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Section 1.0 EXECUTIVE SUMMARY

1.1 What is ARPA?

The Arkansas River Power Authority (ARPA) is a joint action agency chartered with the task of providing wholesale electric power to its seven rural municipal members in southeast Colorado and northern New Mexico:

Colorado Members

Holly

La Junta

Lamar

Las Animas

Springfield

Trinidad

New Mexico Member

Raton

1.2 What is an Integrated Resource Plan?

An Integrated Resource Plan (IRP) evaluates a utility's projected future electric requirements and energy resources in order to ensure that the utility will continue to provide adequate and reliable electric service. An IRP evaluates a large range of energy resource alternatives, such as existing generation, new traditional generating capacity, power purchase contracts, renewable energy and energy conservation and efficiency.

ARPA and its members have certain allocations of federal hydropower supplied by the Western Area Power Administration (WAPA). As customers of WAPA, ARPA and its members are periodically required to prepare an IRP in accordance with 10 CFR Part 905. Since ARPA's energy requirements are directly related to the energy requirements of its members, WAPA granted "IRP Cooperative Status" to ARPA and its members, meaning that ARPA may prepare one IRP on behalf of ARPA and all the ARPA members. Per correspondence received from WAPA dated July 17, 2006, this IRP must be approved by the ARPA Board but does not require approval of the governing body of each ARPA member.

ARPA's first Cooperative IRP was completed and approved by the ARPA Board and each member governing board in 1996; ARPA's second Cooperative IRP was similarly completed and approved in February of 2003. Both the 1996 and 2003 IRPs concluded that ARPA had sufficient energy resources to meet near-term future energy requirements. In addition, the 2003 IRP recommended several action items, several of which have been completed or are ongoing activities.

1.3 Objective

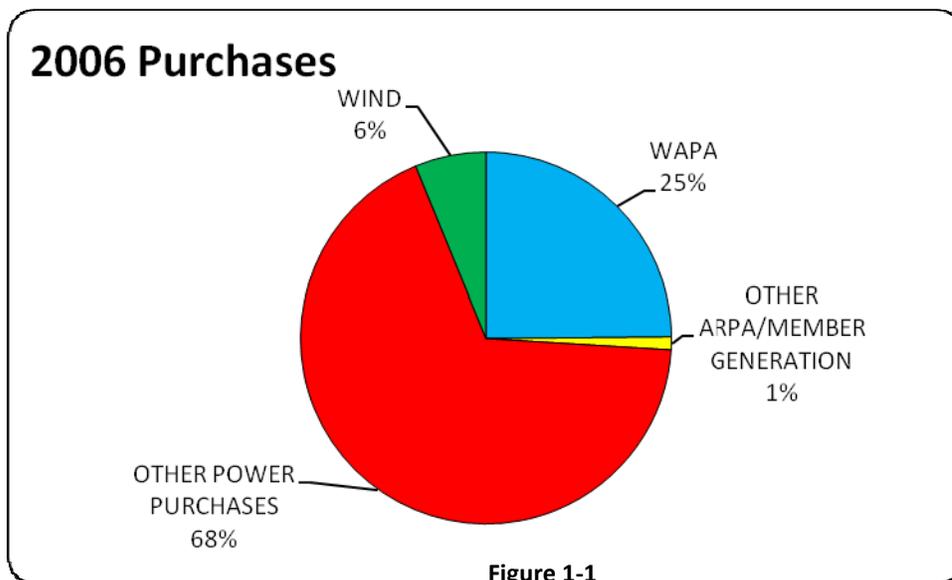
This 2007 Integrated Resource Plan is ARPA's third Cooperative IRP. This plan is intended to meet several objectives:

- Fulfill the planning requirements of 10 CFR 905.
- Summarize the issues affecting ARPA's decision making.
- Communicate ARPA's strategies for meeting its members' future wholesale electric supply needs.
- Provide the public with ample opportunity to comment and provide input into ARPA's long-term power supply plan.
- Identify action items required for successful implementation of ARPA's long-term power supply plan.
- Demonstrate ARPA's commitment to meeting its members' power supply needs in a cost effective, environmentally balanced and reliable manner.

1.4 Current Energy Requirements

In 2006, ARPA's energy sales to members¹ were 331,464 MWh. As shown in Figure 1-1, approximately 7% was supplied by ARPA and member-owned generation (including wind resources), 25% was purchased from WAPA and the remaining 68% was purchased from other power suppliers.

The ARPA system is comprised of five summer-peaking systems and two winter-peaking systems (Raton and Trinidad), which helps to balance ARPA's peak demand. ARPA's 2006 coincidental peak load of 69,628 kW occurred in July.



¹ This includes energy purchased from WAPA under Lamar's LAP allocation.

1.5 Load Forecast - Theory and Approach

ARPA's total energy and capacity requirements are directly related to the level of energy sold by the individual member systems to their end-use consumers. It is thus necessary to forecast the future energy sales and peak demand of each ARPA member in order to project ARPA's future energy and capacity requirements.

ARPA contracted with Power System Engineering, Inc (PSE) to conduct two load forecasts. The first forecast was completed in 2005 in preparation for ARPA's 2006 bond issue. The second forecast, completed in late 2006 for inclusion in this IRP, was revised to expand the historical dataset for energy sales, demand, economics, demographics and weather from 1990-2004 to 1990-2005. The methodology utilized to conduct the load forecast is described in detail in Section 4.2.

1.6 Future Energy Requirements and Peak Demand

As shown in Table 1-1, over the last five years ARPA's actual energy requirements (non weather-normalized) have decreased an average of 0.4% annually while peak demand has increased 0.2% annually. The decrease in sales is attributable primarily to a severe multi-year drought which impacted irrigation loads in the regions. The load forecast, which is based on normal weather patterns, projects that ARPA's energy requirements will increase an average of 0.4% annually and both the summer and winter peak demand will continue to increase at an average rate of 0.2% annually.

Table 1-1: Summary of Load Forecast

Year	Energy Requirements* (MWh)	Summer Coincident Peak (kW)	Winter Coincident Peak (kW)
ACTUAL			
2002	336,744	69,680	53,207
2003	328,484	69,904	54,810
2004	325,978	67,967	54,010
2005	337,360	75,704	57,427
2006	331,464	69,628	53,445
FORECAST			
2007	331,352	71,350	54,593
2008	333,853	71,639	54,805
2009	333,571	71,619	54,779
2010	332,875	71,585	54,699
2011	333,065	71,654	54,690
2012	335,170	71,910	54,854
2013	337,114	72,138	55,007
2014	338,558	72,332	55,106
2015	341,884	72,707	55,178
2016	344,181	72,969	55,561

*The energy requirement shown in Table 1-1 is based on sales to members. Depending on the distribution of supply resources, ARPA requires an additional 16,000 – 21,000 MWh annually to compensate for transmission losses.

1.7 Future Energy Resources

In the 2003 IRP, ARPA discussed the possibility of converting a member-owned gas-fired boiler to coal-fired generation. In 2006, ARPA broke ground on the Lamar Repowering Project, which involves the installation of a new coal-fired circulating fluid bed (CFB) boiler, steam turbine, auxiliaries, and coal, ash and limestone material handling systems at the existing Lamar Power Plant in Lamar, Colorado. The new coal-fired boiler, in conjunction with Lamar's existing 25 MW steam turbine and the new steam turbine generator, will convert the facility from gas to coal and increase the capacity of steam generation at the facility from 25 MW to approximately 44 MW gross (38.5 MW net).

The completion of the Lamar Repowering Project (LRP), scheduled for mid-2008, significantly alters ARPA's future energy needs. Whereas past IRPs contemplated future supplemental energy supply primarily from purchase power contracts, the majority of ARPA's energy needs will now be served by its own generating resources in combination with its WAPA allocation.

Due to this major shift of resources, ARPA also contracted with PSE to conduct an hourly production cost model of ARPA's power supply resources. The purpose of the hourly production model was to estimate the amount of energy supplied by each ARPA resource, estimate the amount of excess energy from the LRP that may be expected to be available for sale into the market, and predict the amount of energy that will need to be purchased either on the open market or via supplemental contract(s). The production model was conducted for 2009, the first full year the LRP will be in service, as well as for 2018, to check the impact of future load growth on the energy scheduling results. The resulting energy balance is depicted in Table 1-2.

Table 1-2: Energy Balance (MWh)

Source	On-Peak	2009		2018 Total
		Off-Peak	Total	
WAPA Purchases				
CRSP	6,872	5,517	12,389	12,389
LAP	40,017	35,033	75,050	75,050
Lamar Generation	136,224	149,688	285,912	285,912
Wind Resources	10,129	13,216	23,345	23,345
Market Purchases	<u>7,575</u>	<u>4,669</u>	<u>12,244</u>	<u>20,776</u>
Total Resources	200,817	208,123	408,940	417,472
Load	181,170	168,659	349,829	365,916
Market Sales	<u>19,647</u>	<u>39,464</u>	<u>59,111</u>	<u>51,556</u>
Total Requirements	200,817	208,123	408,940	417,472

As summarized above, ARPA will have sufficient resources to meet future projected energy requirements:

WAPA: Energy from WAPA will continue to supply approximately 25% of ARPA's energy needs. ARPA's contracts with WAPA have been extended to 2024.

ARPA and Member-Owned Generation: The Lamar Repowering Project, scheduled for commercial operation in mid-2008, and the existing 7.5 MW of wind generation owned by ARPA and its members will provide approximately 71.5% of ARPA's energy needs for the long-term.

Supplemental Power: ARPA has entered into a purchase power agreement effective October 1, 2007 with the Municipal Energy Agency of Nebraska (MEAN) to supply all of ARPA's energy needs, less ARPA/member-owned generation and ARPA's WAPA allocations. This agreement extends through May of 2008, at which time ARPA anticipates commercial operation of the Lamar Repowering Project. The agreement allows for an extension of the purchase term in the event the commercial operation date is delayed. Once the LRP is commercial, ARPA will need to purchase approximately 3.5% of its energy needs via the open market, contract(s) for supplemental power, or generate the energy with other ARPA/member-owned units. At the current time, ARPA is investigating scheduling and energy purchase/sales (for excess generation from the LRP) arrangements with other load-serving entities in order to meet ARPA's future supplemental purchase power needs.

1.8 Environmental Impacts

ARPA and its members are committed to providing electricity in an environmentally-sound manner. By way of example:

- ARPA's gas-fired generating unit in Raton, installed in 2003, will be used in standby mode but can be utilized for peaking or intermediate generation. This unit is equipped with a CO/VOC catalyst to reduce emissions of volatiles and carbon monoxide.
- Approximately 25% of ARPA's current energy requirements are provided by renewable hydropower.
- An additional 6% of ARPA's current energy requirements are provided by wind energy owned by ARPA and its member Lamar Light & Power, although ARPA and Lamar do sell the renewable attributes of these turbines to other entities.
- ARPA recently installed a used standby diesel generating unit in Holly, Colorado. This unit meets Tier I emission standards. Based on permitted emission rates (converted to lb/hr), the new unit achieves the following emission reductions when compared to the unit it replaced: NO_x 21%, CO 95%, SO₂ 5%, VOC 40% and particulates 78%.

- The Lamar Repowering Project is equipped with several emission controls. The limestone injection inherent to the CFB process controls SO₂ emissions. The boiler is equipped with a baghouse that controls over 99.8% of the potential particulates. Most importantly, all of the material handling facilities and storage areas for coal, limestone and ash are fully enclosed and equipped with fabric filters to control particulate emissions. This unique feature allows the project to be a minor source of particulate emissions. Although the project does increase overall facility-wide emissions of CO and particulates, facility-wide potential NO_x emissions have decreased by almost 300% and SO₂ emissions have decreased by over 200%.

1.9 Action Items

Because ARPA's energy requirements are directly impacted by the energy needs of the *customers of the ARPA members*, ARPA itself has little direct influence on demand-side management (DSM). In order to meet its future energy requirements and assist its members to promote DSM, ARPA plans to conduct the following activities in the near term:

Two Year Action Plan

1. Complete the Lamar Repowering Project.
2. Restructure ARPA's wholesale energy rate, which is now primarily energy-based, to include a significant demand component.
3. Join a power pool to assist with short-term energy supply in the event of unplanned outages of the LRP.
4. Continue negotiations with other load-serving entities for scheduling, supplemental energy purchases and excess energy sales upon commercial operation of the LRP; enter into an agreement with one or more entities prior to June of 2008.
5. Purchase the real-time metering equipment installed on the ARPA member systems by MEAN.

