



Developing Utility Ability

Dispensing the Value of Tribal Energy Resources to the Tribal Community

March 13 & 14, 2006
Avi Resort & Casino
Laughlin, Nevada



Hosted by
Aha Macav Power Service (AMPS)
Tribal Utility
Mohave Valley, Arizona

Supporting Agency
US Department of Interior
Assistant Secretary, Indian Affairs Office of Indian
Energy Resource Developing

Sponsored by
Fort Mojave Indian Tribe (FMIT)
Distributed Generation Systems, Inc. (DISGEN)
Caterpillar Power Systems, North America



Reported by
Council of Energy Resource Tribes (CERT)



Table of Contents

Executive Summary.....3

MARCH 13, 2006

CONFERENCE OPENING CEREMONIES4

WHAT IS A TRIBAL UTILITY OR ANY ELECTRIC UTILITY?
 Bill Cyr, General Manager, AMPS4

Technical Aspects & Terms Every Tribe Must Become Familiar with to Own and Operate Electric Utility
Krista Gordon, Power Engineering Manager, Disgen.....5

DEVELOPING TRIBAL UTILITIES FUNDING SOURCES
Carolyn Stewart, Red Mountain Energy Partners.....6

FOUNDATION, FORMATION AND CONTINUED OPERATION
Bill Cyr, General Manager, Aha Macav Power Systems.....6

LUNCHEON: VISION FOR TRIBAL ENERGY SUFFICIENCY
Roger Fragua, Council of Energy Resource Tribes7

UTILITY FAIR
Aha Macav Power Services Administration and Staff.....8

Tribal Utility Ability: Converting Resources to Revenue. Opportunities, Technology, Operations, Alliances
Dale Osborn, Bill McCabe, Disgen.....9

Calpine Tour: South Point Energy Center
Jim Doherty, General Manager, Calpine9

Maximizing Tribal Resource Benefit
Dale Osborn, President, Distributed Generation Systems, Inc.10

MARCH 14, 2006

CATERPILLAR, TRIBAL POWER SOLUTIONS
Nick Kelsch, Caterpillar11

Community Scale Utility Operations & Management
 Optimization of a Community Scale Utility - Aha Macav Power Service
Rob Webster, Webster Ventures, Inc.12

Office of Energy and Economic Development, Department of the Interior
Roger Knight, Petroleum Engineer12

TRIBAL UTILITY EXPERIENCE
Larry Ahasteen, Navajo Tribal Utility Authority.....13

TOHONO O’ODHAM UTILITY AUTHORITY
Charles Wiese, General Manager, Tohono O’Odham Utility Authority13

Community Scale Utility Operations and Management Efficiency
Craig Broussard, GM, Heber Light & Power
Rob Webster, Webster Ventures, Inc.14

LUNCHEON: TRIBAL SOVEREIGNTY AND ENERGY SELF-SUFFICIENCY
Tex Hall, Chairman, Three Affiliated Tribes..... 15

Tribal Transmission Access-Federal Hydro Power Allocations
Tony Montoya, Western Area Power Administration..... 15

Utility Fair and Product Demonstration
Caterpillar 16

Evaluation Survey Results 17

List of Attendees 23





EXECUTIVE SUMMARY

The Fort Mojave Indian Tribe hosted Tribes from all across Indian Country to convene a technical conference on the formation of Tribal utilities. The setting was appropriate since the Fort Mojave Tribe provides an excellent example of the formation, operation and administration of a Tribal utility, Aha Macav Power Service. The vision of the Tribal Council to develop a Tribal utility has served the energy needs of their community by addressing both population growth and infrastructure development. The FMIT invited Tribes, government, and industry to discuss Tribal energy sufficiency in a two-day conference that helped break down the complex components of utility formation. Conference topics ranged from the basics of utility formation to more sophisticated energy management technologies.

Nora Mc Dowell, Tribal Chair, and traditional elders welcomed nearly 100 Tribal, industry, and governmental attendees to the Fort Mojave Tribal lands and facilities; Twenty-five Tribes were represented. Bill Cyr, General Manager of Aha Macav Power Systems, illustrated the essential steps of utility formation with the Fort Mojave Indian Tribe example. This was followed by other presentations that introduced more technical information on utility governance, funding sources, and energy generation systems. The attendees gained knowledge and understanding from a thoughtful and well-planned agenda, allowing ample time for discussions and networking between attendees and presenters.

Tribes benefited from presentations on a broad range of subjects from Tribal energy visioning to energy as a means to exercising Tribal sovereignty and jurisdiction. A number of more technical presentations on the *how-to* of Tribal utility formation and energy management were offered along with three informative field tours. The three tours included a visit to the AMPS warehouses, Calpine's South Point Energy Center, and a demonstration by Caterpillar and their modular unit for distributed generation.

Developing Utility Ability: Dispensing the Value of Tribal energy Resources to the Tribal Community delivered as promised. The conference provided Tribal representatives an opportunity to learn about the intricacies of operating a Tribal utility first hand from seasoned practitioners and managers. The conference offered both general and detailed information and ample opportunities for information exchanges in formal sessions and informal social settings. The event concluded with an open invitation to meet again in the near future for a series of higher level discussions and presentations on Tribal utility formation.

In order for Tribes to achieve their own visions of energy sufficiency they must strike a balance of building internal capacity, business relations for partnerships and policy advocacy at the local, state and national levels. Conferences like *Developing Utility Ability* offer Tribes opportunities to work toward success. They also provide a unique forum for Tribe to Tribe discussions, and networking toward potential partnerships.

The conference was financially supported by the Department of the Interior's newly created Office of Energy and Economic Development. This conference was also supported by technical presentations from Tribes, government, and industry.





March 13, 2006

CONFERENCE OPENING CEREMONIES



Bill Cyr, General Manager, Aha Macav Power Service, welcomed attendees to the conference after an early breakfast. A veterans group provided the conference with a Color Guard and posted the American and Tribal flags, after which another group added the California, Nevada and Arizona flags. As with most Tribal events and gatherings, the welcome and posting of the Colors was followed by a traditional blessing by a Tribal elder, Delphina, and traditional song and dance by community members from the Fort Mojave Indian Tribe.



