77TH CONGRESS : : : : 1ST SESSION

JANUARY 3, 1941–JANUARY 2, 1942

HOUSE DOCUMENTS

VOL. 58

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1941

77th Congress, 1st Session - - - - - House Document No. 21

Twentieth Annual Report

of the

Federal Power Commission

Fiscal Year Ended June 30, 1940

with additional activities
to December 1940

United States
Government Printing Office
Washington : 1941

FEDERAL POWER COMMISSION

MEMBERS

LELAND OLDS, *Chairman*
CLAUDE L. DRAPER, *Vice Chairman*
BASIL MANLY
JOHN W. SCOTT
CLYDE L. SEAVEY

LEON M. FUQUAY, *Secretary*

PRINCIPAL OFFICE

Hurley-Wright Building
1800 Pennsylvania Avenue NW.
Washington

REGIONAL OFFICES

New York.—U. S. Parcel Post Building, 341 Ninth Avenue
Chicago.—The Merchandise Mart, 222 North Bank Drive
Atlanta.—10 Forsyth Street Building
Denver.—Central Savings Bank Building, 15th and Arapahoe Streets
San Francisco.—Phelan Building, Market and O'Farrel Streets

ANNUAL REPORT—1939-40

DECEMBER 1, 1940.

To the Senate and House of Representatives:

The Federal Power Commission herewith submits to the Congress its annual report for the fiscal year July 1, 1939, to June 30, 1940, with additional activities to December 1940.

LELAND OLDS, *Chairman.*
CLAUDE L. DRAPER.
BASIL MANLY.
JOHN W. SCOTT.
CLYDE L. SEAVEY.

CONTENTS

TWENTIETH ANNUAL REPORT OF THE FEDERAL POWER COMMISSION

PART I

SECTION I. REVIEW OF THE COMMISSION'S ACTIVITIES

This is the Twentieth Annual Report of the Federal Power Commission following its creation under the Federal Water Power Act of 1920. That act was limited, in the main, to providing Federal supervision of water-power developments located on streams over which Congress had jurisdiction or on Federal public lands. Subsequent amendments, notably those enacted in 1935, broadened the Commission's functions to encompass the regulation of the interstate aspects of the business of supplying the Nation's power needs. Consistent with this expansion the statute was renamed the Federal Power Act.

The original act of 1920 established broad principles which have increasingly controlled Federal power policy and water resource, development. That act marked an important forward step in the conservation and utilization of the Nation's water-power resources, directed toward preserving the basic right of the people to enjoy their full value. It is noteworthy and significant that the Commission's twentieth anniversary was marked by a broad decision of the United States Supreme Court upholding the essential features of the 1920 act.

Twenty Years Growth of the Power Industry.

The 20 years since the establishment of the Commission have been epoch making in the history of the electric-power industry. During this period the total installed capacity of electric-generating plants in the United States has increased from 14,372,000 to over 42,000,000 kilowatts. The output of these plants has grown from 43,334,000,000 to more than 143,000,000,000 kilowatt-hours.

The use of the country's water-power resources has kept pace with the development, the installed capacity of hydroelectric plants increasing from 3,786,595 in 1920 to approximately 12,000,000 kilowatts in 1940. Today, the country's falling water is providing the people annually with more than 46,000,000,000 kilowatt-hours of electrical energy.

The past two decades have also seen rapid progress in the integration of the country's power supply. More than 160,000 miles of transmission lines today interconnect generating stations and systems,

to assure economical use of the generating capacity. This interconnection has created a situation where the flow of electric energy disregards State lines and becomes an important part of interstate commerce. In addition, it has been accompanied by an integration of companies into great systems which have presented the Nation with new problems of regulation.

Electric utilities today serve more than 30,000,000 customers as compared with 10,000,000 in 1920. Electricity has become the most important form of energy used for lighting and a hundred other purposes in homes, farms, offices, stores, and industrial establishments.

The tremendous expansion of the electric-power business, the tendency of this expansion to disregard State lines, and the increasing dependence of all phases of the people's life upon electricity have necessitated a corresponding increase in responsibility of the Federal Government for assuring ample supplies of power at low cost. Moreover, today, in this period of great national emergency, we are confronted with the requirements of modern mobilization for defense. This means industrial mobilization, and industrial mobilization requires electric power in abundance—millions of kilowatts of capacity and tens of billions of kilowatt-hours of electric energy.

Adequate and dependable power supply to meet the requirements of expanding defense orders can only be assured through careful planning, because it takes from 18 months to 2 years to construct a steam-generating station, and frequently longer to build a hydroelectric project. At the direction of the President, such planning has been undertaken by the Federal Power Commission in cooperation with the Advisory Commission to the Council of National Defense, the National Power Policy Committee and both publicly and privately owned electric utilities. The readiness of the Commission to deal with the emergency situation bears witness to the foresight and wisdom of Congress in broadening the Federal Power Act to include wide power survey functions and the authority to deal with defense power problems.

Three Periods in the Life of the Commission.

The 20 years of the Federal Power Commission's life divide naturally into three periods: The first 10 years in which its activities were chiefly concerned with the licensing of private water-power developments; the next 5 years in which pioneer power and rate surveys laid the foundation for broader regulatory and planning functions; and the last 5 years in which the Commission's function was extended to include regulation of the interstate aspects of electric and gas utility companies, continuing surveys of the entire electric industry and provision for power development in connection with Federal river-basin programs.

The first period began with the enactment of the Federal Water Power Act in 1920 and ended with the reconstitution of the Commission as an independent five-man agency in 1930. In this period it was composed of the Secretaries of War, Interior, and Agriculture and was staffed principally by technical men borrowed from these departments. Its activities were in the main limited to encouraging the development of the country's water powers under long-term licenses and regulating the accounting for licensed projects to prevent overcapitalization of the development of such resources. In issuing licenses, the Commission performed the limited conservation function of assuring that projects were best adapted to comprehensive plans for developing the country's waterways for all public purposes.

The second period, covering the next 5 years, ended in the wide extension of the Commission's function to cover the entire electric-power industry under title II of the Public Utility Act of 1935. During this period the Commission laid the foundations for broader responsibility through the conduct of the National Power Survey and the Electric Rate Survey, the results of which were published in 1935.

The Power Survey represented the first attempt to analyze the electric-power supply and requirements of the country as a whole, with a view to arriving at sound conclusions as to the adequacy of the supply and steps which should be taken continuously to assure its development to meet the needs of a Nation.

The Rate Survey, resulting in the first in the Commission's series of typical bill reports, established the value of comparative statistics for the entire power industry as a means to the development of cost and price standards.

The third period of the Federal Power Commission's activities was initiated by the Public Utility Act of 1935. This act gives the Commission regulatory powers over the interstate wholesale rates and over the accounts and certain financial transactions of electric utilities engaged in interstate commerce. It makes the Commission's comprehensive surveys of all phases of the industry's operations a continuing function. To the Commission's responsibility for assuring water-power development on a sound basis the act adds a further responsibility for encouraging interconnection and coordination of facilities. This responsibility includes the authority to order interconnection and interchange of power to meet emergency conditions, more especially conditions which may arise if the country becomes involved in war.

During this period the Flood Control Act of 1938 gave the Commission substantial responsibility in connection with the planning of hydroelectric power developments at flood-control dams. In the same year the Natural Gas Act broadened the Commission's regula-

tory function to include the regulation of the transportation and sale of natural gas in interstate commerce. The Commission was also given certain responsibilities under the acts governing the Tennessee Valley and Columbia River Basin programs.

The rounding out of the Commission's responsibility for proper utilization of the country's power resources reflects a broadening of the conception of conservation. In terms of this broadened conception, conservation includes:

(*a*) Encouragement of the orderly development of water-power resources under conditions precluding their exploitation for excessive profits;

(*b*) Sound coordination of all power-generating facilities to assure the most economical supply of power to distribution centers;

(*c*) Uniform original cost accounting to eliminate hidden cost barriers to consumption, and the development of comparative cost and price standards as a quasi competitive stimulus to better management.

Before turning to the more detailed survey of the Commission's work, contained in subsequent sections of this report, its principal activities may be briefly summarized as follows:

Encouragement of Orderly Water-Power Development.

In the 20 years of the Commission's responsibility for development of the country's water-power resources, the Commission's work has included consideration of projects totalling 21,154,000 horsepower. This total is made up of the following:

Licensed projects with a present installation of 4,383,000 horsepower and an ultimate installation of 6,872,000 horsepower;

Unlicensed projects, many of which may eventually be licensed, with a total installation of 8,782,000 horsepower;

Multipurpose river basin projects with potential installations aggregating 5,500,000 horsepower.

The decision of the United States Supreme Court in the New River case (85 L. Ed. 201), marking the end of years of litigation over the extent of the Commission's authority to require licenses for water-power developments, was a fitting climax to the Commission's 20 years of work in this field. The Court fully sustained the Federal Power Act as interpreted by the Commission and upheld the constitutional power of the United States over its waters, extending not only to navigation but also to flood control, watershed development, and recovery of the cost of improvements through utilization of power.

During the year the Commission has had under consideration declarations of intention to construct new water-power projects with

installations totalling approximately 500,000 horsepower, applications for preliminary permits for projects totaling over 1,000,000 horsepower, and applications for licenses for projects with over 200,000 horsepower of aggregate capacity.

Steady progress has also been made in the survey of unlicensed projects on streams under the control of Congress. Formal procedures have been under way to bring under Federal license such projects with 260,000 horsepower of aggregate capacity, located in the Connecticut, Susquehanna, and Columbia River Basins.

During the year the Commission collected a total of $814,858 in fees from licensed projects, the proceeds going into the general funds of the United States Treasury. A portion of the total is distributed each year to the States and Indian funds.

Hydroelectric Power at Flood Control Projects.

The Commission's comprehensive river-basin surveys, in compliance with the Flood Control Act of 1938, have covered more than 300 proposed reservoir projects and have led to recommendations that provision be made at 72 of these projects for ultimate hydroelectric installations totaling 5,500,000 horsepower.

Outstanding power possibilities, included in this year's recommendations, were found in connection with proposed flood control and navigation projects in the Connecticut and Merrimack River Basins in New England, the Susquehanna River Basin in Pennsylvania, the Ohio River tributaries in Pennsylvania, West Virginia, and Kentucky, the Savannah River in Georgia and South Carolina, the Santee River Basin in South Carolina, the Coosa River Basin in Georgia, and the White River Basin in Arkansas.

The Commission's studies indicate that in most instances small additional investment at such projects would assure the ready development of their potential power when required by the power market and the conservation of the country's energy resources. In each case the power market characteristics of the area were analyzed as a basis for recommending the most economical ultimate installation.

This work involves close cooperation with the United States Corps of Engineers and with other governmental agencies represented on the Water Resources Committee of the National Resources Planning Board. It is based on the multiple-purpose conception of river-basin planning. Such planning holds that the fullest advantage of a basin's water resources can be secured only by bringing together the several related water uses in a comprehensive plan of coordinated development.

Adequate Power for National Defense.

During the year the Commission's work in the field of power surveys has been greatly increased and broadened in response to the direction of the President that it undertake, in cooperation with the

National Power Policy Committee and the Advisory Commission to the Council of National Defense, to assure adequate and dependable power supply for the defense program. This represents a continuation of the Commission's concern for defense power supply which has featured its work continuously since 1935.

In preparation for its defense power work the Commission has defined power supply areas, determined where generating facilities might be most readily added to existing plants, developed plans for interconnection and power interchange between systems, determined the probable increase in demand for power for critical defense load centers, kept constantly informed as to the capacity of the equipment industry to produce additional generating units, and, in cooperation with the power industry, has standardized steam turbine generators.

The Commission is currently translating defense orders into demand for power; keeping informed as to the power needs of defense industries; gathering monthly information as to the relation between power requirements and available capacity, projected several years ahead, for all power supply areas in the country; investigating all major interruptions of service and, in cooperation with other Government agencies and the utilities, making plans for protection of power supply against hostile acts.

The Commission has also investigated the feasibility of a system of high-capacity transmission interconnections tying together the major power-market centers of the Eastern industrial area with a view to the more economical use of existing capacity and greater assurance against interruption of service in any one of the important centers of defense production. The utilities have cooperated in exhaustive tests of the feasibility of such a giant network.

The regular annual analysis of data concerning the generation, transmission, distribution, and sale of electric energy, now based on reports from 1,560 operating systems, continues to provide increasingly valuable information to all concerned with the conduct of the country's power systems.

Preliminary surveys to determine the economic feasibility of further interconnection and coordination of power facilities have been Completed for 25 of the 48 power supply areas into which the country has been tentatively divided. In view of the importance of these studies in terms of national defense power supply, the initial work has been confined largely to the important industrial areas.

Uniform Original Cost Accounting.

By the end of the year the accounting and engineering work involved in the determination of the "actual legitimate original costs" of licensed water power projects had been completed for projects involving claimed costs totaling $522,000,000 out of a total of $740,000,000 for all projects now under Federal Power Commission

license. Final determinations had been made for 54 projects, the aggregate cost being fixed at $128,389,719, representing a reduction of more than $10,000,000 as compared with the costs originally claimed for these projects.

During the year the number of companies which have submitted reclassifications of accounts in accordance with the Commission's uniform system, reached a total of 211, reporting utility plant including all departments aggregating approximately $5,500,000,000. Of the total of $4,750,000,000 reported for the electric departments, more than $400,000,000 was segregated in adjustment accounts representing excess over the original cost of the properties.

The Commission has completed 28 field studies, designed to check the reclassifications of accounts submitted by the companies. As a result of this check the Commission is asking the companies in question to reduce the total classified as electric plant from $757,718,015 to $716,515,347, finding more than $41,000,000 improperly included in the total. Most of the companies have responded favorably.

The Commission anticipates that the total utility plant, which will be covered by its original cost studies, will exceed $9,000,000,000, or approximately 75 percent of the total for all privately owned electric utilities. This work is establishing a sound basis for comparative cost analysis of tremendous value to utility companies, investors, and consumers.

The Commission's accounting investigation of the service charges of the Associated Gas & Electric system, carried on in collaboration with the Pennsylvania Public Service Commission, resulted in a report presenting an extraordinary picture of the exploitation of an essential public service under cloak of the holding-company device. The records developed by the Commission in this investigation were used by the Department of Justice in the successful prosecution of Mr. H. C. Hopson, the chief figure in this abuse of responsibility.

Of equal importance was the Commission's accounting investigation of the political expenditures of five electric utilities operating in the State of Washington. This investigation brought out that during the past 5 years these five utilities spent more than a million dollars in political activities opposing publicly owned and operated utility districts and public ownership movements. It also brought out that at least a part of these expenditures and the time of many employees concerned were charged to rate payers.

Regulation of Interstate Wholesale Rates.

Important rate cases during the year have resulted in Commission decisions directing companies wholesaling electricity and gas in interstate commerce and licensees to reduce their rates by approximately $5,000,000 a year. The Commission also suspended proposed in-

creases in the "gateway" rates charged by 11 natural gas and 2 electric companies.

The Commission's decision ordering a $350,000 annual reduction in the wholesale rates charged by its licensee, the Safe Harbor Water Power Corporation, was significant because the decision rested on use of the statutory net investment in the water-power project as the controlling element in the rate base. The decision, in effect, adopts the "prudent investment" theory of rate regulation. The company has appealed to the courts.

The Chicago District Generating Corporation case, which is still pending, has also shown how rate cases can be expedited by the exclusion of "reproduction cost" evidence. This company generates power and sells it at wholesale to distributing companies serving the entire Chicago area.

The Commission's case, involving wholesale power rates charged by the Moline-Rock Island Manufacturing Co., to affiliated distributing companies, has already led to rate reductions totaling $325,000 a year to consumers served by the affiliated companies. This case involved a situation in which utility interests had for years escaped effective State regulation by separately incorporating the interstate wholesale power supply portion of a system serving on both sides of the Illinois-Iowa border.

A major rate decision of the year was an interim order directing the Natural Gas Pipe Line of America to reduce by $3,750,000 annually its rates on natural gas eventually distributed in the Chicago area. This decision, based on a complete presentation of the company's case, was designed to end the indefinite delay involved in the protracted procedures which characterize orthodox rate cases. The company has appealed to the courts.

In the Otter Tail Power Co. case, involving discrimination in the wholesale rates charged various small municipal customers, the Commission effectively maintained the principle that the reasonable wholesale rate for all customers in a given class of service cannot be higher than the lowest rate charged by the company to any customer in that class. The resulting reduction in rates averaged approximately 10 percent.

The Commission in the Otter Tail case and in other cases, is making use of "show cause" orders to eliminate costly and time-consuming rate procedures where preliminary investigations reveal excessive or discriminatory rates. In several instances this has led to the filing of reduced rates.

Statistical Reports Provide Cost and Rate Yardsticks.

The Commission has continued to compile and publish its Typical Electric Bill Reports. Residential bills are reported for each community of 250 or more population, commercial bills for places of

2,500 and over, and industrial bills for cities with populations of 10,000 or more.

The Commission has added its National Electric Rate Book which makes available to the public a continuously up-to-date record covering more than 15,000 rate schedules including service rendered in all communities of 1,000 or more population.

The Commission has also established its report, entitled "Statistics of Electric Utilities in the United States" as an annual publication, making available comprehensive financial and operating information on every important privately owned electric utility in the country.

The monthly reports of the Commission on Electric Power Statistics have been expanded to supply the national defense need for current information on the relation of the growing demand to assured generating capacity. These reports also form the basis of the annual statistics covering the capacity and output of all generating stations.

The Commission's statistical work has been increasingly directed toward the development of yardsticks of costs, rates, and performance, thereby introducing something analogous to the force of competition in an industry which has always considered itself a natural monopoly. To implement this work, the Commission is rapidly developing a significant study of unit costs and financial relationships to supplement its typical bill comparisons.

Protection of Public Interest in Corporate Transactions.

The Commission has continued to pass on applications for authority to merge or dispose of electric-utility properties subject to its jurisdiction. A number of these cases have involved the acquisitions of private-utility facilities by public agencies. The Commission has also acted on a number of applications for authority to issue securities.

The year has seen significant progress in the enforcement of the Commission's jurisdiction over the holding of interlocking positions by officers and directors of utilities subject to its jurisdiction. Especial attention has been given to the relationship between this function and that of the Securities and Exchange Commission under section 11 of the Public Utility Act.

In one important case the Commission denied authorization for two important executives to hold such positions because they had consented to the unwarranted use of their companies' funds for the benefit of an affiliated financial house. Two other key directors of this group of companies were denied authorization because of consistent failure to attend directors' meetings.

Conservation Problems in Natural Gas Regulations.

The enactment of the Natural Gas Act of 1938 extended the Commission's jurisdiction to include another important energy resource—natural gas. The Natural Gas Act and the work which the Com-

mission is doing under it should be considered as a first step in dealing with the conservation of one of the country's exhaustible resources.

Under the act the Commission has authority to regulate rates charged for the transportation and wholesaling of natural gas in interstate commerce, to grant certificates of convenience for proposed new pipe lines extending into the market area of existing companies, to direct extensions of existing pipe lines where existing markets will not be adversely affected, and to control the flow of natural gas over the nation's boundaries.

Already, under this legislation, successful steps have been taken to reduce natural-gas rates. But the applications for authorization of new transmission pipe lines raise fundamental issues of conservation which cannot be settled in the public interest without a broadening of the Act.

The Commission has before it the first proposal to tap the Southwestern reserves of natural gas to supply the tremendous markets of the industrial Northeast. This proposal, which will probably be planned initially to deliver more than 150,000,000,000 cubic feet of gas annually to the New York City area, has already raised the question whether the proposed use of natural gas would not result in displacing a less valuable fuel, creating hardships in an industry already supplying the market, while at the same time rapidly depleting the country's irreplaceable reserves of natural gas. But under the provisions of the Natural Gas Act the Commission appears to have no authority to consider this important problem.

An even more fundamental question is involved, the question whether rapid depletion of the country's natural gas reserves may not reduce for all time the country's potentially recoverable reserves of oil. This would have serious implications in terms of national defense.

Recommendations for Better Regulation of the Natural Gas Industry.

In order to make possible more effective protection of the public interest in connection with the transportation and sale of natural gas in interstate commerce, the Commission offers the following recommendations:

1. Section 7 (c) of the act should be broadened to give the Commission control over all new interstate natural-gas pipe-line construction through prohibiting the construction of any new lines utilized in interstate commerce until authorized by a certificate from the Commission. The present proviso in the act permitting enlargement or expansion of existing facilities for supplying increased market demands in a company's present market area without a certificate should be retained.

2. The Commission should be given the express statutory authority to compile and publish statistics of the natural-gas and manufactured-

gas industries comparable with those now compiled and published concerning electric utilities under section 311 of the Federal Power Act.

3. In order to assure adequate protection of domestic and commercial consumers against unjust or discriminatory rates, the Commission's rate regulatory authority should be extended to sales of natural gas from interstate pipe lines for industrial as well as domestic and commercial purposes. Such authority over sales for industrial purposes should cover direct sales to industries as well as sales for resale to the industrial customers of distributing companies.

Cooperation With Other Governmental Agencies.

The past year has been characterized by steadily increasing cooperation with other governmental agencies, including the National Resources Planning Board, the United States Corps of Engineers, other Federal agencies concerned with power and rates, State utility commissions, State water-resources bodies, and municipalities.

The Commission is represented on the Water Resources Committee, including two of its subcommittees, and the Energy Resources Committee of the National Resources Planning Board. It cooperates in the work of these committees directed to the best use of water resources as a part of public-works programs.

In performing its duties under the national defense program, the Commission is cooperating with the War and Navy Departments, the Coast Guard, the Maritime Commission, Civil Aeronautics Board, Advisory Commission to the Council of National Defense, the National Power Policy Committee, and the Federal Bureau of Investigation.

Constant cooperation with the Securities and Exchange Commission has been an important factor in the coordination of the closely related functions of the two commissions in the field of utility regulation.

The Federal Government is itself a very large customer of the electric industry throughout the United States, purchasing annually through its many agencies great quantities of electric energy. Establishments of the Army and Navy, housing authorities, lending agencies, and other branches of the Government regularly consult the Commission on their individual problems of power supply and rates.

The Commission has been particularly concerned with the development of closer cooperation with State agencies. Upon the institution of any proceeding, whether on application or complaint or upon the Commission's own motion, notices are sent to the Governors and regulatory agencies of the States affected. The States are asked whether they desire to participate in the proceedings.

During the year 1 or more State commissions and cities intervened in 15 important cases. These included the States of Indiana, Maryland, Missouri, Pennsylvania, Oregon, Washington, West Virginia, and Wisconsin, and the cities of Toledo, Ohio, and Madison and Milwaukee, Wis.

275462—41——2

Regulatory Commissions, which participated in joint hearings with the Commission, included those of the States of Indiana, Iowa, Kansas, Missouri, Nebraska, Oklahoma, Oregon, Pennsylvania, Wisconsin, and Wyoming. Several of the Commission's experts have been loaned to State commissions under authority of section 209 (c) of the Federal Power Act and section 17 (c) of the Natural Gas Act.

The Commission's 4-year investigation of six operating companies of the Associated Gas & Electric Co. system, which was brought to a conclusion during the year, affords an excellent example of the complementary action of Federal and State commissions. This investigation was undertaken in 1936 when the Governor and regulatory commission of the State of Pennsylvania informed the Commission that an inquiry being prosecuted by the Pennsylvania Commission had disclosed that the six companies had so-called service contracts and arrangements injuriously affecting their rates and that the inquiry had been thwarted by the removal of certain essential books and records from the State.

Hearings were undertaken jointly with the Pennsylvania Commission. But 3 years of litigation were required to obtain some of the records, one phase of the proceeding going to the United States Supreme Court, so that the hearings were not actually concluded until April 1940. The examiner's report and the Commission's opinion in the case were referred to the various State regulatory bodies to aid them in guarding against similar inflation in service-company costs.

The Commission instituted its investigation of the East Ohio Gas Co. on its own motion in response to a petition of the city of Cleveland. The city requested a determination of the cost of transportation in interstate commerce of natural gas from the Ohio River to the Cleveland city gate. This investigation, which will be helpful to a number of Ohio municipalities in rate cases before the Ohio Public Utilities Commission, has been delayed by litigation instituted by the company.

Commission Consideration of Procedural Problems.

Aware of the necessity for speeding up the regulatory process, the Commission during the past year has given consideration to the agitation for legislation dealing with procedure before Federal administrative agencies. It is seriously concerned with the fact that efforts in this direction seem to be proceeding on the premise that private interests must be further safeguarded against the claimed arbitrary actions of such bodies. The Commission's consideration of the matter has, of course, been limited to the function of utility regulation and the relation of its functions to the requirements in that particular field.

The Commission believes that sound thought on the subject must begin with the premise that the regulation of privately owned public utilities came into being in large measure as a substitute for competition in a field which had come to be considered as adapted to "natural monopoly." In the main its purpose was to assure the lowest possible costs and prices for utility services.

Historically, competition, when effective, offered a system in which people tended to obtain necessary goods and services at the lowest prices. A private business operating in a competitive field would automatically lose its market to a competitor who offered to supply the market at lower prices. In fact, such a business could not insist that consumers pay it higher prices on the grounds that its costs justified such prices. Instead it must revise its conception of its costs to meet competition.

Regulation, if it is to be a worthy substitute for competition, must similarly be able continuously to make it impossible for a public-utility company to charge prices higher than it could charge if an efficient and economical competitor could reasonably be expected to enter the field and capture the market.

The story of utility regulation, however, has been in the main a story of increasingly elaborate and protracted procedures devised by representatives of private companies to delay or circumvent the efforts of regulatory bodies to achieve these objectives. The reason for this appears obvious. Having obtained a status substantially free from competition, these companies now seek, by the establishment of elaborate techniques, to regain the arbitrary control of costs and rates which would be theirs under unregulated monopoly.

Space does not permit an extended discussion of all the details inherent in the regulatory problem. Suffice it to say that the complications resulting from the "fair value" theory, with its reproduction costs, its going value, its observed depreciation, etc., pose but a part of the problem which constantly confronts those charged with the responsibility for making regulation reasonably effective in the public interest.

The machinery for handling the regulatory problem cannot safely be confined to old methods. The regulatory agency is in fact a "tribune of the people" designed to "furnish protection to rights and obstacles to wrongdoing which, under our new social and industrial conditions, cannot be practically accomplished by the old * * * procedures" used in dealing with adversary suits in the law courts.

It would appear, therefore, that in rationalizing the problem of procedure for administrative agencies, the rule laid down in *Munn* v. *Illinois*, 94 U. S. 113 (1876), that property used to furnish utility services ceases to be private property and is subject to regulation, should

be accepted as a cardinal principle in determining essential procedures for dealing with the regulatory problem.

The Commission believes that steps should be taken to improve regulatory and administrative procedure. But it believes that such steps should be designed to speed rather than to delay the effective accomplishment of the regulatory purpose. The Commission has been constantly engaged in efforts in that direction.

For example, the Commission during the past year has adopted new prehearing procedure to expedite and accelerate the orderly conduct and disposition of hearings. This new procedure provides for informal conferences to consider the possibility of (1) simplification of the issues; (2) exchange of exhibits proposed to be offered in evidence; (3) obtaining admissions of fact and of documents which will avoid unnecessary delay in the hearings; (4) limitation of the number of expert witnesses; and (5) other matters.

This step is consistent with the Commission's policy of assuring all parties the "rudiments of fair play" in its proceedings.

The Commission has made it a practice for years to promulgate rules only after conferences with the interested parties and publication in the Official Register, to give all interested parties ample notice of its proceedings and an opportunity to present evidence, to conduct comprehensive public hearings, to permit the filing of briefs and the presentation of oral arguments, to require independent written reports from trial examiners, and to grant rehearings in proceedings after good cause has been shown.

The Commission, however, is convinced that the entire purpose of regulation will be defeated if steps are taken to afford private interests, basically opposed to the purposes of regulation, widened opportunity to adopt the status of aggrieved parties and, under the aegis of "due process," still further to delay and render futile sound regulatory efforts in protection of the public.

In the situation which prevails today, it is not the private interests who are the aggrieved parties, subject to arbitrary action of administrative agencies, but rather the consumers, subject to the arbitrary charges of monopoly which is protected against the control of sound regulation by the procedural latitude which monopoly today enjoys. And, in a larger sense, the whole people is aggrieved because the monopolistic tendency toward high costs and high prices is one of the fundamental sources of economic instability. In this situation the Commission is striving to accomplish expeditious regulatory procedures which fully protect the public against any semblance of arbitrary or unfair treatment.

SECTION II. WATER-POWER DEVELOPMENT-LICENSED PROJECTS

The genesis of the Federal Power Commission is to be found in the determination of the country to encourage the development and sound utilization of its water-power resources. Initially this was conceived of in terms of the issuance of Federal long-term licenses for developments in streams under Federal jurisdiction as a substitute for the relatively haphazard grants or permits, terminable by the governmental agencies almost at will, which tended to discourage investment of private funds in water-power projects.

Four Million Horsepower Operating Under Licenses.

The success of the Commission in making possible the development of water power under the licensing provision of the Federal Power Act is measured by the fact that outstanding major licenses for hydroelectric projects today cover developments with a total present installation of more than 4,000,000 horsepower designed for an ultimate installation of nearly 7,000,000 horsepower. The total cost of the projects constructed under the 128 major licenses is estimated at approximately $740,000,000.

The Commission has also undertaken a survey of unlicensed projects in the United States for the purpose of ascertaining which ones may be operating without requisite Federal authority, by reason of the occupation of Government lands or location on navigable waters or because their operation affects the interests of interstate or foreign commerce. This investigation discloses the existence of at least 1,300 unlicensed hydroelectric plants in the United States with installed capacity aggregating 8,782,000 horsepower. A critical examination indicates that many of these plants are located on streams subject to the jurisdiction of Congress or affect lands of the United States and in consequence should be covered by licenses.

Supreme Court Supports Broad Federal Authority.

The Commission's efforts to assure orderly development of the country's water-power resources under a broad conception of the importance of Federal authority over streams have been hampered by the resistance of certain private power interests to the requirement that they obtain licenses for water-power developments. This resistance has extended beyond the refusal to take out licenses for already constructed projects to decisions not to undertake needed power developments because the Commission found that a license would be necessary.

This laid the ground for a specious argument that the Commission by requiring licenses was actually retarding the utilization of the country's water-power resources. A specific case is that of the refusal of the Carolina Aluminum Company of America to go ahead with its Tuckertown project on the Yadkin River in North Carolina. Today that power would be of inestimable value for the production of aluminum for the national defense program if the company had been willing to proceed under a license under the Federal Power Act.

The 15-year controversy as to the breadth of Federal jurisdiction over the country's river-basin resources was settled by a decison of the United States Supreme Court in the case of the *United States* v. *Appalachian Electric Power Co.*, popularly known as the New River case. This case was argued before the Court in October 1940.

The decision fully sustained the Commission's conception of the extent of Federal jurisdiction over the country's rivers and its powers over development in such rivers. Handed down on December 16, 1940, it seems a fitting climax to the twentieth anniversary of the Federal Water Power Act. In it the Court recognized and approved the basic principles underlying Federal power policy with respect to the Nation's rivers.

The Supreme Court recognized the dynamic nature of the problem and held that:

1. The plenary Federal power over commerce must develop with the needs of commerce and is as broad as those needs;

2. The Nation's right that its waterways be utilized for the interests of the commerce of the whole country is inherent in its sovereign powers and navigability includes the feasibility of interstate use after reasonable improvements;

3. The constitutional power of the United States over its waters is not limited to control for navigation; navigability is but a part of the whole. Flood protection, watershed development, recovery of the cost of improvements through utilization of power are likewise parts of commerce control;

4. Navigable waters are subject to national planning and control in the broad regulation of commerce granted to Federal government;

5. The Federal government has domination over the water power inherent in the flowing stream and is liable to no one for its use or non-use. The flow of a navigable stream is in no sense private property and exclusion of riparian owners from its benefits without compensation is entirely within the government's discretion;

6. The flow of a navigable stream has no assessable value to the riparian owner. If the government were now to build the dam, it would have to pay the fair value, judicially determined, for the fast land; nothing for the water power;

7. The plenary power of Congress over navigable waters would empower it to deny the privilege of constructing an obstruction in those waters or to grant the privilege on terms;

8. Since the United States might erect a structure in these waters itself, even one equipped for electrical generation, it may constitutionally acquire one already built;

9. Such acquisition or such option to acquire is not an invasion of the sovereignty of a State.

This decision will have the effect of expediting and increasing the volume of the Commission's licensed project work. It will also provide a firm foundation for the more recent expansion of the Commission's work initiated under the Flood Control Act of 1938.

Licensed Project Work During the Year.

The Commission's work in connection with the licensing of water-power developments may be roughly divided into the following: (*a*) Examination of "declarations of intention" to determine whether the proposed project must obtain a license; (*b*) passing on applications for preliminary permits to enable prospective licensees to reserve sites while completing the necessary preliminary surveys; (*c*) passing on applications for licenses to construct projects; (*d*) investigations of projects already constructed without licenses to determine whether licenses should be required; (*e*) supervision of licensed projects, both in course of construction and in operation to assure conformance with the license terms.

Declarations of intention.—During the year the Commission had under investigation eight declarations of intention to construct water-power projects with installed capacity aggregating approximately 500,000 horsepower. Such investigations involve the gathering and analysis of data to determine whether the proposed project will (*a*) be constructed in navigable waters of the United States, (*b*) affect the interests of interstate commerce, or (*c*) involve Government lands.

The proposed projects are located in five States, Iowa, Minnesota, North Carolina, Oregon, and Washington. One project was abandoned and another is still under consideration. Of the remaining six, four were held by the Commission to require no license, while two cannot be undertaken until a license has been obtained.

Three of the projects, located in North Carolina, are of particular importance because of their relation to the production of aluminum—a vital product in the national defense program. They are located in tributaries of the Tennessee River and are owned by the Nantahala Power & Light Co., a subsidiary of the Aluminum Co. of America.

Two of these projects, one on the Nantahala River with an installed capacity of 63,000 horsepower and one on the west fork of the Tuckasegee River with an installed capacity of 30,000 horsepower, were found by the Commission to require no licenses. Both projects are now under construction and, in view of the need for additional power for the manufacture of aluminum, are being rushed to completion as rapidly as possible.

The other project, known as the Fontana project, located on the Little Tennessee River about 20 miles above the head of navigation, will include a dam with a maximum height of 470 feet, a reservoir with a usable storage capacity of 1,000,000 acre-feet, and a powerhouse

with an installed capacity of 300,000 horsepower. The reservoir will be the fourth largest storage reservoir so far constructed east of the Mississippi River.

After careful engineering investigation and review of all authoritative records, the Commission found that the Fontana project would substantially affect the navigable capacity of the Little Tennessee and Tennessee Rivers and that, in consequence, the interests of interstate commerce would be affected. This meant that it would be necessary for the company to obtain a license for the development.

The Commission granted the company's request for a rehearing. But when the company came to the conclusion that a license, with its recapture provision, would be required, it decided not to go forward with the project and asked that all proceedings be dropped.

Preliminary permits.—Four applications for preliminary permits for water-power projects were before the Commission during the year. Only one of these involved the proposed construction of a project which would constitute an important step in the utilization of the country's water resources. This was the application of the State of Arizona for a preliminary permit for a large water-power project at the Bridge Canyon site on the Colorado River.

This project, as tentatively proposed by the applicant, would raise the water surface 570 feet and create a reservoir with storage capacity of 2,500,000 acre-feet. Located just above the Boulder Canyon project, it would be a part of the comprehensive development of the Colorado River on a multipurpose basis. The power plant would be designed for an ultimate installation of 1,100,000 horsepower. A preliminary estimate of the Commission's staff indicates that the cost of the project, including transmission lines, would exceed $150,000,000. Action on the application is still pending.

Licenses.—During the year the Commission had under consideration 13 applications for licenses for major water-power developments, located in the States of Arizona, California, Colorado, Michigan, Montana, Ohio, Oregon, Washington, and Wyoming. The majority of them were for projects involving Government lands. Five of these applications were granted and licenses issued, 1 was dismissed for failure to complete the application, 1 was denied without prejudice, and the remainder are still pending.

Three of these applications are of sufficient interest to warrant brief comment:

The Pacific Gas & Electric Co. applied for a license to construct two water-power developments on the North Fork of the Feather River in California, the Cresta project with an installation of about 93,000 horsepower, and the Pulga project with about 110,000 horsepower. The Commission's investigation of this application involved a power study of the entire system, both as to power re-

sources and market requirements, and developed the probability that the proposed developments would be important in terms of assuring adequate supplies of power for defense production in the California area.

The study also developed the fact that a major factor in the value of the two proposed power plants will be the regulated flow contributed by Lake Almanor, now covered by a license for a minor part project. The Commission denied the application without prejudice on the ground that the application should include Lake Almanor under the standard license for the combined projects.

The application of the city of Tacoma for a water-power project on the South Fork of the Skokomish River in Washington raised a similar question as to whether the proposed project should not be included with the city's Cushman Nos. 1 and 2 plants as constituting a single project for the comprehensive development of the power resources of the North and South Forks of the river. The Cushman plants, already constructed, are operating under a single license. The aggregate capacity of all three plants will be 162,500 horsepower.

The application of the Sacramento Valley Utility Co. for a license for a water-power project to be located at a Government dam on the Yuba River in California, involves the possibility of developing 12,250 horsepower for use of the people of the area at a dam constructed primarily for the storage of mining debris. The Commission's staff has investigated the market requirements of the area and the economic feasibility of the project.

Commission Surveys Unlicensed Projects.

During the year the Commission has continued its survey of unlicensed water-power projects in the United States to ascertain which ones are operating without requisite Federal authority and should be required to accept licenses.

The Commission has initiated procedures to require the licensing of important hydroelectric developments which are today operating without valid Federal sanction, including the Bellows Falls project of 61,800 horsepower capacity on the Connecticut River, the Holtwood project of 158,000 horsepower on the Susquehanna River, two smaller projects on the same river, and the 46,900-horsepower Montana Power Company project located at Thompson Falls on Clark Fork of the Columbia River.

The Bellows Falls case involved extensive hydraulic studies to determine whether the intermittent daily operation of power plants on the Connecticut River affects the navigable capacity of the stream at points downstream from the plants. It also involved voluminous evidence as to the navigability of the river. The hearings in the

matter have been completed, briefs filed, and the case is awaiting final determination.

