

Reclamation's pass of the power torch to Western in the 1970s came during an unusual period in our nation's history. Almost immediately after passage of the 1977 DOE Act, the legislative branch of the Federal government pushed Western "to take the lead in conservation implementation."¹

In 1978, Gary Frey came from Reclamation to Western as the agency's first Director of Environmental Affairs. Almost immediately, Frey realized how environmental issues would influence the new PMA's mission: "The environmental office had to be familiar with various elements of the agency. The office impacted nearly every element of the agency and its functions."²

In late 1979, the General Accounting Office stated that Congress should "relieve WAPA of its charter responsibility to encourage widest possible use of electricity at the lowest possible cost and direct it to undertake programs to examine the most appropriate structure of its rates to encourage conservation."³ Young enough not to carry any baggage, yet wise enough to take a hint, Western set about creating a conservation program amenable to both customers and Congress.

Protecting rural economies and ensuring the stability of the transmission grid placed Western center stage in an environmental juggling act between customer demands and resource management. This act played differently on the region's many stages—ranging from the strict environmental statutes in California to Upper Great Plains customers wanting to get the most of their substantial coal reserves.⁴

Environmentalists and public power customers have always viewed each other with suspicion, as each side peppered its materials with sneering stereotypes like "tree huggers" or "slash-and-burn developers." In his position as Director of Environmental Affairs, Frey attempted to build bridges between the groups on a foundation of compromise. He followed a maxim when dealing with parties divided by transmission lines and dam flows: "Success is finding the least most objectionable solution to a majority of the people."⁵

Frey, and all of Western, stepped gingerly on that middle ground throughout the 1970s and 1980s, as a number of high-profile environmental issues threatened to radically change how Western managed the Federal transmission system. Some questions—the impact of hydropower on birds, fish and flows and the volatile controversy related to electric and magnetic fields around high-voltage transmission lines—forced the PMA to solve problems Reclamation never faced.

Despite the prolonged agony of the first energy crisis and the uncertainty of the next one, conservation remained anathema to most Americans. Between crises, in the late 1980s to the mid-1990s, Susan DeBelle, then an energy services specialist, discovered that energy efficiency wore two faces depending on where you were in the service territory. "There was a very wide difference between customers in the Upper Great Plains region and California. California customers were up-to-date and current and ready to try new things and knew what was out there." According to DeBelle, small communities in the Upper Great Plains Region took the long way with innovation: "In those smaller areas, they still depend on us more. In a couple towns I visited that still operated little coal-burning plants where the guy chucked coal that served tiny towns—200 or 300 people. There they were willing to take your power, but by God, don't talk to them about new-fangled things, like saving energy."⁶



Susan DeBelle and Clarence Council show off a new photovoltaic educational kit for Western's customers in 1991.

At the start of 21st century, the issues of energy and the environment caused conflict between desires for a cleaner world and the need to fuel our technology-dependent lifestyles. With rolling blackouts threatening to inundate the nation, pollsters found what Americans say and how they act were at odds. Gas-guzzling sport utility vehicles on the highways and more electrical gadgets at home pushed up demand, contradicting research data showing most citizens believed protecting the environment was the nation's No. 1 problem.

Western's senior managers realized they must "strike a balance" when stringing a tightrope "between proactively demonstrating support of non-hydro renewable resource activities and maintaining their responsibility to: 1) keep rates stable; and 2) not increase customer supplemental power supplier surplus capacity."⁷

Laws of Nature

Numerous regulations guide Western's environmental procedures—notably the National Historic Preservation Act, the Endangered Species Act, the Toxic Substances Control Act, the Resource Conservation and Recovery Act and the Clean Water Act, but none has all-persuasive, all-enduring consequences like the first of the line—the National Environmental Protection Act.

Signed into law by Richard Nixon in 1969, eight years before Western's birth, NEPA remains the environmental policy template for the Federal government. Guided by NEPA, Western encourages public participation as an important element of its environmental planning program. The element of NEPA that changed the way Western and other Federal agencies interacted with customers is the Environmental Impact Statement. The EIS opened Federal resource management planning to the public. Participation in these decision-making processes could make or break an agency's plans to license and fund construction projects.⁸

Western veteran Frey said that when NEPA was the "new thing" in the early 1970s, he was working as an environmental specialist for Reclamation. From the late 1960s to the early 1980s, Frey recalled an advancing mountain of environmental compliance paperwork transforming the culture of Federal works projects: "NEPA documentation changed over the years. I remember writ-

The National Historic Preservation Act protects sites with historical significance.



ing one of the earliest programs on one page.” With a touch of understatement, he added, “It’s grown considerably since then.”⁹ Many Environmental Impact Statements now run to several hundred pages.

Western can point to instances where NEPA made a project better. In the mid-1980s, Western participated in building the Hayden-Blue River 230/345-kV transmission line in the Colorado Rocky Mountains. Originally proposed by the Rural Electrification Administration, the line drew protests from environmentalists who delayed routing the lines along the peaks of Grand and Summit counties. After consulting NEPA guidelines, Western reanalyzed the transmission line route using a supplemental environmental impact statement and held public meetings between local and Federal authorities and citizens. After listening to everyone’s concerns, Western won sup-

port from both counties and the U.S. Forest Service for a line alignment that economically met both environmental and engineering criteria.¹⁰

NEPA was on the books for eight years before the next milestone arrived wrapped in a blanket of environmental directives.

