

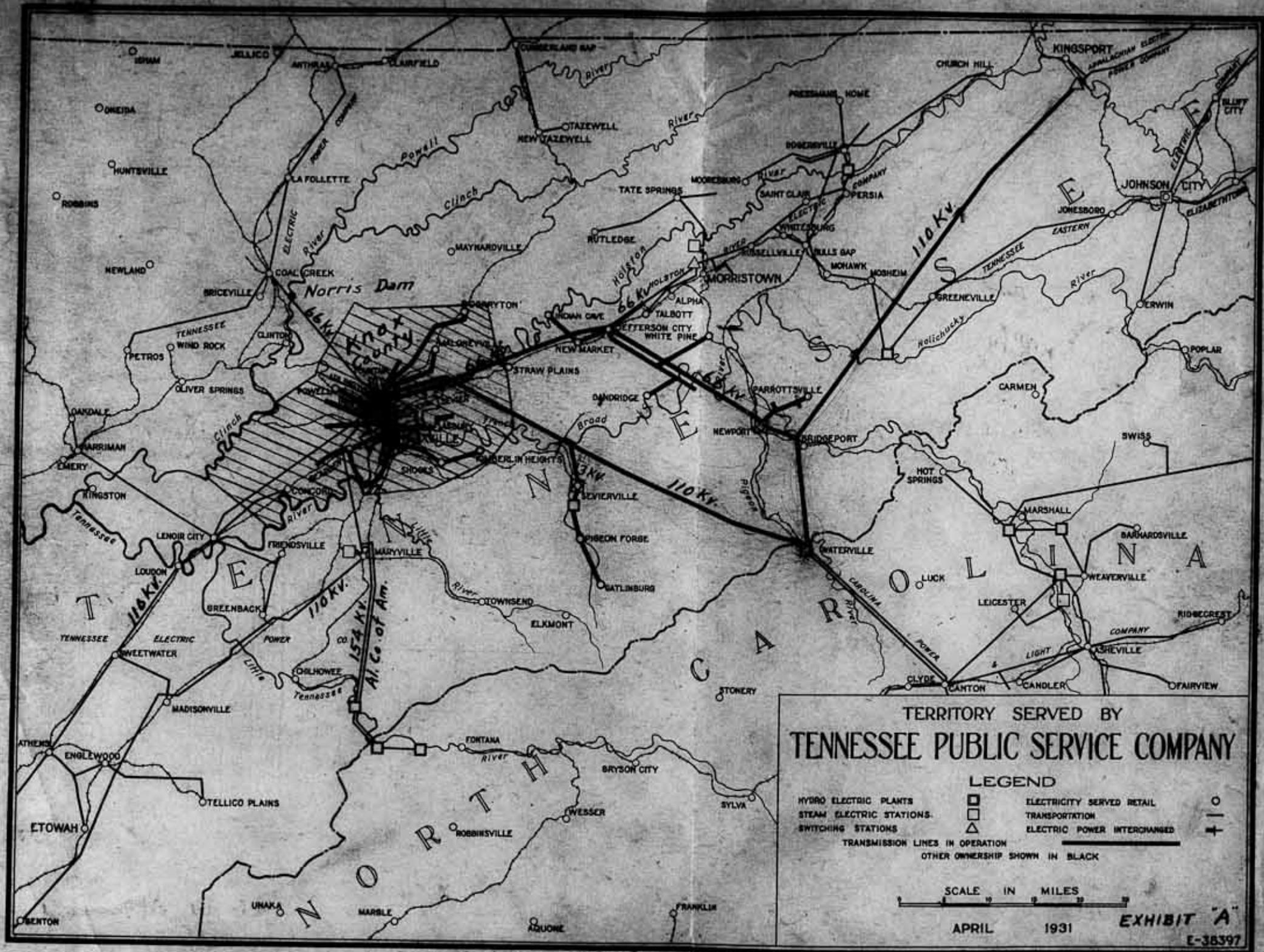
PSF

Tennessee Valley Authority
1933-34

Subject File

Box 187

Box 187



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[PUBLIC—No. 17—73D CONGRESS]

[H. R. 5081]

[As amended by Public—No. 412—74th Congress]

[H. R. 8632]

AN ACT

To improve the navigability and to provide for the flood control of the Tennessee River; to provide for reforestation and the proper use of marginal lands in the Tennessee Valley; to provide for the agricultural and industrial development of said valley; to provide for the national defense by the creation of a corporation for the operation of Government properties at and near Muscle Shoals in the State of Alabama, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That for the purpose of maintaining and operating the properties now owned by the United States in the vicinity of Muscle Shoals, Alabama, in the interest of the national defense and for agricultural and industrial development, and to improve navigation in the Tennessee River and to control the destructive flood waters in the Tennessee River and Mississippi River Basins, there is hereby created a body corporate by the name of the "Tennessee Valley Authority" (hereinafter referred to as the "Corporation"). The board of directors first appointed shall be deemed the incorporators, and the incorporation shall be held to have been effected from the date of the first meeting of the board. This Act may be cited as the "Tennessee Valley Authority Act of 1933."