Five Year Action Plan

1. Encourage members to continue implementation of member DSM and renewable energy programs currently underway, such as industrial lighting and LEDs, voltage conversion, energy audits and photovoltaic lighting of signs, flags, etc.
2. Upon member request, assist individual members to investigate potential member programs for informing their residential customers about ways to save energy; assist members to develop any feasible program(s).
3. Upon request, assist individual members to assess the impact of electronic load shedding and/or time of use retail rates.
4. Continue to evaluate transmission projects beneficial to ARPA and its members.

1.10 Conclusion

ARPA is in a significantly different position than during the preparation of past IRPs. While ARPA has relied heavily in the past on other entities via long and short term purchase power contracts for the majority of its energy needs, ARPA will soon be generating over 70% of its energy needs in addition to the 25% currently obtained from WAPA.

In its last IRP, ARPA stated: “ARPA must remain flexible in its approach to future power supply. Maintaining a balance of coal-fired, gas-fired, and renewable generation is imperative in order to provide the members with a continued reliable, economic supply of wholesale electricity.” ARPA believes it has achieved this goal. In the last five years, ARPA and its members have installed new, efficient gas generation for intermediate and peaking use, sufficient wind generation to supply 6% of ARPA’s energy needs, and a new coal-fired power plant to meet ARPA’s baseload energy requirements for the next 40 years. All of this ARPA generation is a long-term investment projected to meet ARPA’s energy needs for decades to come, leaving less than 5% to be purchased via the market or supplemental contracts. ARPA’s remaining long-term energy supply tasks include the development of agreement(s) for scheduling, supplemental energy purchases and excess energy sales upon commercial operation of the LRP and the investigation, support and future development of transmission projects that enhance member reliability or are economically favorable.

ARPA remains committed to its mission: to promote the long term economic well-being of our municipal members and their consumers by providing a dependable and competitively priced supply of wholesale electric power in an environmentally sound manner.

Section 2.0 WAPA COMPLIANCE

This 2007 Cooperative Integrated Resource Plan (2007 IRP) will be submitted to the Western Area Power Administration on behalf of the Arkansas River Power Authority and its members in accordance with the requirements of 10 CFR Part 905.

10 CFR Part 905.11 requires an Integrated Resource Plant (IRP) to include the following six elements:

2.1 Identification of Resource Options

IRPs must include an assessment and comparison of existing and future supply and demand-side resource options available to ARPA and its members. *An assessment of ARPA's current and future supply and demand side resources is included in Section 5.0.*

2.2 Action Plan

IRPs must include an action plan describing specific actions ARPA will take to implement its IRP. *Section 7.0 contains short (two year) and long (five year) action plans that are necessary in order to implement this IRP.*

2.3 Environmental Effects

To the extent practical, ARPA must minimize adverse environmental effects of new resource acquisitions and document those efforts in the IRP. *Environmental effects of ARPA's new generation resources are discussed in detail in Section 6.0. ARPA pledges to abide by all applicable environmental regulations and minimize adverse environmental effects to the maximum extent economically and technically feasible.*

2.4 Public Participation

ARPA must provide ample opportunity for full public participation in developing the IRP. *Section 8.0 describes ARPA's public participation process and includes a resolution of approval from the ARPA Board.*

2.5 Load Forecasting

ARPA must conduct load forecasting using an acceptable load forecasting method. *Section 4.2 describes the forecasting methodologies utilized and summarizes the results of ARPA's load forecast.*

2.6 Measurement Strategies

ARPA must include a brief description of measurements strategies for options identified in the IRP to determine whether the IRP's objectives are being met. *Section 7.0 includes the criteria for evaluating the effectiveness of ARPA's resource strategy.*

Section 3.0 INTRODUCTION

3.1 Scope

An Integrated Resource Plan (IRP) compares a utility's projected future electric requirements to the utility's energy resources in order to ensure that the utility will continue to provide adequate and reliable electric service. An IRP evaluates a large range of energy resource alternatives, such as existing generation, new traditional generating capacity, power purchase contracts, renewable energy and energy conservation and efficiency. An IRP also considers environmental issues and other societal costs of providing energy services. The public shall be provided with an opportunity to participate in the development of the IRP and the IRP must be approved by the applicable governing board. Per correspondence from WAPA dated July 17, 2006, this IRP must be approved by the ARPA Board of Directors but need not be approved by the governing board of each ARPA member.

As customers of WAPA, ARPA and its members are periodically required to prepare an IRP in accordance with 10 CFR Part 905. Since ARPA's energy requirements are directly related to the energy requirements of its members, WAPA granted "IRP Cooperative Status" to ARPA and its members by letter dated December 27, 1995.

ARPA's first Cooperative IRP was completed and approved by the ARPA Board and each member governing board in 1996; ARPA's second Cooperative IRP was similarly completed and approved in February of 2003. Both the 1996 and 2003 IRPs concluded that ARPA had sufficient energy resources to meet near-term future energy requirements. In addition, the 2003 IRP recommended several action items, several of which have been completed or are ongoing activities.

This 2007 Integrated Resource Plan is the third Cooperative IRP prepared by the Arkansas River Power Authority and is being submitted to WAPA in accordance with the requirements of ARPA's Energy Planning and Management program as set forth in 10 CFR, Part 905. This plan discusses the following topics in accordance with the requirements of 10 CFR Part 905:

- ARPA's current load requirements
- A forecast of ARPA's future load requirements
- ARPA's current power supply arrangements
- ARPA's potential future supply-side options, including renewable resources
- An assessment of potential demand-side resources which could be implemented by ARPA members
- An environmental assessment of ARPA's new supply-side resources
- An action plan

- A measurement strategy for determining whether the objectives of this plan are being met
- A public participation plan
- Conclusions

ARPA and its members are committed to the principles of least cost planning for the long term and the ARPA Board has approved this plan as shown in Section 8.0, Public Participation. Although ARPA's new baseload generation facility will provide the majority of ARPA energy requirements for the long term, ARPA's overall resource plan is dynamic and may require adjustment as circumstances change in the future. Variances in load growth projections, changes in transmission capability, relief of existing transmission constraints or other circumstances could have a significant influence on the particular plans of ARPA to meet its member load requirements. Moreover, the assumptions, guidelines and projected needs set forth in this IRP may be substantially and dramatically affected by potential regulatory changes such as electric industry restructuring, mandatory renewable portfolio standards, significant changes to existing environmental regulations, membership in (voluntary or mandated) Regional Transmission Organizations, and related developments or initiatives.

3.2 Objective

This 2007 Integrated Resource Plan is intended to meet several objectives:

- Fulfill the planning requirements of 10 CFR 905.
- Summarize the issues affecting ARPA's decision making.
- Communicate ARPA's strategies for meeting its members' future wholesale electric supply needs.
- Provide the public with ample opportunity to comment and provide input into ARPA's long-term power supply plan.
- Identify action items required for successful implementation of ARPA's long-term power supply plan.
- Demonstrate ARPA's commitment to meeting its members' power supply needs in a cost effective, environmentally balanced and reliable manner.

3.3 What is ARPA?

The Arkansas River Power Authority, or ARPA, is a joint action agency chartered with the task of providing wholesale electric power to its seven rural municipal members in southeast Colorado and northern New Mexico: Holly, La Junta, Lamar, Las Animas, Springfield, and Trinidad, Colorado and Raton, New Mexico. ARPA is governed by a fourteen member Board of Directors, consisting of two persons appointed by each member municipality.

ARPA's mission is to "work together to promote the long term economic well-being of the municipal members and their consumers by providing a dependable and competitively priced

supply of wholesale electric power in an environmentally sound manner.” ARPA also provides legal, environmental and energy support services to its members in furtherance of this mission. Currently, ARPA’s efforts are directed towards:

- Providing reliable wholesale electric power at competitive and affordable rates
- Preserving its allocation of low cost federal hydropower
- Establishing transmission paths to economically deliver wholesale power to our member systems
- Maintaining the viability of member-owned and controlled electric systems through integration of existing member-owned generation facilities with ARPA-owned local generating resources and supplemental purchase power, thus preserving local generation and associated jobs
- Installing new generation and transmission to replace aging member generation, provide new baseload, intermediate and standby resources and accommodate member growth
- Furnishing and coordinating support services for the members in order to encourage energy efficiency programs and achieve economic and operational efficiencies

When ARPA was established in 1979, each ARPA member owned local generation; some members also owned one or more sections of transmission line. ARPA members are responsible for the continued upkeep, operation and maintenance of this existing member-owned generation and transmission so long as these activities do not become economically detrimental to the member. ARPA reimburses members for usage of their member-owned generation and transmission in accordance with ARPA’s current tariff and reimbursement schedules as approved at least annually by the Board of Directors.

ARPA is responsible for acquiring power supplies and to construct, operate, and maintain new generation, transmission and related facilities for the purpose of delivering wholesale electric power to its members. Currently ARPA’s power supply mix is a combination of supplemental purchased power obtained under contract, federal hydropower, and ARPA-owned and member-owned generation, including 7.5 MW of ARPA and member-owned wind generation. In addition to the local member-owned generation, all ARPA-owned generation is located in the member communities. This local generation helps to ensure a continued job force in the local member communities and provides a high degree of reliability for the members’ consumers.

In 2006, ARPA broke ground on the Lamar Repowering Project, which involves the installation of a new coal-fired circulating fluid bed boiler, steam turbine, auxiliaries, and coal, ash and limestone material handling systems at the existing Lamar Power Plant in Lamar, Colorado. The new coal-fired boiler, in conjunction with Lamar’s existing 25 MW steam turbine and the new steam turbine

generator, will convert the facility from gas to coal and increase the capacity of steam generation at the facility from 25 MW to approximately 44 MW gross (38.5 MW net).

The completion of the Lamar Repowering Project, scheduled for mid-2008, significantly alters ARPA's future energy needs. Whereas past IRPs contemplated future supplemental energy supply primarily from purchase power contracts, over 95% of ARPA's energy needs will be served by its own generating resources in combination with its WAPA allocation.

Although ARPA is responsible for future energy supply, ARPA's input into demand-side management (DSM) is limited to price signals via the demand component of ARPA's wholesale energy rate to its members. ARPA has no authority to mandate retail DSM or energy-efficiency programs, nor does ARPA have control over the design and implementation of retail DSM programs undertaken at the sole discretion of each ARPA member. However, ARPA's energy support services personnel are available to provide DSM program assistance to members at their request. In the past, ARPA has also worked in cooperation with its member systems to conduct DSM surveys and to promote an energy efficiency compact fluorescent bulb distribution program. ARPA anticipates that these types of cooperative efforts will continue in the future.

3.4 ARPA Member Systems

Each municipal member of ARPA independently owns and operates an electric system, distributing retail electric power to residential, commercial and industrial customers and for municipal and public use within its service area. Members' generating resources are discussed in detail in Section 5.1.1 of this Plan.

Holly, Colorado: The Town of Holly purchased its municipal utility in 1949. The utility serves an area of approximately 24 square miles with 31 miles of distribution facilities. Approximately 16 % of Holly's revenues are derived from customers outside municipal boundaries. Approximately 10% of Holly's load base was lost during a tornado that devastated the region in the spring of 2007; it is anticipated that it may take several years to rebuild this load base.

La Junta, Colorado: The La Junta municipal electric utility was created in 1939 and serves an area of approximately 10 square miles. La Junta operates approximately 55 miles of distribution line and 6.3 miles of transmission line. Approximately 14 % of the power sold by La Junta is delivered to customers outside municipal boundaries.

Lamar, Colorado: The Lamar municipal electric utility has been in existence since 1920 and serves approximately 170 square miles, comprised of areas both within and outside the municipal boundaries. Approximately 34% of Lamar's total electric sales are outside municipal boundaries. Lamar's facilities include approximately 320 miles of distribution line and 30 miles of transmission line. The Lamar Utilities Board, which operates and oversees the electric utility, was established in 1962 pursuant to the Lamar Home Rule Charter.

Las Animas, Colorado: The Las Animas municipal electric utility was established in 1941 and serves an area of approximately 22 square miles. Approximately 47% of its sales occur outside the municipality. Las Animas's facilities include about 50 miles of distribution line and 13 miles of transmission line.

