led a discussion regarding a land lease of 80 acres for the Three Hills Event Center proposal for October.

Slides for the November 15 and January 23, 2017 Public Meetings Follow

Nebraska City Board of Public Works

Informational Public Meeting on
WAPA Integrated Resource Plan
November 15, 2016

Presented by:

Phil Euler, P.E.
Mgr. Engineering Services
NMPP Services
Lincoln, NE
(402) 474-4759

peuler@nmppenergy.org

Shannon Coleman, P.E.
Supervisor, Resource Planning and Analysis
Municipal Energy Agency of Nebraska
Lincoln, NE
(402) 474-4759

scoleman@nmppenergy.org

Introductions of Board, Customers and Staff

Please briefly introduce yourself

- Who are you and what is your reason for being here
- How much experience do you have with NCU
- Any special Electric Utility issue you would like discussed

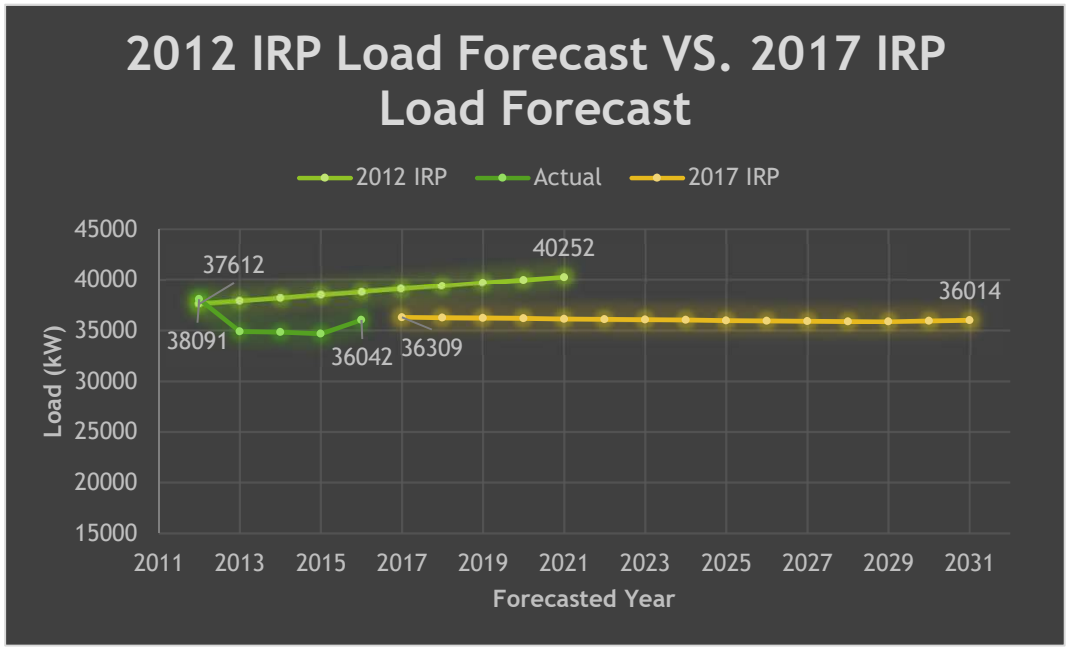
Overview of Meeting Agenda

- What is WAPA?
- Why is a IRP needed?
- Customer Input Required
- 2016 Customer Survey Results
- Customer Comments
- Board Comments and Directions

What is WAPA

- The **Western Area Power Administration (WAPA)**
  - Federal Agency that Markets and delivers hydroelectric power and related services
  - Operates in a 15-state region of the central and western states
  - NCU's Power Agreement is with the Upper Great Plains (UGP) Division
  - UGP power comes from 8 dams and power plants on the Upper Missouri River north of Fort Peck, Sioux Falls SD.
  - This power is enough to serve more than 3 million households delivered over WAPA Transmission lines
  - 22% of the NCU total needs (38 million KWh or 174 million) come from WAPA UGP

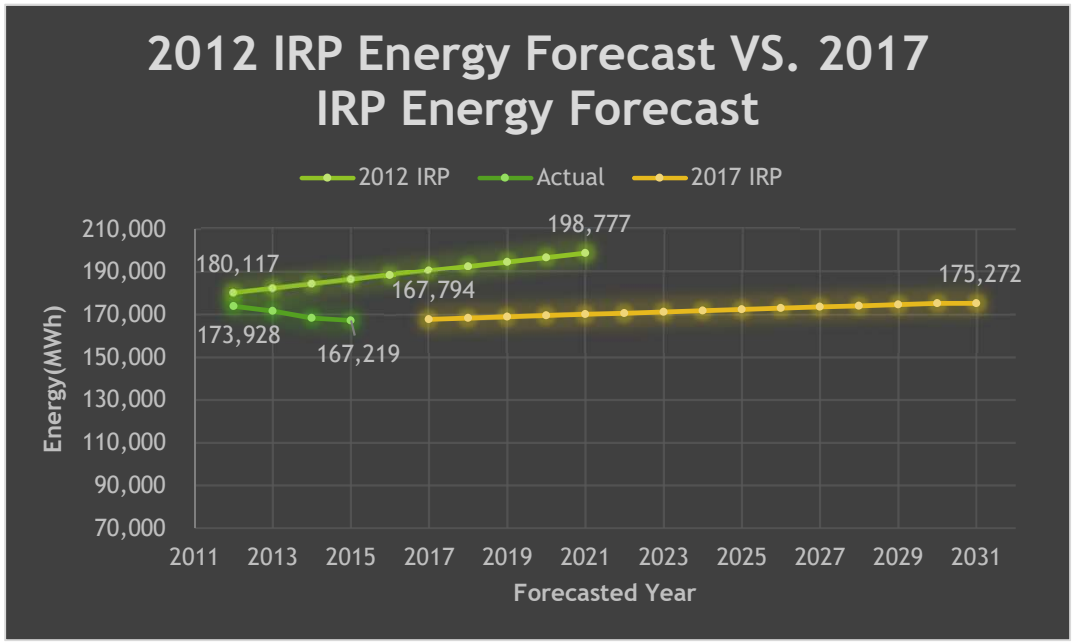
2012 and 2017 IRP Load Forecast Comparison



1. The 2012 IRP a little over-forecasted the annual peak load, and we adjusted it back in the 2017 IRP forecast.

2. The actual annual peak load was below expectation in 2014 and 2015 due to the mild summer and winter seasons.

2012 and 2017 IRP Energy Forecast Comparison



1. The 2012 IRP a little over-forecasted the energy requirement, and we adjusted it back in the 2017 IRP forecast.

2. The actual annual energy consumption were slightly lower than expectation in 2014 and 2015 due to the consecutive mild summer and winter seasons.

