



Department of Energy
Western Area Power Administration
Desert Southwest Customer Service Region
P.O. Box 6457
Phoenix, AZ 85005-6457

Via E-mail: jmt@krsaline.com

FEB 24 2012

Ms. Jennifer Torpey
K. R. Saline & Associates, PLC
160 North Pasadena, Suite 101
Mesa, AZ 85201-6764

Re: Roosevelt Irrigation District 5-year Integrated Resource Plan

Dear Ms. Torpey:

Thank you for submitting this plan to Western Area Power Administration (Western). The report, dated December 21, 2011, covers the reporting period of 2012 through 2016. This is your formal notice that this report has been reviewed and approved.

Data from all customers will be included in our annual report which is provided to Congress and others.

For annual updates, please use our automated on-line reporting system at <http://www.wapa.gov/FormsAuth/Login.aspx?ReturnUrl=/irpsubmit/irpsubmit.aspx>.

Western has a wide range of information on our Energy Services web site, www.wapa.gov/es, which may help you implement your plan. You may also call our PowerLine at (800) 769-3756 for personal assistance. If you do not have access to the web site, have questions on the guidelines, or need assistance in implementing your report action plan, please contact me at (602) 605-2659 or colletti@wapa.gov.

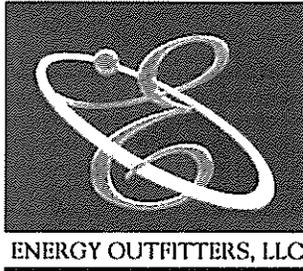
Please do not hesitate to call if I may be of further assistance in this or any other Energy Services related matter.

Sincerely,

A handwritten signature in cursive script that reads "Audrey Lynn Colletti".

Audrey Lynn Colletti
Public Utilities Specialist

cc: Darrick Moe
Joe Mulholland
Donovan Neese
Sheryl Sweeney



Via E-mail & USPS

December 29, 2011

Mr. Darrick Moe
Regional Manager
Western Area Power Administration
Desert Southwest Region
P. O. Box 6457
Phoenix, AZ 85005-6457

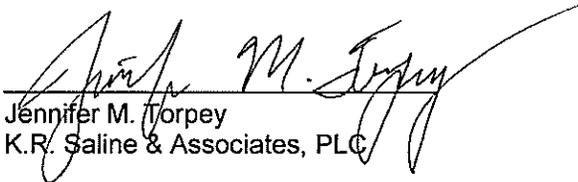
Re: Roosevelt Irrigation District Integrated Resource Plan

Dear Mr. Moe,

As you know, Western Area Power Administration's ("Western") Integrated Resource Planning Approval Criteria require Western's customers to submit updated Integrated Resource (or Small Customer) Plans to the appropriate Regional Manager every five years after Western's approval of the initial Plan. Enclosed on behalf of Roosevelt Irrigation District ("RID"), pursuant to 10 C.F.R. § 905.13(b), is the third five-year update to RID's Integrated Resource Plan. This update was approved by RID's Board of Directors at a public meeting held on December 21, 2011.

If you have any questions regarding this Integrated Resource Plan, please do not hesitate to contact me.

Sincerely,


Jennifer M. Torpey
K.R. Saline & Associates, PLC

Enclosure

cc: Donovan Neese (w/encl.)
Sheryl Sweeney (w/encl.)
Audrey Colletti (w/encl.)
Joe Mulholland (w/encl.)

INTEGRATED RESOURCE PLAN

THIRD FIVE-YEAR UPDATE

ROOSEVELT IRRIGATION DISTRICT

December 21, 2011

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Profile Data

Roosevelt Irrigation District ("RID" or "the District") is an irrigation district organized in 1927 pursuant to Chapter 19 of Title 48 of the Arizona Revised Statutes. RID has been providing irrigation service to its service area since 1928.

RID is governed by a three-member Board of Directors. It has a staff of 35 full-time employees supervised by a Superintendent. The staff and Superintendent are primarily engaged in the irrigation and drainage service aspects of RID's operations. With a service area of approximately 44,000 acres, RID utilizes its purchased power to service agricultural irrigation pumping loads, certain other agricultural related loads, and to provide for its own pumping loads. RID owns no portion of the electrical transmission or distribution lines. However, RID and certain of its customers do own distribution transformers. A map of RID's boundary is provided in **Appendix A**.

The District's current Board of Directors and relevant contact persons are detailed below.

- **Board of Directors**

W. Bruce Heiden—President
K. C. Gingg
Dwight B. Leister

- **Contact Persons**

Donovan L. Neese—Superintendent
Roosevelt Irrigation District
103 West Baseline
Buckeye, AZ 85326-1115
Ph: (623) 386-2046
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Sheryl A. Sweeney—Legal Counsel
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One North Central Avenue,
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Kenneth R. Saline—Engineering Consultant
K. R. Saline & Associates, PLC
160 N. Pasadena, Ste. 101
Mesa, AZ 85201-6764
Ph: (480) 610-8741
Fax: (480) 610-8796

RID purchases Hoover power from the Arizona Power Authority (“the Authority”), SLCA/IP power from Western Area Power Administration (“Western”), and other power from Arizona Public Service Company (“APS”) and the Salt River Project (“SRP”). In addition, RID is a participant in the Hoover Resource Exchange Program and a party to an Integrated Resource Scheduling Agreement. These arrangements permit RID and other similarly situated utilities to integrate and exchange Hoover and SLCA/IP power resources. The power and energy from the Authority, Western, APS, and SRP are transmitted over the Parker-Davis transmission system, the Pacific Northwest-Pacific Southwest Intertie transmission system, the CRSP transmission system and the transmission systems of APS and SRP. The power and energy are delivered from the transmission system delivery points to the customers of RID over APS’s and SRP’s facilities under contracts with those entities. RID does not own any portion of the electrical transmission or distribution system. However, certain distribution transformers are owned by RID or its customers.

RID currently levies an acreage assessment to cover a small portion of its operating expense, the remainder being met out of water and power revenues. The policies for service and rates for power provided by RID to its customers are determined and set by its Board of Directors. A copy of RID’s current rate schedule is attached as **Appendix B**.

In addition to crop prices and operating costs, the overall financial feasibility of the farming operations is significantly impacted by water costs from irrigation pumping which is supplied with RID electrical power. RID purchases the majority of its power resources from the Authority and Western.

The current projection of the District loads for the upcoming two-year period does not indicate that additional resources are needed at this time. The resource scheduling and utilization of the District’s resources have been managed through the Authority’s Hoover Resource Exchange Procedures and through the District’s participation in an Integrated Resource Scheduling program for Hoover and SLCA/IP resources, respectively. These resource management programs have provided the necessary flexibility for the District to re-pattern its resources monthly to meet its changing loads and exchange the resources with other preference entities who can temporarily utilize the power during the same periods. With the continuation of these programs, and current loads and resources, there is not any short-term need for additional resources for the District. Therefore, the District will use its current entitlements of Hoover and SLCA/IP resources with intermittent purchases of APS and SRP supplemental power to meet its projected loads through the two-year planning period. For the five-year planning period, a need for additional resources was identified. For this timeframe, the District anticipates using its Hoover resource entitlement, its SLCA/IP entitlement, the Integrated Resource Scheduling program, Resource Exchange Procedures, and APS, SRP and Southwest Public Power Resources Group (“SPPR Group”) resources to meet its projected loads.

District Goals and Objectives

- Provide Reliable Water Service and Electric Power at Lowest Practicable Cost, Consistent With Sound Business Principles
- Enhance Customer Financial Stability by Providing Services which Enhance Property Values and Provide Long-Term Stability in Water and Electric Power Rates
- Promote Energy Efficiency and the Effective Management of Water and Power Resources

Competitive Situation

- **District Contract Information**

Arizona Power Authority (Hoover Power Contract)
 Western Area Power Administration (SLCA/IP Contract)
 Power Supply and Services Agreement with APS [approved by FERC]
 Power Services Master Agreement with SRP
 Southwest Public Power Resources Group/Sempra Generation (Power Purchase Agreement)

- **Regulations Applicable to District**

Energy Planning and Management Program (EPACT '00)
 Arizona Department of Water Resources—Groundwater Management Act

- **Regulations Applicable to District Customers**

Arizona Department of Water Resources—Groundwater Management Act

- **Competition With District Service**

APS also offers retail service in the District's service territory and has several retail rates that are openly available to the customers of RID. In many instances, APS and RID serve power to different loads of the same customer.

There is competition for leasing the farm ground within RID. Many of the land owners in RID and other districts lease ground to tenant farmers who lease property based upon lease cost and water costs (i.e., pumping costs). Therefore, to the extent that the costs in RID become significantly higher than other areas, the competition for farm ground may significantly impact the irrigated acreage and electric load of the District.