Chairwoman Nora Mc Dowell welcomed the attendees to the traditional homelands and to meet with the more than 1,100 Tribal members on their reservation that spans into Arizona, California, and Nevada. The Chairwoman introduced the Tribe from both historic and contemporary times. The Tribal members and Spirit Mountain, the place of the Aha Macav people’s origin, were introduced through a video that portrayed the Tribe’s environment, culture, language, and vision for their future. The sponsors, DOI, DOE, Disgen, Caterpillar and others were also recognized.



Jack Stevens, Chief of Economic Development, DOI Office of Indian Energy and Economic Development, spoke of the importance of Tribal sovereignty and how widely it is misunderstood. A U. S. Supreme Court case relating to the Cherokee Trail of Tears and Justice Marshall’s opinion of Tribal sovereignty was outlined to underscore the fact that Tribes are in fact, *Sovereigns*. Mr. Stevens used history to bring the attendees to more contemporary affronts to Tribal sovereignty in the development of Tribal energy and economic development. Mr. Stevens suggests that the conference title and Tribal sovereignty are aligned.



WHAT IS A TRIBAL UTILITY OR ANY ELECTRIC UTILITY?

William Cyr, General Manager, Aha Macav Power Systems

The purpose of Bill Cyr’s presentation was to provide an overview and to describe the base elements of a utility. Mr. Cyr emphasized that to create an electric utility is to engage in a complex and amazing affair. Fifteen years ago FMIT began creating and building a utility from absolutely nothing to become a successful and growing





energy service provider. The main goal for the FMIT in sponsoring this utility conference is for the Tribe to illustrate the benefits and challenges of owning a Tribal utility. In hosting the conference, AMPS wanted to share the lessons they have learned with Tribal leaders and Tribal utility managers. Mr. Cyr described the basic components and elements in creating an electric utility. The basics include the invaluable employees, safety awareness, transmission, distribution, customer utilization level, power supply/generation, customer service, rolling stock, general stock, and information technology. The importance of a utility's employees is demonstrated by the specific roles they play in supporting a well-run business. The line workers, engineers, technicians, accountants, and resource schedulers are a few examples of key employees essential to a utility.

Mr. Cyr also explained some important concepts and terms in setting up and running an electric utility. For example, *transmission voltage level* is a term used to describe the equipment and system used to distribute the power received from a remote location to the point where it will be used, while *distribution voltage level* refers to the equipment and system used to distribute power received from the transmission system to the end customer. *Rolling and general stocks* are the physical large and small equipments necessary to build a utility and to carry out day-to-day activities. *Information technology* is also essential component that includes hardware and software to read meters and maintain the utility business. According to Mr. Cyr, "Electric utilities, as an industry, are the largest users of information system technology in the world today."

Mr. Cyr recognizes the wisdom of Tribal leaders at Fort Mojave to see the importance of forming a utility and also to have the patience and expertise necessary for its long term success. Their wisdom translated into planning and building the infrastructure necessary for future growth.

The Technical Aspects and Terms Every Tribe Must Become Familiar with to Own and Operate an Electric Utility

Krista Gordon, Power Engineering Manager, Disgen

Krista Gordon's presentation covered basic electricity terms, fundamentals of transmission and distribution, electric rates, and utility efficiency. Terms important to understand in an electric utility include Volt, Amp, Watt, Ohm (unit of resistance), Horsepower, Hertz (unit of frequency), and Kilo Watt Hour (reflects energy used). According to Ms. Gordon, before a Tribe establishes an electric utility, it must know how much energy customers will use. To do this look at the number of homes and their potential uses, and survey businesses and facility customers for their potential needs.



Distribution is the line system that will deliver power. Typical voltages for distribution are 12.47kV, 24.9kV, 34.5kV, and 41.6kV while typical transmission voltages are 69kV, 115kV, 138kV, 161kV, 230kV, or 345kV. Utility rate structures depend and vary by residential, commercial, industrial, and irrigation customers. A utility sets its rates by





assessing all set up and operating costs. Sources of system inefficiency include undersized conductors, phase imbalances, excessive reactive power consumption, harmonics and lack of voltage control.

DEVELOPING TRIBAL UTILITIES FUNDING SOURCES

Carolyn Stewart, Red Mountain Energy Partners

Carolyn Stewart covered utility formation steps, typical utility formation funding, and grant funding sources in her presentation. The steps in utility formation, addressing capacity building, include: 1) *feasibility studies*, 2) *outreach/education*, 3) *human resources*, 4) *formation, funding sources*, 5) *operations*, and 5) *performance*. At each one of these seven steps, specific and detailed tasks are recommended and described by Ms. Stewart.



For example, under the feasibility studies step, situation, load and system assessments should be conducted. The outreach and education step involves the community to be served where early public participation and regulatory support are essential to project success. Advancing to the next step, Ms. Stewart describes how recruitment and training are important elements for human resources objectives.

Funding sources for the utility should consider grant acquisition, financial forecasts, system financing, rate development, and cost of service studies. Critical to capacity building under operations include costs associated from setting up the office to improving existing systems, while performance includes improving the process and networking.

What agencies and programs may provide funding sources for each of the described steps above? The Department of Energy provides competitive First Steps and Renewable Energy Feasibility grants. Other funding sources include very competitive grants from DOI, ANA Social and Economic Development program, EPA, or HUD. A Tribe should consider all potential sources of Tribal funding, capacity, and capabilities.

FOUNDATION, FORMATION AND CONTINUED OPERATION

Bill Cyr, General Manager, Aha Macav Power Systems

Bill Cyr, General Manager of Aha Macav Power Service, delivered a presentation that gave insight to the Fort Mojave people, and the impetus for the development of AMPS. The Tribal vision for self-sufficiency, self-determination, and Tribal sovereignty of the Fort Mojave Indian community was the impetus for the development of AMPS. The other infrastructures, roads, water, wastewater, bridge, fire and police protection are also important and key services for the future Tribal development.



The “checker boarded” nature of the current Tribal lands creates unique challenges for AMPS from both the physical logistics and the political arenas. The severe climate that





the Fort Mojave Tribe is a challenge considered in future plans and endeavors. The AMPS service territory includes both Tribal and non-Tribal customers through a series of transmission, distribution, and substation infrastructures. AMPS currently employs ten Indian and non-Indian individuals.