SEC. 2. (a) The board of directors of the Corporation (hereinafter referred to as the "board") shall be composed of three members, to be appointed by the President, by and with the advice and consent of the Senate. In appointing the members of the board, the President shall designate the chairman. All other officials, agents, and employees shall be designated and selected by the board.

(b) The terms of office of the members first taking office after the approval of this Act shall expire as designated by the President at the time of nomination, one at the end of the third year, one at the end of the sixth year, and one at the end of the ninth year, after the date of approval of this Act. A successor to a member of the board shall be appointed in the same manner as the original members and shall have a term of office expiring nine years from the date of the expiration of the term for which his predecessor was appointed.

(c) Any member appointed to fill a vacancy in the board occurring prior to the expiration of the term for which his predecessor was appointed shall be appointed for the remainder of such term.

(d) Vacancies in the board so long as there shall be two members in office shall not impair the powers of the board to execute the functions of the Corporation, and two of the members in office shall constitute a quorum for the transaction of the business of the board.

(e) Each of the members of the board shall be a citizen of the United States and shall receive a salary at the rate of \$10,000 a year, to be paid by the Corporation as current expenses. Each member of the board, in addition to his salary, shall be permitted to occupy as his residence one of the dwelling houses owned by the Government in the vicinity of Muscle Shoals, Alabama, the same to be designated by the President of the United States. Members of the board shall be reimbursed by the Corporation for actual expenses (including traveling and subsistence expenses) incurred by them in the performance of the duties vested in the board by this Act. No member of said board shall, during his continuance in office, be engaged in any other business, but each member shall devote himself to the work of the Corporation.

(f) No director shall have financial interest in any public-utility corporation engaged in the business of distributing and selling power to the public nor in any corporation engaged in the manufacture, selling, or distribution of fixed nitrogen or fertilizer, or any ingredients thereof, nor shall any member have any interest in any business that may be adversely affected by the success of the Corporation as a producer of concentrated fertilizers or as a producer of electric power.

(g) The board shall direct the exercise of all the powers of the Corporation.

(h) All members of the board shall be persons who profess a belief in the feasibility and wisdom of this Act.

Sec. 3. The board shall, without regard to the provisions of civil-service laws applicable to officers and employees of the United States, appoint such managers, assistant managers, officers, employees, attorneys, and agents as are necessary for the transaction of its business, fix their compensation, define their duties, require bonds of such of them as the board may designate, and provide a system of organization to fix responsibility and promote efficiency. Any appointee of the board may be removed in the discretion of the board. No regular officer or employee of the Corporation shall receive a salary in excess of that received by the members of the board.

All contracts to which the Corporation is a party and which require the employment of laborers and mechanics in the construction, alteration, maintenance, or repair of buildings, dams, locks, or other projects shall contain a provision that not less than the prevailing rate of wages for work of a similar nature prevailing in the vicinity shall be paid to such laborers or mechanics.

In the event any dispute arises as to what are the prevailing rates of wages, the question shall be referred to the Secretary of Labor for determination, and his decision shall be final. In the determination of such prevailing rate or rates due regard shall be given to those rates which have been secured through collective agreement by representatives of employers and employees.

Where such work as is described in the two preceding paragraphs is done directly by the Corporation the prevailing rate of wages shall be paid in the same manner as though such work had been let by contract.

In so far as applicable, the benefits of the Act entitled "An Act to provide compensation for employees of the United States suffering

injuries while in the performance of their duties, and for other purposes", approved September 7, 1916, as amended, shall extend to persons given employment under the provisions of this Act.

Sec. 4. Except as otherwise specifically provided in this Act, the Corporation—

(a) Shall have succession in its corporate name.
 (b) May sue and be sued in its corporate name.
 (c) May adopt and use a corporate seal, which shall be judicially noticed.

(d) May make contracts, as herein authorized.
 (e) May adopt, amend, and repeal bylaws.
 (f) May purchase or lease and hold such real and personal property as it deems necessary or convenient in the transaction of its business, and may dispose of any such personal property held by it.

