UTILICORP UNITED INC.

MISSOURI PUBLIC SERVICE

1999-2004
ENERGY SUPPLY PLAN

MARCH 19, 1999
UPDATE

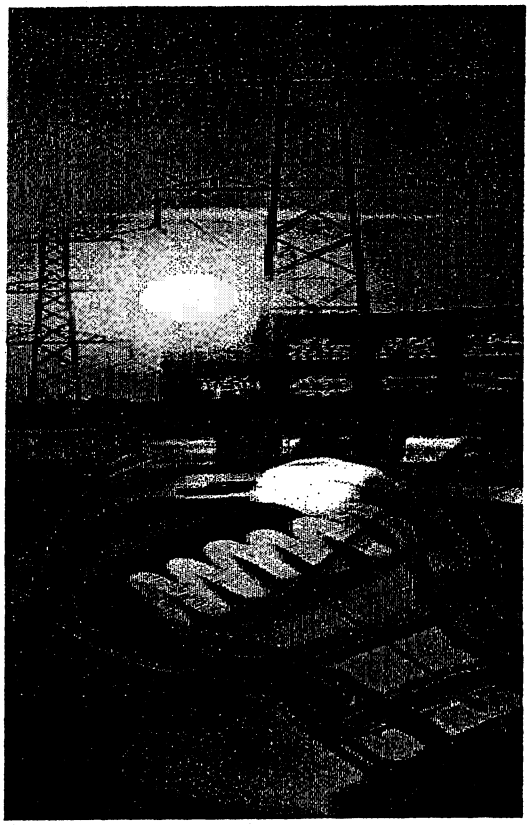

Table of Contents

1. EXECUTIVE SUMMARY

On August 24, 1998, Missouri Public Service (MPS) presented its Preliminary Energy Supply Plan for 1998 - 2003. At that time, the recommended action plan consisted of the following three steps:

- Negotiate extensions of the existing lease agreements on the Nevada and Greenwood combustion turbines;
- Secure short term capacity to meet MPS' capacity needs through 2000; and,
- Pursue the construction of a 500 MW combined cycle unit with an in service date of June 1, 2001.

Since the presentation of its Preliminary Action Plan last August, MPS has pursued all three elements of its action plan with the following results:

- Successfully negotiated the purchase of the Nevada combustion turbine from the lease holder for $1.6 million ($80.00/kw).
- Executed a purchase power contract for 135 MW of short term peaking capacity contract with Aquila Energy Marketing Corporation (AEMC) for the year 2000 summer season. This contract has been filed with the Federal Energy Regulatory Commission (FERC) for its approval.
- Secured a flexible option to purchase additional peaking capacity for the summer seasons of 2000 and 2001. The flexibility of the option will enable MPS to optimize its purchase of capacity to meet a range of capacity needs in both years. This contract has not yet been executed.
- Executed a contract with MEP Pleasant Hill, LLC (MEP) for the purchase of up to 500 MW of intermediate capacity for the period from June, 2001 to May, 2005. This contract has been filed with the Missouri Public Service Commission (MPSC) for its approval. Upon approval of the contract by the MPSC, the contract will be submitted to the FERC for its approval.

In addition, MPS has budgeted and is pursuing the capacity enhancements to its existing fleet of generating units that were presented in the Preliminary Energy Supply Plan. A review of these enhancements and the projected completion date for each one is discussed in Section 2.3.

The remainder of this update will focus on the following areas:

- Load & Resource Forecast
- Generation Resources
- Purchase Power Resources

2. LOAD & RESOUCE FORECAST

MPS updated its base, pessimistic and optimistic load forecasts earlier this year. As a result, revised load & resources forecasts for each load forecast have been prepared. The projected loads & resources forecasts are shown in Table 2.1, 2.2, and 2.3 for the respective load forecasts.