Cheaper to Save a Kilowatt than to Produce One

When President Jimmy Carter signed the Department of Energy Organization Act on Aug. 4, 1977, it launched the “Western Era” of customer partnerships tied to energy management. The Act reflected America’s panic in the early 1970s over where the next drop of gasoline or kilowatthour of electricity was coming from. The crisis cooled by the late 1970s as the nation lost patience with a seemingly never-ending energy crisis.

However, in the halls of power, energy remained the Carter Administration’s top priority and drove the agenda in Congress. After passage of the DOE Act, the Carter Administration sent the National Energy Plan to Capitol Hill. After a year-and-a-half of debate on the floors of the House and Senate, the president signed



Western’s Conservation and Renewable Energy program held workshops and loaned equipment to help customers use infrared cameras to reveal energy leaks in structures and equipment.

the National Energy Act on November 9, 1978. The nine-inch-thick legislative package consisted of five major pieces of legislation. The NEP sought to establish greater Federal control over the nation's energy supply, but also allowed increased customer involvement toward developing long-term energy management plans.

Western quickly realized that establishing a conservation and renewable resources program might be a ray of light through the gloom of the energy crisis. In 1980, one of the agency's earliest briefing papers regarding alternate sources of energy beamed with optimism: "The variety of solutions is limited only by the number of authors who have addressed this subject."¹¹

Before a joint session of Congress in July 1979, Jimmy Carter directed the nation to meet 20 percent of its energy needs with solar power by the end of the century. To reach this goal, Carter directed the PMAs to "develop and implement formal energy conservation and renewable resources programs in concert with other Federal agencies and utility entities." The President's pronouncement was a curious one for Western and the other PMAs, as more than 90 percent of the agency's marketed resource came from renewable hydropower—well exceeding the president's 20-percent benchmark. Nevertheless, to obey Carter's directive, Western added its conservation and renewable energy activities.¹²

In November 1979, DOE's Office of Power Marketing Coordination asked Western to submit a formal Conservation and Renewable Energy Program proposal to the Department's Assistant Secretary for Resources Applications by Sept. 20, 1980. To reach Carter's standard of 20 percent or more of projected energy sales through conservation and renewable resources, Western set three steps: first, direct energy savings through conservation activities; second, count on savings resulting from energy produced by renewable resources, and finally, calculate additional savings from conservation-related activities such as the existing Oil Conservation Program started by the Department of the Interior in 1972.¹³ Western estimated the impact of its C&RE plan alone could save the nation more than 100,000 barrels of oil per day. An internal review of the president's plan, and Western's response, remarked that the program was "extremely ambitious, but achievable."¹⁴

New Administration, new approach

In 1981, Ronald Reagan replaced Jimmy Carter in the White House. Following the wishes of the new administration, in November 1981, Western expanded its original C&RE plan to encompass all its customers. The agency decreed that each customer receiving a long-term allocation of Federal power must develop its own C&RE program. The primary guidelines of the C&RE program stressed increased energy production from renewable resources, reduced dependence on imported energy and greater efficiency. Western's managers predicted that over time an ancillary benefit would develop through "integral working relationships with its customers." Time placed strings on this friendship, as Western wanted customers to submit their plans within a year of signing a firm power contract.¹⁵



Western's C&RE program encouraged irrigation pump testing by customers such as the Laramie County Conservation District to save both water and energy. (Photo courtesy of the U.S. Soil Conservation Service)



Municipal utilities like Palo Alto, Calif., offered energy-saving options like water heater blankets to customers. The city's Energy Savings program also provided employment for students.

Speaking before a meeting of the American Public Power Association in Scottsdale, Ariz., in October 1981, Western Administrator Robert McPhail explained why the C&RE program was one of the first significant turning points for his agency:

In July of this year, the Reagan Administration submitted the National Energy Policy Plan (NEP-3) to the Congress. It reflected a sharp break in format and philosophy from previous energy plans. This new plan seeks an objective of energy self-sufficiency as determined by individual choice and market competition . . . The overriding concern of the Federal Government is to establish sound policies that will encourage both the private and public sectors to produce and use energy resources wisely and efficiently. It is also apparent that one of the answers to this concern is a realistic Conservation and Renewable Energy Program. I would hasten to add that no one, including Western, is suggesting that conservation and renewable energy activities can solve all our problems. But to suggest that they will not significantly contribute to the solution is indeed folly.¹⁶

By the close of Fiscal Year 1981, fewer than 350 Western customers and associated members held firm electric service contracts containing C&RE requirements. Collectively those plans contained about a thousand C&RE activities. By the following year, 1982, more than 250 additional customers signed new power contracts. A decade later, in 1992, Western had almost a 100-percent participation among its 615 customers and their members. In an average year, customers took part in between 2,400 to 3,200 required C&RE activities.