Consumers of electricity in the New England States have a vital interest in this case because of the possible effect of the establishment of Federal jurisdiction on the cost of Bellows Falls power which represents an important part of the wholesale power supply of the region. The Federal Trade Commission investigation revealed that, in the course of several financial deals in which the plant has been involved, the book cost of the project was written up by several millions of dollars. Federal Power Commission accounting would be directed at the elimination of such write-ups from its capitalization.

The case involving the Holtwood plant of the Pennsylvania Water & Power Co. involved less engineering determination because the project is located in a stretch of the Susquehanna River between the Conowingo and Safe Harbor projects, both of which are already under license. After a hearing, the Commission found the river navigable and ordered the company to accept a license.

The Pennsylvania Water & Power Co. appealed from this order to the Court of Appeals of the District of Columbia and simultaneously sought to enjoin the Commission in the United States District Court. Both of these suits are now pending and raise squarely the question of the Commission's authority to compel acceptance of a license for a project built prior to the passage of the Federal Water Power Act of 1920.

In the case of the Montana company's Thompson Falls project the Commission, after investigation revealed that the project occupied in part lands of the United States, issued an order directing the company to show why it should not accept a license. The company responded by signifying its intention to file an application for a license and the application is now in preparation.

Amendments to Licenses.

During the year the Commission, after the necessary engineering investigations had been completed, acted on 30 applications for amendments to existing project licenses. Several of these may be mentioned as being of more than routine interest.

The Commission approved the installation of an additional 28,000 kilowatt generating unit at the Safe Harbor project on the Susquehanna River. This project is considered an excellent example of the proper development of water-power resources. Approval of the additional unit was based on a study indicating that the additional power was needed in the area and that the proposed installation represented the most economical means of providing for the need.

The Commission authorized the Pacific Gas & Electric Co. to proceed with the construction of a new radial gate spillway to increase

the safety of its Philbrook Reservoir Dam prior to amendment of the license. It provided, however, that, in the operation of the project, an attendant be stationed at the dam continuously when the gates are closed until it is established to the satisfaction of the Commission that such attendance is unnecessary. The Commission's action was based on hydraulic studies to determine the safety and adequacy of the proposed new structure.

The Commission has under consideration the application of the Arkansas Power & Light Co. for amendment to a license covering three projects on the Ouachita River in Arkansas. The amendment would permit the company to postpone construction at the Blakely Mountain site, the farthest upstream of three sites of which two have already been developed. The important question involved in the decision is the proper programming of a number of proposed water-power developments in terms of the market requirements of the area. Among the other projects to be considered are multipurpose developments on the White River which are being definitely planned as parts of the United States Corps of Engineers flood-control program.

Niagara Falls Case.

One of the most important cases under consideration by the Commission during the year involves the application of the Niagara Falls Power Co. for amendment to its license to permit it to divert an additional 275 cubic feet per second through its existing power plants. This is the remaining unlicensed 275 cubic feet per second of the 20,000 cubic feet per second which may be diverted for power purposes on the United States side of the Niagara River under the 1909 Boundary Waters Treaty with Canada.

The application was originally made in 1928 and the company has been utilizing the diversion on a temporary basis pending final decision in the case. As the result of a protest and brief filed by the Power Authority of the State of New York the case was broadened to include certain questions as to whether the company's present use of Niagara Water is in the public interest. These questions included (*a*) whether the plans of the Niagara Falls Power Co. are best adapted to a comprehensive plan for improving the Niagara River and (*b*) whether the company has violated the terms of its license and of the Federal Power Act through entering into a contract for sale of power to the Aluminum Co. of America on a basis involving possible restraint of trade. On the basis of such alleged violations, Counsel for the Power Authority asked that the existing license for the Niagara Falls project be revoked.

This important case, after 63 days of hearings, the filing of briefs and the Examiner's report, is now before the Commission for decision.

Routine Inspection Work.

The Commission has carried on its regular inspection work to assure the construction of licensed projects in accordance with the approved plans, to determine whether any changes in such plans are necessary in the interest of the safety of the structure, and to see that projects constructed under licenses are operated in conformity with the license provisions. Among the more important examples of this inspection work the following may be noted:

The Commission has maintained an engineer-inspector continuously on the construction work of the Santee-Cooper project of the South Carolina Public Service Authority. The Commission's engineers have reviewed the plans and cooperated with this licensee in the design of the project, in the program for testing materials, in determining the manner and extent of reservoir clearing and in the adoption of satisfactory cost keeping methods.

The Commission's Denver office has handled the field supervision of the Central Nebraska Public Power & Irrigation District project on the North Platte and Platte Rivers. The Kingsley storage dam, which forms a part of this project, is the largest earth filled dam in the country with the exception of the Fort Peck Dam on the Missouri River. It will be one of the oustanding engineering structures of the country. Jurisdiction of the Commission over this project has been of material value in coordinating and protecting the more or less divergent interests of power, irrigation, navigation, and flood control.

The Commission's supervision of The Montana Power Co.'s 77,000 horsepower Flathead Lake project has included investigations to determine (1) whether any modification should be made in the requirements relative to clearing the margins of Flathead Lake and (2) the cause, nature, and extent of seepage damage alleged to have been suffered by owners of lands bordering the lake.

Supervision of the construction of the city of Seattle's Ross Dam by the Commission's San Francisco office was particularly important because of (1) the proposed ultimate height of the dam (650 feet) and (2) the unusual problems of design arising from the proposed construction of the dam in three stages. The Commission's engineers cooperated with the city in working out numerous details of design and construction.

During the year the Commission's engineers have made investigations leading to constructive recommendations for the safety of two licensed projects on the Saluda River in South Carolina.

The larger of these, the Saluda project of the Lexington Water Power Co., is a rather exceptional project with an earth dam more than 200 feet high, a reservoir with 1,600,000 acre-feet of usable

storage capacity and a 180,000 horsepower power plant. The Commission's investigation was directed to a determination of the adequacy of the project structures in the light of present knowledge of soil mechanics and probable flood flows. The work involved extended study of stream flow, storm records, and various hydraulic calculations.

In addition, the Commission, in cooperation with the War Department, the company, and the South Carolina Public Service Authority, arranged for the making of tests of the material comprising the dam. The results of these tests are being studied to determine what, if any, alterations should be made in the dam in the interests of safety. The conclusions reached will also determine the safe operating level of the reservoir.

The smaller of these projects, the Buzzards Roost project of Greenwood County, S. C., includes a 90-foot earth dam and a 20,000 horsepower hydroelectric plant. Throughout the year foundation problems and diversion difficulties in connection with this dam were receiving the attention of the Commission's engineers.

In collaboration with engineers of the licensee, the War Department and the Public Works Administration, the Commission's staff was instrumental in securing larger spillway capacity and changes in design and construction procedure to insure greater safety and permanence of the project works. Construction of the project has been completed except for minor details and the power plant is operating at full capacity.

Determination of Headwater Benefits.

In 1939 the Commission assessed headwater benefits under section 10 (f) of the Power Act against the California San Joaquin Light & Power Corporation in favor of Southern Edison Co., Ltd., an upstream licensee, the construction and operation of whose project resulted in downstream benefits. This is the first case in which the Commission has determined headwater benefits under section 10 (f). Other cases of this nature are expected to arise in the future.

General Principles of River Basin Planning.

Since 1920 it has been the continuing responsibility of the Federal Power Commission, when considering a proposed water-power development, to assure that the development of any part of a river will not only conserve and utilize the power values of the particular site to the fullest extent possible, but also that it will be an integral part of the comprehensive development to conserve and utilize, in the public interest, all the water resources of the entire river basin.

This responsibility of the Commission is made explicit in section 10 (a) of the Federal Power Act which makes it a specific condition of all licenses:

> That the project adopted, including the maps, plans, and specifications, shall be such as in the judgment of the Commission will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce, for the improvement and utilization of water-power development, and for other beneficial public uses, including recreational purposes; and if necessary in order to secure such plan the Commission shall have authority to require the modification of any project and of the plans and specifications of the project works before approval.

This meant that in considering any particular project it might be necessary for the Commission to consider stream-flow regulation in the interests of flood control, domestic and industrial water supplies, pollution abatement, irrigation, navigation, recreation, biotic effects, new water-power developments, increasing and improving the potential power output at existing and partially developed water-power sites, and accomplishing other desirable purposes in the public interest.

SECTION III. WATER POWER DEVELOPMENT—MULTIPLE-PURPOSE RIVER BASIN PLANNING

The year has seen great progress in the Commission's cooperation with the United States Corps of Engineers and other governmental agencies under the flood-control program. This phase of the Commission's work assures the maximum ultimate utilization of the country's water-power resources as an integral part of comprehensive, planned river-basin development for flood control, navigation, power, pollution abatement, and recreation. It is a natural extension of the Commission's activities during its early years, which sought to encourage sound development of the Nation's water-power resources under Federal licenses.

Planning Possible Under Flood Control Act of 1938.

The authorization contained in the Flood Control Act of 1938 enabled the Commission to undertake the particular function of river-basin planning contemplated in the Federal Power Act. The Flood Control Act specifically imposes upon the Federal Power Commission the duty of making recommendations to the Secretary of War concerning the installation of penstocks and other facilities adapted to possible future use in the development of hydroelectric power in any flood-control dam constructed by the War Department.

The duties and responsibilities with which the Federal Power Commission is charged under the Federal Power Act make it imperative that the Commission, in performing its obligations under the Flood Control Act of 1938, consider not only the feasibility of incorporating penstocks in each flood-control dam but also the relationship of the dam to all projects in a comprehensive plan to develop the water resources of the river basin. The relative economy and desirability of the use of the water for power production and for other purposes must be considered.

Rivers constitute one of the country's great natural resources. By having made use of the benefits to be secured from them, our civilization has progressed. The utilization of our water resources will, in the future, very likely have an even greater influence than in the past in determining the economic security and social welfare of the citizens of this country. The fuller development and utilization of the potential power resources of a river may well have a stabilizing effect on the economic life through the vitalization of industry and

agriculture, thereby promoting higher standards of living among the people.

Many water projects have been planned in the past as isolated and unrelated projects. Each has served its particular purpose more or less effectively, sometimes with and sometimes without interference with other projects on the stream or in the basin. In certain instances, however, as the development of other water projects in the basin has become desirable, it has been found that the existing plants and structures have greatly interfered with the full and best development of the potential water resources.

The basis of the multiple-purpose treatment of river basins is that fullest advantage of a basin's water resources can be secured only by bringing together the several related water uses in a comprehensive plan of coordinated development. Its aim is to insure, in the public interest, the best possible use of the basin's water resources. Such treatment, in which the benefits to be secured are balanced according to their economic and social importance, is best calculated to promote the welfare of the people in the area and also in the country as a whole.

More Than 5,000,000 Horsepower Recommended.

The investigations made to date by the Commission's Division of Power-Flood Control Surveys indicate that ultimate installations of hydrogenerating capacity aggregating 5,500,000 horsepower in connection with 72 Government reservoir projects, which will be constructed for flood control and other purposes, will be economically feasible as part of the multiple-purpose development program to meet the growing need of the people in the areas in which the projects are located

The ultimate cost of the projects is estimated at a total of $1,095,000,000, of which $632,000,000 represents the additional cost of providing for the power development. Thus the power will be economical as the additional cost required to produce power at these dams will average about $115 horsepower which is a relatively low investment for hydroelectric projects.

Power Possibilities of 307 Projects Investigated.

Since 1938, when the flood-control program first provided the Commission with funds for such comprehensive river-basin survey work, the Commission has investigated and studied the power possibilities of 307 flood-control projects. Of this number, 191 projects were under study during the fiscal year of 1940, involving river basins in 30 States. Among those investigated were the basins of such rivers as the Merrimack and Connecticut in the North Atlantic drainage area; the Susquehanna, Santee, and Savannah in the Central and South Atlantic drainage areas; the Allegheny, Monongahela, Ohio, and

Kanawha in the Ohio River drainage area; the Kansas in the Missouri River drainage area; the White, Arkansas, Canadian, and Red in the Southwest Mississippi River drainage area; the Neches, Trinity, Guadalupe, and Rio Grande in the Western Gulf drainage area; the Columbia and Willamette in the North Pacific drainage area; and the San Joaquin in the South Pacific drainage area.

The projects submitted to the Commission fall into two general classifications. The first classification includes those projects which have been authorized by the Congress for construction. They are being constructed or in various stages approaching construction. With few exceptions, they have been flood-control projects upon which the recommendation of the Commission was required with respect to the advisability of installing penstocks or other facilities adapted to possible future use in the generation of hydroelectric power. The Denison Reservoir on the Red River in Oklahoma and Texas, and the Bluestone Reservoir on the New River in West Virginia are both multiple-purpose flood-control and power projects which are included among the authorized projects upon which recommendations of the Commission have been made.

The second general group of projects which have been submitted to the Commission includes those embodied in the survey reports of the United States Corps of Engineers. These projects have been of a widely varying character. For example, the Allegheny Reservoir in the upper Ohio River Basin was considered for flood control and pollution abatement; the Isabella project on the Kern River in California, for flood control and stream-flow regulation for irrigation and other purposes; the Table Rock and Bull Shoals projects in the White River Basin in Missouri and Arkansas, for flood control and power; the Narrows project on the Little Missouri River in Arkansas, for flood control and power; projects in the Santee River Basin in North and South Carolina, for navigation and power; and reservoir projects in the Neches River Basin in Texas, for flood control, irrigation, improvement of navigation, and the development of power. These projects, for which Congressional authorization has been recommended, are predominantly of the multiple-purpose type of improvements.

A brief review of the Commission's survey work in certain major river basins will suggest the possibilities latent in the multiple-purpose approach.

Studies of New England River Basin Projects.

Congress has authorized the construction of a system of flood-control reservoirs in the Merrimack and Connecticut River Basins in New England and has appropriated funds for its initiation. The Commission has received information relative to 19 proposed projects for the reduction of flood heights in these basins. Five of these projects are now under construction.

The projects are proposed on tributaries of these streams, widely scattered throughout the area. The utilization of the possible power output from such widely scattered projects involves a thorough understanding of the power requirements and probable market for the output of the plants in the New England area. For that reason, the projects on these two river systems have been studied concurrently with a view to their coordinated operation. These studies have contemplated the possibility of absorbing the output from all potential multiple-purpose projects into the existing utility systems.

In the New England area the development of cities and communities in the river valleys has precluded the use of many of the major and naturally most valuable reservoir sites from the standpoint of stream-flow regulation. As a result it is now necessary to consider the use of smaller sites on the tributaries and headwaters which are still possible of development and which have not yet been fully occupied by agriculture and industry.

The most readily available power sites in these basins have been developed for many years as an adjunct to local industries, first for mechanical power and later, in many cases, for hydroelectric power. At points where many industries congregated, such as at Holyoke and Turners Falls on the Connecticut River in Massachusetts and at Bellows Falls in Vermont, power developments have been combined under public-utility operation and redevelopments have been made possible, as at Turners Falls and Bellows Falls.

Most of the other power reservoir sites which have been considered valuable have also been developed by private capital. An example is the development of the Lower Fifteen Mile Falls site by the New England Power Association. In fact, there are only a few important sites remaining in the area which are feasible of economic development by private financing. As a result, the new approach, which has now been made possible by public financing of multiple-purpose projects combining flood control and other desirable purposes with the development of power, has opened up an entirely new and wider field for hydroelectric development in this area as well as in other regions of the country.

Connecticut River Basin studies.—The Commission's investigations of the Connecticut River and its tributaries indicate that there are 12 key reservoir projects which should be included in a multiple-purpose program for the Connecticut Basin. Five of these projects should be used for flood control and stream-flow regulation in the interest of downstream power, navigation and pollution abatement but will have no power installations.[1] The remaining seven projects should include initial power installations totaling 480,000 horsepower,

[1] The Victory project on the Passumpsic and the Monomonac, Gardner, Hydeville, and Priest Brook projects on the Millers River.

with an annual output of over 700,000,000 kilowatt-hours.[2] These projects, by regulating stream flow, will also make possible the production of tens of millions of additional kilowatt-hours annually at existing downstream power developments.

Merrimack River Basin studies.—The Commission's investigations of the Merrimack River and its tributaries similarly reveal the power possibilities of eight key multiple-purpose projects. Two of these projects will be for flood control and stream regulation,[3] while the remaining six should include initial power installations totaling approximately 160,000 horsepower, with an annual output of over 270,000,000 kilowatt- hours.[4]

The projects in each basin must, in effect, be considered together as a unified project, as the upstream reservoirs provide storage for stream-flow regulation which is necessary to make the downstream projects feasible. All contribute to flood control, pollution abatement, and recreation.

Evolution of plans for Contoocook River as example of cooperation.—The development of plans for multiple-purpose flood-control projects on the Contoocook River, a tributary of the Merrimack, reveals how cooperation between the Commission and the United States Corps of Engineers under the Flood Control Act of 1938 assures the best possible plan for developing the water resources of any area.

The first flood control plan in 1939 called for a single large reservoir near the mouth of the Contoocook River. Local residents objected on the ground that, while this would have protected the lower Merrimack Basin communities against floods, it provided no protection to the farms and communities in the Contoocook Valley. The whole matter was restudied in the light of the destructive 1938 floods, the Commission's staff working closely with the United States Corps of Engineers. The Commission suggested a shift to a number of headwater projects in general accord with the plan of the New Hampshire Water Resources Board to protect the Contoocook Valley as well as the lower Merrimack and to conserve and utilize the abundant river resources, including power.

The United States Corps of Engineer's investigation of the projects proposed by the Commission indicated that some of them would not be economical. But it led to a modification of the original plan to include certain headwater projects. Furthermore, the revised plan included provision for the ultimate development of a considerable portion of the potential water power available in the river.

---

[2] The Upper Fifteen Mile Falls and Enfield projects on the Connecticut, the Gaysville project on the White, the Newfane project on the West, the Knightville project on the Westfield, the Tully project on the Tully, and the Erving project on the Millers River.

[3] The Bennington and Beards Brook projects on the Contoocook River.

[4] The Livermore Falls and Franklin Falls projects on the Pemigewasset, the Blackwater project on the Blackwater, and the Stoddard, Lower Hillsboro, and Penacook projects on the Contoocook River.

On the basis of the conclusions of the United States Corps of Engineers, the Commission's staff also revised its original plan and suggested a program which it felt would more fully conserve the power values of the basin. This was considered in a conference at the Office of the Chief of Engineers and it was agreed that the multiple-purpose objectives appeared to warrant further consideration.

The problem under consideration by both agencies was that of devising a plan which would be justified for the immediate purposes of flood control, would come within the funds authorized, and would also be susceptible of future enlargement for economical development of power.

As a result of further studies of both plans by the two agencies modifications were made so that the two plans are more and more closely approaching each other, with increasing emphasis on the use of headwater reservoirs and the maximum ultimate recovery of the power values of the stream.

Both plans for ultimate development today include the Blackwater, Mountain Brook, West Peterborough, Stoddard, Beards Brook, and Penacook projects. In addition the Commission recommends the Bennington and Lower Hillsboro projects, while the United States Corps of Engineers prefers the Long Falls and Hopkinton-Everett projects. Both plans will provide adequate flood control with roughly comparable amounts of dislocation of local life to make room for the reservoirs. The estimated costs are also not far apart.

The Commission's plan provides for an initial power installation of 47,000 kilowatts and an ultimate installation of 109,000 kilowatts as compared with 43,000 and 84,000 kilowatts respectively in the United States Engineers' plan. In general the Commission's plan assures slightly more economical power.

Final decision in the matter, as a result of the cooperation of the two agencies, will unquestionably assure the people of the entire Merrimack Basin the best plan for utilization of the Contoocook water resources for all beneficial purposes.

Studies of Projects in Upper Ohio River Basin.

The Commission's investigation of a system of 10 reservoir projects authorized by Congress for the reduction of flood heights at Pittsburgh and in other areas in the Upper Ohio River Basin has revealed the increased potentialities of the multiple-purpose approach to river-basin development as contrasted with the single-purpose approach. In this connection, the report on the Conemaugh project is of special interest.

The plan, as submitted, contemplated a dam and reservoir on the Conemaugh River, 7.3 miles above its confluence with the Kiskiminitas River and about 65 river miles above Pittsburgh. The dam as planned would be about 150 feet high, providing 270,000 acre-feet of

storage capacity reserved for flood control, equivalent to 3.8 inches of run-off from the 1,357 square miles of drainage area above the dam. The estimated total cost of the project is $22,000,000.

The Commission's recommendation on this project is a notable example of the application of the principle of multiple-purpose planning to conserve and develop the water resources of a basin including water power. The recommendation was that two projects, one on the Clarion River and one on the Cheat River, should together be given priority as alternatives to the Conemaugh project.

This recommendation was made as a result of an investigation of the entire Upper Ohio River Basin, utilizing the results of engineering studies by private engineers, by power companies, by the Flood Commission of Pittsburgh, by the United States Corps of Engineers, and utilizing its own field reconnaissance surveys. From this investigation, the staff of the Commission has developed a comprehensive plan for the multiple-purpose utilization of the water resources of these areas.

The Conemaugh project was found to be a desirable flood-control project for the protection of Pittsburgh and the Upper Ohio Valley. But it would have little value for other than flood control. It contains no power potentialities. The Commission's studies indicate further that at least equivalent flood control could be secured at no great expenditure by the construction of alternative projects on the Clarion and Cheat Rivers. These reservoirs, built at first for flood control, would be susceptible of later modification and enlargement for the development of the extensive and low cost hydroelectric potentialities of these streams.

The studies show that, when the demand for power requires it, the multiple-purpose developments on these rivers will provide an installed capacity of 800,000 kilowatts with an average annual output of about 1,500,000,000 kilowatt-hours. In terms of equivalent public-utility steam production costs this power will have an annual value, delivered to the market, sufficient to earn about 10 percent of all power investment costs, applicable to interest, taxes and amortization. The availability of such potential hydroelectric power, adjacent to one of the important war-material areas, may prove of vital importance to the defense program.

The proposed Youghiogheny River development for flood control, power, pollution abatement, recreation, and navigation, includes one major reservoir project serving all these purposes, one reservoir to provide stream-flow regulation for power and six power plants, with an aggregate installed capacity of 213,000 horsepower. The Commission's studies show that, if the other projects are also built on the river, it will be economically feasible to install 32,000 horsepower

with an average annual output of 76,300,000 kilowatt-hours at the Youghiogheny Reservoir project now under construction for flood control and river regulation.

Tributaries of Lower Ohio River Investigated.

The Commission's investigation of projects in the lower Ohio tributaries, still in the preliminary stages, has already revealed great power possibilities in the Kanawha and Cumberland River Basins.

The Bluestone Reservoir project on the New River in the Kanawha Basin, West Virginia, already authorized by Congress for flood control and power, offers the possibility of an initial 120,000 horsepower installation with an average annual output of 400,000,000 kilowatt-hours.

The Wolf Creek Reservoir project, also authorized for flood control, will be a major unit in the comprehensive development of the Cumberland River Basin for flood control in the Cumberland, Ohio, and Mississippi Rivers, as well as for power, navigation, and other purposes. The Commission's preliminary studies indicate the feasibility of an initial installation of 240,000 horsepower at this project with an average annual energy output of 800,000,000 kilowatt-hours. The regulation of stream flow, which it will provide, will also benefit a number of potential power sites on the river below. The development of this river should probably be planned in close association with the Tennessee River basin projects.

Many Basins Included in Surveys.

The general nature of the Commission's multiple-purpose river-basin surveys, in connection with the Flood Control Acts, has been indicated in the discussion of the Connecticut, Merrimack, and Ohio River projects. Brief reference to the results of surveys in certain other basins will suggest the scope of the work.

Susquehanna River Basin.—Three projects suggested for this basin, located respectively on the Raystown Branch of the Juniata River, on Conewago Creek and on Loyalsock Creek in the State of Pennsylvania, will not only provide important flood-control benefits but will also offer the possibility of power installations aggregating 176,000 horsepower with an average annual output of 238,000,000 kilowatt-hours. Furthermore, they will result in a large increase in the dependable power at the existing privately owned Safe Harbor, Holtwood, and Conowingo plants.

Santee River Basin.—The Blairs and Greater Lockhart projects, proposed as essential steps in the development of the Santee River system in South Carolina, offer the possibility of initial power installations totaling 160,000 horsepower, with an average annual output of 483,000,000 kilowatt-hours. The stream regulation, which they

will afford, will increase the dependable power at two existing downstream plants and also at the new Santee-Cooper project.

Savannah River Basin.—The Commission's investigations show that this basin offers the Clark Hill project in Georgia and South Carolina, designed for flood control and navigation, but with a feasible initial power installation of approximately 185,000 horsepower capable of producing 544,000,000 kilowatt-hours a year.

Coosa River Basin.—The Commission's investigations indicate that the coordinated operation of two proposed projects in this basin for flood control and power will make available initially a total installation of approximately 142,000 horsepower, with an average annual output of 174,000,000 kilowatt-hours. These projects, known as the Allatoona and Gilmer Ferry Reservoirs, located in Georgia, will also increase the dependable capacity at existing downstream plants.

White River Basin (Arkansas and Missouri).—The Commission's investigations of five flood-control projects in the White River Basin indicate that it will be economically feasible to install initially 386,000 horsepower of capacity at these projects, with an average annual output of 1,158,000,000 kilowatt-hours of hydroelectric energy. The Commission believes that the availability of this power should provide a stimulus to industrial development and utilization of the mineral resources in the area.

Additional basins.—In addition to the foregoing, the Commission has investigated 9 other river basins involving 15 flood-control projects. These projects offer the possibility of an aggregate initial power installation of 637,000 horsepower, with an average annual output of 1,725,000,000 kilowatt-hours.

General Principles Applied in Power-Flood Control Works.

The flood-control projects which have come before the Commission have been authorized to meet specific flood problems and, in the majority of instances, have not contained provisions for the possible future generation of power. It is recognized, in these cases, that flood-control requirements must receive primary consideration. However, it is equally imperative that a long-range view be taken in appraising the desirability of the future production of power at these projects.

The question before the Commission in connection with any flood-control project is whether or not some expenditure is advisable to preserve for the future the power which may ultimately be developed in connection with the project. In general, where the expenditure of but relatively small sums of money will preserve the possibility of power development, it is believed that a liberal view should be taken as to the value of power which may subsequently be developed. In

terms of the conservation of the energy resources of the country, the value of this power, therefore, should be predicted on the future cost of fuel, reflecting the depletion of fuel resources.

In projects of this type, the cost of power is based upon the incremental cost required to secure the power facilities over and above the cost of the project as it has been authorized for flood control and does not involve a study of allocation of costs. This method of approach has become well established.

Based upon these considerations the Commission has recommended that provisions be made for penstocks or other similar facilities those authorized by Congress to meet specific flood problems. In the remainder, the Commission found that the power possibilities were so limited or that the costs of securing them were so great that the development of power at those projects would not be in the public interest.

The problems in the case of the multiple-purpose type of projects, which include power as a feature of the initial construction, are somewhat different and more involved. Whereas the considerations with respect to stream flow, type of dam, etc., are common to all types of reservoir projects, the questions of an immediate market for power, the character of the power which can be utilized, and the size and type of installation, are of primary importance in the consideration of multiple-purpose projects proposed for immediate construction. In these instances, the immediate investment of major sums of money is involved.

The character of the power which can be developed at each project is generally of the type which has its greatest value when utilized in conjunction with other sources of power supply and is usually peak load power. The value of this power and the possibility of its marketing involve considerations of alternative supply from steam-electric stations. Its value, in general, is measured by the cost of producing the power by the alternative means, and must reflect differences in transmission and distribution costs, differences in capacity and energy losses, and differences in operating costs.

During the year the Commission has completed a series of power market studies relating to proposed flood control projects throughout the United States. These investigations were closely related to and were based on data made available by the general power surveys already discussed. They included studies of existing power facilities, of load characteristics and load growths, and of the probable value of power in the several areas as a basis for the Commission's recommendations to the Secretary of War as to the feasibility of providing power facilities at the proposed projects.

These power-market studies are the essential basis for the economic evaluation and planned use of the Nation's water-power resources. They supply the necessary information to determine the economic worth of a proposed project and to assist in arriving at the proper size of installation to be provided.

Comprehensive power-market studies of this type have been made at the request of the War Department for use in connection with its investigations of the Denison project on the Red River, the Pensacola project on the Grand-Neosho River, the Fort Peck project on the Missouri River, the Gavins Point and Fort Randall projects on the Missouri River, and a series of projects proposed for the Yellowstone River. Similar studies for the War Department are now under way in connection with projects on the Cumberland River and in the White River Basin.

An exhaustive study of a similar character covering the power requirements of the northwest portion of the United States was also recently undertaken at the request of the Bonneville Administration. The purpose of this study is to develop the best plan for the coordinated use of the Bonneville and Grand Coulee projects and such other multiple-purpose projects as it may be desirable to construct in that area in the future.

Cooperation With Other Agencies.

The Commission's work in the field of multiple-purpose river basin development, with especial emphasis on assuring ultimate utilization of the water power potentialities, involves constant cooperation with other governmental agencies. By reason of the nature of the work, the cooperative relationship with the United States Corps of Engineers has been especially close and constant. Much of the Commission's work could not have been accomplished with the efficiency which has attended it without the cooperation not only of the Office of the Chief of Engineers but also of the District Engineer offices throughout the country. A report of the Commission's work in this field would not be complete without this acknowledgment.

SECTION IV. POWER SURVEYS AND NATIONAL DEFENSE

The Federal Power Commission's power surveys carried out under the broad authority conferred upon it by the Public Utility Act of 1935, have proved increasingly important throughout the past year. Their importance has been accentuated by the need for prompt and continued planning to assure adequate supplies of power for the steadily expanding defense program. The Commission's defense power work, in fact, represents a natural expansion of its responsibility for assuring adequate supplies of dependable power to meet the growing needs of the people.

In March 1938, the President directed the Commission to make "an accurate, complete, and up-to-date revision of the Federal Power Survey of 1935," saying that it "would constitute a valuable contribution to the plans for the mobilization of industry in the event of war." The resulting confidential report on "Electric Power in War" contained such significant conclusions that the President appointed the National Defense Power Committee, on which the Federal Power Commission was represented, to find ways and means of meeting the Nation's power needs in the event of war.

The emergency staff employed by the Commission on the "Electric Power in War" study was taken over by the Committee and continued the work under the supervision of members of the Commission's staff. Subsequently, when the President asked the National Power Policy Committee to take over the work of the National Defense Power Committee, the Commission continued to furnish the staff and basic data for the undertaking.

Defense Power Work Expanded During Year.

The defense power work of the Commission during the past year has been carried out in cooperation with the National Power Policy Committee and the Advisory Commission of the Council of National Defense. Since June 14, 1940, the work has followed the instructions of the President in his letter to the Commission under that date.

In that letter [1] the President called upon the Commission (*a*) to translate national-defense orders into demands for power, (*b*) to keep check on the adequacy of the power supply to meet such demands, (*c*) to keep currently informed of the needs of the national defense industries, (*d*) to keep records of the orders being placed with the electrical equipment industry for additional capacity and the ability

[1] See Appendix C for full text.

of the industry to meet such orders, (*e*) to plan, in cooperation with the utility industry, to meet every power need in the most economical manner, and (*f*) to work out plans, in cooperation with the utilities and other Government agencies, for the protection of power supply against hostile acts.

Report on power requirements and capacity.—In October 1939, the Commission's staff, collaborating with the National Power Policy Committee, completed a fact-finding report on the power demands and generating capacities of the electric utilities of the Nation, the probable demands in the immediate future including estimated defense increments, the generating capacity on order, and the additional capacity that would be required to assure adequate power supply for the defense load. Special attention was devoted to certain important manufacturing areas from which the greater part of the materials needed for the defense program would be obtained.

Conferences with power-system representatives.—The Commission's staff assisted the National Power Policy Committee at a series of conferences with representatives of power systems, serving 13 important centers of war material production. The conferences were called with a view to arriving at sound conclusions for each area as to (*a*) the trend of power requirements, (*b*) expected 1941 load, (*c*) the assured capacity to carry that load, (*d*) the estimated load that might be expected in the event of full mobilization for national defense, (*e*) the extent to which assured capacity would be adequate to meet war requirements, (*f*) the plans of the industry for providing additional capacity where called for, and (*g*) the possibility of new transmission interconnections as a partial preparation for possible war emergency. The Commission's staff prepared special reports as a basis for each of these conferences.

Cooperative investigation of transmission interconnections.—The Commission, in cooperation with a special committee representing the utility systems, has continued the investigation of the technical and economic feasibility of a series of high-capacity transmission interconnections between the important centers of defense production. Such interconnections, if found feasible, would not only increase available capacity by reducing the total reserve requirements but would also serve as a protection to each interconnected area against interruption of industrial production resulting from the destruction of a major generating station by hostile act.

Monthly reports on loads and capacity.—The Commission is obtaining and compiling monthly returns from the principal electric-utility systems of the country relating to their existing and anticipated electric power loads, the generating capacity available and planned for installation in the future, and the reserve capacity required for normal operation. On the basis of these returns, the Commission is

issuing a monthly report on the power requirements and capacity relationship in the 48 power-supply areas into which the country has been subdivided.

In a letter to the President, based on these reports for September 1940 and information as to defense loads in the several areas, the Commission reported that:

1. Except for possible "bottlenecks" in certain areas, the demands for electric power in 1941 could be met with existing facilities and those under construction;

2. The full effects of the national-defense loads would not be felt in most areas until 1942, when the aggregate deficiencies in generating capacity in certain areas would probably exceed 1,500,000 kilowatts;

3. The areas where the greatest need would probably develop would be: Upper New York State, the Philadelphia region, the Pittsburgh region, Chicago and vicinity, St. Paul and eastern Minnesota, the Southeastern States, the Arkansas area, Idaho and Utah, and northern California.

Reports on equipment orders.—The Commission is collecting monthly information from the electrical-equipment manufacturers as to orders for steam, turbine generators, water wheels and water-wheel generators. This information includes scheduled delivery dates, probable dates for completion of installation, need for additional skilled labor and materials, and any factors which might delay the manufacturing processes. It will assist in determining priorities for the manufacture of such equipment if the need for such priorities develops.

Reports from industrial plants.—The Commission is compiling the results obtained from a short questionnaire sent to approximately 25,000 of the more important industrial plants of the country, including plants which generate their own power in whole or in part. The list includes all plants with national defense orders.

The returns from these industrial plants will assist in anticipating loads to be expected in the next 2 years and in translating defense orders into kilowatts of power requirements. Several electric utilities have indicated that this canvass of the manufacturing plants of the country has already proved of great assistance in their system planning.

Power requirements for defense orders.—The Commission receives currently from the National Defense Commission, the War and Navy Departments, and other governmental agencies responsible for defense orders, regular information as to orders placed, and translates these orders into power requirements. It is also keeping current information as to all plans for expansion of manufacturing capacity. This

information supplies a firm basis for estimates of the future power requirements of the various power-supply areas.

Field investigations are being pushed wherever interruptions of service or threat of inadequate power supply may affect the national defense program. Frequently these investigations are made at the request of the War and Navy Departments. In certain instances the Commission has assisted in assuring adequate supplies of power at reasonable rates for essential Government defense activities.

Defense power supply in connection with Government projects.—The Commission has made an exhaustive analysis of all Government river-basin projects, both constructed and proposed, in order to determine the availability of power for such projects as a possible contribution to defense power supply in certain areas. The availability of such hydroelectric power may become of major importance in case the increased demand for generating capacity in the next few years should exceed the ability of the manufacturers of steam-turbine generators to produce the required units.

Protection against sabotage.—The Commission has served as a coordinating agency in plans for the protection of power supply against hostile acts. Conferences are being held with representatives of the electric utilities and other Government agencies, including the Federal Bureau of Investigation, the Military Intelligence Division of the War Department, the Intelligence Division of the Navy Department, and the Advisory Commission of Council of National Defense to assure adequate protection for important generating stations, substations, transmission lines, and distribution facilities. The Commission is making a study of each important power plant in the Nation, and advising the electric utilities as to the action which should be taken to protect their plants.

Cooperation of the utility industry.—Reference to the national defense power work of the Commission would be incomplete without a word as to the cooperation of the country's electric utility systems, both public and private, in the efforts to assure adequate and dependable power supply for the defense program. Throughout its defense activities, and especially in formulating the questionnaires and forms for gathering the necessary information, the Commission has been advised by representatives of important systems which have made their best men available for the purpose. The Commission has also been able to count upon the cooperation of the power systems in assuring realistic results from the questionnaire sent to industrial plants throughout the country.

Results Already Obtained From Defense Work.

A sound basis has been developed by the Commission for dealing effectively with the many and varied problems that arise in connection with the supply of power required for the national defense program.

The nature of the problems and their extreme importance to vital industries and to the Nation are such that the methods employed are calculated, in the main, to avoid deficiencies of power rather than to attempt to overcome shortages after they are found to exist. Material results have already been achieved. The outstanding effect of the Commission's work has perhaps been the development of a realization throughout the power industry of its part in assuring "all out" production for national defense and a recognition of the necessity of long range comprehensive planning to meet the responsibility involved.

Generating capacity under construction.—An example of such planning is the action initiated by the Commission for additional capacity in the TVA area. Plants are now under construction as a result of action that followed the Commission's report on the facts—plants which, when completed, will supply vital industries with power that would not otherwise have been available.

Other instances could be cited of capacity under construction as a result of the Commission's efforts. These efforts are, in part at least, responsible for the increase in the amount of generating capacity under construction throughout the country from 1,600,000 kilowatts in 1938 to 5,500,000 kilowatts in 1940. Another desirable result in this connection is the accelerated construction schedule for new capacity. A considerable amount of new capacity will go into operation in 1941 that was originally planned for installation months later.

Standardization.—An early and important result of the defense power work was the standardization of the sizes, steam pressures, and voltages of steam-turbine generators among the different manufacturers. This was worked out in a series of conferences with representatives of the electrical utilities and the equipment companies. Such standardization reduces the total time required to produce generating capacity and permits economies for both the manufacturer and the purchaser.

Similar opportunities for standardization exist in the manufacture of boilers and water wheels. Conferences relating to this equipment have resulted in a study of the possibilities of developing uniform standards.

Mobile units.—The Commission's staff took a leading part in the development of mobile generating stations and mobile transformer units. These units are now being manufactured in commercial quantities. They have already proven their worth in emergency cases, and are also being used to provide power quickly to new customers at places remote from the facilities of existing systems.

