Integrated Resource Plan

Prepared for

Falls City Utilities
Falls City, Nebraska

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Section I. Introduction

This is the Integrated Resource Plan (IRP) for Falls City Utilities (Falls City). The IRP was developed to identify Falls City's resource requirements for the 10-year period beginning fiscal year 2007 through fiscal year 2016.

Purpose

Falls City is responsible for serving the City of Falls City with electricity, gas, water, and sanitary sewer and water services. 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 to maintain their current allocations of power and energy from WAPA. This IRP is also intended to meet WAPA's requirements.

As part of Falls City'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 Falls City's power supply requirements at the lowest reasonable cost consistent with prudent financial and technical principles.

Discussion of Past IRP Studies

Falls City submitted an IRP to Western in 2002. The 2002 IRP recommended that Falls City monitor baseload projects for feasibility, extend the Omaha Public Power District (OPPD) contract until a new baseload purchase/participation could be made, and construct or purchase additional peaking capacity to replace generating units that will be retired in the future. Falls City implemented the IRP recommendations for a new baseload purchase/participation by participating in the OPPD Nebraska City Unit #2 (NC-2) Project. The 2002 IRP also recommended that Falls City continue to investigate partnerships with the Nebraska Energy

Office (NEO), implement low cost Demand Side Management (DSM) programs and consider purchases of renewable energy based on customer interest. As part of the initial step in the implementation of the recommendation, Falls City participates in the Nebraska Municipal Power Pool (NMPP)'s Electric Distribution Services (EDS) including infrared scanning and meter verification audits. Falls City submits progress reports on the IRP annually to Western.

Methodology

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

- Prepared Falls City's peak demand and energy requirements forecast.
- Compared forecasted peak demand and energy requirements to existing Falls City power supply resources to estimate future resource needs.
- Screened power supply resource options to identify economical resources to include in the integration analysis.
- Screened DSM measures to identify economical and technically feasible measures that could be included in the integration analysis.
- Integrated DSM measures with supply resources to develop IRP options.
- Considered environmental impacts and costs of each IRP option.
- Developed recommendation based on economic and non-economic considerations.
- Solicited public participation and incorporated comments in the IRP.

General Objectives

Falls City's goal is to provide reliable service at low rates. Falls City also focuses on ensuring ample capacity for future growth and development. To achieve this stated goal, Falls City focused on the following objectives in developing the IRP:

- Maintain local control of the utilities system.
- Focus on continued growth and development.
- Maintain low rates.
- Maintain financial and rate stability.

Utility Profile

Falls City is a not-for-profit municipally owned electric utility located in southeastern Nebraska. In 2006, the electric customers were segmented in the following customer classes:

- Residential 2,213
- Commercial 547
- Industrial 21
- Total Electric Customers: 2,781

Falls City had a system peak of 15,080 kW in 2006. Falls City's annual energy usage was 53,511 MWh in 2006, for an annual load factor of 40.51%.

Section II. Load Forecast

Introduction

Based on trending analysis and identification of known new loads, an annual peak growth rate of 0.0% - 0.7% appears reasonable. Since 1998, annual energy growth has averaged -0.35% per year. The forecast is presented in Table 1. Load projections were based on historical data through the year 2006, with system peak load growth projected at 0.0% - 0.7% per year thereafter. Energy calculations are based on projected demand, hours in the year, and a load factor of 46% - 48%.

Table 1
Falls City Utilities
Historical and Projected
Peak Demand and Energy Requirements

Year	Net System Peak MW	Percent Change	Net System Energy MWh	Percent Change	Load Factor %
1997	15.10		53,923		41%
1998	14.70	-2.65%	55,030	2.05%	43%
1999	15.40	4.76%	50,869	-7.56%	38%
2000	14.56	-5.45%	54,930	7.98%	43%
2001	14.06	-3.43%	54,519	-0.75%	44%
2002	13.92	-1.00%	53,931	-1.08%	44%
2003	14.44	3.74%	52,136	-3.33%	41%
2004	13.60	-5.82%	51,535	-1.15%	43%
2005	13.54	-0.44%	54,737	6.21%	46%
2006	15.08	11.37%	53,511	-2.24%	41%
2007	14.10	-6.50%	56,258	5.13%	46%
2008	14.20	0.71%	56,892	1.13%	46%
2009	14.20	0.00%	57,218	0.57%	46%
2010	14.30	0.70%	57,702	0.85%	46%
2011	14.30	0.00%	58,189	0.84%	46%
2012	14.30	0.00%	58,851	1.14%	47%
2013	14.40	0.70%	59,194	0.58%	47%
2014	14.40	0.00%	59,700	0.85%	47%
2015	14.50	0.69%	60,208	0.85%	47%
2016	14.50	0.00%	60,886	1.13%	48%

