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# Federal Energy Regulatory Commission



## 2001 Annual Report



# FEDERAL ENERGY REGULATORY COMMISSION

## 2001 ANNUAL REPORT



*Photo courtesy of Arizona Public Service.*

# TABLE OF CONTENTS

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Members of the Federal Energy Regulatory Commission	2
Letter from the Chairman	3
Overview	5
Energy Markets	11
Energy Projects	19
Hydroelectric Power Table	33

## MEMBERS OF THE FEDERAL ENERGY REGULATORY COMMISSION



William L. Massey  
Commissioner



Pat Wood, III  
Chairman



Linda K. Breathitt  
Commissioner



Nora Mead Brownell  
Commissioner

# LETTER FROM THE CHAIRMAN

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To the Senate and House of Representatives:

I am pleased to submit to the Congress the Federal Energy Regulatory Commission's annual report, covering the fiscal year from October 1, 2000, through September 30, 2001.

This is the 81st report issued by the Commission and its predecessor, the Federal Power Commission. As an independent agency, the Commission oversees key operating functions of the natural gas, electric utility, hydroelectric power, and oil pipeline transportation industries.

For fiscal year 2001, Congress appropriated \$175,200,000 to support Commission activities. Under the authority of the Omnibus Budget Reconciliation Act of 1986 and other laws, the Commission recovers all of its costs from regulated industries through fees and annual charges. Revenues generated from these sources completely offset congressional appropriations and therefore result in a net cost to the treasury of zero dollars. As a result, the users and beneficiaries of the Commission's services—not the general taxpayers—pay its operating costs.

Respectfully,



Pat Wood, III  
Chairman



*Near Lost River, West Virginia, FERC and Columbia Gas representatives hike two miles of a gas pipeline route as part of a compliance inspection. Federal Energy Regulatory Commission photo.*

# **THE COMMISSION'S REGULATORY RESPONSIBILITIES**

The Commission is a five-member independent regulatory agency, which succeeded to the regulatory responsibilities of the Federal Power Commission in 1977. The Commission's responsibilities include the licensing of non-federal hydroelectric facilities, the certification of natural gas pipelines, regulating the rates of natural gas pipelines and pipelines transporting crude oil and oil products, and regulating the rates and other aspects of electric utility activities.

Hydropower is the oldest area of Commission jurisdiction. The Commission's predecessor began federal regulation of non-federal hydroelectric generation in 1920, authorizing the construction of projects in interstate commerce and overseeing their operation and safety. The Commission now regulates 2,000 dams that generate over five percent of all electric power in the United States.

Since 1935, the Commission has regulated certain electric utility activities under the Federal Power Act (FPA). Under FPA Sections 205 and 206, the Commission oversees the rates, terms and conditions of sales for resale of electric energy and transmission service in interstate commerce by public utilities. The Commission must ensure that those rates, terms and conditions are just and reasonable, and not unduly discriminatory or preferential. Under FPA Section 203, the Commission reviews mergers and other asset transfers involving public utilities. The utilities regulated under FPA sections 203, 205 and 206 are primarily investor-owned utilities; government-owned utilities (such as the Tennessee Valley Authority [TVA], the federal power marketing agencies, and municipal utilities) and most cooperatively-owned utilities are not subject to the Commission's regulation, with certain exceptions.

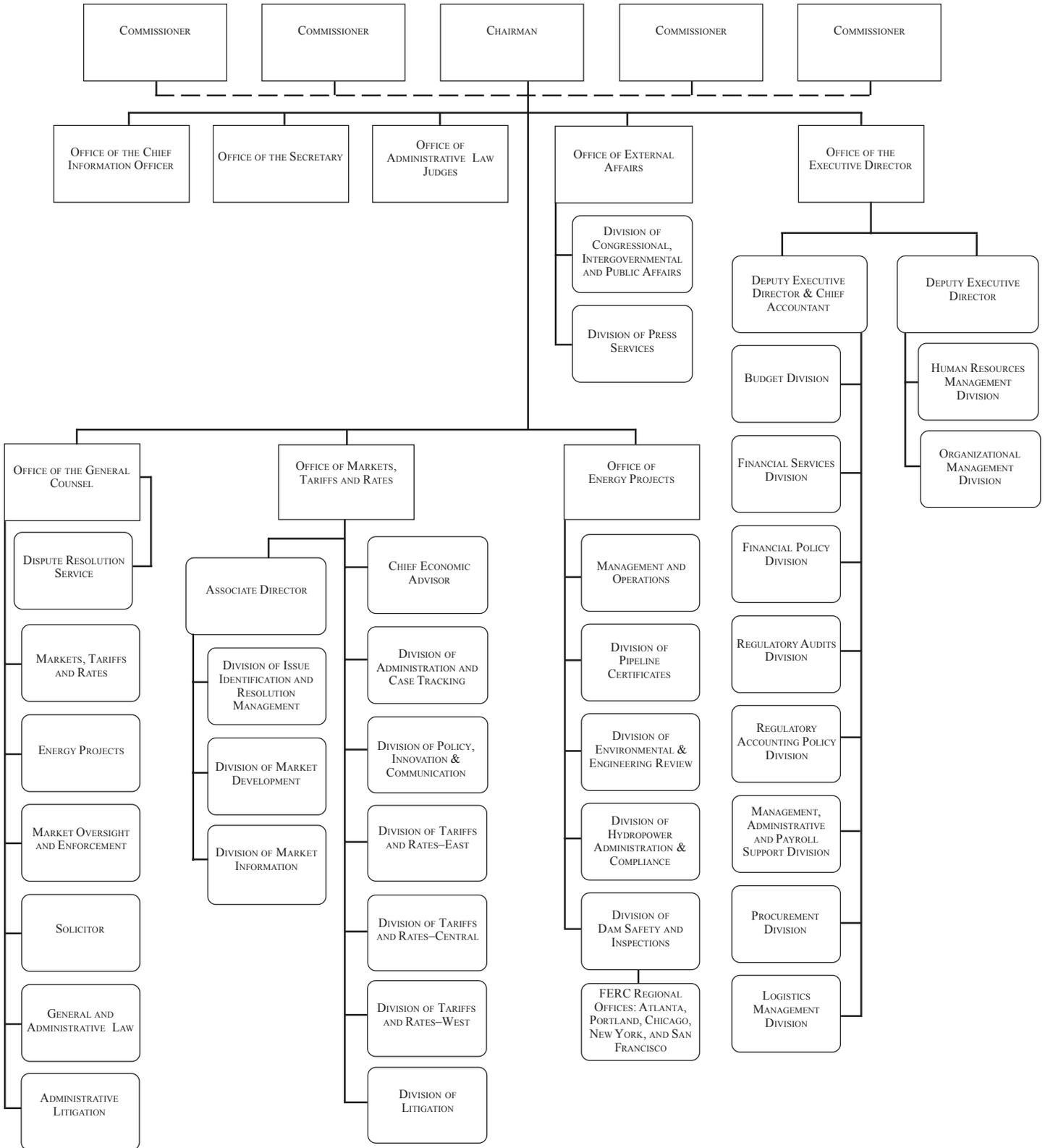
The Commission may not regulate retail sales or local distribution of electricity. These are matters left to the states by the FPA. Nor does the Commission have a role in authorizing the construction of new generation facilities (other than non-federal hydroelectric facilities) or transmission facilities. These too are state or local responsibilities.

The Commission's role in the natural gas industry is largely defined by the Natural Gas Act of 1938 (NGA). Under the NGA, the Commission regulates the construction of new natural gas pipelines and related facilities and oversees the rates, terms and conditions of sales for resale and transportation of natural gas in interstate commerce. Pipeline siting and construction is authorized by the Commission if found to be required by the public convenience and necessity. As with hydropower licensing, the Commission's actions on pipeline projects typically require consideration of factors under the National Environmental Policy Act (NEPA), the Endangered Species Act, the Fish and Wildlife Coordination Act, the Coastal Zone Management Act and other such legislation. The wellhead price of natural gas, which the Commission previously regulated, was gradually deregulated by Congress beginning with the Natural Gas Policy Act of 1978 (NGPA). All wellhead price controls on natural gas ended on January 1, 1993. Regulation of retail sales and local distribution of natural gas are matters left to the states.

Finally, the Interstate Commerce Act (ICA) gives the Commission jurisdiction over the rates, terms and conditions of transportation services provided by interstate oil pipelines. The Commission has no authority over the construction of new oil pipelines, or over other aspects of the industry such as production, refining or wholesale or retail sales of oil.

**OVERVIEW**

**2001 FERC ORGANIZATIONAL CHART**



## LOOKING AHEAD

California was among the first states to open its electric industry to competition, opening a restructured market in 1998. Until June 2000, California's electric markets appeared to work well. However, California's flawed market rules failed to send generators signals to build new capacity, even while the state experienced rapid economic growth. The lack of new capacity made the California market vulnerable. In 2000, a series of other conditions exposed that vulnerability: a severe drought curtailed hydropower; demand-side response was virtually non-existent, partly because of fixed retail rates; and a hot summer followed a cold winter. The balance between supply and demand tightened, and electric prices rose dramatically.

The Commission acted to mitigate the sharp price increases of electricity and natural gas in the Western states. These measures provided customers with relief from the most extreme spot market prices. The Commission also removed a series of regulatory obstacles to expedite providing increased energy supplies to the West. Since June 2001, electric prices have dropped to normal levels and below, throughout the West, and remained there. Several factors led to this result: reduced demand, relatively mild weather, increased supplies, and the Commission's price mitigation. Nonetheless, it is abundantly clear that market crises can erupt quickly, especially in electricity. If not prevented or treated quickly, they can do enormous damage.

Given the experience of Western energy markets, it is now clear that the Commission's primary emphasis must be to facilitate a full transition to competitive wholesale energy markets as soon as possible, and to address crucial issues that arise during the transition. The Commission's most important responses are:

- **A New Sense of Focus and Direction.** This is embodied by the Commission's Strategic Plan.
- **An Increased Emphasis on Market Oversight and Investigation.** This is embodied in the third of the Commission's four key challenges.

FERC's Strategic Plan lays out challenges, or goals, in four areas:

- **Energy Infrastructure**

*Goal: Promote a Secure, High-quality, Environmentally-responsible Energy Infrastructure Through Consistent Policies.* This goal will encourage investment in the infrastructure needed to sustain energy markets by removing roadblocks, providing cost recovery clarity, and welcoming innovative thinking about rates and use of new technology. By focusing on infrastructure, this goal covers many of the Commission's important traditional responsibilities, for example, pipeline certificates, hydropower licenses and preliminary permits, compliance activities, environmental and other licensing conditions, dam safety inspections, and most rate determinations.