The two purchase power contracts, the purchase option and the capacity enhancements listed in the executive summary are all included in the projected energy supply portfolio. Note that the capacity option allows MPS to match its capacity purchase to the forecast capacity needs under each of the three load forecast scenarios for the years 2000 and 2001.

Table 2.1: Load & Resources Forecast for Base Load Forecast

Forecast Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Projected Firm Load	1,197	1,202	1,229	1,258	1,286	1,320	1,350	1,385	1,419	1,445	1,472
Load Responsibility	1,197	1,202	1,229	1,258	1,286	1,320	1,350	1,385	1,419	1,445	1,472
Capacity Reserves @ 12%	163	164	168	172	175	180	184	189	194	197	201
Total Capacity Requirement	1,360	1,366	1,397	1,430	1,461	1,499	1,534	1,574	1,613	1,643	1,673
Generation Resources											
Sibley #1	54	54	54	54	54	54	54	54	54	54	54
Sibley #2	54	54	54	54	54	54	54	54	54	54	54
Sibley #3	395	395	395	410	410	410	410	410	410	410	410
JEC #1	57	57	57	57	57	57	57	57	57	57	57
JEC #2	57	57	57	57	57	57	57	57	57	57	57
JEC #3	58	58	58	58	58	58	58	58	58	58	58
RG #3	74	74	74	74	74	74	74	74	74	74	74
GW #1	62	62	67	67	67	67	67	67	67	67	67
GW #2	62	62	67	67	67	67	67	67	67	67	67
GW #3	62	62	67	67	67	67	67	67	67	67	67
GW #4	61	61	67	67	67	67	67	67	67	67	67
Nevada	20	20	20	20	20	20	20	20	20	20	20
KCI #1	15	15	18	18	18	18	18	18	18	18	18
KCI #2	18	18	18	18	18	18	18	18	18	18	18
Total Generation	1,047	1,047	1,070	1,085	1,085	1,085	1,085	1,085	1,085	1,085	1,085
Capacity Purchases											
AECI	160	190									
KCPL	60	90									
UE	115										
OPTION			95	25							
AEMC			135								
MEP				320	500	500	500				
1999 RFP		50	100								
Total Purchase	335	330	330	345	500	500	500	0	0	0	0
Total Generation + Capacity Purchase	1,382	1,377	1,400	1,430	1,585	1,585	1,585	1,085	1,085	1,085	1,085
Net Capacity Balance	22	11	3	1	124	86	51	(489)	(527)	(557)	(588)

Table 2.2: Load & Resources Forecast for Optimistic Load Forecast

Forecast Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Projected Firm Load	1,197	1,209	1,243	1,279	1,315	1,357	1,396	1,441	1,484	1,523	1,561
Load Responsibility	1,197	1,209	1,243	1,279	1,315	1,357	1,396	1,441	1,484	1,523	1,561
Capacity Reserves @ 12%	163	165	170	174	179	185	190	197	202	208	213
Total Capacity Requirement	1,360	1,374	1,413	1,453	1,494	1,542	1,587	1,638	1,687	1,731	1,774
Generation Resources											
Sibley #1	54	54	54	54	54	54	54	54	54	54	54
Sibley #2	54	54	54	54	54	54	54	54	54	54	54
Sibley #3	395	395	395	410	410	410	410	410	410	410	410
JEC #1	57	57	57	57	57	57	57	57	57	57	57
JEC #2	57	57	57	57	57	57	57	57	57	57	57
JEC #3	58	58	58	58	58	58	58	58	58	58	58
RG #3	74	74	74	74	74	74	74	74	74	74	74
GW #1	62	62	67	67	67	67	67	67	67	67	67
GW #2	62	62	67	67	67	67	67	67	67	67	67
GW #3	62	62	67	67	67	67	67	67	67	67	67
GW #4	61	61	67	67	67	67	67	67	67	67	67
Nevada	20	20	20	20	20	20	20	20	20	20	20
KCI #1	15	15	18	18	18	18	18	18	18	18	18
KCI #2	18	18	18	18	18	18	18	18	18	18	18
Total Generation	1,047	1,047	1,070	1,085	1,085	1,085	1,085	1,085	1,085	1,085	1,085
Capacity Purchases											
AECI	160	190									
KCPL	60	90									
UE	115										
OPTION			110	50							
AEMC			135								
MEP				320	500	500	500				
1999 RFP		50	100								
Total Purchase	335	330	345	370	500	500	500	0	0	0	0
Total Generation + Capacity Purchase	1,382	1,377	1,415	1,455	1,585	1,585	1,585	1,085	1,085	1,085	1,085
Net Capacity Balance	22	3	2	2	91	43	(1)	(552)	(601)	(645)	(689)