Load and Resource Information

- **Historical and 5-Year Load Forecast:**

Oct-Sep	Winter Demand CP @ Sub (kW)	Summer Demand CP @Sub (kW)	Peak Annual Growth	Energy @Substation (kWh)	Energy @Meters (kWh)	Load Factor
2002	14,019	19,393		82,071,947	77,763,867	48%
2003	16,152	18,826	-3%	77,027,529	72,912,492	47%
2004	14,087	18,310	-3%	76,088,968	71,962,053	47%
2005	13,415	18,144	-1%	63,914,286	60,441,054	40%
2006	11,761	17,287	-5%	69,927,313	66,140,007	46%
2007	13,030	17,117	-1%	71,474,803	67,591,283	48%
2008	14,687	17,500	2%	72,405,432	68,465,825	47%
2009	12,503	15,863	-9%	65,548,286	61,945,986	47%
2010	11,622	15,986	1%	59,936,903	56,728,155	43%
2011	13,708	17,572	10%	79,900,988	75,688,666	52%
<i>Current Forecast</i>						
2012	13,708	17,572	0%	79,900,988	75,688,666	52%
2013	13,708	17,572	0%	79,900,988	75,688,666	52%
2014	13,708	17,572	0%	79,900,988	75,688,666	52%
2015	13,708	17,572	0%	79,900,988	75,688,666	52%
2016	13,708	17,572	0%	79,900,988	75,688,666	52%

See **Appendix C** for summaries of the historical monthly load information (by operating year) as well as graphical illustrations of how the District schedules its resources to cover its loads in a typical year.

- **Customer Profile Information**

- District Facilities—54%
 - Irrigation Pumping—51%
 - Other Facilities—3%
- Private Irrigation Pumping Plants—22%
- Non-Irrigation Ag-Related—23%
- Other—1%

See **Appendix C** for graphical illustrations.

- **Supply Side Resources**

The District anticipates that current federal resources under contract and continuation of the Integrated Resource Scheduling Procedures and Resource Exchange Program will be sufficient for the District to meet its monthly power and energy requirements through the short-term planning period. Some APS and SRP supplemental power will continue to be purchased from time-to-time to cover any short-term power deviations. For the long-term planning period, the District has determined to secure an additional long-term resource to diversify its portfolio of suppliers and provide additional options for firming through the Resource Exchange Program and Integrated Resource Scheduling Procedures.

As described in the District's prior Plan, RID spent several years participating with the SPPR Group in evaluating future resource opportunities. The SPPR Group is an association of forty not-for-profit electric utilities, including cooperatives, municipalities, tribal power authorities, and irrigation and electric districts providing service in Arizona, California, and Nevada. Taking advantage of the Group's size to broaden the scope of possible supplies, multiple options for resources were considered, including both construction of a generating unit and purchase of a portion of an existing generating unit. Ultimately, however, both of these options became infeasible due to economic and regulatory circumstances. The Group then issued a Request for Proposals ("RFP"), in response to which a variety of proposals could be submitted, including unit contingent proposals, turnkey proposals, 25-year purchase power agreements, slice of utility system offers in which the sale would be treated with the same firmness as native load, and the sale of existing generating units. The RFP was later modified to reflect the changing requirements of the participants, and required bids to be for unit contingent power or firm power from dedicated units, including slice of system sales. Bids were also required to be for fully dispatchable service. Ultimately, due to economic and other considerations, it was determined that the most practicable option was a long-term power purchase agreement. Beginning January 1, 2015, the District will begin operating, as a member of the SPPR Group, under its new Power Purchase Agreement with Sempra Generation. Detailed below are the District's current contractual commitments:

Arizona Power Authority (Hoover Power) at Buckeye or Pinnacle Peak Substations

- Hoover A Capacity & Energy
 - 3,100 kW (Maximum with Hoover Firming Capacity)
 - 10,596,000 kWh (Contract Entitlement)
- Expires September 30, 2017

Salt Lake City Area/Integrated Project Capacity at Pinnacle Peak and/or Rogers Substation

- Winter Season CROD: 1,638 kW

- Summer Season CROD: 4,876 kW
- Contract Term: Expires September 30, 2024
- Energy entitlements by fiscal year:

<i>Fiscal Year</i>	<i>Winter Season Energy (kWh)</i>	<i>Summer Season Energy (kWh)</i>
FY 2012 - FY 2024	3,002,390	8,873,811

Power Supply and Services Agreement (APS)

- Capacity & Energy as needed
- Wheeling from Buckeye Substation to meters
- Meter Reading and Customer Billing Services
- Losses from Substation to Meters
 - Capacity loss factor: 7.9 %
 - Energy loss factor: 5.5 %
- Expires December 31, 2020

Power Service Master Agreement (SRP)

- Capacity and Energy as needed
- Wheeling from Pinnacle Peak Substation to Meters
- Meter Reading Services
- Losses from Substation to Meters: current season losses:
 - Winter 4.79% for Demand and Energy
 - Summer 5.18% for Demand and Energy
- Expires September 30, 2024

Power Purchase Agreement (Sempra Generation—through SPPR Group)

- Firm Capacity and Energy
 - 8,000 kW
 - Energy as needed
- Effective January 1, 2015; expires December 31, 2039

- **Demand Side Resources**

The majority of the District's electric power is utilized to pump groundwater for agricultural purposes. The following is a list of some of the on-going water conservation practices that are implemented by the District and its customers to efficiently utilize groundwater and therefore electricity.

Alternate Furrow Irrigation	Graded Furrow or Border	Soil & Water Amendments
Cut-Back Irrigation	Uniform Slopes	Tail Water Recovery
Shortened Field Lengths	Deficit Irrigation	Irrigation Scheduling
Land Leveling	Cropping Pattern-Winter vs.	Concrete Ditch Lining
Precision Tillage	Summer	

Identification and Comparison of Resource Options

The identification of options for additional resources within this IRP is coordinated through an examination of the costs and benefits for each resource. Because the District and the majority of the District's customers already implement numerous irrigation and agricultural efficiency practices in the operations and because the Arizona Groundwater Management Act heavily regulates the use of groundwater, opportunities for additional energy savings through demand side management ("DSM") are very limited. However the District will continue to look for other opportunities for energy savings from evolving technological advances in agricultural practices. To the extent practicable, the District will also endeavor to promote customer awareness of pumping workshops and other similar forums for further education on advancements in water conservation practices and technology. For your information we have attached a comprehensive explanation of the Groundwater Management Act as **Appendix D**.

Designation of Options

If additional resources are needed, the least cost option is identified from a cost benefit analysis. This information is considered by the Board of Directors in public meetings and combined with other information to select an Action Plan for the District which conforms to the regulations and guidelines of the Energy Planning and Management Program. The selection of the District's Action Plan also includes consideration for reliability of service, economics, rate impacts and price elasticity, environmental effects, regulatory impacts and risks, legal considerations and risks, competitive impacts, social acceptance and public considerations and any other factors which may be identified from time-to-time which may be pertinent in selecting or implementing an Action Plan.

Action Plan

- **Resource Action Plan**

The time period covered by the District's Action Plan is the five-year period from 2012 through 2016.

The District has determined that to provide reliable electric power at the lowest practicable cost, consistent with sound business principles, the District will continue using its entitlements of Hoover and SLCA/IP power to supply much of its projected power requirements over the five-year planning period. The current federal resources and continuation of the Authority Hoover Resource Exchange Program and Integrated Resource Scheduling Procedures will be sufficient for the District to meet its monthly power and energy requirements through the short-term planning period. Additional purchases of APS and SRP supplemental power will continue to be made from time-to-time to cover any short-term power deviations.

For the long-term planning period, the District has identified a need for additional resources, with the objective of increasing its options for firming resources purchased through the Resource Exchange Program and Integrated Resource Scheduling Procedures, and to serve as a successor for long-term contracts which will terminate in coming years. Therefore, RID has entered into a long-term power purchase agreement as a member of a group of public power entities. Together with the District's existing contractual arrangements, this is anticipated to be sufficient to meet all of the District's requirements over the five-year planning period. No further resources will be required. The District continuously reevaluates the possible need for new resources, the availability of less costly resources and the potential for additional DSM activities. The District's Resource Action Plan enhances customer financial stability by providing services that will enhance property values and provide long-term stability in electric power rates.

Since no new resources beyond those already secured are needed, there are no milestones to evaluate accomplishment of the Plan activities. Nevertheless, the District will monitor any adjustments to the Plan for the long-term resource needs and will annually review its electric loads and resources for any significant changes. In the event the loads of the District are projected to materially increase above those levels represented in the Load and Resource information, other than normal deviations due to cropping changes or weather impacts, the District will review its forecast and evaluate the need for modifying its IRP and notify Western accordingly. In any event, the District will evaluate its load forecast and resource information in detail every five years and refresh its Plan, in accordance with Western's regulations.

- **Conservation Action Plan**

The District has decided to continue certain conservation activities to promote and maintain energy efficiency and customer awareness for conserving electric, water, and land resources.

