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Russell, KS

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# City of Russell, Kansas

## Integrated Resource Plan
## JULY 2016

### INTRODUCTION

The purpose of the electricity resource plan is to set a course for Russell's municipal electric utility to follow in considering all reasonable opportunities to meet future energy service requirements using demand-side management techniques, new renewable resources, and other programs that will provide customers with electricity at the lowest possible cost. With regard to this planning process, demand-side management techniques are activities the utility can undertake to encourage its customers to use electricity differently. Renewable resources are those electricity sources that are continuously or cyclically renewed by the natural ecological cycle; for example, solar, wind, hydroelectric, geothermal and biomass sources.

The Russell municipal electric utility is submitting this plan to the Western Area Power Administration (Western) as its response to the regulations of Western's Energy Planning and Management Program. This is the Second plan submitted to Western. Plans are to be filed every five years with annual updates to be supplied to Western.

Consistent with Western's regulations, this electricity resource plan and the plan actions to be implemented over the next five years are directed at considering all reasonable opportunities to meet the utility's future electric energy requirements using demand-side management techniques, new renewable resources and other programs that will provide the utility's customers with electricity at the lowest possible cost, while minimizing, to the extent practicable, adverse environmental effects. System reliability through

brush clearing, tree trimming, maintenance, and the use of infrared technology is important to the city for the stability of their system.

The planning process involved 1) describing the key elements of the utility and its service territory, 2) forecasting the electricity needs of the utility's customers, 3) assessing the sources of electricity supply, 4) assessing the demand for electricity, 5) exploring the opportunities for demand-side management and renewable energy programs and 6) establishing an action plan. The remainder of the report is organized along these steps.

## CONTACT INFORMATION

Russell, Kansas

133 W. 8th Street

Russell, KS 67665

## CURRENT PROFILE OF THE MUNICIPAL ELECTRIC UTILITY

The City of Russell is located in western Kansas on Interstate 70. Russell is located in Russell County. Russell is the most populous city in and county seat of Russell County, Kansas, United States. The population is 4,475.

As of 2013, the county's population was 6,933, while Russell's was 4,475. From 2000 to 2013, the city's population decreased by 5.5%

Typical of rural Kansas where farms are being consolidated and few new employment opportunities exist, smaller communities struggle to keep and attract the businesses that will prevent the younger workforce from migrating to urban centers. In Russell as of the 2000 census, the "65 and over" age group comprised 24.6% of the population. This age group encompassed 13% of the population for the State as a whole.

During the winter, the average daytime temperature is 22 degrees and the average nighttime temperature is 15 degrees. In the summer months, the average daytime and nighttime temperatures are 90 degrees and 63 degrees, respectively. The average temperature in January is 30 degrees. For July the average temperature is 80 degrees.

The City provides electric, sanitation, recycling, water and sewer utility services to the community. Weather is the key determinate of the electric peak load, with the summer cooling load driving the system peak.

During 2015, the utility served 2365 residential customers, approximately 770 commercial customers and 256 industrial customers. Electricity sales growth for the five years ended 2015 was 3%, while customer growth was 1%.

With regard to the market potential for residential sales, the City expects to be holding steady. As of 2006, Russell had 2182 owner-occupied housing units.

For commercial and industrial sales, the utility's major customers during the past five years have been White Energy, (large Ethanol plant in Russell), Land O Lakes Feed, Klemas Grocery, and Russell Hospital.

Russell competes with neighboring communities for commerce and new industry and views it's electric, water and sewer rates, and its tax rates, as factors in remaining competitive. Russell wants its electric rates to be competitive with Sunflower Electric and Midwest Energy, which serves the area surrounding the City. The city of Russell's local gas supplier is Oneok Energy and there could be opportunities in the future to look at programs with Oneok that promote energy conservation.

The utility's electric energy sources consist of purchased power and internal electric generation. Consisting of seven generating units that represent 30 MW's

## LOAD ANALYSIS AND FORECAST

Annual peak demand and energy sales are expected to hold steady over the five-year planning horizon from 2016 to 2020. Total energy sales are expected to increase 1% annually, from 123,103 MWh in 2015 to 129,258 MWh in 2020.

The modest 1% growth rate reflects the slow customer and economic growth in the utility's service territory. Russell's population shows very little growth over the last five years, so what little growth is expected in residential sales will come primarily from increases in household usage through technology and electric use in the households.

The forecast is also susceptible to changes in the agricultural and industrial economy in the region. Among the utility's largest customers are the ethanol plant and grain elevators. Other large customers such as the grocery store depend on drawing customers from the surrounding farms.

