

## Superintendent's Letter

On March 4, 1902, Seattle voters took a bold step by approving bonds to build a hydroelectric power plant on the city's newly established Cedar River watershed to supply electricity for street lights. At the time, the Seattle Electric Company, then a tentacle of the national Stone & Webster cartel and a distant ancestor of today's Puget Sound Energy, was the dominant private electrical utility and owned or controlled most of the city's streetcar and interurban lines.

Guided by a young but indomitable engineer named James D. Ross, the new utility powered its first street lights on January 10, 1905, and began serving private customers by the following September. Such competition precipitated an unavoidable clash with private interests, which pursued an aggressive media and political campaign against public power for decades to come.

City Light became an independent municipal department in April 1910 and went on to establish a record of innovation and efficiency envied around the world. It developed an extraordinary hydroelectric resource on the Upper Skagit River beginning in 1919 and, in 1967, on Northeastern Washington's Pend Orielle River. City Light acquired the last private electrical assets and customers within the Seattle city limits in 1950 and became a partner with utilities, public and private, throughout the region to develop a model system for generating, distributing, and managing electricity for the greater public good.

The utility survived two world wars, fierce competition, and innumerable swings in the local, state, and federal political climate. Mistakes were made, and a few disasters were narrowly avoided – such as a substantial investment in nuclear power – but City Light emerged from every challenge smarter and stronger.

Nothing, however, prepared us for 2001, truly a year in which all of the rules changed. We thought we had weathered the “perfect storm” of 2000, when California's disastrous experiment in deregulation and the cynical manipulations of Western energy markets by Enron and other profiteers combined with a record Pacific Northwest drought to send energy prices soaring. But 2001 proved far worse.

We were not alone in our travails, of course. The largest utility in the West was driven into bankruptcy. Whole industries were shut down. Some utilities watched as their major industrial customers closed up shop, other utilities stranded salmon, others took on high cost, long-term contracts that would burden them and their customers for many years.

None of those things happened at City Light. Our lights stayed on, we had a strong salmon year on the Skagit, and our major customers continued to operate. But at a cost.

Among all the frustrations of this remarkable year, two stand out. The year 2001 was to be the year we implemented a plan approved by the Seattle City Council in 2000 that would reduce the impact of



weather on our power supply and put in place more conservative financial planning parameters. By October of 2001, the plan was in place, allowing us to meet our customers' needs with our own resources even in the worst water conditions. But the storm hit before our preparations were complete. The other frustration was with the stewards of the marketplace, the Federal Energy Regulatory Commission (FERC). In the face of the obvious, in the face of the recommendations of their own staff, the FERC failed to provide the regulatory oversight that would have saved customers billions of dollars and many thousands of jobs throughout the West.

City Light survived this crisis thanks to steadfast support from its elected supervisors, the Mayor and City Council of Seattle, thanks to the skill and resilience of its workers, and thanks to an unparalleled commitment to extraordinary conservation measures by customer-owners.

This annual report offers what we believe is a candid and accurate chronicle of the year's unprecedented events and City Light's responses. While we are still assimilating the experiences described here and making necessary adjustments in utility policies and practices, there is no question of City Light's fundamental soundness and reliability as we move into our second century.



Gary Zarker  
Superintendent  
Seattle City Light



## 2001 Highlights

### January 2001

Successful "Save 10% at home and at work" conservation program is launched to reduce wholesale energy purchases.

### February 28, 2001

Nisqually earthquake shakes Puget Sound but barely affects City Light facilities and services.

### April 2001

Consolidated Customer Service System goes "live."

### June 2001

FERC caps wholesale energy prices too late to blunt cost impacts.

### July 2001

Klamath Falls gas-fired plant begins generating 100 MW for Seattle.

### September 11, 2001

Terrorist attacks on the United States intensify utility security efforts.

### October 2001

BPA begins delivery of power under Seattle's new 10-year contract.

### November 2001

Rainfall and snow pack exceed normal levels while national economy slips into a recession.

### December 2001

Seattle enters contracts to become the largest municipal utility purchaser of wind power in the United States.