- **Competitive Markets**

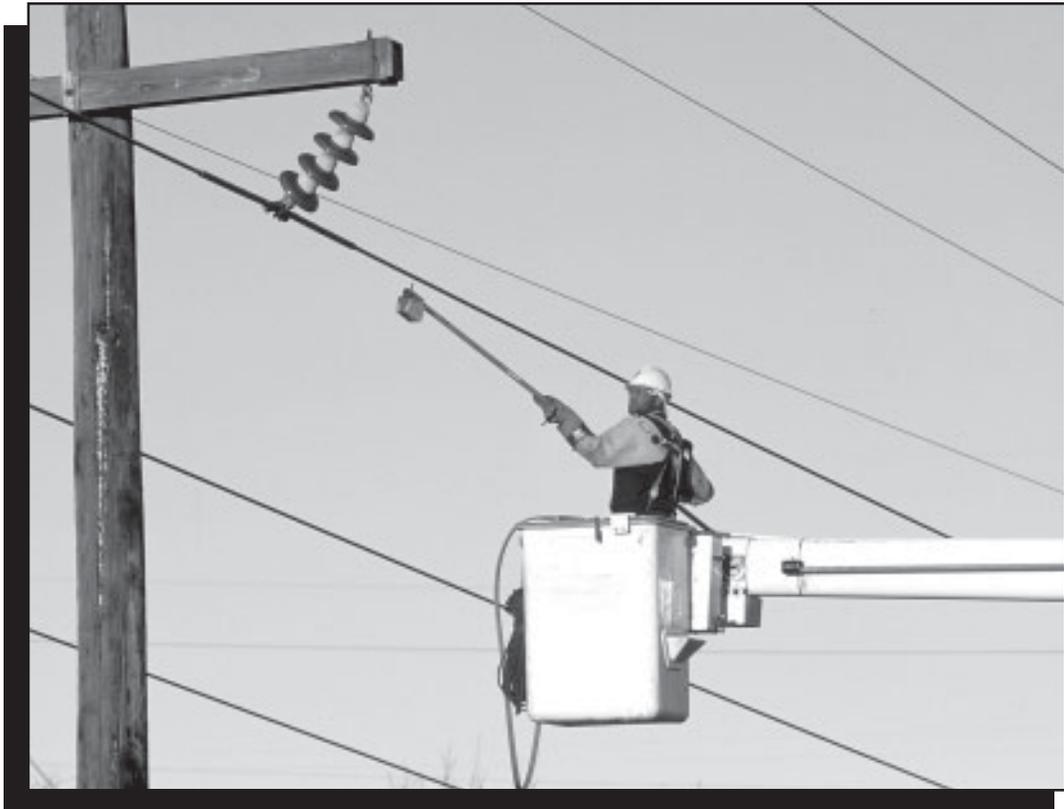
*Goal: Foster Nationwide Competitive Energy Markets as a Substitute for Traditional Regulation.* This goal focuses on the Commission's need to complete the transition to competitive energy markets as quickly and comprehensively as possible. This will require the growth of many new institutions, particularly clearly defined and independent regional transmission organizations (RTOs), to make electric markets work. The Commission also needs to establish standardized market designs that will apply in every wholesale electric market, and encourage continued efforts by industry groups to standardize reliability and business practice standards, promote the use of demand-side participation in energy markets, and establish regional transmission planning. Along with some traditional work in the area of rate determinations, this goal furthers work on initiatives begun in the last couple of years such as RTOs and new policies for natural gas.

- **Market Oversight**

*Goal: Protect Customers and Industry Participants Through Vigilant and Fair Oversight of the Transitioning Energy Markets.* This goal will ensure that competitive energy markets benefit the Nation over the long run. The Commission plans to establish a new office to coordinate all market oversight and investigative activity. The Commission needs a much stronger ability to recognize and respond to problems in the markets. At the systemic level, the Commission needs to recognize problems when—or before—they develop and craft solutions quickly. The Commission must also be able to police individual behavior in markets much more effectively than in the past. Work toward this goal also includes more traditional work, such as some aspects of litigation, dispute resolution, complaints, mergers, and auditing.

- **Resource Management**

*Goal: Efficiently Administer the Agency's Resources to Accomplish the Agency's Goals.* The Commission will be unable to meet its programmatic challenges without management support. This includes enhancing the talents and skills of the staff through recruitment and training, building effective, customer-friendly information technology (IT) services, supporting the Commission with logistics and financial services, and strengthening the Commission's strategic management processes.



*A line mechanic tests a power line to make sure it is not energized prior to performing maintenance. Photo by Rick Giammaria, courtesy of the Potomac Electric Power Co.*



*Control room at Plant Bowen, located in Cartersville, Georgia. Photo courtesy of Georgia Power.*

## GOALS

The Commission's overall goal for energy markets is to benefit customers by providing a fair, open, and efficient regulatory foundation for competition. Three objectives related to this goal are to:

- Develop and encourage competitive market institutions
- Increase market pricing efficiency
- Mitigate significant market power.

Three overall strategies apply to all the above objectives. These overall strategies are:

- Observe and monitor energy markets
- Improve and promptly enforce market rules
- Resolve disputes quickly and fairly.

The Commission will develop and encourage competitive market institutions by promoting the development of institutions that ensure fair and efficient markets without the burden of heavy-handed regulation. The Commission will help these market institutions grow, foster the exchange and sharing of appropriate market information, and monitor market developments, intervening only where and when necessary. The Commission will continue to develop rules, such as those in Order No. 2000 and Order No. 637, that increase transmission system integrity and flexibility through regulatory reform. And the Commission will increase the transparency of Commission policies and availability of market-related information.

The Commission will work to make markets more efficient through the development of innovative, efficiently priced services that provide reliable transportation systems at the lowest cost to the customer. Utilities once agreed to regulation in exchange for being the monopoly provider of energy services to customers. Their rates were based on the prudent costs of providing service and a reasonable return on investment. This approach gave utilities few incentives to improve operating efficiency or to offer new or different services. Pricing as many utility services as possible through competitive markets promotes efficient utility operations by introducing a risk/reward dynamic not found in regulated monopolies. Competitive market pricing provides good economic signals for both plant expansion and consumption decisions by customers.

The Commission will act vigorously to mitigate significant market power. Market power—the ability to raise and maintain prices above a competitive level for a sustained period—distorts price signals, reduces incentives for efficiency, and artificially increases prices to customers.

## ACHIEVEMENTS

### Outreach

During FY 2001, Commission staff conducted 22 informal outreach meetings with trade associations and energy, environmental, and consumer organizations to explore issues relating to visions of the future and the regulatory changes that would be required to meet those visions. In addition, the Commission held a number of conferences both in Washington and around the nation on a variety of issues, such as post-Order No. 637 affiliate issues, electric utility seams issues, and regional Northwest and California electric power issues. The

Commission also engaged in an extensive outreach effort with international delegations. During FY 2001, Commission staff met with over 50 foreign delegations, addressing a variety of topics such as industry restructuring, competition, price regulation, and RTOs. Commission staff also maintained close relationships with a variety of governmental and other entities with which it interacts, including the Department of Energy (DOE), the North American Electric Reliability Council, Federal Emergency Management Agency (FEMA), state regulators, and the National Association of Regulatory Utility Commissioners.

### **Regional Transmission Organizations**

During the past year, the Commission continued to push for the development of RTOs throughout the Eastern and Western Interconnections. RTOs will operate large, regional electric transmission systems on a non-discriminatory basis and under standardized terms and conditions of service. RTOs are expected to provide billions of dollars of benefits to customers. During the past year, the Commission has issued orders, and been heavily involved in collaboration with affected stakeholders, on the development of RTOs. The Commission expects to institute a rulemaking proceeding in the near future to develop a standardized RTO tariff of general applicability as well as standardized market rules applicable to the services provided by RTOs.

### **Market Observation and Monitoring**

The success of all aspects of the Commission's energy markets program depends on being able to respond to the rapid, continuous evolution of natural gas and electric power markets. The Commission has developed a monitoring capability that allows it to understand the industries and evolving dynamics of the market, and to identify market problems and opportunities to extend competitive solutions.

During the past year, the Commission has begun to examine gas and electric markets on a regional and a national basis using current and historical data. On a daily basis the Commission monitors gas and electric spot prices at major trading hubs, weather, congestion on the electric grid, generation outages, and pipeline operational flow orders. This information is made available to the Commission and all staff. The Commission also monitors additions to generation and transmission or pipeline capacity, storage levels by region, futures prices, reserve levels, hydro levels, market volatility, and releases of gas pipeline capacity above the maximum rate. Information on these data is issued in a monthly report to the Commission staff. In addition, the staff monitors for compliance with informational posting requirements of energy websites, and generation outages for separate reports.

Staff has also focused on understanding the underlying dynamics of the markets. They include: the role of risk management and risk management tools in energy markets, the operation of independent system operators (ISOs) and RTOs, and the pricing structures in the different markets. The Commission has made major strides in identifying market structure and development issues of this type. Staff education on these issues occurs through a variety of vehicles, including a monthly report on energy market issues.

### **Supply and Demand in the West**

In response to the severe energy shortages plaguing California, the Commission implemented a number of initiatives to bring more economical and reliable energy supplies to the stressed California and Western energy markets. In addition to immediately streamlining regulatory procedures for wholesale electric power sales and expediting the certification of natural gas pipeline projects into California and the West, the Commission established a number of economic incentives aimed at ensuring that upgrades to the western transmission grid are made quickly. Among the incentives were increased rates of return on common equity and shortened depreciation periods for projects that significantly increase transmission on constrained routes.

## **Price Mitigation for California and Western Markets**

By various orders issued in the spring and summer, the Commission implemented a price mitigation plan for California and extended such curbs on spot market sales throughout the Western Systems Coordinating Council (WSCC). The plan, which is to remain effective through September 30, 2002, includes the following major elements:

- Enhancing the California ISO's ability to coordinate and control planned outages of generating units during all hours.
- Requiring all utilities owning non-hydroelectric generation in California and the WSCC to offer all of their available power to the market place to the extent the output from the facilities is not already committed.
- Establishing conditions, including refund liability, on public utility sellers' market-based rate authority to prevent anticompetitive bidding behavior.
- Establishing a mechanism for price mitigation for all sellers bidding into the California ISO spot market and other spot market sales in the WSCC. Under this mechanism, the Commission established a formula (based on gas-fired generation) to be used to establish the real-time market clearing price when mitigation applies. The price mitigation plan applies to spot market sales in all hours.

## **Electronic Tariffs**

On March 14, 2001, the Commission issued a Notice of Inquiry and Informational Conference (NOI) on Electronic Tariff Filings. This notice announced the Commission's intent to move to an electronic format for oil, gas, and electric tariffs; requested comments on several issues; and scheduled a staff informational conference which was held on April 24, 2001. The goals of this initiative are to make it easier for parties to file and view tariffs, facilitate tariff research, and to comply with the Office of Management and Budget (OMB) requirement to have an electronic format available for all documents by October 2003. Currently, oil and electric tariffs are filed on paper and gas tariffs are filed in an outdated electronic format.

In addition to Commission staff, representatives from the oil, gas and electric industries, and other interested parties participated in the informational conference. Numerous comments were received, and a staff team continues to work out numerous technical issues with the goal of creating a system to electronically collect, manage, and disseminate oil, gas, and electric tariff information.