Between Western and its customers, there was a broad interpretation of what constituted a "C&RE activity." During the 1980s, agency staffers loaned out wind measuring devices known as anemometers, issued irrigation pump test equipment and pointed infrared heat detection units at houses leaking thermal energy undetectable to the naked eye. Western also conducted residential and renewable energy workshops and assessed solar, wind, cogeneration and conservation resources across its service territory.

The Hoover Power Plant Act of 1984 (P.L. 98-381) formally required customer participation in Western's C&RE program. The Act's Title II required that all long-term, firm electric service customers develop and implement individual C&RE programs as a condition of receiving Federal power.¹⁸ Any entity holding a long-term contract with Western for firm electrical power had to establish a C&RE program that included conservation, energy management, cogeneration, wind, solar, biomass, small-scale hydropower or geothermal technology programs.

During the first half of the 1980s, Western promoted the C&RE program to its customers as economical first and good for the environment second. At mid-decade, Western received and approved more than 450 customer or member organization programs. Western's 1985 Annual Report reviewed the C&RE program after its first half decade and declared it customer friendly:

“Western has structured its C&RE Program to allow individual customers the flexibility to choose C&RE activities best suited to their own situation. Properly applied, many of the conservation technologies are good business for the struggling utility. In most cases, it is less expensive to save a kilowatt than it is to produce a new one.”²⁰

Money Is Also Green

In the structure of Western’s policy making, the Endangered Species Act is secondary to NEPA, but ESA holds a special place for customers who believe it symbolizes Federal meddling in local affairs.

Over the first half of Western’s history, it seemed that every corner of its service area had some environmental battle brewing or in full pitch. These fights ranged from the full court legal press over flows at Glen Canyon Dam to the ruckus over Western’s participation in building the Colorado-Ute 345-kV transmission lines in southwestern Colorado to navigational, recreational, environmental and power impacts on the Missouri River. Each case was different, and Western’s participation in these matters ranged from innocent bystander to being right in the bullseye.

One environmental dispute that lasted nearly two decades surrounds water releases from the Glen Canyon Dam in Arizona. In the 1980s, protests from the environmental community over releases from Glen Canyon Dam almost brought water and power operations to a halt. The Glen Canyon situation underscored how Reclamation’s and Western’s responsibilities changed during the 1970s and 1980s from irrigation development and power generation to operations planning and environmental management.

The agencies worked together on an EIS exploring the effects of dam operations on natural resources in Glen Canyon National Recreation Area and Grand Canyon National Park. The background work was divided into two parts. Phase 1 of the Glen Canyon Environmental Studies sought to determine if dam operations affected downstream natural resources and if modifications



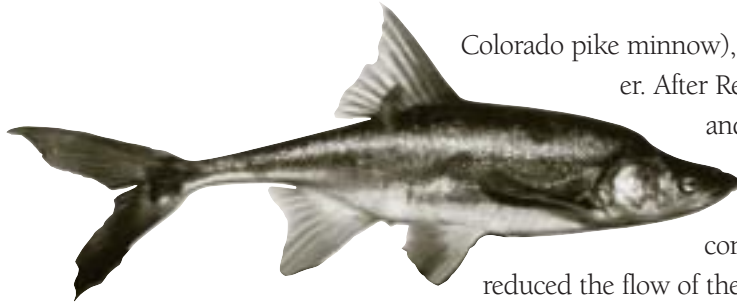
Concerns about protecting the Grand Canyon’s ecosystem led to flow restrictions at Glen Canyon Dam.



Western’s Energy Services program has promoted energy- and water-saving techniques like low energy precision application, or LEPA, which allows irrigators to place water where it’s needed. The technique reduces evaporation, thereby reducing water and energy consumption. This field is in eastern Colorado.

would diminish adverse impacts. The second phase further examined the effects of various flows on the downstream environment and offered a number of economic options.²¹

In the upper Colorado basin, Western participated in the Recovery Implementation Program. The program sought protection for endangered species like the Colorado squawfish (now known as the



The bonytail chub is one of four endangered species in the Colorado River.

Colorado pike minnow), the humpback chub, bonytail chub and razorback sucker. After Reclamation built Hoover Dam during the 1930s, Federal and State authorities introduced new kinds of fish in the Colorado River—specifically rainbow trout, bass and catfish—for sport. In addition to Hoover, subsequent construction of Glen Canyon and Flaming Gorge dams reduced the flow of the river; turning the warm, swift, turbid waters of the Colorado cold and clear. This change in conditions benefited the predatory newcomers, as they fed on the eggs and larvae of native fish, furthering their decline.²²

The RIP is a cooperative effort among Western, Reclamation, the U.S. Fish and Wildlife Service; the states of Utah, Wyoming and Colorado; environmental groups and water users and developers. Participating agencies contributed to raising endangered fish in hatcheries and stocking them in the wild; building passageways around certain dams to allow fish to migrate up and down the river; removing non-native fish from areas where endangered fish still exist and releasing water from Federal reservoirs that mimic flow pattern in effect before dam construction. Biologists predicted that these actions would restore the fish populations.²³