Raton, New Mexico: Raton's municipal electric utility is operated and maintained by The Raton Public Service Company (RPS), a New Mexico corporation wholly owned by the City of Raton. RPS has operated Raton's electric utility under a franchise originally granted in 1919. RPS serves an area of approximately 22 square miles in northern New Mexico. About 6% of RPS sales are attributable to rural residential and commercial customers located outside municipal boundaries. RPS's facilities include about 84 miles of distribution line and 2.5 miles of transmission line.

Springfield, Colorado: The Springfield municipal electric utility was established in 1947 and serves an area of approximately 2 square miles. Less than 2% of Springfield's sales are attributable to customers outside municipal boundaries. Springfield has approximately 26 miles of distribution line, which includes 4 miles of distribution line to the ARPA wind turbine in Springfield.

Trinidad, Colorado: The Trinidad municipal electric utility was established in 1949 and serves an area of approximately 7 square miles. Less than one percent of Trinidad's total sales are comprised of sales to customers outside municipal boundaries. Trinidad's facilities include approximately 72 miles of distribution line.

Table 3-1 summarizes the population and 2006 energy needs of ARPA and its members. Over the last five years (2002 – 2006), energy consumption of the ARPA members as a group decreased an average of 0.4% annually while peak demand increased 0.2% annually. The decrease in energy consumption is attributable primarily to a severe multi-year drought which impacted irrigation loads in the regions. However, according to the U.S. Census Bureau 2006 Population Estimates and Census 2000, Trinidad is the only ARPA member community that experienced population growth between 2000 and 2006.

3.5 ARPA Wholesale Energy Rate

Until 1985, ARPA's wholesale rate was structured differently for each member. In October of 1985 the ARPA Board of Directors implemented a new rate structure with a single, common rate applicable to all ARPA members. This rate concept is still in existence today, although in a slightly varied format. Because the majority of energy supplied by ARPA has been acquired on a \$/kWh basis, the rate structure is primarily energy-based and currently does not have a demand charge for members with manned power plants. The rate also includes a component for reserves, maintenance of existing ARPA-owned resources, and future generation and transmission acquisitions.

In preparation for the commercial operation of the Lamar Repowering Project, the Board hired an independent consulting firm to perform a cost of service analysis and evaluate the restructuring of

ARPA's rate. As a result of this study, it is anticipated that the Board will adopt a new rate structure with significant demand component in the near future. Such a demand component may encourage the member systems to evaluate or initiate new DSM programs in their individual communities.

Table 3-1: Summary of ARPA Member Systems

Member	2006 Estimated Population *	2006 Winter Peak (kW)	2006 Summer Peak (kW)	2006 Energy Purchases (MWh)
Holly, CO	987	1,152	1,930	7,083
La Junta, CO	7,242	11,388	17,298	74,366
Lamar, CO **	8,356	14,965	23,493	93,360
Las Animas, CO	2,531	4,285	6,760	30,081
Raton, NM	6,781	12,289	9,047	58,897
Springfield, CO	1,350	2,026	3,131	12,311
Trinidad, CO	9,134	9,841	9,051	55,366
ARPA Totals	36,381	53,445	69,628	331,464
		Coincidental Peak		

* U.S. Census Bureau 2006 Population Estimates

** Lamar provides electric service for several small municipalities and towns surrounding Lamar; hence, Lamar's electric requirements are much greater than other ARPA members in the same population range.

3.6 Reference Materials

In developing this Integrated Resource Plan, the following reference material was utilized:

- ARPA historical database, including purchased power, generation, demand and energy sales
- PSE's 2006 ARPA Load Forecast and Summary of Production Cost Modeling Report
- Power Purchase Contracts 87-SLC-0028 and 87-LAO-102 with WAPA (as amended)
- 10 CFR Part 905

Section 4.0 LOAD ANALYSIS

4.1 Historical Load Patterns

4.1.1 Member Peak Demand

Five of the ARPA member systems peak in the summer: Holly, La Junta, Lamar, Las Animas, and Springfield. The remaining two systems, Raton and Trinidad, peak in the winter months. Member peak demand for 2003 – 2006 is shown in Table 4-1 below.

Table 4-1: Member Peak Demand (kW)

	2003		2004		2005		2006		Average Annual Change *
	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	
Holly	1,200	1,900	1,200	1,700	1,300	2,100	1,152	1,930	(1.2%)
La Junta	11,794	17,053	11,124	17,419	13,802	18,626	11,388	17,298	1.9%
Lamar	15,900	25,000	15,400	23,900	17,870	26,408	15,046	23,493	(1.9%)
Las Animas	4,546	6,689	4,432	6,414	4,926	7,154	4,285	6,760	1.1%
Raton	11,556	9,928	12,263	9,049	11,970	9,850	12,289	9,047	1.2%
Springfield	2,036	3,043	2,062	3,000	2,278	3,454	2,026	3,131	1.8%
Trinidad	9,425	8,660	9,400	8,224	10,328	9,043	9,841	9,051	1.3%

* Calculated based on winter peak for Raton and Trinidad and summer peak for all other members.

4.1.2 ARPA Peak Demand

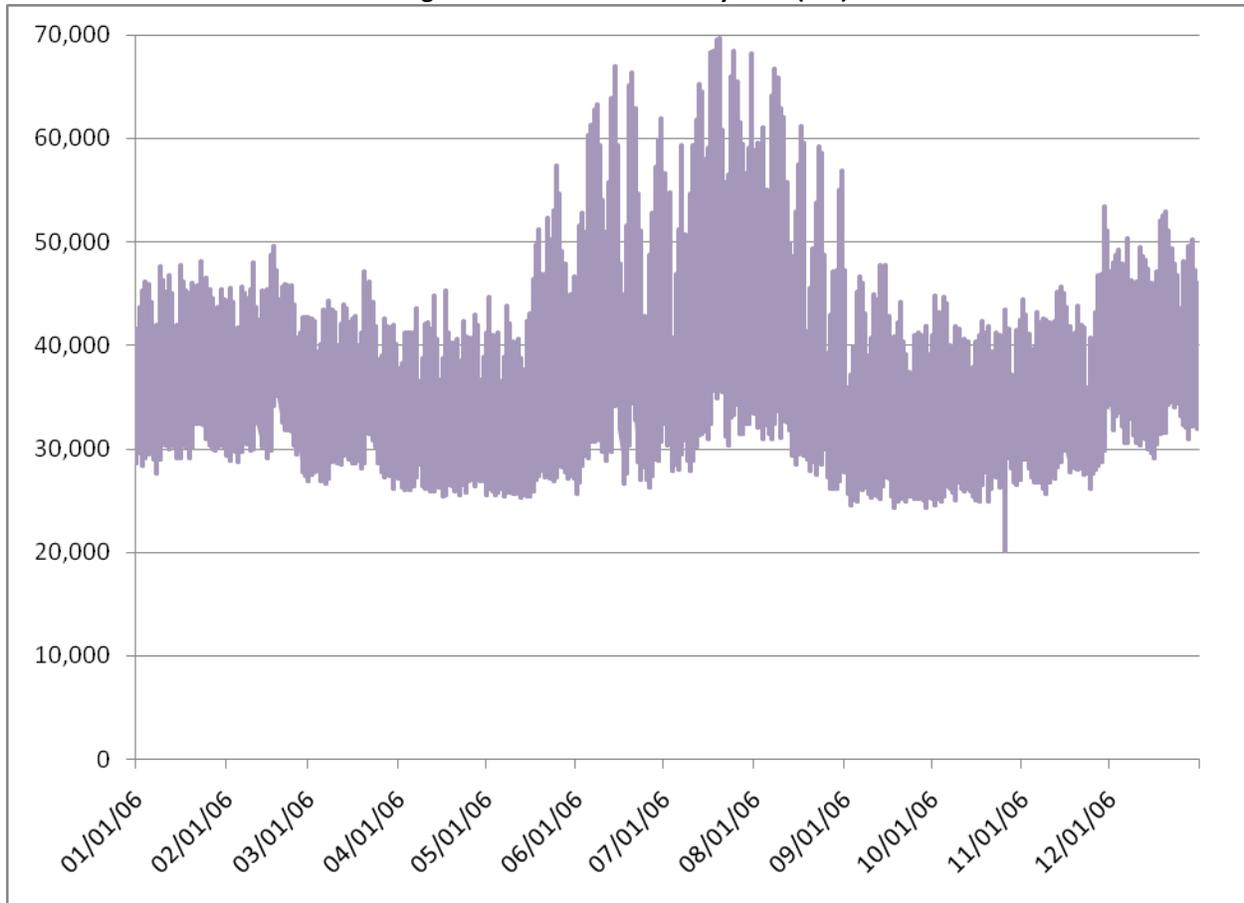
ARPA peak demand for 2003 – 2006 and each member’s contribution to ARPA’s peak is shown in Table 4-2 below. ARPA’s coincidental peak typically occurs in July. In each year depicted below except 2006, the coincidental winter peak occurred in December; the 2006 peak occurred in November. From 2003 - 2006, ARPA’s coincidental peak demand increased an average of 0.2% annually.

Table 4-2: Member Contribution to ARPA Peak Demand (kW)

	2003		2004		2005		2006	
	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer
ARPA Coincidental	54,810	69,904	54,010	67,967	57,427	75,704	53,445	69,628
Holly Contribution	1,100	1,700	1,100	1,600	1,100	2,100	826	1,800
La Junta Contribution	10,800	16,502	10,994	16,502	12,335	18,626	11,137	17,096
Lamar Contribution	15,700	24,900	14,247	23,900	15,218	26,408	13,995	23,164
Las Animas Contribution	4,193	6,267	4,385	6,411	4,378	7,154	4,270	6,646
Raton Contribution	11,556	9,197	11,913	8,634	11,970	9,425	11,449	8,921
Springfield Contribution	2,036	2,925	2,005	2,982	2,098	3,184	1,961	3,110
Trinidad Contribution	9,425	8,413	9,366	7,938	10,328	8,807	9,807	8,891

ARPA's hourly load in 2006 is depicted in Figure 4-1 below.

Figure 4-1: ARPA 2006 Hourly Load (kW)



4.1.3 ARPA Energy Requirements

The total energy requirements⁵ for ARPA and the corresponding energy sales to each member system are summarized in Table 4-3 below. ARPA's total energy requirements average approximately 6% greater than the sum of the individual members' energy requirements. This difference is attributable to two factors: transmission line losses and station service requirements for ARPA and member-owned power plants⁶. For the five year period depicted below, ARPA's energy sales to members decreased an average of 0.4% annually.

⁵ All values in this IRP include purchases resulting from Lamar's CRSP WAPA allocation.

⁶ ARPA does not charge members for energy associated with station service.

Table 4-3: ARPA Sales to Members (MWh)

	2002	2003	2004	2005	2006	Average Growth Rate
Holly	8,054	7,374	6,636	7,089	7,083	(2.9%)
La Junta	71,660	72,322	72,272	76,430	74,366	1.0%
Lamar	102,931	96,036	95,612	98,434	93,360	(2.3%)
Las Animas	29,787	30,002	29,035	30,289	30,081	0.3%
Raton	57,835	57,334	57,265	58,456	58,897	0.5%
Springfield	12,180	11,941	11,909	12,474	12,311	0.3%
Trinidad	54,297	53,475	53,250	54,188	55,366	0.5%
Total Sales to ARPA Members	336,744	328,484	325,978	337,360	331,464	(0.4%)
Total ARPA Energy Requirements	356,102	347,695	344,180	359,099	351,966	(0.3%)

4.1.4 ARPA Member Retail Sales

The distribution of retail sales by customer class for the ARPA members as a group is shown in Table 4-4. "Other" sales consist of items such as electric water heater customers and irrigation customers.