The board shall select a treasurer and as many assistant treasurers as it deems proper, which treasurer and assistant treasurers shall give such bonds for the safe-keeping of the securities and moneys of the said Corporation as the board may require: *Provided*, That any member of said board may be removed from office at any time by a concurrent resolution of the Senate and the House of Representatives.

(g) Shall have such powers as may be necessary or appropriate for the exercise of the powers herein specifically conferred upon the Corporation.

(h) Shall have power in the name of the United States of America to exercise the right of eminent domain, and in the purchase of any real estate or the acquisition of real estate by condemnation proceedings, the title to such real estate shall be taken in the name of the United States of America, and thereupon all such real estate shall be entrusted to the Corporation as the agent of the United States to accomplish the purposes of this Act.

(i) Shall have power to acquire real estate for the construction of dams, reservoirs, transmission lines, power houses, and other structures, and navigation projects at any point along the Tennessee River, or any of its tributaries, and in the event that the owner or owners of such property shall fail and refuse to sell to the Corporation at a price deemed fair and reasonable by the board, then the Corporation may proceed to exercise the right of eminent domain, and to condemn all property that it deems necessary for carrying out the purposes of this Act, and all such condemnation proceedings shall be had pursuant to the provisions and requirements hereinafter specified, with reference to any and all condemnation proceedings: *Provided*, That nothing contained herein or elsewhere in this Act shall be construed to deprive the Corporation of the rights conferred by the Act of February 26, 1931 (46 Stat. 1422, ch. 307, secs. 1 to 5, inclusive), as now compiled in sections 258a to 258e, inclusive, of title 40 of the United States Code.

(j) Shall have power to construct such dams and reservoirs in the Tennessee River and its tributaries, as in conjunction with Wilson Dam, and Norris, Wheeler, and Pickwick Landing Dams, now under construction, will provide a nine-foot channel in the said river and maintain a water supply for the same, from Knoxville to its mouth, and will best serve to promote navigation on the Tennessee River and

its tributaries and control destructive flood waters in the Tennessee and Mississippi River drainage basins; and shall power to acquire or construct power houses, power structures, transmission lines, navigation projects, and incidental works in the Tennessee River and its tributaries, and to unite the various power installations into one or more systems by transmission lines. The directors of the Authority are hereby directed to report to Congress their recommendations not later than April 1, 1936, for the unified development of the Tennessee River system.

(k) At any time before the expiration of five years from the date when this section, as amended, becomes law may in the name of and as agent for the United States and subject to approval of the President, dispose of any of such real property as in the judgment of the board may be no longer necessary in carrying out the purposes of this Act, but no land shall be conveyed on which there is a permanent dam, hydraulic power plant, fertilizer plant, or munitions plant, heretofore or hereafter built by or for the United States or for the Authority.

(l) Shall have power to advise and cooperate in the readjustment of the population displaced by the construction of dams, the acquisition of reservoir areas, the protection of watersheds, the acquisition of rights-of-way, and other necessary acquisitions of land, in order to effectuate the purposes of the Act; and may cooperate with Federal, state, and local agencies to that end.

Sec. 5. The board is hereby authorized—

(a) To contract with commercial producers for the production of such fertilizers or fertilizer materials as may be needed in the Government's program of development and introduction in excess of that produced by Government plants. Such contracts may provide either for outright purchase of materials by the board or only for the payment of carrying charges on special materials manufactured at the board's request for its program.

(b) To arrange with farmers and farm organizations for large-scale practical use of the new forms of fertilizers under conditions permitting an accurate measure of the economic return they produce.

(c) To cooperate with National, State, district, or county experimental stations or demonstration farms, with farmers, landowners, and associations of farmers or landowners, for the use of new forms of fertilizer or fertilizer practices during the initial or experimental period of their introduction, and for promoting the prevention of soil erosion by the use of fertilizers and otherwise.

(d) The board in order to improve and cheapen the production of fertilizer is authorized to manufacture and sell fixed nitrogen, fertilizer, and fertilizer ingredients at Muscle Shoals by the employment of existing facilities, by modernizing existing plants, or by any other process or processes that in its judgment shall appear wise and profitable for the fixation of atmospheric nitrogen or the cheapening of the production of fertilizer.

(e) Under the authority of this Act the board may make donations or sales of the product of the plant or plants operated by it to be fairly and equitably distributed through the agency of county demonstration agents, agricultural colleges, or otherwise as the board

may direct, for experimentation, education, and introduction of the use of such products in cooperation with practical farmers so as to obtain information as to the value, effect, and best methods of their use.

