

EFFECT OF WATER WITHDRAWALS ON ELECTRIC OPERATIONS AT THE COLORADO RIVER INDIAN RESERVATION

PURPOSE

The purpose of this presentation is to describe the impact of proposed reductions in Colorado River flow on the electric facilities and operations serving the Colorado River Indian Reservation. The reduced river flow would result from increased upstream diversions of water to make a prolonged sale of water by Imperial Irrigation District (IID) to the San Diego County Water Authority (SDCWA).

THE RESERVATION

The Colorado River Indian Reservation (Reservation) straddles the lower Colorado River in Arizona and California. It was created in 1865 and is comprised of some 270,000 acres. The Mohave Indians were the original residents, having occupied the lower reaches of the Colorado River since prehistoric time. Then, before the Reservation was created, members of the Chemchuevi tribe came into the area. More recently, in 1945, members of the Hopi and Navajo tribes moved to the Reservation. Thus, the residents are now comprised of four tribal groups who are joined together under a government known as the Colorado River Indian Tribes (Tribes) with headquarters at Parker, Arizona. The local economy that supports tribal residents is primarily comprised of irrigated farming and water recreation activities.

THE ELECTRIC SYSTEM

Reliable electric service to the reservation began in the late 1930s when a transmission line was built from Parker Dam by the Bureau of Indian Affairs (BIA) to provide construction power for a new diversion dam to be built on the Reservation. The new Headgate Rock Dam was constructed by the BIA in the 1938-1941 period to provide irrigation water to the Reservation, which would allow extensive development of irrigated farmland. The electric supply at that time was provided to the BIA by Bureau of Reclamation (BOR) generation facilities at Parker and Hoover Dams. With the outbreak of the Second World War, some 20,000 Japanese-American internees were moved to three internment camps built within the reservation and a 34.5 KV transmission line was extended some 13 miles into the Reservation to serve the internment camps.

After the internment camps were abandoned in 1945, the electric service was gradually broadened by the BIA to serve growing irrigation, residential and commercial loads on the Reservation. The system was originally conceived to be an adjunct of the expanding BIA-operated irrigation system but residential and commercial loads have become increasingly important. The electric system has been continuously operated by the BIA and was designated to receive federal preference power, first from the Parker-Davis project and later from the Upper Colorado River Storage Project. The system has a pronounced summer peak demand and provides service only within the Reservation.

Under BIA management, the electric system rate revenues are accumulated in a separate Reservation electric trust fund from which all electric operating expenses and improvements are paid. This arrangement eliminates any reliance on appropriated federal funds. A 1993 Interior Department audit determined that some \$9 million of appropriated funds had been used to expand the electric system and these funds were subsequently transferred from the trust fund to repay the Federal Government. That repayment eliminated any federal debt and no other debt is owed by the system.

THE HYDROELECTRIC DEVELOPMENT

As the Reservation electric loads grew, it became necessary to supplement federal preference power so the BIA elected to purchase supplementary energy from the Arizona Public Service Company (APS). However, the supplemental energy came at about eight times the cost of the federal preference energy. The purchase of expensive APS power seemed destined to increase as loads grew, threatening to increase retail rates. This economic threat rejuvenated the idea of building a hydroelectric plant at Headgate Rock Dam. Such a supplementary supply of low-cost electricity for the Reservation would eliminate the expensive purchases from APS. A hydroelectric plant had been envisioned when the Headgate Rock diversion dam was initially designed in the late 1930s.

In January 1977, the Colorado River Tribal Council formally requested federal assistance to develop a Reservation hydroelectric plant at Headgate Rock Dam (the plant is referred to herein as the Headgate plant) to utilize the 15-foot hydraulic head at the dam. In response the BOR prepared a 1980 planning report for the BIA, indicating the feasibility of constructing a 19.5 MW power plant to produce 86.5 million kilowatt-hours of electricity annually for beneficial use on the Reservation. The report indicated substantial benefits from the elimination of expensive APS purchases and predicted the growing reservation load would quickly absorb the plant's output.