Table 4-4: Retail Sales Distribution of the ARPA Members

CLASS	ITEM	2001	2002	2003	2004	2005
RESIDENTIAL	Number of Consumers	17,136	17,231	17,259	17,091	17,050
	Total Sales (MWh)	113,760	115,440	115,356	113,006	116,294
	Usage per Consumer (kWh)	6,639	6,700	6,684	6,612	6,821
IRRIGATION	Number of Consumers	166	174	175	168	169
	Total Sales (MWh)	4,325	4,492	1,966	1,596	3,542
	Usage per Consumer (kWh)	26,015	25,854	11,267	9,521	20,980
GENERAL C&I	Number of Consumers	3,751	3,761	3,814	3,868	3,865
	Total Sales (MWh)	158,669	158,685	155,461	155,265	161,629
	Usage per Consumer (kWh)	42,298	42,188	40,758	40,143	41,815
LARGE C&I	Number of Consumers	10	13	13	13	13
	Total Sales (MWh)	16,540	19,794	21,495	22,955	20,511
	Usage per Consumer (MWh)	1,654	1,523	1,653	1,766	1,578
STREET & YARD LIGHTING	Number of Consumers	1,365	1,369	1,357	1,320	1,294
	Total Sales (MWh)	5,184	5,324	5,131	5,278	5,034
	Usage per Consumer (kWh)	3,798	3,890	3,780	3,999	3,889
OTHER	Number of Consumers	360	352	345	341	330
	Total Sales (MWh)	11,104	10,858	8,887	10,021	10,247
	Usage per Consumer (kWh)	30,844	30,819	25,765	29,430	31,043
TOTAL	Consumers	22,788	22,900	22,963	22,800	22,721
	Members' total Retail Sales	309,581	314,594	308,296	308,120	317,257

4.2 Load Forecast

4.2.1 Methodology

ARPA's total energy and capacity requirements are directly related to the level of energy sold by the individual member systems to their end-use consumers. It is thus necessary to forecast the future energy sales and peak demand of each ARPA member in order to project ARPA's future energy and capacity requirements.

ARPA contracted with Power System Engineering, Inc (PSE) to conduct two load forecasts. The first forecast was completed in 2005 in preparation for ARPA's 2006 bond issue to fund the Lamar Repowering Project. The second forecast, completed in late 2006 for inclusion in this IRP, was revised to expand the historical dataset for energy sales, demand, economics, demographics and weather and utilized the historical period of 1990-2005. The county level economic and demographic data used in the forecast were published by Woods & Poole Economics, Inc. in July, 2006 as part of their Comprehensive Economic and Demographic Data Digest (CEDDS).

The residential consumer forecast was produced by combining county-level demographic projections with trends in housing unit share and estimates of meters per household to project residential consumer growth for each member system. Housing unit share represents the percent of county households served by the member system.

For residential energy use per consumer, general commercial and industrial (C&I) consumers and general C&I energy use per consumer forecasts, the pooled time-series and cross-sectional econometric models developed in the 2005 forecast were evaluated and re-estimated with the expanded historical databases. The major explanatory variable included in the model for general C&I consumers was total population and the major variables for energy use per consumer were three-year moving average price of electricity in 2005 dollars, per capita income in 2005 dollars and cooling degree-days

The large C&I consumer and sales projections are based on individual forecasts of eight large C&I consumers served by Lamar and five large C&I consumers served by Raton. Those individual forecasts were primarily based on the input received from Lamar and Raton staff. Lamar expects to add a new ethanol plant load in December 2007. An unnamed new load was also added to reflect the long-term growth of Lamar's large C&I sales.

Raton anticipates a new hospital load to be added in mid to late 2007. However, its net impact on their large C&I energy sales will be reduced by about 50% because substantial portions of the two existing hospital loads are expected to be transferred to the new hospital. Raton no longer expects some other new large C&I loads which were included in previous forecasts.

Irrigation energy sales are held constant at 2005 levels reflecting the most recent experience following the water pumping moratorium that was imposed in 2003 and 2004. Sales to other classes by member utility, including street and yard lighting and inter-department sales, were

projected by setting constant at the 2005 actual value, using a three-year or five-year average value, or by using a fifteen-year average growth rate. Member utility own use was projected by using the most recent five-year average value, except at Raton whose own use projection is estimated to be less than one third of the 2005 actual level because their existing coal-fired boiler has been placed in cold standby. The most recent five-year average value was assumed for future distribution loss percentage at all seven members.

The monthly contributions to ARPA peak demands by member utility were also modeled by using the pooled time-series and cross-sectional econometric modeling technique. The major explanatory variables for the peak demand model are monthly total energy requirement by member utility, cooling degree-hours on the monthly peak demand day for the summer months, and heating degree-hours on the monthly peak demand day for the winter months.¹ The coefficients of the summer and winter weather variables in the class energy sales models and in the peak demand model equations are differentiated among the member utilities to reflect distinct saturations of the related appliances.

All of the member utilities except Raton experienced exceptional growth in energy sales and peak demand in 2005. Due to this exceptional growth, the residential and general commercial energy use per consumer models and the peak demand models fit the historical data well but substantially underestimate the 2005 results. This poses a dilemma for a forecaster in choosing how to use the model results to develop the forecast. If we believe that the underestimation in 2005 was due to events that will not continue or repeat, the best forecast would be the pure model forecast and energy sales would not return to the 2005 levels again for several years. If, however, we believe that strong 2005 growth is likely to be sustained, the best forecast would be to use the growth rate suggested by the model (slope of the model equation) but the 2005 intercept. This practice is sometimes referred to as “benchmarking” to 2005.

Some of the growth in energy sales and demand in 2005 was related to weather since annual total cooling degree-days were 34.8 percent higher in 2005 than in 2004. There was no difference in 2004 and 2005 total heating degree-days. Using the weather sensitivities of cooling and heating loads estimated by the 2006 econometric model coefficients of weather variables, the 2004 and 2005 energy sales are weather-normalized as shown in Table 4-5:

Table 4-5: Weather Normalized Energy Sales (MWh), 2004 - 2005

Year	Actual	Weather Normalized
2004	308,120	310,402
2005	317,257	317,790
Growth Rate	3.0%	2.4%

¹ Cooling degree hours were calculated by subtracting 65 degrees from the maximum hourly air temperature on the monthly peak demand day, while heating degree days are absolute values of the minimum hourly air temperature on the monthly peak demand day minus 65 degrees.

The growth rate calculated with the weather-normalized sales reveals that 2.4 percent of the 3.0 percent growth in energy sales is related to non-weather factors including a substantial increase in water pumping and irrigation energy sales when the moratorium imposed in 2003 and 2004 was lifted and substantial increases in non-weather-related energy usage of residential and general C&I consumers.

Since the econometric models of residential and general C&I energy use per consumer and contributions to ARPA peak demand include actual weather variables, the model estimates of 2005 actual energy sales and peak demand are weather-corrected. The underestimation in 2005 is therefore above and beyond weather impacts.

Two versions of the preliminary forecasts of residential and general C&I energy sales and contribution to ARPA peak demand, one with 2005 benchmarking and the other without benchmarking, were sent to the member utility managers for their review and comment. The sustainability of the growth level achieved in 2005 was discussed with the individual member utility managers on the basis of the most recent available 2006 energy sales and weather data. Holly, Las Animas, Springfield and Trinidad chose the 2005 benchmarking method, while La Junta and Lamar decided to go with the model-based forecast without benchmarking. Raton believes both the residential and the general C&I energy sales forecasts with and without benchmarking are too high. At Raton's request, the final energy sales and total energy requirement forecasts for Raton were derived by adopting Raton's own forecasts for residential and general C&I sales, which are significantly lower than the model-based forecasts. Raton's contribution to ARPA peak demand was projected by applying the lower total energy requirement forecast to the peak demand model equation. Raton's forecast of residential energy sales in 2025 is 20.9 percent lower than the model forecast, while its general C&I energy sales forecast is 28.8 percent lower. Due to these significant deviations from the model forecasts, PSE views Raton's residential and general C&I energy sales forecasts as extremely conservative.

4.2.2 Forecast Results

As summarized in Table 4-6 and depicted in Figure 4-2 through Figure 4-4, the load forecast projects that ARPA's energy requirements will increase an average of 0.4% annually and both the summer and winter peak demand will continue to increase at an average rate of 0.2% annually.

While there were significant differences between the 2005 and 2006 forecasts pertaining to the energy and demand of some individual member systems, the combined results for the ARPA system as a whole have not changed very much from the 2005 load forecast. In part, this is due to Raton's conservative forecast, which cancels most of the increases in other member utilities' forecasts.

Table 4-6: Summary of Load Forecast

Year	Energy Requirements* (MWh)	Summer Coincident Peak (kW)	Winter Coincident Peak (kW)
ACTUAL			
2002	336,744	69,680	53,207
2003	328,484	69,904	54,810
2004	325,978	67,967	54,010
2005	337,360	75,704	57,427
2006	331,464	69,628	53,445
FORECAST			
2007	331,352	71,350	54,593
2008	333,853	71,639	54,805
2009	333,571	71,619	54,779
2010	332,875	71,585	54,699
2011	333,065	71,654	54,690
2012	335,170	71,910	54,854
2013	337,114	72,138	55,007
2014	338,558	72,332	55,106
2015	341,884	72,707	55,178
2016	344,181	72,969	55,561

*The energy requirement shown in Table 4-6 is based on sales to members. Depending on the distribution of supply resources, ARPA requires an additional 16,000 – 21,000 MWh annually to compensate for transmission losses.