Below is a table representing the past 5 years of energy mix, historical peaks, and customers for referencing.

| | ENERGY RESOURCE PLAN | | | | |
|---|---|---|---|---|---|
| | 2011 | 2012 | 2013 | 2014 | 2015 |
| ANNUAL KWH SALES | 107,829,000 | 107,734,000 | 110,504,000 | 112,693,000 | 110,030,000 |
| ANNUAL KWH REVENUE | $9,983,000 | $8,776,978 | $10,301,000 | $10,398,000 | $10,030,473 |
| ANNUAL YEAR END CUSTOMERS IN CLASS: | | | | | |
| A. RESIDENTIAL-CITY | 2,351 | 2,359 | 2,355 | 2,340 | 2,509 |
| B. RESIDENTIAL-RURAL | 0 | 0 | 0 | 0 | 0 |
| C. COMMERCIAL-CITY | 798 | 744 | 760 | 678 | 711 |
| D. COMMERCIAL-RURAL | 0 | 0 | 0 | 0 | 0 |
| E. LARGE POWER-CITY | 261 | 261 | 262 | 259 | 261 |
| F. LARGE POWER-RURAL | 0 | 0 | 0 | 0 | 0 |
| G. DUSK TO DAWN LIGHTS | 358 | 415 | 420 | 329 | 504 |
| ANNUAL KWH CONSUMED FOR CITY USE | 3,678,415 | 3,954,261 | 3,603,973 | 3,755,104 | 2,876,113 |
| ANNUAL KWH LOSSES FOR THE CITY | 9,667,667 | 4,204,948 | 4,596,417 | 7,645,519 | 9,577,528 |
| ANNUAL PEAK DEMAND-KWH | 24,870 | 24,104 | 24,841 | 24,790 | 25,005 |
| DATE AND TIME OF PEAK | 8/01/2011 AT 2 PM | 06/28/2012 AT 11;42 AM | 06/27/2013 AT 3:44 PM | 8/20/14 AT 3:12 PM | 07/28/2015 AT 4:53 PM |
| ANNUAL KWH GENERATED | 2,818,14 | 25,673,110 | 7,922,866 | 2,511,696 | 59,724 |
| ANNUAL SECI PURCHASES-KWH | 79,167,220 | 83,273,972 | 91,432,567 | 60,796,188 | 52,778,816 |
| ANNUAL WAPA PURCHASES | 15,103,445 | 15,645,356 | 15,645,356 | 15,633,356 | 15,599,391 |
| ANNUAL MARKET PURCHASE | 12,515,531 | 8,960,000 | 3,501,000 | 34,500386 | 40,061,500 |
| ANNUAL GRDA PURCHASE | 9,601,685 | 10,195,666 | 10,787,657 | 13,022,900 | 14,604,000 |
| TOP FIVE LARGEST CUSTOMERS: | | | | | |
| A. LARGEST USER | WHITE ENERGY/GLU | WHITE ENERGY/GLU. | WHITE ENERGY/GLU. | WHITE ENERGY/ETH. | WHITE ENERGY/ETH. |
| B. SECOND LARGEST | WHITE ENERGY/ETH. | WHITE ENERGY/ETH. | WHITE ENERGY/ETH. | WHITE ENERGY/GLU. | WHITE ENERGY/GLU. |
| C. THIRD LARGEST | LAND O LAKES/FEED | LAND O LAKES/FEED | LAND O LAKES/FEED | LAND O LAKES/FEED | LAND O LAKES/FEED |
| D. FOURTH LARGEST | RUSS. HOSPITAL | KLEMA IGA | KLEMA IGA | KLEMAS/GROCERY | KLEMAS/GROCERY |
| E. FIFTH LARGEST | KLEMA IGA | RUSS. HOSPITAL | RUSS. HOSPITAL | HOSPITAL | HOSPITAL |

Historical Peak loads are show below with a 1% growth factor for future load growth over the next 5 years.

| 2016 | 2017 | 2018 | 2010 | 2019 | 2020 |
|---|---|---|---|---|---|
| 23955 | 24194 | 24435 | 24679 | 24925 | 25174 |

## SUPPLY-SIDE ASSESSMENT

Peak demand and energy is supplied from the utility's purchase power agreements and city generation, and the membership in KMEA and the EMP 2 power pooling and management project.

Energy is purchased from Sunflower Electric, Western Area Power Administration, Grand River Dam Authority, KMEA, and the real-time energy market. Of the total energy estimate for 2016, the utility will be purchasing 15,645 MWh from Western, under a firm-power contract.