The Fort Mojave Indian Tribe Value Proposition (Steps to Sovereignty) slide was key to outlining the Tribal economic development ventures, enterprises and activities ranging from utilities, entertainment, agriculture, real estate and a sundry of basic services. The presentation covered the governance and policy structure of AMPS as well as the finance, legal and technical issues that are dealt with by the administration of AMPS. Mr. Cyr introduced the new plans for a consortium and projects under consideration by the FMIT. The presentation concluded with Mr. Cyr underscoring the importance of qualified staff with positive attitudes and focus on safety as keys for a successful Tribal utility.

Currently AMPS has one 28 MVA and one 3.750 MVA substations. The transmission system is 30+ miles of 69 KV with 15 miles of 24 KV distribution, serving 850 Tribal and non-Tribal customers.

Additional utility issues brought up by the audience included rights-of-way and their valuations, continuity of service, grid connection, and demand load. AMPS experience provides some valuable lessons for other Tribes: owners of non-Tribal poles located on Tribal lands could not provide legal proof of their authority; AMPS backup system proved to be necessary in a power emergency; and the utility must plan ahead for rapid growth of demand.

LUNCHEON: VISION FOR TRIBAL ENERGY SUFFICIENCY

Roger Fragua, Council of Energy Resource Tribes

Roger Fragua delivered a brief talk on the Vision for Tribal Self-Sufficiency through a series of examples demonstrating the Indian Energy Movement. Mr. Fragua began by acknowledging the leadership of the Fort Mojave Indian Tribe for hosting the 1999 National Tribal Energy Vision strategy session which gave genesis to the Inter-Tribal Energy Network or ITEN. The National Tribal Energy Vision, simply stated, is that *by 2010 every Tribe should have access to affordable and reliable sources of electricity for community and economic development.*

To achieve the Vision, Tribal leadership envisioned accessing federally discounted hydro-power contracts, developing new generation projects with emphasis on renewable energy resources and implementing strict energy efficiency measures as a means to Tribal energy sufficiency. The talk represented Tribes as communities and their respective leaders as visionary in nature, and view their current and future through a different prism of cultural and spiritual realities.

Mr. Fragua provided a historical recounting of the Council of Energy Resource Tribes and the current policy issues that Tribes are working to implement. The industry challenge to Tribal sovereignty on rights-of-way is a contemporary issue that Tribes are working to resolve. Tribes as “developers” of their own energy plans and projects is





gaining momentum and a cadre of young Indian professionals will be needed to assure the development will continue on Tribal terms. Mr. Fragua concluded with a challenge to Tribes, government, and Industry to bring young Indians into the movement.

UTILITY FAIR

Aha Macav Power Services Administration and Staff

The conference attendees traveled by bus to the Aha Macav Power Services yards and buildings for a tour of the AMPS facilities. It was an opportunity to meet with AMPS field personnel for hands-on demonstrations. The tour gave small groups opportunities for Q & A sessions with the practitioners and to learn about the various types of equipment necessary for operating a Tribal utility.

The AMPS staff provided excellent demonstrations of their skills and knowledge of the rolling and general stocks described by Bill Cyr, General Manger of AMPS in an earlier presentation. The bucket trucks, an example of the utility's rolling stock, reached approximately 75 feet, gave a few brave attendees a good view of surrounding areas. Other tools and equipment explained and demonstrated included regulators, meters, wires used for transmission and distribution, and derricks.

While some technology demonstrated AMPS high level of sophistication in data collection and their daily operation, other stock review emphasized safety awareness in all their work.





Tribal Utility Ability: Converting Resources to Revenue. Opportunities, Technology, Operations and Alliances

Dale Osborn, Bill McCabe, Disgen

Dale Osborn delivered a brief introduction on Disgen and invited Tribal representatives to inquire about project development and operations. Mr. Osborn began by presenting a comprehensive outline of the Rosebud Sioux Tribal energy wind project. The presentation outlined the governance, technical, and financial structures behind the 750 KW Alex “Little Soldier” Lunderman wind turbine project. The presentation included green tag marketing, energy sales, and the importance of renewable energy credits. There are two revenue streams: energy sales and credit sales.



Communication with Tribal leadership and communities is paramount for successful projects; inviting membership into the project, disclosing financial details and sharing ideas on who does what by when are essential. Mr. Osborn explained that the Rosebud wind project did not cost the Tribe any capital outlay. The presentation outlined photos of the construction phases of the project.

The next wind project at Rosebud, the 30MW Owl Feather War Bonnet, is scheduled for construction in 2007. This project is funded by DOE/DOI and cost shared with industry partners, with a total project price tag of \$50 million. Mr. Osborn explained that the economic benefits to the Tribe from War Bonnet will vary from \$13 to \$20 million depending on how the Rosebud Tribe wants to finance the project.



The presentation outlined the importance of getting familiar with Tribal environmental permitting, NEPA specifically. Rosebud is not expected to put up money with a third party owning the project initially, due to tax credit financing. The U.S. government is also expected to provide long-term debt financing. The presentation concluded with a series of suggested questions that Tribes might ask perspective developers to gain more detailed information before making decisions.

Calpine Tour: South Point Energy Center

Jim Doherty, General Manager, Calpine



The attendees toured the South Point Energy Center, a 540MW Merchant Power Facility, located on the Fort Mojave Indian Reservation. Calpine leases Tribal lands and uses Tribal water for this operation. The tour was an opportunity for attendees to inquire about the operations, maintenance and management of a full-scale gas fired power plant. Basics of the plant include two cooling





towers and an emission monitoring system that monitors and controls NOX and CO2 emissions.

The tour guides for small groups were seasoned engineers and managers, who generously offered their time to show and respond to basic and complex questions. The tour was well attended and well received by conference attendees.



RECEPTION AND DINNER

Maximizing Tribal Resource Benefit

Dale Osborn, President, Distributed Generation Systems, Inc.

A warm reception for networking for all attendees preceded the dinner. The dinner presentation was by Dale Osborn, President of Distributed Generation. Mr. Osborn presented a comprehensive outline of the Rosebud Sioux Tribe's completed and future wind projects through a PowerPoint presentation. The presentation outlined the governance, technical and financial structures of the first 750KW wind energy project. The presentation included green tag marketing, energy sales and the importance of renewable energy credits. There are two revenue streams: energy sales and credit sales.