## **Market Power Investigations**

By orders issued March 28, 2001, and June 11, 2001, the Commission ordered hearings into allegations of market power, affiliate abuse and anti-competitive impact on the delivered price of gas and the wholesale electric market in California associated with three transportation contracts between El Paso Natural Gas Company and El Paso Merchant Energy-Gas, L.P. and El Paso Merchant Energy Company. These proceedings arose out of a complaint filed by the Public Utilities Commission of the State of California that the El Paso affiliated companies took improper advantage of their affiliate relationships to exercise market power and to drive up the cost of natural gas.

On March 28, 2001, the Commission ordered a hearing into three filings made by Transwestern Pipeline Company of negotiated rate contracts for firm transportation service containing pricing formulas that substan-

tially exceeded recourse rate charges. The hearing will determine if Transwestern was able to contravene Commission regulations and policy by withholding pipeline capacity that would otherwise be available at the recourse rate in order to make that capacity available at substantially higher rates. On September 13, 2001, the Commission ordered a similar hearing into eight negotiated rate filings made by PG&E Gas Transmission, Northwest Corporation. Separate hearings were under way in both proceedings.

### **Refunds in California and the Northwest**

On July 25, 2001, the Commission ordered separate evidentiary proceedings to determine the scope and methodology for calculating refunds in the spot markets operated by the California Independent System Operator Corporation and the California Power Exchange Corporation for the period October 2, 2000, through June 20, 2001, and in the spot markets in the Pacific Northwest for the period December 25, 2000, through June 20, 2001. These proceedings were initiated partly in response to a report by the Chief Administrative Law Judge on his efforts to achieve a settlement of refund issues between and among buyers and sellers in these spot markets. The Chief Judge also recommended a methodology to be used to calculate refunds. On September 24, 2001, the presiding administrative law judge in the Pacific Northwest proceeding recommended that the Commission not require any refunds in the Pacific Northwest. The Commission asked for comments on the judge's recommendations.

### **Index of Customers Notice of Proposed Rulemaking (NOPR)**

On July 26, 2001, the Commission issued a NOPR, proposing a quarterly electronic report that would increase the accessibility and usefulness of key electric power data. The proposed Index of Customers Report would contain information on contracts in service and transaction information for power sales during the previous calendar quarter. The Commission proposes that each public utility under the FPA would no longer file conforming service agreements: short-term or long-term service agreements for market-based sales of electric energy; service agreements for those generally applicable services, such as point-to-point transmission service, for which the public utility has an approved standard form of agreement under its tariff; and Quarterly Transaction Reports summarizing its short-term sales and purchases of power at market-based rates. The new electronic format would make the information standard, complete and easier to use. Numerous comments were received by the Commission. Work on a final rule and the development of an information system to collect, manage and disseminate the report data will continue in FY 2002.

### **Electronic Format for Forms 2, 2-A and 6**

In the Commission's continuing effort to improve the ease and accuracy of filing and processing data collections, it implemented a new, mandatory electronic version of the FERC Form 6, Annual Report of Pipeline Companies, and offered an optional revised electronic format for the FERC Form 2, Annual Report of Major Natural Gas Companies, and Form 2-A, Annual Report of Non-major Natural Gas Companies. The Commission issued Order 620 on December 13, 2000, revising the Form 6 filing requirements and mandating electronic filing over the Internet using software provided at no cost by FERC. The software is very similar in format to the successful Form 1 system. The Form 6 was previously filed only on paper. Similar software was developed to collect Form 2 and 2-A data over the Internet for the year 2000 filings, submitted in April 2001. These forms were previously submitted on paper and diskette, and required substantial manual intervention to produce, process and verify. The new software is much easier for respondents to use, loads into the FERC Form 2 database automatically, and contains edit checks which significantly reduce staff processing time.

### **Standards of Conduct for Affiliates**

In September 2001, the Commission proposed a rulemaking that would adopt a uniform set of standards of conduct to govern the relationship between regulated gas and electric transmission providers and their energy affiliates. The new standards are intended to reflect the significant changes in the electric and gas industries that have occurred since separate sets of standards were implemented for each industry.

### **Increased Infrastructure Security**

Immediately following the September 11, 2001, terrorist attacks, the Commission assured its regulated companies that it will approve applications proposing the recovery of prudently incurred costs necessary to safeguard the nation's energy infrastructure. The Commission is committed to expedite the processing on a priority basis of any application that would recover costs of security from wholesale customers. The Commission views the safety and reliability of the nation's energy supply infrastructure as being critical to the nation's economic well-being.

### **Informal Procedures**

The Commission encourages parties to resolve disputes quickly and informally, whenever possible. The Commission encourages parties to use the Enforcement Hotline (for quick advice and resolution), or the Dispute Resolution Service (DRS) (for facilitation, mediation, or other alternative dispute resolution [ADR] services) before filing a case with the Commission. After they file a case, the Commission may address the issues based on the filing or through a technical conference, refer the matter to the DRS, use a settlement judge, or begin other ADR processes to help parties resolve the matter informally.

### **Targeted Litigation**

Situations will always arise where the Commission needs formal investigations or hearings. The Commission will be selective, setting only appropriate disputes for full investigation and hearing. Approaches developed in FY 2000 will continue to cut by up to one fourth the time taken to decide litigated cases.

### **Electric Utility Mergers**

Recognizing that dramatic changes in the electric utility industry were giving rise to increased public utility mergers in addition to more innovative utility combinations, the Commission has taken steps to update and clarify the procedures and policies concerning public utility mergers. On November 8, 2000, the Commission issued Order No. 642, which established streamlined filing requirements for merger applications. Designed to facilitate the review process, the rule:

- Revises filing requirements to reflect existing merger policy based on the Commission's 1996 Merger Policy Guidelines
- Provides more detail for the industry in developing competitive market analyses
- Continues the existing screening process for mergers with potential horizontal competitive concerns and establishes informational requirements for vertical competitive analyses
- Streamlines filing requirements for transactions that do not raise competitive concerns
- Reduces the industry's regulatory burden by eliminating outdated filing requirements.

During the year, the Commission also acted on seven merger applications. They were:

EC00-106-000	Entergy Power Marketing Corp./ Koch Energy Trading, Inc.
EC01-13-000	Bangor-Hydro Electric Company/ Emera Inc.
EC01-22-000	FirstEnergy Corporation/ GPU, Inc.
EC01-25-000	The AES Corporation/ IPALCO Enterprises, Inc.
EC01-63-000	Niagara Mohawk Holdings, Inc./ National Grid USA
EC01-97-000	Energy East Corp./ RGS Energy Group
EC01-101-000	Potomac Electric Power Company/ Conectiv.

The Commission continues to experience a marked increase in the number of corporate applications pertaining to disposition of public utility property, consolidation or purchase of securities (Section 203 filings). Many of these applications involve the divestiture of transmission assets related to sale of generation assets and corporate reorganizations. These ongoing changes in the electric industry are occurring in large part as a result of continuing restructuring in the industry. With these changes, and with Commission initiatives such as Order No. 2000, Section 203 corporate applications are expected to remain an important part of the Commission's regulatory mission.

### **Natural Gas Wellhead Determinations**

The Commission received approximately 2,000 wellhead determinations under the procedures established in Order No. 616 which reinstated wellhead determinations under Section 503 of the NGPA. The determinations establish eligibility for a tax credit under Section 29 of the Internal Revenue Code. The determination procedures apply to coal seam gas, Devonian shale gas, and tight formation gas produced through recompletions commenced after 1992 in wells drilled after 1980 and before 1993, or through wells commenced after 1980 and before 1993.

### **Oil Pipeline Pricing Index**

On December 14, 2000, the Commission issued an order concluding its initial five-year review of the oil pipeline pricing index first established in Order No. 561. In Order No. 561 the Commission established an index for pricing oil pipeline transmission rates equal to the Producer Price Index for Finished Goods (PPI) minus 1 percent. The index, when applied to established base rates, would act as a measure of actual cost changes in the oil pipeline industry. The initial review undertaken during 2000 found that the index has remained an accurate measure for tracking oil pipeline costs.

## Changes in Gas Pipeline Regulation

During FY 2001, the Commission continued the implementation compliance process for gas pipelines under Order No. 637. In Order No. 637, the Commission, among other things, revised its regulations relating to scheduling procedures, capacity segmentation, and pipeline penalties in order to improve the competitiveness and efficiency of the interstate pipeline grid.

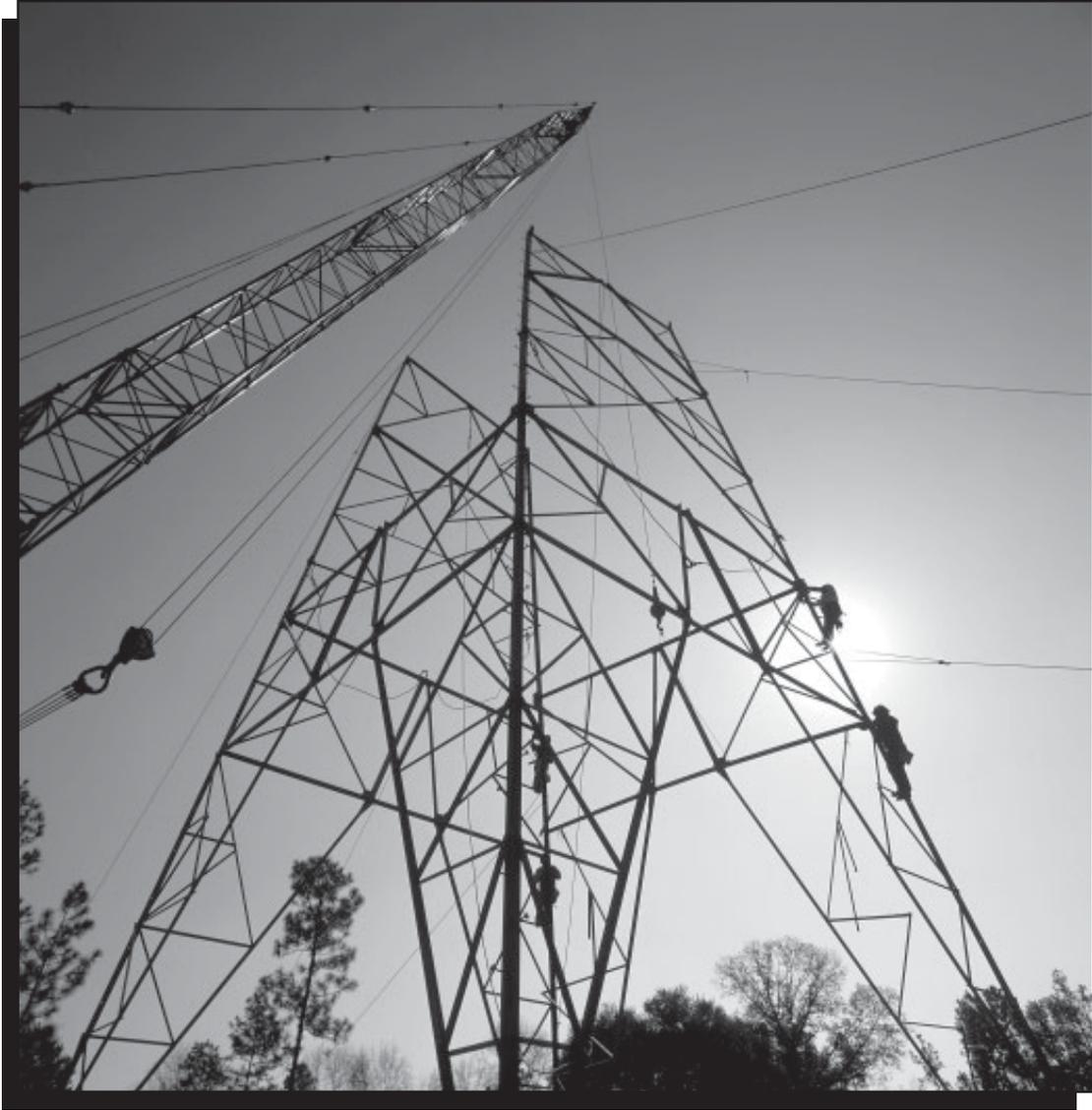
The Final Rule, Order No. 637:

- Temporarily removes price ceilings for certain short-term transactions
- Permits peak/off-peak and seasonal rates
- Revises transaction procedures, such as scheduling
- Narrows the right of first refusal
- Improves reporting requirements to provide more transparent pricing information.