Period: Calendar Year 2012 through 2016
Activity: Pump Testing Program
Goal: Test 100% of RID pumping plants twice every year for 5 years.
Activity Description: Irrigation Pump Efficiency Testing

Period: Operating Year 2012 through 2016
Activity Description: Water Displacement Program
Goal: Continue utilization of treated effluent in place of groundwater

Period: Operating Year 2012 through 2016
Activity Description: Customer Outreach and Education
Goal: Provide Water and Energy Conservation Tips

- **Validation and Evaluation**

The District owns and operates its own pumps and is required to annually supply groundwater withdrawal information to the State of Arizona under the Groundwater Management Act. This information is usually determined using electrical usage information and pump tests. The District's program of testing pumping plants will continue to help RID prepare its groundwater reporting information and will also allow the District to evaluate each pumping plant and identify pumping plants which may be experiencing a decrease in overall pumping efficiency. Historically, this has been a very successful program for the District. Under this program, the District will attempt to periodically test each of its pumping plants. With the pump test information, and previous test information, an efficiency trend pattern can be prepared. From the test information, the associated cost savings that might result if the tested pump were operating at a theoretical 100% efficiency level can be developed based upon the current District rates. The efficiency information may assist the District in scheduling planned maintenance of the pumping plants and identify the financial benefit from performing the efficiency improvements on a more frequent basis. Overall, on a District wide basis, the ongoing pump testing and monitoring activity should encourage more frequent pump maintenance which will result in an overall efficiency improvement and energy savings. The Conservation Action Plan will be evaluated annually to determine whether 100% of the pumping plants have been tested in that year.

Subject to its availability from third parties, RID utilizes treated effluent each year, thereby displacing water that would otherwise have to be pumped. For calendar year 2011, the District expects it will receive approximately 22,000 acre feet. This amount is approximately 20-25% of the District's water delivery for a year. The amount of water which is available to the District each year fluctuates, so it is difficult to predict how much energy will be saved over the planning horizon. However, RID plans to continue this activity over the next five years.

The majority of the District's energy usage is for the pumping and delivery of water to its customers. To encourage and promote awareness of efficiency activities, the District provides pamphlets to its customers on the importance of water and energy conservation. Any increase in conservation on the part of the District's customers will assist the District in conserving and managing its resources.

Environmental Effects

The District is required, to the extent practical, to minimize adverse environmental effects of new resource acquisitions. As noted above, the District has secured an additional long-term resource which will become effective January 1, 2015. In procuring this resource, the District worked collaboratively with a group of other similarly situated entities, known collectively as the SPPR Group. Options for meeting anticipated future needs were carefully considered, including the consideration of renewable resources. The SPPR Group also utilized an Independent Market Monitor bidding process overseen by the Arizona Corporation Commission to ensure the request for proposals process resulted in the best alternative, and provided an unbiased evaluation platform. However, no appropriate renewable resource was identified. The resource ultimately selected is output from a natural gas supplied plant. Selection of a gas fired generation source will help the District avoid future purchases from coal-fired generation, or market purchases from a blended fuel mix which may include nuclear or coal. For RID, the SPPR resource is intended to ultimately replace current supplemental power supply arrangements which utilize thermal resources. In addition, the acquisition of this resource will allow the District the flexibility to incorporate additional renewable resources which require firming, such as wind or hydro generation. Ultimately, the District intends to utilize hydro resources and its firming capabilities through the Hoover Resource Exchange Program and Integrated Resource Scheduling Procedures to meet the majority of its electric loads. To the extent the District utilizes the Integrated Resource Scheduling Procedures and the Resource Exchange Program and their firming capabilities to exchange and better utilize the hydro resources of the District and other similarly situated utilities, such efforts should be environmentally beneficial since such increased utilization would offset thermal generation purchases.

In addition to maximizing the hydro resources, the District and the District's customers are involved in substantial water conservation programs in their farming practices. The installed water conservation investment by the District's customers is extensive and far-reaching. Their ongoing conservation practices and ongoing maintenance of conservation investments continue to conserve significant amounts of groundwater annually. To the extent the District sponsors conservation activities and information activities with its customers, the conservation of groundwater is the fundamental achievement, which is environmentally beneficial and economically sound. In addition, the overall irrigation efficiency of each farmer is heavily regulated by the State of Arizona through the Groundwater Management Act. A comprehensive discussion of the Groundwater Management Act is provided in **Appendix D**.

Public Participation

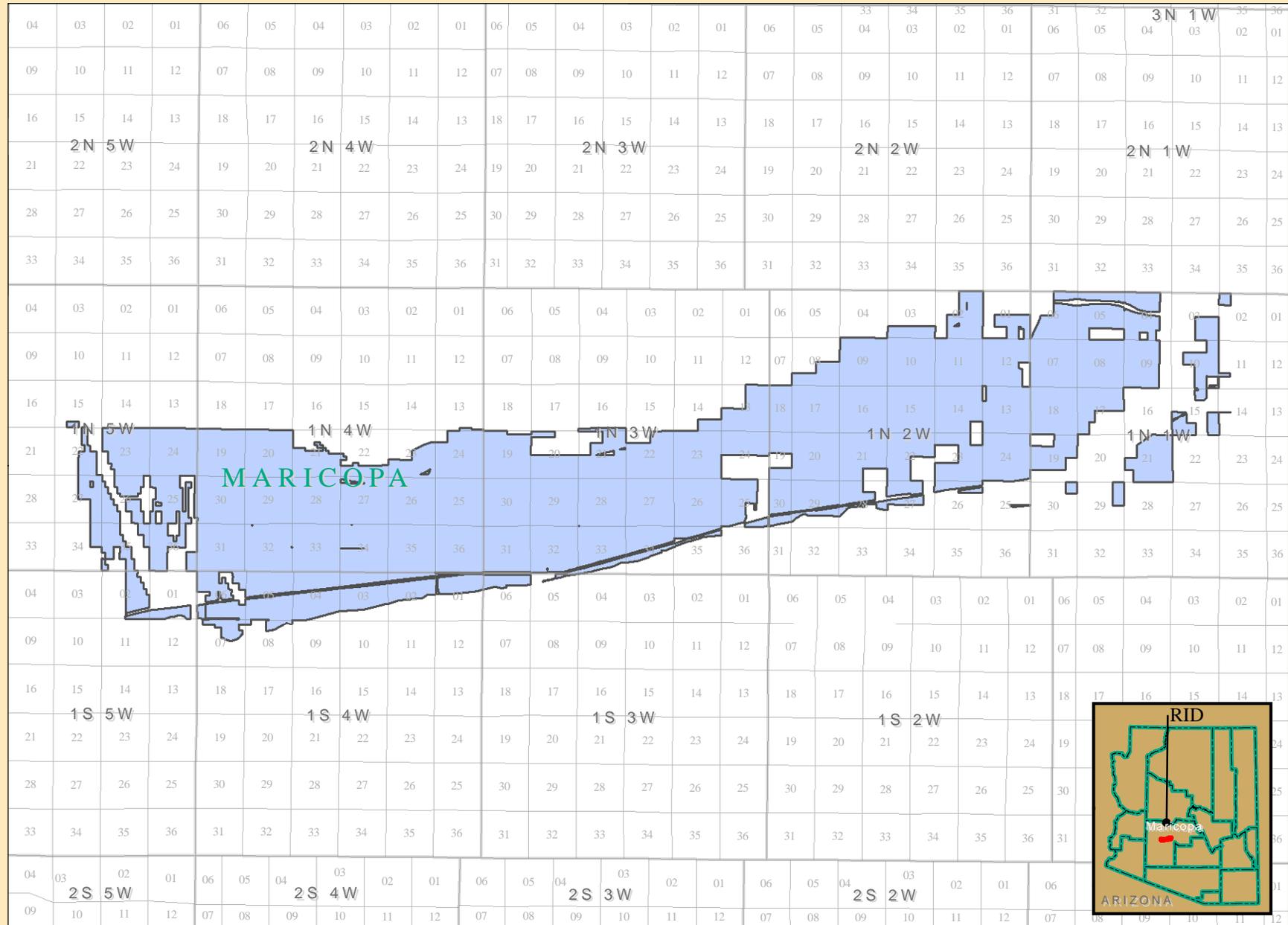
The District has held one public meeting to discuss the development of its IRP.

Prior to the meeting, the District posted notice in advance of the meeting, giving the time and place of the meeting and specifying that the District would be considering a draft IRP at the meeting. The notice was posted in accordance with statutory open meeting law requirements. The notice stated that the draft IRP would be available to the public in advance of the meeting and that public comment on the draft IRP would be accepted at the meeting. A copy of the notice is attached as **Appendix E**.

At the meeting, the draft IRP was presented to the Board. After discussion and the opportunity for public comment, the Board authorized the preparation of a final IRP, with such revisions as the Board deemed appropriate. There were no public comments.