Section III. Supply Side Resource Analysis

Current Power Supply Arrangements

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

Existing Supply Side Resources

Falls City's system generates 20.4 MW capacity and energy, purchases 3 MW of capacity and energy from WAPA, and has ownership rights for 5.5 MW of baseload that is currently under construction. Table 2 summarizes Falls City's existing supply side resources.

Table 2
Falls City Utilities
Existing Generating Resources - 2006

Source	Capacity (MW)	Energy (MWh)
Generation	20.40	927
WAPA	3.05	14,751
Municipal Energy Agency of Nebraska (MEAN)	0.00	37,833
Omaha Public Power District (OPPD) (1)	0.00	0
Total	**23.45**	**53,511**

(1) MEAN provides scheduling services for the MAPP Service Schedule C, Falls City

Owned Generation. Falls City owns and operates two diesel engine generators and six dual fueled (diesel/natural gas) engine generators.

WAPA. WAPA delivers firm electric service to Falls City. This agreement terminates in 2024.

Municipal Energy Agency of Nebraska (MEAN). MEAN provides scheduling services for the MAPP Service Schedule C, non-firm energy from OPPD to Falls City. This contract expires April 30, 2010.

Omaha Public Power District (OPPD). Falls City has a contract with OPPD that provides MAPP Schedule C non-firm energy that may be interrupted up to a maximum of 750 hours per year. The existing contract expires April 30, 2010.

OPPD Nebraska City Unit #2 (NC-2). Falls City has a contract with OPPD for 0.83% of 663 MW (or 5.5 MW) of NC-2 which is projected to come 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.

Transmission. Falls City is interconnected at 69 kV with OPPD at Falls City. OPPD provides transmission service for WAPA and OPPD purchases under firm and non-firm point-to-point transmission arrangements. MEAN serves as the scheduling agent for the OPPD transmission service.

Comparison of Loads and Resources

Forecasted peak demand and energy requirements were summarized and compared to existing capacity and energy resources. Table 3 (page 7) summarizes the Comparison of Peak Demand and Energy Requirements to Resources. Figure 1 (page 8) is the graphical presentation of the comparison of loads and resources.