These changes are expected to create greater transactional liquidity and more competition. To ensure they do, the Commission will obtain and make available better information about availability and price, enabling shippers to make more informed decisions. The implementation compliance process for this order should be substantially complete by the end of the next fiscal year.



*Gas pipeline installation in Greenland, New Hampshire.  
Photo courtesy of Foster's Daily Democrat/Dave Lane.*



*Tower construction near Baxley, Georgia. Photo courtesy of Georgia Power.*

## GOALS

The Commission's challenge is to promote a secure, high-quality, environmentally-responsible energy infrastructure through consistent policies. The objectives for meeting these challenges include:

- Removing roadblocks impeding market investment; and
- Proactively addressing landowner, safety, and environmental concerns.

### Natural Gas Pipeline Infrastructure

The expeditious processing of certificate applications, while ensuring due process for those affected by natural gas projects, remains an ongoing goal for the Commission. Early involvement helps the Commission accomplish this goal. The Commission encourages applicants to address stakeholder concerns before the certification process formally begins, while using collaboration with affected parties to the greatest extent possible. The Commission seeks to foster early involvement in its process by using such tools as enhanced pre-filing opportunities and its gas outreach program.

The gas pipeline industry continues to expand into new markets. Pipelines are proposing to serve markets already served by other pipelines. Competing pipelines, and landowners who question the need for the new projects, vigorously contest many of these proposals. Parties with environmental concerns also question the need. Processing contested proposals requires significant resources, and the Commission remains fully committed to ensuring that multiple competing interests and timeliness issues are not only addressed, but that any decision authorizing the construction and operation of facilities balances these concerns.

Increasing availability of Canadian supplies, new deep-water production in the Gulf of Mexico, and the growing market for natural gas in the Northeast will continue to result in large construction projects. The Commission also expects that Canadian gas and oil suppliers will seek additional markets for their products in the United States, and that producers will explore options to export gas to Canadian and Mexican markets, which may require pipeline construction. Pre-filing conferences and meetings are taking place to explore the utilization of Alaskan gas reserves for the lower 48 states. Increased competition in markets and customers' desires for multiple, competing sources of supply will generate more NGA Section 3 filings and related requests for Presidential permits for importing and exporting gas and oil. The Commission will also continue to see projects related to the extensive exploration effort on the offshore outer continental shelf and construction of pipelines to reach significant new gas supplies.

The Commission expects to receive applications for storage development for peaking capacity and supply flexibility, since customers will continue to be responsible for their own gas supply acquisition. Anticipated storage facilities include depleted gas fields, new leached-salt caverns, and liquefied natural gas (LNG) tanks. These projects, many of which will be located near market areas, are likely to generate significant public interest regarding competition, need, and environmental impact.

The Commission also anticipates many applications for replacement facilities. Replacement and upgrading of pipeline facilities continues because of the aging of the national pipeline grid.

Regardless of whether the gas certificate applications involve new greenfield projects, expansions of existing facilities, or simply the replacement of aging infrastructure, the Commission continues to ensure the responsible development of transportation capacity with large public interest benefits.

### **Optimizing Hydroelectric Projects**

Electricity generated from the power of falling water is economical, renewable, available for peak demand, and free of emissions and is a significant component of the nation's energy mix. But because hydropower projects use and affect a variety of important natural resources, they must adjust to increasing concern for the environment and shared jurisdictional authorities, while competing in rapidly changing energy markets.

Public concern about the environmental effects of hydropower operations continues to increase. This heightened concern, reflected in a host of environmental laws, results in many additional requirements in new licenses.

While the Commission's responsibility under the FPA gives equal consideration to the many competing power and non-power interests, various statutory requirements give other agencies a powerful role in the licensing of projects. The Commission shares its license conditioning authority with numerous state and federal agencies. Shared jurisdiction poses unique challenges to the Commission in issuing timely and balanced licenses. In FY 2001, the Commission reported to Congress on the results of an Interagency Task Force formed in 1998. The Task Force developed seven key reports containing many recommendations to improve, streamline, and enhance the licensing process.

Over the next eight years, more than 180 project licenses will expire. Many of these projects significantly affect important environmental resources, and as such, have a high potential for conflicts. The Commission mitigates this potential by: (1) involving every integral stakeholder (local citizen groups, power users, Native Americans, environmental organizations, fish and wildlife agencies, and the hydropower companies) early in the licensing/relicensing process; and (2) promoting better communication among stakeholders. By encouraging participation early in the collaborative processes, the Commission's authorizations more thoroughly address the needs of the stakeholders affected by the hydropower facilities. Environmental terms and conditions are developed after providing numerous opportunities for input from all stakeholders and carefully considering all associated issues and concerns.

### **Hydropower Project Safety**

The Commission's internationally recognized dam safety program ensures that the dams under its jurisdiction are properly constructed, operated and maintained. Because of the increasing number of older dams under the Commission's jurisdiction, continued vigilance is necessary. As engineering technology, tools, and procedures improve, the Commission conscientiously facilitates sharing of knowledge, and it works with licensees, the engineering community, and federal and state agencies to maintain its acclaimed dam safety record.

# ACHIEVEMENTS

## NATURAL GAS PIPELINES

### Expedited Approval Process

President Bush's National Energy Policy (NEP) asks agencies to continue their efforts to expedite natural gas pipeline permitting in an environmentally-sound manner and to look for ways to improve the regulatory process governing approval of interstate pipeline projects. Accordingly, the Commission reviewed its pipeline certification program. New approaches, such as enhanced pre-filing cooperation with applicants, have allowed the Commission to respond to urgent energy needs.

When the serious need for gas in California and the West demanded a quick response, the Commission's staff expeditiously processed those certificate applications involving additional deliverability into western markets. Another immediate step the Commission took was to temporarily increase cost limitations on blanket certificates and prior notices for projects located in the WSCC, which were scheduled to be in service by April 30, 2002. Blanket certificates and prior notices allow the applicant to automatically construct facilities using authority granted outside of the traditional review process.

### Major Facilities Construction

In 2001, the Commission authorized the construction and operation of a significant number of pipeline facilities to provide service to all regions of the country. Major projects include:

The Gulfstream Project, which was authorized in February, 2001, involves the construction and operation of 744 miles of pipe and 120,000 horsepower of compression at an estimated cost of \$1.65 billion. The pipeline will transport 1,130 million cubic feet per day (MMcfd) of natural gas from Mississippi to Florida, crossing the Gulf of Mexico in the process. Wyoming Interstate's Medicine Bow Lateral Expansion, which was authorized in May, provides for the transportation of 675 MMcfd of gas over 155 miles of pipe in Wyoming and Colorado, using 7,170 horsepower of compression at a cost of \$156 million. Pacific Gas and Electric was authorized in July to construct and operate 21 miles of pipe and 97,500 horsepower of compression in order to transport 207 MMcfd of natural gas from Canada. The project is estimated to cost about \$122 million. Florida Gas Transmission's Phase V Expansion, which was also authorized in July, comprises 231 miles of pipe and 89,765 horsepower of compression in Alabama, Mississippi and Florida at a cost of approximately \$427 million. This project increases the transportation capacity of Florida Gas' system by almost 270 MMcfd.

In addition to the above authorizations, the Commission also made preliminary determinations on non-environmental issues on several major projects. Iroquois Gas Transmission's Eastchester Extension would provide 230 MMcfd of deliverability and would require the construction of 32.8 miles of pipe and 54,300 horsepower of compression in New York at a cost of about \$174 million. Maritimes and Northeast Pipeline's Phase III Project proposes to transport 360 MMcfd of gas to Massachusetts using 25 miles of pipe at an estimated cost of \$134 million. Algonquin Gas Transmission Company's Hubline Project would deliver 230 MMcfd of gas into Massachusetts using 35 miles of new pipe at a cost of about \$160 million. North Baja Pipeline proposes to provide 500 MMcfd of transportation via the construction of about 80 miles of pipe and 7,200 horsepower of compression in Arizona and California. Colorado Interstate Gas Company plans to construct 119 miles of pipe and 4,450 horsepower of compression in Colorado at a cost of about \$72 million to transport 272 MMcfd of gas. Tuscarora Gas Transmission Company would transport 95.9 MMcfd of gas in California and Nevada by constructing 14.2 miles of pipe and 24,000 horsepower of compression at an estimated cost of \$57.8 million.

## ENERGY PROJECTS

In 2001, the Commission also authorized two major storage projects and three LNG projects. Central New York Oil and Gas Company's Stage Coach Storage project, which was authorized in February, provides storage for up to 13.6 billion cubic feet (Bcf) of natural gas, using 25,000 horsepower of compression. Egan Hub was authorized in June to construct and operate 19,130 horsepower of compression in order to store 5.5 Bcf of natural gas in Louisiana. Distrigas of Massachusetts was authorized in January to increase by 600 MMcfd its deliverability of regassified LNG from its Boston import terminal by constructing about \$35 million of LNG-related facilities. Trunkline LNG was authorized in March to provide 300 MMcfd of deliverability at its LNG plant in Louisiana. The cost of this project is estimated to be \$1.3 million. Finally, Southern LNG was authorized in July to deliver 135 MMcfd of regassified LNG from its import terminal in Georgia using facilities costing \$14.2 million.

The following table provides a summary of the major natural gas facilities authorized by the Commission in FY 2001:

TYPE OF PROJECT	FACILITIES / ADDED CAPACITY	COST (\$ MILLION)
New Pipeline	2449 miles; 804,592 horsepower; 6.63 Bcfd capacity	6,644
New Storage	19.1 billion cubic feet storage; 44,130 horsepower; 500 MMcfd deliverability	N/A
Expanded Liquefied Natural Gas	1.04 Bcfd deliverability	50.5
Preliminary Determinations	305.9 miles 89,950 horsepower 1.7 Bcfd capacity	742.8

### Information Availability and Outreach

The Commission remained vigilant in ensuring that pipeline companies notify affected landowners of proposed route locations according to the Landowner Notification Rule. The ongoing success of this program has proved useful in providing an opportunity for early landowner participation in the Commission's process. Early participation can allow the parties to identify and resolve disputes before filing with the Commission and come up with significant new issues and alternatives.