2017 IRP Load and Energy Forecast Methodology

1. The 2017 annual Load was forecasted based on the historical ***HOURLY*** load data from 2010 to 2015. The independent variables for the regression analysis included Weather data (Average Temperature, CDD and HDD), Calendar data (Month and Weekday), and Population Data.

2. The 15-Year Load (2018 to 2031) was forecasted based on the historical ***MONTHLY*** load data from 2010 to 2015. The independent variables for the regression analysis included all the variables used in the annual forecast, as well as Income data.

3. Both 2017 and 15-year Energy forecast were forecasted based on the historical ***MONTHLY*** load data from 2010 to 2015. The independent variables for the regression analysis included Weather data (Average Temperature, CDD and HDD), Calendar data (Month and Weekday), and Economic Data (Population and Income).

What is an IRP?

- WAPA instituted the *Energy Planning and Management Program* (EPAMP) on November 20, 1995.
- The Integrated Resource Plan (IRP) is part of EPAMP
  - It requires WAPA Towns to prepare and submit an IRP every 5-years with annual updates
  - The purpose is to develop two and five-year implementation plans to meet NCU's power needs but at the lowest reasonable cost
  - This allows NCU to maintain its current allocation of low cost hydropower
  - In 2015 WAPA power cost 3.3 cents/KWh vs. other NCU resources at 5 to 6 cents/KWH

2016 NCU Customer Survey

Customer Survey

Please take a few minutes to fill out this survey regarding the resources NCU employs to provide reliable utility service to our customers. The comments of our ratepayers/owners are important to us, and we value any input you may have.

You may return this form with your payment either by mail or in person at the location where you pay your bill. NCU welcomes your feedback, and your answers will be kept confidential. Thank you for your participation.

Energy Resources

Our current power agreement related to Federal Hydroelectric resources requires a five year power resources planning study. In the interest of gathering input for our planning process, please rate your preference for the following resources to be studied:

Energy Resource	1st	2nd	3rd	4th	5th	6th
Construction of New Fossil Fuel Generation (natural gas)	☐	☐	☐	☐	☐	☐
Construction of New Renewable Generation (wind)	☐	☐	☐	☐	☐	☐
Construction of New Renewable Generation (solar)	☐	☐	☐	☐	☐	☐
Purchase Power from the Market	☐	☐	☐	☐	☐	☐
Reduce Energy Usage with Efficiency and Conservation Programs	☐	☐	☐	☐	☐	☐
Customer Owned Renewable Generation (solar)	☐	☐	☐	☐	☐	☐

- About 5180 surveys were mailed with bills in September
- 387 surveys were returned by November 10

2016 Customer Survey
Final Results

Energy Resource Ranked by Customers

1st Construction of New Renewable Generation (wind)

2nd Reduce Energy Usage with Efficiency and Conservation Programs

3rd Construction of New Renewable Generation (solar)

4th Construction of New Fossil Fuel Generation (natural gas)

5th Customer Owned Renewable Generation (solar)

6th Purchase Power from the Market

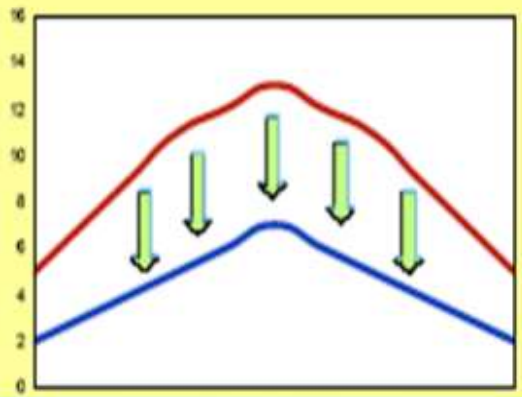
- The Customer's first Choice is a more utility size Wind Power.
- The Second choice is a ***Demand Side Management*** option (Conservation) as opposed to adding more ***Supply Side*** Generation (solar 3rd and Natural Gas 4th).

Meeting Utility Objectives Through DSM

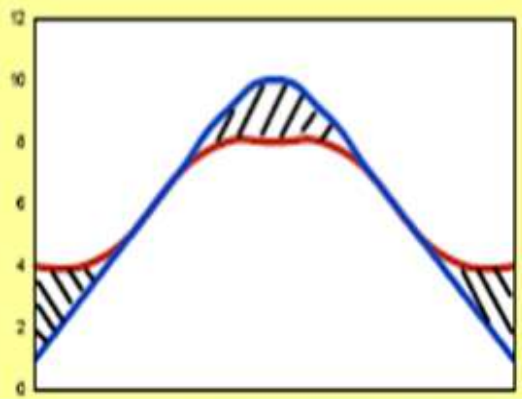
Lighting, Water Heating

Thermal Storage

STRATEGIC CONSERVATION

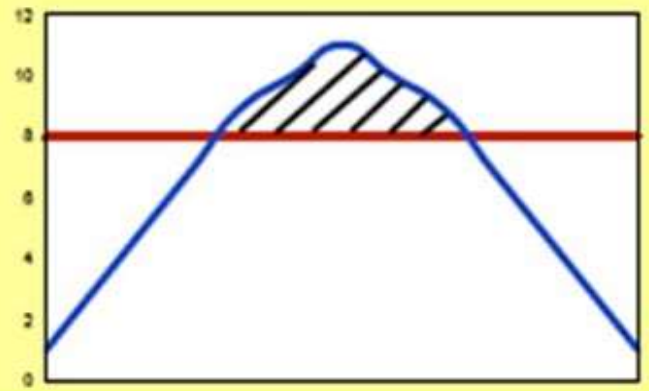


LOAD SHIFTING



DR, Interruptible

PEAK DEMAND CLIPPING



THE CADMUS GROUP, INC.