Table 2.3: Load & Resources Forecast for Pessimistic Load Forecast

Forecast Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Projected Firm Load	1,197	1,195	1,217	1,239	1,259	1,286	1,307	1,335	1,359	1,375	1,390
Load Responsibility	1,197	1,195	1,217	1,239	1,259	1,286	1,307	1,335	1,359	1,375	1,390
Capacity Reserves @ 12%	163	163	166	169	172	175	178	182	185	188	190
Total Capacity Requirement	1,360	1,358	1,383	1,408	1,431	1,461	1,485	1,517	1,545	1,563	1,580
Generation Resources											
Sibley #1	54	54	54	54	54	54	54	54	54	54	54
Sibley #2	54	54	54	54	54	54	54	54	54	54	54
Sibley #3	395	395	395	410	410	410	410	410	410	410	410
JEC #1	57	57	57	57	57	57	57	57	57	57	57
JEC #2	57	57	57	57	57	57	57	57	57	57	57
JEC #3	58	58	58	58	58	58	58	58	58	58	58
RG #3	74	74	74	74	74	74	74	74	74	74	74
GW #1	62	62	67	67	67	67	67	67	67	67	67
GW #2	62	62	67	67	67	67	67	67	67	67	67
GW #3	62	62	67	67	67	67	67	67	67	67	67
GW #4	61	61	67	67	67	67	67	67	67	67	67
Nevada	20	20	20	20	20	20	20	20	20	20	20
KCI #1	15	15	18	18	18	18	18	18	18	18	18
KCI #2	18	18	18	18	18	18	18	18	18	18	18
Total Generation	1,047	1,047	1,070	1,085	1,085	1,085	1,085	1,085	1,085	1,085	1,085
Capacity Purchases											
AECI	160	190									
KCPL	60	90									
UE	115										
OPTION			80	5							
AEMC			135								
MEP				320	500	500	500				
1999 RFP		50	100								
Total Purchase	335	330	315	325	500	500	500	0	0	0	0
Total Generation + Capacity Purchase	1,382	1,377	1,385	1,410	1,585	1,585	1,585	1,085	1,085	1,085	1,085
Net Capacity Balance	22	18	2	3	155	124	100	(431)	(459)	(478)	(494)

SCHEDULE FAD-23
Page 7 of 12

3. GENERATION RESOURCES

3.1 Overview

During 1998, UtiliCorp's Missouri Public Service (MPS) electric supply portfolio consisted of fourteen generating units with an accredited capacity of 1,047 MW and three purchase power contracts representing a total purchase capacity of 345 MW. Actual system coincident peak load was 1,197 MW in July. Actual system load factor was 47%, based on net energy for load of 4,657,936 MWh dispatched. The MPS capacity mix was 36% peaking capacity and 64% base load capacity. MPS' single largest generating unit is the coal-fired Sibley Unit 3, which has a net rated capacity of 395 MW. MPS' other coal-fired resources include its 171 MW ownership in the Jeffery Energy Center and 107 MW in Sibley units #1 & #2.. MPS also owns 127 MW of peaking capacity and leases an additional 247 MW of peaking capacity.