1 in = 3 miles

APPENDIX A -- Map of District Boundary



Sources: Township Range Sections: AZ State land - Aris District Boundary : Verified by RISA in 09/2010 per legal resolutions

Issued: 02/2011 IRRP/MAR/RID Created: 06/02/2011 - Edited: 06/14/2011 by BLS areview 10

Roosevelt Irrigation District

Legend

- Townships
- County Boundary
- Sections
- District Boundary



DISCLAIMER:
 K.R. Saline & Associates, PLC
 Does not warrant the accuracy
 or location of the facilities shown



	Account charge/account	Energy Charge/kWh	Demand Charge/kW	Sales Tax
Dairy	\$ 54.45	\$ 0.05460	\$ 9.79	7.30%
Gins	\$ 54.45	\$ 0.04740	\$13.09 summer \$9.79 winter	7.30%
Suncor	\$ 54.45	\$ 0.05350	\$ 8.86	N/A
Private Irrigation	\$ 54.45	\$ 0.05350	\$ 5.50	N/A

ROOSEVELT IRRIGATION DISTRICT

COMBINED SERVICE TERRITORIES

Demand @ Pump (kW)

Year	October	November	December	January	February	March	April	May	June	July	August	September	Max
2002	13,047	12,912	11,016	11,889	11,166	12,927	15,608	14,446	16,565	16,925	18,081	16,342	18,081
2003	15,043	12,372	9,531	12,341	9,563	12,374	16,259	15,827	16,008	17,201	17,536	15,876	17,536
2004	11,758	12,258	9,487	11,586	8,132	13,176	15,038	15,789	17,056	16,950	16,492	15,650	17,056
2005	12,537	10,504	8,927	8,533	8,873	11,256	12,551	14,183	16,052	16,889	15,737	15,451	16,889
2006	10,014	10,964	8,504	9,958	10,055	10,041	13,718	15,055	15,836	16,099	15,405	14,461	16,099
2007	10,551	10,979	7,974	8,267	8,912	12,196	14,241	15,475	15,809	15,940	15,642	15,184	15,940
2008	11,970	11,805	7,992	9,328	10,890	13,728	14,751	15,269	15,464	15,503	16,292	14,250	16,292
2009	11,237	10,489	9,359	11,653	10,127	9,172	12,400	14,508	14,778	14,663	14,266	12,508	14,778
2010	9,031	10,816	7,750	8,391	5,910	9,073	11,575	13,488	14,407	14,927	14,426	13,696	14,927
2011	11,606	11,048	8,095	12,756	11,273	12,685	14,540	15,294	16,230	16,291	16,383	16,280	16,383

Demand @ Substation (kW)

Year	October	November	December	January	February	March	April	May	June	July	August	September	Max
2002	14,019	13,856	11,805	12,734	11,932	13,803	16,720	15,446	17,745	18,137	19,393	17,507	19,393
2003	16,152	13,286	10,280	13,229	10,239	13,220	17,412	16,968	17,169	18,464	18,826	17,024	18,826
2004	12,598	13,163	10,224	12,440	8,726	14,087	16,109	16,932	18,310	18,188	17,695	16,786	18,310
2005	13,415	11,286	9,595	9,176	9,542	12,005	13,379	15,206	17,232	18,144	16,904	16,597	18,144
2006	10,775	11,761	9,142	10,695	10,785	10,721	14,655	16,158	17,002	17,287	16,534	15,515	17,287
2007	11,352	11,792	8,602	8,892	9,580	13,030	15,224	16,611	16,977	17,117	16,793	16,303	17,117
2008	12,866	12,692	8,627	10,030	11,682	14,687	15,785	16,397	16,610	16,652	17,500	15,309	17,500
2009	12,093	11,314	10,104	12,503	10,868	9,827	13,266	15,564	15,863	15,732	15,302	13,432	15,863
2010	9,720	11,622	8,363	9,032	6,373	9,734	12,363	14,425	15,421	15,986	15,443	14,659	15,986
2011	12,434	11,873	8,715	13,708	12,104	13,554	15,539	16,388	17,404	17,473	17,572	17,461	17,572

Energy @ Pump (kWh)

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
2002	4,906,596	2,909,928	3,603,013	4,498,891	4,253,918	5,638,686	8,624,260	7,874,118	8,676,362	10,720,107	10,056,329	6,001,659	77,763,867
2003	3,766,309	2,829,890	3,151,136	3,709,198	2,373,682	4,009,821	8,071,517	8,289,918	8,785,691	10,625,710	8,960,169	8,339,451	72,912,492
2004	3,776,801	2,240,562	3,526,438	3,768,304	2,226,958	5,534,049	7,204,180	7,611,267	9,966,609	10,036,754	10,036,754	6,673,313	71,962,053
2005	3,552,322	2,131,766	3,162,787	2,200,956	1,880,080	3,012,391	5,401,302	6,764,525	8,561,786	9,261,557	7,985,923	6,525,659	60,441,054
2006	3,556,900	3,173,227	2,975,253	3,674,595	3,337,200	4,213,700	5,931,830	7,722,655	8,786,161	8,709,350	8,421,510	5,637,626	66,140,007
2007	3,282,529	2,305,485	2,428,135	2,858,035	2,604,924	4,908,964	6,788,660	7,464,739	8,670,054	9,421,189	9,301,888	7,556,681	67,591,283
2008	4,143,578	2,592,972	2,225,647	3,009,998	3,340,524	5,225,643	6,998,845	6,823,344	7,890,303	9,391,766	9,267,188	7,556,017	68,465,825
2009	3,708,296	2,219,962	2,989,202	4,340,817	3,263,911	4,368,773	5,679,553	6,878,556	7,348,484	8,063,696	7,240,208	5,844,528	61,945,986
2010	2,818,531	2,294,274	2,560,127	2,260,938	1,821,212	2,819,372	5,409,754	5,347,685	7,868,882	8,732,448	8,086,424	6,708,508	56,728,155
2011	3,444,080	2,835,968	2,826,812	3,928,402	3,310,494	4,936,953	7,613,897	7,677,844	9,494,667	9,767,552	10,691,691	9,160,306	75,688,666

Energy @ Substation (kWh)

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
2002	5,182,230	3,075,471	3,806,186	4,750,489	4,488,761	5,948,713	9,102,943	8,303,241	9,154,534	11,312,937	10,613,401	6,333,041	82,071,947
2003	3,977,250	2,989,908	3,331,561	3,915,660	2,505,186	4,228,382	8,514,852	8,760,723	9,285,839	11,232,941	9,471,175	8,814,052	77,027,529
2004	3,991,990	2,369,211	3,729,698	3,983,693	2,354,027	5,847,608	7,613,152	8,049,053	10,540,409	9,937,968	10,614,794	7,057,365	76,088,968
2005	3,746,062	2,253,671	3,344,101	2,326,781	1,986,614	3,176,962	5,693,261	7,160,710	9,062,669	9,803,383	8,452,920	6,907,152	63,914,286
2006	3,764,862	3,351,704	3,142,881	3,879,861	3,519,456	4,442,004	6,250,949	8,174,726	9,300,364	9,218,934	8,914,171	5,967,401	69,927,313
2007	3,474,436	2,437,092	2,566,278	3,019,454	2,751,076	5,174,400	7,156,029	7,901,662	9,177,403	9,972,218	9,846,002	7,998,753	71,474,803
2008	4,385,763	2,740,410	2,352,998	3,180,168	3,526,368	5,508,102	7,379,243	7,224,647	8,353,857	9,943,152	9,811,270	7,999,454	72,405,432
2009	3,925,779	2,347,744	3,161,672	4,588,620	3,450,786	4,617,319	6,001,707	7,283,081	7,780,324	8,537,677	7,665,886	6,187,691	65,548,286
2010	2,984,041	2,425,977	2,707,785	2,390,911	1,926,131	2,980,910	5,716,157	5,646,576	8,310,274	9,222,351	8,540,913	7,084,877	59,936,903
2011	3,638,350	2,994,943	2,985,115	4,145,095	3,491,422	5,200,216	8,018,025	8,107,453	10,029,726	10,318,014	11,296,095	9,676,534	79,900,988

Roosevelt Irrigation District

APS SERVICE TERRITORY

Demand @ Meters (kW)

Year	October	November	December	January	February	March	April	May	June	July	August	September	Max
2002	8,451	7,802	6,148	6,418	5,182	5,694	8,506	7,244	9,320	9,696	10,851	9,181	10,851
2003	9,597	7,912	7,462	7,219	5,217	5,849	8,982	8,563	8,873	10,032	10,349	8,695	10,349
2004	6,124	7,338	6,901	6,876	4,685	5,835	7,702	8,458	9,780	9,420	9,091	8,466	9,780
2005	6,689	6,983	6,034	5,916	6,147	4,838	5,213	7,035	8,767	9,724	8,970	8,814	9,724
2006	6,363	6,715	5,803	6,508	6,136	4,676	6,606	8,074	8,696	8,964	8,273	7,563	8,964
2007	6,732	7,159	6,310	5,768	6,078	5,914	7,164	8,405	8,853	8,904	8,590	8,379	8,904
2008	7,112	8,088	6,508	6,424	6,687	7,258	7,915	8,430	8,686	8,702	9,167	8,098	9,167
2009	7,179	8,003	7,429	6,639	5,830	4,745	5,765	7,401	7,921	7,565	7,178	6,900	8,003
2010	5,834	6,736	6,010	5,733	4,429	5,114	4,699	6,395	7,291	7,808	7,344	6,878	7,808
2011	6,222	7,590	6,001	8,756	7,451	6,517	7,532	8,287	9,230	9,370	9,457	9,377	9,457