Previous IRP Plan Findings

- The 2012 IRP Plan findings were to:
  - Not look for additional supply side resources with the addition of WEC-2.
  - Continue to promote *Tree Planting Programs* to strategically place trees for reducing future air conditioning loads.
  - Continue to promote Nebraska Energy Office (NEO) programs to fund customer energy saving projects.
  - Continue low cost DSM programs such as promotion of energy efficiency via the NCU website.
  - Consider purchases of renewable energy based on customer interest.
  - Continue to monitor customer interest through customer surveys.

Which are Supply Side vs *Demand Side?*

- The 2012 IRP Planned options color codes SS vs DS:
  - Not look for additional supply side resources with the addition of WEC-2.
  - ***Continue to promote Tree Planting Programs to strategically place trees for reducing future air conditioning loads.***
  - ***Continue to promote Nebraska Energy Office (NEO) programs to fund customer energy saving projects.***
  - ***Continue low cost DSM programs such as promotion of energy efficiency via the NCU website.***
  - Consider purchases of renewable energy based on customer interest.
  - Continue to monitor customer interest through customer surveys

2016 NCU Customer Survey
Results Continued

If NCU offered a Community Participation Solar Generation Project, how much would you be willing to pay (in addition to your current utility bill) to participate?

- Less than $5 per month - 29%
- $5 to $10 per month - 34%
- More than $10 per month - 7%
- Would not participate - 30%

Do you have interest in installing a photovoltaic solar energy system on your home?

- Yes - 34%
- No - 65%
- Already own this type of system – 1%

- 70% are interested in a community solar energy options
- About at third will consider solar on the home

2016 NCU Customer Survey
Results Continued

Are you aware of:

NCU's "Energy Saving Tree" Planting Program?

- 16% Aware and have participated.
- 42% Aware but have not participated.
- 42% Not aware of the program.

Arbor Day Free "Energy Saving Trees" Program?

- 21% Aware and have participated.
- 42% Aware but have not participated.
- 37% Not aware of the program.

Which energy conservation or efficiency solutions you have applied in your home or place of business:

- Insulation of Buildings – 21%
- New Windows - 19%
- Shading (trees or awnings) - 16%
- Lighting Upgrades (LED or CFL) - 24%
- Air Conditioning Upgrades - 15%
- Heat Pump Installation - 5%

- Other Refrigerator Rebate, New doors and windows, wood heating, earth home, Tank-less WH, Geo HP

- About 20% have participated in Shade Tree Programs
- The most popular conservation method is lighting upgrades followed by Insulation

2016 NCU Customer Survey
Results Continued

Potential interest in the installation of Smart Metering at your residence or owned business 1 = not interested 5 = very interested
Average interest =2.55

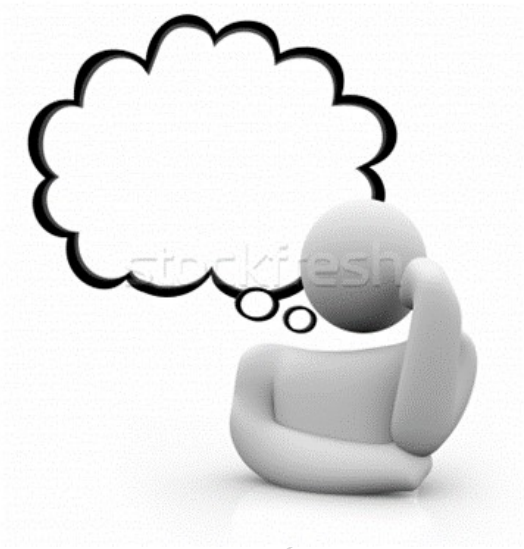
How likely would you be to monitor and/or utilize the data collected by Smart Metering?
Average interest =2.64

Are you aware NCU's Refrigerator Rebate Plan?
- Yes - 20%
- No - 80%

- Customers are aware of 'Smart Meter' technology but may not be sure how it might be helpful
- Only 1 in 5 know about the refrigerator rebate program