After consideration by Congress, initial design funds were provided in federal fiscal year 1985 under authority of the Snyder Act (Act of November 2, 1921, 42 Stat. 208). That Act is designed to provide beneficial services and facilities to Indians. This funding allowed the BOR to begin design and construction of the Headgate plant for subsequent BIA management. The three-unit plant was completed in 1993 at a cost of about \$55 million. The Snyder Act funding of the plant meant no repayment would be required from the Tribes or their Reservation electric trust fund.

The Headgate plant consists of three 6.5 MW turbine generators which produce electricity that can be fed through a nearby substation into the BIA-operated Reservation system and into the Western Area Power Administration (WAPA) 161 KV transmission system. The 1993 commencement of plant operations immediately eliminated the need for costly APS power purchases to serve the Reservation system. The plant is managed by BOR under contract to the BIA.

The Headgate plant operated successfully until October 1998, when an accident occurred that caused extensive flooding and damage to the three turbine generators. Repairs were undertaken under supervision of BOR and the plant was returned to full service in

September 2000. The cost of needed repairs was shared between the plant prime contractor, BOR and BIA. The BIA contribution of about \$4.4 million was taken from the Reservation electric trust fund.

GENERATION OPERATIONS

Overall, the Headgate plant has been a successful addition to Reservation resources. Since it began full operations in mid-1993, the plant has produced more than 500 million kilowatt-hours through the year 2001, as follows:

<u>Year</u>	<u>Net Generation (million KWH)</u>
1994	70.9
1995	76.0
1996	80.9
1997	97.2
1998 (9 months of operations)	84.4
1999 (out of service)	0.0
2000 (3 months of operations)	29.3
2001	<u>80.3</u>
Total	519.0

These results validate the 86.5 million kilowatt-hour annual average production predicted for the plant in the 1980 BOR planning report. And, as noted earlier, these operations allowed the discontinuance of expensive power purchases from APS, another initial objective for the plant. With the introduction of this low-cost electric resource, the electric rates on the Reservation have been stable at about 7.5 cents per kilowatt-hour, significantly lower than the rates charged by surrounding utilities. However, the 1980 prediction that the plant's production would be fully absorbed by Reservation loads did not occur because the electric growth was not as rapid as expected. This has allowed the sale of excess hydroelectric power, some to other Indian reservations, with revenues going to the local Reservation electric trust fund.

The Reservation electric system serves 5,150 metered customers in both Arizona and California. Currently, the Headgate plant provides more than half of the electric energy used by the system's Reservation customers each year, including usage at the time of the summer peak.

TRIBAL BENEFITS FROM THE HEADGATE PLANT

When the Tribes first sought the Headgate plant development, in 1977, it was hoped that the plant could be built quickly and would provide immediate and lasting benefits to the Tribes. Although it took 16 years to realize, the Tribes immediately began to enjoy the energy resource they have waited for and expect those benefits to continue indefinitely.

In summary, the plant provides a local generation resource that can assist Reservation electric reliability, it helps keep the electric rates at a reasonable level, it provides some employment for local members of the Tribes, it allows additional manned security for the diversion dam, it provides energy to other reservations and local consumers, it has not imposed a repayment burden on Reservation ratepayers and it helps maintain the Reservation electric trust fund with wholesale revenues.

The plant provides intangible benefits also. It is a modern energy plant that is a source of pride to members of the Tribes, unmatched on any Indian reservation in the Southwest. It has educational value, as well, offering young tribal members a chance to see firsthand how electricity is produced with computer-controlled turbine generators and fed into a modern electric system and transmission grid.