Many other accomplishments.—Instructions have been prepared for restricted distribution to operating officials for the protection of plants against sabotage or other hostile acts. These instructions provide officials and responsible employees in charge of operations

with a manual of information as to measures to be taken both as to detection and as to restoration of service in the event of specific kinds of damage.

The Commission, acting in cooperation with other agencies, has investigated and reported on the needs for equipment and the requirements for priorities where such needs exceeded the supply.

Areas where the power supply is adequate to meet the expanding needs of industry have been defined, and new national defense industries have been located in such areas.

Branches of the Federal Government have been aided in their efforts to purchase adequate quantities of power at reasonable rates. As a result of these efforts the alternative of the Government having to purchase its own generating equipment was avoided. Recently, for example, the National Aeronautical Advisory Committee required 15,000 kilowatts of firm power and 10,000 kilowatts of off-peak power for the expanded operations at Langley Field, near Newport News. The neighboring utilities insisted on an excessive price for the power. But as a result of the cooperative efforts of the Commission and the National Power Policy Committee, a satisfactory arrangement was worked out at a saving to the Government of several hundred thousand dollars a year.

Likewise the Commission has assisted the Army and the Navy in securing power for their rapidly expanding needs at army camps, air bases, navy yards, and torpedo stations at reasonable rates, as well as the assurance of reliable service.

For example, the Navy Department faced a demand for an excessive rate on power required for one of its most important stations near Newport, R. I. The Department requested the assistance of the Federal Power Commission. After a detailed study of the situation the Commission participated in conferences at which the necessary contract was worked out at a saving of more than 30 percent to the Government.

Interconnection and Coordination of Power Facilities.

The Commission's defense power work represents, in the main, an expansion and intensification of its normal activities in the field of power system economics. Certain of these normal activities should be briefly referred to.

During the year the Commission has completed preliminary interconnection and coordination studies covering 25 of the 48 power-supply areas into which the United States has been divided. Much of the detailed work on these studies was performed by engineers in the Commission's regional offices under general supervision from Washington.

Because of the imminent need for dealing with the problems of defense-power supply, the areas selected for these initial studies are

located in the eastern half of the country where the power requirements for defense production will be concentrated to a large extent. This selection was also dictated by the fact that most of the flood-control projects under consideration are also located in the same region and the results of the studies were necessary to aid in determining the advisability of incorporating provisions for future power development into the plans for these projects.

Preliminary studies limited to existing systems.—The preliminary interconnection and coordination studies, made during the year, have been limited to the relations between existing systems in the individual power-supply areas. The analysis has been directed to determining the savings which could be obtained, in meeting the requirements of growth of demand for power in the next 10 years, by further interconnecting their transmission lines and generating stations and by coordinating their operations.

In many sections of the country existing systems have already been interconnected and at least partially coordinated, either through common ownership or through operating agreements. Where this is the case, it is clear that savings through further coordination will be relatively small under existing conditions. One new factor that might change these conditions would be the availability of hydro-electric power made more dependable by large storage reservoirs.

The results of these preliminary studies show, as would be expected, that savings though coordination alone will be relatively small as compared with total costs, although still quantitatively important in many areas. The studies, however, have been limited to the possible savings resulting from coordinated operation. No attempt has been made to appraise the further savings which might be realized by integrating the business and financial activities of the electric utility systems in the areas under investigation.

Possible savings.—The possible savings in power costs as a result of further interconnection and coordination, considered in connection with those studies, are worth noting.

In the first place, where two or more systems are interconnected, they can share each other's reserve capacity and so reduce the total amount of capacity required for dependable operation.

In the second place, the larger total demand of the combined systems should make possible the fuller use of the more economical generating stations.

In the third place, the larger number of customers served by the combined systems may result in relatively less maximum demand for which each system must provide capacity, due to the fact that the maximum demands on the separate systems may not occur at precisely the same time.

275462—41——4

In the fourth place, where hydroelectric stations are involved, interconnected systems may be able to take better advantage of the reliability, flexibility, and operating convenience possessed by generating stations with ample reservoir capacity.

Finally, such cooperating systems, in planning necessary additions to capacity, can take advantage of the best sites for new low cost steam electric stations.

Possibilities of wider interconnection.—The results of preliminary studies, limited to individual power supply areas defined largely by existing systems, raise the question whether the size of the districts within which interconnection and coordination of power supply might be encouraged should not be greatly expanded. The advances in the technology of high-capacity transmission over long distances suggest that, to obtain the greatest benefits in the way of economical power supply, the power supply of the future should be coordinated over very large regions.

For loads of the order of twice those now experienced—such as may be definitely anticipated within a decade or so—it is clear that the power supply for areas, comprising perhaps several States, should be treated as being closely related if not fully coordinated. Large storage hydroelectric stations, and large efficient steam-electric stations in regions of low-cost fuel, will make desirable an extension of the present degree of interconnection and coordination just as the growth of load and the improvement of engineering design led to the present relatively large groupings of electric utility systems.

In this connection it should be emphasized that the objective of interconnection and coordination is concerned primarily with making available an abundance of dependable power supply at the lowest possible cost and with the greatest possible conservation of the country's energy resources. The problem is thus a separate one from those involved in the distribution phases of the electrical business, concerned primarily with marketing electricity to ultimate consumers.

For this reason, if the results of further analysis should suggest the advantage of coordination of power supply on a scale larger than appears desirable for the business of power distribution, it may warrant consideration of the possibility of working out the problems of integration on a new basis. This new basis might involve a separation of the wholesale power supply function and the retail distribution function, with appropriate organization for each division of the business.

Interconnection and the Best Use of Water Power.

The probable expansion of water power development as a part of multipurpose river basin programs cannot be overlooked as a factor in any fundamental consideration of the problems of further interconnection.

Hydroelectric power supplied by ample storage of water is particularly advantageous in large interconnected systems because the power capacity can be utilized almost instantly, or can be reserved without material loss. The water storage can serve as a "balance wheel" or "storage battery" for several neighboring systems and enable the modern steam electric stations to operate more uniformly and thus more economically.

With the continuing growth in power requirements it is clear that, for the highly developed industrial sections of the country at least, the question is not whether the potential power output for any proposed multiple-purpose project can be used, but rather when and how it can best be used. Previous conceptions of the power values of many important rivers are being completely revised.

Interconnection and coordination will thus make it possible and feasible to utilize additional generating capacity at many existing and future hydroelectric projects at a low incremental investment; such additional capacity, if backed by water storage, is particularly adaptable for serving peak loads of short duration with very little added operating expense. The larger loads to be served will also permit a greater utilization of the energy available at many existing hydroelectric plants.

Thus, it may be expected that continued progress in interconnection and coordination of electric utility systems will be accompanied by a corresponding increase in the development and use of the Nation's water-power resources.

Investigations of Interruptions to Service.

The Commission devotes close attention to major interruptions in electric service and has investigated these interruptions to determine their relation to the high service standards required in the public interest to assure an adequate supply of power.

During the fiscal year six investigations were made of major interruptions to electric service in important industrial or metropolitan centers. These investigations included a determination of the cause of the failures, their effect on vital Federal activities, on interstate commerce and on consumers, and the steps necessary or desirable to prevent recurrence.

Continual interruptions in electric service in the Virginia communities, adjacent to the District of Columbia, recently caused interested parties to consider a formal petition to the Federal Power Commission for a connection between the power lines of the Virginia Public Service Co. and Potomac Electric Power Co. as insurance against future service failures. The Commission is particularly interested in this matter because the service interruptions affect the United States Naval Torpedo Station at Alexandria, Naval Radio Station at Arlington, and Fort Belvoir.

Collection and Analysis of Basic Data.

During the year the Commission has continued to improve its machinery for gathering and compiling engineering data which are basic to all the work discussed in this section of the report. Including the data gathered by the National Power Survey in 1934, the Commission now has an unbroken record of electric utility operations from the calendar year 1927 to date.

Annual power-system statements were received from approximately 1,560 operating systems and maps were secured showing the areas served by 960 systems. From time to time other basic data were obtained by correspondence or by direct contact in the field. Due to the increasing volume of material accumulating as a result of the collection of this material year after year a card file system was inaugurated in order to permit the transcribing of the principal items of information reported so as to make it readily available for reference purposes.

In this connection, it should be noted that there is ample evidence that the reports prepared by the various power systems have been of real value to the utility industry itself. The standardization of the manner of reporting the requested information has resulted in a more uniform approach to the solution of many power problems and has facilitated engineering discussions between utility systems. It has also provided a convenient form for the recording of basic data and in many cases has initiated the compiling of such data on the part of utility systems.

This basic work of the Commission, which underlies all its accomplishment in the field of power-supply economics, may be briefly summarized as follows:

1. The Commission has collected, and is keeping up to date, information covering all details of the installation, cost of operation, loads, and load characteristics of all the electric utilities in the United States.

2. The Commission has divided the country into regional power districts and made studies of the capacity installed, the availability of such capacity to carry loads, the loads to be expected, the amount of load existing water power and fuel plants can carry, normally and in an emergency, and the additional capacity which will be required in each area.

3. The Commission has made interconnection and coordination studies for the several districts, including the possibilities of developing water power, conserving fuel, strengthening existing ties between power systems and making new interconnections,

together with estimates of the size, and cost of such interconnections and their value in terms of added capacity.

4. The Commission has made studies of the undeveloped water power of the United States, the capacities that can be added quickly at existing hydro and fuel plants, and of the sites available for new steam-electric plants in certain important regions.

5. The Commission has collected and analyzed information on the basic industries of the country, with special reference to the requirements of the electrochemical, metallurgical, and allied industries, dependent for their continued operation and expansion upon the assurance of large quantities of low-cost energy. These industries play a vital part in defense production.

This information is used daily by the staff of the Commission and has proved of inestimable value to the Commission in the discharge of its statutory duties and responsibilities. It is also frequently consulted by representatives of other Federal agencies concerned directly or indirectly with power matters, by representatives of State and municipal agencies responsible for the regulation of electric utilities, and by the general public.

SECTION V. ACCOUNTING CONTROL OF POWER COSTS

The Commission's broad function of assuring accounting control of the electric utilities subject to its jurisdiction has been increasingly effective during the year. This contributes materially toward the objective of assuring the lowest possible costs for electric service.

The Commission is doing pioneer work in developing the possibility of comparative cost analysis based on the actual legitimate investment in the power business. Out of this are coming valid cost standards, reflecting the various conditions of service rather than the variations due to arbitrary financial practices. Lack of such cost standards has been a basic weakness in regulation.

The Commission's work in the field of accounting control divides itself naturally into the following:

(*a*) Determination of the actual legitimate cost and net investment in licensed water-power projects;

(*b*) Establishment throughout the power business of uniform original cost accounting on a functional cost basis;

(*c*) Extension of depreciation accounting, implemented by the prescribing of a list of "retirement units" of property.

The development of effective accounting control along the lines indicated is already proving of great service to operating companies interested in establishing the conduct of their business on the soundest possible basis, to institutional investors and underwriting houses interested in appraising the true financial condition of the utilities seeking financing, to all concerned with the interest of consumers and to investors themselves. For this reason the Commission is convinced that those companies seeking to avoid its jurisdiction are doing a disservice to themselves as well as to the industry as a whole and the huge investment interest which the industry represents.

Legitimate Investment in Water Power Projects.

When the Federal Water Power Act was first passed in 1920, Congress made it mandatory that all water projects under its jurisdiction, for which valid permits had not already been granted, should be capitalized for all purposes at no more than their actual legitimate original cost. This means that the privilege granted private owners to develop the people's water-power resources could not be capitalized, either for purposes of rate making or as a basis for the price which the Government would pay on recapture at the end of the license period.

The Federal Water Power Act accounting provisions were thus based on the principle that there is no private property in the flowing water of streams subject to the jurisdiction of Congress.

During the early years of the Commission's existence the accounting activities were limited by the small appropriations available for such work. Originally, the accounting staff consisted of only the chief accountant, one assistant, and a stenographer. In the late 1920's the staff was expanded to a limited degree. Finally, when the 1935 Utility Act established a basis for a considerable expansion of the Commission's engineering and accounting staffs, the simultaneous expansion of its functions to include general regulation of interstate utilities made it difficult to catch up with the lagging licensed project cost determinations.

The magnitude of the task of cost determinations for licensed project cost is indicated by the fact that 128 major licenses were in force in 1940, with claimed or estimated costs totaling about $740,000,000. Of this total over $100,000,000 represents projects still under construction.

Results Achieved in Determination of Project Costs.

Notwithstanding the fact that the Commission has been understaffed for the purpose during the greater part of its life, it has completed the accounting and engineering work on projects involving claimed costs totaling $522,000,000, or 70 percent of the total claimed for all projects under major licenses. Actually, this means that the auditing and engineering work has been completed on 80 percent of all constructed projects.

The Commission has completely settled and approved actual legitimate costs for 54 projects, with costs totaling $128,389,719. As originally claimed, the cost of these projects amounted to $138,957,174. The reduction of $10,567,455 in the cost which can be capitalized in connection with these projects affords concrete evidence of the importance of this phase of the Commission's work.

The present status of projects for which the determination of the actual legitimate costs remains to be settled is as follows:

Status of unsettled licensed project cost cases

Status	*Claimed Cost*
Accounts audited, hearings held, opinions and orders issued, and cases partially settled	$28, 363, 871
Accounts audited, hearings held, opinions and orders to be issued	147, 885, 304
Accounts audited, reports prepared, cases awaiting hearing or other action	216, 953, 366
Accounting work in progress	73, 280, 064
Awaiting assignment for field audit	24, 782, 249
Awaiting filing of cost statements	8, 545, 002
Construction work in progress	104, 276, 063
Uncompleted, inactive, dormant	8, 847, 100

During the past year the Commission has determined and approved project costs totaling more than $30,000,000. Cases have been completed, except for final determination, involving claimed project costs aggregating $148,000,000. The Commission is confident that, in solving the complex legal, accounting, and engineering problems of pending project cost cases, it will establish precedents which will materially reduce the work required for the disposition of future cases.

Important licensed project cost cases which are nearing completion include:

The Safe Harbor project on the Susquehanna River in Pennsylvania, with a cost of approximately $28,000,000. In May 1940 the United States Court of Appeals for the Third Circuit affirmed, with slight modifications, the Commission's determination of the project cost as of December 31, 1932.

The Wallenpaupack project of the Pennsylvania Power & Light Co., with a claimed cost of approximately $9,000,000. This case, involving a subsidiary of the Electric Bond & Share Co., requires a determination as to whether the fees paid to affiliated companies based upon cost plus contracts should be allowed as part of the legitimate project cost. In order to deal with this case, the Commission's Division of Accounts made a detailed examination of the costs to Electric Bond & Share and its subsidiary Phoenix Utility Co. of rendering services to all licensees in the system. The decision, therefore, will undoubtedly expedite the determination of project costs for the many licensed projects which are operated by Electric Bond & Share subsidiaries.

The Rock Island project of the Puget Sound Power & Light Co., on the Columbia River in Washington, with a claimed cost of approximately $16,000,000, offers the first instance in which a company recognized that project cost does not include fees paid to affiliated companies for services based on actual cost plus a profit. The company claimed only the actual cost to the affiliates of rendering management and construction services. In this case only a few minor items remain to be determined.

The Mitchell Dam project, of the Alabama Power Co. on the Coosa River in Alabama, involving a claimed cost of $10,646,000 and an approved cost of $7,209,000. In this case, the United States Court of Appeals for the District of Columbia sustained the Commission's order except for two minor points and remanded the matter for redetermination of those points. The Commission issued its supplemental order, including the redeterminations ordered by the court, on November 26, 1940. This case involved the futile attempt by the company to justify nearly $3,500,000 inflation in capital accounts by means of a substitute steam plant method, in effect capitalizing the

savings resulting from the development of water power instead of steam.

The Martin Dam and Jordan Dam projects of the Alabama Power Co., on the Tallapoosa and Coosa Rivers, respectively, involve problems similar to those dealt with in the Mitchell Dam case. At issue are the reasonableness of the claimed project cost, the amount to be allowed as overhead expense of an affiliated construction company and the propriety of including in project cost the profit made by the affiliated company in furnishing construction equipment to the licensee while the affiliated company constructed the project. In the case of Jordan Dam there is also the question of the propriety of capitalizing $2,750,000 which corresponds with the $3,500,000 inflation problem in the Mitchell Dam case.

The Big Creek projects of the Southern California Edison Co. in Central California, involving claimed costs totaling more than $82,000,000, presented the Commission with difficult engineering problems involving the reasonableness of the costs actually incurred in construction. These projects are located on Government lands in the Sierra Nevada Mountains.

The Ariel project of the Inland Power & Light Co. on a tributary of the Columbia River in the State of Washington, with a 1932 claimed cost of $8,645,000, involves problems of affiliated company profits corresponding with those referred to in connection with the Wallenpaupack project. It is also an Electric Bond & Share Co. subsidiary.

The Conowingo project of the Susquehanna Power & Light Co., located near the mouth of the Susquehanna River, involves a claimed cost in excess of $54,000,000. The cost determination in this case presents the Commission with many complex problems of engineering, accounting, law, and finance.

The Niagara Falls project, of the Niagara Falls Power Co., with an alleged investment of $44,000,000 as of 1921, involves utilization of the water-power resources of Niagara Falls and is one of the oldest, largest, and most important hydroelectric developments in the United States. This case is nearing final determination but requires decisions on difficult issues involving attempts to justify the writing up of this unique public water-power resource by millions of dollars.

Final determination of licensed project cost cases requires, in most instances, extended investigations of the claimed project costs by the Commission's accounting, engineering, and legal staffs. The purpose of such investigations is to ascertain whether the various items of claimed cost were actually expended, whether such expenditures were made for project purposes, and whether the expenditures for project purposes were legitimate.

The reports of these investigations are served on the licensees and, in case there is substantial disagreement between the Commission's staff and the licensee, the matter is taken up at formal hearings in order that the basic facts necessary for the Commission's final determination of actual legitimate original project cost may be fully developed. As already indicated in the discussion of specific cases, the company may ask the courts to review the Commission's final determination.

Uniform Accounting on Original Cost Basis.

The importance of proper accounting in assuring utility services at the lowest possible rates, can hardly be over-emphasized. In 1935, when the Commission obtained jurisdiction over utilities transmitting or selling electricity at wholesale in interstate commerce, the Federal Trade Commission was effectively disclosing the inflation in the accounts of operating as well as holding companies.

This inflation of assets was so buried in the accounts of these utilities that most persons, including regulatory commissions, were unaware of its extent. The accounts of many utilties were in a poor condition. In some instances, practically all of the utility plant was included in a lump sum account. In other instances, purchases made many years before were carried in one account, the amount of which did not change from year to year.

In these cases the actual investments in departments of the utility—gas, electric, street railway, water, etc.—could not be ascertained. Further break-down of the investment by electric department functions—generation, transmission, distribution—was, of course, out of the question. In still other instances, where a break-down of the investment appeared to be available, it was found that the break-down was nothing more than the result of an appraisal by the company based on reproduction cost.

Such a condition was unhealthy for both investors and consumers. It precluded the development of comparative cost standards, without which regulation became ineffective.

The Commission's progress in requiring the books of electric utilities to be set up on a uniform original-cost basis is providing the first sound basis for the development of such cost standards. It means that the plant accounts of the individual operating companies are being reclassified by prescribed accounts on the basis of the original cost of each operating unit to the utility first devoting such property to the public service.

When reclassification of the accounts of any utility on an original-cost basis is completed, any excess costs or write-ups are entered and earmarked in special accounts set up for that purpose.

Original costs filed by 211 utilities.—As of June 30, 1940, 211 electric utilities had submitted their reclassifications or original-cost studies pursuant to the Commission's uniform system of accounts effective January 1, 1937. The total amount of utility plant reported by these companies was $5,490,847,449, and was reclassified under the present system of accounts as follows:

Electric plant:	
Electric plant in service	$4, 212, 963, 535
Electric plant leased to others	22, 002, 454
Construction work in progress	73, 935, 401
Electric plant held for future use	37, 619, 433
Electric plant acquisition adjustments	320, 801, 553
Electric plant in process of reclassification	[1] (1, 848, 478)
Total electric plant	4, 665, 473, 899
Electric plant adjustments	84, 263, 683
Other utility plant	741, 109, 867
Total utility plant	5, 490, 847, 449

[1] Parentheses indicate figure is to be subtracted rather than added.

The difference between original cost and book cost of electric plant is represented by the electric plant acquisition adjustments of $320,801,553, and the electric plant adjustments of $84,263,683, or a total of more than $400,000,000 of capitalization in excess of original cost which had become imbedded in the books of these companies.

The Commission expects that approximately 300 original cost studies will be submitted by electric utility companies, although only about 275 are subject to the Commission's requirements in this respect. The other studies have been submitted by electric utilities voluntarily and without the Commission's request. The total amount of utility plant included in these studies will exceed $9,000,000,000, estimated to represent approximately 75 percent of the total electric plant of all privately owned electric companies.

While the larger companies were required to submit their studies by January 1, 1939, and the smaller companies by January 1, 1940, the Commission, upon request and proper showing, has granted extensions of time beyond those dates. The extensions in most instances have been necessary because of the difficulties met with in the reclassification work.

The Commission in July 1939 issued orders to 21 companies requiring them to explain why they had failed to prepare and submit their original-cost studies. Since that date similar orders have been issued to 31 additional companies. Hearings have been held in 16 of these cases and all but 9 have either submitted original-cost studies or have agreed to do so. In the 9 cases the Commission's jurisdiction is at issue.

The Commission checks original cost reports.—By June 30, 1940, the Commission's staff had completed 28 field examinations to determine the correctness of the original cost returns filed by companies reporting utility plant totaling $865,166,378 and electric plant totaling $757,718,015. On the same date 13 additional field examinations were in progress involving companies with electric plant totaling $514,770,195.

The reports of the Commission's staff, based on the 28 field studies already completed, showed that it would be necessary for the companies to make substantial corrections in the reclassifications of accounts which they had submitted to the Commission. The staff reduced the total classified as electric plant from $757,718,015 to $716,515,347, finding that over $41,000,000 had been improperly included in the total. The changes recommended by the staff are shown in the following table:

Electric plant	*As reclassified by companies*	*As adjusted by F. P. C. staff*
Electric plant in service	$713, 293, 401	$685, 168, 323
Electric plant leased to others	5, 168, 255	4, 838, 309
Construction work in progress	4, 091, 056	3, 120, 497
Electric plant held for future use	5, 712, 291	813, 664
Electric plant acquisition adjustments	29, 437, 404	21, 828, 413
Electric plant in process of reclassification	15, 608	746, 141
Total electric plant	757, 718, 015	716, 515, 347
Electric plant adjustments	33, 652, 075	61, 661, 036
Other utility plant	73, 796, 289	79, 361, 235
Total utility plant	865, 166, 378	857, 537, 619

Ten of these staff reports have been served on the companies with requests that their books of account be adjusted accordingly. Most of the companies responded favorably. In fact, in only one case so far, that involving the original cost of the Northwestern Electric Co., has a formal hearing been found necessary. The Oregon and Washington regulating bodies participated in the proceedings involving that company.

Six field examinations were suspended, after work had been started, because the original cost studies filed by the companies were found so unsatisfactory that it was necessary to ask the utilities in question to do considerable additional work. Altogether, the Commission's original cost-field examinations have involved electric utilities operating in 36 States and the District of Columbia, including subsidiaries of 17 holding-company systems.

Disposition of adjustment accounts.—It is too early to discuss the disposition of amounts in the electric plant acquisition adjustments and electric plant adjustments accounts. It can be said, however, that the amounts in the latter account will usually, if not always, be found to represent inflation which should be disposed of in the shortest possible time.

The electric plant acquisition adjustments, on the other hand, will require greater study. More information is needed as to the nature of the amounts recorded, the transactions which gave rise to the amounts, etc., before generalizations can be made. Probably the facts in each case will control the disposition.

The Commission feels it has gone as far as it can go at this time by authorizing public utilities to charge the amounts off to surplus at once or to amortize the amounts by charges to miscellaneous amortization account. In general, the Commission believes that such amortization periods should be as short as possible, consistent with the protection of the public, investors, and the utility.

The Commission is convinced that great and lasting benefits will accrue from the original cost provisions of its systems of accounts. With proper enforcement not only will information indispensable to proper regulation be made readily available, but also sounder and stronger financial structures will ultimately be achieved for the utilities themselves.

Enforcement of Original Cost Accounting.

Three important cases, involving the Commission's power to enforce legitimate original cost accounting in connection with licensed projects, are now pending in the courts. Louisville Gas & Electric Co., Lexington Water Power Co., and Northern States Power Co.[1] are the companies which are seeking review of the Commission's determinations.

The outcome of these cases will go far toward determinating the Commission's power to require a licensee to charge to surplus items which the Commission decides are not part of the actual original cost of a licensed project and which do not represent other investments.

A similar case, involving the application of the Commission's original-cost accounting to an electric utility engaged in interstate commerce, has just reached the point of decision by the Commission. This is the Northwestern Electric Co. case already referred to.

Following the company's protest against a joint report by the staffs of the Federal Power Commission and the public utilities commissioner of Oregon, the Commission ordered the company to show cause why it should not be directed to adjust its books to conform with the joint report. The case was heard in Portland, Oreg., and the Commission issued a decision which prohibited the attempted retroactive capitalization of items which had been previously charged to operating expenses and the attempted capitalization of interest during construction which had not been capitalized by election of management.

The Commission's decision also provided for the elimination over a period of years of a $3,500,000 write-up in the company's electric-plant account. The company has asked for a rehearing.

[1] Since this was written the court has sustained the Commission in the Northern States Power Co. case.

Progress in Depreciation Accounting.

The Commission's uniform systems of accounts are progressively bringing about the development of proper depreciation accounting in the electric and natural-gas industries. This will prove an important factor in strengthening the companies financially and will also mean that consumers of these services will be credited through reduced rate bases with the full amount of depreciation reserves created by charges to operating expenses.

Prior to 1937 few electric and gas utilities practiced depreciation accounting. Instead, the "retirement reserve" practice was in vogue. Under this practice, the companies did not charge the cost of plant assets to expense as the service value of such assets was consumed. Instead, they maintained a reserve estimated sufficient to stand the cost of retirements whenever they became necessary. Such a reserve did not, except by accident, measure the exhausted or consumed service value of the entire plant. It was largely a cushion or buffer to ease the strain of accounting for retirements of plant items.

During the depression years of the 1930's, when public-utility properties did not grow as rapidly as in the preceding period, and when substantial retirements were made or in prospect, the inadequacy of the "retirement reserve" method of accounting was brought strongly to the fore.

The uniform systems of accounts definitely require depreciation accounting. Because of the change from "retirement reserve" accounting to "depreciation" accounting the Commission did not expect that adequate reserves would be set up at once. It assured, however, that in a very brief period proper depreciation expense would be recorded. Actually, there has already been considerable improvement in the depreciation policies of many electric utilities and natural-gas companies.

When the Commission adopted its uniform system of accounts, depreciation accounting was long over-due. Essential information was lacking. Few studies of the service lives of electric and gas-utility properties had been made. And the Commission is, today, prevented by limitations in staff from making the comprehensive depreciation studies which are needed.

Other Elements in Effective Accounting Control.

The Commission is proceeding along two other lines to establish the effectiveness of accounting control in both the electric and the natural-gas industries. These are:

1. The prescribing of a list of "retirement units" of utility property as a means of clearly distinguishing between expenditures which should be charged to plant account and to expense.

2. The setting up of both plant and operating costs on a functional basis in order to provide a sound foundation for comparative cost studies.

In undertaking both these steps the Commission has had the cooperation of representatives of State utility commissions and of the utilities subject to its jurisdiction.

Since the beginning of the utility industry the problem of separating charges to maintenance from charges to capital has been one of the accounting problems of the business. For example, some electric utilities followed the rule that 10 poles in a row had to be replaced before the cost of the new poles could be charged to the plant accounts and the cost of the old poles removed. These utilities charged the cost of fewer replacements to maintenance, unless a different kind or size of pole was used in replacement.

Other utilities followed an entirely different policy, treating the replacement of a single pole as a capital, rather than a maintenance, transaction.

In order to bring greater uniformity into this field of utility accounting, the Commission compiled two lists of "retirement units," one for the electric and the other for the natural-gas business. Any item in the list, when retired, must have its cost removed from the plant accounts. Similarly, any item in the list, when installed, must have its cost recorded in the plant accounts. The utilities, subject to the Commission's uniform system of accounts, may subdivide the items, that is, may increase the number of items chargeable to plant account, but they may not combine them into fewer units.

These lists of retirement units will unquestionably make maintenance accounting practices more uniform and consistent. At the same time they will lead to more adequate depreciation studies and better depreciation accounting.

The requirement of the Commission's system of accounts, that plant and operating expenses be set up on a functional cost basis, means simply that accounts are classified and grouped according to the production, transmission, distribution, and general administrative functions. In addition, records must be kept for each generating station and transmission line. These are the elements of property with which the Commission is chiefly concerned in its rate cases. In a sense, this latter procedure represents a substitute for continuous property records for the classes of plant mentioned.

The Commission favors the adoption of continuous property records. But, after conferences with representatives of State commissions and representatives of the utility industry, it concluded that the requirement of such records on a Nation-wide basis would be premature.

Associated Gas & Electric Service Charges.

One of the outstanding accounting investigations of the Federal Power Commission was the inquiry into the reasonableness and appropriateness of charges paid by 6 Pennsylvania operating subsidiaries of the Associated Gas & Electric Co. to the so-called Hopson and other service companies of the Associated system. This inquiry, which covered the records of approximately 125 corporations, trusts, and individuals, was completed on September 27, 1940.

The investigation was undertaken on January 6, 1936, upon representations of the Governor and regulatory Commission of Pennsylvania that an inquiry being prosecuted by the Pennsylvania Public Utility Commission had disclosed that the six Pennsylvania operating companies had certain so-called service contracts and arrangements which injuriously affected their rates and service. They represented further that certain books and records had been removed from Pennsylvania during the course of the inquiry. Three years of litigation were required to obtain some of the records needed for the investigation. One phase of the proceeding was considered by the United States Supreme Court in *Federal Power Commission* v. *Metropolitan Edison Co. et al.*, 304 U. S. 375. Hearings held jointly with the Pennsylvania Commission were concluded on April 19, 1940.

The Trial Examiner's report and the Commission's opinion issued September 27, 1940, revealed the taking of millions of dollars from the public and an extraordinary picture of exploitation of an essential public service for which the holding company device served as a cloak. Almost every possibility for plunder was exploited by Howard Hopson, by service companies under his control, and by certain companies in the Associated Gas & Electric system. The facts developed by the investigation were made available to various State agencies and regulatory bodies to aid them in guarding against the inflation of service company costs.

The records developed by the Commission were used by the Department of Justice in the successful prosecution of Mr. Hopson.

275462—41——5

SECTION VI. LOWER RATES FOR ELECTRICITY AND GAS

The regulation of wholesale rates for electric power and natural gas, moving in interstate commerce, provides a field in which the Federal Government effectively supplements the efforts of State commissions to assure consumers the lowest possible rates for these important energy services. Jurisdiction over interstate wholesale electric rates was conferred on the Commission by the Public Utility Act of 1935, while similar jurisdiction over natural-gas pipe-line company charges was provided by the Natural Gas Act of 1938.

The Commission took immediate steps to obtain the contracts which embody such interstate wholesale rates and now has on file approximately 1,000 such contracts involving the wholesaling of electricity and 3,000 covering sales of natural gas. These contracts are, in general, considerably more complex than are the rate schedules of distributing companies, some running to more than 200 pages.

The retail rates charged local consumers of gas and electricity are in many instances affected by the amount the distributing companies pay for natural gas and electricity sold to them at wholesale in interstate commerce. This is particularly true of the natural-gas industry, where the transmission (pipe line) companies characteristically sell their product at the "city gate" to local distributing companies. Such sales of electricity and gas to distributing companies, where interstate commerce is involved, are beyond the reach of State regulation.

State Commissions Ask Federal Action.

For this reason, many of the Commission's major rate cases, especially those involving natural gas, have been initiated as the result of complaint by State commissions or municipalities, seeking to close the loophole through which companies engaged in interstate sales were escaping regulation.

The Illinois Commerce Commission was one of the first State commissions to file a complaint—against the rates charged by the Natural Gas Pipeline Co. of America. This case is discussed in some detail later in this report.

The Public Service Commission of New York filed a complaint against the rates charged by the New York State Natural Gas Co. to the distributing utility in Syracuse, N. Y. Hearings have already been held in this case but the record is being kept open because of its direct relationship to another investigation, that of the Peoples Natural Gas Co.

Soon after the passage of the Natural Gas Act the Public Service Commission of Missouri called upon the Commission to determine a reasonable gate rate for gas delivered to Kansas City, Mo., by the Cities Service Gas Co. Following a preliminary investigation the Commission subsequently issued a show cause order. When it appeared that an adjustment in rates could not be ordered except after a general investigation such an investigation was ordered and is now in progress.

The Louisiana Commission has also petitioned the Commission to supplement its activities in seeking lower rates from the Interstate Natural Gas Co. and the United Gas Pipe Line Co. The petition involved all the "city gate" rates of the Interstate Natural Gas Co. in Louisiana. The Commission ordered a general investigation of both companies and it is interesting to note that, although both companies denied the jurisdiction of the Louisiana Commission because of their admitted interstate operations, they contested the applicability of the Natural Gas Act to their businesses.

The Wyoming and Pennsylvania State commissions have also enlisted the assistance of this Commission by petitions and complaints, and investigations have been undertaken in response thereto. Likewise, numerous cities have petitioned the Commission to undertake rate investigations, among the larger of which have been Cleveland, Akron, Toledo, and Columbus, Ohio, and Denver, Colo.

Progressive Steps In Rate Making Policy.

The following important developments in rate making policy are reflected in the Commission's formal decisions issued during the last year:

1. The insistence by the Commission on a prudent investment rate base.
2. The insistence by the Commission on the deduction of an adequate depreciation reserve from cost of property with resultant lowering of rate base.
3. The use of the technique of ordering immediate rate reductions where justified before completion of the usually extended hearings.
4. The immediate removal of discrimination by requiring that the consumers of a given class be given the lowest rate available to any consumer of the class.

The Commission is convinced that these progressive steps are necessary to provide the certainty and reasonable dispatch without which rate regulation fails to afford the public with more than apparent protection.

Important Formal Cases Undertaken During Year.

During the year formal rate cases were undertaken by the Commission as a result of its analysis of current-rate filings, on the basis of preliminary investigations, or on complaint by State commissions or other interested parties. For purposes of discussion, such cases may be classified as: (*a*) Suspensions of proposed rate increases, (*b*) *prima facie* cases based on preliminary investigations which disclose high rates due to excessive earnings or discrimination in rates, and (*c*) complete investigations.

Suspensions of increases.—In the fiscal year 1940 the Commission suspended proposed increases in rates of 11 natural-gas and 2 electric companies, involving altogether increases aggregating $326,000 a year. The companies, whose proposed rate increases were suspended, included the Colorado Interstate Gas Co., the Mississippi River Fuel Corporation, the Columbia Carbon Co., the Columbia Fuel Corporation, the United Gas Pipe Line Co., the Southern Carbon Co., the Interstate Natural Gas Co., the Hope Producing Co., the New York State Natural Gas Corporation, the Allegany Gas Corporation, the Kentucky Natural Gas Corporation, the Arkansas-Missouri Power Corporation, and the Arkansas Utilities Co.

These suspensions of rate increases involved charges which would eventually enter into rates paid by consumers in a large number of communities located in Wyoming, Illinois, West Virginia, Arkansas, Missouri, Indiana, Kentucky, Pennsylvania, and New York State.

The disposition of these cases has been varied. In some instances the companies have canceled the proposed increases. In a few cases, the company has subsequently submitted full *prima facie* justification of the increase and the Commission has vacated its order of suspension. Frequently, however, it has been found that a determination of the proposed increases involves all rates and operations of the company. In such cases a full investigation has been instituted or the suspension order continued pending the completion of a general investigation already under way.

Prima facie cases.—The Commission is taking steps to shorten regulatory procedure by "show cause" orders based on preliminary investigations which clearly reveal high rates due to excessive earnings or evidence of discrimination. In effect, the company is advised of the tentative findings which the Commission proposes to adopt in a final order unless the company can disprove them. The results of this procedure have proven its value in promoting effective regulation.

In a number of instances the companies have responded by filing reduced rates or by standardizing their rates at the level of the lowest rate to remove discrimination cited in the order. Examples of such

cases are: Gulf States Utilities Co., where reductions in rates to five municipally and six privately owned utilities in Louisiana were effected; Baltic Operating Co., which brought reductions in rates to two gas-distributing companies in Kansas; and Sioux City Gas & Electric Co., where the company responded by filing a reduction of approximately 20 percent in the wholesale rate to the municipal utility of South Sioux City.

In the few cases where hearings have been necessary they have been comparatively brief and the show cause order has been sustained in its essentials. Hearings involving rates of the Oklahoma Gas & Electric Co., the Kentucky Utilities Co., the Southwestern Light & Power Co., and the Otter Tail Power Co. may be cited as examples of this result. The Otter Tail case, being of particular significance, is subsequently discussed in some detail.

It is significant that the Commission's cases at these hearings have been based almost exclusively upon the *prima facie* evidence accumulated during its preliminary investigations. Such evidence is based principally on an analysis of material taken from the company's own reports to the Commission.

Progress in Comprehensive Rate Investigations.

The following comprehensive rate investigations, involving the entire rate structure and operations of the company, undertaken as a result of complaints by State commissions or city governments, were completed during the year, or still in progress as of June 30, 1940:

Illinois Commerce Commission v. *Natural Gas Pipeline Co. of America et al*
Public Service Commission of Wyoming v. *Canadian River Gas Co. et al.*
Public Service Commission of Missouri v. *Cities Service Gas Co.*
Louisiana Public Service Commission v. *Interstate Natural Gas Co., Inc.*
Louisiana Public Service Commission v. *United Gas Pipe Line Co.*
Public Service Commission of New York v. *New York State Natural Gas Corporation.*
Pennsylvania Public Utility Commission v. *Pittsburgh & West Virginia Gas Co.*
Pennsylvania Public Utility Commission v. *Hope Natural Gas Co.*
City of Cleveland, Ohio, v. *Hope Natural Gas Co.*
City of Akron, Ohio, v. *Hope Natural Gas Co.*
City of Toledo, Ohio, v. *Hope Natural Gas Co.*
City of Columbus, Ohio, v. *United Fuel Gas Co.*
City and County of Denver, Colo., v. *Public Service Co. of Colorado et al.*

Important rate cases, undertaken on the Commission's own initiative during the past year, involved the following companies selling electricity at wholesale in interstate commerce: Safe Harbor Water Power Corporation, Chicago District Electric Generating Corporation, Moline-Rock Island Manufacturing Co., and Minnesota Power & Light Co.