## Introduction



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Two thousand one will be remembered as the year all the rules changed. The tragedy of September 11 showed the world that unimagined events could indeed occur, and on a vast and horrific scale. For City Light, 2001 was the year when decades of conventional utility practice and assumptions collapsed amid the chaos of the western energy crisis, the costliest electrical energy event in the nation's history.

Beginning in the mid-nineties, the pace of electric deregulation accelerated, especially in California. City Light and other

utilities then took precautions against stranded investment – contracts and financial commitments that could not be recovered at anticipated future rates. Among those strategies

was a 65 average megawatt reduction of its purchases from the Bonneville Power Administration, a quarter of its contract entitlement. This meant more reliance on the market, which was less expensive at the time. With normal precipitation in the Pacific Northwest, City Light planners reasonably anticipated that the utility could generate most of the power its customers would need and sell seasonal surplus energy to other utilities. City Light also maintained its long-term commitment to environmental stewardship by keeping its robust conservation program and through promotion of renewable energy sources.

By mid-2000, however, City Light found itself at the center of a collision of three unique factors: a contrived shortage of electricity in California that forced spot

market prices to astronomical levels, a low-water year that robbed Seattle of both the power it needed for the winter and the surplus it sold in the summer, and the persistent refusal of the Federal Energy Regulatory Commission (FERC) to police the western energy market. All these events combined to leave the utility with a record net loss of \$52 million. We called it a “perfect storm” at the time, but worse turbulence lay ahead in 2001.

In November 2000, the FERC staff told its commissioners that the markets were dysfunctional and prices were neither just nor reasonable, the standard the agency is required to enforce. Unfortunately, the FERC refused to do its regulatory job. By the end of 2000, City Light's net expense for needed extra power soared to \$104 million. In California, the situation was even worse. State government stepped in to buy power with taxpayer money as its major utilities ran out of cash. Seattle struggled, but kept its lights on.

The cost of keeping the lights on was heavy. The Seattle City Council took the courageous, but unpopular step of raising rates in January, March, and July, as well as passing through an additional increase by the Bonneville Power Administration in October of 2001.

To reduce purchases from the market, City Light's residential and commercial customers rallied to the utility's call to conserve an additional 10 percent “At Home and At Work.” This reduced consumption saved as much as \$80 million for energy purchased in 2001.

## The Manufactured Energy Crisis

Seattle City Light's experiences cannot be separated from others in the West. Over the years, the Golden and Evergreen states developed a symbiotic relationship in which seasonal surpluses were exchanged - City Light bought California power in the winter and sold excess power in the summer. It was an efficient and effective arrangement.

Even as the economic recovery of the roaring nineties was increasing demand in the West, reserves in the marketplace were still as strong as they had been at any time in the decade. But the market acted as if there was little energy available.