Once again, Mr. Osborn reiterated that communication with Tribal leadership and communities is paramount for successful projects. The project did not cost the Tribe any outlay of cash. The presentation outlined photos of the construction phases of the first 750KW project. The next project, Owl Feather War Bonnet, 30MW, scheduled for 2007, funded by DOE/DOI and cost shared with industry partners, with a total cost of \$50 million. The presentation was a variation on the theme delivered earlier in the day.





March 14, 2006

CATERPILLAR, TRIBAL POWER SOLUTIONS

Nick Kelsch, Caterpillar



Nick Kelsch presented solutions to Tribal energy sufficiency with Caterpillar power generation technologies. Caterpillar's annual revenue is approximately \$36 billion where Power Systems (one of three principal businesses) makes up a big portion of Caterpillar's income. The strength of the company lies in an established worldwide network of partnerships. In comparison with other similar companies, Caterpillar provides similar amounts of energy generating capacity but in a compact package.

The standard package of the Gensets includes an engine, generator, base, cooling system, and a digital control panel. The CAT electronic engine controls offer improved durability and reliability, 30% better exhaust emission and 10-15% better fuel economy. Mr. Kelsch also explains some of the general components and functions of an operating system. The diesel engine fuel systems offer fuel storage options while also addressing fuel contaminants in storage. The gas engine fuel systems require adequate fuel pressure and a sufficient fuel source. The best fuel options depend on emission, cost, and use issues.

There are different voltages available for distribution (13,800V), commercial (208-480V), or private home use (120V). The complete enclosed utility is compact, self contained, and factory-assembled. The digital parallel switchgear offers monitoring and control of the whole system. The CAT network also provides rental of mobile source of power, offering varied voltages for varied uses.

Some of the many challenges to utility management include accurately forecasting energy needs, assuring power quality, dealing with increased energy costs, addressing peak capacity, and improving capital utilization. One solution CAT offers to Tribes is *Distributed Generation*: a stand-alone use of small Power Generation Units (up to 50MW) located close to the load center, by the Tribes in applications that benefit the Tribe, the electric system, or both. Distributed Generation offers greater efficiency when compared to a traditional coal-fired power plants. It also improves power reliability, reduces energy costs, improves and reinforces grid reliability, and adds peak KW capacity. The benefits of a Reciprocating Gensets are low capital costs, quick delivery and installations, offering fuel flexibility. Mr. Kelsch adds that Caterpillar offers a mature and proven technology.

Co-generation is combined heat and power and offers on site power with heat recovery, increased efficiency of energy utilization, and low life cycle costs. Examples of Gensets are located at Morongo Resort Casino and Spa, Temple University peak shaving facility, and a municipal power plant in Trinidad, Colorado.





Community Scale Utility Operations & Management Optimization of a Community Scale Utility - Aha Macav Power Service

Rob Webster, Webster Ventures, Inc.



Rob Webster delivered a presentation that began with an introduction to an informal alliance with Disgen, Webster Ventures, and Aha Macav Power Service. The technical presentation was centered on Aha Macav Power Service. The basis for managing a Tribal utility is good solid analytical work, data, and framework. The analytical data is used for modeling business growth and reacting to trends. The analytical information is valuable for utility operation and

business planning.

Phase I of the AMPS business model is forecasting the energy loads of the service territory in a five year load growth model. The newly added Tribal Event Center will add additional demand on the AMPS utility and with the analytical work the loads can be factored into the growth planning. The presentation included comparisons of the last five years of historical growth. The “Fort Mojave Challenge” was presented in a snow cap peak chart to demonstrate the various load characteristics, pricing, and shaping. The presentations covered in great detail the Tribal utilities loads and requirements. The presentation covered utility planning and attempted to answer the question, “How do we meet the load?” The answer can be found in planning and utilizing historical trend data. Load factors and variances between times of day and seasons of the year constitute the shape (peaks and valleys) and price of the load. The presentation covered peak and baseload generation applications.

Office of Energy and Economic Development, Department of the Interior

Roger Knight, Petroleum Engineer

Roger Knight provided a brief introduction and overview of the DOI’s various technical, funding, and outreach programs that the department has initiated, including engineering and biology. The department is working with Tribal renewable energy programs, sand and gravel, oil and gas, minerals, seismic and database assistance, IMDA technical reviews, and a sundry of other services. Mr. Knight encouraged Tribes to meet with the DOI personnel to determine how the department may provide assistance in Indian energy development.





TRIBAL UTILITY EXPERIENCE

Larry Ahasteen, Navajo Tribal Utility Authority



The Presentation began with a video that introduced conference participants to the Navajo Tribal Utility Authority, NTUA, through a historical accounting of the longest operating Tribal utility. The video presentation was very comprehensive in nature outlining the service territories, programs and business structures. The utility has five different service territories and provides reliable and affordable service to their customers. The video was

followed an introduction of “Vinnie”, a new employee and a presentation. The presentation outlined the governance structures of NTUA, customer base, and delineation of services: electricity, water, wastewater, natural gas, and solar power (PV).

The Navajo Nation estimates that 18,000 of the 48,000 Tribal homes are without electricity, yet they host major power plants that serve off-reservation communities. NTUA serves close to 38,000 customers with 703 GWH of power through more than 7,000 miles of distribution lines. On the natural gas side, NTUA serves 7,500 customers through 600 miles of pipelines. NTUA waste waste-water serves close to 35,000 customers with 236 water wells and 5,474 miles of pipelines. The NTUA solar and wind programs are working toward energy sufficiency with off-grid customers and is enjoying some success. The successes are collaboration between and amongst the Tribe, government, and industry. NTUA has plans to expand their business, service territories and services.

TOHONO O’ODHAM UTILITY AUTHORITY

Charles Wiese, General Manager, Tohono O’Odham Utility Authority



The Tohono O’odham Nation covers of 4,479 square miles, with an approximate population between 12,000 to 14,000 people in over 70 villages. The Utility Authority was established in 1970 by the Tribal Council and began operating in 1974. They acquired a telephone system from Qwest in 1987, and became an interested service provider in 1996. They partnered with Cellular One in 1997 and began providing propane service in 1987.

The utility structure is made up of a Tribal enterprise with a board of directors, consisting of at least four members with significant management experience in the utility industry and at least three Tribal members. The General Manager reports to the Board. The Tribe got into the electric business because many villages had no power, and service extensions from the cooperative were very expensive. Thus, extending power to the small communities was not economically feasible or practical for the cooperative.