The Commission also continued its outreach program to collect and disseminate information on ways for applicants, state and other federal agencies, and citizens to identify and resolve disputes before filing with the Commission. Commission staff initiated a series of Interstate Natural Gas Facility Planning Seminars. Seminars were held in Albany, New York; Chicago, Illinois; Tampa, Florida; and Seattle, Washington. These seminars were designed to bring the parties together to explore new strategies for participatory project design and for developing solutions to environmental issues during the pre-filing planning process.

Based on feedback from the seminars, Commission staff developed and issued a report entitled *Ideas for Better Stakeholder Involvement in the Interstate Natural Gas Pipeline Planning Pre-Filing Process*.

### **Alaskan Gas**

In response to interest in Alaskan gas, in January 2001, staff submitted to the U.S. Senate Committee on Energy and Natural Resources a report on the Alaskan Natural Gas Transportation Act of 1976 (ANGTA) requirements for constructing a pipeline from Alaska to the lower 48 states. The report discusses Commission proceedings in the 1970s under ANGTA and the issues the Commission would face to finish considering these applications today.

As part of the President's NEP, Commission staff are also participating in a DOE working group on Alaskan natural gas.

## **HYDROPOWER LICENSING, ADMINISTRATION, COMPLIANCE AND SAFETY**

### **LICENSING**

#### **Increased Collaborative Efforts**

The Commission continues to promote collaborative efforts by encouraging participation in the Alternative Licensing Process (ALP). The ALP is a voluntary process designed to improve communication among interested parties, and allows the Commission's staff to provide requested assistance to participants early in the licensing process. The process is flexible and tailored to the facts and circumstances of the particular project. Other efforts to promote collaboration include interagency hydropower workshops, stakeholder consultation meetings, and outreach meetings.

#### **Resource Standards and Adaptive Management Provisions**

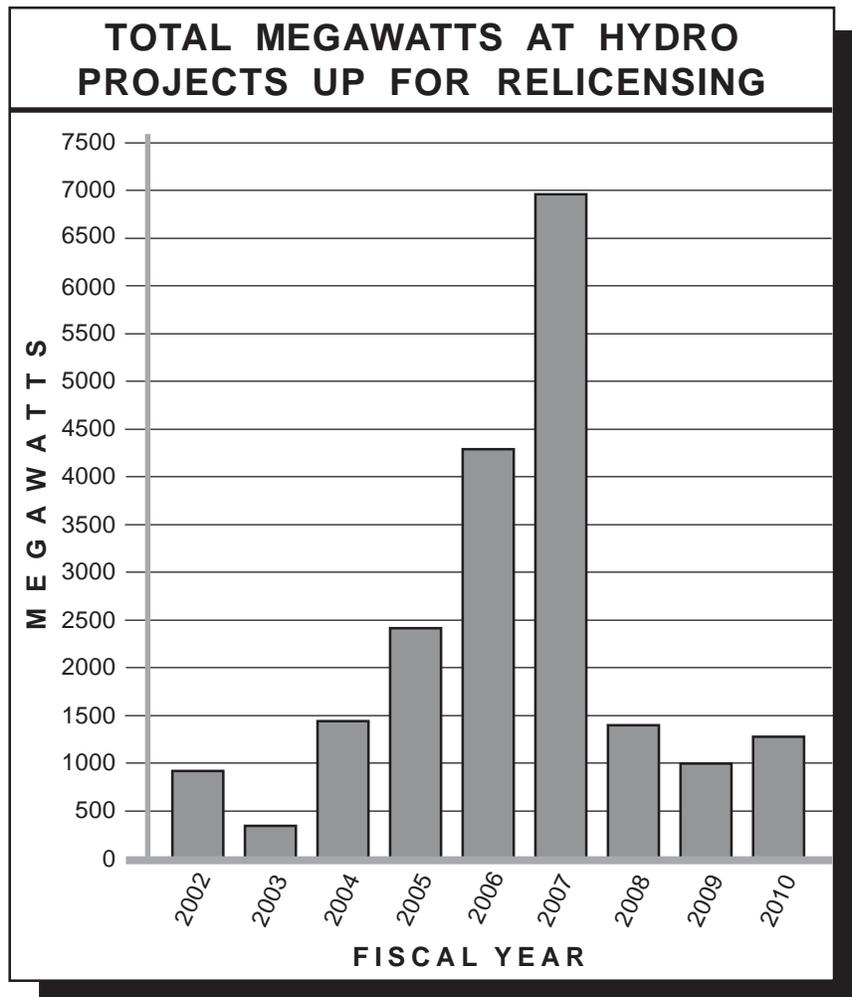
With the resource standards approach (performance-based measures), the Commission imposes the desired result and allows the licensee to decide the best way to achieve that result. Under the adaptive management approach, the Commission issues licenses with terms that allow the Commission to react to changes over time. The joint use of resource standards and adaptive management provides a more flexible approach, allowing stakeholders to decide cooperatively the best and most cost-effective way to meet license objectives. The Commission has already initiated the use of these approaches in recent relicensing orders. During relicensing proceedings, Commission staff will examine license objectives to decide how to apply the resource standards and adaptive management approaches. In addition, Commission staff will institute monitoring procedures to determine their effectiveness in achieving the desired results.

## Settlements

The Commission encourages stakeholders, particularly when using the ALP, to resolve issues in the form of settlement agreements. The following are examples of settlement agreements reached in FY 2001.

FPL Energy Maine Hydro LLC reached a settlement agreement with stakeholders for the relicensing of Maine’s largest hydro plant, the 88-megawatt (MW) Indian Pond Project, also known as Harris Station. The agreement stems from talks that began in 1999, after the project was purchased by FPL Energy from Central Maine Power Co. The agreement would more than double the existing minimum flow from 140 to 300 cfs. It also would provide habitat restoration funding, angler access, and suitable flows for fishing. FPL Energy Maine is to donate 1,300 acres for conservation purposes and to attempt to protect lands along Kennebec Gorge.

On June 21, 2001, PacifiCorp filed a settlement agreement on behalf of itself and seven federal and state agencies to resolve issues associated with the relicensing proceeding for its 185.5-MW North Umpqua Project in Douglas County, Oregon. The project is adjacent to and just upstream of the 34-mile-long North Umpqua Wild and Scenic River, considered by many the nation’s premier steelhead trout resource. The settlement agreement is the product of over five years of discussions among the signatories and Commission staff participation during the year.



### **Interagency Cooperation**

In May 2000, the Commission and the Departments of Interior, Commerce, and Agriculture signed a statement of commitment to make the hydropower licensing process more efficient and effective. A Joint Settlement of Commitment outlines the administrative reforms developed by an interagency task force that these agencies created to improve the hydropower licensing process. In December 2000, the task force released seven reports that included agreements pertaining to: noticing procedures; NEPA processes; endangered species consultation; studies process; mandatory terms and conditions; trackable and enforceable license conditions; and collaborative processes. Beginning in January 2001, an interagency outreach team presented the task force reports to over 150 Commission and resource agency personnel in eight cities.

To monitor the success of interagency agreements aimed at improving the licensing process and to create a lasting forum for discussion of issues among agencies involved in the licensing process, the task force created the Interagency Hydropower Committee (IHC).

To help in defining the Commission's and U.S. Fish and Wildlife Service's responsibilities and opportunities to protect migratory birds, the Commission is participating along with other agencies in the preparation of a memorandum of understanding (MOU) to implement Executive Order 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds."

## **COMPLIANCE AND ADMINISTRATION**

### **Preliminary Permits**

During FY 2001, the Commission processed 169 applications for preliminary permits. Over 200 applications were filed, a 97 percent increase from FY 2000, and the great majority of sites proposed for study are located in the western United States. The purpose of a preliminary permit is to maintain priority of application for a license during the three-year term of the permit while the permittee conducts investigations and secures data necessary to determine the feasibility of the proposed project and prepares an acceptable development application.

### **Non-Power License**

The Commission has issued its first non-power license to Wisconsin Electric Power Co. for the 800-kW Sturgeon Project. The non-power license permits temporary operation of the project for several years while the reservoir is drained, the reservoir bed is stabilized, and the project works are removed. When that is completed, the Commission intends to accept WEPCO's application to surrender its license. The Commission approved an agreement in early 2001 that included relicensing eight WEPCO projects in the Upper Menominee River Basin and the surrender of the Sturgeon license.

### **License Transfers**

During FY 2001, the Commission acted on 39 applications for the transfer of a license. When a licensee wishes to transfer its license, it must seek Commission approval. A transfer application is jointly filed by the transferor and transferee and is publicly noticed. Since the issuance of the Commission's Decommissioning Policy Statement in 1994, Commission staff has scrutinized license transfers to ensure that a transferor with a poor compliance record is not trying to escape that record and give a transferee an advantage in relicensing, or handing off an increasingly marginal project to a new licensee that lacks the financial resources to maintain the project. A determination is made concerning the proposed transferee's fitness under the FPA.

### **Outreach**

The Commission continues to make outreach a part of its day-to-day operations. Commission staff provides assistance and guidance to interested parties working toward mutually acceptable solutions to post-licensing matters.

For example, in October 2000, Commission staff met in Taftsville, Vermont, to discuss the relocation of two historic substations at the Taftsville Project. At the meeting, the group discussed alternatives and agreed to look at various options.

Staff encouraged the licensee and the group to develop a scoping document to look at the feasibility of relocating the two substations. The group has filed progress reports and is working toward a solution.

At the request of the licensee for the Smith Mountain Project in central Virginia, Commission staff participated in a meeting with the licensee and waterfront home developers interested in the application process for non-project uses. Staff assisted the licensee in explaining this process and discussed the licensee's ongoing efforts to prepare a shoreline management plan for the project. Staff also met with the steering committee at Smith Mountain Lake to discuss the development of their shoreline management plan.

Commission staff participated in an outreach meeting concerning water-borne debris on the lower Susquehanna River near Harrisburg, Pennsylvania. In response to a recent high-flow event on the river, the meeting allowed parties to review the debris management measures taken at the Conowingo Hydroelectric Project.

Commission staff also attended a meeting in Missoula, Montana, with multiple agencies to discuss Flathead Lake. A public session was held to provide information to the public regarding the operation of the project during summer low flow and drought conditions.

Since February 2001, Commission staff has met regularly with the licensee of the Toledo Bend Project and a group of interested stakeholders to assist the group in a collaborative effort to reach a mutually acceptable agreement on reservoir operating levels at the project, which is located on the Sabine River in Texas and Louisiana. Commission staff continues to assist and guide the collaborative work group as it works toward resolving these issues.

### **Civil Penalties**

In FY 2001, the Commission, for the first time in a decade, did not impose any civil penalties; however, several noncompliance cases were addressed and resolved. In one case, Commission staff worked over several years and visited a project site numerous times to facilitate its sale. In another case that had public safety implications, the Commission was granted injunctive relief and a District Court ordered a licensee to make necessary repairs by a specified date, or face contempt or daily fines until the repair work was completed. This matter was also resolved in FY 2001, when a company with hydro experience purchased the project and agreed to make the needed repairs. The Commission also reached an agreement with a municipality that had allegedly violated its license requirement concerning flushing flows. Negotiations with the municipality revealed a differing interpretation of the requirement and after further discussions about environmental impacts, the licensee agreed to implement the flushing flows sought by the Commission and revisit the issue by submitting an application to amend the license.