(f) The board is authorized to make alterations, modifications, or improvements in existing plants and facilities, and to construct new plants.

(g) In the event it is not used for the fixation of nitrogen for agricultural purposes or leased, then the board shall maintain in stand-by condition nitrate plant numbered 2, or its equivalent, for the fixation of atmospheric nitrogen, for the production of explosives in the event of war or a national emergency, until the Congress shall by joint resolution release the board from this obligation, and if any part thereof be used by the board for the manufacture of phosphoric acid or potash, the balance of nitrate plant numbered 2 shall be kept in stand-by condition.

(h) To establish, maintain, and operate laboratories and experimental plants, and to undertake experiments for the purpose of enabling the Corporation to furnish nitrogen products for military purposes, and nitrogen and other fertilizer products for agricultural purposes in the most economical manner and at the highest standard of efficiency.

(i) To request the assistance and advice of any officer, agent, or employee of any executive department or of any independent office of the United States, to enable the Corporation the better to carry out its powers successfully, and as far as practicable shall utilize the services of such officers, agents, and employees, and the President shall, if in his opinion the public interest, service, or economy so require, direct that such assistance, advice, and service be rendered to the Corporation, and any individual that may be by the President directed to render such assistance, advice, and service shall be thereafter subject to the orders, rules, and regulations of the board: *Provided*, That any invention or discovery made by virtue of and incidental to such service by an employee of the Government of the United States serving under this section, or by any employee of the Corporation, together with any patents which may be granted thereon, shall be the sole and exclusive property of the Corporation, which is hereby authorized to grant such licenses thereunder as shall be authorized by the board: *Provided further*, That the board may pay to such inventor such sum from the income from sale of licenses as it may deem proper.

(j) Upon the requisition of the Secretary of War or the Secretary of the Navy to manufacture for and sell at cost to the United States explosives or their nitrogenous content.

(k) Upon the requisition of the Secretary of War, the Corporation shall allot and deliver without charge to the War Department so much power as shall be necessary in the judgment of said Department for use in operation of all locks, lifts, or other facilities in aid of navigation.

(l) To produce, distribute, and sell electric power as herein particularly specified.

(m) No products of the Corporation shall be sold for use outside of the United States, its Territories, and possessions, except to the United States Government for the use of its Army and Navy, or to its allies in case of war.

(n) The President is authorized, within twelve months after the passage of this Act, to lease to any responsible farm organization, or to any corporation organized by it, nitrate plant numbered 2 and Waco Quarry, together with the railroad connecting said quarry with nitrate plant numbered 2, for a term not exceeding fifty years at a rental of not less than \$1 per year, but such authority shall be subject to the express condition that the lessee shall use said property during the term of said lease exclusively for the manufacture of fertilizer and fertilizer ingredients to be used only in the manufacture of fertilizer by said lessee and sold for use as fertilizer. The said lessee shall covenant to keep said property in first-class condition, but the lessee shall be authorized to modernize said plant numbered 2 by the installation of such machinery as may be necessary, and is authorized to amortize the cost of said machinery and improvements over the term of said lease or any part thereof. Said lease shall also provide that the board shall sell to the lessee power for the operation of said plant at the same schedule of prices that it charges all other customers for power of the same class and quantity. Said lease shall also provide that, if the said lessee does not desire to buy power of the publicly owned plant, it shall have the right to purchase its power for the operation of said plant of the Alabama Power Company or any other publicly or privately owned corporation engaged in the generation and sale of electric power, and in such case the lease shall provide further that the said lessee shall have a free right of way to build a transmission line over Government property to said plant, paying the actual expenses and damages, if any, incurred by the Corporation on account of such line. Said lease shall also provide that the said lessee shall covenant that during the term of said lease the said lessee shall not enter into any illegal monopoly, combination, or trust with any privately owned corporation engaged in the manufacture, production, and sale of fertilizer with the object or effect of increasing the price of fertilizer to the farmer.

SEC. 6. In the appointment of officials and the selection of employees for said Corporation, and in the promotion of any such employees or officials, no political test or qualification shall be permitted or given consideration, but all such appointments and promotions shall be given and made on the basis of merit and efficiency. Any member of said board who is found by the President of the United States to be guilty of a violation of this section shall be removed from office by the President of the United States, and any appointee of said board who is found by the board to be guilty of a violation of this section shall be removed from office by said board.