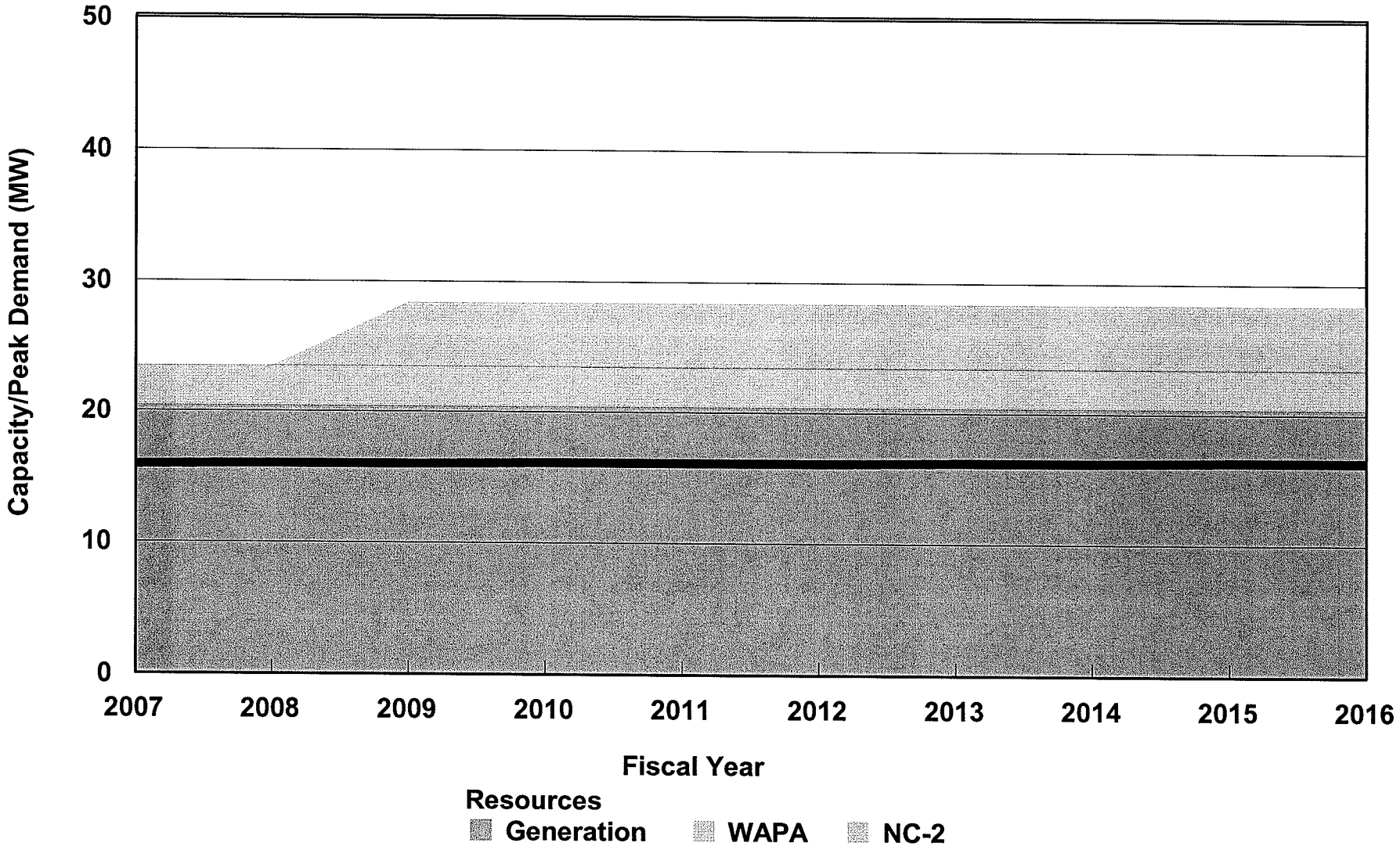
Table 3
Comparison of Peak Demand and Enegy Requirements to Resources

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Demand										
Peak Demand Obligation (1) (2)	15.8	15.9	15.9	16.0	16.0	16.0	16.1	16.1	16.2	16.2
Capacity Resources (3)	23.4	23.4	28.4	28.4	28.4	28.4	28.4	28.4	28.4	28.4
Surplus/(Deficit)	7.6	7.5	12.5	12.4	12.4	12.4	12.3	12.3	12.2	12.2

Notes:
(1) Included forecast demand and 15% required reserves.
(2) Peak Demand is the summer peak, as Falls City Utilities is a summer peaking system.
(3) Included 1% reduction in WAPA in 2011.

Figure 1

Falls City, Nebraska
Comparison of Load vs. Resources



Falls City's Peak Demand Obligation includes peak demand and capacity reserves. Capacity reserves were calculated using the Mid-Continent Area Power Pool (MAPP) Generation Reserve Sharing Pool (GRSP) reserve requirement of 15% of peak demand.

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

- Falls City has sufficient capacity throughout the study period.
- Falls City may need outage replacement energy during scheduled outages of NC-2 after expiration of the OPPD contract.
- Falls City has sufficient energy available from peaking capacity to supply energy needs during high load hours; however, it may be advantageous to purchase non-firm energy if it is less expensive than the operating costs of peaking generation.

The owned resources typically are not used to generate energy because the cost of energy from these resources is greater than the cost of energy in the economy market.

Future Supply Side Resources

Falls City 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. Falls City participates in NPA's resource planning process.

Identification of Resource Options

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

Renewable Resources. Falls City, through its membership in MEAN, is involved in the wind project in Kimball, Nebraska although it does not specifically purchase wind energy from

MEAN. OPPD also includes renewable resources in its portfolio, including wind energy and landfill methane.

Unit Participation and Energy Purchases. Unit participation purchases in generating facilities of other utilities is an option for long-term resources. Falls City is involved in the following:

- OPPD Nebraska City 2.

Evaluation Criteria

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

- Ability to meet Falls City'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.

Supply Side Resources Selected for Screening

Several power supply resources were screened and evaluated for inclusion in the Falls City IRP. Due to the fact that Falls City has sufficient capacity resources throughout the study period, supply-side resource alternatives focused on Falls City's energy needs.