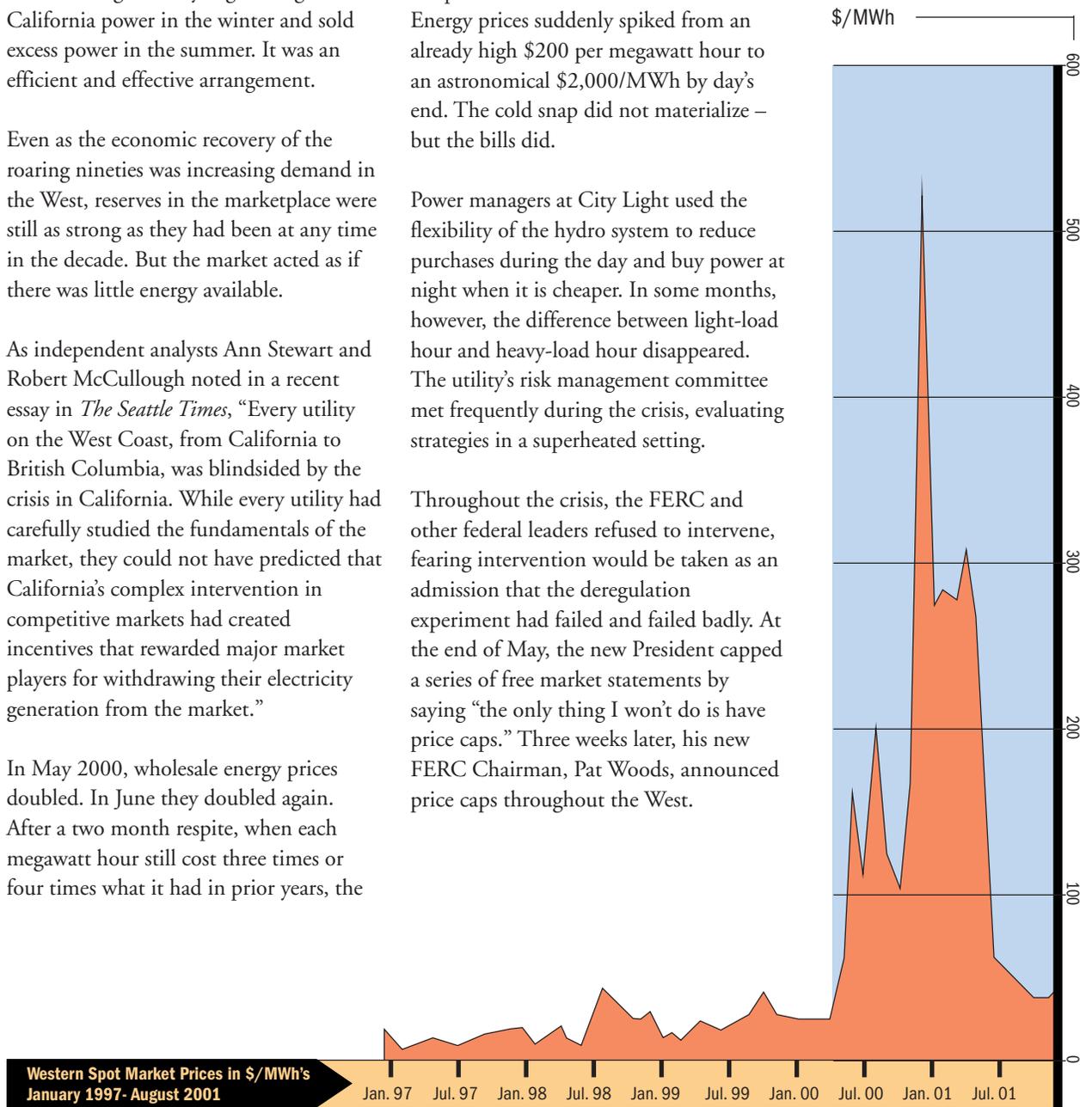
As independent analysts Ann Stewart and Robert McCullough noted in a recent essay in *The Seattle Times*, "Every utility on the West Coast, from California to British Columbia, was blindsided by the crisis in California. While every utility had carefully studied the fundamentals of the market, they could not have predicted that California's complex intervention in competitive markets had created incentives that rewarded major market players for withdrawing their electricity generation from the market."

In May 2000, wholesale energy prices doubled. In June they doubled again. After a two month respite, when each megawatt hour still cost three times or four times what it had in prior years, the

price shot up to 10 times historic levels. The volatility of the market was dramatized in December when cable television's Weather Channel broadcast an erroneous daily forecast for subzero temperatures in the Pacific Northwest. Energy prices suddenly spiked from an already high \$200 per megawatt hour to an astronomical \$2,000/MWh by day's end. The cold snap did not materialize - but the bills did.

Power managers at City Light used the flexibility of the hydro system to reduce purchases during the day and buy power at night when it is cheaper. In some months, however, the difference between light-load hour and heavy-load hour disappeared. The utility's risk management committee met frequently during the crisis, evaluating strategies in a superheated setting.

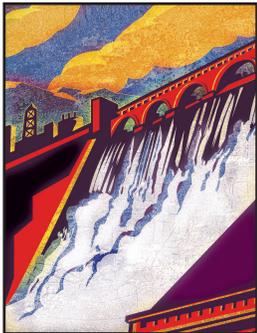
Throughout the crisis, the FERC and other federal leaders refused to intervene, fearing intervention would be taken as an admission that the deregulation experiment had failed and failed badly. At the end of May, the new President capped a series of free market statements by saying "the only thing I won't do is have price caps." Three weeks later, his new FERC Chairman, Pat Woods, announced price caps throughout the West.



