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## City of Russell, Kansas

### Integrated Resource Plan

December 2010

#### 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 First 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. 8<sup>th</sup> 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 4,217.

As of 2009, the county's population was 6,597, while Russell's was 4,185. From 1990 to 2000, the city's population decreased by 10.9%

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, 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 2005, the utility served 2344 residential customers, approximately 721 commercial customers and 255 industrial customers. Electricity sales growth for the five years ended 2009 was 4%, while customer growth was 7%.

With regard to the market potential for residential sales, the City expects to be holding steady. As of 2006, Russell had 2344 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, 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 2010 to 2014. Total energy sales are expected to increase 1% annually, from 105,738 MWh in 2009 to 110,031 MWh in 2014.

The modest 1% growth rate reflects the slow customer and economic growth in the utility's service territory. Russell's population actually decreased over the last ten 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				
	2005	2006	2007	2008	2009
ANNUAL KWH SALES	104,487,000	108,288,000	102,140,000	97,207,000	105,738,000
ANNUAL KWH REVENUE	\$8,984,000	\$10,040,000	\$7,765,000	\$9,632,000	\$9,137,000
ANNUAL YEAR END CUSTOMERS IN CLASS:					
A. RESIDENTIAL-CITY	2,334	2,344	2,342	2,340	2,509
B. RESIDENTIAL-RURAL	0	0	0	0	0
C. COMMERCIAL-CITY	713	721	751	678	711
D. COMMERCIAL-RURAL	0	0	0	0	0
E. LARGE POWER-CITY	252	255	257	259	261
F. LARGE POWER-RURAL	0	0	0	0	0
G. DUSK TO DAWN LIGHTS	358	415	412	410	407
ANNUAL KWH CONSUMED FOR CITY USE	3,391,000	3,288,000	2,881,000	3,242,000	2,151,000
ANNUAL KWH LOSSES FOR THE CITY	5,213,969	5,677,165	5,600,055	5,092,492	6,979,850
ANNUAL PEAK DEMAND-KWH	23,955	27,695	22,204	23,440	23,449
DATE AND TIME OF PEAK	7/20/05 AT 2 PM	7/25/06 AT 4 PM	8/13/07 AT 5 PM	7/24/08 AT 3:39 PM	8/25/09 AT 3:58 PM
ANNUAL KWH GENERATED	61,196,485	36,386,621	18,442,886	7,719,118	8,345,543
ANNUAL SECI PURCHASES-KWH	49,322,614	81,015,805	92,657,498	99,340,399	104,080,301
ANNUAL WAPA PURCHASES	0	0	0	0	3,905,000
ANNUAL REMC SPOT MARKET PURCHASE	0	0	0	3,476,787	12,322,914
TOP FIVE LARGEST CUSTOMERS:					
A. LARGEST USER	WHITE ENERGY/ETH.	WHITE ENERGY/GLU.	WHITE ENERGY/GLU.	WHITE ENERGY/ETH.	WHITE ENERGY/ETH.
B. SECOND LARGEST	WHITE ENERGY/GLU.	WHITE ENERGY/ETH.	WHITE ENERGY/ETH.	WHITE ENERGY/GLU.	WHITE ENERGY/GLU.
C. THIRD LARGEST	EPCO	EPCO	KLEMA IGA	LAND O LAKES/FEED	LAND O LAKES/FEED
D. FOURTH LARGEST	RUSS. HOSPITAL	KLEMA IGA	RUSS. HOSPITAL	KLEMAS/GROCERY	KLEMAS/GROCERY
E. FIFTH LARGEST	KLEMA IGA	RUSS. HOSPITAL	MCDONALDS	HOSPITAL	HOSPITAL

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

<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>
<u>23955</u>	<u>27695</u>	<u>22204</u>	<u>23440</u>	<u>23449</u>	<u>23683</u>	<u>23920</u>	<u>24160</u>	<u>24401</u>

## 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 2010, 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 - Secondary				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 2009 Russell purchased 104,080,301 kWh from SECI, 3,905,000 kWh from Western, 12,322,914 kWh from the real-time marketplace and generated 8,345,543 kWh.