Below is a table showing all the generation internal to the city of Russell and its capabilities.

| | | Russell | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Unit Name | | Russell #1 | Russell #2 | Russell #7 | Russell #8 | Russell #9 | Russell #10 | Russell #11 |
| Manufacturer | | Solar GT | Solar GT | Nordberg | EMD | EMD | Nordberg | Nordberg |
| Unit Type | | Comb. Turb. | Comb. Turb. | Int. Comb. | Int. Comb. | Int. Comb. | Int. Comb. | Int. Comb. |
| Model # | | | | | | | | |
| Accredited Cap. | (kW) | 5,960 | 5,960 | 3,175 | 2,650 | 2,650 | 3,166 | 3,166 |
| Net Dependable Cap. | (kW) | 5,960 | 5,960 | 3,000 | 2,650 | 2,650 | 3,166 | 3,166 |
| Name Plate Cap. | (kW) | 7,200 | 7,200 | 3,500 | 2,650 | 2,650 | 3,961 | 3,961 |
| Fuel Type - Primary | | Gas | Gas | Gas | Diesel | Diesel | Gas | Gas |
| Fuel Type - Seconday | | | | Diesel | | | Diesel | Diesel |

Infrared scanning is used on the system including the substation and switchgear. A continuing use of infrared scanning is expected to detect new distribution problems that can affect line losses and system efficiency.

The city utilizes numerous purchase power contracts for their city needs of power supply.

The city has contracted with GRDA- Grand River Dam Authority for 2MW's of hourly power supply. The contract was established with KMEA in 2000 and is set to expire in 2026.

The City also works with KMEA as a participant in EMP 2 (Energy Management Project #2) utilizing a load following agreement from SECI with 8 other cities as part of a pooling project. The cities work in conjunction with each other as a single customer on the SECI system and utilize purchase power agreements, internal generation, and real-time market purchases and sales to manage their loads and their costs to their citizens. In 2015 Russell purchased 52,778,816 kWh from SECI, 15,599,391 kWh from Western, 14,604,000 from GRDA and 40,061,500 kWh from the real-time marketplace and generated 59,724 kWh.

## DEMAND-SIDE ASSESSMENT

The utility serves approximately 2,365 residential customers, 770 commercial customers and 256 industrial customers. For 2015, energy sales were as follows:

| | | |
|---|---|---|
| Residential | 23,240 MWh | 21% |
| Commercial | 17,139 | 15.5 |
| Industrial | 69,650 | 63 |
| Total | 110,029 | |

Load is greatest in the summer months as air conditioning use increases. The utility can expect an annual peak sometime during July, August or September.

The utility's major customers are small industries (White Energy, Land O Lakes Feed, Klemas Grocery, and Russell Hospital). Relative to the size of the customer base, each large customer is significant. The utility's service territory is small and fixed. This means that a customer can be lost if it relocates by just a mile or two into another service territory. Fortunately, most of these are situated in the town and are much less susceptible to relocation.

The city owns and operates numerous buildings for city use and street lighting. In 2015 Russell had energy consumption of 2,064,000 kWh's for city use.

The city currently participates in a couple of demand side management programs for the customers within the service territory of the city of Russell Kansas.

1) The city has replaced all traffic control lights, a portion of dusk to dawn lights and major intersections with more efficient LED.
2) The City has adopted a Net Metering Policy for renewable energy.
3) The City sends out a quarterly newsletter outlining ways to be more energy conscience and reduce your energy consumption
4) Every bill that goes out to a customer in Russell contains energy savings tips that the customer can use to reduce their energy or water consumption.

## OPPORTUNITIES FOR DEMAND-SIDE MANAGEMENT PROGRAMS

Utility management considered how well the various demand-side management (DSM) objectives applied to the utility's supply and demand situation and the utility's operational goals. Three load shape objectives that might be accomplished by DSM were considered:

1. peak shaving,
2. load shifting,
4. flexible load shape,

Peak shaving is not appropriate because the utility has more than adequate capacity, meaning its avoided capacity cost is zero.

Load Shifting is the process of making changes in a city's peak load through moving some of the load to off peak hours. This can be achieved through discussions with large customers about their energy usage at certain times of the day.

Flexible load shape DSM programs are primarily directed at decreasing winter and summer peak demand by targeting water heater and air conditioning end uses. A flexible load shape program to control air conditioning is an option the utility will consider in the future, especially if peak demand growth over the next five years increases faster than is currently forecasted.

Currently the city is working with the main customers White Energy to monitor the usage and adjust to minimize the effects on the load peak.