Variety of Problems in Certain Rate Cases.

Certain of the rate cases referred to above are of sufficient significance as illustrations of the Commission's procedure and of the variety of problems to warrant somewhat more extended discussion.

Safe Harbor Water Power Corporation.—On June 11, 1940, the Commission issued an opinion and order directing the Safe Harbor Water Power Corporation to reduce its wholesale electric rates by approximately $350,000 annually. The company operates a licensed project on the Susquehanna River and sells its entire output to its parent companies, Consolidated Gas, Electric Light & Power Co. of Baltimore, and Pennsylvania Water & Power Co.

This is the first rate case involving a licensed project and the Commission used the statutory net investment rate base prescribed in part I of the Federal Power Act. As a result, the Commission excluded evidence of "reproduction cost" and "going value" and the case was concluded in 9 days of hearings.

The Commission directed the company to adjust its rates annually so as to yield 6 percent on its actual legitimate investment, less depreciation reserve, plus working capital. The case shows how use of "prudent investment" as a rate base will expedite rate making, while assuring protection to the interests of investors and consumers.

The company asked review of the matter by the United States Circuit Court of Appeals for the Third Circuit and simultaneously sought an injunction and declaratory judgment in the District Court for the Eastern District of Pennsylvania. The Commission has moved to dismiss the District Court case.

Chicago District Generating Corporation.—This case, still to be completed, offers another important instance in which the Commission has excluded evidence of "reproduction cost" as an element in the determination of "fair value" and is proceeding on the "prudent investment" basis.

This case involves the largest electric utility so far covered in the Commission's rate investigations. It is engaged in the generation and sale of power at wholesale to utilities serving Indiana and Illinois in the city of Chicago area. Joint hearings with the Indiana Public Service Commission and the Illinois Commerce Commission were completed in October 1940.

Following the initiation of the investigation the Chicago District Corporation reduced its rates approximately $420,000 a year. The evidence of the Commission staff in the hearings has shown that a further additional reduction substantially in excess of this amount is warranted.

The Moline-Rock Island Manufacturing Co.—This case involves a situation in which utilities, serving customers in Illinois and Iowa, had for years escaped the full effect of State Commission regulation

by maintaining a separately incorporated interstate wholesale power supply company known as the Moline-Rock Island Manufacturing Co. This company, which provides all the power retailed by two affiliated companies serving on either side of the Illinois-Iowa State line, was found by the Commission staff to be making approximately 15 percent on the rate base developed by it.

Although the proceedings involving this company have not as yet been fully completed, the Commission's action has already resulted in reductions in retail electric rates by affiliated companies, bringing consumers in Illinois and Iowa savings totaling $325,000 a year. Furthermore, when the action of the Federal Power Commission closed the loophole in State regulation and indicated prior to the time the above reduction was made that even larger rate reductions should be forthcoming, the holding company interests moved to merge the three operating companies. Such a merger would automatically eliminate the wholesale rate over which the Commission has jurisdiction.

The case involves a situation which is more complicated than would appear from the mere fact that the wholesale power supply part of the combine was separately incorporated, for the Moline-Rock Island Manufacturing Co. does not own its major generating station but leases it from an affiliated corporation. Furthermore, it purchases a considerable quantity of power generated at an antiquated power plant, almost all of which is "dump energy," at approximately 5 mills per kilowatt-hour, although it could unquestionably generate the same character of energy in its own steam stations at an incremental cost of less than half that amount. It might also be noted that it is carrying in its claimed electric rate base $250,000 which represents nothing more than a donation to an affiliated street-railway company.

During the course of the proceedings involving this company it appeared that the president of the company had employed a former member of the Commission's staff within less than 1 year after his separation in contravention of the Commission's specific rule. At a hearing held in the matter, it appeared further that during a critical part of the rate case, the company paid him in successive amounts a total of $4,200, although there was no evidence that he rendered any services which might justify such compensation. When called to explain the matter, the president of the company refused to testify.

The Minnesota Power & Light Co.—This case resulted from a request from the Rural Electrification Administration for assistance in securing a reduction in rates for a small rural electrification cooperative which purchased its power supply from the Superior Water, Light & Power Co. This utility, in turn, purchased practically its entire power supply from the Minnesota company.

Following a preliminary investigation, the Commission ordered a general investigation of the rates and practices of the Minnesota company.

Subsequent to the order the cooperative was granted a reduction in rates by the Superior company and the Rural Electrification Administration advised the Commission that the new rate was satisfactory. No change however, has been made in the rate under which the superior company obtains its supply of power from the Minnesota company. The Commission's investigation has, therefore, been continued in order to determine the reasonableness of the rate to the Superior company.

So much difficulty was encountered at the outset in obtaining access to the essential books and records of the Minnesota company that it was first necessary to hold hearings concerning this matter alone. The field work in the investigation is now nearing completion.

Because results of the investigation may have a material effect upon the cost of power to the Superior (Wis.) company, the Public Service Commission of Wisconsin has requested a joint hearing when the investigation is completed.

Otter Tail Power Co.—In this case a technique was developed for dealing in an expeditious manner with discriminations between customers in the same class. The Otter Tail Power Co. served electricity at wholesale to a number of small municipal and other systems in South Dakota and Minnesota. After a full hearing the Commission issued an order and opinion on May 1, 1940, in which it directed the Otter Tail Co. to remove existing discrimination by charging all these wholesale customers the lowest wholesale rate then in effect to any of them.

The Commission stated in its opinion:

> For the purpose of removing a discrimination we interpret the statute to mean that the reasonable wholesale rate for any class of customers be not higher than the lowest rate charged by vendor utility to any customer for the same class of service under the same or substantially similar conditions. If a complete "rate case" is to be conducted before the patent discrimination existing in the instant case is to be removed, such would obviously place a strained construction on the Act and render it ineffective for the expeditious removal of unjust discriminations.

Certain other changes in the form of rate were subsequently agreed upon by the company and the Commission, after which the Otter Tail Power Co. accepted a uniform rate for all its wholesale customers. This resulted in a reduction in charges of approximately $18,000 annually or 10 percent to the small municipalities affected.

Natural Gas Pipe Line—Texoma Natural Gas Cos.—In an order of July 23, 1940, directing the Natural Gas Pipe Line Co. to reduce its rates annually by $3,750,000, the Commission sought a means of preventing the protracted procedure which has come to characterize

too many important rate cases, from requiring consumers to continue to pay rates already shown to be excessive.

The order was issued, after hearings, in response to a joint motion of counsel for the Illinois Commerce Commission and the Federal Power Commission. This motion called for an immediate reduction based on the record which at that time, although the hearings were still in progress, contained the company's entire case. Commission witnesses had also introduced evidence as to "fair rate of return" and the company had been afforded opportunity to cross-examine such witnesses and to introduce rebuttal evidence.[1]

The decision that rates should be immediately reduced was, in effect, based on an allowance of 6½ percent return on a rate base composed essentially of the company's estimates particularly as to the cost of the property, excluding their figure for "going value."

The Natural Gas Pipe Line Co. and the Texoma Natural Gas Co., treated as a single interstate carrier for the purposes of the case, transport natural gas from the Texas Panhandle fields to Joliet, Ill., where it constitutes the supply of natural gas distributed in mixed form to consumers in the Chicago area. The reduction, if made effective, should be passed on immediately to such consumers.

The immediate reduction was stayed by three judges of the Seventh Circuit Court of Appeals on November 1, 1940, in the first appeal from a decision in a rate case under the Natural Gas Act. The fact that this case, involving overcharges of at least $3,750,000 a year in charges to consumers, is still pending, although it was initiated shortly after the passage of the Natural Gas Act in 1938, provides strong reason for the Commission's effort to make effective an immediate rate reduction.

Other rate cases.—A number of other rate cases, which have been before the Commission during the year, are briefly noted.

The first suspension of an increase in natural gas rates under the Natural Gas Act, involving the rate of the Arkansas-Louisiana Gas Co. to the Camden Gas Corporation, not only led to a continuance of the lower rates but enabled the Commission to provide engineering and accounting assistance to the Arkansas Public Service Commission. Recently the Arkansas Commission advised that the rates charged by this company in Arkansas have been reduced to the extent of $547,000 a year and the company has given a cash refund of $500,000 on past billings.

The Hope Natural Gas case, involving a company operating over 3,000 gas wells, 3,000 miles of field and gathering lines, 1,100 miles of transmission lines and 900 miles of distribution lines, with a gross operating revenue of over $21,000,000 a year, is still in progress. The

[1] At the time of the motion for an interim order the record already had run to approximately 6,000 pages of transcript, with 135 exhibits introduced by 57 witnesses.

Hope company sells natural gas at wholesale to companies in Ohio and Pennsylvania. A joint motion of the cities of Cleveland and Akron for an immediate reduction of $662,000 a year was denied because the record to date was not sufficiently complete.

The consolidated case, involving the Canadian River, Colorado Interstate, and Colorado-Wyoming gas companies, has been delayed by litigation in which the companies challenged the right of the Commission to institute an investigation without prior hearing and determination as to its jurisdiction over the companies. This furnishes an example of the delays and waste of staff time imposed upon the Commission by the efforts of the natural-gas companies to thwart enforcement of the Natural Gas Act. The circuit court sustained the Commission's position and the United States Supreme Court denied a writ of certiorari. Hearings in the case are now in progress.

In the Cities Service Gas Co. case, involving resale rates affecting 56 Missouri communities, the Commission attempted to expedite the proceedings by calling upon the company to show why it should not remove certain apparent discriminations. The company's response indicated that a general investigation was necessary. Because the Federal Trade Commission reported that the plant investment, carried on the company's books at more than $41,000,000, contains more than $14,900,000 of "write-up," a determination of the original cost of the properties is in progress.

The New York State Natural Gas Corporation case has been protracted by a material change in conditions, resulting from the fact that the company's source of supply became depleted. As a result other gas companies to which it turned for supply became involved in the investigation.

Suspensions of proposed gas rate increases, involving the Mississippi River Fuel Corporation, the United Gas Pipe Line Co., Southern Carbon Co., Interstate Natural Gas Co., Hope Producing Co., and the United Carbon Co., have led to a general investigation of the intercorporate relations of these companies. The object of the investigation is to determine whether the Mississippi River Fuel Corporation is not simply the separately incorporated interstate transmission pipe line for marketing the natural gas produced by the other companies.

In a number of instances the Commission's power to suspend proposed increases in the rates at which natural gas is sold to other companies for resale has resulted in the withdrawal of such proposed increases and even in rate reductions. Thus the suspension of a proposed $40,000 increase in the rates charged by Mississippi River Fuel to The Laclede Gas Light Co. serving St. Louis, Mo., led the company to file a reduction in rates to the Laclede company. Similar results followed in the case of the Mississippi company's rate to the Illinois-

Iowa Power Co. which distributes in Alton, Ill., and the surrounding area, while both Columbian Carbon Co. and Empire Gas & Fuel Co. withdrew considerable increases in rates when such increases were suspended by the Commission.

In another case, when the Commission suspended increases in the rates at which the Arkansas-Missouri Power Corporation sells power to the Arkansas Utilities Co. and that company, in turn, sells to the Missouri Utilities Co., the companies submitted complete cost studies amply justifying the increases. The Commission, therefore, permitted the increased rates to become effective.

Commission Recognizes Limits to Jurisdiction.

During the year the Commission suspended a proposed increase in rates filed by the Columbian Fuel Corporation for natural gas sold to the Warfield Natural Gas Co. for resale. Following hearings regarding the suspension, the company filed a special petition requesting a hearing as to the jurisdiction of the Commission over the particular sale and over the Columbian Fuel Corporation generally.

Widespread interest developed concerning this question of jurisdiction. The Public Service Commissions of Kentucky and West Virginia, the Mid Continent Gas & Oil Association, the Independent Petroleum Association of America, and the National Association of Railroad and Utilities Commissioners all requested permission to intervene or to file briefs. The Commission granted opportunity for oral arguments on the question by interested parties, which it heard sitting *en banc*.

In its opinion and order the Commission dismissed the entire proceedings, finding that the Columbian company was engaged only in the production of gas and that the Commission had no jurisdiction over the arms-length sale of natural gas at the well mouth.

Research to Expedite Rate Case Work.

The Commission's supervision of wholesale rates for electricity and natural gas transported or sold in interstate commerce is complicated by the fact that such rates are embodied in individual contracts with the purchasing company rather than in rate schedules. A natural-gas company, subject to the Commission's jurisdiction, sells to local distributing companies with each of which it has a contract. One company has filed over 300 such contracts.

The Commission has recently initiated action toward the substitution of rate schedules for such contracts. If such a change can be effectuated it will greatly lessen the Commission's work, facilitate comparisons of rates and permit a more ready interpretation and use of them by the public. Revised forms for filing rates have been tentatively adopted and submitted to the companies for comment. After thorough analysis of the replies it is hoped that the simplified pro-

cedure can be perfected and the present practice of treating contracts as rate schedules eliminated.

The Commission receives more than 100 filings of new rates and rate changes a month. Included in these filings during the past year were annual reductions in rates of approximately $1,000,000. In each case the staff checks the accuracy of the information submitted, makes the necessary analyses and comparisons and studies the operating conditions involved, in order to determine whether there is evidence of unreasonableness or discrimination. The results of these studies are summarized in the form of brief reports on which the Commission acts.

When the review of current-rate filings indicates the desirability of a more complete analysis, or in response to complaints concerning rates already filed, the staff undertakes a preliminary investigation. Such studies provide sufficient information for decisions as to the necessity or feasibility of formal action. As the reports of the companies to the Commission become more complete and standardized, these preliminary investigations will become a more dependable guide to Commission action.

Where increases in rates are proposed, the Commission has only 30 days from the date the filing is received in which to take action on the question of suspension. In such cases, adequate investigation can only be made if the necessary information is available coincident with the filing. This has created a problem, particularly in the regulation of natural-gas rates. As a result the Commission has ordered that the filing of a proposed increase in a natural gas rate, to be complete, must be supported by a cost analysis, including:

1. A brief description of all facilities which have been used for the sale or transportation of natural gas under the rate or charge which has been effective;
2. A statement or estimate of the original cost, both undepreciated and depreciated, of the facilities;
3. An estimate of annual fixed charges, such as taxes, depreciation and return on the original cost;
4. A statement or estimate of operating expenses.

In an effort to expedite its rate work, the Commission has assigned to its Division of Rates and Research the responsibility for rate-case planning. This Division, upon whose reports formal rate cases may be originated by the Commission, will expand its report and recommendations to the Commission to include: (*a*) A statement of the important issues as they appear at the time; (*b*) an estimate of the additional office and field work which will be necessary to complete the Commission's case for presentation, should the matter be contested; (*c*) proposals for allocation between staff units of the prepara-

tion and presentation of evidence; (*d*) suggestions regarding the extent to which detailed preparation is warranted; (*e*) suggestions as to new techniques which might shorten established procedures; and (*f*) a tentative budget for the completed case.

The Commission anticipates that careful planning of rate cases along these lines will enable it to make its rate regulations more effective and at the same time more economical. New procedures may also be developed which will reduce the present length and cost of rate cases.

SECTION VII. REGULATION OF NATURAL GAS

With the passage of the Natural Gas Act of 1938, the Congress gave recognition to the necessity for Federal control of the natural-gas industry to fill the existing gap in the regulatory powers of the State commissions with respect to the sale and transportation of natural gas in interstate commerce. Until the passage of that act, no regulatory body was in existence to which a complaint could be directed or from which information could be obtained concerning the operations of such companies. Interstate natural-gas pipe lines were being developed and operated almost wholly without regulation, and the reasonableness of the rates and charges which they collected could be determined only with great expense and difficulty.

Previous efforts by State commissions to secure information have consequently been directed principally to the investigation of such charges where the rates complained of were between admittedly affiliated companies. The interstate transportation of natural gas, meanwhile, had grown to an industry of such size that the scope of the operations of one enterprise covered many hundreds of miles, extending over many States and a great portion of the country. It required so large a personnel and such sums of money to trace the gas to its source, and determine the costs step by step, resulting in the costs at the particular points of interest, that in many instances State bodies were powerless to search the ramifications of such large enterprises to their source, many miles beyond the borders of the State.

The reports of the Federal Trade Commission, undertaken in connection with its study of utility holding companies, showed the widespread control and intricate corporate structure associated with the production and transportation of natural gas. These conditions, coupled with information developed at extensive public hearings on the subject, resulted in the enactment of the Natural Gas Act in 1938. The act is in effect an effort to bring a hitherto unregulated private industry into the regulated public-utility class. Because of the magnitude which the industry had already obtained, the initiation of public control placed a heavy burden on the small staff allotted to the Commission for the purpose.

Geographical Layout of the Industry.

A brief outline of the physical characteristics of the industry is necessary to an understanding of the problems involved in its regulation.

The territories in which natural gas has been found in commercial quantities in the United States fall into five major producing regions, identified as Appalachian, Indiana-Illinois-Michigan, Mid-Continent-Gulf Coast, Rocky Mountain, and California.

During the last 30 years, waning supplies of gas in the eastern fields have forced a continued shift of the center of production westward, with a corresponding change in the relative importance of the gas-producing States. In 1909 Pennsylvania gave way as the leading State to West Virginia. In 1924 Oklahoma became the leading State, while in 1929 Texas moved into first place. The geographical center of production today is at a point adjacent to the border between Oklahoma and Texas.

In 1938 the marketed production of natural gas came overwhelmingly from the Mid-Continent and Gulf Coast areas, as shown in the following compilation by the Bureau of Mines:

Marketed natural gas production

Production area	*Year 1938*	
	Millions of cubic feet	*Percent*
Appalachian area, comprised of States of Kentucky, New York, Ohio, Pennsylvania, Tennessee, and West Virginia	331, 717	14. 5
Illinois-Indiana-Michigan area	12, 633	0. 5
Midcontinent and Gulf Coast area, comprised of States of Arkansas, Kansas, Oklahoma, Louisiana, and Texas	1, 516, 040	66. 0
Rocky Mountain area, comprised of States of Colorado, New Mexico, Montana, Utah, and Wyoming	104, 781	4. 6
California area	315, 168	13. 7
All other areas	15, 223	0. 7
Total	2, 295, 562	----

Estimates of Natural-Gas Reserves.

Estimates have been made by various authorities of the known natural-gas reserves in the United States. These estimates indicate a total reserve of from 60 to 75 trillion cubic feet of natural gas. The generally accepted figure is 66 trillion cubic feet, segregated as follows:

	Trillion cubic feet
Central and Southern States	51. 5
California	7. 0
Eastern States	6. 0
Rocky Mountain States	1. 5
Total	66. 0

At the present time the rate of consumption of this commodity approximates 2.4 trillion cubic feet per year for all purposes. At this rate of withdrawal, the estimated total volume of reserves would last approximately 27½ years. However, the actual life of the country's natural-gas reserves cannot be definitely fixed in view of the fact that on the one hand new fields are continually being discovered and developed while on the other the market for natural gas is rapidly expanding.

Rapid Extension of Gas Pipe Lines.

Although natural gas had been piped for short distances as far back as 1821, it was not until the period 1925 to 1930, after experiments had proved that natural gas under higher pressures could be transported with greater economy and over longer distances, that the long-distance-transmission pipe line, now characteristic of the industry, came into being. In 1930–31, a line was constructed which supplies Chicago with gas from the Panhandle Field in Texas, a distance of approximately 1,000 miles.

There are today natural-gas pipe-line systems which collect gas from the producing fields in Texas, carry it across the States of Oklahoma, Kansas, Missouri, Illinois, and Indiana, to deliver it 1,200 miles distant, to the industrial centers and highly populated sections of the North and East.

While the great development of the natural-gas industry has taken place in the short period of 15 years, it has been so rapid that there are today in this country approximately 200,000 miles of gas transmission and distribution pipe lines, representing a book investment of more than $2,500,000,000 and serving more than 9,000,000 customers.

Due to the rapid growth of the industry, as well as to the fact that prior to the passage of the Natural Gas Act it operated without a great deal of regulatory scrutiny, the data available as to its corporate ramifications, operations, charges, and profits are very limited and incomplete. In the process of meeting a score of regulatory problems thrust upon it, the Federal Power Commission is rapidly making good this deficiency, steadily accumulating and analyzing data covering the far-flung industry. These data run the whole range from the estimating and compiling of valid determinations of the gas reserves in various fields to the determination of the service lives and capital and operating costs of thousands of miles of pipe lines with their associated compressor stations.

Broad Scope of Commission's Natural Gas Activities.

The formal work of the Commission in the field of natural gas regulation since the passage of the Natural Gas Act has been divided between the handling of:

1. 23 complaints relative to the rates and charges of natural gas companies involving natural gas properties aggregating in

excess of $800,000,000. These complaints involve almost all of the major systems of the country;

2. 10 applications for certificates of convenience and necessity involving the granting of permission for the construction of new pipe lines for the transportation of natural gas into market areas of other natural-gas companies; and

3. 7 applications for a determination by the Commission of its jurisdiction over particular natural gas operations.

In addition, the Commission has been carrying on a considerable number of proceedings, instituted on its own motion and has acted upon eight applications for permits to export natural gas. Altogether, the investigations now underway cover at least one-fourth of the entire natural-gas industry.

In order to establish a sound basis for the regulation of the industry, the Commission attacked the problem of securing uniform accounting. A tentative uniform system of accounts for natural-gas companies, prepared by the accounting staff, was submitted to the companies for their comment. Then, after public hearings, it was prescribed, effective on January 1, 1940.

The Commission has also developed forms for securing statistical data annually from the industry. When the natural-gas companies have reclassified their accounts on an original-cost basis in conformance with the system of accounts and the companies are reporting annually to the Commission, a reliable foundation will have been laid for more effective regulation of the industry.

Regulation of "Gateway" Rates.

A full discussion of the Commission's activities in regulation of "gateway" rates, at which natural gas is sold to other companies for resale, will be found in the section of this report entitled "Lower Rates for Electricity and Gas." Before turning to a consideration of its other functions under the act, however, brief reference should be made to the nature of the work involved in a major natural-gas rate case. This work is particularly difficult in the early years of regulation because it is necessary to compile and classify voluminous engineering and statistical data from heretofore entirely untapped sources.

The Commission's work in connection with a major rate case may be briefly summarized as follows:

1. *Operating data.*—Each case requires a thorough analysis of the operations of the company, including an investigation of the loads, demands, production, purchases, transportation, and sales. On the basis of these data the Commission's staff is able to forecast the company's future operations.

2. *Physical property.*—The Commission's staff is required to make field surveys to determine the amount of property, the extent to which it is used or useful in the public service, and its physical condition.

3. *Service life.*—Because of the lack of adequate data in the industry for the determination of reasonable depreciation allowances, it has been necessary to have members of the staff make comprehensive studies of the service lives of various kinds of depreciable property.

4. *Gas reserves.*—As the natural-gas industry is an extractive industry, one of the important elements of cost which must be determined pertains to the exhaustion of the service life of the properties due to the depletion of the natural-gas reserves which the properties were constructed to produce or transport. The Commission's geologists have been engaged in estimating the volume of gas reserves in a number of important fields, among them the Panhandle field in Texas, the Hugoton field in Kansas and a major portion of the fields located in West Virginia, Pennsylvania, and New York. A few years' difference in the estimated life of available gas reserves supplying a given market may make a large difference in the rates which can be justified for that area.

5. *Accounting.*—The Commission's staff is required to make thorough audits of the books of the natural-gas company in question to determine the original cost of the properties to be included in the rate base and also to make sure that the income and expense accounts present a true picture of the company's investment and earnings.

In connection with the organization of natural-gas rate cases along the lines indicated, the Commission staff has made four comprehensive field investigations. These investigations covered the properties and operations of the Hope Natural Gas Co. and the New York State Natural Gas Corporation in the East, the Texoma Natural Gas Co. and Natural Gas Pipe Line of America in the Mid-Continent, and the Canadian River Gas Co., Colorado Interstate Gas Co., and Colorado-Wyoming Gas Co. in the Mid-West.

Applications for Authorization of New Pipe Lines.

Many applications for certificates of convenience and necessity, permitting the construction of new pipe lines, have come before the Commission since enactment of the Natural Gas Act. The following tabulation shows in general the status of these applications and their magnitude:

	Estimated Cost
Docket No. G–106 (pending)—Kansas Pipe Line & Gas Co., from (Texas Panhandle), Hugoton Field in Kansas to Mesaba Iron Range in Minnesota—900 miles	$14, 550, 000
Docket No. G–108 (withdrawn)—Public Service Gas Co., from Montana and Wyoming to Wisconsin—1,500 miles	49, 400, 000
Docket No. G–119 (pending)—North Dakota Consumers Corporation, from North Dakota to Minnesota—198 miles	4, 250, 000
Docket No. G–122 (granted)—Louisiana Nevada Transit Co., from Cotton Valley Field, La., to Okay, Ark.—73 miles	450, 000
Docket No. G–123 (dismissed without prejudice)—General Gas Pipe Line Co., from south central Kentucky to central Indiana—180 miles	4, 300, 000
Docket No. G–136 (withdrawn)—Ralph R. Willis, from Illinois to Indiana—10 miles	40, 000

	Estimated Cost
Docket No. G–165 (pending)—Tennessee Gas & Transmission Co., from northwestern Louisiana to western South Carolina—1,300 miles	$20, 300, 000
Docket No. G–168 (hearings completed—pending)—Western Natural Gas Co., from Hugoton Field, Kans., to Milwaukee, Wis.—800 miles	25, 200, 000
Docket No. G–178 (hearings completed—pending)—Independent Natural Gas Co., from Texas Panhandle to Milwaukee, Wis.—877 miles	28, 700, 000
Docket No. G–180 (pending)—Reserve Gas Pipe Line Co., from south Texas to New York City—1,500 miles	80, 000, 000
Total	$227, 190, 000

It should be noted that the Commission's jurisdiction over proposed new pipe-line construction is limited to those cases in which the new line will enter the market area already being served by another natural-gas company. This limitation has serious disadvantages in terms of the general purposes of the Natural Gas Act. In the first place, as there is no precise definition of the market area of another natural-gas company, the Commission must decide in each instance whether or not it has jurisdiction. In the second place, it prevents any serious effort to control the unplanned construction of natural-gas pipe lines with a view to conserving one of the country's valuable but exhaustible energy resources.

As a prerequisite to granting such a certificate, the Commission generally requires the applicant to furnish detailed proof showing (*a*) a firm, adequate source of supply of natural gas, (*b*) a market that desires natural-gas service, more adequate service or service at lower rates, (*c*) estimates which will demonstrate the feasibility of the project, and (*d*) the ability of the applicant to finance the undertaking and to complete and operate the facilities in such a manner that the enterprise will be a sound, going concern.

In complying with the above requirements, the applicant company is requested to file detailed estimates of cost of gas at the source of supply, cost of construction, or cost of acquisition of proposed extension from the source of supply to the prospective market, with maps and plats, proposed schedules of rates and charges, and a forecast of operating expenses, volumetric sales, and revenues.

With these and other general data the Commission may then determine that the present or future public convenience and necessity will require the new construction, the feasibility of the project, protect the public from discriminatory rates, and know that the proposed project will be a going concern and will not work undue hardships on the public because of failure of the enterprise.

In a significant case decided in July 1940, the Fifth Circuit Court of Appeals upheld the Commission's grant of a certificate permitting the Louisiana Nevada Transit Co. to construct a pipe line which would compete with that of the Arkansas-Louisiana Gas Co. in certain parts of Arkansas. The latter company's contention that the resulting loss of business would affect its other customers was rejected. The practical effect of the grant of this certificate was a reduction of more than 33⅓ percent in industrial gas rates in the area affected.

The Question of Conservation.

As shown in the table, the Commission has before it an application for a certificate permitting construction of a 1,500-mile pipe line from south Texas to New York City. The proposal calls for 24-inch pipe line operated at a pressure of 1,000 pounds per square inch, maintained by the installation of 13 pumping stations totaling 128,000 horsepower in capacity. This line would be capable of delivering approximately 250,000,000 cubic feet of gas a day to a market area including approximately 3,000,000 customers now using artificial gas or other fuels.

This first proposal to tap the Southwestern reserves of natural gas to supply the tremendous markets available in the Northeastern States poses the country with a serious problem of energy resource conservation. The Natural Gas Act as presently drafted does not enable the Commission to treat fully the serious implications of such a problem. The question should be raised as to whether the proposed use of natural gas would not result in displacing a less valuable fuel and create hardships in the industry already supplying the market, while at the same time rapidly depleting the country's natural-gas reserves. Although, for a period of perhaps 20 years, the natural gas could be so priced as to appear to offer an apparent saving in fuel costs, this would mean simply that social costs which must eventually be paid had been ignored.

Careful study of the entire problem may lead to the conclusion that use of natural gas should be restricted by functions rather than by areas. Thus, it is especially adapted to space and water heating in urban homes and other buildings and to the various industrial heat processes which require concentration of heat, flexibility of control, and uniformity of results. Industrial uses to which it appears particularly adapted include the treating and annealing of metals, the operation of kilns in the ceramic, cement, and lime industries, the manufacture of glass in its various forms, and use as a raw material in the chemical industry. General use of natural gas under boilers for the production of steam is, however, under most circumstances of very questionable social economy.

There is an even more important question which should be answered before Government sanction is given to large scale delivery of natural gas to the great Eastern industrial areas. That is the question as to whether rapid depletion of the country's natural-gas reserves may not reduce for all time the country's potentially recoverable reserves of oil. In view of the tremendous importance of petroleum products in both peace and war, it would be a grave mistake to allow the quest for quick profits and temporary convenience to cut into our available petroleum supplies.

The Commission is convinced that these conservation problems are of such preeminent importance, especially in the present world situation, that the Natural Gas Act should be immediately broadened to give the Commission adequate power to resolve them in the public interest.

SECTION VIII. YARDSTICKS AND STATISTICS

During the last year the Commission has made further progress in the development of dynamic statistics as a new technique of regulation. There has been increasing evidence that this phase of the Commission's work is producing the most desirable form of regulation—self-regulation by the utilities themselves.

Financial institutions have also seen the value of this new regulatory procedure and are in many instances taking advantage of it, recognizing that a soundly operated public utility is the best risk for investors. As a result, the financial interests, which exercise an important influence over the management of utility systems, are beginning to assist in accomplishing the objectives of regulation.

A basic reason why regulation of privately operated utility monopolies has not provided the greatest possible use at the lowest possible price, has been its failure to develop substitutes for the automatic cost and price standards enforced by competition. The belief of regulatory commissions, based upon dicta in certain State and Federal decisions, that the courts would not recognize rate or cost comparisons as valid evidence of the reasonableness or unreasonableness of rates may have been a major factor in preventing the development of such standards, although in some of the States noteworthy pioneer work had been done in this direction.

The general assumption that the costs of any particular utility must be presumed to derive from the peculiar conditions of the service area, over which the management had no control, also tended to remove any strong incentive to low costs and at times even to encourage high costs. This was an unhealthy condition for both consumers and investors. It led to a public demand for the establishment of the force of competition through construction of public plants, which might also serve in some measure as "yard sticks" for the industry as a whole.

The Commission's statistical work has been directed toward the development of a truly competitive force without necessitating the duplication of distribution facilities required by actual public competition in particular localities. It is, in effect, making every electric utility in the country, whether publicly or privately owned, a competitor of every other such utility, constantly testing its ability to maintain the lowest costs and rates and promote the highest average consumption.

In the electric-power industry, it is not merely a situation in which the utilities have historically enjoyed a monopolistic privilege, but one in which competition may definitely involve increase in costs.

For this reason, a method which provides the effect of competition, without the increased expense, is extremely desirable in the public interest.

Comprehensive Statistics Published by Commission.

The annual publications, through which the Commission is today making dynamic statistics available as a stimulus to economical operation and good sales policy in the electrical industry, include:

(*a*) The Typical Bill Reports.
(*b*) The National Electric Rate Book.
(*c*) Statistics of Electric Utilities in the United States.
(*d*) Electric Utility Unit Costs and Relationships.

Other statistical publications of the Commission which make available essential information to all interested in the electrical industry include:

(*a*) Directory of Electric Utilities.
(*b*) Directory of Generating Plants.
(*c*) Monthly Electric Power Statistics.
(*d*) Annual Statistics of Capacity and Output of Generating Stations.
(*e*) Installed Capacity of Waterwheels in the United States.
(*f*) Average Electric Bills.

Annual Publication of Typical Bill Reports.

During the current year the Commission continued the series of annual rate reports, begun in 1935, which present rates for electric service in the form of typical monthly bills for various classes of service. These reports have enabled people throughout the country for the first time to compare their electric bills with electric bills for similar service in any other community. In short, they offered the country its first complete collection of rate yardsticks.

The typical bills are shown for residential service in all communities of 250 population or more, for commercial light and power in all communities of 2,500 population or more, and for industrial service in all communities of 10,000 population or over. In the aggregate, these reports comprise nearly 2,000 pages of basic statistical information that is widely used for comparative purposes and numerous analyses and research studies.

The Commission has received from many sources evidence of the extent to which the typical bill reports have served as a stimulus, not only to effective regulation but also to the development of more progressive rate policies on the part of the utility companies themselves. In spite of all argument that the rates in one community cannot serve as a criterion of rates in another community, the low typical bills which have been achieved in certain parts of the country

inevitably become standards which the bills in other parts of the country tend to approach.

This is shown by the steady narrowing of the spread between the highest and the lowest bills for various classes of electric service.

Furthermore, investment houses, financial institutions, and underwriters are beginning to recognize that low rates reflect sound management and good public relations. Underwriters, in appraising a company as a basis for new security issues, are looking at the Commission's typical bill comparisons to determine how the company measures up in terms of rate yardsticks. All this promotes self-regulation by utility management.

These reports combine timeliness with comprehensiveness. The statistics for all communities in the United States are published during February and March with data as of January 1 of each year. Notwithstanding this, there is no lessening of exactitude and completeness.

Rate Comparisons as Prima Facie Evidence.

In order to indicate the value of the typical bill reports, as providing *prima facie evidence* of the need for rate reductions, the following tables have been compiled from the report covering the rates in effect on January 1, 1941, in cities of more than 50,000 population. They show comparisons between the 10 highest and the 10 lowest residential electric bills for monthly consumptions of 25 kilowatt-hours, 100 kilowatt-hours and 250 kilowatt-hours:

Typical residential bills, cities of 50,000 population and more, Jan. 1, 1941

25 KILOWATT-HOURS PER MONTH

10 lowest bills		*10 highest bills*	
*Chattanooga, Tenn., *Knoxville, Tenn., *Nashville, Tenn.	$0.75	Allentown, Pa., Bethlehem, Pa., Harrisburg, Pa., Lancaster, Pa., Wilkes-Barre, Pa.	$1.74
*Cleveland, Ohio	.80	Hartford, Conn	1.75
Birmingham, Ala	.81	Corpus Christi, Tex., Miami, Fla	1.78
*Memphis, Tenn	.86	Pawtucket, R. I	1.79
*Fort Wayne, Ind., Portland, Oreg	.87	Portland, Maine	1.85
*Seattle, Wash., Louisville, Ky	.88	Lowell, Mass	1.90
*Hamilton, Ohio	.94	St. Petersburg, Fla	1.91
*Lansing, Mich., *Tacoma, Wash	.95	Johnstown, Pa	1.94
Arlington County Va., *Columbus, Ohio, Washington, D. C.	.98	Tampa, Fla	1.99
Arlington County, Va., Asheville, N. C., Cincinnati, Ohio, Cleveland, Ohio, Cleveland, Heights, Ohio, Covington, Ky., Hamilton, Ohio, *Holyoke, Mass., *Kalamazoo, Mich., Lakewood, Ohio	1.00	Manchester, N. H	2.00

*Publicly owned utility.

100 KILOWATT-HOURS PER MONTH

10 lowest bills		*10 highest bills*	
*Tacoma, Wash	$1. 70	Atlantic City, N. J	$4. 98
*Chattanooga, Tenn., Cincinnati, Ohio, Covington, Ky., *Knoxville, Tenn., *Nashville, Tenn	2. 50	Pawtucket, R. I	4. 99
Madison, Wis	2. 60	Manchester, N. H	5. 00
Washington, D. C	2. 61	Lowell, Mass	5. 03
*Cleveland, Ohio	2. 65	Allentown, Pa., Bethlehem, Pa., Harrisburg, Pa., Lancaster, Pa., Wilkes-Barre, Pa	5. 04
*Lansing, Mich	2. 70	Yonkers, N. Y	5. 15
Birmingham, Ala	2. 75	Mount Vernon, N. Y., New Rochelle, N. Y	5. 20
*Kansas City, Kans	2. 80	Lawrence, Mass	5. 28
St. Louis, Mo	2. 85	Tampa, Fla	5. 54
*Memphis, Tenn	2. 88	St. Petersburg, Fla	6. 08

250 KILOWATT-HOURS PER MONTH

10 lowest bills		*10 highest bills*	
*Tacoma, Wash	$3. 20	Mount Vernon, N. Y., New Rochelle, N. Y., Yonkers, N. Y	$8. 70
Cincinnati, Ohio, Covington, Ky	4. 75	Atlantic City, N. J	8. 83
Topeka, Kans	4. 79	Malden, Mass., Medford, Mass	8. 85
*Springfield, Ill	4. 80	Pawtucket, R. I	8. 94
Madison, Wis	4. 85	Fall River, Mass	9. 05
Washington, D. C	4. 94	Providence, R. I	9. 07
*Kansas City, Kans	4. 95	Tampa, Fla	9. 19
*Chattanooga, Tenn., *Knoxville, Tenn., *Nashville, Tenn	5. 00	Boston, Mass., Newton, Mass., Somerville, Mass	9. 40
*Los Angeles, Calif	5. 10	Lawrence, Mass., Lowell, Mass	9. 53
*Seattle, Wash	5. 20	St. Petersburg, Fla	10. 08

*Publicly owned utility.

Certain interesting facts brought out by these comparisons may be briefly noted, as follows:

(1) The 10 lowest typical bills in each instance include the charges of both publicly and privately owned systems, with only a slight predominance on the public side. In a number of instances there is a competitive situation. On the other hand, the 10 highest bills in every instance represent the charges of private systems serving without competition.