## DEMAND-SIDE ASSESSMENT

The utility serves approximately 2509 residential customers, 711 commercial customers and 261 industrial customers. For 2009, energy sales were as follows:

Residential	21,291 MWh	20%
Commercial	17,805	17
Industrial	<u>66,642</u>	63
Total	<u>105,738</u>	

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 2009 Russell had energy consumption of 2,151,000 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 bought CFL low usage light bulbs and makes those available to the residents of the city.
- 2) The city has replaced all traffic control lights with more efficient LED.
- 3) The City has adopted a Net Metering Policy for renewable energy.
- 4) The City sends out a quarterly newsletter outlining ways to be more energy conscience and reduce your energy consumption
- 5) Every bill that goes out to a customer in Russell contains energy savings tips that the customer can use to reduce their energy 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**

Western is planning on offering Renewable Energy Credits (REC's) to their customers starting in 2011. KMEA is planning on actively managing this program for the participating cities in the program. The state of Kansas currently does not have a renewable portfolio standard for municipals but this acquisition of these credits will show the citizens of the Russell community that the city is actively attempting to embrace renewable energy options. Russell currently contracts for renewable energy through its purchase power agreement with Western Area Power Administration and through its purchase power agreement with Grand River Dam Authority. Both of which are Hydro Electric Power Generation. Russell also utilizes the use of Wind generation through its contract with SECI as SECI has wind generation on their system.

## **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 2010 to 2015. 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 2010 and 2014, 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.

#### **PUBLIC COMMENT AND CITY ACCEPTANCE OF IRP**

The City of Russell, Kansas made the IRP available to the citizens of the city of Russell through various means. The plan was made available on the city website and was also mentioned on the local radio as available for comment. The city received zero comments or questions of the plan.

The City of Russell, Kansas city council approved the Western IRP during a council meeting held on \_\_12/21/2010\_\_\_. The council adopted the plan and will make the plan available to its citizens for reference.

CITY OF RUSSELL



RALPH WISE

City Manager

**January 18, 2011**

**Russell City Council Meeting – Minutes  
City Hall  
Russell, Ks.**

The Russell City Council met in regular session at 4:33 PM with the following members in attendance: Mayor Dawson; council members Cook, Cross, Hunsley, Boxberger and Stoppel. Also in attendance: City Manager Wise, City Attorney Cole and City Clerk Hamilton. Council members Allen, Daugherty and Phillips were absent.

**Invocation**

Reverend Earl Haggard gave the invocation.

**Recognition – None**

**Approval of Agenda**

Council president Boxberger moved to approve the agenda and council member Hunsley seconded. The motion passed unanimously.

**Presentations**

City manager Ralph Wise indicated that it was time to bid the operation of the club house at the golf course. The plan was to finish the golf season with a city employee running the club house and then consider putting the operation out for public bid. He presented the RFP included in the packet and said that the goal was to meet with the golf association boards, advertise the RFP and have an action item on the March council meeting agenda, with someone in place to operate the club house by April 1.

**Public Comments on Agenda Items**

Shanda Milhon of C & S Enterprises appeared and presented her plan for serving alcohol at the Bellamy Brothers concert that she has scheduled for Friday May 6<sup>th</sup>. She provided written copies of the plan and signatures of approval from the businesses on the 700 block of Main Street. Council member Cross inquired if OPI objected to the concert since they had not signed the form that Shanda presented. Shanda indicated that Alice contacted the owners and the owners do not object if the City approves the event. The hand-out has been incorporated into the agenda packet.

## **Action Items**

### **1. Deines Cultural Center Renovation Bids – City Manager**

City manager Ralph Wise indicated that the bids were received today for the 2<sup>nd</sup> floor renovation. The low bidder was HIEB & Associates, LLC in the amount \$151,700. The renovation work is \$147,900 plus an additional \$3,800 was included for a drywall alternate. He recommended that \$50,000 be provided from the capital improvement fund and the balance of the funding be provided from the Johnson Trust Fund. The capital improvement fund already has a \$50,000 line item in the budget.

Council member Hunsley asked Fred Abercrombie if he had any experience with this contractor. Mr. Abercrombie indicated that he does have experience with this contractor and they are reputable and competent.

Council member Cross moved to accept the low bid provided by HIEB and Associates, LLC using the recommended funding sources and council member Hunsley seconded. There was no further discussion and the motion passed unanimously.

### **2. Snow Removal Equipment bids – Public Works Director**

Public works director Arlyn Unrein indicated that the low bid for the equipment was \$114,985 and was provided by Professional Turf Products. The equipment includes a carrier vehicle, a rotary plow, a push plow and a rotary mower. Ninety-five percent of the costs will be reimbursed by the FAA, excluding the \$10,000 rotary mower. The total to be paid by the city is \$15,249.25. The mower is to be funded from the equipment reserve fund.

The carrier vehicle is a 100 horsepower Toro which will operate all the attachments. Purchasing the mower will expedite mowing the airport ground and eliminate the need to transport parks department mowers to the airport for mowing.

Council president Boxberger moved to purchase the equipment from Professional Turf Products with the funding described above and contingent upon obtaining the FAA grant funding. Council member Cross seconded and the motion passed unanimously.

### **3. Armory Use Agreement – City Attorney**

City attorney Ken Cole indicated that the Council needs to direct staff to proceed with preparing an agreement with the Recreation Commission for use of the Armory building. Once it is completed, the Council can vote on it or suggest changes. Council member Cook indicated that she had heard many positive comments about this use of the facility.