The rate impact of a DSM program on non-participants is crucial to the utility's viability. As already discussed, the City's economy is dependent on a limited number of commercial and industrial businesses. Neither the utility nor the City can afford to lose a major customer to surrounding utility company or to a neighboring community. Customer electricity rates are too important to be ignored in evaluating DSM programs.

Another factor regarding the feasibility of DSM activities is the utility's lack of economies of scale. The utility simply doesn't have the sales volume to justify large DSM programs; any DSM activities must recognize and work within the limited budget of a municipal utility.

## RENEWABLE ENERGY

The city continues to explore entering into a wind energy purchase power agreement. Kansas Municipal Energy Agency will be developing proposals to present to the city in 2016. The city has attended numerous meetings with companies that install community solar farms.

## IMPLEMENTATION PLAN

Consistent with the timeframe set out in the regulations of Western's Energy Planning and Management Program, this electricity resource plan covers the five years 2016 to 2020. The actions to be implemented under the plan are defined by the following basic parameters:

1. There is sufficient capacity to meet projected load growth and adequate power supply arrangements are in place.
2. DSM objectives are peak shaving which is being utilized through the use of the Western allocation. KMEA schedules the Western allocation within the parameters set forth by Western in a way that shaves the peaks off the demand set by the city on the SECI system. DSM demand management is being utilized through the actions of the city through its programs with energy conservation and education.
3. Energy conservation for city services would be beneficial and will be considered.
4. Facility conservation improvement programs for city services will result in direct savings. This can include the CFL lighting program and programs designed to reduce consumption in the city owned and operated buildings and facilities.

Between 2016 and 2020, the utility will select, design and implement any DSM programs found to be effective and feasible, based on final cost and

quantitative factors. Program costs, participation levels, and energy and demand impacts, will be determined in the process. Public participation will be crucial for this process as well. Once any programs are determined to be feasible for the city the second step is to design an evaluation plan to measure the success of the program. This evaluation will measure both the process and the impact of the programs. This evaluation will consider effectiveness on energy , peak demand and program participation. For each selected program, a program budget and schedule will be designed.

In closing the city of Russell has reduced its dependence on fossil fuels through the Western contract and the GRDA contract. Through both of these Hydro programs the city is able to provide power to its citizens that is economical, reliable, and renewable.

# ADDENDUM TO CITY OF RUSSELL, KS 2016 IRP

On June 7, 2016, during City Council Work Study, city staff informed the council of the WAPA 5 Year Integrated Resource Plan requirements and deadline during an open public meeting. The IRP was featured in local newspaper articles and the local radio station. The 2010 IRP was posted on the City web site. The city did not receive any communications from the public regarding the IRP.

Once WAPA has approved the 2016 IRP, it will be posted on the city web site and will be featured on People In the News, which is an interactive radio spot which highlights current projects in our city.

The city web site is located at www.russellcity.org

**EXCERPT OF MINUTES OF A MEETING**
**OF THE GOVERNING BODY OF**
**THE CITY OF RUSSELL, KANSAS**
**HELD ON JULY 19, 2016**

The governing body met at the usual meeting place in the City, at 4:30 p.m., the following members being present and participating, to-wit: Richard Cross, DeVane Dinkel, G.J. Long, Jim Cross, Paul Phillips, Barry Hoffman, Michelle Wagner and Frank Peirano.

Absent: None

The Mayor declared that a quorum was present and called the meeting to order.

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(Other Proceedings)

Thereupon, there was presented an agenda item entitled:

**CONSIDERATION FOR APPROVAL WESTERN AREA POWER ADMINISTRATION INTEGRATED RESOURCE PLAN**

Thereupon, Councilmember Long moved that said Plan be adopted. The motion was seconded by Councilmember Wagner. Said consideration was duly read and considered, and upon being put, the motion was carried by the vote of the governing body, the vote being as follows:

Yea: Eight_____.

Nay: None_____.

Thereupon, the Mayor declared said agenda item approved.

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(Other Proceedings)

On motion duly made, seconded and carried, the meeting thereupon adjourned.

**CERTIFICATE**

I hereby certify that the foregoing Excerpt of Minutes is a true and correct excerpt of the proceedings of the governing body of the City of Russell, Kansas, held on the date stated therein, and that the official minutes of such proceedings are on file in my office.

(SEAL) CITY OF RUSSELL, RUSSELL COUNTY, STATE OF KANSAS

Mayor

Clerk

**July 19, 2016**

**Russell City Council Meeting – Minutes**
**City Hall**
**Russell, KS**

Mayor Mader called the City Council meeting to order at 4:30 PM with the following members in attendance: Councilmembers: Richard Cross, Dinkel, Long, Jim Cross, Phillips, Hoffman, Wagner and Peirano.