(2) The 10 highest bills for each level of consumption mean that consumers in those cities pay almost twice as much for their service as consumers in cities where the 10 lowest bills prevail.

(3) The consumers who pay the 10 highest bills for 100 kilowatt-hours a month of service could buy 250 kilowatt-hours a month for the same monthly charge if they lived in the cities where the 10 lowest typical bills for 250 kilowatt-hours are considered reasonable.

These facts indicate the need for a thorough analysis to determine whether there are any conditions, beyond the control of competent management, to justify such differentials. Differences in conditions

might include, among other things: (*a*) Cost of fuel if steam power is a factor, (*b*) legitimate cost of hydroelectric power development in case it plays a part, (*c*) load factor characteristics of the business, (*d*) customer and load densities, (*e*) extent of underground in the distribution systems, and (*f*) adequacy of maintenance, reliability of service, etc.

Differences found to exist should be evaluated on the assumption that the management of a public utility may be expected to have kept its system reasonably up-to-date in terms of the technical progress of the industry and that consumers throughout the United States are entitled to the advantages in reduced costs which flow from such progress.

It may be expected that the progressive utility managements will increasingly consider such comparisons as an incentive, corresponding with the incentive provided by competition, to carry out the changes in policy necessary to assure their customers at all times the benefit of the lowest possible costs for their electric service.

Changes in Residential and Commercial Rates Compared.

The Commission is following closely the trends in the typical bills for all classes of service, including residential, commercial light, commercial power and industrial power. These trends, as shown in the following short tables, reveal the fact that rates for commercial lighting service are coming down about as fast as rates for residential service:

Weighted average bills of residential and commercial light service (1935–40)

RESIDENTIAL AVERAGE BILL FOR

Date	25 kilowatt-hours	100 kilowatt-hours	250 kilowatt-hours
January 1, 1935	$1.60	$4.47	$8.90
January 1, 1936	1.53	4.21	7.85
January 1, 1937	1.45	4.10	7.51
January 1, 1938	1.43	4.03	7.34
January 1, 1939	1.40	3.96	7.21
January 1, 1940	1.36	3.88	7.05

COMMERCIAL LIGHT AVERAGE BILL FOR

	0.75 kilowatt [1] 50 kilowatt-hours [2]	3 kilowatts [1] 375 kilowatt-hours [2]	6 kilowatts [1] 750 kilowatt-hours [2]
January 1, 1935	$3.11	$19.41	$37.09
January 1, 1937	2.85	17.51	34.47
January 1, 1938	2.77	17.04	33.66
January 1, 1939	2.69	16.66	32.91
January 1, 1940	2.65	16.21	31.76

[1] Kilowatts of billing demand.
[2] Kilowatt-hours of energy used.

Since 1935 the reductions in residential electric bills have averaged 15 percent for 25 kilowatt-hours, 13.2 percent for 100 kilowatt-hours and 20.8 percent for 250 kilowatt-hours of service. Corresponding reductions in average commercial light bills have been 14.8 percent for 50 kilowatt-hours, 16.5 percent for 375 kilowatt-hours and 14.4 percent for 750 kilowatt-hours of monthly service.

15,000 Rate Schedules in National Electric Rate Book.

The Commission's National Electric Rate Book is published to provide the public with information as to the rate schedules on which the typical monthly electric bills are based and other rate schedules available for special purposes. Periodic supplements are issued to keep the publication abreast of rate changes. During 1940, 67 supplements were issued containing 4,891 changes, most of which reflect reductions in the level of rates.

The complicated nature of the rate situation appears in the fact that this rate book, covering publicly and privately owned utilities serving communities of 1,000 population or more, contains more than 15,000 separate rate schedules. Between 25 percent and 35 percent of these rate schedules change each year.

Through the publication of this rate book the Commission has made available to the public for the first time the rate schedules of all electric systems, large and small, public as well as private.

Statistics of Electric Utilities An Effective Instrument.

Statistics of Electric Utilities in the United States was published for the second time during the past year. Along with the typical bill reports and the uniform systems of accounts, it is proving the most effective instrument of regulation issued by the Commission.

The report covers utilities claiming more than 17 billion dollars in assets, of which 14 billion dollars represents utility plant. The total electric operating revenue of these utilities amounted to $2,168,670,000, and their operating costs, including operation, maintenance, taxes, depreciation and amortization, amounted to $1,472,915,000.

The information is compiled from the annual reports which the companies file with the Commission. It shows for each utility uniform tables of balance sheets, income and earned surplus accounts, capital stocks and bonds, electric operating revenues, customers and sales by classes of service, operating expenses, utility plant accounts and data as to physical quantities. All this information is broken down to reveal all the operations and costs of the companies on a functional basis.

This report, which will steadily improve as more companies reclassify their accounts in accordance with the Commission's original cost system, permits the appraisal of almost every characteristic of a com-

pany's operating or financial practices and achievements as against corresponding factors in the management of any other company.

The report thus furnishes a basis for the development of cost and management standards, related to the peculiarities of the individual companies, supplementing the rate standards embodied in the typical bill reports. The Commission has evidence that utility companies and financial houses are using this authoritative and comprehensive itemization of the operating performance of the various systems in just this way.

An Example in Comparative Cost Yardsticks.

In the following table the distribution and administrative costs of two companies are extracted from this report to illustrate the possibilities of developing comparative cost standards which it embodies. The separate costs are shown in round figures and then on a per customer basis. In view of the fact that the comparisons, without further elaboration, might be embarrassing, the companies are here designated as company A and company B.

Company A reports its electric plant at somewhat over $30,000,000, serves approximately 130,000 customers and derives from them a gross revenue of approximately $9,000,000. Company B reports its electric plant at approximately $45,000,000, serves somewhat less than 150,000 customers and collects a gross revenue of about $11,000,000.

Their distribution, business and administrative expenses compare as follows:

Comparative distribution and business expenses

Expenses	Company A		Company B	
	Total	Per customer	Total	Per customer
Distribution, operation and maintenance	$716,000	$5.50	$1,542,000	$10.50
Customer accounting and collecting	241,000	1.85	720,000	4.90
Sales promotion	87,000	.65	257,000	1.75
Administrative and general	330,000	2.50	1,024,000	7.00
Total	1,374,000	10.50	3,543,000	24.10

These companies operate in closely adjacent areas in the same region. Company A sells about 20 percent more electric energy per customer than company B, giving it total energy sales in excess of those of company B. If we turn to the typical bill reports, we find that company A's rates are lower than those of company B.

The comparison, therefore, raises a serious question whether company B ought not immediately to undertake a thorough analysis of its expense accounts to determine whether they are in accord with sound modern practice.

It might well ask its manager to determine the justification for spending $10.50 per customer on the operation and maintenance of

its distribution system when a neighboring system managed to do it for $5.50 per customer. The answer might be that company B's system was better maintained or furnished more reliable service. Then the question would be whether the difference in maintenance was sufficient to justify the difference in cost per customer.

The next question would naturally be as to whether the meter reading, billing, and collecting cost of $4.90, as compared with $1.85 per customer for company A, did not indicate inefficiency and lack of economy somewhere in the commercial office. And a further question would probe into an administrative and general overhead expense running three times that of a somewhat similar company with only 10 percent fewer customers.

Data of Benefit to Consumers and Investors.

The matter may be viewed either from the consumer's or the investor's angle:

To the consumers buying from company B the comparison suggests that their bills might be cut on the average by about $13.50 per year, over $1 per month, if company B could find a way to operate satisfactorily with this group of expenses no greater than those of company A. That would mean a saving equivalent to about a third of the average residential bill in the country today.

To the investor in company B the comparison suggests that approximately $2,000,000 might be saved for net operating income if company B could operate in a satisfactory manner with distribution, business and administrative expenses more closely approximating those of company A. Or the matter might be so handled that both the consumer and the investor would benefit.

The investigation, initiated as a result of such comparisons, might perhaps indicate that there were sound grounds for higher expenses on the part of company B, or it might indicate that company B's expenses on an efficient basis should fall somewhere between the two. In any case, the application of such quasi-competitive standards would probably result in gains to both consumers and investors.

A concrete example may be cited to show that the proposed use of the Commission's published statistics of the electric utilities of the United States is not just a theory. In the case of a western utility, comparisons of the kind indicated suggested possible savings in operating expenses totalling about $500,000 a year. This led the company to make a thorough analysis of the expenses, which appeared high, with a constructive determination to find more efficient and economical ways of providing just as good service. The second year of its experiment will see its annual savings in these expenses already passing the $400,000 mark. Its financial position has been correspondingly improved.

The motive, as well as the method of the company, is clearly set forth in the following extracts from a letter written by its president to the Federal Power Commission dated August 19, 1940:

I would like to comment on the value to us of the annual statistical reports being published by the Commission. We have always been somewhat skeptical of the value of comparing operating costs and units of investment with other companies when the comparisons were limited to those companies in one state or where accounting methods were not uniform.

* * * * * * *

The data in the Federal Power Commission's reports being Nation-wide, form a statistical base broad enough to set out certain variations and to permit comparison between agencies with similar operating characteristics. These reports therefore make readily available to management the results obtained under similar operating conditions and are a very valuable check. They carry out and make effective the purpose of uniform accounting.

* * * * * * *

We were aware that our territory was unique and that we were operating under conditions scarcely duplicated in the country, yet we started efforts and are meeting with considerable success.

* * * * * * *

The data in the reports are so complete that comparisons may be carried all the way down to detailed operations and thus enable the investigator to determine with considerable definiteness just where deviations from averages lie.

* * * * * * *

If it is found that distribution costs are high per customer, these reports enable us to tell where they are high, what activity is costing us more than it is costing others; patrolling line, service on customers' premises, station labor or supervision. Likewise, if administrative and general expense is found out of line, the reports permit us to make comparisons in considerable detail, to show whether we are spending too much on general office expense, whether we spend more on employees' welfare or general office supplies, or the salaries of general officers.

So far as our Company is concerned, we will continue to take full advantage of the opportunity offered by the Federal Power Commission's annual reports to compare our costs with others. We believe that this is the use for which the uniform classification of accounts was intended and they are the first reports comprehensive enough on operating costs to be of great value. We hope you continue their publication.

Cost Units and Relationships To Be Made Available.

The Commission has been carrying on for some years for its own information and education an analysis of electric utility cost units and relationships. The results have been of great use in many branches of its regulatory work. This year it will publish the results for the first time with a view to making available to regulatory bodies and management a reliable means of appraising policies and practices.

Among the significant relationships which will be included in this report are:

(*a*) Mortgage debt to utility plant accounts;

(*b*) Electric depreciation reserve to electric plant for utilities predominantly steam, hydroelectric or purchasing their power supply;

(*c*) Electric operating revenues to electric plant accounts;

(*d*) Electric operating revenue deductions to revenues;

(*e*) Maintenance and depreciation expenses to electric plant accounts.

Cost units which are being developed for the report include:

(*a*) Investment per kilowatt of capacity in land, structures, and equipment, separately for steam and internal-combustion plants;

(*b*) Investment per kilowatt of capacity in land; structures; dams, reservoirs, waterways; and equipment for hydroelectric plants;

(*c*) Investment per structure mile of transmission lines of various types and voltages;

(*d*) Unit operating costs for various important expense accounts related to significant conditions.

An Approach to Cost Standards.

The following table will serve to indicate the nature of the analysis which will be contained in the electric utility cost units and relationships report. It shows the relation of customer accounting and collecting expenses per customer to the number of customers served by systems of various sizes, indicates the extent to which such cost analysis may raise questions of importance to the sound organization of the electric business. The table is based on an analysis of 321 companies serving approximately 22,000,000 electric customers:

Average accounting and collecting expenses

Companies having customers numbering from—	Average number of customers	Per customer per year
0 to 5,000	3,557	$3.76
5,100 to 10,000	7,167	3.41
10,100 to 20,000	14,268	3.17
20,100 to 30,000	24,078	3.09
30,100 to 50,000	38,698	3.07
50,100 to 100,000	71,533	2.96
100,100 to 200,000	140,895	3.17
200,100 to 500,000	283,409	3.37
Over 500,000	753,663	3.74
Average all companies	67,489	3.31

Beginning at the top of the table with the smaller companies, the downward trend of per customer costs follows the natural expectation in that the larger companies would have greater opportunity to utilize more efficient methods of meter reading, billing, and collecting. But this expected trend appears to be abruptly interrupted and reversed when the size of the companies passes the 100,000 customer mark.

When the group of largest companies is reached, including seven companies with over 500,000 customers apiece, the annual cost per customer for accounting and collecting has climbed back to a level practically equivalent to the cost to the smallest companies, $3.74, as compared to $3.76.

Further analysis is, of course, necessary to answer the question why the largest companies have the higher costs in this particular expense classification. But, until some other answer is given, the implication is strong that utility corporations may become unwieldy if they grow too large and that smaller local units, where feasible, may be found the most desirable organization for the distribution end of the business.

The same question is raised in a slightly different way by another one of the unit cost analyses. The Commission's studies include an analysis of distribution system operating expenses per customer related to the customer density per mile of distribution pole line. The following table shows the conclusions, based on data from 213 companies with 11,427,000 customers:

Relation of distribution operating expense per customer to customers per mile, 1938

Companies with less than 100,000 customers		Companies with more than 100,000 customers	
Customers per mile	Cost per customer	Customers per mile	Cost per customer
0 to 20	$6.83	0 to 15	
20 to 30	5.69	15 to 30	$6.95
30 to 40	5.45	30 to 45	6.45
40 to 60	5.01	45 to 60	6.38
Over 60	5.20	Over 60	5.85
Average	5.60	Average	6.53

The average customer density per mile of line for the smaller companies was 29.5 as against 32.1 for the companies with more than 100,000 customers, yet, contrary to first expectations, the average per customer cost of distribution system operation is nearly $1 per year higher. Here again, further investigation is indicated.

Other Reports and Statistics.

The Directory of Electric Utilities, issued for the first time this year, is an 800-page publication containing authoritative information about 2,035 publicly owned and 1,314 privately owned electric utilities. For each utility it gives the corporate control, top holding company and extent of voting interest; names of officers and directors, or principal officials, if the utility is publicly owned; total assets, electric operating revenue and number of customers; the generating capacity by type of power and kilowatt-hours generated and purchased; and the communities served and the utilities supplied at wholesale.

275462—41——7

The Directory of Generating Plants, about to be issued, contains basic information concerning every central electric station of more than 1,000 kilowatts capacity. The information includes location of plant, capacity, net generation, average number of employees, year of installation of generators, year of installation of boilers for steam plants, of engines for internal combustion plants, and of water wheels for hydroelectric plants.

The directory will be accompanied by an up-to-date map and forms an index to the location of electric generating stations and transmission lines in the United States.

Monthly Electric Power Statistics, issued as part of the Commission's regular function, shows the electricity generated by hydro, steam, and internal-combustion engines in each State, as well as consumption of fuel by each type of fuel and coal stocks on hand. Approximately 1,500 copies of this report are distributed monthly. The data are widely accepted as an important component of the indexes of business activity.

Annual Statistics of Capacity and Generation contains details as to capacity and production by various classes of ownership of facilities and types of prime mover. This year's edition includes certain new features including:

(*a*) A compilation showing scheduled additions to generating capacity and budgeted construction expenditures for the ensuing year; and

(*b*) The consumption of fuel by electric generating plants.

State Commission Jurisdiction and Regulation of Electric and Gas Utilities.—This report, compiled during the year, contains information as to regulation of rates for different services, regulation of service standards, accounting practices and many other characteristics of regulation in the several States. It is an authoritative compilation of the powers of the State commissions in each field of regulation.

In spite of the fact that all the Commission's publications are sold under congressional authority at a price covering approximately the cost, the public demand is constantly growing, indicating a widespread desire to have the facts in a form which the ordinary citizen can understand and use. For example, more than 25,000 copies of the 1940 Typical Monthly Bills reports have already been sold.

In response to this public demand the Commission is proceeding as rapidly as its resources will permit to expand its statistical work and its publications with a view to supplying in the simplest, most convenient, and economical form all the information that the ordinary citizen, as well as the expert, desires regarding the electric utility industry.

Statistics for Other Agencies.

The Commission, during the past year, consummated arrangements by which it provides the Bureau of Labor Statistics with quarterly data as to retail prices of electricity. These are used by that Bureau as components of its cost-of-living indices. The Commission is also providing the Bureau, for the use of other agencies, with monthly information as to changes in rates for electric service. These cooperative arrangements are in keeping with the objectives of the Division of Statistical Standards of the Bureau of the Budget for avoiding duplication of effort.

Many other departments and independent establishments of the Federal Government and the States are also provided with basic statistics of the electric or gas industries, as required by them.

Statistics for Commission Use.

In addition to the reports published by the Commission for general distribution and sale, many statistical compilations are made for the administrative uses of the Commission. As the techniques used in these informal reports are developed, and as public interest in their subject matter becomes known, they will develop into publications comparable to those now being regularly distributed.

Among the informal statistical reports compiled by the staff during the past year were (*a*) Electric Sales for Resale; (*b*) Interstate Natural Gas Transactions; and (*c*) Typical Gas Bills in Cities of 50,000 population and over.

SECTION IX. GENERAL ACTIVITIES

During the year the Commission has handled a large volume of general work in connection with (*a*) certain financial operations, mergers, dispositions of facilities and interlocking directorates over which it has jurisdiction; (*b*) cases involving determinations as to whether certain companies are subject to the provisions of the Federal Power Act; and (*c*) certain duties assigned to the Commission in connection with the operations of the Tennessee Valley Authority and other Federal power undertakings.

Since the Public Utility Act of 1935 gave it jurisdiction over certain dispositions of facilities, mergers and security issues, the Commission has passed upon more than 100 applications. The book value of facilities involved in the sale and merger transactions alone has exceeded $1,250,000,000.

Many of these cases have required exhaustive examinations of the ramified financial problems encountered. Certain significant cases are referred to below.

Mergers and Dispositions of Property

During the year the Commission received and disposed of eight new applications to sell electric facilities subject to its jurisdiction, three applications for authority to merge such facilities, and two applications for authority to acquire shares of another public utility. In addition the Commission acted on five applications for authority to issue securities under section 204 of the Federal Power Act. The significance of a number of these proceedings warrants brief comment.

Oklahoma Gas & Electric Co.—The main issue in this case, involving the company's purchase of the properties of the former Western Light & Power Corporation, was the failure of the latter company to secure prior authorization from the Commission for the sale of its facilities. The Commission, in an order conditionally approving the transaction, found that it had resulted in improvement of facilities and lower rates, without detriment to the interests of security holders, but warned that the "acts of these companies in attempted transfer of facilities subject to the jurisdiction of the Commission without prior commission authorization constitute no safe precedent for a similar course of conduct by any other public utility in the future."

New England Power Co.—The application of this company for approval of its plan to acquire the properties and franchises of the Bellows Falls Hydro-Electric Corporation immediately raised questions as to a probable write-up of several millions of dollars in the

Bellows Falls Corporation's capital structure and the fact that the Bellows Falls hydroelectric project might be operating illegally without a license.

The Commission, in ordering a hearing on the application, indicated that it would look into the original cost of the Bellows Falls facilities and the question whether the project was not located in a stream subject to the jurisdiction of Congress. The New England Power Co. thereupon indicated that it would not proceed and asked to withdraw its application. The Commission immediately initiated proceedings to determine whether a license should be required for the Bellows Falls project. These proceedings have been discussed in Section II.

Susquehanna and Pennsylvania Transmission Cos.—In approving the merger of these companies into their parent Pennsylvania Water & Power Co., the Commission specifically reserved for future determination all questions involving the accuracy of the original cost of the facilities and the adequacy of the amount credited to the depreciation reserve of the Pennsylvania Water & Power Co.

Pacific Power & Light—Inland Power & Light Cos.—In the case of *Pacific Power & Light Co.* and *Inland Power & Light Co.*, the United States Circuit Court of Appeals for the Ninth Circuit on May 8, 1940, decided that the Commission had set too high a standard for mergers by demanding a showing of affirmative benefit to the public. The Court held that section 203 of the Federal Power Act, which provides that the Commission shall approve such mergers as it finds "consistent with the public interest" requires merely a showing of absence of detriment to the public. In compliance with the Court's direction, hearings were held in October 1940 to reconsider the joint application of Pacific Power & Light and Inland Power & Light companies for approval of the merger of Inland with Pacific. The matter is pending Commission decision.

Public acquisitions of private facilities.—Among the acquisitions of electric facilities handled during the year were several involving purchases by public systems and corporations including:

(*a*) Purchase of a portion of the Mississippi Power Company system by the TVA in association with two electric membership corporations and two municipalities;

(*b*) Purchase of the Alabama Power Company's northern Alabama properties by the TVA and certain municipalities and electric cooperatives;

(*c*) Purchase by the Bonneville Administration and two public utility districts of a portion of the West Coast Power Company's properties in Washington and Oregon; and

(d) Purchase by the Nebraska Consumers Public Power District of the electrical facilities of the Interstate Power Company located in the State of Nebraska.

Applications for Security Issues.

During the year the Commission received and acted on five applications for authority to issue securities under section 204 of the Federal Power Act. In these matters the Commission has insisted that all such financing must be done at the lowest possible cost of money to the public-utility companies. In this connection, it has required that, where security issues are sold through underwriters, the principle of competitive bidding be applied.

The Nevada-California Electric Corporation case was of especial interest because out of it developed a readiness on the part of the company to cooperate with the Commission in steps to place itself in a much sounder financial basis which has already greatly strengthened its position.

The case involved an application for authorization of the issuance of $5 par value common shares, $50 par value 8 percent noncumulative dividend preferred shares and $50 par value 6 percent cumulative dividend preferred shares in exchange for the then outstanding shares. The Commission denied this application because it would have confirmed what constituted, in effect, a previous issue of securities without Commission authorization and because "the issuance of the proposed $50 par value, 8 percent non cumulative dividend preferred shares, with the authorization of this Commission, would be misleading and tend to create confusion as to the justifiable rate of return on such a security, and such issue is incompatible with the public interest."

The Commission accompanied its order with an opinion from which the two following paragraphs may be quoted:

> In the first place, the proportion of fixed income securities to the Company's total capitalization will still be excessive. As a result of this fact and the further fact that the interest rates, and the preferred dividend rates on such securities will still be relatively high, the burden which they impose on the Company's net income must tend to restrict the possibility of favorable financing in the future. It may be that after a thorough canvassing of the situation, preferred stockholders who are also holders of common stock might find it to be in their interests to agree to accept in exchange for their preferred shareholdings, shares of a new issue of common stock. It has been noted that as of December 31, 1938, the twenty largest stockholders of the Corporation held 72,310 of the outstanding 85,883 shares of common and 60,327 of the 114,612 shares of preferred stock.
>
> In the second place, the operating expenses of the Corporation increased markedly during 1936, 1937, and 1938, reaching levels, on a unit basis, considerably higher than those of other electric utilities of generally similar characteristics. Certain increases appear to have been of a temporary nature and some downward readjustment of expenses may, therefore, be expected. While still further reductions in such expenses may be rendered difficult by specific operating conditions, constructive consideration of the subject might establish a basis for considerable improvement in net income, thereby assuring more favorable circumstances for future refunding operations.

Subsequently, upon petition filed January 22, 1940, the Commission reopened the proceedings and the applicant "withdrew the original proposal to split the preferred shares and requested Commission authorization for the proposed issuance of shares to effectuate the change in dividend rights from 7 percent cumulative to 3 percent cumulative plus 4 percent noncumulative. That amendment stated that the applicant's reason for withdrawing the proposal to split the preferred shares was that further consideration of more thoroughgoing adjustments in its capital structure had indicated possibilities of such adjustments which would apparently not be furthered at that time by such a split-up."

Under date of May 7, 1940, the Commission acting upon the application as amended "authorized the issuance of $100 par value 3 percent cumulative plus 4 percent noncumulative preferred dividend shares in exchange for 7 percent cumulative preferred dividend shares, and the issuance of $10 par value shares of common stock to be exchanged share for share for outstanding $100 par value shares."

The Tennessee Valley Authority filed two applications under section 15 (a) of its act for Commission approval of certain credit contracts.

The first group of credit contracts was designed to assist certain purchasers of properties of the Tennessee Electric Power Co. to finance the purchases, make improvements to properties and obtain working capital. The second group was designed to assist the Cities of Louisville and Philadelphia in the State of Mississippi to purchase electric transmission and distribution facilities.

The Commission approved both transactions.

Other security issues approved by the Commission during the year involved the Otter Tail Power Co., the Montana-Dakota Utilities Co. and the Sierra Pacific Power Co. The Commission also scrutinized 14 certificates of notification of the issuance of short-term notes for more than $7,000,000 to insure conformity with the requirements of the Act.

Public Interest in Interlocking Positions.

The past year has seen significant developments in the enforcement of the section of the Federal Power Act, which requires the Commission to find that the public interest will not be adversely affected before approving interlocking positions among utilities under its jurisdiction. During the year hearings were completed and orders issued concerning interlocking directorates and positions in seven utility systems involving 96 applicants.

In dealing with the various questions involved in these cases the Commission has given serious consideration to the relationship between their jurisdiction over such interlocking positions and the

purpose of section 11 of the Holding Company Act. In every case the Securities & Exchange Commission is consulted before a decision is rendered.

Baltimore Consolidated Gas.—The first of these cases to involve issues of sufficient importance to warrant an opinion affected the Consolidated Gas, Electric Light & Power Co. of Baltimore and allied water-power companies of the so-called Aldred system. The Commission denied authorization to four of the top executives of the company to hold interlocking positions and they resigned from all positions subject to section 305 (b) of the Federal Power Act.

In the case of two of these directors the Commission based its disapproval on the fact that they had consented to the unwarranted use of the companies' funds for the benefit of the financial house of Aldred & Co. This irregularity, involving over $2,000,000 of the funds of the Baltimore Co. and the Pennsylvania Water & Power Co., was a less-than-arm's length transaction without the knowledge of the respective boards of directors.

The applications of the other two directors were disapproved on the ground that consistent nonattendance of director's meetings, in the absence of other showing of benefit, was a ground for disapproval.

Immediately following the resignation of these men from interlocking positions, the Baltimore and Pennsylvania companies terminated the employment of Aldred & Co. with respect to financial matters. The boards of directors then appointed a committee to investigate and advise as to the possibility of the collection of the large amounts due from Aldred & Co., former fiscal agents.

Union Electric Co.—During the fiscal year the Commission denied approval to Shurly R. Irish to hold the positions of comptroller in the Union Electric Co. of Missouri and certain of its subsidiary and affiliated companies. The Commission found that Mr. Irish, as comptroller of the companies, was directly charged with the keeping of the accounts of the various companies, and had not complied with the provisions of the Commission's uniform system of accounts. The Commission found, therefore, that his continued holding of the interlocking positions would not be in the public interest. The Commission has scheduled for hearing the holding of interlocking positions by the entire group of directors and officers of the so-called Union Electric group.

The Commission's work under this section of the act has, to date, involved consideration of the interlocking positions held by about 300 utility executives and directors. Of these 115 have been found to require no further attention because resignations or consolidations have eliminated their interlocking positions; 38 have been found to

require no authorization for the positions which they hold; 68 have received authorization for the positions which they hold and 36 applications remain to be disposed of. In the case of 74 applicants no replies have yet been received to requests for supplemental information.

Problems of Jurisdiction.

During the year the Commission undertook a number of field investigations to determine the public utility status of utility systems, where the companies are denying Federal jurisdiction or where the extent of involvement in interstate commerce is in doubt.

These investigations included the operations of several subsidiaries of the New England Power Association, the Hartford Electric Light Co., the Bellows Falls Hydro-Electric Corporation, the Puget Sound Power & Light Co., the Northwestern Electric Co., the Marion-Reserve Power Co., and the Ohio Public Service Co. All of these investigations involved an inspection of the facilities of the company and a tracing of the flow of energy between systems and across State lines.

The Hartford Electric Light Co. case was especially interesting because of the ingenious line of technical reasoning put forward by the company to avoid Commission jurisdiction. The company contended and attempted to show that the electric energy generated in Connecticut and passing through transformers and over transmission lines to Massachusetts was not the same energy when it reached Massachusetts. According to the company, the intervention of transformers performed the trick necessary to absolve the company from participation in interstate commerce.

This ingenuity raised questions of a highly technical nature requiring the employment of several physicists and engineers of national reputation by both the Commission and the company. All this procedure became necessary to determine whether the company should comply with the Commission's uniform system of accounts requiring it to file a reclassification statement of the original cost of its electric facilities.

Accounting for Political Expenditures Investigated.

In the summer of 1940 the Commission received many complaints about the political expenditures of public utilities. These were so numerous that it was impossible for the Commission to investigate them. In cases of public utilities subject to the jurisdiction of the Commission, letters were sent asking for information on the subject, particularly whether such expenditures were charged to the rate payers or the stockholders. The answers to these letters were, in many instances, unsatisfactory.

In October, November, and December, 1940, the Commission conducted hearings and an investigation into the expenditures of five electric utilities operating in the State of Washington. The results of these hearings and the investigation have not yet been finally analyzed. However, it appears that during the past five years these five utilities spent more than a million dollars in political activities opposing publicly owned and operated utility districts and public ownership movements. At least part of these expenditures and the time of many employees concerned were charged to operating expenditures and thence to the rate payers. As a result of this investigation, the Commission believes it will have to revise certain of its accounting regulations and probably make recommendations to the Congress for remedial legislation.

PART II

NEW APPLICATIONS FOR PRELIMINARY PERMITS AND LICENSES

One hundred and twenty-seven new applications for licenses for power projects and one new application for a preliminary permit were received during the fiscal year, making a total of 1,729 received during the 20-year period from 1920 to June 30, 1940. The proposed total installation of the project for which application for preliminary permit was filed was 5,000,000 horsepower. Three of the new applications for license were for major projects, and 17 were for minor projects. The three applications for license for major projects had a total proposed installation of 1,240 horsepower.

In addition to the 128 new applications, 12 applications for renewal of licenses were filed, and an application for license was received for 2 of 6 developments covered by a pending application for preliminary permit. One application was filed for license for a project covered by an outstanding preliminary permit, and one application for license was changed to an application for preliminary permit.

New applications for preliminary permits and licenses filed during the fiscal year ended June 30, 1940

Project No.	Application for—	Name of applicant	State	Stream	Installation, estimated horsepower capacity
1602	License	Cherryland Rural Electric Cooperative Association.	Michigan	Transmission line	
1603	do	do	do	do	
1604	do	Brinker Lashbough Mining Co	California	do	
1605	do	Ozark Border Electric Cooperative.	Missouri	do	
1606	do	Will C. Feddersen	Wyoming	Spring Creek	(1)
1607	do	Jump River Electric Cooperative, Inc.	Wisconsin	Transmission line	
1608	do	Central Virginia Electric Cooperative.	Virginia	do	
1609	do	F. I. Reed	Alaska	do	
1610	do	Deep East Texas Electric Cooperative, Inc.	Texas	do	
1611	do	Monterey Utilities Corporation	Virginia	do	
1612	do	The Walton Electric Membership Corporation.	Georgia	do	
1613	do	B–A–R–C Electric Cooperative	Virginia	do	
1614	do	Mississippi Power & Light Co	Mississippi	do	
1615	do	Public Service Co. of Colorado	Colorado	do	
1616	do	City of Loveland	do	do	
1617	do	Pacific Gas & Electric Co	California	do	
1618	do	San Luis Valley Rural Electric Cooperative, Inc.	Colorado	do	
1619	do	Wisconsin Michigan Power Co	Michigan	do	
1620	do	Flathead Electric Cooperative, Incorporated.	Montana	do	
1621	do	Pacific Gas & Electric Co	California	do	
1622	do	Lakeside Light & Power Co	Arizona	do	
1623	do	Wisconsin Michigan Power Co	Michigan	do	
1624	do	Pacific Gas & Electric Co	California	do	
1625	do	A. F. Baumhoff	do	South Fork of American River.	50
1626	do	Alhambra Shumway Mines, Inc.	do	Transmission line	
1627	do	Valley Rural Electric Cooperative, Inc.	Pennsylvania	do	
1628	do	L. D. Sweet	California	Nigger Creek	2
1629	do	Coast Electric Power Association.	Mississippi	Transmission line	
1630	do	Deep East Texas Electric Cooperative, Inc.	Texas	do	

[1] Application incomplete. Minor project. Proposed installation not specified.

New applications for preliminary permits and licenses filed during the fiscal year ended June 30, 1940—Continued

Project No.	Application for—	Name of applicant	State	Stream	Installation, estimated horsepower capacity
1631	License	Pacific Gas & Electric Co	California	Transmission line	
1632	do	do	do	do	
1633	Preliminary permit.	Fred T. Colter	Arizona and Utah	Colorado, Little Colorado, Verde, and Williams Rivers.	5,000,000
1634	License	Deep East Texas Electric Cooperative, Inc.	Texas	Transmission line	
1635	do	Arkansas Valley Electric Cooperative Corporation.	Arkansas	do	
1636	do	do	do	do	
1637	do	Southern California Edison Co. Ltd.	California	do	
1638	do	Cloverland Electric Cooperative	Michigan	do	
1639	do	Carolina Power & Light Co	South Carolina	do	
1640	do	City of Ketchikan, Alaska	Alaska	do	
1641	do	Laurens Electric Cooperative, Inc.	South Carolina	do	
1642	do	Pacific Gas & Electric Co	California	do	
1643	do	Coast Electric Power Association.	Mississippi	do	
1644	do	Clarke County Electric Corporation.	Wisconsin	do	
1645	do	Bill Jamis	California	An unnamed stream, a tributory of Rush Creek.	2
1646	do	Pacific Gas & Electric Co	do	Transmission line	
1647	do	W. L. Zeigler	Idaho	Pratt Creek	340
1648	do	Pacific Gas & Electric Co	California	Transmission line	
1649	do	Central Arizona Light & Power Co.	Arizona	do	
1650	do	Curtis M. Rocca	California	Echo Creek	27
1651	do	Star Valley Power & Light Co	Wyoming	Swift Creek	500
1652	do	George W. Collins	Washington	Burton Creek	13
1653	do	Wallace A. Doe	Alaska	Baranof River	52
1654	do	Southern Pine Electric Power Association.	Mississippi	Transmission line	
1655	do	Nantahala Power & Light Co	North Carolina	do	
1656	do	Coast Electric Power Association.	Mississippi	do	
1657	do	do	do	do	
1658	do	Union Pacific Railroad Co	Idaho	do	
1659	do	Pacific Gas & Electric Co	California	do	
1660	do	Western Michigan Electric Cooperative Association.	Michigan	do	
1661	do	James E. Rentschlar	Oregon	Lake Creek	3
1662	do	Fred C. Olsen	Montana	Hawks Creek	2
1663	do	Lambda Chemical Products Co	Washington	South Fork of Stillaguamish River.	400
1664	do	Craig-Botetourt Electric Cooperative.	Virginia	Transmission line	
1665	do	San Joaquin Light & Power Corporation.	California	do	
1666	do	Central Vermont Public Service Corporation.	Vermont	do	
1667	do	Southern California Edison Co. Ltd.	California	do	
1668	do	San Joaquin Light & Power Corporation.	do	do	
1669	do	Pacific Gas & Electric Co	do	do	
1670	do	The Red Top Mining Co	Nevada	do	
1671	do	Southeastern Illinois Electric Coop. Inc.	Illinois	do	
1672	do	Gayle R. Green and Ruby M. Green.	California	Little Gray Eagle Creek.	4
1673	do	Singing River Electric Power Association.	Mississippi	Transmission line	
1674	do	Randolph Electric Membership Corp.	North Carolina	do	
1675	do	Southern Pine Electric Power Association.	Mississippi	do	
1676	do	The Montana Power Co	Montana	do	
1677	do	Pacific Gas & Electric Co	California	do	
1678	do	The Intermountain Rural Electric Association.	Colorado	do	
1679	do	Indian Valley Light & Power Co.	California	do	

New applications for preliminary permits and licenses filed during the fiscal year ended June 30, 1940—Continued

Project No.	Application for—	Name of applicant	State	Stream	Installation, estimated horsepower capacity
1680	License	Central Electric Cooperative, Inc.	Pennsylvania	Transmission line	
1681	do	Pacific Gas & Electric Co	California	do	
1682	do	The Intermountain Rural Electric Association.	Colorado	do	
1683	do	Hart County Electric Membership Corporation.	Georgia	do	
1684	do	Kittitas County Public Utility District No. 1.	Washington	do	
1685	do	Pacific Gas & Electric Co	California	do	
1686	do	Wisconsin Michigan Power Co	Michigan	do	
1687	do	Pacific Gas & Electric Co	California	do	
1688	do	Papago Ward Corporation of the Church of Jesus Christ of Latter Day Saints.	Arizona	do	
1689	do	Wisconsin Michigan Power Co	Wisconsin	do	
1690	do	William W. Hamilton	Oregon	Three Rivers	4
1691	do	Pacific Gas & Electric Co	California	Transmission line	
1692	do	do	do	do	
1693	do	Bradford Electric Co	Pennsylvania	do	
1694	do	General Public Utilities, Inc	South Dakota	do	
1695	do	California-Pacific Utilities Co	California	do	
1696	do	The Arizona Power Corporation.	Arizona	do	
1697	do	Lowell L. Hall	Oregon	Trapper Creek	11
1698	do	Herstle Jones	California	Transmission line	
1699	do	Leora Roycroft	Alaska	do	
1700	do	The Montana Power Co	Montana	do	
1701	do	General Public Utilities, Inc	South Dakota	do	
1702	do	Oceanic Fisheries Company, Inc.	Alaska	An unnamed creek, a tributary of Thumb Bay.	50
1703	do	Jackson County Electric Membership Corporation.	Georgia	Transmission line	
1704	do	Clay Electric Cooperative Association, Inc.	Florida	do	
1705	do	Pacific Gas & Electric Co	California	do	
1706	do	Florida Power & Light Co	Florida	do	
1707	do	Donald R. Pira	California	Sailor Bar Creek	(2)
1708	do	Mississippi Power Co	Mississippi	Transmission line	
1709	do	Jackson County Rural Electric Cooperative Corporation.	Kentucky	do	
1710	do	Murray W. Haws	California	Rock Creek	(2)
1711	do	Oscar Edward Kosar	Washington	An unnamed stream, a tributary of Indian Creek.	12
1712	do	Kentucky Utilities Co	Kentucky	Transmission line	
1713	do	Aiken County Electric Cooperative Association.	South Carolina	do	
1714	do	Fred Nicholson	Montana	do	
1715	do	City of Springville, Utah	Utah	Spring Creek	
1716	do	Carroll Electric Cooperative Corporation.	Missouri	Transmission line	
1717	do	State of Alabama, Department of Conservation.	Alabama	do	
1718	do	West Coast Power Co	Oregon	do	
1719	do	Louisville Gas & Electric Co	Kentucky	do	
1720	do	Black River Electric Cooperative.	Missouri	do	
1721	do	Thomas R. Armstrong	California	Canadian Creek	9
1722	do	The Nevada-California Electric Corporation.	do	Transmission line	
1723	do	Valley Electric Membership Corporation.	Louisiana	do	
1724	do	Idanha Power Co	Oregon	do	
1725	do	Southern Illinois Electric Cooperative.	Illinois	do	
1726	do	Talache Mines Incorporated	Idaho	do	
1727	do	Sierra Pacific Power Co	California	do	
1728	do	Southern Pine Electric Power Association.	Mississippi	do	
1729	do	B-A-R-C Electric Cooperative	Virginia	do	
	Total				5,001,481

[2] Minor project of less than 1 horsepower. Not included in total.