Salt Lake City Area/Integrated Projects customers supported and funded Western's environmental goals in the Upper Colorado River Basin. Approximately 8 to 10 percent of SLCA/IP rates fund environmental programs like the Upper Basin Recovery Implementation Plan and the Glen Canyon Monitoring and Research Center. During the 1990s, CRSP customers funded more than \$160 million in environmentally related costs, including purchased power required by changes in flows. In 1994, Western announced plans to amend power sales contracts to let SLCA/IP customers choose where to get their supplemental power to bridge the gap caused by curtailed generation.²⁴

Western and its SLCA/IP customers entered into this amendment on April Fools' Day 1997, and exactly a year later, Western began a program that gave customers a choice: to either have Western purchase the necessary supplemental power and a pass-through the cost, or to provide the power themselves from either their own generation or purchases. In 1998, Western estimated that the cost to replace lost electrical power to maintain downstream natural resources totaled \$44 million each year.

Fish in the Upper Colorado River Basin were not the only creatures Western monitored. During the mid-1990s, Western participated as one of nine agencies from state, Federal and tribal authorities in implementing the 1992 Central Valley Project Improvement Act. The CVPIA established fish and wildlife functions as "a beneficial purpose" along with irrigation and power on California's Central Valley Project. The primary provision of the CVPIA designated 800,000 acre-feet per year of water for fish, wildlife and habitat restoration. Western evaluated the impact to power generation and collected customer revenues to pay for CVPIA. As part of the project, Western customers funded a temperature control device that restored 200 GWh of energy that would have been foregone to protect downstream fish reproduction.²⁵

An Electrifying Issue

Threat or figment? That is the lingering debate around the issue of electromagnetic fields, or EMF, emanating from high-voltage transmission lines. Between 1979 and 1993, 14 different stud-

ies, from the United States to Finland, examined the possible association between proximity to power lines and various types of childhood cancer. Out of the 14 studies, four showed any statistically significant association between EMF and leukemia. Of eight additional studies seeking a connection for cancer in adults living near power lines, two reported a connection.²⁶

In 1984, Western participated in a study led by Bonneville Power Administration examining the effects of high-voltage DC lines and towers on cattle and crops. In 1993, Western spent nearly \$300,000 toward another Bonneville research study regarding melatonin and other immune system responses to EMF exposure.²⁷ In addition, Western supported EMF research through its membership in the Electric Power Research Power Institute.²⁸ In 1992 alone, EPRI spent \$15 million on EMF research.²⁹

The most recent research on EMF continues to raise questions without providing positive answers. In 1999, the National Institute of Environmental Health Sciences concluded, “the probability that EMF exposure is truly a health hazard is currently small.”³⁰

Two years later, an EPRI report presented a new theory: that contact current exposure was the cause of the weak association between certain types of cancer and EMF fields. Contact current exposure occurs when a person touches two conductive surfaces with different electrical potential at the same time. The studies continue.³¹

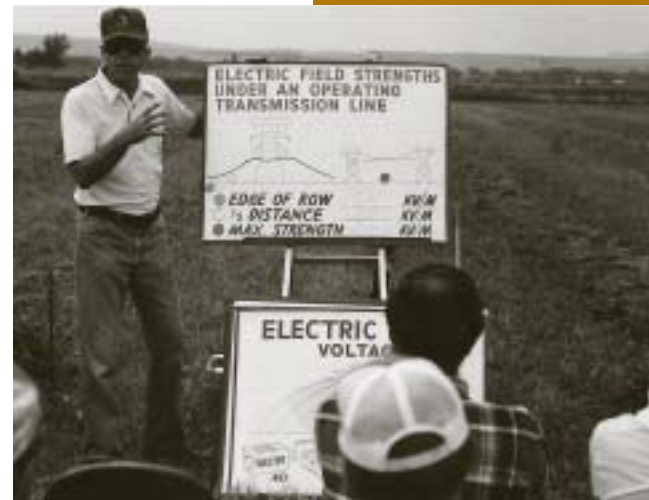
Changing Roles

Guided by the sun, or cast on the wind, perhaps the most unexpected story in Western’s green history is its participation in developing sources of energy other than hydropower. Rooted in tradition and Federal regulation, Western’s primary power generation comes from the rivers of the West. However, there are areas of this region synonymous with blazing sunshine and blowing wind. Over the past 25 years, Western has experimented with different forms of technology to harness these elements of nature.

Stronger than the Sun

Western looked carefully at the sun before considering solar power. Urged on by President Carter’s National Energy Policy, in 1978, the PMA joined the Federal Photovoltaic Utilization Program. A 20-amp battery charger at a radio repeater site in Cunningham Mountain, Ariz., was the agency’s first venture into photovoltaic power.³² From this first step, Western has explored the possibilities of PV in commercial applications through alliances with a wide array of groups.