## Nature Takes a Hand

At 82 percent of its generation, City Light has the highest percentage of hydropower in the region. City Light planners use October as the beginning of the water year. The water year that began in October 2000 started badly and soon got worse. Despite predictions for normal precipitation, it was clear by mid-December that the region was in a drought. City Light's wholly-owned hydro production would be cut in half.

If the shocks from the energy market and from world events were not enough to rock Seattle, the Nisqually Earthquake of February 28, 2001, certainly did.



In keeping with City Light's policy of "Fish First," power managers maintained minimum stream flows to protect salmon habitats along the Skagit. During the crisis, City Light managers released enough water to insure that redds (shallow water nests of salmon eggs) were kept wet. These actions saved one of the strongest runs of endangered King Salmon in many years.

Across the state, at Boundary Dam on the Pend Oreille River, sharply reduced releases from federal dams upstream meant that only one of the dam's six turbines was in use.

If the shocks from the energy market and from world events were not enough to rock Seattle, the Nisqually Earthquake of February 28, 2001, certainly did. The 6.8 temblor – the strongest in the Puget Sound region since 1949 – damaged many older buildings in Seattle, but had no effect on power houses, generation

stations, and dams. The distribution system suffered outages affecting only 19,000 customers, mostly properties built on landfill in Seattle's south end. Almost all service was restored by midnight. Total damage to City Light facilities was approximately \$250,000, compared to more than \$1 billion in earthquake damage around Puget Sound.

In November 2001, the rains returned at last. Steady precipitation continued into December and January promising an above-normal water year for 2002. But for City Light, as with the rest of the world, nothing would ever be "normal" again.

## Power Supply

The crisis came as City Light was changing its resource mix in profound ways. It contracted for power from a clean-burning gas generator in Southern Oregon in July of 2001 and a large wind farm near Walla Walla at the end of the year, to go with a new contract with the Bonneville Power Administration. It complemented these resources with new planning concepts to manage the new mix.

Beginning on July 29, 2001, Seattle began receiving the energy output of 100 MW of capacity from the Klamath Falls gas-fired power plant under a five-year contract, renewable for five additional years. This 500-megawatt plant was developed jointly by the City of Klamath Falls and PacifiCorp Power Marketing of Portland. Klamath Falls is in southern Oregon, with

good access to natural gas pipelines and the main electrical transmission line between California and the Northwest. The plant also incorporated greenhouse gas mitigation strategies. It replaced the 80 aMW lost when the coal-fired Centralia plant was sold more than a year before.

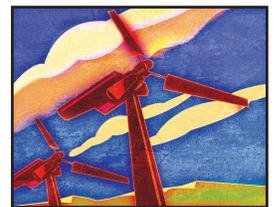
In October, Seattle began a new contract with the Bonneville Power Administration. City Light and other power generators had long negotiated for a “slice” of the federal hydroelectric system. Seattle’s slice of the system is 4.6676 percent of the power generated by BPA. The actual amount of power will fluctuate, depending on rainfall. City Light will pay the same percentage of BPA’s system costs, including any budget overruns and debt payments to the U.S. Treasury. City Light accepts some risk of reduced power output caused by fish-protection measures on the Columbia River system. This sharing of risk with BPA also entitles City Light to enjoy any system benefits. For example, City Light will be able to market any surplus energy associated with its percentage of the system.

The contract also gives City Light a “block” of BPA power. A block is a firm amount of power shaped (or scheduled) to a monthly net requirement. Under the block and slice contract, City Light will buy 493.8 average megawatts for the first five years of the contract and 608.2 average megawatts for the second five years. The contract runs until 2011. Based on price forecasts, the contract could save City Light millions of dollars compared to purchasing power from the wholesale market.