Demand @ Substation (kW)

Year	October	November	December	January	February	March	April	May	June	July	August	September	Max
2002	9,176	8,471	6,675	6,969	5,626	6,182	9,236	7,865	10,119	10,528	11,782	9,969	11,782
2003	10,420	8,591	8,102	7,838	5,664	6,351	9,752	9,298	9,634	10,893	11,237	9,441	11,237
2004	6,649	7,967	7,493	7,466	5,087	6,336	8,363	9,183	10,619	10,228	9,871	9,192	10,619
2005	7,263	7,582	6,552	6,423	6,674	5,253	5,660	7,638	9,519	10,558	9,739	9,570	10,558
2006	6,909	7,291	6,301	7,066	6,662	5,077	7,173	8,767	9,442	9,733	8,983	8,212	9,733
2007	7,309	7,773	6,851	6,263	6,599	6,421	7,779	9,126	9,612	9,668	9,327	9,098	9,668
2008	7,722	8,782	7,066	6,975	7,261	7,881	8,594	9,153	9,431	9,448	9,953	8,793	9,953
2009	7,795	8,689	8,066	7,208	6,330	5,152	6,260	8,036	8,600	8,214	7,794	7,492	8,689
2010	6,334	7,314	6,526	6,225	4,809	5,553	5,102	6,944	7,916	8,478	7,974	7,468	8,478
2011	6,756	8,241	6,516	9,507	8,090	7,076	8,178	8,998	10,022	10,174	10,268	10,181	10,268

Energy @ Meters (kWh)

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
2002	2,679,305	2,054,075	2,139,841	2,202,749	1,397,623	1,569,319	3,409,769	2,638,652	3,864,300	5,137,580	4,989,798	2,783,902	34,866,913
2003	2,282,721	1,988,906	2,616,989	2,018,294	1,180,328	1,349,871	3,324,941	3,064,840	3,779,525	5,615,640	4,268,432	3,523,091	35,013,578
2004	1,707,674	1,455,396	2,639,172	2,009,682	1,089,383	1,718,136	2,587,103	2,965,158	4,363,698	4,252,004	4,575,038	2,791,644	32,154,088
2005	1,465,433	1,784,189	2,719,478	1,836,346	1,416,717	1,287,451	1,807,626	2,333,061	3,959,980	4,274,254	4,043,984	3,504,918	30,433,437
2006	1,868,343	2,177,460	2,087,384	2,295,136	1,416,549	1,496,678	1,741,865	3,072,804	3,718,628	3,907,653	3,921,516	2,676,715	30,380,731
2007	1,747,045	1,892,380	1,918,517	2,068,481	1,729,381	1,657,258	2,339,084	3,060,744	3,774,261	4,591,455	4,421,757	3,512,655	32,713,018
2008	2,315,401	2,035,414	1,875,243	2,205,563	1,964,570	1,748,153	2,676,913	2,683,345	3,597,276	4,658,506	4,586,417	3,918,629	34,265,430
2009	2,066,149	1,583,754	2,315,640	2,176,345	1,882,029	1,808,658	1,920,259	2,728,613	3,234,203	3,439,197	2,987,265	2,865,731	29,007,843
2010	1,362,688	1,476,872	1,958,941	1,538,014	1,339,432	1,677,314	1,628,298	1,889,627	3,224,723	3,598,477	3,564,242	2,767,869	26,026,497
2011	1,713,759	2,065,317	2,038,569	2,414,770	1,822,010	1,886,394	2,670,539	2,847,414	4,583,061	4,721,693	5,689,638	4,424,709	36,877,873

Energy @ Substation (kWh)

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
2002	2,835,243	2,173,624	2,264,382	2,330,951	1,478,966	1,660,655	3,608,221	2,792,224	4,089,206	5,436,593	5,280,210	2,945,928	36,896,203
2003	2,415,578	2,104,662	2,769,301	2,135,761	1,249,024	1,428,435	3,518,456	3,243,217	3,999,497	5,942,476	4,516,859	3,728,139	37,051,405
2004	1,807,062	1,540,102	2,792,775	2,126,648	1,152,786	1,818,133	2,737,675	3,137,733	4,617,670	4,499,475	4,841,310	2,954,121	34,025,490
2005	1,550,723	1,888,031	2,877,754	1,943,223	1,499,171	1,362,382	1,912,832	2,468,848	4,190,455	4,523,020	4,279,348	3,708,908	32,204,695
2006	1,977,083	2,304,190	2,208,872	2,428,715	1,498,994	1,583,786	1,843,243	3,251,644	3,935,056	4,135,083	4,149,752	2,832,503	32,148,921
2007	1,848,725	2,002,519	2,030,177	2,188,869	1,830,033	1,753,712	2,475,221	3,238,883	3,993,927	4,858,683	4,679,108	3,717,095	34,616,952
2008	2,450,160	2,153,877	1,984,384	2,333,929	2,078,910	1,849,897	2,832,712	2,839,519	3,806,641	4,929,636	4,853,351	4,146,697	36,259,713
2009	2,186,401	1,675,930	2,450,413	2,303,011	1,991,565	1,913,924	2,032,020	2,887,421	3,422,437	3,639,362	3,161,127	3,032,520	30,696,131
2010	1,441,998	1,562,828	2,072,953	1,627,528	1,417,388	1,774,935	1,723,067	1,999,605	3,412,405	3,807,912	3,771,685	2,928,962	27,541,266
2011	1,813,502	2,185,521	2,157,216	2,555,312	1,928,053	1,996,184	2,825,967	3,013,137	4,849,800	4,996,501	6,020,781	4,682,232	39,024,206

ROOSEVELT IRRIGATION DISTRICT

SRP SERVICE TERRITORY

Demand @ Meters (kW)

Year	October	November	December	January	February	March	April	May	June	July	August	September	Max
2002	4,596	5,110	4,868	5,471	5,984	7,233	7,102	7,202	7,245	7,229	7,230	7,161	7,245
2003	5,446	4,460	2,069	5,122	4,346	6,525	7,277	7,264	7,135	7,169	7,187	7,181	7,277
2004	5,634	4,920	2,586	4,710	3,447	7,341	7,336	7,331	7,276	7,530	7,401	7,184	7,530
2005	5,848	3,521	2,893	2,617	2,726	6,418	7,338	7,148	7,285	7,165	6,767	6,637	7,338
2006	3,651	4,249	2,701	3,450	3,919	5,365	7,112	6,981	7,140	7,135	7,132	6,898	7,140
2007	3,819	3,820	1,664	2,499	2,834	6,282	7,077	7,070	6,956	7,036	7,052	6,805	7,077
2008	4,858	3,717	1,484	2,904	4,203	6,470	6,836	6,839	6,778	6,801	7,125	6,152	7,125
2009	4,058	2,486	1,930	5,014	4,297	4,427	6,635	7,107	6,857	7,098	7,088	5,608	7,107
2010	3,197	4,080	1,740	2,658	1,481	3,959	6,876	7,093	7,116	7,119	7,082	6,818	7,119
2011	5,384	3,458	2,094	4,000	3,822	6,168	7,008	7,007	7,000	6,921	6,926	6,903	7,008

Demand @ Substation (kW)

Year	October	November	December	January	February	March	April	May	June	July	August	September	Max
2002	4,843	5,385	5,130	5,765	6,306	7,621	7,484	7,581	7,626	7,609	7,611	7,538	7,626
2003	5,732	4,695	2,178	5,391	4,575	6,869	7,660	7,670	7,535	7,571	7,589	7,583	7,670
2004	5,949	5,196	2,731	4,974	3,639	7,751	7,746	7,749	7,691	7,960	7,824	7,594	7,960
2005	6,152	3,704	3,043	2,753	2,868	6,752	7,719	7,568	7,713	7,586	7,165	7,027	7,719
2006	3,866	4,470	2,841	3,629	4,123	5,644	7,482	7,391	7,560	7,554	7,551	7,303	7,560
2007	4,043	4,019	1,751	2,629	2,981	6,609	7,445	7,485	7,365	7,449	7,466	7,205	7,485
2008	5,144	3,910	1,561	3,055	4,421	6,806	7,191	7,244	7,179	7,204	7,547	6,516	7,547
2009	4,298	2,625	2,038	5,295	4,538	4,675	7,006	7,528	7,263	7,518	7,508	5,940	7,528
2010	3,386	4,308	1,837	2,807	1,564	4,181	7,261	7,481	7,505	7,508	7,469	7,191	7,508
2011	5,678	3,632	2,199	4,201	4,014	6,478	7,361	7,390	7,382	7,299	7,304	7,280	7,390