One bright spot of Western’s PV partnerships was helping to bring electricity to one of the most remote locations in North America—the Navajo Nation of northern Arizona. In 1992, the Salt Lake City Area Office, DOE, Navajo Tribal Utility Authority and Sandia National Laboratories designed and installed small PV systems for Navajo homes scattered across the desert reservation. These organizations banded together after the previous NTUA systems failed from lack of maintenance. Under a \$300,000 DOE grant, NTUA installed and operated 75 four-panel alternating cur-



Western sponsored educational sessions on electric and magnetic fields, like this one conducted in Harlem, Mont., by J.T. Franklin, an education consultant for the Mid-Continent Area Power Pool. The session was in conjunction with the reconstruction of the Fort Peck-Havre transmission line.



rent systems. The tribal utility charged 72 homeowners a monthly fee for use and upkeep. For Western, the project provided an opportunity to judge the cost of PV. Brian Parry, a public utilities specialist in Salt Lake City, explained: “We’re also gathering accurate cost figures on installation and maintenance costs. Utilities need to know these things to determine if PV is more cost-effective than stringing a line.”³³

Nearly a decade later, at the start of a new century, NTUA gave some tribal members their first taste of electricity. In late 2000, the utility spent \$2 million for 200 PV systems to install at private homes. Some parties involved recalled the lessons learned from the 1992 installations:

“Based on results of that effort, the new systems are somewhat bigger with about 600 watts of photovoltaic collectors,” said Roger Hill of Sandia Laboratories Renewable Energy Department. “They will be able to convert about 3 kilowatt-hours per day on average in the winter. That’s enough electricity to power a single household for a day, if the family members are conservative in their use of electricity.” Between the utility and each individual is a lease-purchase agreement placing maintenance responsibilities on NTUA. After 15 years, the customer assumes ownership and responsibility for maintaining the system.³⁴

Western is also a member of the Utility Photovoltaic Group, and for many years, an agency senior manager sat on the UPVG board of directors. UPVG is a consortium of utilities promoting the use of PV technology for utility applications. Western climbed on the Million Solar Roofs Initiative, launched by President Bill Clinton on Dec. 12, 1997.³⁵

The Initiative’s goal is putting

a million solar energy systems on the nation’s roofs by 2010. By 2002, Western practiced what it preached. In three regions and the CRSP Management Center, Western facilities gather the sun’s rays through PV, with a combined capacity of 142 kW.³⁶

Western’s longest-lasting PV partnership started up on a roof in Folsom, Calif. Western and the Sacramento Municipal Utility District have an enduring arrangement to demonstrate commercial applications for PV panels. The two organizations first installed a 3-kW experimental building-integrated PV system on Western’s new Folsom Operations Center in 1995. Within a half decade, the Sierra Nevada Region’s non-hydro renewable energy program included a 50-kilowatt PV Technology Demonstration Project at Folsom, a 78-kW PV Project at Elverta and a 2-kW PV project at Redding. These systems incor-



Rooftop photovoltaic installations like this one at the Elverta Operations Center demonstrate Western’s interest in renewable energy technologies.

porate PV panels into each roof and provide both weather protection and power generation. These programs intended to accelerate cost-reductions to deliver low-cost PV power in the competitive utility market.³⁷

Cast Your Fate to the Wind

Experts and novices in trying to describe the massive potential of the wind blowing across the Upper Great Plains eventually dubbed the Dakotas and Montana the “Saudi Arabia of Wind.” Across its service area, Western established and participated in many different programs encouraging customers to use wind to power their homes and businesses.

Windmills signaled pioneers’ presence on the prairie during the last half of the 19th century. Used for pumping water during the first half of the 20th century, many windmills produced only a single kilowatt to generate power at remote sites. After the arrival of the Rural Electrification Administration in 1935, gas-fired and hydropower plants blew wind generation off the map, as detractors stated wind generating units were too expensive for daily use. By the 1970s, rising energy prices and the search of clean renewable energy led back to a modernized version of the windmill.³⁸

As early as 1978, Western raised its administrative finger in the air and judged that wind was worth exploring. That year, Western joined with Reclamation to install a prototype wind generator near Medicine Bow, Wyo., connecting the output of the wind generator to the high-voltage transmission system and integrating wind power with hydroelectric. Western’s 1979 Annual Report predicted: “Although these small wind machines will not contribute significantly to reducing oil consumption, they will give Western an opportunity to assess technical wind characteristics which, if favorable, could lead to large installations.”³⁹

By 2001, wind was the fastest-growing energy source in the world, and 18 of the 50 states boasted wind farms. Western attempted to get a handle on wind again at the turn of the century. In 1999, Western’s Upper Great Plains Office, in cooperation with the National Renewable Energy Lab in Golden, launched a comprehensive, wind development program focusing on 12 sites across North and South Dakota. The following year, Western introduced, “Wind Energy Workshop in a Box,” a how-to kit for customers that promoted the benefits of wind power in non-technical language Western distributed the information kit to schools, municipalities and community groups.⁴⁰ In spring 2001, former senior manager Ken Maxey predicted Western’s efforts in this area would remain understated: “The customer demand has to be there before Western can proceed any further with renewables.”