Figure 4-2: ARPA Total Energy Requirements (MWh), Actual and Projected

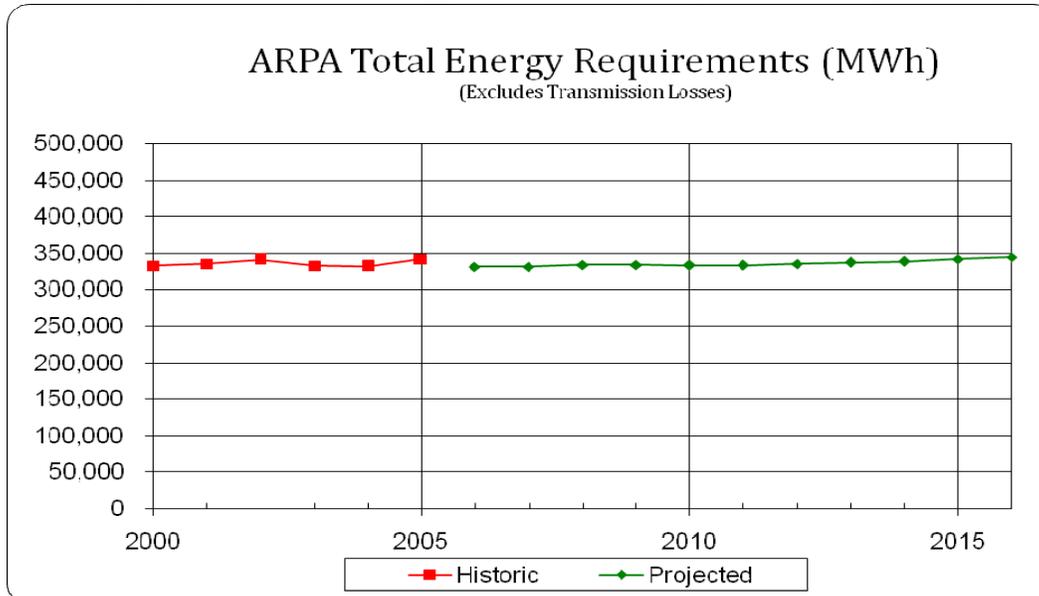


Figure 4-3

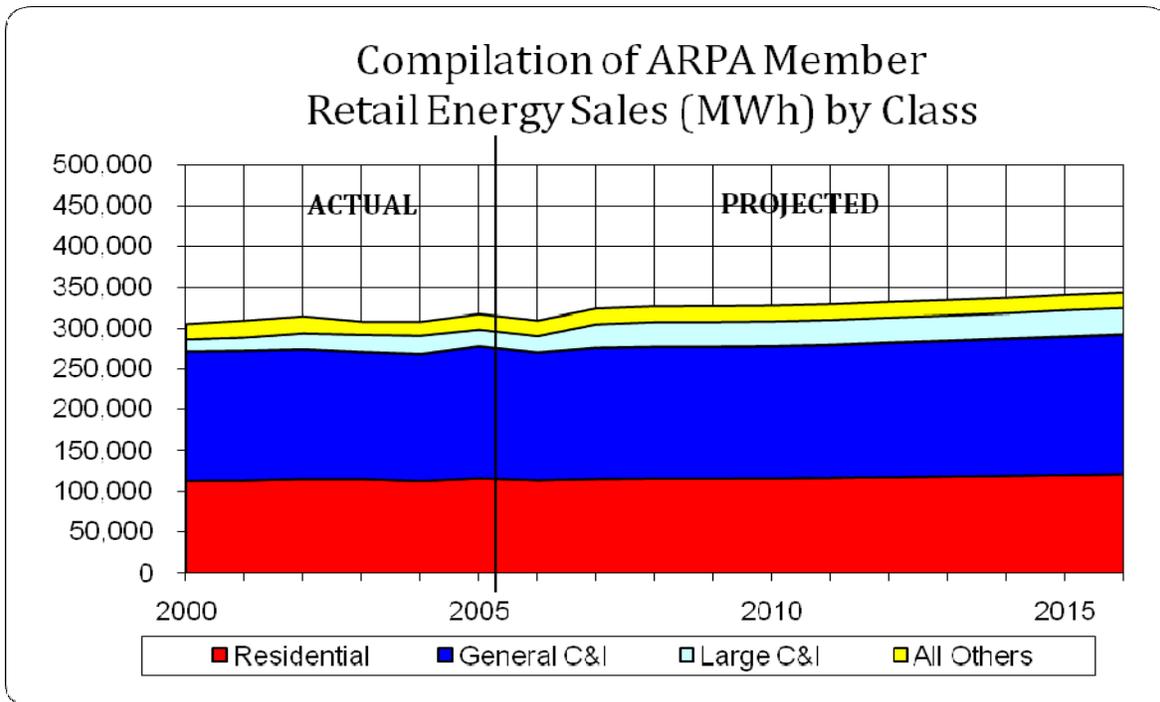
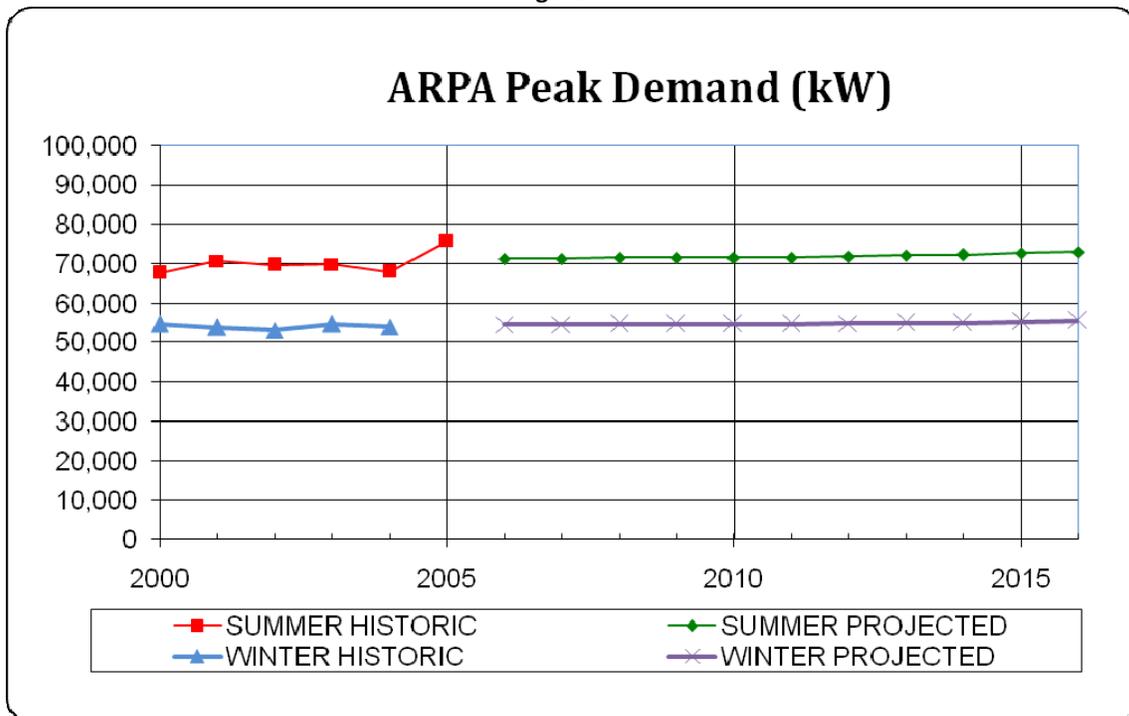


Figure 4-4



Section 5.0 SUPPLY AND DEMAND SIDE ANALYSIS

5.1 Existing Supply Side Resources

ARPA's existing power supply resources consist of the following three sources:

- Member-owned and ARPA-owned generation
- Federal hydropower from the Western Area Power Administration
- Supplemental purchased power obtained under contract

Each of these sources is described in greater detail below.

5.1.1 Member-Owned and ARPA-Owned Generation

When ARPA was established in 1979, each ARPA member owned local generation. ARPA members are responsible for the continued upkeep, operation, and maintenance of this existing member-owned generation so long as these activities do not become economically detrimental to the member. ARPA coordinates with its members when member-owned generation is needed to assist with power supply. Members are reimbursed for the usage of their member-owned generation in accordance with ARPA's current tariff and reimbursement schedules as approved at least annually by the Board of Directors.

When ARPA submitted its first IRP in 1996, three members operated baseload generating facilities: Trinidad and Raton operated smaller coal-fired units and Lamar operated a 25 MW gas boiler and steam turbine. In 1998, the Trinidad coal unit was placed in cold standby as explained in the 2003 IRP. In 2003, Lamar's gas boiler was placed in standby due to escalating gas prices; the boiler has since been permanently retired. In 2006, Raton placed their coal unit in cold standby due to the unavailability of useable and economical coal supply; although the unit remains permitted to operate, its future use is unknown and depends significantly on the development of a new useable coal supply.

While members are responsible for their *existing* generation, ARPA is responsible for acquiring power supplies and to construct, operate and maintain *new* generation, transmission and related facilities for the purpose of delivering wholesale electric power to its members. Since the 2003 IRP, ARPA has completed three generation projects and is in the process of completing a fourth project. As recommended in the 1996 IRP, all of this new generation is installed in the local member communities in order to enhance reliability and minimize transmission constraints. At each ARPA-owned generating facility except the wind turbines, ARPA has contracted with the local member electric utility to provide personnel to operate and maintain the generating equipment. This arrangement allows ARPA and its members to minimize overhead costs while at the same time use local, experienced operating and maintenance personnel.

ARPA's new generation projects are described in more detail below.

Holly Generation Project: In 2000, ARPA and the Town of Holly jointly financed the installation of a used 2 MW diesel-fired internal combustion engine generating set to provide backup power for the Town of Holly, but this used unit proved to be unreliable for backup purposes. As a result, in 2007 ARPA replaced this unit with a used, but significantly newer diesel-fired generating set with a Tier I emission rating. Since Holly's power plant facility is not manned 24 hours per day, ARPA plans to equip the unit for remote starting and monitoring from the Lamar Power Plant.

Raton Generation Project: In the fall of 2003, ARPA completed its installation of a 7.5 MW gas-fired internal combustion engine generating set at a greenfield site in Raton, New Mexico, as discussed in the 2003 IRP. Although there are still some functional issues with this unit, upon completion the unit should be able to operate in standby, peaking or intermediate mode.

Wind Turbines: In 2004, ARPA installed two 1.5 MW wind turbines; one in Lamar and one in Springfield. Although ARPA is responsible for all future generation, the ARPA Board executed an agreement with Lamar Light and Power which allowed them to own and install an additional three 1.5 MW wind turbines at the site in Lamar. The turbines are maintained via an agreement with the turbine manufacturer, but both the Lamar and Springfield turbines are monitored remotely from the Lamar Power Plant. This 7.5 MW of ARPA/member wind typically provides over 6% of ARPA's annual energy requirements. When possible, ARPA and Lamar sell the energy attributes of the wind generation in order to assist in recouping the transmission energy imbalance charges associated with the turbines.

Lamar Repowering Project

In 2006, ARPA broke ground on the Lamar Repowering Project, which involves the installation of a new coal-fired circulating fluid bed (CFB) boiler, steam turbine, auxiliaries, and coal, ash and limestone material handling systems at the existing Lamar Power Plant in Lamar, Colorado. The new coal-fired boiler, in conjunction with Lamar's existing 25 MW steam turbine and the new steam turbine generator, will convert the facility from gas to coal and increase the capacity of steam generation at the facility from 25 MW to approximately 44 MW gross (38.5 MW net). The existing portions of the power plant will continue to be owned by Lamar, but ARPA will own all the new facilities. Lamar Light and Power will operate the facility.

The completion of the Lamar Repowering Project (LRP) is scheduled for mid-2008. ARPA's supply-side resource needs will shift dramatically upon commercial operation of the LRP. In the 1996 IRP, ARPA relied heavily on its member's baseload generation for supply side resources. Since all of those units have been retired or placed in cold standby, ARPA became extremely dependant on the acquisition of supply side resources from third parties and purchase power contracts. Once the LRP is on-line, it, coupled with the wind turbines and WAPA allocations, will supply over 95% of ARPA's energy needs for the long-term. ARPA's

need for future need for supply side resources and demand side management is thus limited to the remaining approximately 3 - 5% of its energy needs.

All ARPA-owned and member-owned generation can be placed into one of five categories:

Standby: Standby generation is utilized only in emergencies, such as when power is interrupted either by contract or due to a transmission line outage. Standby generation must be capable of quick startup and is typically a diesel or dual fuel internal combustion engine. These units may have operated in a peaking or baseload mode in the past, but have been downgraded to standby due to a variety of factors, such as equipment age, operating costs, unstaffed plant or a permit limitation.

Standby/Peaking: A standby/peaking unit is similar to a standby unit, except the unit can also be utilized in a peaking mode. A peaking unit will typically operate 0 - 500 hours per year, depending on its need.

Intermediate: These units are built to operate under a variety of conditions ranging from standby to intermediate (approx. 2,000 - 5,000 hours annually) to baseload mode. Factors that influence the use of these units include fuel cost and fuel availability.

Non-Scheduleable: Units such as the wind turbines fall into this category because the operation of these units is dependent on non-controllable factors and hence these units cannot be consistently scheduled for a specific amount of capacity at a specific time of day.

Baseload: A baseload unit operates seasonally or year-round. Units in this category cannot operate in other modes because of the long time required for unit startup (typically 4 - 8 hours). Units in baseload cold standby are not currently in operation but remain permitted to recommence operation.

The ARPA-owned and member-owned generation is summarized in Table 5-1. In the 2003 IRP, ARPA described one of its newer generating units, the Mercury 50. Because this unit was a prototype unit and the commercial units are anticipated to have a significantly different configuration, the long-term future of spare parts for this unit is currently unknown. For that reason, the Mercury 50 has been omitted from ARPA's discussion of current supply side resources.

Table 5-1: Summary of ARPA and Member-Owned Generation

Location	Year Installed	Owned By	Capacity	Fuel	Type
Holly	1991 - 1997	Member	1 MW	Diesel	Standby
	2007	ARPA	1.8 MW	Diesel	Standby/Peaking
La Junta	1939 - 1971	Member	15 MW	Diesel/Dual	Standby/Peaking
Lamar	1946 - 1949	Member	2 MW	Diesel	Standby
	2004	Member	4.5 MW	Wind	Non-Scheduleable
	2004	ARPA	1.5 MW	Wind	Non-Scheduleable
	2008	LRP	38.5 MW (net)	Coal	Baseload
Las Animas	1941 - 1967	Member	5 MW	Diesel	Standby/Peaking
Raton	1961	Member	7.5 MW	Coal	Baseload Cold Standby
	2003	ARPA	7 MW	Natural Gas	Intermediate
Springfield	1950 - 1962	Member	2.8 MW	Diesel/Dual	Standby
	2004	ARPA	1.5 MW	Wind	Non-Scheduleable
Trinidad	1950	Member	3 MW	Coal	Baseload Cold Standby
	1965	Member	3.5 MW	Diesel/Dual	Standby/Peaking
	1999	ARPA	5.6 MW	Diesel	Standby/Peaking
TOTALS			5.8 MW	Standby	
			30.9 MW	Standby/Peaking	
			7 MW	Intermediate	
			7.5 MW	Non-Scheduleable	
			38.5 MW	Baseload (non-cold standby)	
			89.7 MW	TOTAL	

As discussed in the 1996 IRP, the majority of member-owned generation is reaching the end of its life cycle, ranging in age from 30 - 60 years. This member-owned generation has been and will continue to be vital to ARPA. However, ARPA recognizes that unit reliability and availability of spare parts will become greater issues as these units continue to age. In order to maintain ARPA's high standard of reliability, ARPA developed and implemented a plan for the gradual replacement of this aging generation, as is evident by the significant number of generation projects completed by ARPA in the last nine years; such projects involved standby/peaking, intermediate, non-scheduleable and baseload generation additions and/or replacements.