Energy @ Meters (kWh)

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
2002	2,227,291	855,853	1,463,172	2,296,142	2,856,295	4,069,367	5,214,491	5,235,466	4,812,062	5,582,527	5,066,531	3,217,757	42,896,954
2003	1,483,588	840,984	534,147	1,690,904	1,193,354	2,659,950	4,746,576	5,225,078	5,006,166	5,010,070	4,691,737	4,816,360	37,898,914
2004	2,069,127	785,166	887,266	1,758,622	1,137,575	3,815,913	4,617,077	4,646,109	5,602,911	5,144,814	5,461,716	3,881,669	39,807,965
2005	2,086,889	347,577	443,309	364,610	463,363	1,724,940	3,593,676	4,431,464	4,601,806	4,987,303	3,941,939	3,020,741	30,007,617
2006	1,688,557	995,767	887,869	1,379,459	1,920,651	2,717,022	4,189,965	4,649,851	5,067,533	4,801,697	4,499,994	2,960,911	35,759,276
2007	1,535,484	413,105	509,618	789,554	875,543	3,251,706	4,449,576	4,403,995	4,895,793	4,829,734	4,880,131	4,044,026	34,878,265
2008	1,828,177	557,558	350,404	804,435	1,375,954	3,477,490	4,321,932	4,139,999	4,293,027	4,733,260	4,680,771	3,637,388	34,200,395
2009	1,642,147	636,208	673,562	2,164,472	1,381,882	2,560,115	3,759,294	4,149,943	4,114,281	4,624,499	4,252,943	2,978,797	32,938,143
2010	1,455,843	817,402	601,186	722,924	481,780	1,142,058	3,781,456	3,458,058	4,644,159	5,133,971	4,522,182	3,940,639	30,701,658
2011	1,730,321	770,651	788,243	1,513,632	1,488,484	3,050,559	4,943,358	4,830,430	4,911,606	5,045,859	5,002,053	4,735,597	38,810,793

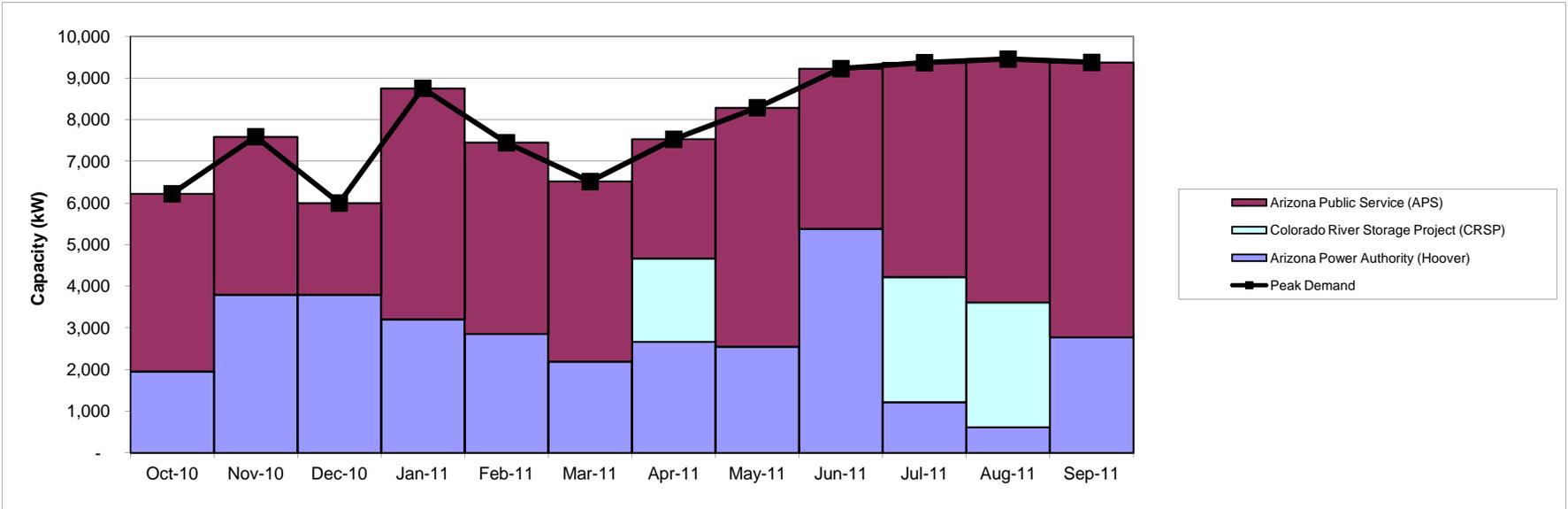
Energy @ Substation (kWh)

Year	October	November	December	January	February	March	April	May	June	July	August	September	Total
2002	2,346,987	901,847	1,541,804	2,419,538	3,009,795	4,288,058	5,494,722	5,511,017	5,065,328	5,876,344	5,333,191	3,387,113	45,175,744
2003	1,561,672	885,246	562,260	1,779,899	1,256,162	2,799,947	4,996,396	5,517,506	5,286,342	5,290,465	4,954,316	5,085,913	39,976,124
2004	2,184,928	829,109	936,923	1,857,045	1,201,241	4,029,475	4,875,477	4,911,320	5,922,739	5,438,493	5,773,484	4,103,244	42,063,478
2005	2,195,339	365,640	466,347	383,558	487,443	1,814,580	3,780,429	4,691,862	4,872,214	5,280,363	4,173,572	3,198,244	31,709,591
2006	1,787,779	1,047,514	934,009	1,451,146	2,020,462	2,858,218	4,407,706	4,923,082	5,365,308	5,083,851	4,764,419	3,134,898	37,778,392
2007	1,625,711	434,573	536,101	830,585	921,043	3,420,688	4,680,808	4,662,779	5,183,476	5,113,535	5,166,894	4,281,658	36,857,851
2008	1,935,603	586,533	368,614	846,239	1,447,458	3,658,205	4,546,531	4,385,128	4,547,216	5,013,516	4,957,919	3,852,757	36,145,719
2009	1,739,378	671,814	711,259	2,285,609	1,459,221	2,703,395	3,969,687	4,395,660	4,357,887	4,898,315	4,504,759	3,155,171	34,852,155
2010	1,542,043	863,149	634,832	763,383	508,743	1,205,975	3,993,090	3,646,971	4,897,869	5,414,439	4,769,228	4,155,915	32,395,637
2011	1,824,848	809,422	827,899	1,589,783	1,563,369	3,204,032	5,192,058	5,094,316	5,179,926	5,321,513	5,275,314	4,994,302	40,876,782