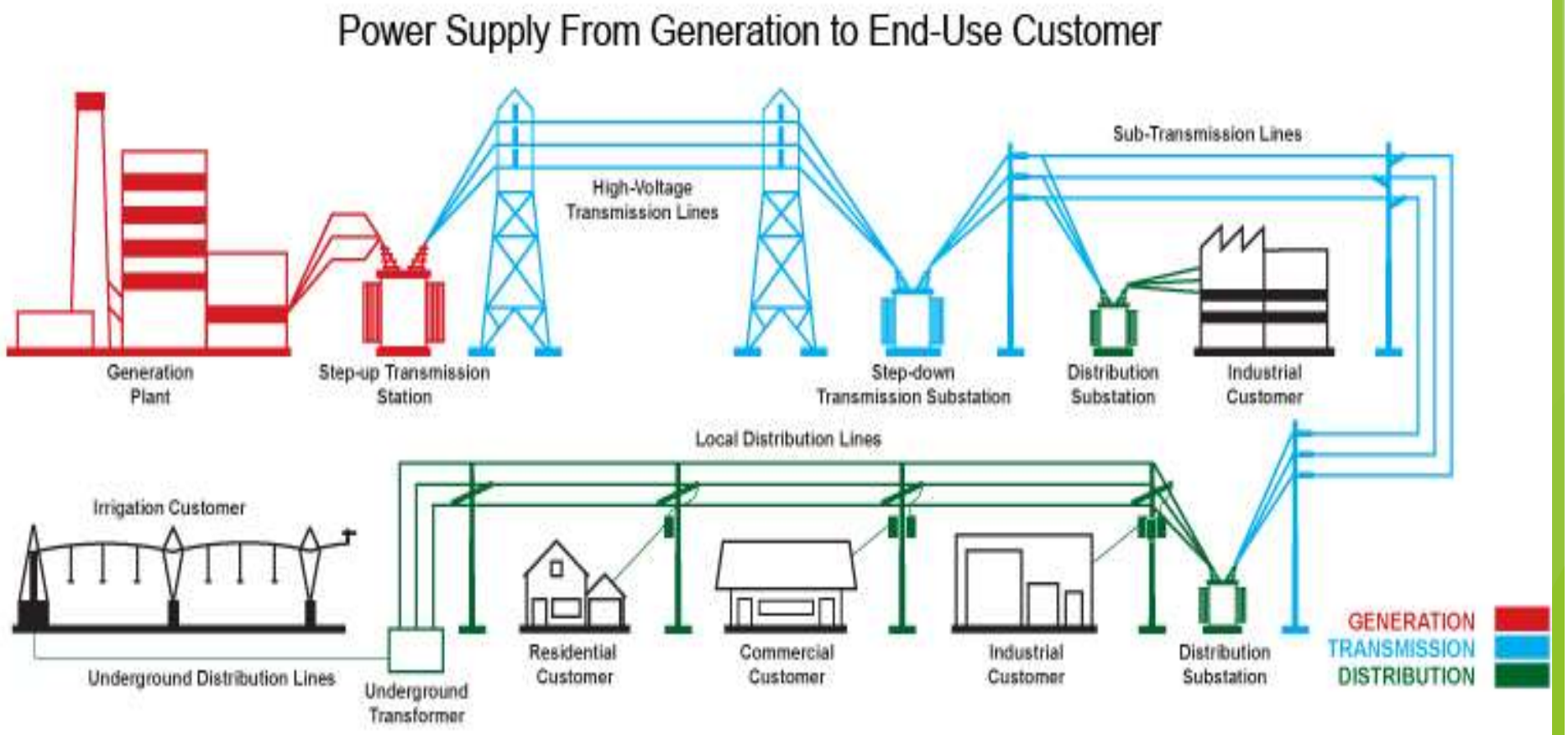
What new DSM Options could be considered

- Electric Vehicle Promotion (Strategic load growth)
- Electric Vehicle Charging Stations (Strategic load growth)
- Promotion of Gas Assisted Heat Pumps (Strategic load growth)
- Incandescent light bulb bounty coupon to buy LED bulb
- Old Window Air Conditioner Rebate in addition to Refrigerator Rebate
- Others?



Other Comments or ?Questions

Typical Electric Generation, Transmission and Distribution Diagram



Nebraska City Board of Public Works

Public Hearing on Preliminary
WAPA Integrated Resource Plan Report
January 23, 2017

Presented by:

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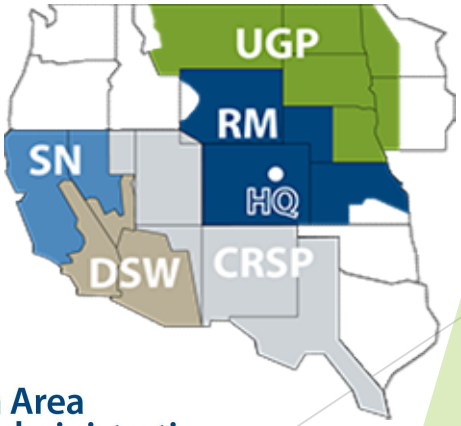
Overview of Meeting Agenda

- Summary of November Informational meeting
- Summary of NCU current resources
  - Supply Side
  - Demand Side
- 2016 Customer Survey Results
- Two and Five Year IRP Plans Recommended
- Public Comment