COLLECTED FROM LICENSEES DURING FISCAL YEAR, $815,707.93

A total of $815,707.93 was collected by the Commission from licensees during the fiscal year ended June 30, 1940. As provided by section 10 (e) of the Federal Power Act, charges are levied (1) to reimburse the United States for the costs of administering part I of the act; and (2) to recompense the United States for the use, occupancy, and enjoyment of its lands and other property included in licensed projects. Section 17 provides for the distribution of the funds thus obtained as follows: Charges fixed by the Commission for the purpose of reimbursing the United States for the costs of administration of part I of the act, paid into the Treasury of the United States and credited to "Miscellaneous receipts"; all proceeds from Indian reservation lands, 100 percent to the credit of such Indians; charges for the use and occupancy of public lands, one-eighth to the "general fund" of the Treasury, one-half to the reclamation fund, and three-eighths to the respective public-land States and Territories in which the receipts originated; charges collected from navigable water projects, one-half to a special fund expended under direction of the Secretary of War in the construction, maintenance, and operation of dams and other structures on navigable waters, and one-eighth to the "general fund" of the Treasury under the provisions of the act, as well as three-eighths which were not specifically distributed by the act.

The distribution of proceeds from licenses under the Federal Power Act for the fiscal year 1940 was as follows:

To Indian tribes	$60, 368. 73
To the reclamation fund	26, 980. 56
To the War Department	173, 378. 40
To public-land States	20, 235. 80
To the "general fund" of the Treasury, representing 12½ percent of collections from public-land projects and 50 percent of collections from navigable-water projects involving the use of dams, appurtenant lands, or other property	180, 123. 54
To the "general fund" of the Treasury, representing a direct levy for reimbursing the costs of administration of part I of the Federal Power Act	353, 770. 81
Total	814, 857. 84

As provided under section 17 (b) of the act, penalties were levied for delinquency in the payment of annual charges and the amount of $132.30 collected and deposited to the credit of "Penalties for delinquencies of licensees under Federal Power Act."

Collections from revested Oregon and California railroad grant lands and Coos Bay wagon-road grant lands situated in certain li-

censed projects and not subject to distribution under section 17 of the act but credited to the accounts involved, amounted to $660.84 and $56.95, respectively.

There will be found in appendix B of this report, under the heading of "Financial statements," tables showing collections by projects and the distribution thereof for the fiscal year 1940, as well as other tables showing total collections and distribution by fiscal years for the period beginning June 11, 1920, and ending June 30, 1940.

The Commission also collected and deposited to the credit of "Miscellaneous receipts" during the fiscal year ended June 30, 1940, the sum of $573.65 from the sale of maps; $18,978.48 from the sale of publications; and $1,407.32 for copying fees.

275462—41——8

PART II

APPENDIX A

PROJECTS UNDER MAJOR LICENSE AND PRELIMINARY PERMIT

Projects under major license, June 30, 1940

Project No.	Licensee	Stream	Horsepower		
			Power capacity	Installation	
				Present	Ultimate
	Alabama:				
82	*†Alabama Power Co	Coosa River	21,760	72,000	93,000
349	----do	Tallapoosa River	37,750	135,000	180,000
618	----do	Coosa River	30,400	146,800	180,000
	Arkansas:				
271	*†Arkansas Power & Light Co	Ouachita River	22,000	92,500	162,000
	California:				
67	*Southern California Edison Co. Ltd.	San Joaquin River and tributaries.	129,100	184,700	184,700
77	*Pacific Gas & Electric Co	Eel River	12,958	9,877	18,500
78	----do	South Fork American River	6,400	8,100	8,100
88	*Merced Irrigation District	Merced River	3,377	35,000	35,000
95	*Emma Rose & Hobart Estate Co.	Highland Creek	900	(1)	(1)
96	*San Joaquin Light & Power Corporation.	San Joaquin River	17,600	45,000	45,000
99	*Pacific Gas & Electric Co	Canyon Creek	292	2,700	2,700
120	*Southern California Edison Co. Ltd.	San Joaquin River	37,726	105,000	195,000
137	*Pacific Gas & Electric Co	North Fork Mokelumne River.	36,197	85,500	85,500
175	*San Joaquin Light & Power Corporation.	North Fork of Kings River	3,905	41,500	151,000
176	*Escondido Mutual Water Co	San Luis Rey River	115	1,334	1,334
178	*San Joaquin Light & Power Corporation.	Kern River	4,171	12,000	12,000
184	*Pacific Gas & Electric Co	South Fork American River	16,579	28,000	112,000
187	----do	North Fork Yuba River	3,575	8,700	8,700
233	----do	Pit River	45,360	99,000	99,000
	----do	----do	54,288		120,000
344	*San Gorgonio Electric Corporation.	San Gorgonio and Whitewater Rivers.	599	3,000	3,000
382	*Southern California Edison Co. Ltd.	Kern River	3,809	14,400	14,400
619	*Pacific Gas & Electric Co	Bucks and other creeks	17,400	67,000	67,000
747	*California Public Service Co	Pine Creek	250	800	800
748	*Sierra Consolidated Mines, Inc	Green Creek	380	500	500
1250	*City of Pasadena	San Gabriel River	450	2,400	2,400
1302	*California Fruit Exchange	Gray Eagle Creek and Long Lake.	205	485	485
1318	*Pacific Gas & Electric Co	South and Middle Forks Stanislaus River.	26,520	61,500	61,500
1333	*San Joaquin Light & Power Corporation.	Tule River tributaries	1,103	7,200	7,200
1350	*W. L. Leland	Chipps Creek	89	200	200
1352	Pacific Gas & Electric Co	North Fork Feather River	76,028	90,000	90,000
1354	*San Joaquin Light & Power Corporation.	North Fork San Joaquin River and Willow Creek.	7,221	39,300	39,300
1388	*The Nevada-California Electric Corporation.	Leevining Creek	2,803	14,000	14,000
1389	----do	Rush Creek	4,551	16,000	16,000
1390	----do	Mill Creek	920	4,020	4,020
1514	*The Calso Co	Canyon Creek	83	110	110

Basis for jurisdiction:
*Affects Government lands.
†Affects navigable waters.

[1] Reservoir only.

Projects under major license, June 30, 1940—Continued

Project No.	Licensee	Stream	Horsepower		
			Power capacity	Installation	
				Present	Ultimate
	Colorado:				
400	*The Western Colorado Power Co.	Animas and South Fork of San Miguel Rivers.	6,500	13,000	13,000
	Florida:				
177	†Florida Power Corporation	Oklawaha River	320	700	700
682	do.*	Ochlockonee River	1,270	13,000	13,000
	Georgia:				
485	†Columbus Electric & Power Co.	Chattahoochee River	28,000	66,000	80,000
659	†Crisp County	Flint River	4,080	9,000	18,000
1218	†Georgia Power Co	do	4,605	8,250	8,250
	Idaho:				
18	*†Idaho Power Co	Snake River	7,804	13,300	19,000
20	*Utah Power & Light Co	Bear River	5,120	20,000	20,000
204	*The Washington Water Power Co.	South Fork Clearwater River.	860	860	860
386	*Unity Gold Production Co	Elk Creek	480	600	600
457	*†Idaho Power Co	Snake River	9,265	9,265	9,265
472	*Utah Power & Light Co	Bear River	10,000	40,000	40,000
492	*John C. Higgins	Big Boulder Creek	153	400	400
503	*†Idaho Power Co	Snake River	12,100	13,460	13,460
621	†The Washington Water Power Co.	Clearwater River	8,340	10,880	10,880
703	*Utah Power & Light Co	Paris Creek	445	900	900
749	*Western States Utilities Co	Birch Creek	200	270	270
1176	*Bradley Mining Co	East and South Forks Salmon River.	250	520	520
	Illinois:				
287	†State of Illinois and North Counties Hydro-Electric Co.	Fox River	900	5,300	5,300
	Iowa:				
925	†City of Ottumwa	Des Moines River	728	4,200	4,200
	Kentucky:				
289	†Louisville Gas & Electric Co	Ohio River	36,176	108,000	135,000
539	†Kentucky Utilities Co	Kentucky River	2,770	3,000	3,000
	Maryland:				
405	†The Susquehanna Power Co. and Philadelphia Electric Power Co.	Susquehanna River	45,200	378,000	594,000
	Michigan:				
401	†Michigan Gas & Electric Co	St. Joseph River	630	2,300	2,300
785	†City of Allegan	Kalamazoo River	888	1,800	3,000
	Minnesota:				
346	†Minnesota Power & Light Co	Mississippi River	4,464	18,000	24,000
362	†Ford Motor Co	do	7,250	19,200	19,200
469	*†Minnesota Power & Light Co	Kawishiwi River	1,140	5,000	5,000
	Missouri:				
459	*†Union Electric Co. of Missouri	Osage River	15,000	201,000	268,000
	Montana:				
5	*†The Montana Power Co	Flathead Lake and River	80,000	77,000	154,000
970	*Glacier Silver Lead Mining Co	Granite Creek	230	350	350
1534	*Colorado-Montana Mines Association.	Belle Creek	134		200
	Nebraska:				
1256	†Loup River Public Power District.	Loup River	19,635	63,600	63,600
1417	†The Central Nebraska Public Power & Irrigation District.	Platte and North Platte Rivers.	26,890		96,500
	New York:				
13	†Henry Ford & Son, Inc	Hudson River	3,640	8,100	8,100
16	†The Niagara Falls Power Co	Niagara River	351,198	561,500	561,500
	North Carolina:				
432	†Carolina Power & Light Co	Big Pigeon River	23,760	147,000	147,000
693	*Town of Highlands	Cullasagee River	185	300	600
1531	†City of High Point	Yadkin River	8,540		30,000
	Ohio:				
738	†Fred and John F. Dover	do	123	123	123
	Oklahoma:				
1494	*†Grand River Dam Authority	Grand River	24,000		120,000
	Oregon:				
135	*Portland General Electric Co	Clackamas River and Oak Grove Fork.	41,400	80,000	80,000
308	*Inland Power & Light Co	East Fork Wallowa River and Royal Purple Creek.	870	1,100	1,100
669	*Crooked River Ranch Co	Crooked River	432		700
1097	*John A. Zehntbauer	Jack Creek	115	115	115
1447	*Inland Power & Light Co.	Crooked River	1,470	1,470	1,470

Basis for jurisdiction:
*Affects Government lands.
†Affects navigable waters.

Projects under major license, June 30, 1940—Continued

Project No.	Licensee	Stream	Horsepower		
			Power capacity	Installation	
				Present	Ultimate
	Pennsylvania:				
309	†The Clarion River Power Co	Clarion River	1,440	38,400	51,200
487	†Pennsylvania Power & Light Co	Wallenpaupack Creek	8,148	57,000	57,000
1025	†Safe Harbor Water Power Corportion.	Susquehanna River	25,707	255,000	510,000
	South Carolina:				
199	†South Carolina Public Service Authority.	Santee and Cooper Rivers	57,888	----------	240,000
516	†Lexington Water Power Co	Saluda River	34,814	180,000	270,000
1267	†Greenwood County	----do	4,360	----------	20,000
	South Dakota:				
792	*The Dakota Power Co	Rapid Creek	1,000	1,600	1,600
	Texas:				
1490	†Brazos River Conservation and Reclamation District.	Brazos River	7,600	----------	47,250
	Utah:				
190	*Uintah Power & Light Co	Uinta River and Pole Creek	3,070	800	3,070
486	*Utah Power & Light Co	Logan River	1,800	2,800	2,800
597	*Utah Light & Traction Co	Big Cottonwood Creek	710	2,700	2,700
665	*Utah Power & Light Co	Santaquin Creek	290	1,250	1,250
671	----do	Alpine Creek and South Fork.	225	2,620	2,620
675	----do	Battle Creek	225	3,500	3,500
696	----do	American Fork Creek	1,305	3,150	3,150
713	----do	Mill and other creeks	625	2,000	2,000
814	*Telluride Power Co	Beaver River and tributaries.	2,000	4,350	4,350
946	*Hyrum City	Blacksmith Fork	515	600	600
1273	*Parowan City	Center Creek	215	496	496
1373	*Utah Power & Light Co	South Willow Creek	152	550	550
	Virginia:				
1235	†City of Radford	Little River	509	1,140	1,140
	Washington:				
553	*City of Seattle	Skagit River	34,000	166,000	320,000
588	*Crown Zellerbach Corporation	Elwha River	9,000	17,500	17,500
637	*The Washington Water Power Co.	Chelan River and Lake	46,816	68,000	136,000
719	*Royal Development Co	James and Phelps Creeks	410	440	440
935	*†Inland Power & Light Co	Lewis River	28,375	55,000	220,000
943	*†Puget Sound Power & Light Co	Columbia River	125,000	84,000	210,000
1393	†Pend Oreille Mines & Metals Co	Clark Fork of Columbia River.	2,000	2,500	2,500
1487	*Quinault Light Co	Ziegler Creek	375	375	375
	West Virginia:				
1175	†Kanawha Valley Power Co	Kanawha River	9,420	42,900	42,900
1290	----do	-----do	5,324	27,550	27,550
	Wisconsin:				
108	*Northern States Power Co	Chippewa River	16,824	(1)	(1)
710	*†Wisconsin Power & Light Co	Wolf River	540	900	900
1510	†City of Kaukauna	Fox River	2,360	----------	8,000
	Wyoming:				
1198	*Jackson Hole Light & Power Co	Flat Creek	141	350	350
	Alaska:				
201	*Town of Petersburg	Crystal Lake	1,000	1,240	1,240
350	*Anchorage Light & Power Co., Inc.	Eklutna River	800	3,000	3,000
408	*Sitka Wharf & Power Co., Inc	Medvetcha River	430	430	430
420	*City of Ketchikan	Ketchikan Creek and Lakes	900	3,800	3,800
917	*Portland Canal Power Co	Davis River	6,900	----------	50,000
951	*Chichagoff Mining Co	Rust Lake and outlet	624	1,180	1,180
1101	*Prince William Sound Water-Power, Light & Telephone Co.	Solomon Gulch	334	427	427
1144	*S. M. Graff	Lowell Creek	186	700	700
1426	*Buchan & Heinen Packing Co	Upper and Lower Lakes	170	192	300
1432	*Kadiak Fisheries Co	Tributary to Dry Spruce Bay.	146	146	146
1502	*Vincent Soboleff	Hidden Falls Lake	440	440	440
	Puerto Rico:				
663	*Porto Rico Railway Light & Power Co.	Blanco River and tributaries.	1,425	7,000	7,000
	Total		1,868,532	4,382,515	6,872,366

Basis for jurisdiction:
*Affects Government lands.
†Affects navigable waters.
[1] Reservoir only.

Projects under preliminary permit, June 30, 1940

Project No.	Permittee	Stream	Horsepower	
			Power capacity	Ultimate installation
	California:			
1386	*Sisson Gold Mining Co	North Yuba River tributaries and Pekoe Creek.	180	180
	Indiana:			
1442	†The Acme Engineering Service, Inc.	Salamonie River	1,600	2,000
	Alaska:			
1521	*Pelican Cold Storage Co	Lisianski Inlet	100	500
	Total		1,880	2,680

Basis for jurisdiction:
*Affects Government lands.
†Affects navigable waters.

PERMITS AND LICENSES ISSUED UNDER THE FEDERAL POWER ACT DURING THE FISCAL YEAR ENDED JUNE 30, 1940, THE PARTIES THERETO, AND THE SPECIAL TERMS PRESCRIBED

PRELIMINARY PERMITS

PROJECT NO. 1521—ALASKA

Preliminary permit issued July 22, 1939, for 2 years.

Permittee: Pelican Cold Storage Co., Juneau, Alaska.

Location of project: On an unnamed stream on the north shore of Lisianski Inlet on Chichagof Island, in the Tongass National Forest, Alaska.

Description of project: The project will consist of a diversion dam, a tunnel 200 feet long, a flume 650 feet long, a penstock 300 feet long, a power plant with installed capacity of about 500 horsepower operating under a static head of 120 feet, and an electric power line 2,500 feet long.

No special terms prescribed.

LICENSES FOR MAJOR PROJECTS

PROJECT NO. 1373—UTAH

License issued October 2, 1939, for 50 years.

Licensee: Utah Power & Light Co., Salt Lake City, Utah.

Location of project: On South Willow Creek, in the Wasatch National Forest, Tooele County, Utah.

Description of project: The project, which is constructed, consists of a small diversion dam, a short flume, a water conduit approximately 4 miles long, leading to a powerhouse containing two 200-kilowatt generating units and having an installed capacity of approximately 550 horsepower. The static head is 1,118 feet.

No special terms prescribed.

Annual charges: 1 cent per horsepower on 550 horsepower installed capacity, plus 2½ cents per thousand kilowatt-hours of energy generated by the project during the preceding fiscal year ended June 30, plus $387.60 for the use of lands of the United States.

PROJECT NO. 1388—CALIFORNIA

License issued August 25, 1939, for the period of 50 years beginning December 1, 1936.

Licensee: The Nevada-California Electric Corporation, Riverside, Calif.

Location of project: On Leevining Creek, in the Mono National Forest, Mono County, Calif.

Description of project: The project, which is constructed, consists of the Saddlebag, Tioga, and Rhinedollar dams and reservoirs, of 11,138, 1,386, and 745 acre-feet storage capacity, respectively; the Poole or Leevining Creek No. 1 powerhouse

with installed capacity of 14,000 horsepower; and a conduit extending from the Rhinedollar Reservoir to the powerhouse, together with a low voltage transmission line, a telephone line, and other appurtenances used in operating the project. The static head is 1,674 feet.

Special terms prescribed: The licensee shall permit such development of the reservoir and streams within the project area by the Forest Service for recreational purposes as will not be inconsistent with their use by the licensee for power purposes pursuant to the license.

Annual charges: 1 cent per horsepower on 14,000 horsepower installed capacity plus 2½ cents per thousand kilowatt-hours of energy generated by the project during the preceding fiscal year ended June 30, plus $2,600 for use of lands of the United States.

PROJECT NO. 1390—CALIFORNIA

License issued October 2, 1939, for the period of 50 years beginning December 1, 1936.

Licensee: The Nevada-California Electric Corporation, Riverside, Calif.

Location of project: On Mill Creek, in the Mono National Forest, Mono County, Calif.

Description of project: The project, which is constructed, consists of the Lundy Dam and Reservoir of 3,820 acre-feet storage capacity, the Mill Creek powerhouse with an installed capacity of 4,020 horsepower, a return ditch extending from the powerhouse to Mill Creek, a conduit partly of 48-inch wood stave and partly of 36-inch to 30-inch steel pipe line extending from the Lundy Dam to the powerhouse, and a 55,000-volt transmission line and a telephone line extending from the Mill Creek powerhouse to the Leevining Creek No. 3 powerhouse. The average static head is 766.7 feet.

Special terms prescribed: The licensee shall permit such development of the reservoir and stream within the project area by the Forest Service for recreational purposes as will not interfere with their use by the licensee for power purposes pursuant to this license.

Annual charges: 1 cent per horsepower on 4,020 horsepower installed capacity, plus 2½ cents per thousand kilowatt-hours of energy generated by the project during the preceding fiscal year ended June 30, plus $125.67 for use of lands of the United States.

PROJECT NO. 1494—OKLAHOMA

License issued July 26, 1939, for the period of 50 years beginning January 1, 1939.

Licensee: Grand River Dam Authority, Vinita, Okla.

Location of project: On Grand River, in Mayes, Craig, Delaware, and Ottawa Counties, Okla., and McDonald County, Mo.

Description of project: The project consists of a dam approximately 147 feet in height and 5,595 feet long, located on Grand River about 5 miles northeasterly from the town of Pensacola, consisting of a reinforced concrete, multiple-arch, nonoverflow section 4,284 feet long, a concrete gravity spillway section 861 feet long with crest gates of the Taintor type, and a concrete gravity, nonoverflow section 451 feet long; an auxiliary spillway located about 1 mile east of the main dam, consisting of two detached gravity concrete sections about 800 feet in total length, also surmounted by Taintor gates; a reservoir extending approximately 55 miles upstream from the dam, with storage capacity of 1,680,000 acre-feet at elevation 745 feet above mean sea level, which is the maximum power pool level, and with pro-

vision for flood-control storage to elevation 755, at which level the total storage capacity will be about 2,200,000 acre-feet; a powerhouse located immediately below the dam with initital installation of 60,000 kilowatts in four units and with provision for the installation of two additional similar units; and transmission lines to available markets in the general vicinity of the project.

Special terms prescribed

Relating to construction: (*a*) The licensee shall construct such extensions to the aprons below the spillway sections of the dam, or provide such other works for the protection of the spillways, as the Commission, on the basis of project operation experience, shall determine to be necessary or desirable. (*b*) Subject to the provisions of section 13 of the act, the licensee shall commence the construction of the project on or before April 1, 1939, and shall complete the same on or before December 31, 1940, including the initial installation of four 15,000-kilowatt generating units, and, consistent with the purposes of the project, shall thereafter install two additional units of approximately the same capacity at such time or times as the Commission may direct so as to supply adequately the reasonable market demands for power. (*c*) The licensee shall clear and keep clear the bottom and margins of the reservoir between elevations 745 and 699 feet above mean sea level and shall remove the tops of brush and trees growing at a lower elevation so that they shall not extend above said elevation 699.

Relating to operation: (*a*) The licensee is authorized to operate the reservoir in such manner as to utilize storage space below elevation 745 for power production purposes except during periods when the reservoir is being operated for the control of floods. The storage capacity between elevations 745 and 755 shall be expressly reserved for the control of floods. The licensee shall impound flood waters in the storage space between elevations 745 and 755, and release flood waters therefrom, when, as, and in the manner directed by the Secretary of War or his authorized representative: *Provided*, That the licensee shall not be required to impound water above elevation 750 until the United States has acquired the necessary flowage rights above that elevation. (*b*) Subject to the foregoing provision, the operation of the project by the licensee, so far as such operations may affect the use, storage, and discharge from storage, of waters, shall at all times be subject to control of the Secretary of War under such rules and regulations as he may prescribe in the interests of navigation and flood control, and subject to the control of the Commission under such rules and regulations as it may prescribe for the safety of the dam and for the protection of life, health, and property. (*c*) In the interest of public health, the licensee shall control mosquito propagation in the reservoir by distribution of oil or diluted paris green, or by other effective method, at such times and in such manner as may be directed by the Commission or by the State Commissioner of Public Health of Oklahoma, and shall at all times be subject to the lawful jurisdiction of said commissioner of public health.

Other special terms: (*a*) Subject to the approval by the Commission the licensee shall complete exhibits J, K, L, and M with respect to the location, design, and description of transmission lines in accordance with the rules and regulations of the Commission, and file the same with the Commission when and as the licensee determines upon the location and design of said lines. The licensee shall not commence construction of any transmission lines until the plans therefor have been approved by the Commission. (*b*) The licensee shall acquire all necessary lands, easements, and rights-of-way up to elevation 750; and shall raise all railroads affected by the project to such elevation above elevation 755 as may be necessary to provide for operation of the railroads when the reservoir is raised to elevation 755.

Annual charges: 1 cent per horsepower on 120,000 horsepower plus 2½ cents per thousand kilowatt-hours of energy generated by the project during the preceding fiscal year ended June 30, all such charges being subject to those provisions of the Federal Power Act relating to exemption from payment by a municipality selling power from a licensed project to the public without profit or using such power for municipal purposes.

PROJECT NO. 1502—ALASKA

License issued April 1, 1940, for the period of 10 years beginning March 16, 1938.

Licensee: Vincent Soboleff, Angoon, Alaska, trustee for Hidden Falls Lumber Mills, Hidden Falls, Alaska.

Location of project: On an unnamed stream which flows into Kasnyka Bay, Baranoff Island, in the Tongass National Forest, Alaska.

Description of project: The project, which is constructed, consists of a low masonry dam, a flume 122 feet long, a penstock, and two pipe lines from the penstock to four water wheels at the Hidden Falls Lumber Mills. The static head is 172 feet and the installed capacity is 440 horsepower. The energy generated is used for sawmill purposes.

Special terms prescribed: In the event a license for a more complete development of the stream on which the project is located is granted to another licensee, the licensee herein agrees to surrender this license at such time as the licensee for such development guarantees to furnish the licensee herein, free of charge, for the remaining period of the license, 440 continuous electrical horsepower or such part thereof and at such time as may be needed.

Annual charges: $60.

PROJECT NO. 1514—CALIFORNIA

License issued February 1, 1940, for 20 years.

Licensee: The Calso Co., San Francisco, Calif.

Location of project: On Canyon Creek, in the Trinity National Forest, Trinity County, Calif.

Description of project: The project, which is constructed, consists of a rock-filled, log-crib diversion dam; a timber flume 7,946 feet long; an 18-inch steel penstock 917 feet long; a powerhouse with an installed capacity of 150 horsepower; and a transmission line 3.128 miles long. The static head is 325 feet. The energy generated is used for mining and milling purposes.

Special terms prescribed: (*a*) The licensee shall begin rehabilitation of the project on or before August 1, 1940, and shall complete the same on or before August 1, 1941. (*b*) The licensee shall provide such fish protection as the Secretary of Commerce may deem necessary.

Annual charges: $63.67.

PROJECT NO. 1534—MONTANA

License issued April 1, 1940, for 50 years.

Licensee: Colorado-Montana Mines Association, Helena, Mont.

Location of project: On Belle Creek, in the Deerlodge National Forest, Madison County, Mont.

Description of project: The project consists of a concrete diversion dam, a 3- by 2-foot timber flume about 1,600 feet long, a 20-inch steel penstock 365 feet long,

a powerhouse with installed capacity of about 200 horsepower, and two 2,300-volt transmission lines having a total length of approximately 0.86 mile. The static head is 168 feet. The energy generated is used for mining purposes.

Special terms prescribed: (*a*) The licensee shall construct a small fish ladder at the diversion dam and install proper parallel bar screens at the power intakes. (*b*) The licensee shall begin the construction of the project works on or before April 1, 1941, and shall complete the same on or before April 1, 1942.

Annual charges: $25.68.

LICENSES FOR MINOR PROJECTS

Project No. 891—Oregon

License issued March 12, 1940, for the period of 10 years beginning June 19, 1938.

Licensee: Henry L. Corbett, Portland, Oreg.

Location of project: On Jack Creek, in the Deschutes National Forest, Jefferson County, Oreg.

Description of project: The project, which is constructed, consists of a rock and log type diversion dam, a ditch about 1,647 feet long, a vertical concrete penstock, and a small powerhouse. The static head is 14 feet and the installed capacity is 12 horsepower. The energy generated is used for demestic purposes at the summer home of the licensee.

No special terms prescribed.

Annual charges: $10.

Project No. 945—Oregon

License issued October 14, 1939, for the period of 10 years beginning July 18, 1939.

Licensee: Vincent Rafferty, Government Camp, Oreg.

Location of project: On Camp Creek, in the Mount Hood National Forest Clackamas County, Oreg.

Description of project: The project, which is constructed, consists of a small diversion dam built of logs, planks, and debris; a wooden flume 1,842 feet long; a pipe line 2,000 feet long; and a powerhouse in the basement of Government Camp Hotel. The power capacity is approximately 5 horsepower. The energy generated is used for domestic lighting purposes.

No special terms prescribed.

Annual charges: $10.

Project No. 947—California

License issued May 20, 1940, for the period of 10 years beginning July 16, 1939.

Licensee: Wirt Lane, Crescent City, Calif.

Location of project: On an unnamed tributary of Smith River, in the Siskiyou National Forest, Del Norte County, Calif.

Description of project: The project, which is constructed, consists of a small diversion dam; a flume, ditch, and pipe line aggregating approximately 1,780 feet; and a small frame powerhouse with installed capacity of 3 horsepower. The static head is 76 feet. The energy generated is used in connection with an automobile camp.

No special terms prescribed.

Annual charges: $10.

PROJECT NO. 950—MONTANA

License issued August 4, 1939, for the period of 20 years beginning February 1, 1939.

Licensee: Thomas Dunbar, Woodside, Mont.

Location of project: On Little Blackfoot River, in the Helena National Forest, Powell County, Mont.

Description of project: The project, which is constructed, consists of a small diversion dam; a flume and ditch 1,277 feet long; and a frame powerhouse 20 by 20 feet. The static head is about 24 feet and the power capacity is approximately 11½ horsepower. The energy generated is used in connection with mining operations.

Special terms prescribed: The licensee shall install and maintain in working condition a parallel bar screen with open spaces not greater than three-eighths of an inch, either at the entrance to the diversion ditch or at the intake of the power plant.

Annual charges: $10.

PROJECT NO. 955—OREGON

License issued February 17, 1940, for the period of 10 years beginning May 27, 1939.

Licensee: Diamond Lake Improvement Co., Inc., Medford, Oreg.

Location of project: On Lake Creek in the vicinity of Diamond Lake, in the Umpqua National Forest, Douglas County, Oreg.

Description of project: The project, which is constructed, consists of a small diversion dam; a 26-inch pipe line about 55 feet long; a powerhouse 16 by 24 feet containing a turbine and a 30-kilowatt generator; and a transmission line about 9,063 feet long. The static head is 20 feet and the installed capacity is 40 horsepower. The energy generated is used for lighting and general purposes at a nearby recreational development.

Special terms precribed: (*a*) The licensee shall install any screens required under the State law for fish protection. (*b*) If not already accomplished, the licensee shall construct at its own expense a flume or conduit to convey 3 cubic feet per second of water from a point in Lake Creek above the licensee's diversion dam to the intake of the existing flume serving the hatchery of the Oregon State Game Commission in such a manner as will provide for a constant and uninterrupted supply of water for the hatchery, the location and construction of the flume or conduit being subject to the approval of the Game Commission. (*c*) The Commission reserves the right, power, and authority to issue a license for the construction, operation, and maintenance of a hydroelectric project which will more completely utilize the water resources of the drainage area in which the project is located. (*d*) The acceptance of the license by the licensee constitutes its stipulation, consent, and agreement for the benefit of the United States or the person or persons hereafter constructing, operating, and maintaining such more complete hydroelectric project, that the licensee shall not be entitled to any compensation for damages sustained by reason of inundation or destruction of the project or project works, provided the licensee shall be entitled to receive from such more complete hydroelectric development an amount of electric energy equal to that generated by this project before surrender of the license at rates to be fixed by a duly constituted authority.

Annual charges: $10.

PROJECT NO. 975—CALIFORNIA

License issued January 12, 1940, for the period of 10 years beginning July 8, 1939.

Licensee: Albert J. Rupley, Placerville, Calif.

Location of project: On Fresh Pond Creek, a tributary of South Fork American River, in the Eldorado National Forest, Eldorado County, Calif.

Description of project: The project, which is constructed, consists of a concrete diversion dam; an iron pipe 483 feet long; a wood-frame powerhouse 10 by 12 feet with installed capacity of 3 horsepower; and a transmission line 483 feet long. The static head is 161 feet. The energy generated is used for domestic lighting purposes.

Special terms prescribed: The licensee shall install any screens required under State law for the protection of fish.

Annual charges: $10.

PROJECT NO. 1080—OHIO

License issued August 12, 1939, for the period beginning May 2, 1939, and terminating May 1, 1940.

Licensee: The Hook-Aston Milling Co., Zanesville, Ohio.

Location of project: At United States Dam No. 10 on Muskingum River, Muskingum County, Ohio.

Description of project: The project, which has been constructed for many years, consists of intake works and a flour mill operated by two 39-inch Victor turbines located on lands of the United States adjacent to Dam No. 10. The turbines have a capacity of 206 second-feet at 12.5 feet head, which is equivalent to about 234 horsepower. The land and the right to use the water were at one time leased from the War Department under authority of an act approved August 11, 1888. The operation of the project is seasonal, and it is used about 10 hours daily.

Special terms prescribed: This annual license is the fifth issued since the expiration of the original license on May 1, 1935, and is issued under the terms and conditions of the original license, exclusive of the period thereof. The special terms prescribed in the original license are given on page 184 of the eleventh annual report.

PROJECT NO. 1087—OHIO

License issued August 24, 1939, for a period beginning May 2, 1939, and terminating May 1, 1940.

Licensee: Rechsteiner Milling Co., Lowell, Ohio.

Location of project: In the vicinity of United States Dam No. 3 at Lowell on Muskingum River, Washington County, Ohio.

Description of project: The project works consist of a wooden culvert fitted with two wooden head gates, an unlined earth ditch about 140 feet long, a short wooden flume, and two obsolete water wheels in a flour mill, and a short tailrace. Water is drawn from a canal used to pass navigation between the pool above the dam and the lock located about 1 mile downstream. The points of diversion from the canal and discharge into the river are located about 400 feet upstream from the lock. The wheels are rated, respectively, at 79.56 horsepower at 10-foot head and 53 horsepower at 11-foot head. The license authorizes the use of a strip of Government land along the canal and 125 second-feet of water therefrom. These privileges were enjoyed by the licensee under a lease granted by the War Department under authority given by an act approved August 11, 1888.

Special terms prescribed: This annual license is the fifth issued by the Commission since the expiration of the original license on May 1, 1935, and is issued subject to sections 8 and 26 of the Federal Power Act and to all the terms and conditions of the original license, exclusive of the period thereof. The special terms of the original license are given on page 185 of the eleventh annual report.

PROJECT NO. 1492—OREGON

License issued December 21, 1939, for 10 years.

Licensee: Scott C. Young, Detroit, Oreg.

Location of project: On an unnamed creek tributary to the Marion Fork of the North Santiam River, in the Willamette National Forest, Linn County, Oreg.

Description of project: The project consists of a small timber diversion dam, a 12-inch wood-stave pipe line 1,855 feet long, and a powerhouse with installed capacity of 16.8 horsepower. The gross static head is 50 feet. The energy generated will be used for lighting and power purposes at the commercial resort of the licensee.

Special terms prescribed: The licensee shall begin the construction of the project works on or before December 21, 1940, and shall complete the same on or before December 21, 1941.

Annual charges: $10.

PROJECT NO. 1516—NEW MEXICO

License issued June 7, 1940, for 20 years.

Licensee: George Dewey Rogers, Embudo, N. Mex.

Location of project: On Embudo River, in Rio Arriba County, N. Mex.

Description of project: The project consists of a low concrete diversion dam, a 22-inch pipe line 892 feet long, and a powerhouse with installed capacity of approximately 20 horsepower. The energy generated will be used for domestic purposes and in connection with licensee's fishponds and tourist court.

Special terms prescribed: The licensee shall begin construction of the project works on or before December 7, 1940, and shall complete the same on or before June 7, 1941.

Annual charges: $10.

PROJECT NO. 1527—CALIFORNIA

License issued February 6, 1940, for 10 years.

Licensee: Luke Williams, Grass Valley, Calif.

Location of project: On Deer Creek, in Nevada County, Calif.

Descripton of project: The project consists of a concrete diversion dam about 15 feet high, a ditch about 2,700 feet long, a number of sections of flume, a frame powerhouse with installed capacity of 10 horsepower, and a short transmission line about 130 feet long. The energy generated will be used for mining purposes.

Special terms prescribed: The licensee shall begin construction of the project works on or before August 6, 1940, and shall complete the same on or before February 6, 1943.

Annual charges: $10.

PROJECT NO. 1541—OREGON

License issued August 2, 1939, for the period of 10 years beginning October 1, 1937.

Licensee: Mrs. Ernestine Aufdermauer, Hebo, Oreg.

Location of project: On Buck Creek, a tributary of Alder Creek, in the Siuslaw National Forest, Tillamook County, Oreg.

Description of project: The project, which is constructed, consists of a small rock and timber diversion dam, an open timber flume about 1,500 feet long, an 8-inch steel penstock about 70 feet long, a frame powerhouse with about 5 horsepower installed capacity, and a transmission line about 200 feet long. The static head is 51 feet. The energy generated is used for domestic purposes on the licensee's ranch.

No special terms prescribed.

PROJECT NO. 1549—OREGON

Licnese issued May 20, 1940, for 10 years.

Licensee: Larry Lucas, Agness, Oreg.

Location of project: On Smith Creek, in Curry County, Oreg.

Description of project: The project consists of a low concrete and timber diversion dam, a timber flume, a ditch, a 4-inch steel penstock, a frame powerhouse with installed capacity of about 4 horsepower, and about 0.276 mile of transmission line. The static head is 258 feet. The energy generated will be used to supply a hotel and other buildings owned by the licensee.

Special terms prescribed: The licensee shall begin the construction of the project on or before November 20, 1940, and shall complete the same on or before May 20, 1942.

Annual charges: $10.

PROJECT NO. 1585—OREGON

License issued February 29, 1940, for 10 years.

Licensee: Cal-Ore Mining and Development Co., Grants Pass, Oreg.

Location of project: On South Fork of Galice Creek, a tributary of the Rogue River, in the Siskiyou National Forest, Josephine County, Oreg.

Description of project: The project, which is constructed, consists of a log-crib, rock-filled diversion dam, a water conduit constructed and used primarily for placer mining purposes, a short section of 6-inch pipe line tapping the conduit, a frame powerhouse with installed capacity of 5 horsepower, and a transmission line 4,033 feet long. The gross static head is 140 feet. The energy generated is used for lighting and incidental purposes.

No special terms prescribed.

Annual charges: $5.

LICENSES FOR MINOR-PART PROJECTS AND TRANSMISSION LINES

Transmission lines are considered "minor-part projects" and deemed to be subject to the waiver of conditions authorized by subsection (i) of section 10 of the Federal Power Act.