The Utility Authority also got into the water business because the BIA and IHS did not want to operate the systems. Today the utility, made up of 100 employees, provides electricity to 95% of the homes, and water service to 3,200 customers. Over 75% of the homes now have telephone service and over 1,100 make up the Authority's propane customer base. Some of the challenges they face are sparse population, high maintenance customers, environmental restrictions and permitting, and higher expectations for service. The Authority maintains and upgrades their services, searches for new areas to service, and provides regular training to staff members. Financial resources are derived from Rural Utility Service, national rural cooperative, finance cooperative, unique security arrangements, and grants.

Community Scale Utility Operations and Management Efficiency

Craig Broussard, GM, Heber Light & Power

Rob Webster, Webster Ventures, Inc.



Craig Broussard, General Manager for Heber Light and Power provided some background and experience of the utility. The Heber Light and Power case study presentation discussed the experiences of a small utility located in the Rocky Mountains. Small scale utilities are one of the fastest growing economic sectors in the West. A case study was commenced to demonstrate the use of Distributed Generation in a small scale utility application.

The study began in 2001 and concluded in winter of 2005-2006 and demonstrated the use of Distributed Generation to provide competitively priced electric power during peak load periods and increased system reliability for customers. The small utility weathered the energy crisis due to self-generation; in fact, they marketed generation for profit and created revenue for the utility. The utility has been very successful in power marketing and most company revenue is created through power marketing sales on a small-scale basis. The presentation encouraged Tribal leadership to consider whole sale power contracting and self-generation.

Rob Webster, Webster Ventures, presented information on the whole sale resource purchases with Heber Light and Power. A comparison between Heber and Fort Mojave loads was used for the presentation. The process began with an assessment of current contracts that are in place. The assessment includes contract terms, price, and opportunities for changing contracts for enhancing opportunities. The next step assessed on-site generation opportunities to include total capacity, efficiencies, load structures, environmental constraints, and other issues.



A transmission study is helpful in determining the options for change. The hourly resource options helped to develop annual load shapes, requirements for seasonal peaks





and predicting load growth patterns. Resource Stack was explained in detail and delineated resources available matched with capacity required and analyzed with a daily load shape comparisons. In conclusion, the presentation emphasized that for Tribes considering the development of a small utility in the spirit of energy independence, might consider procuring experienced management, training young people, and focus on safety.

LUNCHEON: TRIBAL SOVEREIGNTY AND ENERGY SELF-SUFFICIENCY

Tex Hall, Chairman, Three Affiliated Tribes

The keynote luncheon presentation began with a personal story and introduction to Chairman Hall and how his father would end stories with, “*that’s just the way it is, son*”. The presentation was centered on that moral to the story and intertwined Tribal governance, policy and jurisdiction with a call to activism and a continued protection of Tribal trust responsibility by the federal government.



Tribal Transmission Access-Federal Hydro Power Allocations

Tony Montoya, Western Area Power Administration



Mr. Montoya introduced the Western Area Power Administration, WAPA, a federal power marketing administration, covering 17 states, 17,000 miles of transmission lines, and 10,000MW of generation that serves 600 customers. The presentation also covered in greater detail power marketing under the Reclamation Act of 1939.

The Desert Southwest Region was highlighted in the presentation and specifically the Parker-Davis Project, Parker and Davis dams, serving 70 municipalities, with 3,100 miles of transmission and 40 substations. The Colorado River Basin was also highlighted along with the various projects along the Basin. The Colorado River Storage Project, Boulder Canyon Dam and the Parker-Davis Project were explained in greater detail for Tribal applications for power allocations for 20 year contracts.

The allocation process is on a 20 year schedule and the presenter encouraged Tribal participation in the contracting process. The power is marketed on a project specific basis, starting five years prior to expiration of current contracts and terms are specific to the project. Transmission in general was covered in the presentation since transmission is becoming increasingly more interesting to Tribal representatives.

The transmission system is akin to the U.S. highway Interstate system and WAPA is a significant owner and operator of the transmission system. OASIS tracking system was introduced to the Tribal representatives as a tool to procure transmission capacity. Historically, WAPA offered on a first-come-first-serve basis at cost to interconnect to the





system. In 1992, FERC Order 888 modified the power act to increase open access, reciprocity and implications for Tribal customers. Interconnect contracts were discussed through a question and answer session. The rules that apply to interconnection are highly technical, expensive, and time intensive. Questions from the attendees about the trust responsibility and the contracting process were answered and discussed. The presentation concluded with a statement that open access is important but complicated.

Utility Fair and Product Demonstration

Caterpillar presented an overview of pieces of their equipment and products.



ICOUP Presentation

Bob Gough, Secretary, Inter-Tribal Council on Utility Policy

Bob Gough provided a brief statement and announcements on Tribal wind development. Mr. Gough reviewed the historical setting when WAPA contracted for the Great Plains Tribes. This is the basis for the development of ICOUP and a spring board for inclusion of other Indian renewable resource development. The WAPA grid is the first national renewable energy grid system, since the resource was hydropower. Today, hydro encompasses only 20% of the power, taken over by coal and gas resources. The announcements covered wind conferences, Wind Energy Assessment Training, WEATS, during second week of August.

Conference Closing

Bill McCabe, Partner, Distributed Generation

Mr. McCabe expressed appreciation of the Fort Mojave Indian Tribe, Aha Macav Power Service, Avi Casino and the attendees for their participation in the first Developing Utility Ability conference.