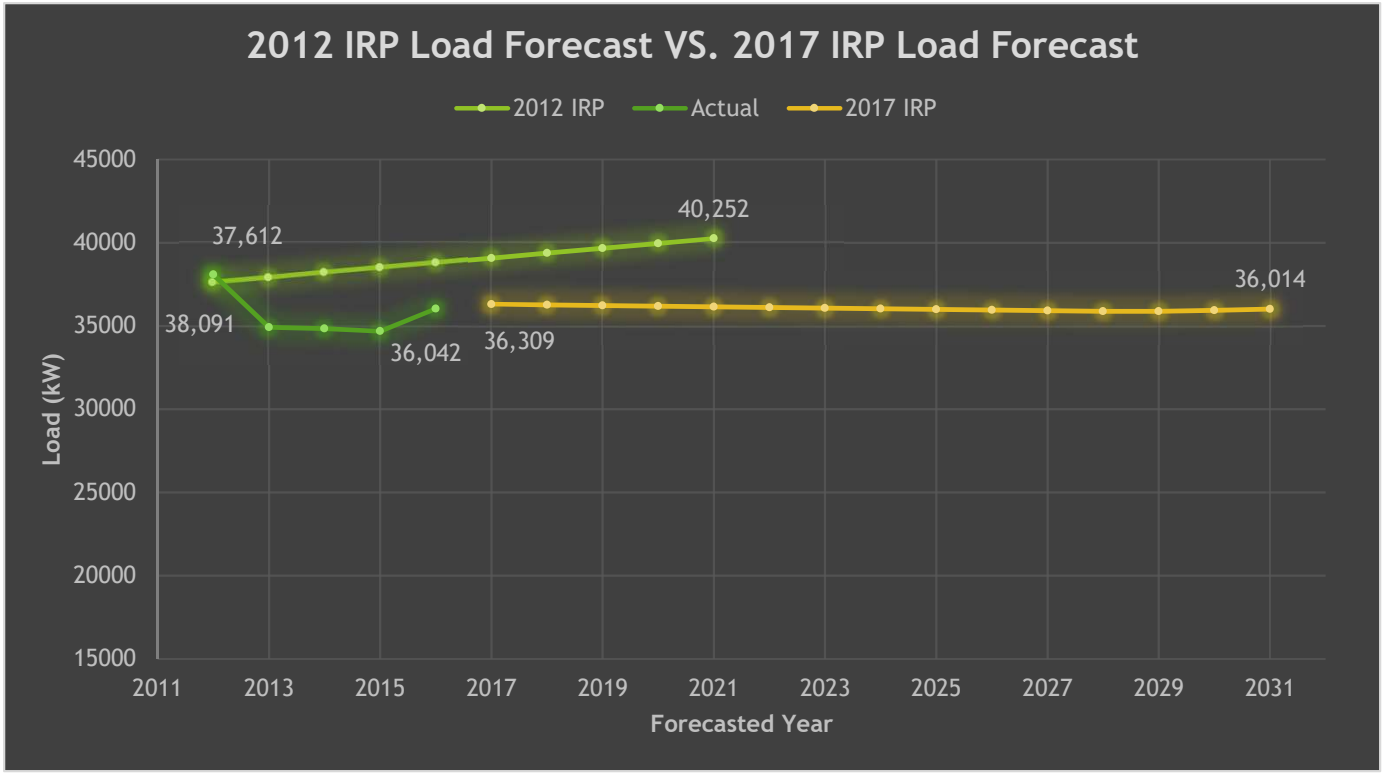
What an IRP includes

- The Integrated Resource Plan (IRP)
  - Requires WAPA Towns to prepare and submit an IRP every 5 years with annual updates
  - The purpose is to develop two and five-year implementation plans to meet NCU's power needs at the lowest reasonable cost
  - Allows NCU to maintain its current allocation of low cost hydropower
  - 2015 Power Costs:
    - WAPA = 3.3 ¢/kWh
    - Other NCU resources = 5-6 ¢/kWh



Western Area Power Administration

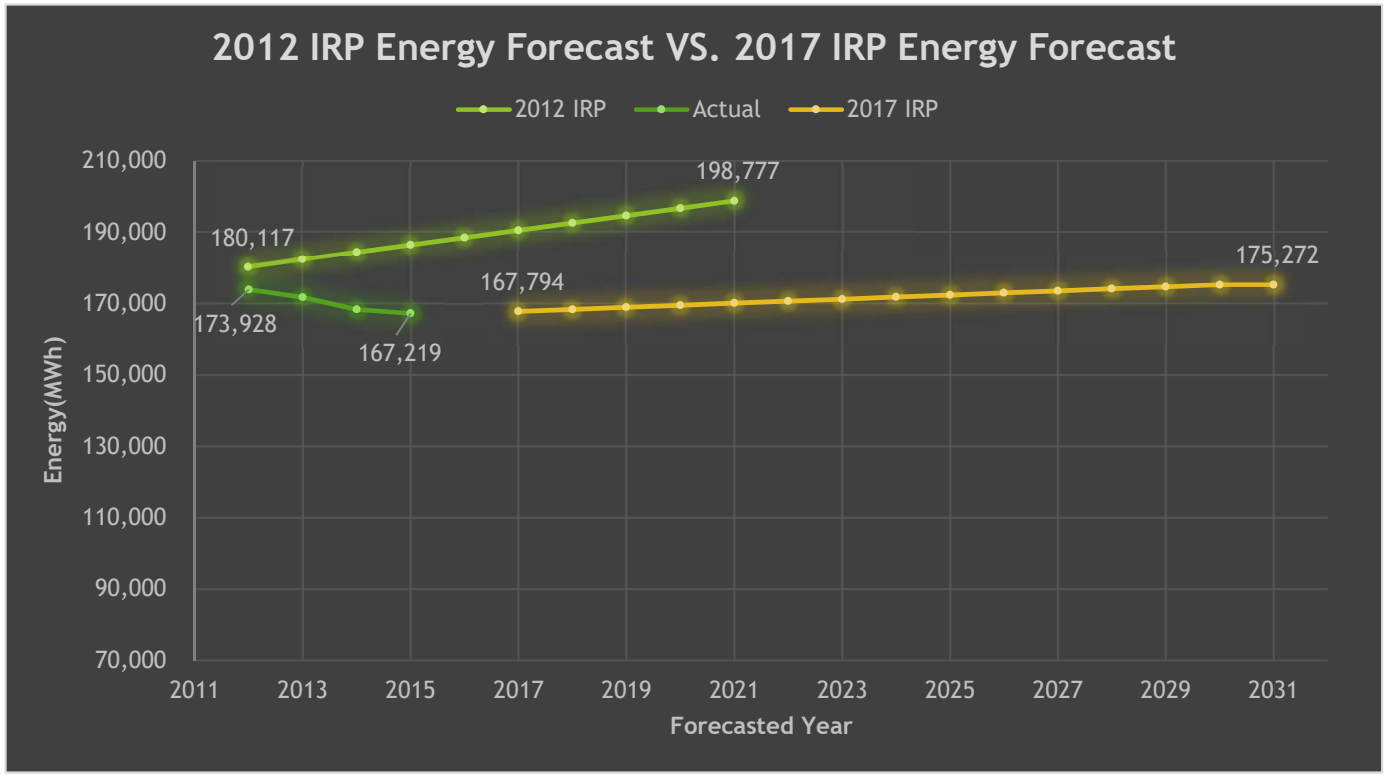
2012 and 2017 IRP Load Forecast Comparison



1. The 2012 IRP a little over-forecasted the annual peak load, and we adjusted it back in the 2017 IRP forecast.

2. The actual annual peak load was below expectation in 2014 and 2015 due to the mild summer and winter seasons.

2012 and 2017 IRP Energy Forecast Comparison



1. The 2012 IRP a little over-forecasted the energy requirement, and we adjusted it back in the 2017 IRP forecast.

2. The actual annual energy consumption was slightly lower than expectation in 2014 and 2015 due to the consecutive mild summer and winter seasons.