For the future, the Tribes look forward to continued growth of electric usage in and around their Reservation. The Lower Colorado River basin in Arizona, California and Nevada has expanded rapidly in the last 50 years. Increased water recreation, gambling, and retirement community development, accompanied by major highway improvements, have vastly supplemented the original scattered agricultural economy along the river. The Tribes are no longer in a backwater community and they recognize their destiny is interwoven with the growing enterprises that surround them. They look forward to involvement in Reservation ventures and organizations that will require more and more electric energy, eventually requiring expansion of the system and generation facilities they beneficially own. Thus, the Headgate plant is a good forward step, but is far from the end of the Tribes electric involvement. Indeed, the Tribes are considering the possibility of replacing the BIA management of the electric system and hydroelectric plant with a tribal utility organization. Such tribal management has already been introduced at the two other Indian reservations where BIA has operated irrigation-related electric systems.

PROPOSED REDUCTION IN WATER FLOW

The impact of the proposed sale of water by IID to SDCWA is appraised in an Environmental Impact Statement (EIS) sponsored by BOR. An initial draft of the EIS has been furnished to the Tribes, which indicates a reduction in the hydroelectric generation at the Headgate plant. The EIS draft assumes that for every acre-foot of water withdrawn from the flow at the Headgate plant, the electric generation will be reduced by 12.97 kilowatt hours. This assumption is based on data accumulated by BOR. The EIS notice published in the Federal Register on March 9, 2001 also estimates that a future withdrawal of 400,000 acre-feet annually will result from the proposed sale. This indicates a possible loss of electrical generation at the Headgate plant of about 5,200,000 kilowatt-hours annually (12.97 X 400,000).

The Tribes have not examined the BOR data and assumptions in detail but certainly agree that a significant reduction of electric generation would occur. If the Headgate plant can produce an average of about 86.5 million kilowatt-hours as was intended when the plant

was built, a loss of 5.2 million kilowatt-hours is an average reduction of six percent of the plant's expected annual output of electricity.

The draft EIS recognizes the difficulty of predicting market values of electricity and thus attempted to state the value of this lost generation in a range from 4 cents per kilowatt-hour to 6.9 cents per kilowatt-hour. Assuming the lower of these values, the lost generation at the Headgate plant would be worth about \$200,000 per year (5.2 million kwh x \$.04). Over the many decades that this sale could occur, the indicated monetary value of the loss to the Tribes is clearly substantial.

Aside from dollar valuations, it is important to appraise the impact of reduced generation in terms of the loss of the electric energy resource, especially at the time of the summer electric peak on the Reservation. The draft EIS does not consider the effect on Reservation electric supply at the time of the summer peak nor how summer peak energy might be valued in dollars.

No reduction in electric production costs is expected at the Headgate plant as a result of the lessened water flow. All three units will continue to be operated, controlled and maintained as before.

TENTATIVE APPRAISAL OF DRAFT EIS

It is obvious that if the IID-SDCWA transaction occurs, an adverse impact will occur, in that the Tribes will lose a part of the valuable hydroelectric resource that they worked so long to achieve. The Tribes monitored the Congressional authorization closely and are convinced that Congress clearly wanted the Tribes to be guaranteed 86.5 million kilowatt-hours of hydroelectric energy annually. The draft EIS does not identify any Congressional deliberations indicating that Congress expected that the annual 86.5 million KWH electric resource would be diminished by six percent in less than 10 years.

Of interest, too, the draft EIS indicates that the IID-SDCWA transaction will cause a loss of electric generation to which the Metropolitan Water District of Southern California (MWD) is entitled at Parker Dam. The draft EIS does not indicate that MWD has waived compensation for this loss or whether the loss is compensated for in water transfer charges that MWD would receive from IID and/or SDCWA.

At this point, it appears that the principal parties, IID and SDCWA, should negotiate some sort of offsetting compensation with the Tribes. At a minimum, there should be prompt assurance that the Tribes' loss of generation will be compensated for in some mutually acceptable way. Further, if the Tribes need to hire engineers, accountants or attorneys to successfully conclude such negotiations, the cost of these services should be borne by IID and SDCWA.

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