### Shoreline Management

The Commission recognized the need for a guidance document to address the Commission's legal authorities and regulatory role with regard to shoreline management, planning, and monitoring. Therefore, in April 2001, the Commission issued a shoreline management guidance booklet.

In recent years, the Commission has seen an increasing number of applications filed for shoreline development activities (specifically for non-project uses and occupancies of project lands and waters). In response to the growing involvement of homeowners and users of recreational facilities in the public review process, Commission staff has been actively searching for ways to work with licensees and concerned stakeholders. Through the *Shoreline Management Guidance Handbook*, the Commission hopes to minimize the environmental effects of these uses of project resources while continuing to allow for public enjoyment of project resources.

### Compliance Plans and Reports

Licenses issued today include conditions that will protect and enhance environmental resources. These conditions require licensees to prepare and file plans or reports with the Commission. These plans and reports may deal with project operation, development of recreational resources, improvements to fishery habitat, water quality protection, wildlife benefits, wetlands and vegetation improvements, and cultural resources protection. Prepared after the license is issued, the licensees typically develop the plans and reports in consultation with identified agencies and groups, and file them as applications with the Commission. In FY 2001, the Commission approved over 900 applications.

### Environmental Compliance Reviews

To ensure that licensees comply with the terms and conditions of their licenses, the Commission will continue to pursue reported incidences of environmental non-compliance. If an incident is reported, the Commission directs the licensee to explain the circumstances surrounding the incident and, if necessary, provide additional information. In FY 2001, the Commission completed over 200 reviews of reports on non-compliance incidents related to environmental requirements. Many of the incidents were received by the Commission as self-reports made by the hydropower licensees while others were allegations received from private citizens and resource agencies. All of the reports required review by the Commission staff with many of the incidents corrected immediately by the licensee or corrected after staff took follow-up actions.

**BETWEEN THE YEARS 2002 AND 2010,  
MORE THAN 180 PROJECT LICENSES WILL EXPIRE.  
THESE PROJECTS REPRESENT ABOUT 21 GIGAWATTS,  
OR 32 PERCENT, OF THE TOTAL GENERATING  
CAPACITY OF ALL LICENSED PROJECTS.**

## **Effectiveness of Environmental Measures**

Most hydropower licenses include requirements to develop plans to monitor the environmental resource protection conditions implemented at the project. In FY 2001, the Commission reviewed the results of these monitoring efforts to evaluate whether the environmental measures were providing appropriate levels of protection, mitigation, and enhancement for environmental resources. Stakeholders with an interest in a particular environmental measure being examined were provided an opportunity to participate in the evaluation process. Through outreach meetings and workshops, the Commission distributed information for licensees and potential licensees to use in developing their environmental resource protection plans. Outreach meetings and workshops addressed such topics as shoreline management programs, water quality protection, fish passage, and recreation management plans. The evaluations resulting from the review and analysis of these monitoring results will allow for improvements to the environmental measures included in future licenses and, consequently, to the hydropower program objective of improving the environmental performance of hydropower projects.

## **SAFETY**

### **Project Inspections**

Inspections verify the structural integrity of dams and compliance with engineering, environmental, and public safety conditions and regulations. They also identify necessary maintenance and remedial modifications. The Commission is responsible for inspecting about 2,600 dams and related water retention structures. It conducts periodic inspections starting from the receipt of an application for a proposed jurisdictional project, throughout the term of a license. The Commission's five regional offices conduct the inspections.

Inspections during project construction ensure that the constructed project complies with the approved design. They also ensure that project construction complies with all applicable federal and state environmental regulations and includes appropriate environmental protection measures, such as erosion control plans and flow monitoring systems. Construction inspections can uncover unexpected conditions (such as unknown foundation features) and any need for design changes.

When the project begins operation, focus shifts to ensuring safe operation and maintenance of the dams. Periodic, on-site operation inspections ensure the long-term structural integrity of the project works. They also ensure that licensees comply with license provisions. These inspections safeguard the continued operation of projects, as well as downstream lives, property, and environment.

Special inspections occur when special issues arise. These may involve potential dam safety problems, unauthorized projects, complaints about the construction or operation of projects, public safety concerns, or compliance issues.

### **Engineering Analyses**

To provide guidance to its engineering staff, dam owners, their consultants, and the rest of the dam safety community, the Commission publishes *Engineering Guidelines for the Evaluation of Hydropower Projects*. These guidelines specify the criteria, analytical methods, engineering parameters, and other engineering aspects related to the design, construction, monitoring, and operation of safe dams. The dam safety community widely requests and relies on these guidelines. The Commission updates and expands the guidelines as necessary to ensure consistency with state-of-the-art technology.

As dams age and undergo various stress conditions, such as floods and earthquakes, the Commission increases its monitoring and use of instrumentation data to decide whether the condition of the dams and their appurtenant facilities are changing. This procedure is the key to detecting potential problems before they become serious and deciding whether new remediation is necessary. With monitoring data available, the Commission will require licensees and their consultants to continually evaluate the condition and performance of their dams.

### **Safety Reviews**

The Commission's dam safety program must ensure consistently high safety standards at high and significant hazard potential dams to maintain the lowest probability of failure. In addition to its own periodic visual inspections and evaluations, the Commission requires periodic independent consultant inspections of dams with high hazard potential. These inspections include a complete engineering assessment and inspection of the project works, with a detailed review of the project design and a thorough inspection of project structures. For quality control, Commission dam safety experts approve qualifications of independent consultants. They also thoroughly review all independent consultant inspection reports for validity of the analysis and conclusions and the need for additional studies or remedial measures.

In FY 2001, the Commission developed and held independent consultants workshops in Portland, Oregon, and Washington, D.C. These workshops accomplished the objective of promoting communication and a common understanding of the Commission's Independent Consultant Inspection Program by the licensees, independent consultants, and Commission staff. The workshops resulted in opening up new lines of communication, specifically a web-based system that provides for the free flow of dam safety-related information, policy updates, and collaboration on developing dam safety initiatives.

### **Ensuring Safe Projects: Aging Hydraulic Components**

The proper functioning of the hydraulic components of dams is critical to ensuring dam safety. Without proper functioning of the hydraulic machinery, penstocks, conduits, gates, and spillways, the necessary control of reservoirs can be lost, resulting in dam failure. While the Commission's role and responsibility regarding dam safety are quite different from those of other agencies, such as the Corps of Engineers, the Bureau of Reclamation, and FEMA, all have common technical dam safety concerns. In addition, the rest of the dam safety community, including dam owners, state dam safety agencies, and engineering consultants, has expertise and a vested interest in technical dam safety issues. The Commission is coordinating and focusing the dam safety community on hydraulic component safety problems. The goal is to develop the proper technical approach to assure the safety and adequacy of aging hydraulic components of dams.

### **Performance Monitoring**

Applying instrumentation to dams and related water-retaining structures, to monitor otherwise-undetectable changes in these structures, is a critical component of the Commission's dam safety program. By applying the correct technology and instrumentation to each unique situation for early detection and evaluation of deficiencies, serious problems are identified, evaluated, and corrected before they fully develop. In FY 2001, the Commission initiated development of an important aspect of its performance monitoring program — potential failure modes analysis. In conducting these analyses, the focus is to determine: (1) the most likely failure mode of a dam; and (2) how to ensure that conditions leading to it will be corrected before they become dam safety problems. Establishing site-specific potential failure modes for dams will increase the efficiency and effectiveness of the performance monitoring program.

### **State Safety Programs**

Congress established the National Dam Safety Program Review Board (NDSPRB) to advise the Director of FEMA on implementation of the National Dam Safety Program. The Commission's dam safety expertise was influential in the Board's accomplishments in FY 2001. Accomplishments included grant distribution to all 50 states, and dam safety program improvements made in every state. Also during FY 2001, the National Dam Safety Program Training Subcommittee, which the Commission chairs, facilitated several beneficial training opportunities for state programs. The State of Alaska requested that the Commission share its expertise in emergency action planning to help improve the state's dam safety program. Commission staff held a training course in Anchorage, Alaska, on the testing of Emergency Action Plans (EAPs) for state-regulated dam owners and Commission-regulated licensees.

### **Seismicity in the East**

In FY 2001, the Commission staff worked with several licensees to develop new information on several site-specific seismicity studies and seismic stability analyses for projects in the southeastern part of the United States. The impact of earthquakes on the safety and stability of Commission-licensed dams is an area of concern and requires detailed engineering evaluations. Current studies have focused on earth dams constructed in the 1930's, sometimes over loose foundation materials, or constructed with techniques that produced a loose embankment dam susceptible to drastic strength reductions during seismic shaking. These evaluations indicate significant modifications are required at several projects. Commission staff has guided the remedial designs to develop effective, least-cost solutions.

### **Seismicity in the Northwest**

In FY 2001, engineering consultants to the Commission completed several studies in the Northwest assessing the seismic influence a major rupture along the Cascadia Subduction Zone and the Juan de Fuca Plate would have on several high hazard potential dams. The Commission's Engineering Guidelines require that high hazard potential dams withstand the Maximum Credible Earthquake (MCE). Study results are enabling Commission staff to establish new or revised MCE loads in the Pacific Northwest region. Currently, several licensees are reviewing the seismic stability of their dams using the seismic loadings developed from the above studies. In addition, the Commission is requiring dam owners to have their independent consultants perform site-specific seismic evaluations and revise dam stability analyses when loading conditions change significantly, or when previous methods of analysis are no longer acceptable.

### **Emergency Action Planning**

The Commission continues to make improvements to its EAP program. The Commission is recognized as a national leader in EAPs. EAPs specify actions that owners must take, in coordination with federal, state and local preparedness agencies, in case of emergencies. During FY 2001, the “International Workshop for Emergency Preparedness at Dams” was planned. Interest from throughout the U.S. and from several foreign countries was generated. Security at dams is an important topic at all Commission emergency action planning workshops. In FY 2001, Commission staff continued to improve its EAP program by incorporating emergency management personnel into the course, and providing more assistance to state dam safety programs. The primary objective of the course is to help Commission licensees better prepare for the testing of their emergency action planning process. To achieve the maximum benefit of exercising the EAP, participation of all key players involved in the plan is needed. Commission staff emphasizes the importance of emergency management personnel working closely with the dam owner to complete the EAP plan test.