NCU Current Supply Side Resources

Table C

Nebraska City Utilities

Existing Generating Resources - 2016

Source	Capacity (MW)	Energy (MWh)	Capacity Factor
Local Generation	27.1	107	0%
Nebraska City Unit #2 (NC-2)	11.4	84,727	85%
WAPA	8.2	39,452	55%
Whelan Energy Center Unit #2 (WEC-2)	10.6	41,683	45%
Market Purchases net of sales	0.0	5,126	1%
Total	**57.30**	**171,095**	**34%**

NCU Load and Resource Position

Table D
Comparison of Peak Demand to Resources

Demand	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Peak Demand Obligation (1) (2)	37.9	39.2	39.7	39.6	39.6	39.5	39.5	40.4	40.4	40.4	40.3
Capacity Resources	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3
Surplus/(Deficit)	**19.4**	**18.1**	**17.6**	**17.7**	**17.7**	**17.8**	**17.8**	**16.9**	**16.9**	**16.9**	**17.0**

Notes:
(1) Included forecast demand and 12.00% SPP required reserves.
(2) Nebraska City Utilities is a summer peaking utility.

[Table D shows Reserve margins above load]

Previous IRP Plan Actions and Results

Table A

Nebraska City Utilities

5 year Demand Side Resources for FY 2011- 2016

Program or Measure (#)	KW Saved	KWH Saved	Expenses	Customers
NCU's Tree Planting Program	0	0	$ 1,079	0
Arbor Day Tree Planting Program	15	15,990	$ 8,411	210
Business Heating Programs (12)	7	25,000	$ 5,993	0
Business Lighting Measures (17)	63	190,194	$ 45,596	154
Business Load Mangement Programs (18)	60	235,746	$ 56,517	0
Residential Refrigerator Recycle Measures (28)	13	61,200	$ 14,672	51
Total FY 2011- 2016	**158**	**528,130**	**$ 132,269**	**415**

Other Actions Taken by NCU

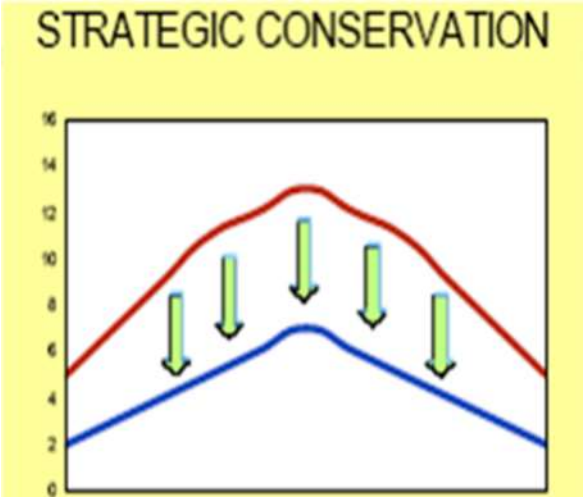
- Local Generation
  - Reciprocating Internal Combustion Engine (RICE) Rules (issued in February 2010 by the EPA);
    - NCU had replaced mufflers with catalytic type converters to reduce exhaust emissions;
    - Added engine crankcase gas capture and recycling equipment to reduce the blow-by emissions;
    - Modifications made on eight of the 12 generating units (27.1 MW) are EPA compliant;
    - Four units (10.0 MW) are now operated for emergency purposes. The reliability benefit provides a high value to NCU customers.
- Renewable Resources
  - NCU executed agreement with Grand Island Utility Department (GI) for about 7.0 MW or a 19.55 % share of Prairie Breeze III Project.
  - NCU share of energy is delivered to the SPP market
  - The annual Renewable Energy Credits (RECs) approximately 30,000 MWH

Which are Supply Side vs Demand Side?

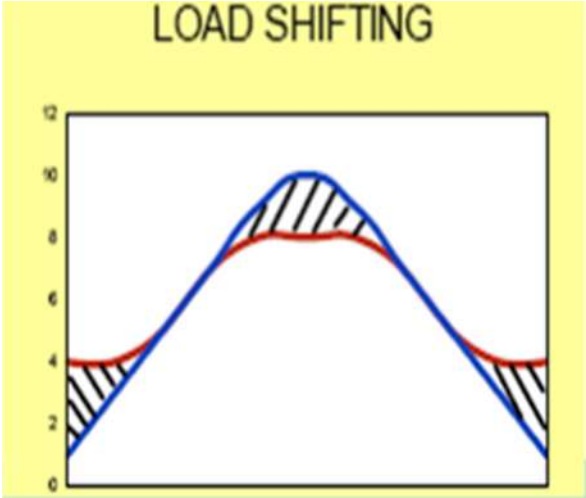
2012 IRP Planned Options	
Supply Side Options	**Demand Side Options**
Not look for additional supply side resources with the addition of WEC2.	Continue to promote Tree Planting Programs to strategically place trees for reducing future air conditioning loads.
Consider purchases of renewable energy based on customer interest.	Continue to promote Nebraska Energy Office (NEO) programs to fund customer energy saving projects.
	Continue low cost DSM programs such as promotion of energy efficiency via the NCU website.

- Continue to monitor customer interest through customer surveys.

