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February 4, 2003

Ms. Jean D. Jewell, Secretary
Idaho Public Utilities Commission
P. O. Box 83720
Boise, ID 83720-0074

IPC-E-01-6

RE: Final Report regarding the
Irrigation Service Time-of-Use Pilot Program
Per Order No. 28706

Dear Ms. Jewell:

The Commission's Order No. 28706 approving the Company's Irrigation Service Time-of-Use Pilot Program directed Idaho Power to report to the commission regarding the operation of the program and its results. Enclosed are seven copies of the Company's final report on the two-year Pilot Program. If you have any questions, please feel free to contact me.

Sincerely,

Maggie Brilz
Maggie Brilz

MB:mb
Enclosure

c: Ric Gale



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IDAHO PUBLIC
UTILITIES COMMISSION

IRRIGATION SERVICE TIME-OF-USE PILOT PROGRAM

Final Report

February 4, 2003

Background

On February 21, 2001 Idaho Power Company filed with the Idaho Public Utilities Commission a request to implement a Time-of-Use Pilot Program to allow irrigation customers to take electric service at time-of-use energy rates under Schedule 25, Irrigation Service Optional Time-of-Use Pilot Program. The Pilot Program was one of several steps taken by the Company during the Western Energy Crisis which targeted load reduction. The purpose of the Pilot Program was to provide Idaho Power, the customers of Idaho Power, and the Commission with the information necessary to evaluate the impacts and benefits of time-of-use (TOU) pricing of electric service for irrigation customers.

The major provisions of the Pilot Program, which was approved by the Commission in Order No. 28706, are:

- The irrigation season is defined by fixed dates rather than by meter reading dates and is the time period June 1 through September 30.

Three time-of-use periods are defined during the irrigation season. They are:

Mid-Peak	9:00 am – 1:00 pm
On-Peak	1:00 pm – 9:00 pm
Off-Peak	9:00 pm – 9:00 am

These time periods are utilized throughout each day of the irrigation season, including weekends and holidays.

- The base energy rates for the three time-of-use periods are:

Mid-Peak	2.8416 cents/kWh
On-Peak	4.9728 cents/kWh
Off-Peak	1.4208 cents/kWh

The base energy rate for usage outside of the irrigation season is the same as the out-of-season base energy rate for the Company's standard irrigation service, Schedule 24. The in-season mid-peak base energy rate is the same energy rate as for in-season energy use under the Company's standard irrigation service, Schedule 24.

- Enrollment in the Pilot Program is limited to 300 metered service points.
- The Pilot Program is not available to new participants after October 1, 2002. However, customers enrolled in the Program on that date may voluntarily continue to receive irrigation service under Schedule 25 for their enrolled metered service points until October 1, 2007.

Two-Year Pilot Participation Results

The two-year data gathering period for the Pilot Program has concluded and the Company is reporting to the Commission its information regarding the Program and its results. The Company has reviewed the usage information available for the Pilot Program participants for the 2001 and 2002 irrigation seasons. In addition, the Company has reviewed the market price data for the months of June through September for 2001 and 2002, in order to determine what, if any, impact on purchase power expenses the Pilot Program may have had.

Number of Participants

During the 2001 irrigation season, 180 metered service points were enrolled in the Pilot Program. In August 2001 a letter was sent to each participant explaining that all metered service points currently enrolled in the Pilot Program would automatically continue to be enrolled for the 2002 irrigation season unless the customer specifically requested a service point be removed from the Pilot Program. Of those original 180 metered service points, 21 chose to be removed from the Pilot Program.

Customers that chose to remove service points from the Pilot Program did so for a variety of reasons. However, the primary reasons claimed were because (1) of changes in crops for which irrigating around the time-of-use blocks was not compatible, or (2) the benefits associated with bill impacts of the time-of-use pricing did not warrant the necessary operational changes.

One of the reasons given by the participants for beginning or continuing participation in the Pilot Program was the speculation there could be a wet spring accompanied by a cool summer that would allow taking advantage of scheduling irrigation usage around the most advantageous time-of-use blocks. The Company is aware of approximately 11 participants who made capital investments that improved their utilization of a time-of-use option. However, it is not clear how many of those investments would still have been made even without the Program's inducements. Still others felt they could benefit from TOU rates in a year they would only be irrigating a portion of the land and thereby would not have to operate a pump as they normally would.

During the 2002 irrigation season, 228 metered service points were enrolled in the Pilot Program: 159 carried forward from 2001 plus 69 new enrollments.

Purchase Power Costs

Market energy prices in irrigation year 2000 were extremely high. These high prices continued into the winter of 2000 – 2001. There were some instances when the average MWh monthly Mid-Columbia price was over \$280. The Pilot Program, which was designed during this period of high market prices, was intended to reduce costs to both the Company and its customers. The large variance between on-peak and off-peak market prices during 2000 and early 2001 enabled the Company to cost justify a 50% discount from the standard irrigation rate to encourage customers to shift energy usage to off-peak time periods. In contrast to the

market prices of 2000 and early 2001, the market prices during the 2001 and 2002 irrigation seasons were not as high nor were the variances between on-peak and off-peak prices as great.