By the end of 2001, Seattle had completed its contracts for purchase of the State Line Wind Project. The State Line project consists of 399 windmills built by Vesta in Denmark and erected by FPL Energy in Walla Walla County, Washington, and Umatilla County, Oregon. City Light will receive the energy output from 50 MW of wind-generated power during the first six months of 2002, increasing to 100 MW later in the year. Seattle is now the largest municipal utility purchaser of wind power in the nation.

The net effect of these decisions is that City Light can meet its load in almost all months under poor water conditions with resources it controls. Not only does this protect against future drought, but it produces surpluses in good water conditions that can be sold in the marketplace. Combined with more conservative financial policies, the result is that the utility will pay back its energy crisis debt more quickly and move to lower and more stable rates in the future.

In addition, City Light’s efforts to meet the challenge of mitigating all of its CO<sub>2</sub> emissions attributable to generation is leading to growing expertise in the field of greenhouse gas mitigation. A project to identify and pursue mitigation strategies is well underway. The experience gained during this process will become a best practice for utilities around the country.



## Getting More from Less

Residential and commercial customers responded enthusiastically to achieve the 10 percent conservation goal. These actions averted the necessity to buy upwards of \$80 million of electricity in the market.



Since 1976, conservation has been part of Seattle's energy policy. The conservation accomplishments of many years combined in 2001 to save ratepayers significant amounts of money. All of those measures in place represented expensive power that did not have to be purchased.

To further reduce market purchases in the crisis year, City Light asked its customers to provide immediate help by cutting back on energy use. The utility enlisted local television meteorologists in a special media campaign urging citizens to "Save 10% At Home and At Work." Residential and commercial customers responded enthusiastically to achieve the 10 percent conservation goal. These actions saved upwards of \$80 million worth of market electricity.

CITY LIGHT HELPED ITS CUSTOMERS SAVE POWER AND REDUCE THEIR LIGHT BILLS IN OTHER WAYS BY:

- Distributing compact fluorescent light bulbs (CFLs) to thousands of its customers. A special mailing to customers included coupons to order more efficient bulbs that consumed a third of the electricity of regular incandescent bulbs. A remarkable 57 percent of City Light's customers responded, ordering 360,000 bulbs. Another 30,000 bulbs were distributed directly to the Seattle Housing Authority. City Light also partnered with the Seattle Police Department's Block Watch program, "Night Out," to distribute 20,000 bulbs in a single summer evening.
- Partnering with Pepsi and local vending machine companies to install 5,000 VendingMisers. These devices "power down" refrigerated vending machines when they are not needed while still preserving food safety and quality. CocaCola has joined the program and savings will increase in 2002.
- Promoting the 10+10 Program. This program created an additional percent incentive for City Light's commercial and industrial customers whose projects could come on line during the energy crisis.
- Continuing to develop the Seattle Energy Code with the Department of Design, Construction and Land Use to increase energy efficiency in new construction. The City Council adopted the energy code in September 2001.
- Becoming a role model for energy-efficient construction. The City Council adopted the Sustainable Building Policy in 2000 and pledged to meet the U.S. Green Building Council's LEED (Leadership in Energy and Environmental Design) standard. City-built construction and remodeling projects of more than 5,000 square feet will use "green" materials and techniques that meet the LEED "silver" rating. The City of Seattle wants to provide incentives to private developers to use more sustainable materials and techniques and City Light is developing programs to offer to the private sector.
- Reducing carbon dioxide emissions equivalent to removing 7,800 vehicles from the road.