At certain points in its history, Western displayed bouts of interest regarding two lesser-known renewables: biomass and geothermal. Biomass is the most democratic of alternate resources as it takes all forms of organic material and turns it into energy. No matter if it came from a corn-field, or at the bottom of a lagoon, biomass technology welcomes them all.



Western has supported a number of wind energy projects.

DOE Biomass Program Moves In with Western

Less glamorous than solar or wind power, biomass energy processes turns trash, manure, crop residue, wood and other organic matter into fuel. But biomass energy offers an advantage that other renewable technologies lack. It uses waste products, so it reduces the amount of trash and

other wastes that could otherwise cause environmental headaches. Such a solution to disposal problems could reduce recent concern about the wastes and odors of large livestock operations.

For more than 10 years, Western managed the Western Regional Biomass Energy Program for DOE. One of five regional programs, WRBEP aimed to increase the production, use and commercial adoption of biomass energy resources. The program focused on assessing biomass resources and uses throughout WRBEP's 13-state region; working with states, other regional programs and industry groups to promote biomass use and technology; and awarded matching grants to research and development projects.



This biodiesel-powered bus in Sioux Falls, S.D., sports a WRBEP logo (top right, back of bus). This demonstration projects was partially financed with a grant from WRBEP. Biodiesel fuel is made from vegetable oil.

The program began in 1987. It was born as a provision in the Energy and Water Development Appropriations bill that directed DOE to carry out a biomass program in the central and southwestern areas of the country.⁴⁴ WRBEP's service territory included Arizona, California, Colorado, Kansas, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, Utah and Wyoming. Since Western also served most of these states, DOE asked Western to take on management responsibilities for the new biomass program.

Under Western, the program manager handled WRBEP's day-to-day operation. The program's goals, objectives, policies and priorities were shaped by a 13-member Ad Hoc Committee representing each state in WRBEP's service area. Committee members were appointed by the governor of each state and included academic and government officials. A Resource Committee of technical experts served as advisors.

Projects funded by the program ranged from gasifying cotton gin trash in Oklahoma to converting cotton stalks and pecan shells to briquettes in Arizona to using buffalo gourds as a fuel in Navajo fireplaces in New Mexico. Other projects encouraged development of biodiesel, a clean-burning alternative to diesel fuel; extracting natural gas from manure; and assessing the impacts to topsoil of harvesting agricultural residue from fields following harvest. Western's involvement ended Oct. 1, 1996, a result of the Transformation process. Day-to-day program management passed to the Nebraska Energy Office.

Earth's Energy

Geothermal energy is as old as the Earth itself, but years away from daily commercial and residential use. As of 2001, Western's non-hydro program started to examine the possibilities of tapping the hot water under the Earth's surface and drawing out that energy through ground-source heat pumps. This alternate form of hydropower will remain under development for the near future.⁴⁶

The Green '90s

Victoria Ponce came to Western's Headquarters as the deputy assistant in the Office of Conservation, Environment and Safety in the early 1990s. Ponce arrived at Headquarters from Western's Loveland office just as the agency prepared to tackle a messy job. In 1991, DOE ordered Western to begin an environmental protection compliance program. The PMA had to comply with Federal, state and local requirements, as well as DOE directives regarding exposure to, and protection from, hazardous material and waste. The initial step toward compliance required evaluating 132 of Western facilities to determine possible past releases of regulated pollutants. Eventually, DOE's directive launched a five-year audit for hazardous materials at more than 1,200 facilities including substations, warehouses and communication and metering sites.⁴⁷ Western staff overcame the audit's initial unpopularity and Ponce remembered the experience as an attitude adjustment for the agency:

The environmental program in the early days was pretty nominal in that it consisted of [preparing] Environmental Impact Statements for a particular construction project. But, the environmental emphasis in the Department (of Energy) and in Congress as they kept passing more laws was that not only do you have to do NEPA compliance in terms of your EISs, but you have this whole compliance area that has to do with your daily operations—much of it being clean-up from years of bad habits. When I came in, the environmental program wound up on the front burner. The Department came out and did an audit on us and found little compliance with a lot of the DOE rules and regulations. Before the DOE audit, the whole focus was building transmission lines and selling electricity. This required getting into a major clean-up program of all of our sites—potentially hundreds of sites. It meant a lot of financial ramifications for the agency.⁴⁸

The first fiscal year after the compliance audit—1991—Western spent \$8 million for facility evaluations, polychlorinated biphenyl removals and cleanups. The largest portion of that amount, \$3 million, went to clean Western's substation at Tracy, Calif.

Letters to Western

If the 1970s were the high summer of the environmental movement, those within Western remember the 1990s as blossom time for green awareness. For Western, the decade began with the launch of the Energy Planning and Management Program, better known as EPAMP. On April 19, 1991, Administrator William Clagett formally proposed changing the existing C&RE



The Western Regional Biomass Energy Program encouraged the use of technologies such as anaerobic digestion, which breaks down animal wastes to produce biogas. The biogas powers a generator to produce electricity. A cover on a manure lagoon traps the biogas.