Retire of the Colors



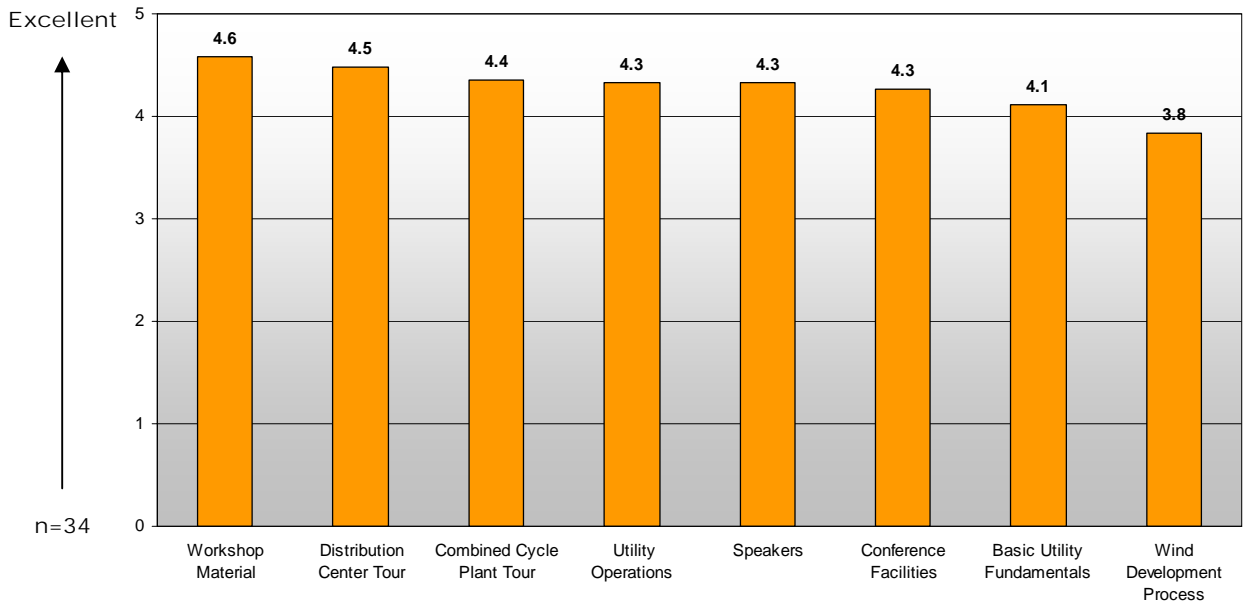


Evaluation Survey Results

Survey results from the *Developing Utility Ability* conference indicated high average ratings for all of the eight specified categories. All categories except for *Wind Development Process* (3.8) received an average score greater than 4 on a 5-point rating scale.

Respondent comments from the survey further indicate the information presented at the conference were useful to attendees. Attendees appreciated the Tribe-to-Tribe information sharing and would like to see similar conferences in the future.

Thirty-four out of 72 attendees (47% response rate) responded to the survey.





Comments from Evaluation Survey

Q1: What piece of information would you take back to your Tribe that you think is critical for developing your own utility.

- 02 Use/reinforce strategic planning
- 03 Basically everything that I have came across here and to be invited back here again
- 04 Rob's power piece
- 05 We are a potential vendor.
- 06 Sustainability concept
- 07 Need to evaluate current resources and project return needs prior to development.
- 08 Power contracts seem to be very critical.
- 10 Capacity, go outside if needed
- 11 The idea that it can be done!
- 12 Inform Tribal Council the opportunities and long term outlook of the positives in owning own utilities. Great future for generations to come.
- 13 The amps example of doing
- 14 The utility fair tour to gain some idea of the cost and massive experience needed.
- 15 Wind energy project to be completed. Self-sufficiency is what it's going to take for Indians to be independent.
- 16 Survey is and #'s need more
- 17 Utility commission on oversight board is a good start. Our upcoming load study is also important start.
- 18 Wind Power
- 19 Developing Renewables
- 20 CAT generation
- 21 The concepts (Baseload v peakload v average), and the Aha Macav Ability to serve community with 10 people.
- 22 Understanding loads—The costs associated with them
- 24 Wind power
- 25 That most things are possible. The availability of working set up examples, export personnel available.
- 26 Success concerning of existing Tribal energy businesses
- 27 Specific histories learned about Tribal utility formation
- 28 Start with Tribal Planning and Facilitate with and Independent group. I like the Ft Mojave presentations and hope they can meet with more Tribes one on one.
- 29 Basic utility fundamentals for Tribes considering utility formation.
- 30 Utility formation basics, distributed generation options for utility formation
- 31 60% of the generating cost is the fuel. A Tribal utility is the exercise of self sufficiency and Self-Determination.
- 33 All information will be helpful—we're starting brand new on our utilities on Hopi.
- 34 Understanding of distributed generation



**Q2: What presentation was beneficial to your Tribe?**

- 02 Fort Mojave, Heber, Tohono O'odham experiences.
- 03 All were very helpful
- 04 Case Study
- 06 Heber project
- 07 Heber grid and power
- 08 Wind energy development projects.
- 10 it's possible
- 11 Day 2—optimization strategies –helped me to see the “big picture” more clearly.
- 12 Water: We have the Tongue River through our res and would like to utilize it.
Electric: we are rich in methane and coal but due to lack of education are not utilizing it. Telecommunications: at present have no cell phone service.
- 13 All that contained straight forward management comments
- 14 What is a utility company and how it all works
- 15 Disgen & owning & operating electricity. Chairman Tex Hall—standing ovation
- 16 CAT power Gen's
- 17 Many
- 18 Basic
- 19 All on Renewables
- 20 Heber
- 21 Distribution center tour/Heber
- 22 Heber Presentation!
- 23 Analyze this Tribes electric load history and energy needs.
- 24 Wind Power
- 25 The process of creating a TVA
- 26 At least \$50%
- 27 Tribal utilities presentation (s)—wish that other tribal utilities also presented instead of consulting, presentations or with those made in shortened time.
- 28 The Tribal presentations were most informative. I like the idea of Tribe to Tribe info Transfer. No strings attached, no sales pitch.
- 29 Presentations on the basics of utility formation, and examples from Tribal utility managers.
- 30 Updated case study for Tribal utility formation.
- 31 Ft Mojave, Aha Macav Power & Navajo Tribal Utility Authority
- 33 Everything was beneficial—gave us better understanding of the direction we need to go.
- 34 Tribal Utility operations and WAPA



Q3: Would you recommend this workshop to others in your community?