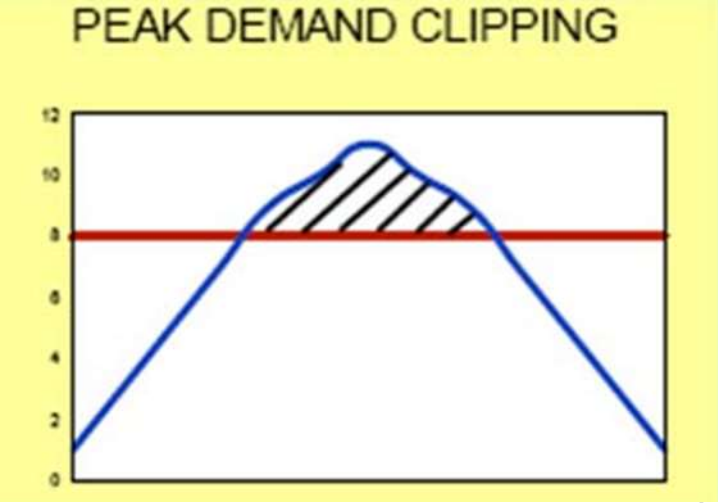
Meeting Utility Objectives Through DSM



Lighting, Water Heating



Thermal Storage



Demand Response, Interruptible

Source:

THE CADMUS GROUP, INC.

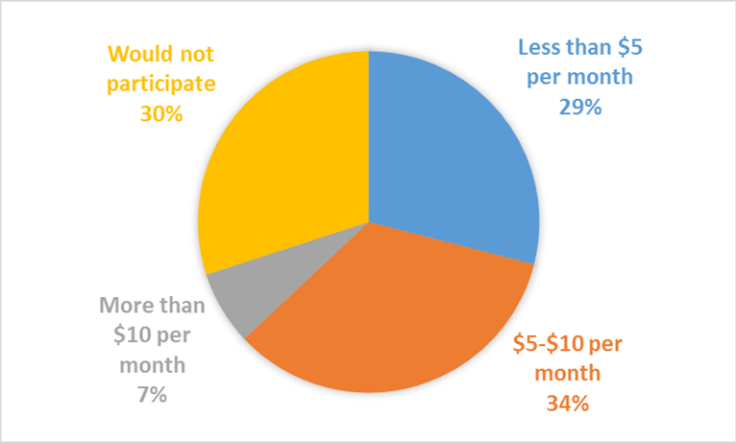
2016 Customer Survey Final Results

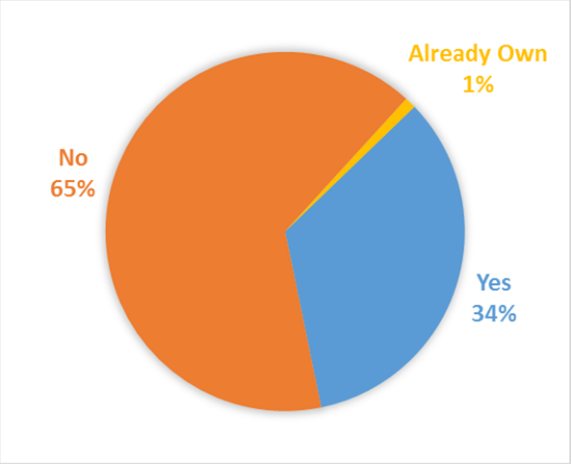
ENERGY SOURCE RANKED BY CUSTOMERS	
1st	Construction New Renewable Generation (Wind)
2nd	Reduce Energy Usage with Efficiency and Conservation Programs
3rd	Construction of New Renewable Generation (Solar)
4th	Construction of New Fossil Fuel Generation (Natural Gas)
5th	Customer Owned Renewable Generation (Solar)
6th	Purchase Power from the Market

- First Choice is more utility owned **Wind Power**.
- Second Choice is **Demand Side Management** option (Conservation) as opposed to more Supply Side generation.
- Third Choice is more utility owned **Solar Generation**.
- Fourth Choice is **Natural Gas Generation**.

2016 NCU Customer Survey Results (Continued)

If NCU offered a Community Participation Solar Generation Project, how much would you be willing to pay (in addition to your current utility bill) to participate?





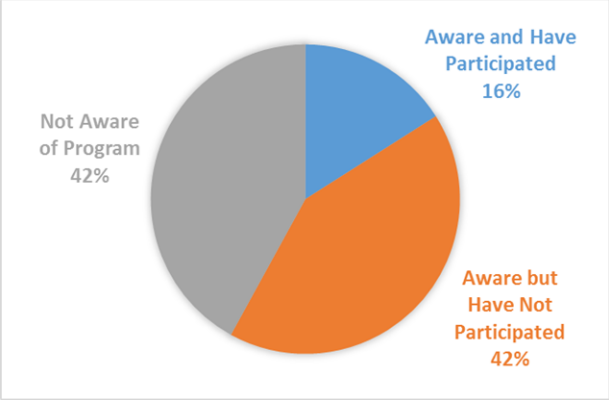
Do you have interest in installing a photovoltaic solar energy system on your home?

- 70% are interested in a community solar energy options
- About at third will consider solar on the home

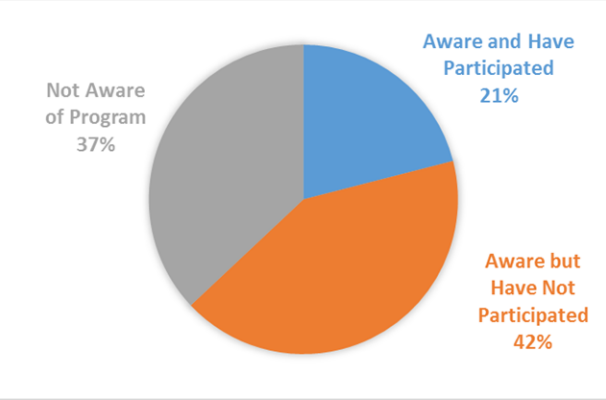
2016 NCU Customer Survey Results (Continued)

Are you aware of:

NCU's "Energy Saving Tree" Planting Program?