	<u>Irrigation Year 2000</u>	<u>Irrigation Year 2001</u>	<u>Irrigation Year 2002</u>	<u>Summer 2003-2007 Forward Mid-C</u>
Average Price (per MWh):				
On-Peak	171.0	52.4	17.7	42.4
Mid-Peak	122.6	44.2	17.2	41.1
Off-Peak	84.2	38.2	12.5	29.9
24-Hr Average	119.5	43.9	15.0	35.9
On/Off Differential	86.8	14.2	5.2	12.5

Looking ahead, the summer 2003-2007 Mid-Columbia forward prices have an estimated on-peak and off-peak average MWh price of \$42.42 and \$29.93, respectively. Therefore, the summer 2003-2007 average prices and differential between average on-peak and off-peak prices are expected to remain relatively low.

Load Shifting

The typical energy usage pattern for all irrigation customers in 1999 and 2000 during the time-of-use time periods established for the Pilot Program was:

On-Peak	34%
Mid-Peak	17%
Off-Peak	49%

Even though the Company has no specific time-of-use information on the Pilot Program participants prior to their participation in the Pilot Program, it is assumed their usage was typical of the irrigation class as a whole. If this assumption is correct, Pilot Program participants did shift their energy usage from the on-peak to the off-peak period during the 2001 and 2002 irrigation seasons. The shift in usage from the on-peak to the off-peak period, however, was less during the second year of the Pilot Program than during the first year of the Pilot Program.

	<u>2001</u>		<u>2002</u>	
	<u>Usage</u>	<u>% Shift</u>	<u>Usage</u>	<u>% Shift</u>
On-Peak	23.0%	(11%)	27.6%	(7%)
Mid-Peak	17.4%	0%	15.8%	(1%)
Off-Peak	59.6%	11%	56.6%	8%

The 2001 irrigation time-of-use total energy usage was 28,295,648 kWh. The 2002 irrigation time-of-use total energy usage was 70,569,448 kWh. If the previous years' usage ratios for the time-of-use periods were applied to the total actual 2001 and 2002 participant usage, it would indicate the following energy shifting tendency:

	2001		2002	
	<u>kWh Allocated By Typical Usage Ratios</u>	<u>Actual TOU kWh</u>	<u>kWh Allocated By Typical Usage Ratios</u>	<u>Actual TOU kWh</u>
On Peak	9,620,520	6,517,456	23,993,612	19,479,929
Mid-Peak	4,810,260	4,912,744	11,996,806	11,124,807
Off-Peak	<u>13,864,868</u>	<u>16,865,448</u>	<u>34,579,030</u>	<u>39,964,712</u>
Total	28,295,648	28,295,648	70,569,448	70,569,448

Purchase Power Cost Savings

For the 2001 irrigation year, purchase power costs for participating Pilot Program customers are estimated to be \$1,272,092 based on hourly market energy prices¹ for June through September 2001. If the Pilot Program participants had maintained their typical usage pattern, the purchase power costs would have been approximately \$1,320,781, again based on the hourly market energy prices for 2001. Therefore shifting energy usage from higher-cost to lower-cost time periods reduced purchase power costs during the 2001 irrigation season by approximately \$48,689.

For the 2002 irrigation year, purchase power costs for participating Pilot Program customers are estimated to be \$965,917 based on hourly market energy prices for June through September 2002. If the Pilot Program participants had maintained their typical usage pattern, the purchase power costs would have been approximately \$991,878. Therefore shifting energy usage from higher-cost to lower-cost time periods reduced purchase power costs during the 2002 irrigation season by approximately \$25,962.

Purchased Power Costs	<u>2001</u>	<u>2002</u>
Typical Usage Pattern	\$1,320,781	\$991,878
Time-of-Use Usage Pattern	<u>1,272,092</u>	<u>965,917</u>
Reduced Purchased Power Costs	\$ 48,689	\$ 25,962

Pilot Program Energy Charges

In 2001, the energy charges for Pilot Program participants during the June through September in-season period were \$703,325. If the Pilot Program customers had been charged the same flat rate as other non-participating irrigation consumers during this same time period, energy charges would have been \$804,049. Shifting energy from the on-peak period to the off-peak period resulted in reduced billings to Pilot Program participants totaling \$100,724. Correspondingly, the Company's revenues were also decreased \$100,724.

¹ Hourly prices were established by using actual Idaho Power Company hourly real-time transaction price data supplemented by Mid C hourly or hlh (heavy load hours)/llh (light load hours) data for hours during which Idaho Power transactions did not take place. The price for each hour of the month was indexed to the monthly average and then the average index for each of the twenty-four hours was computed. A monthly average price in dollars per MWh, weighted by hours of peak and off-peak, was calculated. This single monthly price was then multiplied by the ratio for each hour creating an hourly price curve for each month.