- 02 Must institutionalize information and make DVD for other Tribal areas. Distribute as needed. Follow-on session should build on this so it becomes a common annual occurrence.
- 03 Yes!
- 04 Yes
- 05 Absolutely. Very Well done! Very professional!
- 06 Yes
- 07 Yes!
- 08 Yes, good information. Good combination of different power sources—hydro, wind, gas, diesel, etc.
- 09 --
- 10 Yes
- 11 Absolutely!
- 12 Very much: it's an educational workshop to enrich people with knowledge for us to move forward in Indian Country. As one peoples as Native Americans lack awareness of what's happening in Indian Country may leave some Tribes behind.
- 13 Yes
- 14 Yes
- 15 Yes, definitely
- 16 Yes
- 17 Probably not—we need to watch on other issues first—load study, resource adjustment, energy plan
- 18 Yes
- 19 Yes
- 20 Yes
- 21 Yes, the info is good as is the conversations sparked with other Tribes.
- 22 Yes, with more emphasis in distributed generation development
- 23 Yes
- 24 Yes
- 25 Yes
- 26 Yes, especially to Tribal leadership, grassroots, folks
- 27 Yes, as introduction to utility operation
- 28 Yes, CERT could facilitate regional and topical workshops with Tribes, gov't, and industry in the Future.
- 29 Yes. Aha Macav did a fantastic job organizing the conference.
- 30 Yes, very beneficial. Helpful in understanding the basic issues related to Tribal energy.
- 31 Yes, future conferences in depth power analysis graph and color use charts and load growth. Aha Macav Power spend more time explaining load growth chart needs more color disruptions for load patterns.
- 32 –
- 33 Yes, Tribal Council, community, and Tribal depts.
- 34 Yes



Q4: Other comments to share?

- 02 Alternative Energy from fossil fuels is a balance of cost v environmental impact, not just its economies. Coal gasification, etc, is viable above \$45/bbl. Big companies in energy will pace development based on this fact as well as other factors. Point—this is not just an economic decision to Tribes but also involves environmental considerations.
- 03 Keep up the good work and hopefully to come again in the following years.
- 06 Facility looked friendly surroundings for presenters (PowerPoint)
- 07 Need better transport between Mojave and conference facilities.
- 08 Power plant tour would have been more meaningful had we been provided hard hats to see the INSIDE of the various buildings.
- 09 Tish and the boys did great.
- 11 Basic utility fundamentals—I recommend that more specific information be provided about the components of the distribution/ transmission system and how generation facilities interconnect. Explain how transformers work and why they are necessary. Same for substations, switch yards, etc. Utility code development, describe the regulatory environment.
- 12 I would like to see all these things implemented into our part of the country. (The Plains)
- 14 Very good service and (any?) new people all totally helpful in all areas. Excellent food!
- 15 Hats off to the boys—Pat, Monte, & Mark. Thanks a lot—Tish, Bill, and all those involved in making this workshop a success.
- 16 Looking to future events and workshops
- 17 Good networking!
- 20 Very good facility
- 21 Really enjoyed case example portion
- 22 I would try to define (in great detail) how a Tribe could develop distributed generation using renewables into their local system. Starting small-micro hydro/wind 10kw—250kw. Residential applications/community level applications/biomass utilization backup emergency. Show the economics of scale show what the costs are for small renewable energy applications compare these costs to larger wind farms. Price per kilowatt to develop. Building capacity-Starting small-technicians lineman development. Community level
- 23 Would like to see follow up
- 25 This is a first visit to this type of workshop. I found it well laid out and sufficient time to visit one or one with the experts.
- 26 Follow up, report sent to attendees. Need more time to ask questions after presentations.
- 27 Please expand “Tribal” portion of agenda next time.
- 28 Too many “Sales pitches.” Keep to more basic/generic info. Some workshops too technical for the Tribal Leadership/Representative audience.
- 29 Bill Cyr and Aha Macav staff are great!
- 30 Great Job! I look forward to future conferences and continued information sharing.



- 31 Thank you to Aha Macav Power Services staff and the Tribe for sponsoring such a great event.
- 33 Since my hire, this is one of the best conferences I have attended. Very basic and understandable. Thanks, Kwaq-Kwai. Many Blessings and success for the future.
- 34 Great lunch speaker



ATTENDEE LIST**Fort Mojave Indian Tribe**

Nora McDowell
Tribal Chairperson
500 Merriman Avenue
Needles, CA 92363

Aha Macav Power Service**Board Members**

Del Wakimoto
John Algots
Rudy Bryan
Llewellyn Barrackman
Bonnie Jackson
500 Merriman Avenue
Needles, CA 92364

Aha Macav Power Service Employees

Bill Cyr, General Manager
Ray Besst
Monty Guerrero
Pat Mccord Jr
Mark Burns
Roger Wright
Tish Rodriguez
8780 S. Hwy. 95, P.O. Box 6870
Mohave Valley, AZ 86446

Ak-Chin

Leonard Gold
Ak-Chin Energy Services Manager
4645 S. Lakeshore Dr Suite 16
Tempe, AZ 85282