ROOSEVELT IRRIGATION DISTRICT

APS SERVICE TERRITORY

SCHEDULED RESOURCES TO COVER TYPICAL PEAK DEMAND



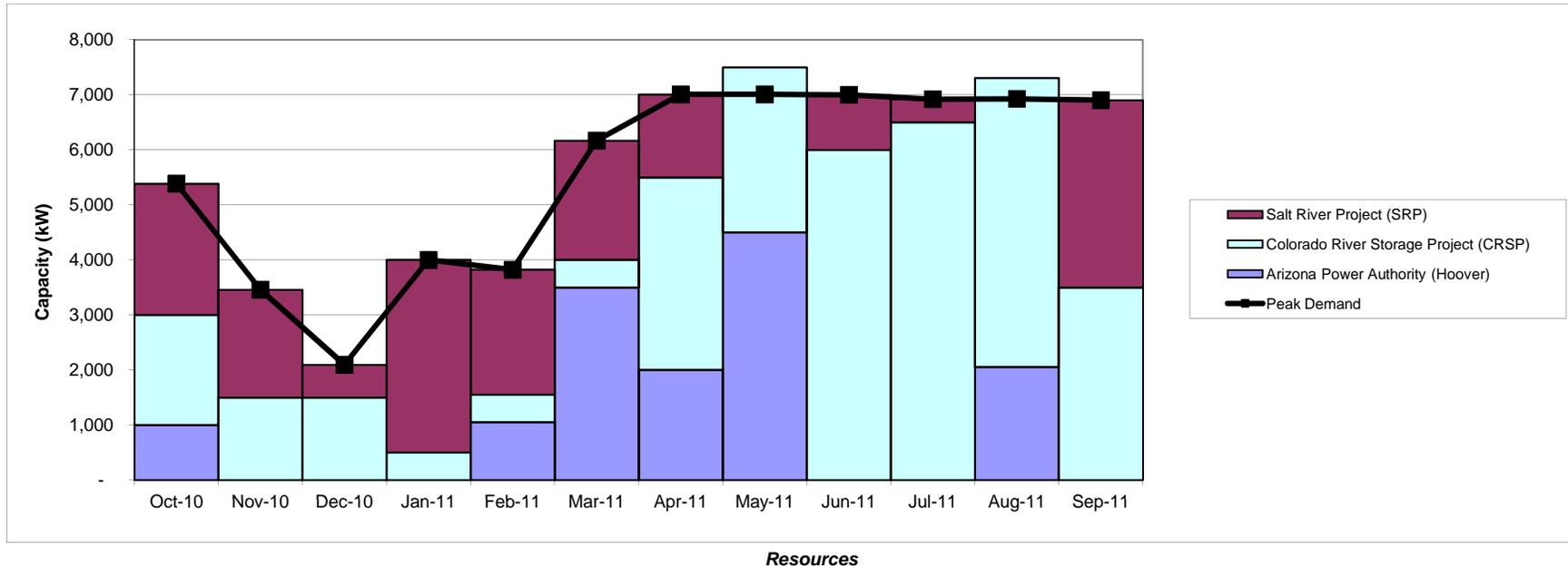
Resources

	<u>Oct-10</u>	<u>Nov-10</u>	<u>Dec-10</u>	<u>Jan-11</u>	<u>Feb-11</u>	<u>Mar-11</u>	<u>Apr-11</u>	<u>May-11</u>	<u>Jun-11</u>	<u>Jul-11</u>	<u>Aug-11</u>	<u>Sep-11</u>
Arizona Power Authority (Hoover)	1,957	3,797	3,795	3,207	2,859	2,196	2,668	2,555	5,379	1,221	615	2,778
Colorado River Storage Project (CRSP)	-	-	-	-	-	-	2,000	-	-	3,000	3,000	-
Arizona Public Service (APS)	4,265	3,793	2,206	5,549	4,592	4,321	2,864	5,732	3,851	5,149	5,842	6,599
Peak Demand	6,222	7,590	6,001	8,756	7,451	6,517	7,532	8,287	9,230	9,370	9,457	9,377

ROOSEVELT IRRIGATION DISTRICT

SRP SERVICE TERRITORY

SCHEDULED RESOURCES TO COVER TYPICAL PEAK DEMAND



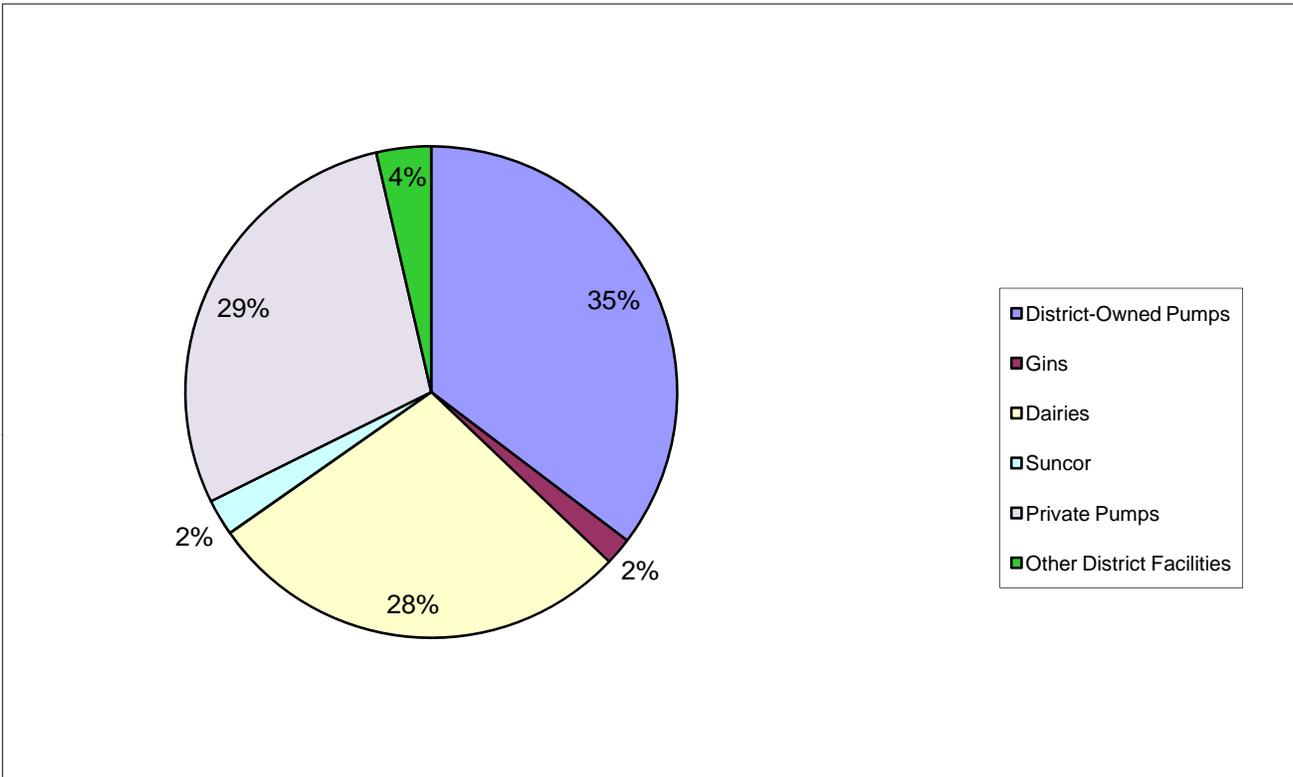
	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11
Arizona Power Authority (Hoover)	1,000	-	-	-	1,050	3,500	2,000	4,500	-	-	2,056	-
Colorado River Storage Project (CRSP)	2,000	1,500	1,500	500	500	500	3,500	3,000	6,000	6,500	5,250	3,500
Salt River Project (SRP)	2,384	1,958	594	3,500	2,272	2,168	1,508	-	1,000	421	-	3,403
Peak Demand	5,384	3,458	2,094	4,000	3,822	6,168	7,008	7,007	7,000	6,921	6,926	6,903

ROOSEVELT IRRIGATION DISTRICT

APS SERVICE TERRITORY

Customer Profile

Customer Type	# of Meters
<i>District-Owned Pumps</i>	59
<i>Gins</i>	3
<i>Dairies</i>	47
<i>Suncor</i>	4
<i>Private Pumps</i>	48
<i>Other District Facilities</i>	6
Total	167



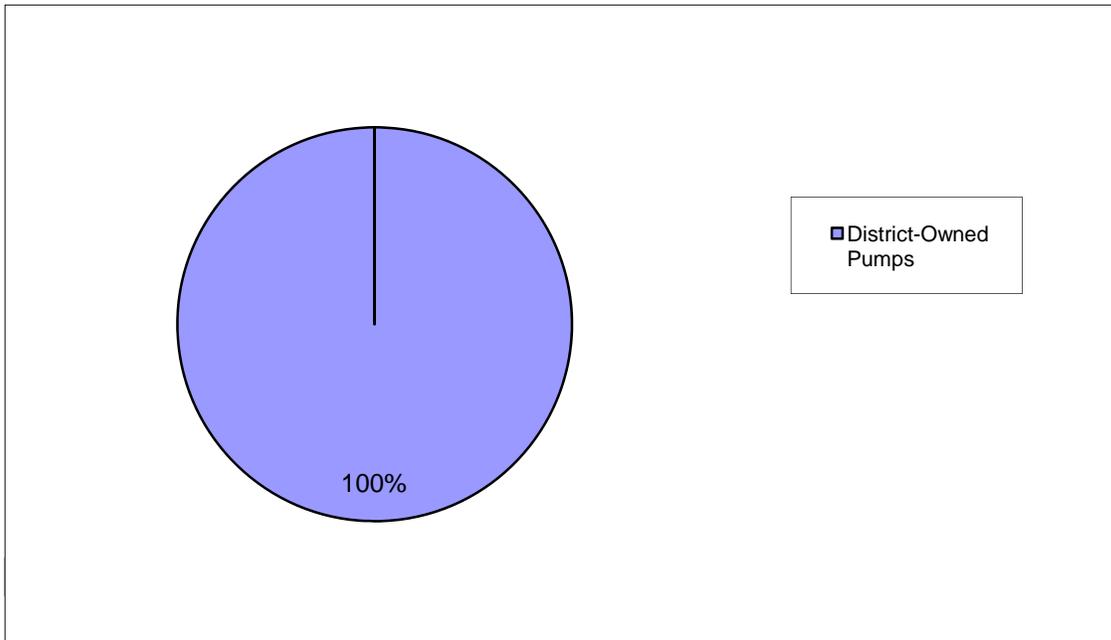
ROOSEVELT IRRIGATION DISTRICT

SRP SERVICE TERRITORY

Customer Profile

Customer Type
District-Owned Pumps
Total

of Meters
52
52



APPENDIX D

CONSERVATION REGULATION

The District and its customers actively undertake to reduce water use and power use through a variety of conservation activities.

The greatest potential for conservation from District customers lies in water conservation. Because the District's customers rely primarily on deep-well irrigation to provide water to crops, saving water means saving electricity.