The supply-side resource alternatives are listed as follows:

- Continued non-firm purchase with OPPD or other supplier.
- Additional baseload capacity and energy to offset peaking energy.

Section IV. Demand Side Analysis

Review of Load Shape Objectives

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

Strategic Load Growth

Strategic Load Growth involves promoting increased loads in all hours for utilities with surplus capacity for all periods of the year.

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.

Strategic Conservation

Strategic conservation is directed at reducing end-use consumption through the conservation of energy and environmental resources. Strategic conservation has a levelized effect on end-use consumption, and thus has a minimal effect on peak load. An example of strategic conservation is an appliance efficiency program.

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.

Load Shifting

Load shifting involves shifting load from peak to off-peak periods. Irrigation load control and thermal energy storage systems are examples of load shifting.

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.

DSM Program Evaluations

Demand Side Management (DSM) measures were considered as a means of deferring capacity acquisitions. DSM measures modify the customer or end use load shape. Fourteen types of DSM programs were evaluated using screening analysis and economic feasibility.

Residential Central Air Conditioning Load Cycling

This DSM program requires the installation of a load-control device that will cycle off the air conditioner during summer peak-load periods. The customer incentive is estimated to be $20 per year with an average load reduction of .85 kW.

Residential Electric Water Heater Load Shedding

A customer incentive of $20 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.

Residential High Efficiency Central Air Conditioners

For customers needing to replace their existing air conditioner, this program would provide rebates or incentives when FCU selects the size of the customer's new or 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 a minimum SEER of 12. Local contractors market high efficiency equipment, although no rebates or incentives are provided.

Residential Room and Window Air Conditioner Rebates

This program is for customers needing to replace their existing room or window air conditioner. Rebates of $50-55 would be available to customers selecting a unit with a SEER of 10 or more.

High Efficiency Refrigerator Rebate Program

Customers purchasing a refrigerator 15% or more efficient than the minimum 1993 standard would be eligible for a $50 rebate. The customer would be required to give the old refrigerator to the dealer who would dispose of it.

Old Refrigerator Pick-up Program

This purpose of this program is to remove refrigerators that are used as second units from homes and the refrigerator market. The program educates customers about the costs of the second refrigerator, and would provide a $25 incentive to customers for turning in old frost-free refrigerators that are still operable. Coordination must occur with local dealers who will dispose of the old refrigerators.

Improved Home Loan Program for Furnace & AC Replacement

This program would provide a loan subsidy to customers installing properly sized high-efficiency equipment. This would be achieved by Falls City providing loan funds or by making a payment directly to the bank granting the loan.

Energy-Efficient New Home

Customers would receive an incentive in the form of a rebate, rate discount or a loan subsidy from Falls City for building a new home to meet certain energy efficiency standards. This program requires a central air conditioner and furnace that are high efficiency and not

oversized. This program also requires additional insulation, reduction of infiltration, and reduction of heat gain or loss.

Energy-Efficient Existing Home

Energy efficient improvements including additional insulation, reduction of infiltration, and full basement insulation would be eligible for a customer incentive. Additional requirements are that the central air conditioner and furnace be high efficiency and not oversized.

Commercial High-Efficiency Lighting

This program would provide incentives, rebates or loans for commercial and industrial customers who increase the efficiency of their lighting. It was assumed that equipment being replaced was replaced with similar or higher efficiency equipment, and only permanent improvements or replacements qualify. Examples include T8 lights with electronic ballasts and adding day-lighting controls.

Commercial High-Efficiency Air Conditioners

Small commercial customers would receive incentives for installing high-efficiency air conditioners when replacing their existing units. Examples of qualifying equipment are room air conditioners, packaged terminal units, rooftop units, and split systems.

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. Adding cooling towers, and energy management controls are examples of eligible improvements.

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 energy-efficient motors and energy management systems as long as the energy savings would be lasting.

Interruptible Rates

Large Industrial customers would receive a credit for interrupting all or part of their load during summer peak periods when asked to do so by Falls City. The customer signs a contact before the summer starts, and is obligated to interrupt a certain amount of their load up to 10 times during a year for periods of eight hours or less.

Based on Falls City's resources and load profile, the types of DSM most suitable are:

- Strategic conservation (summer season) to reduce end-use consumption during peak periods.
- Strategic load building (winter season) to build loads during periods of surplus capacity.
- Peak clipping (summer season) to reduce peaking energy needs.

Screening Analysis

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