In 2002, the energy charges for Pilot Program participants during the June through September in-season period were \$1,852,639. If the Pilot Program customers had been charged the same flat rate as other non-participating irrigation consumers during this same time period, energy charges would have been \$2,005,301. Shifting energy from the on-peak period to the off-peak period resulted in reduced billings to Pilot Program participants totaling \$152,662. Correspondingly, the Company's revenues were also decreased \$152,662.

Energy Charges	<u>2001</u>	<u>2002</u>
Flat Irrigation Rates	\$804,049	\$2,005,301
Time-of-Use Rates	<u>703,325</u>	<u>1,852,639</u>
Reduced Energy Bills	<u>\$100,724</u>	<u>\$ 152,662</u>

TOU Pilot Program Benefits / (Losses)

The real benefit from time-of-use programs is the reduction in purchase power costs that result when usage is shifted from a higher-price to a lower-price time period. Sustained cost reductions will lead to a reduced revenue requirement and, correspondingly, the cost savings will flow through to the Company's customers. The Commission also anticipated these fundamental TOU benefits when it authorized the Pilot Program in Order No. 28706 which stated, "Creating a time of use service offering results in customers paying for usage at rates that more closely match the cost of providing service."

However, as the data above illustrates, there is a mismatch under the current Program structure between the customers' bill reductions and the corresponding reduction in purchase power costs. The Pilot Program reduced purchase power costs in 2001 and 2002 by approximately \$48,689 and \$25,962, respectively. Therefore it is apparent the customers' bill reductions in 2001 and 2002 of \$100,724 and \$152,662 is clearly linked to the rate design, not the actual cost savings.

Under the current time-of-use rate structure, reduced customer bills have exceeded reduced costs each year. Because of this mismatch, the Company's revenue requirement was not reduced; it became greater.

Individual Customer Impacts

In order to benefit from the Pilot Program, it is necessary for a Customer with a typical irrigation load pattern to shift usage from a higher-price time period to a lower-price time period. Unless a Customer's original usage pattern was already skewed to lower-price time periods and maintained throughout their participation in the Pilot, simply enrolling in the Pilot Program would not guarantee benefits.

Comparing the energy charges the Customers would have paid if they had been billed the Company's regular (non-TOU) irrigation rates, the impacts on the self-selected, voluntary Pilot Program participants were as follows:

	<u>2001</u>		<u>2002</u>	
Negative (TOU kWh Bills Larger)	34	18.9%	66	28.9%
No Impact	1	0.5%	2	0.9%
Positive (TOU kWh Bills Smaller)	145	80.6%	160	70.2%

Among those Customers receiving a positive energy charge benefit, the range of the energy benefits are further subdivided as follows:

	<u>2001</u>		<u>2002</u>	
Less than \$100	32	17.8%	59	25.9%
\$101 - \$500	62	34.4%	53	23.2%
\$501 - \$1000	30	16.7%	23	10.1%
Above \$1000	21	11.7%	25	11.0%

The above analysis is a comparison of the benefits/losses related to TOU energy charges, exclusively. Only two participants appear to have increased their kW demand in order to take advantage of TOU energy pricing. However, if any increased demands or the TOU metering charges were included in the analysis, the financial benefits to Pilot Program participants would be smaller.

Summary

The goal of time-of-use pricing is to reduce overall costs to Idaho Power Company and its customers by shifting usage from higher-cost time periods to lower-cost time periods. While the Company's Irrigation Time-of-Use Pilot Program was successful in shifting some load to lower-cost time periods, the reduction in overall power supply costs was modest.

The current rate design results in reduced customer bills which exceed reduced purchased power costs. Without fundamental changes to the rate design, the principal results of the time-of-use program are:

- Only time-of-use participants have the potential to benefit
- The Company's revenue requirement is increasing since the bill reductions to customers are greater than the reduction in power supply costs
- Future bills to all customers (both participating and non-participating) will increase

In order to align the reduced bill benefits to customers with the reduction in power supply costs such that the Company's overall revenue requirement does not increase, the Company intends to file with the Commission a revision to the pricing under Schedule 25. The proposed pricing will be consistent with expected market prices and will strive to match expected cost reductions with customer bill reduction benefits.

In its Reply Comments in Case No. IPC-E-02-12 (the investigation of time-of-use pricing for Idaho Power residential customers), the Company clearly stated its intent to pursue the implementation of an automated meter reading (AMR) system in the near future. Utilization of

an AMR system enables a much more efficient means for offering time-based pricing than does a standard meter reading system. The Company believes it is reasonable to limit participation in time-of-use pricing for irrigation service to those customers who were enrolled in the Pilot Program as of October 1, 2002 and who choose to continue their participation. Information obtained from customers who choose to continue their participation in time-of-use pricing, particularly with prices that match customer benefits with cost reductions, will be valuable in assessing further steps related to time-of-use pricing. In addition, limiting participation to those metered service points operated by current Pilot Program customers will avoid additional investment in standard time-of-use meters.