AZ Power Authority

Harvey Boyce
Admin. Services
1810 W. Adams
Phoenix, AZ 85007

**Bad River Band of
Lake Sup. Chippewa Ind.**

Myron Burns, Sr.
Sr. Mem. Tribal Council
Po Box 39
Odanah, WI 54861

**Bad River Band of
Lake Sup. Chippewa Ind.**

Tom Wojciechowski, Proj. Mgr
Po Box 39
Odanah, WI 54861

BIA

David Head
NIOGEMS Manager
12136 W. Bayaud Ave
Lakewood CO 80228

BIA

Roger Knight
Petroleum Engineer
12136 W. Bayaud Ave
Lakewood CO 80228

Caterpillar

Bill Black, Empire Power Systems
840 N. 43rd Avenue
Phoenix, AZ 85009

Caterpillar

Jim Conklin
Sales
4610 Vandenberg
N. Las Vegas, NV

Caterpillar

Nick Kelsch
El. Power Sales
8950 S 52nd St
Tempe, AZ 85284

CERT

Roger Fragua
Deputy Director
695 S. Colorado Blvd
Denver, CO 80246

CERT

Tweedie Doe
Researcher
695 S. Colorado Blvd
Denver, CO 80246



Chickasaw Nation

Larry Jones
Mgr of Pwr Generators
2020 Lonnie Abbott Blvd
Ada, OK 74820

Chickasaw Nation

Ron Hartin
CTUA Board Member
2020 Lonnie Abbott Blvd
Ada, OK 74820

Cocopah

Edmund Domingues
Vice Chairman
County 15th & Ave. G
Somerton, AZ 85350

Cocopah

Paul Soto
Council Member
County 15th & Ave. G
Somerton, AZ 85350

CRIT

Herman Laffoon
Commerical Manager
Rte1 Box 23-B
Parker, AZ

CRIT

Lawanda Laffon
Land Use Spec.
Rte1 Box 23-B
Parker, AZ

CRIT

Lee Gardner
Consultant
Rte1 Box 23-B
Parker, AZ

CRIT

Pete Homer
Council Member
Rte1 Box 23-B
Parker, AZ

CRIT

Sylvia Homer
Council Member
Rte1 Box 23-B
Parker, AZ

DISGEN

Belvin Pete
Proj. Mgr
200 Union Blvd
Lakewood CO 80228

DISGEN

Bill McCabe, Director
200 Union Blvd
Lakewood CO 80228

DISGEN

Dale Osborn
President
200 Union Blvd
Lakewood CO 80228

DISGEN

Krista Gordon
Eng. Mgr
200 Union Blvd
Lakewood CO 80228

Department of Interior

Jack Stevens, Assistant
Office of Indian Energy & Economic Dev.
Washington DC

Firetail Eng Spec.

Hal Cooper, Consultant
11715 NE 145th Street
Kirkland, WA 98034

Fond du Lac

Bruno Zagar
Env. Specialist
1720 Big Lake Road
Cloquet, MN 55720

Fond du Lac

Rick Gitar
Water Reg Spec
1720 Big Lake Road
Cloquet, MN 55720



Ft. Peck Assiniboine & Sioux

Carl Fourstar
Administrator
Box 1027
Poplar, MT 59255

Heber Light & Pwr

Craig Broussard,
General Manager
31 South 100 West
Heber Utah

Hopi

Deborah Tewa
Contractor
PO Box 5800
Albuquerque, NM 87185

Hopi

James Jefferson
Proj. Mgr
PO Box 123
Kykotsmovi, AZ 86039

Hopi

Randy Selestewa
Utility Specialist
PO Box 123
Kykotsmovi, AZ 86039

Hughes Products

Stephen Thomas
Sales
4840 S 40th St
Phoenix, AZ

Intertribal Council on Utility Policy

Robert Gough
Secretary
PO Box 25
Rosebud, SD 57570

Kaw Nation

Bob Gaddis
KNUC Director
PO Box 50
Kaw City, OK 74641

Kaw Nation

Roy Ball
Vice Chair-Exe Cou
PO Box 50
Kaw City, OK 74641

Kaw Nation

Wayne Mitchell
IDCBG Director
PO Box 50
Kaw City, OK 74641

Man/Hidatsa & Arikara Nation

Terry Fredericks
Dir. Wind Energy
404 Frontage Road
New Town, ND 58763

Mandan/Hidatsa & Arikara Nation

Tex Hall, Chairman
404 Frontage Road
New Town, ND 58763

Morongo Band Of Mission Indians

Deanna Betzer
11581 Portero Rd
Banning, CA 92220

Northern Arapaho

Ernest Sun Rhodes
Utilities Board Chairman
Box 8583
Ethete, WY 82520

Northern Arapaho

Travis Brockie
Engineer
Box 8583
Ethete, WY 82520

Najavo Nation

Srinivasa Venigalla
Electrical Engineer
PO Box 170
Ft. Defiance, AZ 86504

Navajo Tribal

Larry Ahasteen
Renewable Energy Specialist
PO Box 170
Ft. Defiance, AZ 86504



Northern Cheyenne

Diane Spotted Elk
Utility Commissioner
PO Box 747
Lane Deer, MT 59043

Northern Cheyenne

Rennie Pena
Utility Commissioner
PO Box 747
Lane Deer, MT 59043

NREL

Roger Taylor
Energy Prog. Mgr
1617 Cole Blvd
Golden, CO 80401

Oglala Sioux

Joseph RedCloud
OST VP Admin Ast
2070
Pine Ridge, SD 57777

Otoe-Missouria

Richard Goulden
Dir. Of Tr.Energy Dev
8151 Highway 177
Red Rock, OK 74651

Pascuayaqui

Jerry Rhody
Energy Mgr/Const.
4503 W Calle Torim
Tucson, AZ 85757

Pueblo of Laguna

Harry Antonio
Board Member
PO Box 517
Casa Blanca, NM 87007

Pueblo of Laguna

Kenneth Garcia
General Manager
PO Box 517
Casa Blanca, NM 87007

Quechan Indian

Brian Golding
Econ. Dev. Adm
PO Box 1899
Yuma, AZ 85364

Quechan Indian

Steve Laurenzana
Utility Manager
PO Box 1899
Yuma, AZ 85364

Red Mtn Energy

Carolyn Stewart
Director
3131 E Camelback Ste 200
Phoenix, AZ 85016

Red Mtn Energy

Edward Samson
3131 E Camelback Ste 200
Phoenix, AZ 85016

Red Mtn Energy

Tracey Le Beau
3131 E Camelback Ste 200
Phoenix, AZ 85016

Rosebud Sioux

Ken Haukaas
Grant Writer/ Planner
PO Box 430
Rosebud, SD 57570

Rosebud Sioux

Ronald Neiss
Tribal Utility Comm
PO Box 430
Rosebud, SD 57570

Saginaw Chippewa

Steve Jablonski
Facilities Director
7070 E. Broadway
Mt. Pleasant, MI 48858

Saginaw Chippewa

Thomas Kequom
Const. Manager
7070 E. Broadway
Mt. Pleasant, MI 48858



Soboba

"Buster" Mojado
Tr. Council Member
PO Box 487
San Jacinto, CA 92581

Tohono O'odam

Charles Wiese
General Manager
PO Box 1790
Sells, AZ 85634

Tuscarora

Levi Rickard
Tribal Member
1927 Upper Mtn Road
Lewiston, NY 14092

Tuscarora

Stuart Patterson
Chief
1983 Upper Mtn Rd
Sanborn, NY 14132

Wagner Power Systems

Bob Keller, Sales
Colorado, New Mexico, West Texas

WAPA

Tony Montoya
Assistant regional director for power
operations
Phoenix, AZ 85016

Webster Ventures

Rob Webster
Owner
1248 Yale Avenue Ste 210
Salt Lake City, UT 84105

White Mtn Apache

Amy Mignella
Special Council
PO Box 64792
Tucson, AZ 85728

Yavapai-Apache

Jamie Navenma
Economic & Energy Prog. Coor
Flagstaff, AZ