Western's customers encouraged energy savings through efficient lighting installations like this one at the Azusa Public Library in 1994.

Program. EPAMP's objectives included promoting stable, efficient, and economical use of electrical generation and conservation resources by customers through the preparation of Integrated Resources Plans. The program asked Western's long-term firm power customers to consider cost-effective, demand-side management and supply-side alternatives including renewable resources as part of their long-term planning process. EPAMP also committed Western and its customers to sign long-term contracts for Federal power. Western believed that longer contracts would encourage greater customer investment in renewable resources and energy efficiency. These issues dominated the program of 38 public information meetings during June 1991.⁴⁹

Western's brainchild EPAMP barely was out of the starting gate before a major piece of legislation fine-tuned some of its aims.

The Energy Policy Act of 1992

In October 1992, surrounded by a crew of hard-hatted oil rig workers at Maurice, La., President George Bush signed into law the Energy Policy Act of 1992, or EPAct. The omnibus Act numbered 30 titles and filled 443 pages of small print. The Senate and House versions, reconciled by a 135-member conference committee in a month of debate, each totaled a thousand pages. The EPAct received the credit, or the blame, for igniting the electricity deregulation debate of the 1990s. Congressional supporters presented the legislation as containing dual benefits—economic development and energy conservation. By 1994, David Penn, then director of policy analysis for the American Public Power Association, recognized that the Act was already “the watershed event in this decade of change. It is both part of and a product of the restructuring of the industry.”⁵⁰

Once again, Congress grabbed a hold of a Western proposal, tweaked it and served it up to the customer who wanted to buy Western's product. From an environmental viewpoint, EPAct co-opted Western's planned EPAMP. Congress placed slightly heavier demands on the customer. The

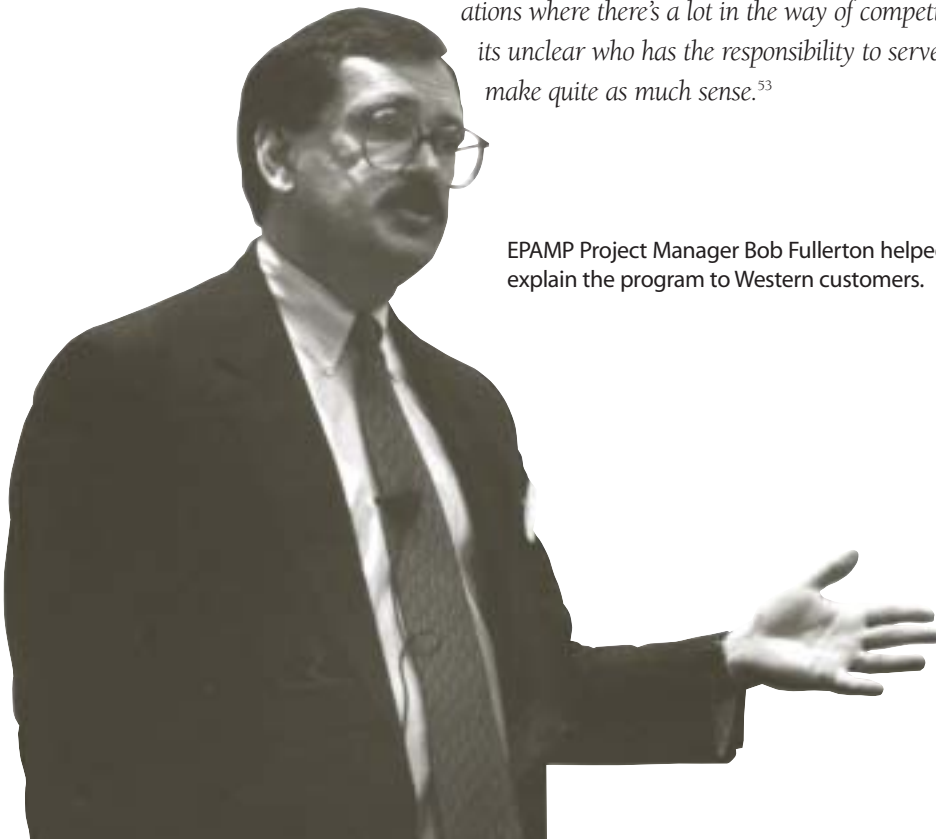
EPAct required all Western customers to submit IRPs every five years. Smaller entities with total energy usage or sales of less than 25 gigawatthours per year and non-members of joint action agencies or member-based associations had the option to submit a less complicated Small Customer Plan. Customers reacted with alarm, fearing increased Federal involvement in local utility planning.⁵¹

Robert Fullerton, Western's project manager for EPAMP from 1991 to 1995, remembered the program as an opportunity to adapt to changes in the market while bolstering the agency's conservation role:

It represented Bill Clagett's idea that it was going to be tough to market power as we had done in the past unless there was some sort of linkage between marketing power and something that highlighted the commitment of our customers to using their resources well. One of the criticisms the Federal power program received in the past is the power is priced low and therefore there is no incentive for people receiving that power to use it wisely. In other words, it could be wasted and might not be used in the best interests of the region. The idea of having Integrated Resource Planning was to make sure that the customers had a good sense of all the options existing on both demand side and supply side and to make choices that take into account environmental factors.⁵²