Council member Cross moved to direct staff to begin negotiating with the Recreation Commission for operating the National Guard Armory and council member Stoppel seconded. The motion passed unanimously.

4. Ordinance No. 1822 Fossil Street Speed Limit During School Times – Police Chief

Police chief Jon Quinday indicated that the speed limit will be reduced to 20 miles per hour from 7:30 to 8:00 AM and from 3:30 to 4:00 PM on school days between second and Wisconsin on Fossil Street. There will also be flashing lights provided by KDOT. The ordinance will not be effective until the equipment is in place. The change will be advertised in advance and citizens are normally given 30 days to comply with these types of changes.

Council president Boxberger moved to pass Ordinance No. 1822 and council member Stoppel seconded. The motion passed unanimously.

5. KDOT Public Transportation Grant Application FY 2012 – Public Works Director

Public works director Arlyn Unrein indicated that this application is normally filed with the State on an annual basis for operation of the Russell public transportation bus. He requested authorization for the mayor to sign the grant application.

Council president Boxberger moved to authorize the mayor to sign the grant application for operating the Russell transportation bus and council member Cook seconded. The motion passed unanimously.

6. Bureau of Reclamation Water Study – City Manager

City manager Ralph Wise said that Rural Water District No. 2 is pursuing a \$200,000 study for water sources in Gove, Trego, Ellis and Russell Counties. The City of Hays has agreed to participate and there is no financial obligation involved. He requested authorization for the Mayor to sign the letter of participation.

Council member Hunsley moved to authorize the Mayor to sign the letter of participation with Rural Water District No. 2 and council president Boxberger seconded. The motion passed unanimously.

7. Unit No. 7 Breaker Repair or Replacement

Electric director Duane Banks explained that the breaker for unit number 7 was damaged by a squirrel and the breaker could either be repaired or replaced. The insurance company will pay the least cost option to fix the damage with a deductible of \$5,000. The cost to repair the breaker amounts to \$7,600 and the cost to replace the breaker would be \$10,950 after insurance. He recommended replacing the breaker and keeping the old one for spare parts to be used or sold.

Council member Jim Cross moved to replace the breaker and council president Boxberger seconded. The motion passed unanimously.

#### 8. Cereal Malt Beverage License for C & S Enterprises

City manager Ralph Wise explained that this was for the Bellamy Brothers event that was discussed earlier in the meeting.

Council president Boxberger move to grant the CMB license for the event and council member Hunsley seconded. The motion passed unanimously.

#### 9. Resolution 01-11 – CMB Consumption on Public Street for May 6, 2011 Event – City Manager

City manager Ralph Wise explained that this is required as part of the CMB license just granted.

Council president Boxberger moved to adopt Resolution No. 0-11 and to amend the time for serving to begin at 7:00 PM. Council member Cross seconded and the motion passed unanimously.

#### **Consent Agenda**

Council President Boxberger moved to approve the consent agenda and council member Cross seconded. There was no further discussion and the motion passed unanimously.

#### **Department Reports**

City Clerk Sheldon Hamilton made a presentation on the codification of the City Ordinances. This is the first codification update since 1986. The new code has been drafted and is on-line and is searchable by word. The procedure will be for the city attorney to review the document and the City Council to adopt it. The goal will be to have it ready for adoption at the March council meeting. There will be a paper copy in the council chambers and at the Municipal Court when it is completed.

Electric director Duane Banks explained that the Integrated Resource Plan for WAPA was on the website after the November meeting and an advertisement was published requesting comments. None were received and the plan will be sent to WAPA.

#### **Governing Body/City Manager Comments**

City manager Ralph Wise passed out a list of issues to be addressed and ask council members to rank them in order of importance. His written report is attached and incorporated into the minutes by reference.

Council member Jim Cross inquired about the partially burned apartment building across from city hall. City manager Ralph Wise said that the owners want to sell it to someone who will repair the building. He indicated the City is holding part of the insurance

proceeds and can raze the building if necessary. Fire chief Sam Schmidt and community development director Barry Mooney indicated that the building is secure.

Mayor Carol Dawson thanked officer Whitten for his action at the recent fire. Police Chief Jon Quinday said that the department has a recognition program and once all of the facts are known, there will be something done to recognize officer Whitten.

### **Public Comments**

**None**

### **Adjournment**

Council President Boxberger moved to adjourn the meeting at 5:35 PM and council member Stoppel seconded. There was no further discussion and the motion passed unanimously.

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Sheldon L. Hamilton, City Clerk

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In compliance with the Americans with Disabilities Act, the City of Russell will provide reasonable accommodations for all public meetings. Persons requiring accommodations in attending any public meetings should contact the City Clerk's office at (785) 483-6311 48 hours prior to the meeting.