*Hydro Quebec's Robert-Bourassa dam, completed in 1979, has a nominal capacity of 5,328 megawatts. Canada is an important supplier of energy to the United States. Photo courtesy of Hydro Quebec.*

# HYDROELECTRIC POWER TABLE

(PROJECTS FOR WHICH LICENSES WILL EXPIRE BETWEEN JANUARY 1, 2001, AND DECEMBER 31, 2007)

LICENSE EXPIRATION DATE	OWNER	FERC PROJECT NO.	STATE	COUNTY	RIVER	INSTALLATION (KW)	FACILITIES UNDER LICENSE	PERIOD OF (YEARS)	SUBJ. FED.
20010125	S D WARREN CO	2942	ME	CUMBERLAND	PRESUMPCOT RIVER	2400	DM PH	20	N
20010125	S D WARREN CO	2931	ME	CUMBERLAND	PRESUMPCOT RIVER	1900	DM PH	21	N
20010125	S D WARREN CO	2932	ME	CUMBERLAND	PRESUMPCOT RIVER	800	DM PH	21	N
20010125	S D WARREN CO	2941	ME	CUMBERLAND	PRESUMPCOT RIVER	1000	DM PH	21	N
20010125	S D WARREN CO	2897	ME	CUMBERLAND	PRESUMPCOT RIVER	1350	DM PH	22	Y
20010131	CONNECTICUT LIGHT & POWER CO	2597	CT	LITCHFIELD	HOUSATONIC RIVER	9000	DM PH	20	N
20010131	NEKOOSA PACKAGING CORP	2901	VA	AMHERST	JAMES RIVER	1875	DM PH	20	Y
20010131	LYNDONVILLE VILLAGE OF	3090	VT	CALEDONIA	PASSUMPSIC RIVER	350	DM PH	20	N
20010131	VIRGINIA ELECTRIC & POWER CO	2009	NC	HALIFAX	ROANOKE RIVER	278000	DM PH	50	Y
20010131	ERIE BOULEVARD HYDROPOWER, L.P	2060	NY	COLTON	TOWN OF COLTON	0	RS	50	Y
20010228	ANTRIM COUNTY	3030	MI	ANTRIM	ELK RIVER	700	DM PH	20	N
20010228	DAIRYLAND POWER COOP	1960	WI	RUSK	FLAMBEAU RIVER	15000	DM PH	50	Y
20010330	CONSUMERS ENERGY CO	2566	MI	IONIA	GRAND RIVER	3250	DM PH	20	Y
20010430	PACIFICORP	2071	WA	CLARK	LEWIS	134000	DM PH	50	Y
20010731	MARQUETTE CITY OF	2589	MI	MARQUETTE	DEAD RIVER	3900	DM PH	20	Y
20010731	USGEN NEW ENGLAND, INC.	2077	NH	GRAFTON	CONNECTICUT RIVER	291360	DM PH	50	Y
20010830	BLACK RIVER FALLS CITY OF	3052	WI	JACKSON	BLACK RIVER	920	DM PH	20	N
20010831	PACIFICORP	2652	MT	FLATHEAD	SWAN RIVER	4150	DM PH	25	Y
20010831	GREEN MOUNTAIN POWER CORP	2090	VT	WASHINGTON	WATERBURY RIVER	5520	DM PH	47	Y
20010901	INTERNATIONAL PAPER CO	2631	MA	HAMPDEN	WESTFIELD RIVER	2690	DM PH	20	Y
20010930	HAMILTON CITY OF	2724	OH	BUTLER	MIAMI RIVER	1500	DM PH	20	N
20010930	ENTERPRISE MILL, LLC	2935	GA	RICHMOND	AUGUSTA CANAL	1200	DM PH	20	N
20010930	AQUENERGY SYSTEMS INC	2416	SC	GREENWOOD	SALUDA RIVER	6200	DM PH	25	Y
20010930	NANTAHALA POWER & LIGHT CO	2694	NC	MACON	QUEENS CREEK	1440	DM PH	25	N
20011001	PACIFICORP	472	ID	FRANKLIN	BEAR RIVER	30000	DM PH	20	Y
20011001	CONNECTICUT LIGHT & POWER CO	2576	CT	FAIRFIELD	HOUSATONIC RIVER	105900	DM PH	20	N
20011001	PACIFICORP	20	ID	CARIBOU	BEAR RIVER	14000	DM PH	23	Y
20011001	PACIFICORP	2401	ID	CARIBOU	BEAR RIVER	40500	DM PH	25	Y
20011031	WISCONSIN ELECTRIC POWER CO	2131	MI	DICKINSON	MENOMINEE RIVER	7200	DM PH	22	Y
20011031	WISCONSIN ELECTRIC POWER CO	2073	MI	IRON	MICHIGAMME RIVER	9600	DM PH	50	Y
20011031	WISCONSIN ELECTRIC POWER CO	2074	MI	IRON	MICHIGAMME RIVER	2800	DM PH	50	Y
20011130	METRO. WATER RECLAMATION	2866	IL	WILL	CHICAGO SANITARY	13500	DM PH	20	Y
20011130	NORTH CENTRAL POWER CO INC	2064	WI	SAWYER	CHIPPEWA RIVER	600	DM PH	50	Y
20011231	WISCONSIN ELECTRIC POWER CO	1759	MI	IRON	MICHIGAMME RIVER	19944	DM PH	27	Y
20011231	CENTRAL MAINE POWER CO	2142	ME	SOMERSET	KENNEBEC RIVER	76400	DM PH	47	Y
20011231	TACOMA, CITY OF	2016	WA	LEWIS	COWLITZ RIVER	460000	DM PH	50	Y
20011231	PORTLAND GENERAL ELECTRIC CO	2030	OR	JEFFERSON	DESCHUTES RIVER	416100	DM PH	50	Y
20011231	WISCONSIN ELECTRIC POWER CO	2072	MI	IRON	PAINT RIVER	100	DM PH	50	Y
20020131	PUD NO 1 OF PEND OREILLE CNTY	2042	WA	PEND OREILLE	PEND OREILLE	60000	DM PH	50	N
20020131	ERIE BOULEVARD HYDROPOWER L.P.	2084	NY	ST LAWRENCE	RAQUETTE RIVER	101250	DM PH	50	Y
20020223	EL DORADO IRRIGATION DISTRICT	184	CA	EL DORADO	SOUTH FORK AMERICAN	20000	DM PH	22	Y
20020331	FORT JAMES OPERATING COMPANY	2312	ME	PENOBSCOT	PENOBSCOT RIVER	7655	DM PH	39	Y
20020731	COMINCO AMERICAN INC	2103	WA	PEND O'REILLE	CEDAR CREEK	0	RS	50	N
20020903	SPRINGVILLE, CITY OF	2031	UT	UTAH	BARTHOLOMEW CR	2000	DM PH	50	N
20020930	HART, CITY OF	3516	MI	OCEANA	PENTWATER RIVER	352	DM PH	20	N
20021012	SITHE PENNSYLVANIA HOLDINGS	309	PA	CLARION	CLARION RIVER	28800	DM PH	23	Y
20021031	HYDRO DEVELOPMENT GROUP INC	6059	NY	ST LAWRENCE	OSWEGATCHIE RIVER	900	DM PH	20	N
20021101	TRINITY CONSERVANCY INC	719	WA	CHELAN	HELPS CREEK	240	DM PH	23	N
20021201	NEW YORK STATE ELEC & GAS CORP	2835	NY	CLINTON	AUSABLE RIVER	2640	DM PH	20	Y
20021231	HYDRO DEVELOPMENT GROUP INC	6058	NY	ST LAWRENCE	OSWEGATCHIE RIVER	1490	DM PH	20	N
20030131	WOODS LAKE HYDRO CO	3410	CO	EAGLE	LIME CREEK	45	DM PH	20	N
20030228	NEW YORK STATE ELEC & GAS CORP	2852	NY	STEUBEN	MUD CREEK	2000	DM PH	20	Y
20030228	ENTERGY, ARKANSAS, INC.	271	AR	HOT SPRINGS	OUACHITA	65300	DM PH	23	Y
20030331	AVONDALE MILLS INC	5044	GA	RICHMOND	AUGUSTA CANAL	2475	DM PH	20	N
20030426	SOUTHERN CALIFORNIA EDISON CO	344	CA	BERNARDINO	SAN GORGONIO RIVER	2250	DM PH	20	Y