Due to the increasing shortage of generating capacity and the associated price escalation for existing surplus and/or new capacity resources, MPS plans to continue to operate and maintain its present fleet of generating assets through the first decade of the next century.

3.2 1999 Maintenance Plan:

At the Sibley Station, turbine overhauls are scheduled to be performed on Units #1 & #2. Siemens Westinghouse has been contracted to manage the turbine overhauls for both units.

Overhaul work on Sibley Unit #2 has been completed with needed repairs made in the following areas: diaphragms, blade erosion, bearing clearances, alignment, etc. In addition to the turbine work, new condenser tubes were installed and other routine boiler maintenance performed. General Electric provided engineering support for the project.

The turbine overhaul for Sibley Unit #1 is currently in progress. This work will be routine in nature as the steam turbine internal parts were refurbished during previous overhauls.

A routine spring maintenance outage will be performed on Sibley Unit #3 (currently scheduled for the period April 10th - 30th)following the turbine overhauls on units #1 & #2. Work will focus on routine boiler repairs in the burner area. In addition, NOx reduction equipment will be installed and minor turbine valve work performed.

JEC #1 spring outage is currently in progress and will be completed by the end of March. During the outage, the economizer section of the boiler was replaced. New combustion controls and turbine controls were also installed.

The spring outage for JEC #2 will begin at the end of March and will be completed in early May. During the outage the economizer section of the boiler, the air heater baskets and the turbine controls will be replaced. The combustion controls will also be upraded.

The sping outage for JEC #3 will begin at the end of the JEC #2 outage and will last one week. Only routine maintenance will be performed.

Routine maintenance will be performed on all combustion turbine units. In addition to routine maintenance, a combustor inspection was completed on GW #3 and a fuel nozzle and combustor liner inspection was completed on RG #3.

3.3 Power Plant Improvements

The following specific equipment modifications to existing MPS generating resources have been identified and included in its supply plan.

A. New High Flow Inlet Guide Vanes - Greenwood (8 MW)
Combustion turbine inlet guide vanes (IGVs) act as air flow dampers during startup and low load operation. This necessary feature for low load operation can penalize full load output by restricting inlet air flow. IGVs are an item typically requiring replacement due to fatigue. Using new alloys, thinner IGVs can replace the originals and provide greater air flow at high output and with it higher capacity. These modifications have the advantages of not impacting O&M, emissions rates, or operating procedures. This upgrade will be completed prior to the summer peak in 2000.

B. Water Injection - Greenwood (12 MW)
The capacity of a combustion turbine is directly proportional to the mass flow through the turbine. Water can be injected at the turbine inlet through the fuel nozzle to increase the mass flow. The advantages of this modification are that it lowers NOx, is easily dispatched, and has industry acceptance. Disadvantages are the delivery, handling, storage and processing of the water, and water injection has a negative impact on the turbines heat rate. This upgrade will be completed prior to the summer peak in 2000.

C. Upgrade Jet Engines - KCI Airport (4 MW)
The jet engines at Kansas City International (KCI) Airport are late 1960s vintage. The manufacturer made improvements to these engines throughout the 1970s. In general, the capacity of these units is limited by the firing temperature. Replacing the units' blades and vanes with higher temperature components will allow the units to operate at higher temperatures. The advantage of these modifications include no impacts to O&M, operating

procedures, or emissions rates. This upgrade will be completed prior to the summer peak in 2000.

D. Boiler/Turbine Upgrade - Sibley (15 MW)
The turbine manufacturer, Westinghouse, and the boiler manufacturer, Babcock & Wilcox, have indicated that additional capacity is available through modifications to the steam turbine and boiler, including some plant auxiliaries. This upgrade is planned for 2000/2001 with the increased capacity available for the 2001 peak season.

3.4 Combustion Turbine Lease Renewal

MPS currently leases the four Greenwood combustion turbines.