## Dedication and Innovation

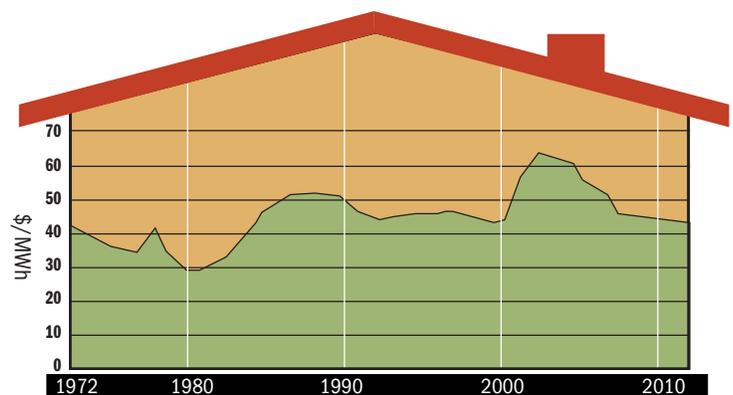
- Helping its larger commercial and industrial customers maximize energy efficiency by launching Seattle MeterWatch in July. MeterWatch is a Web-based program that allows building managers to monitor their electricity use every 15 minutes by computer. Large commercial and industrial customers use office computers to dial in to City Light and monitor their energy consumption. The managers tailor the reports to their own needs. Two-thirds of downtown's largest buildings and more than a third of the largest users outside of downtown can access real-time data on their electricity usage and adjust consumption as they choose.
- Continuing its many other programs that assist customers in trimming their power bills. Large and small commercial customers received rebates for purchase of energy-efficient equipment such as coin-operated laundries in apartment buildings, lighting upgrades and even manufacturing equipment in larger facilities.
- Reaching an agreement in 2001 with the Bonneville Power Administration to receive approximately \$27 million for conservation projects over the next two years.

The economic downturn nationwide, particularly in the high tech industry, meant that the expected demands of new large customers did not materialize. Plans for electricity-intensive installations such as data centers – called server farms and telco hotels – were canceled, delayed, or reduced. These decreases in expanding services helped reduce expenditures for new service at a critical time.

Since 1905, when City Light first turned on the lights in Seattle, the utility has assembled cohesive and skilled groups of trades workers who have kept those lights on. In the early days, line workers took every opportunity to recruit new customers to the fledgling system. A century later, City Light crews still respond when a customer needs assistance. Whether working in underground vaults or high over head, City Light's diverse workforce achieved the goals for system reliability. Despite the earthquake and several storms late in November, the average customer was without power less than one hour over the entire year.

In 2001, the City of Seattle became a role model for energy-efficient construction. The City Council adopted the Sustainable Building Policy in 2000 and pledged to meet the U.S. Green Building Council's LEED (Leadership in Energy and Environmental Design) standard.

**Seattle City Light  
Electricity Cost,  
Inflation Adjusted**





After the terrorist attacks on September 11, security assumed a new importance. City Light had to reexamine its approach to public access.

In the face of numerous challenges, natural and financial, City Light crews kept the turbines and generators turning. At Boundary, the rehabilitation of Unit 52 was completed, the fifth of six huge generators to be reworked. This 12-year, \$131 million project is being accomplished largely in-house by City Light staff.

When City Light first started building its hydro facilities in 1902, construction workers and City Light employees were housed in self-contained towns built just for that purpose. Cedar Falls, Newhalem, and Diablo later evolved into distinct communities. When construction began for Boundary Dam in the 1960s, City Light changed this approach and relied upon the nearby town of Metaline Falls to house its people. The utility wanted to be a good neighbor and City Light contributed to new and improved roads, a high school, a medical facility, and other municipal services. This tradition continued in 2001 when City Light completed a fiberoptic link between the dam and the Power Control Center in Seattle. The line was expanded to schools and libraries in Metaline Falls to tap directly into the Internet. Students and library patrons can now use the Information Superhighway as conveniently as in any “wired” metropolitan area.

In December, crews at the Tolt Powerhouse replaced a broken waterwheel that had kept the plant running at half its capacity. All of the construction was handled in-house, and it demonstrated City Light’s tradition of dedication and teamwork between the staffs in power generation and engineering. By the end of the year, the Tolt was producing electricity at its designed capacity of 16 MW.

After the terrorist attacks on September 11, security assumed a new importance. City Light had to reexamine its approach to public access. The popular tours of the Upper Skagit Hydroelectric Project that began in the 1920s were suspended, the first time since World War Two. Increased security throughout the community has affected the way City Light employees access customer properties for such things as repairs and maintenance and reading meters. Like the rest of the community, City Light changed while still going about its daily business.