There are no additional ARPA or member-owned units slated for retirement or replacement in the near term. Other than the completion of the Lamar Repowering Project, ARPA does not contemplate any generation additions in the near term.

5.1.2 Western Area Power Administration

ARPA currently purchases federal hydropower from two WAPA projects - Loveland Area Projects (LAP) and the Salt Lake City Integrated Projects (CRSP). The agreements for both of these purchases are effective through September 30, 2024.

In addition to ARPA’s allocations, the City of Lamar has a direct allocation of CRSP which predates ARPA’s December 13, 1983 Power Sales Agreement. Although Lamar may purchase this power directly from WAPA, they have authorized ARPA on a recallable basis to schedule and purchase this power on Lamar’s behalf, which allows for greater scheduling and delivery flexibility. In return for this flexibility, ARPA does not include the costs associated with Lamar’s WAPA power in its wholesale energy rate but passes the cost directly on to Lamar. Lamar’s CRSP allocation is also effective through September 30, 2024.

ARPA’s supplemental purchase power supplier, Municipal Energy Agency of Nebraska (MEAN), is currently the scheduling agent for the ARPA and Lamar WAPA allocations.

Maximum monthly energy and capacity allocations are shown on Table 5-2 and Table 5-3 respectively. The CRSP allocations are revised annually; the table below reflects the allocation for the 2005 – 2006 winter season and 2007 summer season. ARPA has recently received notice that the LAP allocation denoted on the table below is anticipated to be reduced by 1% in October of 2009. Table 5-4 summarizes the minimum hourly delivery for each WAPA allocation.

Table 5-2: Maximum Energy (kWh) from WAPA by Month

Month		LAP	CRSP- ARPA	CRSP - Lamar
S u m m e r	April	6,332,500	338,531	484,865
	May	6,636,113	334,115	515,461
	June	7,633,699	328,227	597,997
	July	9,542,123	349,570	693,170
	August	7,633,699	346,626	641,242
	September	5,595,154	317,603	537,396
Summer Subtotal		43,373,288	2,014,672	3,470,131
W i n t e r	October	5,359,163	426,708	638,641
	November	5,359,163	476,442	668,096
	December	5,866,540	544,917	733,949
	January	5,707,985	534,826	701,954
	February	4,502,966	471,397	612,846
	March	4,915,208	485,031	648,590
Winter Subtotal		31,711,025	2,939,321	4,004,076

Table 5-3: Maximum Capacity (kW) from WAPA by Month

Month		LAP	CRSP- ARPA	CRSP - Lamar
S u m m e r	April	23,644	1,003*	2,039*
	May	22,184	1,003	2,039
	June	26,621	1,003	2,039
	July	28,625*	1,003	2,039
	August	25,161	1,003	2,039
	September	24,446	1,003	2,039
W i n t e r	October	20,822	1,522*	2,477*
	November	20,507	1,522	2,477
	December	22,486*	1,522	2,477
	January	21,879	1,522	2,477
	February	20,327	1,522	2,477
	March	18,439	1,522	2,477

* Maximum Seasonal Capacity (Contract Rate of Delivery)

Table 5-4: Minimum Hourly Delivery (kW) from WAPA by Month

Month		LAP	CRSP- ARPA	CRSP - Lamar
S u m m e r	April	5,439	209	426
	May	6,011	209	426
	June	6,870	266	542
	July	9,160	266	542
	August	7,156	266	542
	September	4,866	190	387
W i n t e r	October	4,272	215	349
	November	4,272	287	468
	December	4,947	271	441
	January	4,722	408	663
	February	3,823	408	663
	March	3,823	344	559

ARPA's agreements with WAPA also allow WAPA to supply support and surplus energy (hereinafter referred to jointly as "surplus") which may be used to supplement ARPA's firm purchases from WAPA.

5.1.3 Municipal Energy Agency of Nebraska

ARPA has contracted with MEAN to supply all of ARPA's supplemental energy needs, above its WAPA allocation and ARPA and member-owned generation, through May 2008. The agreement with MEAN allows ARPA to extend the agreement on a month by month basis if the Lamar Repowering Project is not ready for commercial operation by June of 2008. MEAN and Xcel Energy have been providing ARPA's supplemental power supply since September of 2004; ARPA's prior primary supplemental supplier was Tri-State G&T.

5.1.4 Other

ARPA plans to join a power pool to assist with short-term energy supply in the event of unplanned outages of the LRP. ARPA is also exploring agreements with other load serving entities for items such as scheduling, excess energy sales and supplemental power supply upon commercial operation of the LRP.

ARPA also had an agreement with Plains G & T of New Mexico in which Plains could supply power to Raton during outages on the Colorado transmission system which normally serves Raton. This option is for emergency situations only and as such, it is rarely exercised. In addition, Plains G & T recently merged with Tri-State. For these reasons, this arrangement is considered more of an added reliability feature than a regularly utilized supply-side resource.

5.1.5 Transmission Considerations

ARPA and its members own limited transmission:

- ARPA owns 21.5 miles of 115 kV (operated at 69 kV) transmission line connecting Tri-State's Burro Canyon Substation west of Trinidad to Raton, New Mexico. Raton owns 2 miles of transmission line extending from ARPA's line to the Raton power plant.
- Lamar owns a 69 kV transmission line from the Lamar Power Plant to Las Animas. Lamar also owns a distribution line from Lamar to Holly. Lamar provides wheeling service over this line in order for ARPA to deliver power to Holly.
- Las Animas owns a section of 69 kV line from the Las Animas Power Plant to the Bent County line, where the line interconnects with Aquila's transmission line which extends to Aquila's La Junta substation.
- La Junta owns two sections of 69 kV transmission line, connecting Tri-State's La Junta substation to the La Junta Power Plant and extending from there to the La Junta Industrial Park.

ARPA is extremely dependent upon wheeling over the transmission facilities of other utilities in order to supply power to the ARPA member systems. Except for the City of Las Animas, wheeling of WAPA and supplemental power is provided by Tri-State G&T and two of its member systems, SIEA and SECPA. Power can be delivered to Las Animas in one of two ways: through wheeling arrangements with Aquila, or from the member-owned transmission line

from Lamar. Because of this dependence, transmission arrangements are an integral part of ARPA's resource requirements.

ARPA is currently a network transmission customer of Tri-State; the network agreement expires at the end of 2007, but the renewal of the agreement is in progress. In the near term, ARPA also plans to build a transmission line to directly connect the Lamar Repowering Project to the Tri-State substation at Willow Creek.

5.1.6 Historical Data, Supply Side

Figure 5-1 depicts ARPA's supply sources in 2006. Table 5-5 summarizes the energy provided by each of ARPA's resources since 2003.

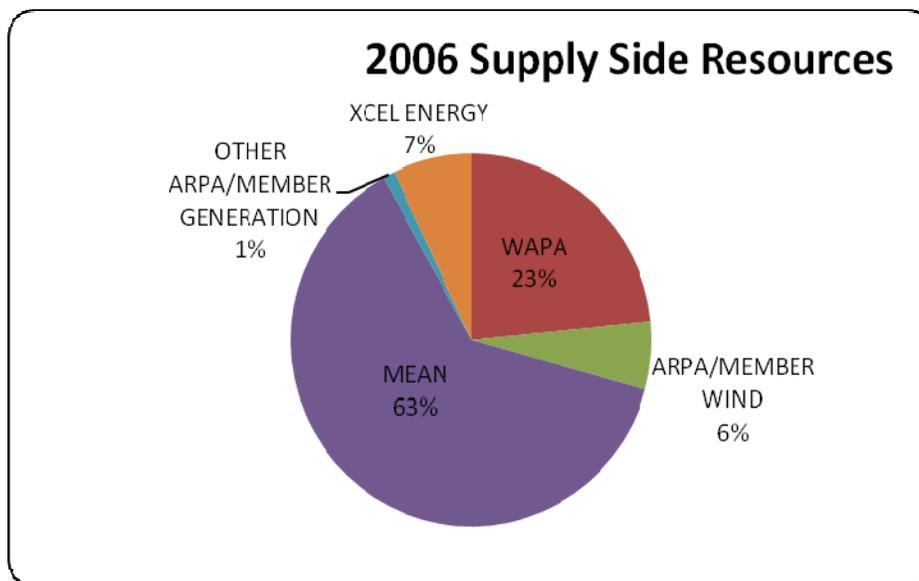


Figure 5-1

Table 5-5: Energy provided by ARPA's Historical Supply Side Resources (kWh), 2003 - 2006

Source	2003	2005	2005	2006
TRI-STATE	164,676,584	116,263,306	0	0
MEAN	0	45,050,150	189,363,263	212,462,044
WAPA	96,867,042	90,442,967	87,214,163	87,472,945
ARPA/MEMBER WIND	0	18,682,604	23,384,684	21,836,556
OTHER ARPA/MEMBER GENERATION	72,918,748	47,400,639	32,857,199	3,934,196
XCEL ENERGY	13,233,000	26,340,000	26,280,000	26,260,000
TOTAL	347,695,374	344,179,666	359,099,309	351,965,741

5.2 Demand Side Options

5.2.1 Overview

Since ARPA is a wholesale power supplier and does not have direct access to retail consumers, each individual ARPA member must assume primary responsibility for the development and implementation of demand side management (DSM) programs in their utility. However, ARPA's Energy Services staff does provide the members with technical assistance and coordinate programs among members to encourage participation.

Any potential member DSM program must be evaluated to determine the following:

- What are the potential annual energy savings and decrease in seasonal peak demand from this program?
- What level of participation can reasonably be anticipated?
- What costs will be incurred by ARPA and its members in order to implement and monitor the program?
- What costs will be avoided by ARPA and its members if the program is implemented?

5.2.2 Current DSM programs

ARPA members are already involved in several ongoing DSM programs:

Commercial/Industrial Lighting: All of the ARPA members have at least one lighting DSM program. Programs include conversion of sign and flag lighting to solar photovoltaic systems, conversion of traffic signals to LED lighting, and conversion of interior and security lighting to more efficient lighting systems. These programs provide ongoing benefits and the energy saved is easily estimated by multiplying the difference in energy consumption (bulb wattage) by the estimated annual usage.

Commercial/Industrial Audits: Lamar, La Junta and Springfield offer energy audits upon request for their commercial and industrial customers.

Upgraded Electrical Equipment: Several of the ARPA member systems are actively involved in distribution tree trimming and voltage conversion programs, converting from 2400 or 4160 kV to 13,800 kV. Older transformers are being replaced with newer, lower-loss transformers on a regular basis.

5.2.3 Potential Future DSM Programs

ARPA's potential future DSM programs include information dissemination, reduction of transmission losses, and restructuring of ARPA's wholesale rate. The restructuring of ARPA's rate may lead to other potential future member-based programs, such as electronic load shedding or time of use retail rates. This list of potential DSM programs is based on the following conclusions:

- ARPA's ability to implement DSM programs for the ultimate consumer is severely limited because ARPA does not directly serve the ultimate consumer; and
- Past IRPs have described potential DSM programs that could be implemented by ARPA members. The 2003 IRP also discussed, based on a 2001 survey conducted of the ARPA member ultimate consumers, reasons why most of these programs are ineffectual, involve substantial liability risk, or do not have sufficient customer base to implement; and
- A certain amount of demand side management will continue to occur naturally as a result of the continuing upward pressure on nationwide energy rates for gasoline, natural gas and electricity; and
- ARPA's survey determined the majority of ultimate consumers will not purchase energy-saving goods unless a significant rebate (in addition to the energy savings itself) exists. Consumers wishing to achieve significant energy reductions now have access to specific federal tax rebates to assist in the funding of such DSM activities.

ARPA's potential future DSM programs are described in more detail below:

Information Distribution

ARPA's past survey determined consumers are interested in information on how to save energy. These results, coupled with renewed consumer awareness in conservation driven by the upward pressure of energy prices, indicate assistance with a retail consumer literature distribution program remains a worthwhile DSM activity to pursue upon request of any ARPA member community. However, the direct energy savings of such programs usually cannot be readily estimated.

Reduction of Transmission Losses

Upon completion of the Lamar Repowering Project, the majority of the ARPA members' energy will be generated directly in the ARPA member community of Lamar. Since Lamar comprises almost 30% of ARPA's total energy requirements, this local generation will significantly reduce transmission line losses, currently rated at 4.92%. Certain potential transmission projects may provide a benefit to ARPA and its members.