PROJECT NO. 519—COLORADO

License issued April 4, 1940, for the period of 10 years beginning October 5, 1939.

Licensee: Public Service Co. of Colorado, Denver, Colo.

Location of project: In Gilpin and Grand Counties, Colo.

Description of project: A 44,000-volt, 3-phase transmission line extending from the east portal of Moffat Tunnel in sec. 2, T. 2 S., R. 74 W., sixth principal meridian to the west portal located in unsurveyed land in T. 2 S., R. 75 W. The line crosses public lands of the United States and lands within the Arapaho and Roosevelt National Forests for a distance of 4.60 miles. The right-of-way is 100 feet wide.

No special terms prescribed.

Annual charges: $41.80.

PROJECT NO. 1005—COLORADO

License issued August 14, 1939, for 40 years.

Licensee: Public Service Co. of Colorado, Denver, Colo.

Location of project: In Boulder County, Colo.

Description of project: The project, which is constructed, consists of Jasper Lake; the flowage therefrom through Jasper and Middle Boulder Creeks to Barker Reservoir, 10 miles away; a 36-inch gravity pipe line 61,837 feet long connecting Barker Reservoir with Kessler Reservoir; Kessler Reservoir; and a pressure pipe line 9,563 feet long leading from Kessler Reservoir to the powerhouse which is located on Middle Boulder Creek about 3 miles west of the city of Boulder. The gravity pipe line crosses lands of the United States within the Roosevelt National Forest for a distance of 1,881.5 feet, and the right-of-way is 60 feet wide.

No special terms prescribed.

Annual charges: $36.10.

PROJECT NO. 1236—COLORADO

License issued May 28, 1940, for 20 years.

Licensee: B. E. Grimes, Irving Grimes, and Ben Grimes, Denver, Colo.

Location of project: In San Miguel County, Colo.

Description of project: A 10,000-volt transmission line crossing lands within secs. 8, 9, 16, 17, 20, 21, and 29, T. 42 N., R. 8 W., New Mexico principal meridian, and consisting of three branches identified as (1) Upper Blue Lake power line, approximately 2.058 miles long; (2) Lower Blue Lake power line, approximately 2.012 miles long; and (3) Lewis power line, approximately 1.473 miles long. The lines cross lands of the United States within the Montezuma National Forest for a distance of 4.077 miles, and the right-of-way is 100 feet wide.

No special terms prescribed.

Annual charges: $37.62.

PROJECT NO. 1397—CALIFORNIA

License issued August 24, 1939, for the period of 50 years beginning December 1, 1936.

Licensee: The Nevada-California Electric Corporation, Riverside, Calif.

Location of project: In San Bernardino, Riverside, and Imperial Counties, Calif.

Description of project: An 88,000-volt, 3-phase, 60-cycle transmission line and appurtenant operating telephone line extending from the city of San Bernardino to the city of El Centro, Calif., and thence to a substation on the Colorado River near the city of Yuma, Ariz., a total distance of 224.93 miles. The line crosses public lands of the United States and tribal Indian lands in the Agua Caliente, Toro, and Yuma Reservations for a distance of 54.016 miles. The right-of-way is 50 feet wide.

Special terms prescribed: (*a*) There is reserved to the United States the prior right, as against the licensee, to use any part or all of the unentered public or reserved lands of the United States occupied by the project as may be required for the construction, operation, or maintenance of canals and ditches constructed under authority of the United States. (*b*) Whenever such construction, operation, or maintenance may require, the licensee shall, upon 30 days' written notice from the Secretary of the Interior or his duly authorized representative, move or change, at its own expense, the location of its project facilities to such new location as will not, in the opinion of the Secretary of the Interior, interfere with such construction, operation, or maintenance.

Annual charges: $221.06.

PROJECT NO. 1431—MONTANA

License issued November 1, 1939, for 20 years.

Licensee: Victoria Mines, Inc., Silver Star, Mont.

Location of project: In Madison County, Mont.

Description of project: A 50,000-volt transmission line connecting with the transmission line (project No. 1495) of The Montana Power Co. at a point in the NE¼NW¼ sec. 12, T. 2 S., R. 6 W., principal meridian, and extending for 1.369 miles in a general northwesterly direction to the Broadway Mines, situated in the SW¼NW¼ sec. 2. The line crosses public lands of the United States for a distance of 0.903 mile, and the right-of-way is 20 feet wide.

No special terms prescribed.

Annual charges: $10.

PROJECT NO. 1434—OREGON

License issued October 27, 1939, for the period of 25 years beginning December 13, 1937.

Licensee: West Coast Power Co., Portland, Oreg.

Location of project: In Douglas County, Oreg.

Description of project: A 12,000-volt transmission line extending approximately 22 miles from Winchester Bay to Florence, Oreg. The line crosses lands of the United States within the Siuslaw National Forest for a distance of 11.94 miles, and the right-of-way is 20 feet wide.

No special terms prescribed.

Annual charges: $24.10.

PROJECT NO. 1441—MONTANA

License issued September 11, 1939, for the period of 20 years beginning May 28, 1937.

Licensee: The Montana Power Co., Butte, Mont.

Location of project: In Phillips County, Mont.

Description of project: Part of a 2,200-volt transmission line extending approximately 8.72 miles from the licensee's substation in Wagner in a southerly direction to a point located in sec. 22, T. 30 N., R. 28 E,. principal meridian, there dividing, one section running in a westerly direction to a point located in NW¼SE¼ sec. 13, T. 30 N., R. 27 E., and the other running in an easterly direction to a point located in the NW¼SE¼ sec. 24, T. 30 N., R. 28 E. The line crosses lands of the United States for a distance of 8.237 miles, and the right-of-way varies from 10 to 15 feet in width.

Special terms prescribed: (*a*) Title to any and all rights-of-way on, across, or over land subject to the provisions of the act of August 30, 1890 (26 Stat. 391),

shall be paramount and superior to title to any right-of-way on, across, or over such land acquired by the licensee, either from the United States or any private person, and in all cases of conflict between the right-of-way of the licensee and that reserved under the act of August 30, 1890 (26 Stat. 391), the licensee at its sole cost and expense shall vacate its right-of-way in favor of use by the United States of the right-of-way reserved under the act of August 30, 1890 (26 Stat. 391). (*b*) Licensee shall not place any poles or other structure of its transmission line on the right-of-way or lands occupied by any ditch, canal, or other structure of the Milk River Federal reclamation project in place on September 11, 1939, and this restriction shall apply to all such rights-of-way and lands of the United States in the Milk River Federal reclamation project, whether acquired under the act of August 30, 1890 (26 Stat. 391), or by conveyance from private persons. (*c*) The licensee may cross with its wires any part of the right-of-way or lands of the United States now or hereafter occupied by the irrigation works of the Milk River Federal reclamation project, provided that the licensee shall maintain a minimum wire clearance of 25 feet above the top of the bank at all canal crossings of said Milk River Federal reclamation project, whether such crossings are in place on September 11, 1939, or thereafter. (*d*) The lands in the Malta homesteads project used by the licensee for the purposes of the transmission line shall be subject to any easements, rights-of-way, mineral reservation, or other rights upon, over, across, and under said lands now outstanding in third persons. (*e*) The licensee shall furnish as a minimum a single-phase, 60-cycle, 115/230-volt service for electric light, power, and appliances, to individuals now located or hereafter residing on the Malta homesteads project area, at the rate prescribed by, and in compliance with, the rules and regulations of the Montana Public Service Commission with respect to such service.

Annual charge: $11.91.

PROJECT NO. 1450—CALIFORNIA

License issued October 19, 1939, for 25 years.

Licensee: Pacific Gas & Electric Co., San Francisco, Calif.

Location of project: In Plumas County, Calif.

Description of project: A 4,400-volt transmission line extending approximately 4,200 feet from the licensee's Quincy 44,000-volt transmission line in sec. 35, T. 25 N., R. 9 E., Mount Diablo base and meridian, to a point in SW¼SE¼ sec. 34, T. 25 N., R. 9 E. The line crosses lands of the United States within the Plumas National Forest for a distance of 2,407 feet, and the right-of-way is 30 feet wide.

Special terms prescribed: The transmission line shall not be utilized for the transmission of electric energy developed at the Hetch Hetchy project and disposed of in violation of section 6 of the Raker Act or any injunction in full force and effect restraining such disposition, and the licensee shall so operate the line as to prevent its utilization for the transmission of such electric energy.

Annual charges: $10.

PROJECT NO. 1496—CALIFORNIA

License issued July 28, 1939, for the period beginning June 20, 1939, and ending December 29, 1971.

Licensee: Mosquito District Mutual Water Co., Placerville, Calif.

Location of project: In the Eldorado National Forest, Eldorado County, Calif.

Description of project: The project, which is constructed, consists of the Finnon Reservoir with storage capacity of 600 acre-feet and the Summerfield ditch approximately 20.56 miles long. The project works are operated and main-

tained by the licensee for irrigation purposes and for the delivery of surplus water to the licensee for project No. 78 for the development of power. The Summerfield ditch occupies a right-of-way 50 feet wide and a total area of 71.9 acres of lands of the United States within the Eldorado National Forest.

Special terms prescribed: If not already installed, the licensee shall install, operate, and maintain a staff gage for the determination of the stage and the amount of water held in and withdrawn from the Finnon Reservoir.

Annual charges: $18.37.

PROJECT NO. 1511—ARKANSAS

License issued July 22, 1939, for the period of 10 years beginning August 26, 1938.

Licensee: Arkansas Power & Light Co., Pine Bluff, Ark.

Location of project: In Arkansas and Phillips Counties, Ark.

Description of project: A 13,000-volt, 3-phase, single-circuit transmission line extending from a point on the west boundary of the White River Migratory Waterfowl Refuge in the S½ sec. 16, T. 5 S., R. 1 W., fifth principal meridian, in a general easterly direction to a point on the east boundary of the refuge in the NE¼NE¼ sec. 24. The line crosses lands of the United States within the White River Migratory Waterfowl Refuge for a distance of 3.684 miles, and the right-of-way is 50 feet wide.

Special terms prescribed: (*a*) The use of the lands constituting the project area for the transmission of electrical energy shall at all times be in accordance with the act known as the Migratory Bird Conservation Act of February 18, 1929 (4 Stat. 1222), as amended, and the regulations of the Secretary of Agriculture pursuant thereto, and shall disturb as little as possible the wild life on the refuge, and the officer in charge of the White River Migratory Waterfowl Refuge is hereby authorized to require that every necessary precaution be taken to safeguard the wildlife thereon. (*b*) A vertical clearance of not less than 20 feet above the 1927 high-water level shall be provided where the transmission line crosses Essex Bayou in sec. 21, T. 5 S., R. 1 W., fifth principal meridian. (*c*) Under the supervision of the officer in charge of the White River Migratory Waterfowl Refuge, the licensee is authorized to clear and maintain a 50-foot right-of-way on lands of the United States constituting the project area, and to cut and remove therefrom all timber owned by the United States. The clearance herein granted shall apply to private land and private timber within the transmission line right-of-way upon acquisition of such lands and/or timber by the United States. (*d*) The licensee shall be obligated to furnish service, if available from the line licensed, at legal rates of charge to all requiring service for purposes similar to those for which the line was originally constructed.

Annual charges: $19.74.

PROJECT NO. 1515—OREGON

License issued September 22, 1939, for the period of 50 years beginning September 25, 1938.

Licensee: California Public Service Co., Portland, Oreg.

Location of project: In Lake County, Oreg.

Description of project: A 60,000-volt transmission line which connects with an extension (project No. 1136) of The California Oregon Power Co., and extends to the town of Lakeview and vicinity. The line crosses lands of the United States within the Fremont National Forest for a distance of 0.815 mile, and the right-of-way is 100 feet wide.

No special terms prescribed.

Annual charges: $11.52.

PROJECT NO. 1519—COLORADO

License issued October 13, 1939, for the period of 50 years beginning October 29, 1936.

Licensee: The Grand County Light, Heat & Power Co., Denver, Colo.

Location of project: In Grand County, Colo.

Description of project: (*a*) A 13,200-volt and 2,300-volt transmission line extending from a point on the boundary of the Arapaho National Forest in the NW¼NE¼ sec. 4, T. 2 S., R. 75 W., sixth principal meridian, in a general southeasterly direction to a point in the SE¼NE¼ sec. 10. (*b*) A 2,300-volt and 110/220-volt branch line extending from a point on the line described in (*a*) in the SW¼SE¼ sec. 3, to a number of houses located in NE¼NE¼ sec. 10. (*c*) A 13,200-volt and 2,300-volt transmission line extending from a point on the line described in (*a*) in the SW¼SE¼ sec. 3, in a general southwesterly direction to a point on the same line in SE¼NE¼ sec. 10. The line crosses lands of the United States within the Arapaho National Forest for a distance of 1.53 miles, and the right-of-way is 25 feet wide.

No special terms prescribed.

Annual charges: $10.

PROJECT NO. 1529—ARKANSAS

License issued July 20, 1939, for 20 years.

Licensee: Southwestern Gas & Electric Co., Shreveport, La.

Location of project: In Washington and Crawford Counties, Ark.

Description of project: A 66,000-volt transmission line extending 37.2 miles from licensee's substation in Fayetteville, Ark., in a southwesterly direction toward Van Buren, Ark., and terminating at a point 9 miles northesast of the northwest section of the town of Van Buren. The line crosses lands of the United States acquired by the Soil Conservation Service, Department of Agriculture, for a distance of 3.843 miles, and the right-of-way is 100 feet wide.

No special terms prescribed.

Annual charges: $35.74.

PROJECT NO. 1535—ARIZONA

License issued February 10, 1940, for 20 years.

Licensee: The Arizona Power Corporation, Prescott, Ariz.

Location of project: In Yavapai County, Ariz.

Description of project: An 11,000-volt, 3-phase, single-circuit transmission line extending 0.904 mile from a point on the existing transmission line (project No. 1405) of the city of Phoenix, Ariz., in a general southwesterly direction to a point in sec. 34, T. 10 N., R. 1 W., Gila and Salt River meridian. The line crosses lands of the United States within the Prescott National Forest for a distance of 0.632 mile, and the right-of-way is 50 feet wide.

Special terms prescribed: The licensee shall permit the Forest Service to make connections with the line for distributing electricity to any buildings or camps near the line within the Prescott National Forest.

Annual charges: $10.

PROJECT NO. 1544—CALIFORNIA

License issued May 24, 1940, for 20 years.

Licensee: Pacific Gas & Electric Co., San Francisco, Calif.

Location of project: In Shasta County, Calif.

Description of project: An 11,000-volt transmission line extending from an existing transmission line owned by licensee in sec. 25, T. 32 N., R. 5 W., Mount Diablo base and meridian, to the town of Buckeye, a tap line to parcel No. 3, in section 11, and a tap line in section 14. The lines occupy public lands of the United States for a distance of 0.044 mile and 0.992 mile, and the rights-of-way are 30.2 feet and 40 feet wide, respectively.

Special terms prescribed: The transmission line shall not be utilized for the transmission of electric energy developed by the Hetch Hetchy project and disposed of in violation of section 6 of the Raker Act or any injunction in full force and effect restraining such disposition, and the licensee shall so operate the line as to prevent its utilization for the transmission of such electric energy.

Annual charges: $10.

PROJECT NO. 1550—CALIFORNIA

License issued May 24, 1940, for 25 years.

Licensee: Pacific Gas & Electric Co., San Francisco, Calif.

Location of project: In Tuolumne County, Calif.

Description of project: A 17,000-volt transmission line extending 6.43 miles from Spring Gap forebay in sec. 27, T. 4 N., R. 17 E., Mount Diablo base and meridian, to the recreational area of the Stanislaus National Forest at Pinecrest in sec. 21, T. 4 N., R. 18 E. The line crosses lands of the United States within the Stanislaus National Forest for a distance of 3.90 miles, and the right-of-way is 60 feet wide.

Special terms prescribed: The transmission line shall not be utilized for the transmission of electric energy developed at the Hetch Hetchy project and disposed of in violation of section 6 of the Raker Act or any injunction in full force and effect restraining such disposition, and the licensee shall so operate the line as to prevent its utilization for the transmission of such electric energy.

Annual charges: $23.72.

PROJECT NO. 1552—NEVADA

License issued March 12, 1940, for the period of 50 years beginning November 16, 1938.

Licensee: Sierra Pacific Power Co., Reno, Nev.

Location of project: In Pershing County, Nev.

Description of project: A 6,600-volt, 3-phase, single-circuit transmission line extending from the Oreana substation in sec. 33, T. 29 N., R. 33 E., Mount Diablo base and meridian, in a general northerly direction to a point in section 3. The line crosses public lands of the United States for a distance of 2.8 miles, and the right-of-way is 20 feet wide.

No special terms prescribed.

Annual charges: $10.

PROJECT NO. 1553—COLORADO

License issued June 28, 1940, for 10 years.

Licensee: New Jersey Zinc Co., Gilman, Colo.

Location of project: In Eagle County, Colo.

Description of project: The project, which is constructed, consists of a short ditch diverting water from Fall Creek, an intake box, a 16-inch and 15-inch pipe line about 2,885 feet long, and a powerhouse with installed capacity of 484 horse-

power operating under a head of 619 feet. The diversion ditch, the intake box, and the pipe line cross lands of the United States within the Holy Cross National Forest for a distance of 2,746 feet, and the right-of-way is 50 feet wide.

No special terms prescribed.

Annual charges: $10.

PROJECT NO. 1575—MONTANA

License issued May 21, 1940, for 50 years.

Licensee: Liberty Metals Co., Troy, Mont.

Location of project: In Lincoln County, Mont.

Description of project: A transmission line system consisting of a 6,600-volt 3-phase, single-circuit line extending from the existing line (project No. 574) of the Montana Light & Power Co., in NW¼NW¼ sec. 11, T. 30 N., R. 34 W., principal meridian, to a compressor house in NE¼NE¼ sec. 10, to a Diesel electric generating plant in SE¼NW¼ sec. 35, T. 31 N., R. 34 W., to a lodge in the NW¼ sec. 35; and a short line extending from the Diesel electric generating plant to a pumping plant in the NW¼NE¼ sec. 35. The line crosses lands of the United States within the Kootenai National Forest for a distance of 1.268 miles, and the right-of-way is 100 feet wide.

No special terms prescribed.

Annual charges: $15.14.

PROJECT NO. 1580—MICHIGAN

License issued May 21, 1940, for 10 years.

Licensee: Wisconsin Michigan Power Co., Appleton, Wis.

Location of project: In Schoolcraft County, Mich.

Description of project: A 13,800-volt, 3-phase transmission line energized at a connection with the 66,000-volt transmission line of the Cliffs Power & Light Co., in Doyle Township, which provides energy for use in Thompson, Gardner, and Inwood Townships. The line crosses lands of the United States within the Hiawatha National Forest for an aggregate distance of 0.67 mile. The right-of-way is 33 feet wide.

No special terms prescribed.

Annual charges: $10.

PROJECT NO. 1582—CALIFORNIA

License issued August 15, 1939, for the period of 50 years beginning November 1, 1938.

Licensee: The Nevada-California Electric Corporation, Riverside, Calif.

Location of project: In Mono County, Calif.

Description of project: A 6,600-volt, 3-phase, 60-cycle transmission line extending a distance of 2.14 miles from a connection with an existing line at the Mono substation near the southeast corner of lot 6, sec. 30, T. 2 N., R. 26 E., Mount Diablo base and meridian, southwesterly to the Log Cabin Mine in sec. 1, T. 1 N., R. 25 E. The line crosses lands of the United States within the Mono National Forest for a distance of 1.870 miles, and the right-of-way is 50 feet wide.

No special terms prescribed.

Annual charges: $12.48.

PROJECT NO. 1621—CALIFORNIA

License issued June 28, 1940, for the period of 20 years beginning July 25, 1939.

Licensee: Pacific Gas & Electric Co., San Francisco, Calif.

Location of project: In Shasta County, Calif.

Description of project: An 11,000-volt transmission line extending about 3.5 miles from an existing 11,000-volt line in sec. 3, T. 32 N., R. 7 W., Mount Diablo base and meridian, to the Greenhorn Mine located in sec. 31, T. 33 N., R. 7 W. The line crosses public lands of the United States for a distance of 1.183 miles, and the right-of-way is 25 feet wide.

Special terms prescribed: The transmission line shall not be utilized for the transmission of electric energy developed at the Hetch Hetchy project and disposed of in violation of section 6 of the Raker Act or any injunction in full force and effect restraining such disposition, and the licensee shall so operate the line as to prevent its utilization for the transmission of such electric energy.

Annual charges: $10.

PROJECT NO. 1646—CALIFORNIA

License issued May 25, 1940, for 10 years.

Licensee: Pacific Gas & Electric Co., San Francisco, Calif.

Location of project: In Butte County, Calif.

Description of project: An 11,000-volt, single-phase transmission line extending from the licensee's interconnected primary transmission system at Las Plumas, Calif., in sec. 14, T. 21 N., R. 4 E., Mount Diablo base and meridian, to the Brush Creek ranger station of the United States Forest Service, in sec. 7, T. 21 N., R. 6 E. The line crosses public lands of the United States and lands within the Plumas National Forest for a distance of 2.68 miles, and the right-of-way is 30 feet wide.

Special terms prescribed: The licensee shall maintain the transposition of circuits in a clockwise direction on the transmission line at points opposite the L/16 and L/S poles of the Forest Service telephone line.

Annual charges. $11. 43.

APPENDIX B

FINANCIAL STATEMENTS

TABLE NO. 1.—*Proceeds derived from licenses issued by authority of the Federal Power Act*

[Collected in the fiscal year ended June 30, 1940]

Project No.	Licensee	Amount received	For use of Indian lands	From public lands and national forests	From other sources (improvements of navigable waters)	Administrative fees
5	The Montana Power Co	$54,451.70	$54,400.00	$51.70		
13	Henry Ford & Son, Inc	5,910.00			$5,000.00	$910.00
16	The Niagara Falls Power Co	87,799.50				87,799.50
18	Idaho Power Co	1,949.42		339.28		1,610.14
20	Utah Power & Light Co	1,333.94		53.94		1,280.00
38	Portland General Electric Co. and Crown Zellerbach Corporation	250.00				250.00
67	Southern California Edison Co., Ltd	38,730.30		6,455.30		32,275.00
77	Pacific Gas & Electric Co	2,972.23		441.36		2,530.87
78	do	1,885.09		285.09		1,600.00
82	Alabama Power Co	5,545.00		105.00		5,440.00
87	Pacific Gas & Electric Co	45.15		45.15		
88	Merced Irrigation District	922.93		78.68		844.25
95	Emma Rose & Hobart Estate Co	146.70		39.00		107.70
96	San Joaquin Light & Power Corporation	5,620.28		1,220.28		4,400.00
99	Pacific Gas & Electric Co	354.33		281.33		73.00
108	Northern States Power Co	7,480.49	3,269.91	4.58		4,206.00
120	Southern California Edison Co., Ltd	12,900.89		3,469.39		9,431.50
135	Portland General Electric Co	14,102.45		3,752.45		10,350.00
137	Pacific Gas & Electric Co	11,630.12		2,580.87		9,049.25
144	Idaho Power Co	45.00	45.00			
150	Central Arizona Light & Power Co	231.00		231.00		
174	Southern California Edison Co., Ltd	56.90		51.90		5.00
176	Escondido Mutual Water Co	38.25		9.50		28.75
177	Florida Power Corporation	180.00			100.00	80.00
178	San Joaquin Light & Power Corporation	1,098.41		55.66		1,042.75
180	Pacific Gas & Electric Co	7.60		7.60		
181	do	6.60		6.60		
184	do	5,084.56		939.81		4,144.75
187	do	928.96		35.21		893.75
190	Uintah Power & Light Co	518.16	262.76	10.00		245.40
201	Town of Petersburg	430.00		180.00		250.00
204	The Washington Water Power Co	303.79		88.79		215.00
233	Pacific Gas & Electric Co	12,731.41		305.65		12,425.76
245	Wagner Assets Realization Corporation	86.60		86.60		
255	The Nevada-California Electric Corporation	57.75		57.75		
271	Arkansas Power & Light Co	5,503.05		3.05		5,500.00
281	The California Oregon Power Co	16.35		16.35		
282	Idaho Power Co	1,458.62		1,453.62		5.00
287	State of Illinois and North Counties Hydro-Electric Co	225.00				225.00
289	Louisville Gas & Electric Co	104,044.00			95,000.00	9,044.00
292	The California Oregon Power Co	8.00		8.00		
298	Southern California Edison Co., Ltd	170.00		170.00		
308	Inland Power & Light Co	271.45		53.95		217.50
309	The Clarion River Power Co	360.00				360.00
312	Molybdenum Corporation of America	220.00		165.00		55.00
321	Public Service Co. of Colorado	63.10		63.10		
325	The Nevada-California Electric Corporation	21.56	19.65	1.91		
326	do	5.00		5.00		
327	do	4.36		4.36		
329	Southern California Water Co	38.40		38.40		
335	Pacific Gas and Electric Co	18.03		18.03		
338	Nevada Irrigation District	270.00		270.00		
339	Puget Sound Power & Light Co	2.66		2.66		

TABLE NO. 1.—*Proceeds derived from licenses issued by authority of the Federal Power Act*—Continued

Project No.	Licensee	Amount received	For use of Indian lands	From public lands and national forests	From other sources (improvements of navigable waters)	Administrative fees
344	San Gorgonio Electric Corporation	$212.59		$62.84		$149.75
346	Minnesota Power & Light Co	1,116.00				1,116.00
349	Alabama Power Co	9,437.59		.09		9,437.50
350	Anchorage Light & Power Co., Inc	399.35		199.35		200.00
352	Idaho Power Co	3.15	$2.50	.65		
357	Bonner Lumber Co	2.28		2.28		
362	Ford Motor Co	97,252.50			$95,440.00	1,812.50
364	Idaho Power Co	44.45		44.45		
374	The Nevada-California Electric Corporation	3.55		3.55		
378	Beaver Gold Mining Co	12.08		12.08		
382	Southern California Edison Co., Ltd	1,303.89		351.64		952.25
386	Unity Gold Production Co	186.50		66.50		120.00
388	Pacific Gas & Electric Co	7.85		7.85		
390	Southern California Edison Co., Ltd	47.79		47.79		
393	San Diego Consolidated Gas & Electric Co	5.00		5.00		
400	The Western Colorado Power Co	1,968.85		343.85		1,625.00
401	Michigan Gas & Electric Co	157.50				157.50
405	The Susquehanna Power Co. and Philadelphia Electric Power Co	11,300.00				11,300.00
408	Sitka Wharf & Power Co., Inc	88.50		51.00		37.50
415	Southern Ohio Public Service Co	1,052.06			986.31	65.75
420	The City of Ketchikan, Alaska	289.28		80.67		208.61
421	The California Oregon Power Co	72.95	69.20	.50		3.25
423	Pacific Gas & Electric Co	70.00		70.00		
429	Minnesota Power & Light Co	26.40		26.40		
431	Idaho Power Co	8.50		8.50		
432	Carolina Power & Light Co	5,940.00				5,940.00
438	Southern California Edison Co., Ltd	2.59		2.59		
439	Idaho Power Co	47.17		47.17		
440	The Nevada-California Electric Corporation	20.35		20.35		
444	Pacific Gas & Electric Co	107.49		102.49		5.00
447	The Arizona Power Corporation	84.77		81.00		3.77
455	Mountain States Power Co	20.00	20.00			
457	Idaho Power Co	2,514.62		198.37		2,316.25
459	Union Electric Co. of Missouri	3,750.74		.74		3,750.00
460	City of Tacoma, Washington	328.37		82.14		246.23
461	Southern California Edison Co., Ltd	32.87		32.87		
466	Idaho Power Co	64.00		32.50		31.50
469	Minnesota Power & Light Co	288.44		3.44		285.00
471	San Joaquin Light & Power Corporation	101.10		101.10		
472	Utah Power & Light Co	3,244.90		744.90		2,500.00
474	The Nevada-California Electric Corporation	25.23		19.24		5.99
477	Portland General Electric Co	53.18		53.18		
478	The Montana Power Co	12.08		12.08		
479	do	98.20		92.72		5.48
481	The Nevada-California Electric Corporation	5.29	5.29			
485	Columbus Electric & Power Co	7,000.00				7,000.00
486	Utah Power & Light Co	529.87		79.87		450.00
487	Pennsylvania Power & Light Co	2,037.00				2,037.00
488	Thermalito Irrigation District and Table Mountain Irrigation District	7.00		7.00		
490	San Diego Consolidated Gas & Electric Co	10.00	8.50	1.50		
492	John C. Higgins	91.55		53.30		38.25
501	Public Service Co. of Colorado	23.90		23.90		
502	Pacific Gas & Electric Co	11.00		11.00		
503	Idaho Power Co	3,372.65		347.65		3,025.00
505	The Washington Water Power Co	9.00		9.00		
506	F. D. Edwards	2.00		2.00		
510	The Washington Water Power Co	29.52		28.59		.93
516	Lexington Water Power Co	8,703.50				8,703.50
517	The Montana Power Co	20.00		20.00		
518	Public Service Co. of Colorado	33.00		33.00		
519	do	23.00		23.00		
520	do	8.00		8.00		
522	Southern California Edison Co., Ltd	5.00		5.00		
523	do	29.10		29.10		
525	Pacific Gas & Electric Co	700.00		200.00		500.00
532	The Nevada-California Electric Corporation	57.50		57.50		
539	Kentucky Utilities Co	5,400.50			4,708.00	692.50

TABLE NO. 1.—*Proceeds derived from licenses issued by authority of the Federal Power Act*—Continued

Project No.	Licensee	Amount received	For use of Indian lands	From public lands and national forests	From other sources (improvements of navigable waters)	Administrative fees
543	The Washington Water Power Co	$5.30		$5.30		
544	The Nevada-California Electric Corporation	400.00	$48.00	352.00		
548	San Diego Consolidated Gas & Electric Co	2.00		2.00		
555	The Washington Water Power Co	12.00		12.00		
558	The Montana Power Co	30.00		30.00		
559	San Diego Consolidated Gas & Electric Co	13.00	13.00			
560	The California Oregon Power Co	23.00		23.00		
562	Pacific Power & Light Co	3.50		3.50		
572	Great Northern Ry. Co	48.34		43.34		$5.00
574	The Montana Light & Power Co	14.00		14.00		
579	Pacific Power & Light Co	7.50		7.50		
584	The Red River Lumber Co	675.00		675.00		
587	The Washington Water Power Co	65.96		55.96		10.00
588	Crown Zellerbach Corporation	2,947.87		697.87		2,250.00
589	The Nevada-California Electric Corporation	88.20	88.20			
591	Ruby H. Cunningham	9.50		4.75		4.75
595-607	The Nevada-California Electric Corporation	192.60		44.20		148.40
596	Utah Power & Light Co	75.00		75.00		
597	Utah Light & Traction Co	228.61		51.11		177.50
601	Utah Power & Light Co	6.00		6.00		
603	The California Oregon Power Co	5.85				5.85
606	Pacific Gas & Electric Co	76.12		27.41		48.71
614	Southern California Edison Co., Ltd	2.00		2.00		
616	Pacific Gas & Electric Co	500.00		472.00		28.00
618	Alabama Power Co	7,608.33		8.33		7,600.00
619	Pacific Gas & Electric Co	5,224.89		874.89		4,350.00
621	The Washington Water Power Co	2,085.00				2,085.00
629	The California Oregon Power Co	4.73	4.73			
636	West Penn Power Co	57.00		57.00		
637	The Washington Water Power Co	12,573.79		869.79		11,704.00
639	Do	13.45		13.45		
655	Pennsylvania Electric Co	37.00		37.00		
657	Wisconsin Public Service Corporation	5.00	5.00			
658	Pacific Power & Light Co	28.00		28.00		
663	Porto Rico Railway, Light & Power Co	391.58		35.33		356.25
665	Utah Power & Light Co	87.17		14.67		72.50
669	Crooked River Ranch Co	8.64				8.64
671	Utah Power & Light Co	71.06		14.81		56.25
673	The Montana Power Co	7.50	7.50			
675	Utah Power & Light Co	65.69		9.44		56.25
677	San Gorgonio Electric Corporation	7.50		7.50		
679	Southern California Edison Co., Ltd	1.00		1.00		
682	Florida Power Corporation	317.57		.07		317.50
696	Utah Power & Light Co	360.28		34.03		326.25
697	Great Northern Ry. Co	14.75		14.75		
703	Utah Power & Light Co	120.38		9.13		111.25
704	The California Oregon Power Co	28.87		28.87		
707	Pacific Gas & Electric Co	40.01		40.01		
710	Wisconsin Power & Light Co	1,635.00	1,500.00			135.00
711	The Nevada-California Electric Corporation	19.00	19.00			
713	Utah Power & Light Co	207.39		51.14		156.25
719	Royal Development Co	143.50		41.00		102.50
721	Virginia Public Service Co	15.00		15.00		
722	Southern California Edison Co., Ltd	65.20		56.50		8.70
731	Alaska Pacific Salmon Co	50.00		10.00		40.00
733	The Western Colorado Power Co	30.00		8.46		21.54
734	Do	457.01		451.97		5.04
737	Pacific Gas & Electric Co	262.50		262.50		
738	Fred and John F. Dover	470.75			$440.00	30.75
740	Pacific Power & Light Co	5.00		5.00		
742	Fred Schwarz	5.00	5.00			
743	Sierra Pacific Power Co	70.00		70.00		
747	California Public Service Co	75.00		12.50		62.50
748	Sierra Consolidated Mines, Inc	204.43		109.43		95.00
749	Western States Utilities Co	65.82		15.82		50.00
752	Carolina Power & Light Co	80.00		80.00		
754	The California Oregon Power Co	5.00		5.00		
759	Public Service Co. of Colorado	37.00		37.00		
760	Do	5.00		5.00		
762	The Washington Water Power Co	8.50	8.50			

TABLE NO. 1.—*Proceeds derived from licenses issued by authority of the Federal Power Act*—Continued

Project No.	Licensee	Amount received	For use of Indian lands	From public lands and national forests	From other sources (improvements of navigable waters)	Administrative fees
764	Utah Light & Traction Co	$6.50		$6.50		
765	Utah Power & Light Co	941.57		931.57		$10.00
768	City of Colorado Springs	10.00		10.00		
772	Pacific Gas & Electric Co	57.00		57.00		
773	The California Oregon Power Co	1.75	$1.75			
774	The Arizona Power Corporation	159.27		154.27		5.00
776	Pacific Gas & Electric Co	21.50		21.50		
777	Puget Sound Power & Light Co	76.00		76.00		
778	Utah Power & Light Co	63.28	41.44	21.84		
779	Southern California Edison Co., Ltd	9.00		9.00		
782	The Nevada-California Electric Corporation	15.00	6.38	8.62		
785	City of Allegan, Michigan	222.00				222.00
786	Idaho Power Co	450.00		450.00		
790	The Montana Power Co	7.09		7.09		
791	The Washington Water Power Co	10.00		10.00		
792	The Dakota Power Co	319.39		69.39		250.00
795	The Washington Water Power Co	136.98		131.98		5.00
796	City of Phoenix, Ariz	35.00	35.00			
800	Southern California Edison Co., Ltd	5.00		5.00		
801	King's Hill Epworth League Association	3.00		3.00		
802	San Joaquin Light & Power Corporation	144.50		144.50		
803	Pacific Gas & Electric Co	1,300.00		379.00		921.00
810	Pacific Power & Light Co	6.15		6.15		
813	The Arizona Power Corporation	12.15		12.15		
814	Telluride Power Co	683.08		183.08		500.00
815	Sierra Pacific Power Co	10.00		5.00		5.00
819	Montana Consolidated Mines Corporation	5.00		5.00		
820	Eastern Oregon Light & Power Co	20.00		20.00		
825	Idaho Power Co	15.20		15.20		
828	The California Oregon Power Co	10.22		10.22		
830	The Nevada-California Electric Corporation	61.25		61.25		
838	Conejos Recreation Association, Inc	5.75		5.75		
844	City of Los Angeles, Calif	5.80		5.80		
846	Southern California Edison Co., Ltd	31.45		31.45		
848	Wells Power Co	42.72		38.13		4.59
855	Public Service Co. of Colorado	14.00		14.00		
856	City of Los Angeles, Calif	9.85		9.85		
859	Mountain States Power Co	10.00		10.00		
867	Virginia Public Service Co	19.62		19.62		
869	San Joaquin Light & Power Corporation	19.00		19.00		
871	Mount Baker Development Co	66.54		57.09		9.45
879	The California Oregon Power Co	8.85	8.85			
881	Pacific Gas & Electric Co	5.00		5.00		
882	The Nevada-California Electric Corporation	12.50		12.50		
886	Public Service Co. of Colorado	6.35		6.35		
889	Pacific Gas & Electric Co	1,500.00		428.57		1,071.43
892	Public Service Co. of Colorado	5.00		5.00		
898	J. L. and M. C. Hooper	22.13		16.60		5.53
906	Hydro-Electric Corporation of Virginia	6.60		6.60		
908	W. F. Drew	9.68		4.84		4.84
909	Idaho Power Co	6.65		6.65		
911	Pacific Gas & Electric Co	9.25		9.25		
913	Virginia Public Service Co	9.30		9.30		
914	Southern Utah Power Co	292.90		292.90		
917	Portland Canal Power Co	138.00				138.00
918	Southern California Edison Co., Ltd	5.00		5.00		
921	Idaho Power Co	33.50		33.50		
923	Southern California Edison Co., Ltd	19.65		19.65		
925	City of Ottumwa, Iowa	182.00				182.00
926	Pacific Gas & Electric Co	7.04		7.04		
927	Virginia Public Service Co	5.00		5.00		
929	Southern California Edison Co., Ltd	5.00		5.00		
931	The Washington Water Power Co	5.00	5.00			
933	Mountain States Power Co	212.50		212.50		
935	Inland Power & Light Co	7,208.46		114.71		7,093.75
937	La Plata Mines Co	40.00		40.00		
938	Sierra Pacific Power Co	51.70		51.70		
940	West Coast Power Co	36.75		12.50		24.25

TABLE NO. 1.—*Proceeds derived from licenses issued by authority of the Federal Power Act*—Continued