Fullerton noted that IRP benefits entered a state of flux once deregulation entered the scene. He believed that customer resource planning worked best in areas yet to fall to deregulation:

Integrated Resource Planning makes a whole lot of sense when you have a marketing area where you have the exclusive right to meet the needs of the customers. IRP is less valuable as a tool as the utility industry is in turmoil. If you enter an arrangement to put in all kinds of efficiency improvements at a particular industrial or commercial load, and they can turn around and buy power from somebody else—then where are you with investments? It's more of a competitive world and how IRP fits in that competitive world is unclear. The more that states aren't moving toward any market-based, free-market power—when you're in situations where there's a lot in the way of competition for load and its unclear who has the responsibility to serve, an IRP doesn't make quite as much sense.⁵³



EPAMP Project Manager Bob Fullerton helped to explain the program to Western customers.

The Customer Speaks

Through many public processes, customers carried Western toward further non-hydro resource development. One with the potential of the greatest long-term impact on the agency occurred during the summer of 1996. Western pledged to help identify customers wanting to use renewable resources—such as power generated by solar or wind—in their generation mix and provide them with the technical and marketing assistance to review their resource options.

Following a public process, Western launched its Non-Hydro Renewable Resources Program in January 1997 with Randy Manion as manager. Manion is a one-man band for non-hydro resources in an agency dominated by hydro tradition and policy. His role is to encourage Western's customers to use renewable resources and help them find resources and information to help in

their efforts. Despite the unlimited potential of non-hydro renewables, Manion understands that non-traditional sources of energy still face an uphill fight for acceptance: “There have never been any major renewable energy projects in the United States because it was the right thing to do. They were all done from environmentally negotiated settlements”⁵⁴

By 2000, it fell to Western to help organize the Public Power Renewable Energy Action Team, which was later renamed the Public Renewables Partnership. PRP's goal is to connect the nation's large co-ops and municipals through a national renewables program. In late 2000, the collaborative group first assisted California's public power utilities by increasing renewable energy use to stabilize energy costs. Manion noted that PRP can only help fuel the public's curiosity in cleaner sources of energy:

“There are plenty of renewables out there—wind, solar, geothermal, biomass and small-scale hydro—and they are cost-competitive in today's market.” After years of pricing themselves out of the market, by the spring of 2001, prices for large-scale geothermal, wind and biomass energy production were as low as four to seven cents per kilowatt-hour.⁵⁵

The threat of an energy crisis in 2001 reawakened the national interest in solar and wind power. In the spring of that year, Manion found the fortunes of renewable energy lie between increasing grassroots interest and a different focus from the nation's leadership. Manion viewed this perception gap between the public and government working toward furthering the cause of alternate energy:

*My purpose right now is to try to justify the use of renewable energy; that these resources are competitive; that they are reliable; that they are a good hedge against unknown natural gas costs. I'll make these arguments to our customers to get them to take a closer look on how they can benefit by employing renewable energy. Right now, I'm focusing my energies out in our customer service regions. That's where our greatest opportunity is right now . . .*⁵⁶



Photovoltaic installations often make financial sense at remote locations, such as this stock watering tank. Building a power line to serve an isolated load is not typically cost-effective.

Green Power

In spite of a 25-year relationship, Western and the environmental community have never been bosom buddies. However, Federal directive, legislation and Western's own survival instincts pushed the agency to see things from the other side. In 1985, Western's senior managers reflected on the avenues Western used to better understand the importance of green issues: "Environmental affairs have a large technological base, are highly visible, represent a complex constituency and require extensive technical expertise."⁵⁷

In 1989, Bill Claggett spoke on that theme of how environmental questions shaped Western's character in its search to find answers:

*We were born in politics to meet some very specific needs. Flood control, navigation, irrigation, and Reclamation of arid lands were the primary focus along with electric generation. No longer. We're now looking at meeting the changing needs of many interest groups. In addition to those early groups, others, including environmentalists, recreational users, Indian tribes and even individual states, are seeking some benefit from the Federal power program.*⁵⁸

Claggett expanded on that perception more than a decade later. In a new century, the former administrator explained technology and the ecology will push Western into new venues:

*In the early '90s, I was talking about photovoltaic shingles. Now available on the Web, they are priced, ready to ship and they look like regular shingles. If you put in photovoltaic shingles, you'll produce more electricity in that house that it can use in a year. In almost every part of [Western's] service area you can produce as much of those rooftops as people need. That's just the next generation, because you are still going to need existing resources. Because at night it doesn't work. Ten or 15 years from now, it may very well be that [Western] is running a nighttime system, instead of a daytime system.*⁵⁹

No one can predict how Western will light the night sky in the years to come. Few would have guessed that when the agency was created in the late 1970s, employees would work to save endangered species and explore forms of generation other than hydropower. Western's role today as a steward of its environment illustrates that the only certainty is that pragmatism will again drive the agency and its customers down a number of unexpected roads. ▼