Restructuring of ARPA's Wholesale Rate

ARPA currently purchases the majority of its energy needs. Since these purchases, exclusive of the federal hydropower, are generally charged at a flat energy rate without a demand component, ARPA's current wholesale rate is primarily energy-based. Within the next 12 months and prior to commercial operation of the Lamar Repowering Project, the ARPA Board plans to investigate options for a wholesale energy rate with a significant demand

component. A demand component could also provide incentive for the ARPA members to implement local DSM programs, such as electronic load shedding or time of use retail rates.

5.3 Future Supply Side Resources

In the 2003 IRP, ARPA discussed the possibility of converting a member-owned gas-fired boiler to coal-fired generation. As described in Section 5.1.1, ARPA broke ground on the Lamar Repowering Project in 2006. The ARPA Board's final decision to build the Lamar Repowering Project in order to meet ARPA's long-term power supply needs came after two years of research and analysis, including various feasibility, economic and power supply option studies. In late 2003, ARPA commissioned Forerunner Corporation to conduct an initial feasibility and economical analysis regarding the conversion of Lamar's existing 25 MW gas boiler to coal. Based on the results of this initial study, a more refined study was conducted which recommended the installation of a new steam turbine to operate in conjunction with the new coal-fire boiler and Lamar's existing steam turbine to increase the facility's capacity to approximately 38.5 MW net. During this time, ARPA also contracted with Power Systems Engineering (PSE) to evaluate ARPA's future short and long term power supply options from an economic standpoint. Following Forerunner's refined study and issuance by ARPA of a 2005 request for proposals for long term power supply, PSE updated its analysis in September of 2005 and concluded "ARPA should continue with its plans to repower the Lamar generating unit to burn coal. We believe that there is strong evidence to support our previous conclusion that this project is needed to help keep the cost of power supply to ARPA's members as low as possible and continues to represent ARPA's most economical alternative." This decision was reached in part on responses by regional wholesale power suppliers indicating a lack of availability of firm system power to meet the Authority's base load power needs.

The completion of the Lamar Repowering Project (LRP), scheduled for mid-2008, significantly alters ARPA's future energy needs. Whereas past IRPs contemplated future supplemental energy supply primarily from purchase power contracts, the majority of ARPA's energy needs will now be served by its own generating resources in combination with its WAPA allocation.

Due to this major shift of resources, ARPA recently contracted with PSE to conduct an hourly production cost model of ARPA's power supply resources. The purpose of the hourly production model was to estimate the amount of energy supplied by each ARPA resource, estimate the amount of excess energy from the LRP that may be expected to be available for sale into the market, and predict the amount of energy that will need to be purchased either on the open market or via supplemental contract(s). The production model was conducted for 2009, the first full year the LRP will be in service, as well as for 2018, to check the impact of future load growth on the energy scheduling results. The resulting energy balance is depicted in Table 5-6.

Table 5-6: Energy Balance (MWh)

Source	2009			2018
	On-Peak	Off-Peak	Total	Total
WAPA Purchases				
CRSP	6,872	5,517	12,389	12,389
LAP	40,017	35,033	75,050	75,050
Lamar Generation	136,224	149,688	285,912	285,912
Wind Resources	10,129	13,216	23,345	23,345
Market Purchases	<u>7,575</u>	<u>4,669</u>	<u>12,244</u>	<u>20,776</u>
Total Resources	200,817	208,123	408,940	417,472
Load	181,170	168,659	349,829	365,916
Market Sales	<u>19,647</u>	<u>39,464</u>	<u>59,111</u>	<u>51,556</u>
Total Requirements	200,817	208,123	408,940	417,472

As summarized above, ARPA will have sufficient resources to meet future projected energy requirements:

WAPA: Energy from WAPA will continue to supply approximately 25% of ARPA's energy needs. ARPA's contracts with WAPA have been extended to 2024. Although the production model above does not include the upcoming 1% reduction in the WAPA Loveland Area Projects allocation, it is assumed this reduction will have little supply-side impact on ARPA as the majority of the replacement energy can be provided by the Lamar Repowering Project, denoted in the "market sales" category.

ARPA and Member-Owned Generation: With the decision by the ARPA Board in 2005 to commence construction of the Lamar Repowering Project, ARPA locked in the majority of ARPA's supply side resources for the long term. The Lamar Repowering Project, scheduled for commercial operation in mid-2008, and the existing 7.5 MW of wind generation owned by ARPA and its members will provide approximately 71.5% of ARPA's energy needs for the long-term.

Supplemental Power: ARPA has entered into a purchase power agreement effective October 1, 2007 with the Municipal Energy Agency of Nebraska (MEAN) to supply all of ARPA's energy needs, less ARPA/member-owned generation and ARPA's WAPA allocations. This agreement extends through May of 2008, at which time ARPA anticipates commercial operation of the Lamar Repowering Project. The agreement allows for an extension of the purchase term in the event the commercial operation date is delayed. Once the LRP is commercial, ARPA will need to purchase approximately 3.5% of its energy needs via the open market, contract(s) for supplemental power, or generate the energy with other ARPA/member-owned units. At the current time, ARPA is investigating scheduling and energy purchase/sales (for excess generation from the LRP) arrangements with other load-serving entities in order to meet

ARPA's future supplemental purchase power needs. ARPA will also need to join a power pool to assist with short-term energy supply in the event of unplanned outages of the LRP.

Excess Sales: ARPA will continue to pursue options for short term and long term contracts with other entities for the sale of excess energy denoted as "market sales" generated by the LRP.

Section 6.0 ENVIRONMENTAL EFFECTS

In accordance with ARPA's mission statement, ARPA and its members are committed to providing electricity in an environmentally-sound manner. Since the 2003 IRP, ARPA and its members have developed four new generation projects. Adverse environmental effects were minimized in each project as described below.

6.1 Holly Generation Project

In 2007, ARPA replaced its aged and unreliable standby diesel fired generating unit in Holly with a used but significantly newer diesel unit. Although not subject to the new source performance standards (NSPS), the unit meets the NSPS Tier I emission standards. Based on permitted emission rates (converted to lb/hr), the new unit achieves the following emission reductions as compared to the unit it replaced:

NO _x	21%
CO	95%
SO ₂	5%
VOC	40%
Particulates	78%

Modeling has also been conducted to verify that operation of this unit will not violate federal and state ambient air quality standards.

6.2 Raton Generation Project

ARPA's gas-fired generating unit in Raton, installed in 2003, is currently used primarily in standby mode but can also be utilized for peaking or intermediate generation. This unit is equipped with a CO/VOC catalyst to reduce emissions of volatiles and carbon monoxide. Raton's back-up coal-fired boiler (Unit #4) was retired after this unit was commissioned. Thorough area modeling has been conducted to ensure that the installation of this unit will not have an adverse impact on the air quality in Raton.

6.3 Lamar Repowering Project

Although ARPA is committed to the principles of renewable wind and solar energy, their use as an ARPA supply side resource is limited due to the excessive cost of photovoltaics and the intermittent, unpredictable nature of wind energy. For this reason, ARPA is in the process of installing a coal-fired generating facility entitled the Lamar Repowering Project to complement its existing renewable supply side resources. The Lamar Repowering Project is equipped with several emission controls. The limestone injection inherent to the CFB process controls SO₂ emissions. The boiler is equipped with a baghouse that controls over 99.8% of the potential particulates. Most importantly, all of the material handling facilities and storage areas for coal, limestone and ash are fully enclosed and equipped with fabric filters to control particulate emissions. This unique feature allows the project to be a minor source of particulate emissions. Although the project does

increase overall facility-wide emissions of CO and particulates, facility-wide potential NO_x emissions have decreased by almost 300% and SO₂ emissions have decreased by over 200%.

Prior to issuance by the Colorado Department of Public Health and Environment of the construction permit for the facility, ARPA conducted a rigorous analysis of the potential environmental impact from the facility. Such analysis included:

- A short range air quality modeling analysis was conducted to verify the LRP will not violate ambient air quality standards or cause significant deterioration of current air quality as shown in Table 6-1.
- Impacts of the Lamar Repowering Project on long-range air quality, water, visibility, deposition and air quality related values (AQRV) in “nearby” Class I areas and Class II scenic view areas were analyzed using the CALPUFF screening model. The impact of the LRP was negligible as shown in Table 6-1.
- An analysis was completed to determine the potential for impairment to soils and vegetation. It was determined that particulate emissions from the LRP should not have an adverse effect on vegetation or soils.
- A residential, industrial and commercial growth analysis concluded that growth resulting from the Lamar Repowering Project is anticipated to be minimal and will have a negligible impact on ambient pollutant concentrations in the Lamar area.

Table 6-1: Comparison of Modeling Results to Modeling Significance Levels (MSL)

Criteria Pollutant	Averaging Period	Maximum Modeled Class II Conc. (µg/m ³)	Class II MSL (µg/m ³)	% of Class II MSL	Maximum Modeled Class I Conc. (µg/m ³)	Class I MSL (µg/m ³)	% of Class I MSL
CO	1-hr	353	2,000	18%	N/A	N/A	N/A
	8-hr	132	500	26%	N/A	N/A	N/A
PM ₁₀	24-hr	4.96	5	97%	0.054	0.3	18%
	Annual	0.95	1	78%	0.04	0.2	20%
SO ₂	3-hr	15.81	25	63%	0.169	1.0	17%
	Annual	0.49	1	49%	0.002	0.1	2%
	24-hr	7.19	5	N/A	0.046	0.2	23%
	24-hr	7.19 is 55% of PSD Monitoring Concentration of 13 µg/m ³ CIA high-second-high was 77 µg/m ³ , which is 21% of 365 µg/m ³ NAAQS					
Parameter	Maximum Modeled Value	Significance Criteria	% of Significance Criteria				
Visibility – Class I	1.71%	5% Change	34%				
Sulfur Dep – Cl I	0.0006 kg/ha/yr	0.005 kg/ha/yr	12%				
Nitrogen Dep – Cl I	0.0003 kg/ha/yr	0.005 kg/ha/yr	6%				
Visibility – Class II	3.86%	5% Change	77%				
Sulfur Dep – Cl II	0.0023 kg/ha/yr	0.005 kg/ha/yr	46%				
Nitrogen Dep – Cl II	0.0011 kg/ha/yr	0.005 kg/ha/yr	22%				

6.4 Wind Generation

In 2003, ARPA and its member Lamar Light & Power installed 7.5 MW of wind generation in Lamar and Springfield. Approximately 6% of ARPA's current energy requirements are provided by these wind turbines, although ARPA and Lamar do sell the renewable attributes of these turbines to other entities.

6.5 Other Projects

In addition to the generation projects listed above, ARPA and its members are involved in many renewable energy and conservation projects:

6.5.1 Hydropower

Approximately 25% of ARPA's current energy requirements are provided by hydropower.

6.5.2 Wind

ARPA and its member communities are actively involved in the promotion of wind power, including providing tours of the turbines to interested parties and compiling regional wind data for various organizations and potential future investors and builders.

6.5.3 Photovoltaic

La Junta, Lamar and Springfield have photovoltaic lighting for signs and/or flags.

6.5.4 Conservation

As discussed in Section 5.2.2, ARPA and its member encourage energy conservation through a variety of programs such as compact fluorescent bulb promotions, energy efficient industrial lighting and LEDs, voltage conversion and energy audits.

ARPA will continue to pursue and promote other potential energy conservation and renewable energy projects as its resource portfolio allows.

Section 7.0 ACTION PLAN AND MEASUREMENT STRATEGIES

Because ARPA's energy requirements are directly impacted by the energy needs of the *customers of the ARPA members*, ARPA itself has little direct influence on demand-side management (DSM). In order to meet future energy requirements and promote DSM where feasible, ARPA plans to conduct the following activities in the near term. Strategies for measuring each action plan goal are included below.

7.1 Two Year Action Plan

7.1.1 Lamar Repowering Project

Complete the Lamar Repowering Project, ARPA's primary new supply-side resource, during the summer season of 2008.

7.1.2 ARPA's Wholesale Energy Rate

Restructure ARPA's wholesale energy rate, which is now primarily energy-based, to include a significant demand component. This restructured energy rate should be implemented no later than the commencement of commercial operation of the Lamar Repowering Project. Consulting costs in conjunction with ARPA's wholesale rate analysis are estimated to be in excess of \$50,000 in 2007 and approximately \$5,000 in 2008.