The following staff members were in attendance: City Manager Jon Quinday, City Attorney Ken Cole, Police Chief Dale Weimaster, Fire Chief Shane Preston, Public Works Director Rich Krause, Building Official Roger Sells, Electric Director Duane Banks and City Clerk Katrina Woelk.

**Approval of Agenda**

Councilmember Jim Cross made a motion to approve the agenda. Councilmember Phillips seconded. The motion carried unanimously.

**Presentation/Discussion**

**1) S. Fossil Interchange Traffic Study**

Representatives from Kirkham Michael presented the Traffic Study for the S. Fossil Interchange.

**2) Special Event Application – Expendables MC**

Greg Rose from the Expendables Motorcycle Club and Shanda Kilian from C&S Enterprises explained that they wanted to close the 600 and 700 blocks of Main Street for a special event on October 15th.

**3) 2015 Audit Report**

Finance Director Katrina Woelk presented the 2015 Audit prepared by Lindburg, Vogel, Pierce, Faris Charted.

**4) 2017 Budget Presentation**

City Manager Jon Quinday presented the finalized budget to be published for the Budget Hearing.

**5) Western Area Power Administration Integrated Resource Plan**

Electric Director Duane Banks gave an overview of the Western Area Power Administration Integrated Resource Plan that he will be asking the council to approve.

**Public Comments on Agenda Items**

None

**Action Items**

1. **Accept 2015 Audit Report**

Councilmember Jim Cross made a motion to accept the 2015 Audit as prepared by Lindburg, Vogel, Pierce and Faris Ctd. Councilmember Wagner seconded. The motion carried unanimously.

2. **Set 2017 Budget Public Hearing Date for 4:30 p.m. on August 16, 2016**

Councilmember Phillips made a motion to set the 2017 budget hearing for August 16, 2016 at 4:30 pm in the Council Chambers. Councilmember Jim Cross seconded. The motion carried unanimously.

3. **Western Area Power Administration Integrated Resource Plan**

Councilmember Long made a motion to approve the Western Area Power Administration Integrated Resource Plan. Councilmember Wagner seconded. The motion carried unanimously.

4. **Housing Development Agreement**

Councilmember Jim Cross made a motion to approve the Housing Development Agreement as presented. Councilmember Wagner seconded. The motion carried unanimously.

5. **CDBG Tennis Court Project Drawdown #1**

Councilmember Jim Cross made a motion to approve the CDBG Tennis Court Project Draw Down #1 for $94,059.25. Councilmember Wagner seconded the motion. The motion carried unanimously.

6. **Resolution 11-16 Consumption of Alcoholic Liquor and Special Event Permit**

Councilmember Wagner made a motion to approve Resolution 11-16 approving the special event permit and allowing the purchase, possession and consumption of alcoholic beverages within the designated barricaded area provided the sponsor secures a temporary permit from the ABC. Further provided that all clean-up and

equipment removal of the designated area is completed by 3 am on October 16, 2016. Councilmember Pierano seconded the motion. The motion carried unanimously.

7. **Resolution 12-16 General Nuisance Abatement**

Councilmember Long made a motion to approve Resolution 12-16 authorizing the removal of the nuisance(s) from 404 N. Franklin Street and providing the abatement costs, if any, incurred by the city shall be charged against the lots or parcels of ground on which the nuisance is located. Councilmember Jim Cross seconded the motion. The motion carried unanimously.

8. **Resolution 13-16 General Nuisance Abatement**

Councilmember Jim Cross made a motion to approve Resolution 13-16 authorizing the removal of the nuisance(s) from 524 W. 1st Street and providing the abatement costs, if any, incurred by the city shall be charged against the lots or parcels of ground on which the nuisance is located. Councilmember Phillips seconded the motion. The motion carried unanimously.

9. **Ordinance 1884 Insurance Proceeds Fund**

Councilmember Jim Cross made a motion to approve Ordinance 1884 concerning the payment of insurance proceeds and repealing Ordinance 1707. Councilmember Wagner seconded the motion. The motion carried unanimously.

**Consent Agenda**

Councilmember Phillips made a motion to approve the consent agenda. Councilmember Wagner seconded. The motion carried unanimously.

**Adjournment**

Councilmember Jim Cross made the motion to adjourn the meeting. Councilmember Phillips seconded the motion. The motion carried unanimously.

Katrina Woelk, City Clerk