Project No.	Licensee	Amount received	For use of Indian lands	From public lands and national forests	From other sources (improvements of navigable waters)	Administrative fees
945	Vincent Rafferty	$4.58		$2.29		$2.29
946	Hyrum City, Utah	148.92		20.17		128.75
949	Mountain States Power Co	154.15		154.15		
951	Chicagoff Mining Co	243.40		87.40		156.00
955	Diamond Lake Improvement Co., Inc.	6.00		3.00		3.00
957	Idaho Power Co	5.00		5.00		
958	Sierra Pacific Power Co	5.00		5.00		
959	do	8.15		8.15		
960	The California Oregon Power Co	5.95		5.95		
961	Matt Carey & Julian A. Knight	9.10		9.10		
965	Eastern Oregon Light & Power Co	42.10		37.10		5.00
966	Southern California Edison Co., Ltd	95.48		90.48		5.00
970	Glacier Silver Lead Mining Co	75.03		17.53		57.50
973	Public Service Co. of Colorado	30.12		30.12		
977	Southern California Edison Co., Ltd	23.53		23.53		
978	Sierra Pacific Power Co	55.95		55.95		
981	he California Oregon Power Co	1.75	$1.75			
982	Sierra Pacific Power Co	12.90		12.90		
983	The California Oregon Power Co	23.28		18.28		5.00
984	Mountain States Power Co	75.00	69.50	5.50		
985	Idaho Power Co	50.60		45.60		5.00
991	Southern California Edison Co., Ltd	5.00		5.00		
993	Zenda Gold Mining Co	14.15		14.15		
994	Telluride Power Co	710.65		705.65		5.00
995	The California Oregon Power Co	11.45		6.45		5.00
998	The Washington Water Power Co	13.40		13.40		
1000	Louisville Gas & Electric Co	7.50			$7.50	
1001	Portland General Electric Co	44.30		44.30		
1002	Southern California Edison Co., Ltd	13.50		13.50		
1004	The Nevada-California Electric Corporation	15.25		15.25		
1005	Public Service Co. of Colorado	13.85		4.26		9.59
1008	The Nevada-California Electric Corporation	30.80	20.00	10.80		
1009	Southern California Edison Co., Ltd	5.00		5.00		
1011	do	5.25		5.25		
1015	The Arizona Power Corporation	6.30		6.30		
1016	The California Oregon Power Co	13.26		13.26		
1017	Pacific Gas & Electric Co	9.50		9.50		
1018	do	11.90		11.90		
1020	Pacific Power & Light Co	5.00		5.00		
1022	Dan Rovero	5.00		5.00		
1024	Highland Utilities Co	5.00		5.00		
1025	Safe Harbor Water Power Corporation	6,426.75				6,426.75
1026	The California Oregon Power Co	12.20		12.20		
1028	Idaho Power Co	13.70		13.70		
1029	The California Oregon Power Co	50.00		50.00		
1030	do	9.30		9.30		
1031	Pacific Gas & Electric Co	54.68		49.68		5.00
1033	Idaho Power Co	5.00		5.00		
1035	The California Oregon Power Co	5.30		5.30		
1037	Sierra Pacific Power Co	29.30		29.30		
1040	The California Oregon Power Co	5.00		5.00		
1042	The Arizona Power Corporation	41.39		36.39		5.00
1047	The California Oregon Power Co	4.90		4.90		
1055	Sierra Pacific Power Co	5.00		5.00		
1057	The California Oregon Power Co	1.05		1.05		
1059	do	1.39		1.39		
1061	Pacific Gas & Electric Co	50.00		24.40		25.60
1063	Public Service Co. of Colorado	83.30		83.30		
1064	The Montana Power Co	5.00		5.00		
1065	do	40.00		40.00		
1066	do	35.10		35.10		
1069	Pacific Gas & Electric Co	5.70		5.70		
1070	The California Oregon Power Co	7.85		7.85		
1071	Arkansas-Missouri Power Co	5.00		5.00		
1072	The Washington Water Power Co	13.25		13.25		
1074	Pacific Power & Light Co	100.00	98.70	1.30		
1076	do	21.50		21.50		
1077	The Arizona Power Corporation	92.39		92.39		
1078	Southern California Edison Co., Ltd	64.55		64.55		
1080	The Hook-Aston Milling Co	635.00			635.00	
1081	The Cliffs Power & Light Co	45.05		45.05		
1082	Pacific American Fisheries, Inc	10.00		5.00		5.00
1084	The Montana Power Co	5.00		5.00		
1086	Turlock Irrigation District and Modesto Irrigation District	56.00		56.00		

TABLE NO. 1.—*Proceeds derived from licenses issued by authority of the Federal Power Act*—Continued

Project No.	Licensee	Amount received	For use of Indian lands	From public lands and national forests	From other sources (improvements of navigable waters)	Administrative fees
1087	Rechsteiner Milling Co	$440.00			$440.00	
1096	Puget Sound Power & Light Co	5.25		$5.25		
1097	John A. Zehntbauer	39.79		11.04		$28.75
1101	Prince William Sound Water-Power, Light & Telephone Co	134.40		50.90		83.50
1102	East Tennessee Light & Power Co	5.00		5.00		
1103	Southern California Edison Co., Ltd	18.70		18.70		
1104	San Diego Consolidated Gas & Electric Co	5.00		5.00		
1109	The Nevada-California Electric Corporation	163.50		163.50		
1111	The Montana Power Co	36.50	$35.05	1.45		
1112	Southern California Edison Co., Ltd	20.54		20.32		.22
1113	Public Service Co. of Colorado	7.00		7.00		
1116	The California Oregon Power Co	2.40		2.40		
1118	The Montana Power Co	20.50		20.50		
1120	The Arizona Power Corporation	16.00		16.00		
1121	Pacific Gas & Electric Co	135.00		135.00		
1122	Grimes Pass Power Co	68.25		68.25		
1123	The Nevada-California Electric Corporation	42.10		42.10		
1127	Northern Virginia Power Co	10.50		10.50		
1130	York Mines	5.00		5.00		
1133	Public Service Co. of Colorado	12.25		12.25		
1136	The California Oregon Power Co	81.15	55.44	20.71		5.00
1138	New England Fish Co	19.15		19.15		
1139	Southern California Edison Co., Ltd	5.00		5.00		
1144	John H. Graff	53.14		6.64		46.50
1148	The Montana Power Co	16.30		16.30		
1151	do	45.65		45.65		
1153	San Joaquin Light & Power Corporation	120.75		120.75		
1154	California Public Service Co	26.95		26.95		
1157	The Montana Power Co	51.48		51.48		
1160	Pennsylvania Electric Co	6.66		6.66		
1163	The California Oregon Power Co	1,083.95		309.70		774.25
1167	The Arizona Power Corporation	59.74		59.74		
1169	W. H. Welch	5.93				5.93
1171	The Nevada-California Electric Corporation	39.80		39.80		
1175	Kanawha Valley Power Co	66,355.00			64,000.00	2,355.00
1176	Bradley Mining Co	114.49		51.99		62.50
1177	San Diego Consolidated Gas & Electric Co	11.70		11.70		
1180	The California Oregon Power Co	24.84		15.76		9.08
1181	The Western Pacific R. R. Co	5.63		5.63		
1183	Pacific Gas & Electric Co	5.00		5.00		
1184	The California Oregon Power Co	222.50		222.50		
1187	Pacific Gas & Electric Co	5.44	1.80	3.64		
1190	do	5.00		5.00		
1191	Sierra Pacific Power Co	151.58		146.58		5.00
1193	City of Los Angeles, Calif	16.00		16.00		
1194	Pacific Gas & Electric Co	5.00		5.00		
1195	do	5.00		5.00		
1198	Jackson Hole Light & Power Co	98.75		73.75		25.00
1201	The Arizona Power Corporation	8.30		8.30		
1205	Southern California Edison Co., Ltd	5.00		5.00		
1206	West Coast Power Co	3.62		.81		2.81
1206	The city of Cascade locks, Oreg	2.83		.64		2.19
1208	Idaho Power Co	5.00		5.00		
1215	City of Seattle, Wash	5.00		5.00		
1218	Georgia Power Co	1,151.25				1,151.25
1220	Public Service Co. of Colorado	5.00		5.00		
1223	Puget Sound Power & Light Co	13.45	13.45			
1224	The Montana Power Co	135.65		135.65		
1225	do	308.47		298.47		10.00
1231	Mountain States Power Co	5.00		5.00		
1235	City of Radford, Va	127.25				127.25
1247	Bessie M. Byrnes	15.64		15.64		
1248	The Arizona Power Corporation	31.26		26.26		5.00
1250	City of Pasadena, Calif	6.46		.87		5.59
1252	Idaho Power Co	145.00		145.00		
1253	Lion Coal Corporation	5.00		5.00		
1255	The Washington Water Power Co	34.10	24.80	4.30		5.00
1257	Public Service Co. of Colorado	62.69		62.50		.19

TABLE NO. 1.—*Proceeds derived from licenses issued by authority of the Federal Power Act*—Continued

Project No.	Licensee	Amount received	For use of Indian lands	From public lands and national forests	From other sources (improvements of navigable waters)	Administrative fees
1258	Pacific Gas & Electric Co	$11.19		$6.19		$5.00
1259	The Montana Power Co	21.04		21.04		
1261	Public Service Co. of Colorado	38.60		28.60		10.00
1262	Sierra Pacific Power Co	31.27		26.27		5.00
1264	Southern California Edison Co., Ltd	5.00		5.00		
1268	Roaring Fork Water, Light & Power Co	99.10		94.10		5.00
1271	The California Oregon Power Co	5.80		5.80		
1272	Southern California Edison Co., Ltd	11.61		6.61		5.00
1273	Parowan City, Utah	72.30		18.55		53.75
1278	Nantahala Power & Light Co	13.75		13.75		
1279	Pacific Gas & Electric Co	5.00		5.00		
1280	Red Bluff Water Power Control District	74.73		7.82		66.91
1285	Southern California Edison Co., Ltd	8.91		3.91		5.00
1287	do	10.74		5.74		5.00
1288	Canyon Mines Corporation	10.81		10.81		
1290	Kanawha Valley Power Co	80,798.60			$80,000.00	798.60
1292	Puget Sound Power & Light Co	5.00		5.00		
1295	Pacific Gas & Electric Co	79.26		74.26		5.00
1296	The Mountain Utilities Corporation	22.50		11.25		11.25
1298	General Public Utilities, Inc	11.54		6.54		5.00
1300	Vosburg Mining Co	10.10		5.10		5.00
1301	George W. Shedd	5.00				5.00
1302	California Fruit Exchange	199.36		180.00		19.36
1304	Puget Sound Power & Light Co	5.00		5.00		
1306	Butte Highlands Mining Co	28.00		28.00		
1314	The J. W. Howell Co	10.00		5.00		5.00
1318	Pacific Gas & Electric Co	8,663.88		2,033.88		6,630.00
1320	Sumpter Valley Dredging Co	20.72		15.72		5.00
1332	Pacific Gas & Electric Co	17.75		12.75		5.00
1333	San Joaquin Light & Power Corporation	556.59		113.33		443.26
1335	do	10.00		5.00		5.00
1337	Morning Glory Mines, Inc	10.39		5.39		5.00
1338	The Montana Power Co	5.00		5.00		
1339	do	5.00		5.00		
1350	W. L. Leland	22.31		12.31		10.00
1351	American Western Mines, Inc., of Montana	24.14		19.14		5.00
1352	Pacific Gas & Electric Co	19,570.17		563.17		19,007.00
1353	The Nevada-California Electric Corporation	61.35		56.35		5.00
1354	San Joaquin Light & Power Corporation	3,191.75		1,644.52		1,547.23
1355	The Montana Power Co	10.00		5.00		5.00
1356	do	10.00		5.00		5.00
1357	Storfold & Grondahl Packing Co	10.00		5.00		5.00
1361	Pacific Gas & Electric Co	10.00	$5.00			5.00
1363	The Arizona Power Corporation	188.63		183.63		5.00
1372	Quartz Hill Mining Co	39.30		34.30		5.00
1373	Utah Power & Light Co	105.20		96.63		8.57
1375	G. W. Moore and Rollie D. Morris	10.00		5.00		5.00
1376	The Montana Power Co	12.02	7.02			5.00
1381	The Nevada-California Electric Corporation	5.00				5.00
1382	Louise Kane	10.00		5.00		5.00
1383	The Arizona Power Corporation	10.00		5.00		5.00
1384	R. B. Caswell	34.15		29.15		5.00
1387	The California Oregon Power Co	10.00		5.00		5.00
1388	The Nevada-California Electric Corporation	918.91		918.91		
1389	do	2,013.70		2,013.70		
1392	Pacific Gas & Electric Co	6.43		1.43		5.00
1393	Pend Oreille Mines & Metals Co	224.91		5.00		219.91
1395	The Nevada-California Electric Corporation	1,463.84		1,448.42		15.42
1397	do	92.38	3.83	73.13		15.42
1398	do	288.70		273.28		15.42
1402	The Arizona Power Corporation	10.00		5.00		5.00
1404	Climax Molybdenum Co	11.25		6.25		5.00
1408	Pacific Gas & Electric Co	10.00		5.00		5.00
1409	Mount Baker Ski Club	10.00		5.00		5.00
1411	San Diego Consolidated Gas & Electric Co	10.00	5.00			5.00
1412	do	10.00		5.00		5.00
1414	Sierra Pacific Power Co	51.78	37.37	9.41		5.00
1418	Public Service Co. of Colorado	10.00		5.00		5.00

TABLE NO. 1.—*Proceeds derived from licenses issued by authority of the Federal Power Act*—Continued

Project No.	Licensee	Amount received	For use of Indian lands	From public lands and national forests	From other sources (improvements of navigable waters)	Administrative fees
1419	H. F. Villiger	$10.00		$5.00		$5.00
1421	Marcel Ehrer et al	10.00		5.00		5.00
1422	Mississippi Power Co	10.00		5.00		5.00
1423	J. C. Spencer	10.00		5.00		5.00
1426	Buchan & Heinen Packing Co	25.00		10.00		15.00
1429	W. P. Studdert	10.00		5.00		5.00
1430	H. L. Bradley, C. O. Bradley, and L. K. Wrenwick	10.00		5.00		5.00
1431	Victoria Mines, Inc	1.68		.84		.84
1432	Kadiak Fisheries Co	34.00		24.00		10.00
1434	West Coast Power Co	49.45		39.19		10.26
1437	Republic Power Co	13.27		8.27		5.00
1438	J. E. Ducey	10.00		5.00		5.00
1440	Lake Superior District Power Co	10.00		5.00		5.00
1441	The Montana Power Co	30.94		17.95		12.99
1443	Breitenbush Hot Springs	9.72		4.86		4.86
1444	The Arizona Power Corporation	37.67		32.67		5.00
1445	Public Service Co. of Colorado	10.00		5.00		5.00
1446	Sierra Pacific Power Co	113.70	$2.67	106.03		5.00
1447	Inland Power & Light Co	350.40		75.60		274.80
1448	Hidden Lake Mining Co	11.55		6.55		5.00
1449	Idaho Power Co	155.38		150.38		5.00
1450	Pacific Gas & Electric Co	2.02		1.01		1.01
1452	P. V. Burke	10.00		5.00		5.00
1458	City of Tacoma, Wash	22.76	11.38			11.38
1462	The Washington Water Power Co	11.50		6.50		5.00
1465	do	266.74		261.74		5.00
1467	The Montana Power Co	10.27		5.27		5.00
1469	The Wind River Power Co	76.38	65.59			10.79
1471	Mineral Hill Leasing Co	20.70		15.70		5.00
1475	Rilla G. Dexter	8.67		4.52		4.15
1477	Atolia Mining Co	52.66		47.66		5.00
1478	Ralph E. Davis	11.62		6.62		5.00
1479	Fred Simi	10.00		5.00		5.00
1482	Jack A. Crawford and Cyrus Bell	10.00		5.00		5.00
1483	Mountain City Improvement Association	14.32		10.70		3.62
1484	Jake Francis Beattiger	10.00		5.00		5.00
1485	Sierra Pacific Power Co	14.82		9.82		5.00
1491	The Montana Power Co	16.44		8.22		8.22
1492	Scott C. Young	.30		.15		.15
1493	Peter J. Engelbrecht & Son	5.68		2.84		2.84
1495	The Montana Power Co	8.44		4.22		4.22
1496	Mosquito District Mutual Water Co	10.01		7.34		2.67
1498	Idaho Power Co	15.86		7.93		7.93
1499	Southern California Edison Co., Ltd	55.18		47.65		7.53
1501	The Montana Power Co	7.62		3.81		3.81
1508	Idaho Power Co	15.04		7.52		7.52
1509	Appalachian Mountain Club	2.71				2.71
1510	City of Kaukauna, Wis	60.27				60.27
1511	Arkansas Power & Light Co	26.66		19.91		6.75
1512	Cordelia Schrode Spencer	8.36		5.04		3.32
1515	California Public Service Co	14.61		8.27		6.34
1519	The Grand County Light, Heat & Power Co	31.76		15.88		15.88
1520	Alpine Trading Co	5.18		2.59		2.59
1522	R. R. Sisac	5.68		2.84		2.84
1529	Southwestern Gas & Electric Co	16.16		13.90		2.26
1543	Olive Blanche Tillotson	5.46		2.73		2.73
1582	The Nevada-California Electric Corporation	14.57		8.73		5.84
	Total	814,857.84	60,358.51	53,971.71	$346,756.81	353,770.81
	Adjustment		[1] 10.22	−10.22		
	Grand total	814,857.84	60,368.73	53,961.49	346,756.81	353,770.81

[1] By amendment of June 22, 1939, effective Dec. 31, 1928, ratio of Indian lands in area of project 108, Northern States Power Co. was increased and that of public lands decreased, necessitating an adjustment of charges in the amount of $10.60 over the period Dec. 31, 1928–Dec. 31, 1938. 50 percent of this amount ($5.30) and 12½ percent ($1.33) was deducted from the reclamation fund and general fund of the Treasury, respectively. However, 37½ percent of this amount had been paid to the State of Wisconsin over the period, therefore, only $3.59, or 37½ percent of $9.58 the amount received for use of lands, State of Wisconsin, for the calendar year 1939, was deducted from payments to States. Adjustment of the remaining $0.38 will be made when funds are available to the credit of the State of Wisconsin.

Proceeds derived from revested Oregon and California railroad grant lands situated in projects under license by authority of the Federal Power Act

[Collected in the fiscal year ended June 30, 1940]

Project No.	Licensee	Amount	Project No.	Licensee	Amount
135	Portland General Electric Co	$152.53	1047	The California Oregon Power Co.	$1.70
281	The California Oregon Power Co	81.78	1057	do	12.10
477	Portland General Electric Co	196.82	1059	do	6.31
603	The California Oregon Power Co	5.95	1116	do	2.60
704	do	36.83	1152	do	5.00
828	do	59.78	1180	do	13.37
995	do	37.77	1365	Mountain States Power Co	5.00
1001	Portland General Electric Co	8.06		Total	660.84
1016	The California Oregon Power Co	30.24			
1045	do	5.00			

Proceeds derived from Coos Bay wagon-road grant lands situated in projects under license by authority of the Federal Power Act

[Collected in the fiscal year ended June 30, 1940]

Project No.	Licensee	Amount
281	The California Oregon Power Co	$56.95

Proceeds derived from penalties assessed for delinquency in payment of annual charges

[Collected in the fiscal year ended June 30, 1940]

Project No.	Licensee	Amount	Project No.	Licensee	Amount
378	Beaver Gold Mining Co	$0.60	1300	Vosburg Mining Co	$9.51
386	Unity Gold Production Co	28.73	1382	Louise Kane	.50
474	The Nevada-California Electric Corporation	1.26	1423	J. C. Spencer	.50
			1429	W. P. Studdert	.50
488	Thermalito irrigation district and Table Mountain irrigation district	.35	1443	Breitenbush Hot Springs	.49
			1452	P. V. Burke	.50
			1478	Ralph E. Davis	.58
506	F. D. Edwards	.10	1483	Mountain City Improvement Association	.72
591	Ruby H. Cunningham	.48			
655	Pennsylvania Electric Co	1.85	1484	Jake Francis Beattiger	.50
748	Sierra Consolidated Mines, Inc	16.35	1492	Scott C. Young	.02
796	City of Phoenix, Ariz	2.80	1496	Mosquito District Mutual Water Co	.80
801	King's Hill Epworth League Association	.15	1512	Cordelia Schrode Spencer	.42
917	Portland Canal Power Co	59.34	1520	Alpine Trading Co	.26
937	La Plata Mines Co	2.60	1522	R. R. Sisac	.28
1122	Grimes Pass Power Co	3.41	1543	Olive Blanche Tillotson	.27
1160	Pennsylvania Electric Co	.33			
1273	Parowan City, Utah	3.62		Total	132.30
1296	The Mountain Utilities Corporation	3.48			

TABLE NO. 2.—*Distribution and credit on the books of the Treasury Department of proceeds of licenses, fiscal year 1940*

To general fund of the Treasury:		
Reimbursement, costs of administration, Federal Power Act		$353, 770. 81
12½ percent of fees from public lands and national forests; 50 percent of fees from improvements of navigable waters		180, 123. 54
To the indefinite appropriation (under administration of the War Department): Maintenance and operation of dams and other improvements of navigable waters		173, 378. 40
To the reclamation fund		26, 980. 56
To payments to States under Federal Power Act, special funds		20, 235. 80
To Alabama	$42. 53	
To Alaska	277. 16	
To Arizona	356. 29	
To Arkansas	15. 70	
To California	12, 099. 26	
To Colorado	548. 09	
To Florida	. 03	
To Idaho	1, 721. 08	
To Michigan	16. 89	
To Minnesota	11. 19	
To Mississippi	1. 88	
To Missouri	. 28	
To Montana	442. 71	
To Nevada	667. 74	
To New Mexico	64. 81	
To North Carolina	35. 15	
To Oregon	1, 858. 23	
To Pennsylvania	37. 75	
To Puerto Rico	13. 25	
To South Dakota	28. 47	
To Tennessee	1. 88	
To Utah	874. 18	
To Virginia	23. 41	
To Washington	923. 23	
To West Virginia	1. 35	
To Wyoming	173. 26	
To Indian funds		60, 368. 73
To proceeds of labor—		
Agua Caliente Indians	22. 26	
Augustine Indians	2. 45	
Camp McDowell Indians	18. 06	
Colfax Indians	5. 00	
Crow Indians	7. 50	
Flathead Indians	54, 435. 05	
Fort Belknap Indians	7. 02	
Fort Hall Indians	88. 94	
Klamath Indians	141. 72	

TABLE NO. 2.—*Distribution and credit on the books of the Treasury Department of proceeds of licenses, fiscal year 1940*—Continued

To Indian funds—Continued.		
To proceeds of labor—Continued.		
Lac Court Oreilles Indians	$3, 280. 13	
La Jolla Indians	39. 00	
Menominee Indians	1, 500. 00	
Morongo Indians	22. 84	
Nez Perce Indians	38. 30	
Pala Indians	13. 38	
Pechanga Indians	1. 00	
Potawatomi Indians	5. 00	
Puyallup Indians	11. 38	
Rincon Indians	27. 50	
Rosebud Indians	5. 00	
Salt River Indians	16. 94	
Shoshone or Wind River Indians	155. 09	
Soboba Indians	19. 00	
Torres Indians	. 14	
Tuolumne Indians	1. 80	
Tulalip Indians	13. 45	
Uintah Indians	262. 76	
Walker River Indians	37. 37	
Winnemucca Colony Indians	2. 67	
Yakima Indians	98. 70	
Yuma Indians	89. 28	
Total distribution under sec. 17 of the Federal Power Act		$814, 857. 84
To penalties for delinquencies of licensees under the Federal Power Act (proceeds from penalties assessed under sec. 17 (b) of the Federal Power Act)		132. 30
To Oregon and California land-grant fund		660. 84
To Coos Bay wagon-road land-grant fund		56. 95
Grand total		815, 707. 93

TABLE 3.—*Analysis of receipts collected from licensees under the Federal Water Power Act*

Collections accrued over the period	Collections made in fiscal year	Collections were made—					Receipts totaled	Receipts were distributed by credits to the following—				
		For use of Indian lands	From public lands and national forests		From other sources (improvements of navigable waters)			Indian funds	Reclamation fund	Indefinite appropriation, maintenance and operation of dams, etc., War Department	Payments to States under the Federal Water Power Act, special funds	General fund of the Treasury
			Administrative fees	Fees for use of lands	Administrative fees	Fees for use of Government dams						
June 11, 1920, to Dec. 31, 1921	1922	$4.83	$2,749.37	$217.09	$5,992.28		$8,963.57	$4.83	$1,483.23	$2,996.14	$1,112.42	$3,366.95
Calendar year 1922	1923	1,236.00	6,683.65	3,454.24	17,595.67	$493.50	29,463.06	1,236.00	5,068.94	9,044.59	3,801.71	10,311.82
Calendar year 1923	1924	1,368.44	11,320.84	5,425.02	35,029.10	493.50	53,636.90	1,368.44	8,372.93	17,761.30	6,279.70	19,854.53
Calendar year 1924	1925	1,422.19	22,752.49	11,606.53	88,124.29	5,493.50	129,399.00	1,422.19	17,179.51	46,808.90	12,884.64	51,103.76
Calendar year 1925	1926	1,466.51	32,465.93	15,125.78	94,719.05	100,933.50	244,710.77	1,466.51	23,795.86	97,826.28	17,846.88	103,775.24
Calendar year 1926	1927	1,538.62	50,901.29	26,243.81	103,672.85	104,033.50	286,390.07	1,538.62	38,572.56	103,853.17	28,929.40	113,496.32
Calendar year 1927	1928	2,418.18	70,164.76	20,693.23	109,243.23	104,033.50	306,552.90	2,418.18	45,429.00	106,638.36	34,071.73	117,995.63
Calendar year 1928	1929	3,451.38	90,456.26	33,283.35	114,995.68	104,315.58	346,502.25	3,451.38	61,869.81	109,655.63	46,402.35	125,123.08
Calendar year 1929	1930	3,419.90	97,667.42	38,654.16	132,524.50	203,873.50	476,139.48	3,419.90	68,160.79	168,199.00	51,120.60	185,239.19
Calendar year 1930	1931	11,302.59	134,585.53	52,986.88	146,444.56	298,859.95	644,179.51	11,302.59	93,786.21	222,652.26	70,339.65	246,098.80
Calendar year 1931	1932	15,403.73	155,091.01	50,413.92	159,843.75	204,264.24	585,016.65	15,403.73	102,752.47	182,053.99	77,064.34	207,742.12
Calendar year 1932	1933	15,593.08	149,998.13	51,031.74	162,382.81	205,466.00	584,471.76	15,593.08	100,514.94	183,924.40	75,386.20	209,053.14
Calendar year 1933	1934	15,205.05	129,872.90	43,293.95	175,857.70	205,885.53	570,115.13	15,205.05	86,583.42	190,871.61	64,937.57	212,517.48
Calendar year 1934	1935	12,904.89	133,382.18	40,143.56	191,698.42	205,280.50	583,409.55	12,904.89	86,762.87	198,489.46	65,072.15	220,180.18
Total		86,735.39	1,088,091.76	392,573.26	1,538,123.89	1,743,426.30	4,848,950.60	86,735.39	740,332.54	1,640,775.09	555,249.34	1,825,858.24

In addition to the receipts shown in the above table, there were collected from revested Oregon and California railroad-grant lands and credited to the Oregon and California land-grant fund the following sums: Fiscal year 1923, $56.17; 1924, $76.52; 1925, $76.52; 1926, $274.34; 1927, $328.75; 1928, $487.40; 1929, $964.56; 1930, $626.07; 1931, $606.83; 1932, $630.75; 1933, $662.57; 1934, $792.97; 1935, $652.48; total $6,235.87.

TABLE No. 4.—*Analysis of receipts collected from licensees under the Federal Power Act*

Collections accrued over the period	Collections made in fiscal year	Collections were made—				Receipts totaled	Receipts were distributed by credits to the following—					
		For use of Indian lands	From public lands and national forests, use of lands	From other sources (improvements of navigable waters, use of Government dams)	Administrative fees		Indian funds	Reclamation fund	Indefinite appropriation, maintenance and operation of dams, etc., War Department	Payments to States under the Federal Power Act, special funds	General fund of the Treasury, from use of lands and Government dams	General fund of the Treasury, reimbursement, cost of administration, Federal Power Act
Calendar year 1935	1936	$3,572.98	$38,801.66	$205,280.50	$335,786.11	$583,441.25	$3,572.98	$19,400.83	$102,640.25	$14,550.62	$107,490.46	$335,786.11
Calendar year 1936	1937	40,929.73	41,067.21	269,280.50	370,135.18	721,412.62	40,929.73	20,533.60	134,640.25	15,400.20	139,773.66	370,135.18
Calendar year 1937	1938	22,947.14	44,647.86	268,939.57	372,253.47	708,788.04	22,947.14	22,323.94	134,469.78	16,742.95	140,050.76	372,253.47
Calendar year 1938	1939	26,895.36	51,728.31	268,770.50	382,739.10	730,133.27	26,895.36	25,864.16	134,385.25	19,398.11	140,851.29	382,739.10
Calendar year 1939	1940	60,368.73	53,961.49	346,756.81	353,770.81	814,857.84	60,368.73	26,980.56	173,378.40	20,235.80	180,123.54	353,770.81
Total		154,713.94	230,206.53	1,359,027.88	1,814,684.67	3,558,633.02	154,713.94	115,103.09	679,513.93	86,327.68	708,289.71	1,814,684.67

In addition to the receipts shown in the above table, there were collected from revested Oregon and California railroad-grant lands and credited to the Oregon and California land-grant fund the following sums: Fiscal year 1936, $643.37; 1937, $669.05; 1938, $655.18; 1939, $656.67; 1940, $660.84; from Coos Bay wagon-road lands, credited to the Coos Bay wagon-road grant fund, for the fiscal year 1936, $38.07; 1937, $56.95; 1938, $56.95; 1939, $56.95; 1940, $56.95; also, for delinquency in payment of annual charges, credited to "Penalties for delinquencies of licensees under Federal Power Act," for the fiscal year 1937, $6.29; 1938, $8.42; 1939, $123.43; 1940, $132.30.

TABLE NO. 5.—*Amounts which have accrued to public-land States under sec. 17 of the Federal Power Act; special funds*

Accrued in the calendar year / Collected in the fiscal year	1921 1922	1922 1923	1923 1924	1924 1925	1925 1926	1926 1927	1927 1928	1928 1929	1929 1930	1930 1931
Beneficiary State:										
Alabama	$0.48	$0.94	$0.93	$39.37	$39.37	$39.38	$39.37	$39.38	$39.37	$39.51
Alaska	7.50	36.50	59.88	242.67	376.28	274.32	354.60	449.79	512.48	627.11
Arizona		58.14	86.62	97.30	127.29	129.56	119.84	135.77	138.06	145.60
Arkansas			148.26	165.00	216.75	303.00	561.75	561.75	561.75	1,201.20
California	1,028.89	3,452.77	5,714.26	11,313.23	14,990.06	20,637.32	24,442.57	29,202.76	38,391.36	45,848.15
Colorado	1.66	8.22	30.94	46.46	69.13	72.10	163.42	256.74	263.11	280.72
Florida										.04
Idaho	9.67	40.76	94.66	154.67	386.08	3,589.19	2,135.77	5,159.66	4,896.86	5,072.23
Michigan										5.51
Minnesota			1.81	9.90	9.90	9.90	9.90	9.90	9.90	9.90
Mississippi						.36	.56	.56	.66	
Montana	25.80	63.69	20.74	32.19	100.72	87.03	95.13	227.50	307.37	137.34
Nevada	6.72		.82	.98	.98	28.98	34.72	34.73	39.35	58.01
New Mexico			2.41	6.04	9.59	11.09	18.33	14.63		
North Carolina		.60	1.16	1.16	.88	.64	17.25	34.06	37.53	47.93
Oregon		62.89	6.79	461.32	937.43	1,932.28	3,655.52	6,550.03	1,230.29	7,577.39
Pennsylvania					1.18	26.53	35.25	35.25	35.25	35.25
Puerto Rico								1.61	10.69	39.97
South Dakota	1.57	1.88	1.88	1.87	1.87	1.88	1.88	1.87	1.88	32.06
Tennessee										.86
Utah					5.55	28.12	429.75	712.86	716.40	1,358.97
Virginia						2.64	5.63	11.54	20.85	20.82
Washington			.67	1.00	21.27	349.57	597.09	1,586.22	2,367.85	6,285.91
Wisconsin	30.13	75.32	97.24	272.14	542.46	1,353.41	1,353.40	1,353.40	1,413.01	1,429.80
Wyoming			10.63	39.34	16.09	52.10		22.34	126.58	85.37
Total	1,112.42	3,801.71	6,279.70	12,884.64	17,846.88	28,929.40	34,071.73	46,402.35	51,120.60	70,339.65

Accrued in the calendar year / Collected in the fiscal year	1931 1932	1932 1933	1933 1934	1934 1935	1935 1936	1936 1937	1937 1938	1938 1939	1939 1940	Total credits to the individual States
Beneficiary State:										
Alabama	$48.78	$42.53	$42.53	$42.53	$42.53	$42.53	$42.53	$42.53	$42.53	$667.12
Alaska	713.47	628.88	613.02	674.56	155.41	308.79	289.51	278.43	277.16	6,874.36
Arizona	190.20	211.45	223.64	220.05	210.45	226.51	321.10	363.79	356.29	3,361.66
Arkansas	1,201.88	1,314.37	1,501.87	2,064.37	1.88	1.88	8.74	3.02	15.70	9,833.17
California	54,924.64	52,146.71	40,266.74	42,498.30	9,153.01	9,138.00	9,757.76	11,983.07	12,099.26	436,988.86
Colorado	302.06	306.84	309.22	326.88	321.29	528.57	502.72	509.29	548.09	4,847.46
Florida	.05	.05	.05	.03	.03	.03	.03	.03	.03	.37
Idaho	5,107.23	5,008.40	5,259.61	5,210.74	1,412.36	1,628.07	1,542.69	1,639.62	1,721.08	50,069.35
Michigan	16.89	16.89	16.89	16.89	16.89	16.89	16.89	22.38	16.89	163.01
Minnesota	9.90	20.22	11.19	11.19	11.19	11.19	11.19	11.19	11.19	179.56
Mississippi								3.57	1.88	7.59
Missouri		.28	.28	.28	.28	.28	.28	.28	.28	2.24
Montana	187.43	143.56	250.02	399.44	182.62	327.72	376.50	414.18	442.71	3,821.69
Nebraska						12.57				12.57
Nevada	54.40	63.81	65.40	86.94	117.30	118.91	184.83	265.66	667.74	1,830.28
New Hampshire	1.54	2.73								4.27
New Mexico								3.42	64.81	130.32
North Carolina	47.93	30.00	76.88	30.95	35.16	35.16	35.16	35.16	35.15	502.76
Oregon	4,273.49	5,135.70	6,608.45	3,860.81	1,129.02	1,164.82	1,804.13	1,815.08	1,858.23	50,063.67
Pennsylvania	36.56	37.75	37.75	37.75	37.75	37.75	37.75	37.75	37.75	507.27
Puerto Rico	66.69	146.84	146.84	146.84	13.25	13.25	13.25	13.25	13.25	625.73
South Dakota	121.63	121.63	121.65	121.65	26.02	29.77	26.84	28.47	28.47	674.77
Tennessee	1.88	1.88	1.88	1.88	1.87	1.87	1.88	1.88	1.88	17.76
Utah	1,297.29	1,483.38	1,541.37	1,494.68	723.77	751.27	779.35	835.29	874.18	13,032.23
Virginia	23.27	23.41	23.41	23.41	23.41	23.41	23.41	23.41	23.41	272.03
Washington	6,727.26	6,774.83	6,073.78	6,054.84	769.33	812.57	790.43	889.83	923.23	41,025.68
West Virginia	1.27	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	12.07
Wisconsin	1,579.36	1,579.37	1,579.36	1,579.36	2.11	2.11	2.11	2.92		14,247.01
Wyoming	129.24	143.34	164.39	166.43	162.34	164.93	172.52	173.26	173.26	1,802.16
Total	77,064.34	75,386.20	64,937.57	65,072.15	14,550.62	15,400.20	16,742.95	19,398.11	20,235.80	641,577.02

APPENDIX C

(Copy)

THE WHITE HOUSE,
WASHINGTON, *June 14, 1940.*

MY DEAR MR. OLDS:

In order that we may have an adequate supply of electric power in the areas in which it is most needed, I would like the Federal Power Commission, utilizing its existing facilities, in cooperation with the National Power Policy Committee, and the Advisory Commission to the Council of National Defense, to undertake the following:

1. To maintain contacts with the War and Navy Departments, the Maritime Commission, the Civil Aeronautics Authority, Coast Guard, the Advisory Commission to the Council of National Defense, and the other government agencies concerned with national defense orders, to translate their orders and requests into demands for power, and to keep check on the adequacy of the power supply to meet such demands;

2. To maintain contacts with vital national defense industries, to keep currently informed as to their present and prospective needs, to confer with the utilities with respect to supplying such needs in the most dependable and economical manner, and with respect to providing needed interconnection between private industrial generating plants and the utility systems;

3. To maintain contacts with the electrical equipment industry, to keep monthly records of all orders placed for generating equipment, to keep check on existing stocks of transmission and distribution equipment and supplies with a view to maintaining them at an adequate level, and to recommend to the President priorities between orders;

4. To obtain monthly information from the utility industry as to loads so that increased requirements in any area can be anticipated and steps taken to meet them promptly, and to plan, in cooperation with the industry, for the most economical use of existing steam and hydro capacity, curtailment of less essential loads, emergency interconnections between systems, expansion of distribution systems to meet war industry requirements, additional generating capacity and, where utilities are

unable or unwilling to undertake necessary construction, to report to the President the need of special arrangements to finance or otherwise further such construction;

5. To work out plans for the protection of power supply against hostile acts, and to this end to cooperate with the utilities and other government agencies, including the Department of Justice, in protecting generating stations, interconnecting transmission lines, important substations and distribution facilities required to assure power supply to key industrial plants.

All information obtained and plans worked out by the Federal Power Commission, in acting as I have requested, should be recorded in triplicate and copies sent forthwith to the National Power Policy Committee and the Advisory Commission to the Council of National Defense.

I am sending a copy of this letter to the agencies enumerated above, requesting that they give you the fullest cooperation in this very necessary work.

Sincerely,

(Signed) FRANKLIN D. ROOSEVELT.

Honorable LELAND OLDS,
Chairman, Federal Power Commission,
Washington, D. C.

○