7.1.3 Power Pool

Join a power pool prior to commencement of commercial operation of the LRP in order to assist with short-term energy supply in the event of unplanned outages of the LRP. ARPA anticipates this project to be completed using in-house staff; consulting and legal fees, if needed, are estimated to be less than \$5,000 in 2008.

7.1.4 Supplemental Agreements

Continue negotiations with other load-serving entities for scheduling, supplemental energy purchases and excess energy sales upon commercial operation of the LRP; enter into an agreement with one or more entities prior to June of 2008. ARPA anticipates these negotiations to be completed using in-house staff with outside consulting and legal assistance if needed. Outside consulting and legal fees are estimated to be less than \$10,000 each in 2007 and 2008.

7.1.5 Real-Time Metering

Purchase the real-time metering equipment installed on the ARPA member systems by MEAN. This equipment can be purchased per existing agreement with MEAN for the depreciated book value at the time of purchase. ARPA has been utilizing the data from this metering equipment since it was installed in conjunction with the supplemental power purchase agreement with MEAN which began in October of 2004.

7.2 Five Year Action Plan

7.2.1 Continue Existing DSM and Renewable Energy Programs

Encourage members to continue implementation of member DSM and renewable energy programs currently underway, such as industrial lighting and LEDs, voltage conversion, energy audits and photovoltaic lighting of signs, flags, etc. As permanent measures, these programs will continue to provide energy savings for years to come.

- a. *Energy Efficient Industrial Lighting and LEDs:* Members plan to continue these conversions on an ongoing basis, with annual costs expected to average around \$2,000 - \$5,000. Energy savings from this program are easily calculated by determining the decrease in wattage and the average annual use of the bulb.
- b. *Voltage Conversion:* ARPA members continue to perform voltage upgrades in their distribution systems, conduct distribution tree trimming and install newer, more efficient transformers on an ongoing basis. Annual costs associated with these programs can vary significantly from year to year but typically range from \$25,000 - \$250,000. Energy savings are estimated by comparing loss levels of the new and replaced equipment. This is one of the members' most effective and most permanent DSM programs.
- d. *Energy Audits:* ARPA members will continue to perform energy audits on an as-requested basis. Annual expenditures currently average \$2,000. Energy savings can be estimated or determined through a follow-up visit or survey; however, the member systems do not currently conduct such analyses.
- e. *Photovoltaic Lighting:* ARPA members use photovoltaic lighting for certain sign and flag lighting systems. Annual costs typically range from \$100 - \$1,000, depending on the amount of repair and new installations completed each year. Current energy savings are estimated (similar to the estimation for part a above) at about 1 kW and 2,500 kWh annually.
- f. *Wind Turbines:* ARPA and its members will continue to operate and maintain their existing wind turbines in Lamar and Springfield. Annual costs, including bond principal and interest, operation and maintenance, and energy imbalance assessments, typically range in excess of \$1 million annually.

7.2.2 DSM Information Dissemination

Upon member request, assist individual members to investigate potential member programs for informing their residential customers about ways to save energy; assist members to develop any feasible program(s). ARPA anticipates this task, if requested, to be completed using in-house staff and equipment; as such, outside costs associated with these programs are estimated to be less than \$1,000 annually.

7.2.3 Investigate Potential New DSM Programs

Upon request, assist individual members to assess the impact of electronic load shedding and/or time of use retail rates. ARPA staff will keep abreast of new DSM technologies such as member electronic load shedding of agreeable consumers during high demand periods; however, ARPA is not currently recommending electronic load shedding because ARPA is able to respond to members' demand levels. ARPA staff will also conduct analyses upon request to determine the benefit of time of use retail rates for specific member customer(s). ARPA anticipates both of these tasks, if requested, to be completed using in-house staff; as such, ARPA anticipates no outside costs associated with these tasks. However, individual ARPA members may opt to contract with an outside consultant to evaluate their retail rates; such costs could be in excess of \$20,000 per member. These costs would not directly result in any energy savings, but may result in future programs or rate structures that encourage energy savings.

7.2.4 Transmission

Continue to evaluate transmission projects beneficial to ARPA and its members. ARPA plans to install a short section of transmission line to interconnect the Lamar Repowering Project directly to Tri-State's transmission system. The initial cost of this line is estimated at over \$1.5 million, to be expended in 2007 and 2008, and is expected to reduce ARPA's loss rate over that section of transmission line (currently assessed at 2%). ARPA staff also plans to research and investigate other potentially transmission opportunities which may prove to be beneficial for economic and/or reliability purposes.

7.3 Summary of Measurement Strategies

In this 2007 IRP, ARPA is required to include a brief description of measurement strategies for options identified in the IRP to determine whether the IRP's objectives are being met. Milestones and measurement strategies for each action item are described in detail above. However, the true measurement of whether the IRP objectives are being met is to determine whether ARPA is continuing to fulfill its mission: to provide a dependable and competitively priced supply of wholesale electric power to its municipal members in an environmentally sound manner.

Section 8.0 PUBLIC PARTICIPATION

8.1 Description of Public Participation Opportunities

Since ARPA's primary new long-term supply side resource is the Lamar Repowering project, public participation regarding ARPA's 2007 Integrated Resource Plan started in 2004 when ARPA began to present the initial LRP feasibility studies to the ARPA Board and the member communities. To that end, public involvement activities included:

- Public presentations in 2004 and 2005 by Forerunner Corporation and Power Systems Engineering to the ARPA Board regarding the feasibility of the Lamar Repowering Project and comparison of the LRP to all other resource options
- Household visits and radio and newspaper advertisements to Lamar retail consumers to explain the need for the Lamar Repowering Project
- Advertised public meeting at the Lamar Community Center to inform the public of the need for the Lamar Repowering Project and to address the public's questions and concerns regarding the LRP and ARPA's long-term power supply plan
- Presentations and public meeting(s) in each member community in the fall of 2005 to describe ARPA's long-term resource plan and request bond funding for LRP; these meetings consisted of presentations to various service organizations, all power boards and the governing body of each member town/city
- ARPA Board meeting in September, 2005 to discuss the results of ARPA's long-term power supply request for proposals and review a revised comparison of the LRP to all other resource options
- Public hearing in Lamar for the Air Quality Control Commission regarding the construction permit for the Lamar Repowering Project; this hearing was conducted at the request of ARPA and Lamar in order to ensure the public was adequately informed regarding ARPA's new primary long term supply side resource
- Public meeting(s) in each member community in the spring of 2007 to describe ARPA's long-term resource plan and request supplemental bond funding for LRP; these meetings consisted of presentations to various power boards and the governing body of each member town/city
- Public presentation of the final draft of 2007 IRP in Trinidad, Colorado on September 27, 2007 and approval of the IRP by ARPA Board

ARPA's Board of Directors meets on a monthly basis, except June. All meetings are public and interested citizens are encouraged to attend. Notice of each meeting is published in the primary

newspaper of each ARPA member community. ARPA's future energy supply, especially the Lamar Repowering Project, has been the main topic of discussion at every Board meeting for at least the last two years. Despite the encouragement for public participation, no members of the public provided any specific comment on the draft 2007 IRP. In fact, during the last two years only one member of the public not affiliated with a member governing board, staff or the press has attended an ARPA Board meeting and asked questions regarding ARPA's resource plan. This citizen's concerns centered primarily on the potential environmental impact of the LRP, and upon hearing the results of the environmental impact analysis completed for the construction permit application, the citizen was satisfied ARPA was conducting its resource planning in an environmentally sound manner.

The following public notice was published in the members' local newspapers prior to the Board's approval of this 2007 IRP:

NOTICE OF PUBLIC MEETING

The Arkansas River Power Authority (ARPA) will present its draft Integrated Resource Plan (IRP) to the public and the ARPA Board of Directors for final comment at 2:00 p.m. on Thursday, September 27, 2007, in conjunction with the regular monthly meeting of the Board, at Aultman Hall, 137 West Cedar Street in Trinidad, Colorado. Members of the public are invited and encouraged to attend the presentation and provide input. The IRP outlines ARPA's plans for meeting the future electric power needs of ARPA and its member communities of Holly, La Junta, Lamar, Las Animas, Springfield and Trinidad, Colorado and Raton, New Mexico.

8.2 Governing Board Approval

At their September 27, 2007 meeting, the ARPA Board adopted Resolution No. 9-07 approving this 2007 IRP and authorizing its submittal to WAPA. Resolution No. 9-07 states:

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE ARKANSAS RIVER POWER AUTHORITY APPROVING AN INTEGRATED RESOURCE PLAN AND DIRECTING ITS SUBMITTAL TO THE WESTERN AREA POWER ADMINISTRATION

WHEREAS, the chief purpose of the Arkansas River Power Authority (ARPA or "Authority"), an intergovernmental entity and political subdivision of the State of Colorado, is to provide the wholesale electric requirements of its member municipalities, each of whom furnish retail electric service in their local communities. ARPA's members are the Colorado municipalities of Holly, Lamar, La Junta, Las Animas, Springfield and Trinidad, and the New Mexico municipality of Raton.

WHEREAS, the Authority obtains a portion of its wholesale power requirements from the Western Area Power Administration ("Western") under long term, firm power contracts. ARPA receives federal hydropower from Western produced at both the Loveland Area Projects and the Salt Lake City Integrated Projects. Under provisions of the 1992 Energy Policy Act ("EPAAct"), firm power customers of Western are obligated to periodically prepare an Integrated Resource Plan ("IRP"),

taking into account certain criteria set forth in this statutory enactment. Western has issued certain rules implementing this EAct requirement. These rules require the Authority to submit an IRP to Western every five years, with progress reports submitted annually.

WHEREAS, ARPA has prepared its third IRP (“2007 IRP”) since the enactment of the EAct in compliance with Western’s implementing rules.

WHEREAS, the 2007 IRP incorporates a public participation plan, the purpose of which is to provide information to the public in the ARPA member communities on the IRP and seek public input. In accordance with the plan, numerous public meetings have been held over the last three years in the ARPA member municipalities with power boards and local governing bodies to discuss ARPA’s long term resource options and more specifically its proposed major new supply side resource, the Lamar Repowering Project.

WHEREAS, ARPA was advised by Western in written correspondence dated July 17, 2006 that approval of the IRP is required by the ARPA Board of Directors but is not required by each of ARPA’s individual member governing bodies.

WHEREAS, A working draft of the 2007 IRP was presented to the public and the Authority’s Board of Directors at their meeting on September 27, 2007 for review, final comment and approval.

WHEREAS, the Board of Directors of the Authority, now being fully briefed on the proposed 2007 IRP and being fully advised, hereby takes the following action:

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE ARKANSAS RIVER POWER AUTHORITY:

1. The Integrated Resource Plan for the Arkansas River Power Authority, dated September 27, 2007, is hereby approved.
2. The 2007 IRP as hereby approved shall be submitted to the Western Area Power Administration.
3. Management of the Authority shall periodically advise the Board on the status of the action plan items incorporated in the approved 2007 IRP.
4. The Board of directors reserves the right to modify the 2007 IRP to take into account changed circumstances and operational and economic considerations.

Approved by the Board of Directors on this 27th day of September, 2007.

Section 9.0 CONCLUSION

ARPA is in a significantly different position than during the preparation of past IRPs. While ARPA has relied heavily in the past on other entities via long and short term purchase power contracts for the majority of its energy needs, ARPA will soon be generating over 70% of its energy needs in addition to the 25% currently obtained from WAPA.

In its last IRP, ARPA stated: “ARPA must remain flexible in its approach to future power supply. Maintaining a balance of coal-fired, gas-fired, and renewable generation is imperative in order to provide the members with a continued reliable, economic supply of wholesale electricity.” ARPA believes it has achieved this goal. In the last five years, ARPA and its members have installed new, efficient gas generation for intermediate and peaking use, sufficient wind generation to supply 6% of ARPA’s energy needs, and a new coal-fired power plant to meet ARPA’s baseload energy requirements for the next 40 years. All of this ARPA generation is a long-term investment projected to meet ARPA’s energy needs for decades to come, reducing transmission losses and leaving less than 5% to be purchased via the market or supplemental contracts. ARPA’s remaining long-term energy supply tasks include the development of agreement(s) for scheduling, supplemental energy purchases and excess energy sales upon commercial operation of the LRP and the investigation, support and future development of transmission projects that enhance member reliability or are economically favorable.

ARPA remains committed to its mission: to promote the long term economic well-being of our municipal members and their consumers by providing a dependable and competitively priced Supply of wholesale electric power in an environmentally sound manner.