### Saving Salmon and More

City Light’s policy of Fish First continued to produce results in 2001. Managers resisted the temptation to use water to turn generators when energy prices were high in order to insure that sufficient water was available to protect salmon egg nests, called redds, in shallow water. The fragile redds must remain just below the surface for eggs to hatch into juvenile salmon, and water that is too deep or runs too quickly can easily wipe out the nests and a generation of fish.

More than two million Pink Salmon returned to the Skagit in 2001, up from 300,000 a decade before. The 2001 adult Chinook return ran almost 15,000, three times the 10-year average. As a demonstration of the complexity of the Skagit ecosystem, the increase in the salmon runs caused an upswing in the population of the endangered American Bald Eagle, which feed on the spawned-out carcasses. At one time this symbol of our nation was near extinction. Today, the Skagit hosts the largest population of Bald Eagles in the continental United States.

City Light's efforts at restoring salmon runs were years ahead of the federal listing of salmon as a threatened species. Today, more than three quarters of the Skagit's salmon spawn within the 25 miles of river affected by dam flow. City Light purchased 78 additional acres in four parcels on the Skagit and the Tolt rivers that will be preserved from development and improved to provide safe drainages and clean stream beds where fish can spawn. Illabot Channel, a key Chum Salmon spawning area, was extended 1,400 feet. In the Skagit Basin, City Light now owns more than 8,000 acres of protected habitat. In North King County, the Tolt River is being reconnected to its historic course by moving back flood control levees. The wider flood plain will still provide protection from high water while increasing riparian habitat.

Ross Lake in the Skagit Project contains what is probably the healthiest Bull Trout population in the Northwest. Bull Trout

are a resident fish, but much remains unknown about them. City Light researchers have begun a long-term project to learn more about this species and this particular population and hope that the research will help this species in other waters where it is not doing as well.

At Seattle's first hydro plant near Cedar Falls, work continued on the Cedar River Habitat Conservation Plan. Seattle first tapped the Cedar in 1900 for drinking water and then in 1905 for electricity. City Light and Seattle Public Utilities have been working to restore salmon habitat on the Cedar. Even though fish cannot yet pass the Landsberg Dam to the Cedar Falls hydro plant, City Light is preparing for the day that will happen. The plant is being modified to insure that hydro operations will not adversely affect the fish.

Closer to home, City Light day-to-day operations have also gone green. City Light is a large industrial operation that uses fuels, solvents, paints, and other chemicals. Ten years ago, the utility generated more than 100,000 pounds of hazardous wastes that had to be treated, stored, or disposed of. By using less hazardous materials in its operations, reducing waste, and by recycling, this figure has dropped to 16,000 pounds a year, saving customers money and improving the health of the environment.

At one time, the nation's symbol was near extinction. Today, the Skagit hosts the largest population of Bald Eagles in the continental United States.



## Serving Customers

One of the original goals of Seattle's Municipal Lighting Plant was to bring the benefits of electricity to all. In this year of rate increases, City Light enhanced its traditional rate assistance programs to keep electricity flowing to customers who can least afford it.

Along with expanding eligibility for low income rate assistance, the City Council added money for outreach, helping to increase participation particularly among elderly. More than 60 percent of seniors who qualify actually take advantage of rate assistance. The council also decided to match contributions to Project Share. Started in 1984 during the last major electrical crisis in the Northwest, Project Share accepts donations from customers who add a few dollars to their bills every two months. These donations help defray the bills of less fortunate members of the community. In April, the City Council voted to match the first \$400,000 contributed by the community. By the end of 2001, Project Share raised \$371,508 in gifts, all of it matched by the council, from customers. Nearly 2,000 customers benefited.



This year City Light replaced its aging customer account and billing system with the Consolidated Customer Service System. CCSS is a joint effort by City Light and Seattle Public Utilities to bring together all of Seattle's municipally-owned utilities – electricity, water, and solid waste – into a single customer database. This was an immense project which involved dissimilar services in separate departments and approximately 700,000 customers. Planning, development, and testing took four years and \$40 million.

On April 2, 2001, the new system went “live.” The conversion not only endured the predictable challenges of any computer changeover, but had to accommodate three overlapping customer databases, the disparate pricing structures of three departments, and 10 different rate changes.