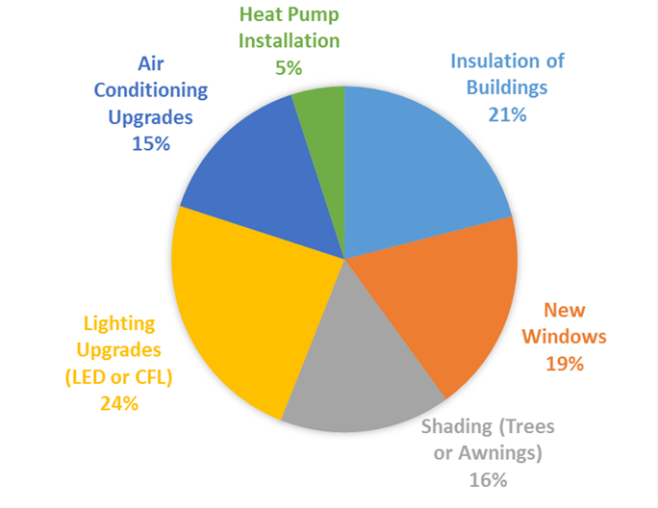


Arbor Day Free "Energy Saving Trees" Program?



Which energy conservation or efficiency solutions you have applied in your home or place of business:

- Other: Refrigerator Rebate, New doors and windows, wood heating, earth home, Tank-less WH, Geo HP

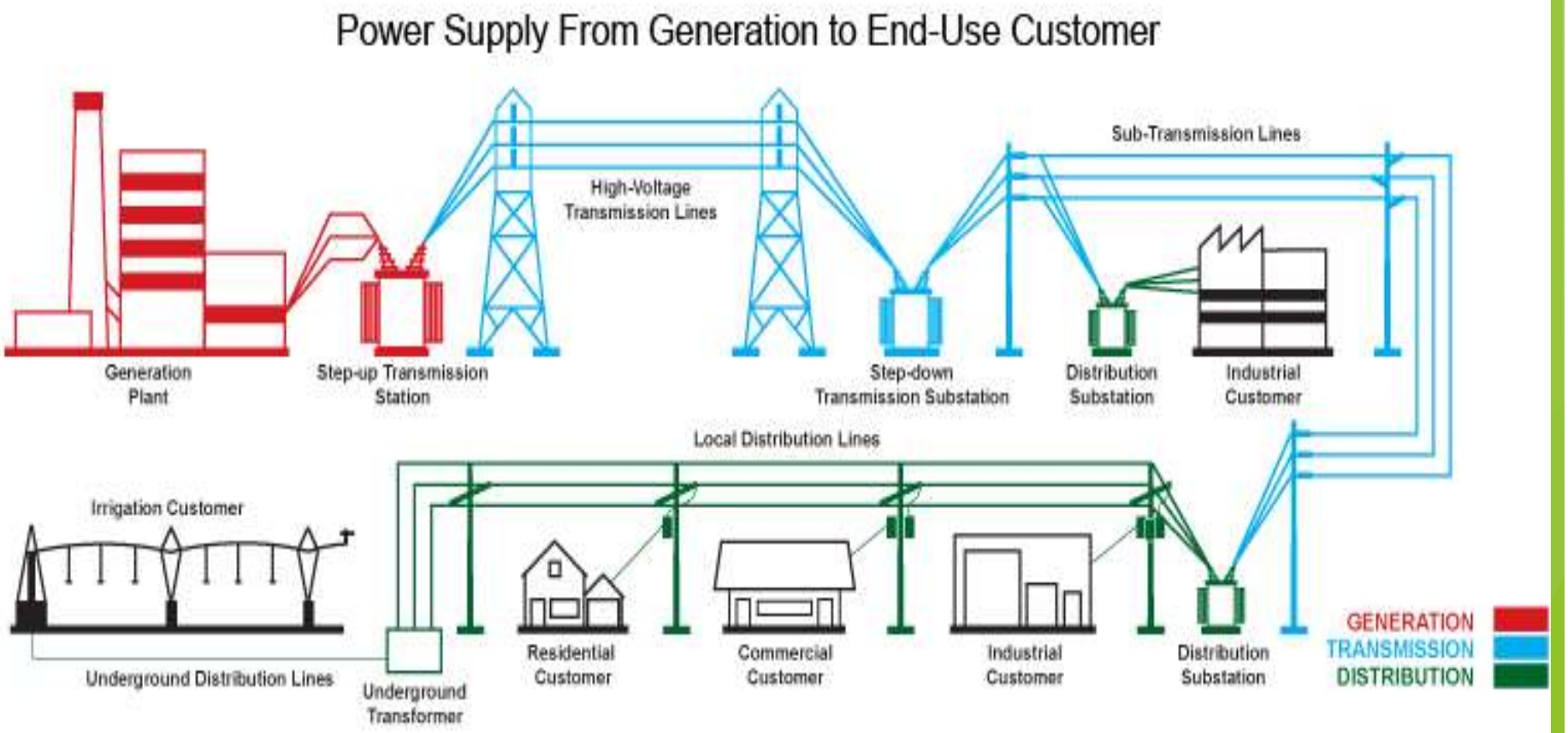


2016 Preliminary 2-Year Plan Recommendations

- Continue Market Energy Purchases
- Online Promotions:
  - NCU- and Audubon-sponsored Shade Tree Planting programs
  - Nebraska Energy Office Loan program for Energy Efficiency Improvements
  - Refrigerator/Freezer Recycle Rebate
    - Consider addition of Window Air Conditioners
  - Rebates for Electric to NG conversion of Water Heaters, Stoves and Dryers
  - NG Assisted Heat Pumps
- Continue NCU policy to replace:
  - Failed streetlight fixtures with LED fixtures
  - Failed motors with VFD motors
  - City facilities lighting with LED fixtures
- Continue to monitor Customer preferences for purchase or participation in renewable resources such as a Community Solar Project

Public Comment Time

The following is a list of DSM Options for consideration:

- Electric Vehicle Promotion (strategic load growth)
- Electric Vehicle Charging Stations (strategic load growth)
- Gas-Assist Heat Pump Promotion (strategic load growth)
- Incandescent light bulb bounty coupon for purchase of LED bulbs
- Others?

Typical Electric Generation, Transmission and Distribution Diagram