In 1980, the Arizona legislature enacted a comprehensive regulatory program to manage and conserve the State's groundwater resources. The Groundwater Code designated certain large area of the State as Active Management Areas ("AMAs"). A.R.S. § 45-411. Within the AMAs, groundwater use for irrigation purposes is heavily regulated. Farmers within AMAs must obtain certificates of irrigation grandfathered groundwater right in order to continue irrigating their property. See A.R.S. §§ 45-416, 45-465.

The District is located within the Phoenix AMA. The management goal for the Phoenix AMA is to achieve "safe yield" by January 1, 2025. A.R.S. § 45-562.A. "Safe yield" means a balance between the amount of groundwater withdrawn in the AMA and the amount of natural or artificial groundwater recharge in the AMA. A.R.S. § 45-561.6.

The goal of safe yield is to be met by applying increasingly stringent conservation requirements, the retirement of certain water uses, and augmentation of the groundwater supply with other sources of water. To date, efforts have focused primarily on conservation requirements.

The management goal of safe yield will be achieved through the enactment and enforcement of five different management plans. A.R.S. § 45-563. The Arizona Department of Water Resources ("the Department") is charged with the task of promulgating and enforcing the management plans. The first management plan ("FMP") covered the period 1980 to 1990.¹ A.R.S. § 45-564. The second management plan covered the period 1990 to 2000. A.R.S. § 45-565. The third management plan covers the period 2000 to 2010. A.R.S. § 45-566. The fourth management plan will cover the period 2000 to 2010. A.R.S. § 45-567. The fifth and final management plan will cover the period 2020 to 2025, and beyond. A.R.S. § 45-568.

¹ The first management plan for the Phoenix AMA was developed over the first several years after the adoption of the Groundwater Code. It became effective for most Phoenix AMA water users on January 1, 1987.

For the first management period, the Department was directed by statute to include conservation measures for irrigation in the first management plan. Specifically, the Department was required to establish an irrigation water duty for each farm in the AMA. A.R.S. § 45-564. Section 45-564.A.1. provides that the Department shall establish:

An irrigation water duty for each farm unit in the active management area. The irrigation water duty shall be calculated as the quantity of water reasonably required to irrigate the crops historically grown in a farm unit and shall assume conservation methods being used in the state which would be reasonable for the farm unit including lined ditches, pump-backs systems, land leveling and efficient application practices, but not including a change from flood irrigation to drip irrigation or sprinkler irrigation.

A.R.S. § 45-564.A.A. (Emphasis added.) Lined ditches, pump-back systems, land leveling and good management practices are conservation methods that are currently in use throughout the District.

The first management plan for the Phoenix AMA established the initial irrigation water duties and total water allotments for each farm. In order to establish the water duties, the Department first considered the types of crops, the number of acres of each and the amount of water historically used on each farm. The Department then determined a farm's historic irrigation efficiency by comparing historical water use to the amount of water the Department determined was adequate for the crop's total irrigation requirement.²

Research by the Department indicated that with good management practices, all irrigation systems could achieve more than 55% irrigation efficiency. Taking into account the achievable level of efficiency and the average historic efficiency, the Department set the minimum irrigation efficiency for District lands at 55%.

If a farm's historic efficiency was less than 55%, the Department assigned an irrigation efficiency that required the farm to either meet a 55% efficiency level or to reduce water use by 6%, whichever resulted in greater water savings.³ (FMP, p. 51)

If a farm's historic efficiency was between 55% and 70%, the Department assigned an irrigation efficiency requirement of either 70% or a percentage that reflected a 6% reduction in water use, whichever gave the higher water duty. (FMP, p. 51).

² "Total irrigation requirement" takes into account the crop's consumptive use, special crop needs (such as frost protection water), leaching requirements and "effective" precipitation. Historic irrigation efficiencies in the Phoenix AMA ranged generally between 55% and 85%. (FMP, pp. 46-48)

³ The Department determined that a 6% reduction in water use could be achieved by employing good irrigation management practices. (FMP, p. 51)

If a farm's historic efficiency was between 70% and 85%, the Department assigned the historic efficiency as the required efficiency. The Department concluded that efficiencies in this range reflected satisfactory conservation methods. (FMP, p. 51).

If a farm's historic use was greater than 85%, the Department assigned an 85% irrigation efficiency requirement. The Department considered 85% efficiency the maximum reasonable efficiency for the first management period. (FMP, p. 51).

Based upon the assigned irrigation efficiency requirements, the Department calculated water duties (the amount of water use permitted per acre) and total water allotments for each farm.

In December, 1989, the Department promulgated the management plan for the second management period (1990 to 2000). For the second management plan, the Department was directed to impose the following further conservation requirements on irrigation. A.R.S. § 45-565.A.1. provides that the Department shall:

Establish a new irrigation water duty for each farm unit to be reached by the end of the second management period any may establish one or more intermediate water duties to be reached at specified intervals during the second management period. The irrigation water duty and any intermediate water duties shall be calculated as the quantity of water reasonably required to irrigate the crops historically grown in the farm unit and shall assume the maximum conservation consistent with prudent long-term farm management practices within Areas of similar farming conditions, considering the time required to amortize conservation investments and financing costs.

A.R.S. § 45-565.A.1. (Emphasis added)

Under the second management plan, the Department established two interim water duties and a final water duty for each farm. The first interim water duty and the total allotment were effective from January 1, 1992 to December 31, 1994. The second interim water duty and total allotment were effective from January 1, 1995 to December 31, 1999. The final water duty and allotment was scheduled to become effective January 1, 2000, and remain in effect until altered under the third management plan.

In setting the final water duty under the second management plan. The Department concluded that most farms within the Phoenix AMA were capable of achieving 85% irrigation efficiency. The Department determined that level basin irrigation is economically prudent and feasible, and that with level basin irrigation and good management practices most farms could achieve 85% irrigation efficiency. Farms with limiting soils or poor water quality were generally assigned a 70% efficiency requirement. Citrus farms, because they cannot economically be leveled, were assigned a 65% efficiency level.

There has been considerable debate and extensive additional study regarding whether the 85% efficiency requirement can be met, even under the best of circumstances. The implementation of the final water duty under the second management plan has been suspended, pending the conclusion of additional study and negotiation. In the fall of 2001, the Department and the agricultural community reached an agreement in principle to reduce the required efficiency to 80% for most farms. In 2002, the statutes were amended to provide that the maximum irrigation efficiency to be imposed is 80%.

The effect of the Groundwater Code is to cause an overall, continuing reduction in water use by the farms served by the District and many other Arizona preference customers. Compliance with the water conservation measures imposed under the State regulatory scheme necessarily results in significant power savings.

Conservation has been an economic necessity to growers in the area served by the District since the first pump was installed over sixty years ago. The land was uneven, ditches were unlined and the lengths of water runs were often long. Growers learned that more even fall of the land and less fall per measured distance resulted in a more efficient use of their water resource and a savings in their cost of operation. Land was leveled with more uniformity and less fall. Growers worked with such agencies as the Soil Conservation Service and the University of Arizona Cooperative Extension Service. Experience and education taught them that such practices as the lining of ditches was a major conservation tool that would save water for unlimited years into the future if properly maintained. In the early years, many miles of ditches were concrete lined by hand. As technology advanced, it became possible to concrete line ditches mechanically. Miles and miles of ditches were lined, until today there are practically no head or carry ditches in the District that are not either concrete lined or underground pipeline. Long water runs were proven to be inefficient and were eliminated by dividing field lengths in half and in some cases into quarters by placing new lined ditches across them. As technology improved, lands were releveled and today with laser leveling it is possible to level to a fraction of a degree or even dead level.

Fields are also situated to enable growers to use run off water from one field and apply it to another field. In the very early 1950's growers started building water recovery systems. The systems called sumps or pump backs, retain runoff water in ponds and use small, energy efficient pumps to push the water to the high corner of the farm and reuse the water in the irrigation system. It is a major conservation tool used by most growers to ensure that no water is wasted and that energy is conserved.

As technology advances, District growers continue to be more efficient in their operations. New water efficient crop varieties have been introduced, new types of irrigation systems are being installed and highly accurate high technology moisture measuring instruments are in use to determine the exact moisture needs of crops. All of these activities increase the efficiency of water and energy use.

ROOSEVELT IRRIGATION DISTRICT

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SUPERINTENDENT
STANLEY H. ASHBY
DONOVAN L. NEESE

PUBLIC NOTICE

Roosevelt Irrigation District ("the District") will be holding a board meeting at 9:00 am on December 21, 2011 at 103 W. Baseline Road, Buckeye, Arizona. At that board meeting the District will review and approve its updated Integrated Resource Plan. This Integrated Resource Plan, which is required by the Western Area Power Administration, details the District's power resource plan for the next five years. The final Integrated Resource Plan will be available to the public at the District's office prior to the meeting. Written comments regarding the Integrated Resource Plan will be accepted anytime prior to or at the meeting. Public comments will also be accepted at this time. Please contact Donovan Neese at 623-386-2046 for more information.