# HYDROELECTRIC POWER TABLE

LICENSE EXPIRATION DATE	OWNER	FERC PROJECT NO.	STATE	COUNTY	RIVER	INSTALLATION (KW)	FACILITIES UNDER LICENSE	PERIOD OF (YEARS)	SUBJ. FED.
20030430	PAROWAN CITY CORP	2782	UT	IRON	RED CREEK	500	DM PH	25	N
20030606	FORD MOTOR CO	362	MN	RAMSEY	MISSISSIPPI RIVER	17920	DM PH	23	Y
20030630	PCA HYDRO INC	2180	WI	LINCOLN	WISCONSIN RIVER	3000	DM PH	26	Y
20030731	BURFORD, JUDITH A	6418	CO	EAGLE	EAST BRUSH CREEK	11	DM PH	20	N
20030824	MINNESOTA POWER & LIGHT CO	346	MN	MORRISON	MISSISSIPPI RIVER	18000	DM PH	23	Y
20030831	SOUTHERN CALIFORNIA EDISON CO	2086	CA	FRESNO	MONO CREEK	0	RS	50	N
20030918	INDIANA MICHIGAN POWER CO	401	MI	ST. JOSEPH	ST JOSEPH RIVER	1750	DM PH	25	Y
20030930	CHARTER TOWNSHIP OF YPSILANTI	5334	MI	WASHTENAW	HURON RIVER	3413	DM PH	20	N
20030930	PACIFIC GAS & ELECTRIC CO	2107	CA	BUTTE	FEATHER RIVER	142830	DM PH	50	N
20031031	PACIFIC GAS & ELECTRIC CO	233	CA	SHASTA	PIT RIVER	317000	DM PH	22	Y
20031031	MINNESOTA POWER & LIGHT CO	469	MN	LAKE	KAWISHIWI	4000	DM PH	22	Y
20031031	NEW YORK POWER AUTHORITY	2000	NY	ST LAWRENCE	ST LAWRENCE RIVER	912000	DM PH	50	N
20031231	POTOMAC EDISON CO	2516	WV	BERKELY	POTOMAC RIVER	1900	DM PH	27	N
20031231	POTOMAC EDISON CO	2517	WV	BERKELY	POTOMAC RIVER	1210	DM PH	27	N
20040131	NEWTON FALLS INC.	7000	NY	ST LAWRENCE	OSWEGATCHIE RIVER	2220	DM PH	20	Y
20040331	S D WARREN CO	2984	ME	CUMBERLAND	PRESUMPCOT	1800	DM PH	20	Y
20040331	PUD NO 1 OF CHELAN COUNTY	637	WA	CHELAN	CHELAN RIVER	48000	DM PH	30	Y
20040410	MIDWEST HYDRO, INC	287	IL	LASALLE	FOX RIVER	3680	DM PH	24	Y
20040430	MADISON PAPER INDUSTRIES	2364	ME	SOMERSET	KENNEBEC RIVER	16977	DM PH	40	Y
20040430	MADISON PAPER INDUSTRIES	2365	ME	SOMERSET	KENNEBEC RIVER	9000	DM PH	40	Y
20040430	MERIMIL LTD PARTNERSHIP	2574	ME	KENNEBEC	KENNEBEC RIVER	6770	DM PH	40	Y
20040430	UNITED WATER CONSERVATION DIST	2153	CA	VENTURA	PIRU CREEK	1420	DM PH	50	Y
20040630	WISCONSIN PUBLIC SERVICE CORP	1979	WI	LINCOLN	WISCONSIN RIVER	4200	DM PH	30	Y
20040731	NORWAY, CITY OF	2720	MI	DICKINSON	MENOMINEE RIVER	5636	DM PH	20	Y
20040731	IDAHO POWER CO	2726	ID	GOODING	BIG WOOD RIVER	21770	DM PH	25	Y
20040930	BARTON VILLAGE INC	7725	VT	ORLEANS	CLYDE RIVER	1300	DM PH	20	N
20040930	PPL HOLTWOOD, LLC	487	PA	WAYNE	LACKAWAXEN RIVER	40000	DM PH	30	Y
20041031	BUFFALO HYDRO L.C.	1413	ID	FREMONT	BUFFALO RIVER	250	DM PH	25	N
20041031	PACIFIC GAS & ELECTRIC CO	2105	CA	PLUMAS	FEATHER RIVER	342628	DM PH	50	Y
20041112	PETERSBURG, CITY OF	201	AK	WRANGELL	CRYSTAL CREEK	2000	DM PH	30	Y
20041116	PORTLAND GENERAL ELECTRIC CO	477	OR	CLACKAMAS	SANDY RIVER	21000	DM PH	25	Y
20041130	INTERNATIONAL PAPER CO	4914	WI	BROWN	FOX RIVER	1078	DM PH	20	N
20041230	PAROWAN CITY CORP	1273	UT	IRON	CENTER CREEK	600	DM PH	30	N
20041231	MOSINEE PAPER CORP	2207	WI	MARATHON	WISCONSIN RIVER	3050	DM PH	30	Y
20041231	MONTANA POWER CO	2543	MT	MISSOULA	CLARK FORK	3200	DM PH	40	Y
20041231	OAKDALE & SAN JOAQUIN IRR DIST	2005	CA	TUOLUMNE	STANISLAUS	63990	DM PH	50	Y
20041231	OAKDALE & SAN JOAQUIN IRR DIST	2067	CA	TUOLUMNE	STANISLAUS	17100	DM PH	50	Y
20041231	PACIFIC GAS & ELECTRIC CO	2130	CA	TUOLUMNE	STANISLAUS	87900	DM PH	50	Y
20041231	GEORGIA POWER CO	2177	GA	HARRIS	CHATTAHOOCHEE	115600	DM PH	50	Y
20041231	PORTLAND GENERAL ELECTRIC CO	2233	OR	CLACKAMAS	WILLAMETTE	16800	DM PH	50	Y
20050228	SOUTHERN CALIF EDISON CO	382	CA	KERN	KERN	12000	DM PH	25	Y
20050228	TAPOCO INC	2169	TN	MONROE	LITTLE TENNESSEE	326500	DM PH	50	Y
20050331	WISCONSIN ELECTRIC POWER	2697	WI	DUNN	RED CEDAR	6000	DM PH	25	Y
20050331	SOUTHERN CALIF EDISON CO	2174	CA	FRESNO	RANCHERIA CR,BIG CR	10800	DM PH	50	Y
20050331	WISCONSIN ELECTRIC POWER	2181	WI	DUNN	RED CEDAR	5400	DM PH	50	Y
20050430	PACIFIC GAS & ELECTRIC CO	178	CA	KERN	KERN	11500	DM PH	25	Y
20050430	ALABAMA ELECTRIC COOP INC	2586	AL	CRENSHAW	CONECUH	8250	DM PH	25	N
20050531	MARSHALL, CITY OF	6514	MI	CALHOUN	KALAMAZOO	319	DM PH	20	N
20050531	GRAND RIVER DAM AUTH	2183	OK	MAYES	NEOSHO	100000	DM PH	50	Y
20050630	N. E. W. HYDRO INC ET AL	7264	WI	OUTAGAMIE	FOX	1390	DM PH	20	Y
20050630	PACIFICORP	2630	OR	JACKSON	N FK ROGUE	36760	DM PH	25	Y
20050630	FPL ENERGY MAINE HYDRO LLC	2194	ME	YORK	SACO	4000	DM PH	50	Y
20050730	NANTAHALA PWR AND LT CO	2601	NC	SWAIN	OCONALUFTEE	980	DM PH	25	Y
20050730	NANTAHALA PWR AND LT CO	2602	NC	JACKSON	TUCKASEGEE	225	DM PH	25	Y
20050730	NANTAHALA PWR AND LT CO	2603	NC	MACON	LITTLE TENNESSEE	1040	DM PH	25	Y
20050731	NANTAHALA PWR AND LT CO	2619	NC	CLAY	HIWASSEE	1800	DM PH	25	Y

# HYDROELECTRIC POWER TABLE

LICENSE EXPIRATION DATE	OWNER	FERC PROJECT NO.	STATE	COUNTY	RIVER	INSTALLATION (KW)	FACILITIES UNDER LICENSE	PERIOD OF (YEARS)	SUBJ. FED.
20050731	IDAHO POWER CO	1971	OR	BAKER	SNAKE	1166500	DM PH	50	Y
20051004	NORQUEST SEAFOOD INC.	620	AK	CHIGNIK	INDIAN CREEK	60	PH	26	N
20051031	PUD GRANT CTY, WASHINGTON	2114	WA	GRANT	COLUMBIA	1755000	DM PH	50	Y
20051031	ERIE BOULEVARD HYDRO, LP	7387	NY	FRANKLIN	RAQUETTE	2700	DM PH	20	Y
20051110	LOUISVILLE GAS & ELECTRIC CO	289	KY	JEFFERSON	OHIO RIVER	80230	DM PH	24	Y
20060131	NANTAHALA PWR AND LT CO	2698	NC	JACKSON	TUCKASEGEE RIVER	26175	DM PH	25	N
20060131	NANTAHALA PWR AND LT CO	2686	NC	JACKSON	TUCKASEGEE RIVER	24600	DM PH	25	N
20060214	MONROE CITY CORPORATION	632	UT	SEVIER	MONROE CREEK	250	DM PH	28	N
20060228	PACIFICORP	2082	CA	SISKIYOU	KLAMATH RIVER	151000	DM PH	52	N
20060228	NANTAHALA PWR AND LT CO	2692	NC	CLAY	NANTAHALA RIVER	43200	DM PH	25	N
20060228	UNION ELECTRIC CO	459	MO	BENTON	OSAGE	176200	DM PH	25	Y
20060331	SOUTH CAROLINA PUBLIC AUTHORITY	199	SC	BERKELEY	SANTEE RIVER	134520	DM PH	27	N
20060412	N Y ST ELEC & GAS CORP	2738	NY	CLINTON	SARANAC RIVER	38950	DM PH	26	N
20060430	PUGET SOUND PWR AND LT CO	2150	WA	SKAGIT	BAKER RIVER	162400	DM PH	50	N
20060430	PACIFICORP	2111	WA	CLARK	LEWIS RIVER	240000	DM PH	50	N
20060430	COWLITZ CO PUD NO 1	2213	WA	COWLITZ	LEWIS RIVER	70000	DM PH	50	N
20060430	PACIFICORP	935	WA	CLARK	LEWIS RIVER	135000	DM PH	23	N
20060630	CHELAN CO PUD 1	2145	WA	DOUGLAS	COLUMBIA R	1236600	DM PH	50	N
20060831	PORTLAND GENERAL ELEC CO	2195	OR	CLACKAMAS	CLACKAMAS RIVER	91900	DM PH	50	N
20060831	PORTLAND GENERAL ELEC CO	135	OR	CLACKAMAS	OAK GROVE FOR	40825	DM PH	26	Y
20061130	ERIE BOULEVARD HYDROPOWER, L.P.	7321	NY	FRANKLIN	SALMON RIVER	1000	DM PH	20	N
20061231	CITY & COUNTY OF DENVER	2204	CO	GRAND	WILLIAMS FORK RIVER	3000	DM PH	43	N
20061231	MONTANA POWER CO	2543	MT	MISSOULA	CLARK FORK	3200	DM PH	38	N
20070131	SACRAMENTO M U D	2100	CA	EL DORADO	TELLS CREEK	762850	DM PH	50	Y
20070228	CITY OF HOLYOKE, MA	7758	MA	HAMPDEN	HOLYOKE CNL	760	PH	20	N
20070327	PACIFIC GAS AND ELECTRIC	606	CA	SHASTA	SOUTH COW CREEK	4400	DM PH	23	Y
20070331	FLAMBEAU HYDRO, LLC	9185	WI	BURNETT	CLAM	1200	DM PH	20	N
20070430	CHUGACH ELEC ASSN INC	2170	AK	SEWARD	COOPER CREEK	15000	DM PH	40	Y
20070430	GARKANE POWER ASSN INC	2219	UT	GARFIELD	W FK BOULDER CREEK	43000	DM H	40	Y
20070609	FLAMBEAU HYDRO, LLC	9184	WI	BURNETT	YELLOW	1076	DM PH	20	N
20070731	ALABAMA POWER CO	82	AL	CHILTON	COOSA	170000	DM PH	32	Y
20070731	PACIFIC GAS & ELECTRIC CO	2155	CA	EL DORADO	S FK AMERICAN RIVER	7000	DM PH	45	Y
20070731	SACRAMENTO M U D	2101	CA	EL DORADO	S FK AMERICAN RIVER	640950	DM PH	40	Y
20070731	ALABAMA POWER CO	618	AL	ELMORE	COOSA	170000	DM PH	27	Y
20070731	ALABAMA POWER CO	2146	GA	ELMORE	COOSA	690900	DM PH	40	Y
20070829	ALASKA POWER AND TELEPHONE CO	1051	AK	SKAGWAY	DEWEY	943	DM PH	27	N
20070831	RESOURCES WEST ENERGY CORP	2545	ID	LINCOLN	SPOKANE	1366000	DM PH	35	Y
20070831	ALABAMA POWER CO	2165	AL	TUSCALOOSA	BLACK WARRIOR	203250	DM PH	40	Y
20070831	NEW YORK POWER AUTHORITY	2216	NY	NIAGARA	NIAGARA	27555000	DM PH	50	Y
20070831	SOUTH CAROLINA GAS AND ELECTRIC	516	SC	NEWBERRY	SALUDA	207300	DM PH	27	Y
20071130	SOUTHERN CALIFORNIA EDISON CO	2085	CA	FRESNO	SAN JOAQUIN	180937	DM PH	40	Y
20071130	WOLVERINE HYDROELECTRIC CORP	2785	MI	MIDLAND	TITTABAWASSEE	3300	DM PH	20	Y

\*INCLUDES TYPES OF FACILITIES AT EACH PROJECT, BUT NOT TOTAL NUMBER OF EACH TYPE (E.G. A PROJECT MAY CONSIST OF MULTIPLE POWERHOUSES OR DAMS.). DM DAM, RS RESERVOIR, CL CANAL, TU TUNNEL, FM FLUME, PI PIPELINE, PK PENSTOCK, PH POWERHOUSE, TR TURBINE, GN GENERATOR(S), TC TAILRACE, TL TRANSMISSION LINE OR CONNECTION THERETO.

For Additional Information, Contact:  
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