Prior to this year, MPS also leased the Nevada combustion turbine. Using the action plan outlined below, MPS negotiated with the current lease holder who no longer wished to own the unit and was able to purchase the unit for $1.5 million plus overheads.

The following table shows the unit, capacity and current lease termination date for the Greenwood units.

Table 3.4-1 Leased Combustion Turbine Data

Unit Name	Capacity (MW)	Lease Termination
Greenwood #1	62	June, 2000
Greenwood #2	62	June, 2000
Greenwood #3	62	June, 2002
Greenwood #4	61	June, 2004

MPS is pursuing the following plan of action to determine whether it should renew the leases, terminate the leases or purchase the units.

- Determine the market value of the units to the lease holders.
- Determine the value of the capacity to MPS.
- Develop Renegotiation Strategy

The above process has revealed a gap between the value of the units to the lease holders and the value to MPS with the value to MPS being approximately twice the market value of the units to the lease holders. Using this information, a strategy was developed in which MPS will offer the following options to the lease holders:

1) Purchase the units at a price that is equivalent to the NPV of the five year lease payments; or,
2) Lease the units for five years for a lease payment stream which will have the same NPV as the unit's fair market value.

Based on its analysis of the inability of simple cycle combustion turbine technology to compete in a deregulated marketplace and the age of the leased units, option 2 is the preferred option. The following table shows the time line for completion of the action plan.

Table 3.4-2: Timetable for CT Lease Renewal/Purchase

Activity	Date
Complete Market Value Study	June 15, 1998
Complete Lease/Buy Analysis	June 30, 1998
Complete Nevada Negotiations	December 1, 1998
Complete GEC 1 & 2 Negotiations	December 1, 1999
Complete GEC 3 Negotiations	December 1, 2001
Complete GEC 4 Negotiations	December 1, 2003

4. PURCHASED POWER RESOURCES

MPS currently purchases capacity and energy through purchase power contracts with two neighboring utilities.

The first contract is with Associated Electric Cooperative (AEC). Capacity and energy are purchased under an agreement executed in 1987, and amended in 1988, 1989 and 1994. The AEC purchase contract expires on May 31, 2000, at which time the contract capacity amount totals 190 MW.

The second contract is with Kansas City Power and Light (KCPL). Capacity and energy are purchased under an agreement executed in 1997. The KCPL contract expires on September 30, 1999, at which time the contract capacity amount totals 90 MW.

MPS also had a contract with Union Electric (UE) to purchase 115 MW of capacity and energy. That agreement was terminated on February 28 of this year. MPS is currently evaluating proposals to replace the capacity and expects to execute a contract by the end of March. The "Unmet Need" shown for 1999 & 2000 in Table 4.1 reflect the shortfall created by the termination of the UE contract.

In addition to the above contracts, MPS has executed two additional contracts to supply capacity and energy beginning in 2000. The first contract is with Aquila Energy Marketing Corporation (AEMC) which will provide 135 MW of peaking capacity and energy in the summer of 2000. The second contract is with MEP Pleasant Hill, LLC (MEP) which will provide 320 MW of peaking capacity in 2001 and 500 MW of intermediate capacity and energy in the years 2002 - 2004.

Finally, MPS has an option to purchase peaking capacity and energy from a regional utility in 2000 & 2001. The purchase amount is flexible and will be adjusted to meet MPS' capacity needs.

The following table summarizes the external power supply arrangements discussed above as well as the current unmet capacity needs of MPS.

Table 4-1: MPS Purchase Power Contracts

Year (June 1)	UE Contract (MW)	AEC Contract (MW)	KCPL Contract (MW)	Option Resource (MW)	AEMC Contract (MW)	MEP Contract (MW)	Total (MW)	Unmet Need (MW)
1998	115	170	60				345	
1999		190	90				280	50
2000				80/110	135		215/245	100
2001				5/50		320	325/370	
2002						500	500	
2003						500	500	
2004						500	500	