SEC. 7. In order to enable the Corporation to exercise the powers and duties vested in it by this Act—

(a) The exclusive use, possession, and control of the United States nitrate plants numbered 1 and 2, including steam plants, located, respectively, at Sheffield, Alabama, and Muscle Shoals, Alabama, together with all real estate and buildings connected therewith, all

tools and machinery, equipment, accessories, and materials belonging thereto, and all laboratories and plants used as auxiliaries thereto; the fixed-nitrogen research laboratory, the Waco limestone quarry, in Alabama, and Dam Numbered 2, located at Muscle Shoals, its power house, and all hydroelectric and operating appurtenances (except the locks), and all machinery, lands, and buildings in connection therewith, and all appurtenances thereof, and all other property to be acquired by the Corporation in its own name or in the name of the United States of America, are hereby intrusted to the Corporation for the purposes of this Act.

(b) The President of the United States is authorized to provide for the transfer to the Corporation of the use, possession, and control of such other real or personal property of the United States as he may from time to time deem necessary and proper for the purposes of the Corporation as herein stated.

SEC. 8. (a) The Corporation shall maintain its principal office in the immediate vicinity of Muscle Shoals, Alabama. The Corporation shall be held to be an inhabitant and resident of the northern judicial district of Alabama within the meaning of the laws of the United States relating to the venue of civil suits.

(b) The Corporation shall at all times maintain complete and accurate books of accounts.

(c) Each member of the board, before entering upon the duties of his office, shall subscribe to an oath (or affirmation) to support the Constitution of the United States and to faithfully and impartially perform the duties imposed upon him by this Act.

SEC. 9. (a) The board shall file with the President and with the Congress, in December of each year, a financial statement and a complete report as to the business of the Corporation covering the preceding governmental fiscal year. This report shall include an itemized statement of the cost of power at each power station, the total number of employees and the names, salaries, and duties of those receiving compensation at the rate of more than \$1,500 a year.

(b) All purchases and contracts for supplies or services, except for personal services, made by the Corporation, shall be made after advertising, in such manner and at such times sufficiently in advance of opening bids, as the board shall determine to be adequate to insure notice and opportunity for competition: *Provided*, That advertisement shall not be required when, (1) an emergency requires immediate delivery of the supplies or performance of the services; or (2) repair parts, accessories, supplemental equipment, or services are required for supplies or services previously furnished or contracted for; or (3) the aggregate amount involved in any purchase of supplies or procurement of services does not exceed \$500; in which cases such purchases or procurement of services may be made in the open market in the manner common among business men: *Provided further*, That in comparing bids and in making awards the board may consider such factors as relative quality and adaptability of supplies or services, the bidder's financial responsibility, skill, experience, record of integrity in dealing, ability to furnish repairs and maintenance services, the time of delivery or performance offered, and whether the bidder has complied with the specifications.

The Comptroller General of the United States shall audit the transactions of the Corporation at such times as he shall determine, but not less frequently than once each governmental fiscal year, with personnel of his selection. In such connection he and his representatives shall have free and open access to all papers, books, records, files, accounts, plants, warehouses, offices, and all other things, property, and places belonging to or under the control of or used or employed by the Corporation, and shall be afforded full facilities for counting all cash and verifying transactions with and balances in depositories. He shall make report of each such audit in quadruplicate, one copy for the President of the United States, one for the chairman of the board, one for public inspection at the principal office of the Corporation, and the other to be retained by him for the uses of the Congress: *Provided*, That such report shall not be made until the Corporation shall have had reasonable opportunity to examine the exceptions and criticisms of the Comptroller General of the General Accounting Office, to point out errors therein, explain or answer the same, and to file a statement, which shall be submitted by the Comptroller General with his report. The expenses for each such audit shall be paid from any appropriation or appropriations for the General Accounting Office, and such part of such expenses as may be allocated to the cost of generating, transmitting, and distributing electric energy shall be reimbursed promptly by the Corporation as billed by the Comptroller General. The Comptroller General shall make special report to the President of the United States and to the Congress of any transaction or condition found by him to be in conflict with the powers or duties entrusted to the Corporation by law.

Sec. 9a. The board is hereby directed in the operation of any dam or reservoir in its possession and control to regulate the stream flow primarily for the purposes of promoting navigation and controlling floods. So far as may be consistent with such purposes, the board is authorized to provide and operate facilities for the generation of electric energy at any such dam for the use of the Corporation and for the use of the United States or any agency thereof; and the board is further authorized, whenever an opportunity is afforded, to provide and operate facilities for the generation of electric energy in order to avoid the waste of water power, to transmit and market such power as in this act provided, and thereby, so far as may be practicable, to assist in liquidating the cost or aid in the maintenance of the projects of the Authority.

Sec. 10. The board is hereby empowered and authorized to sell the surplus power not used in its operations, and for operation of locks and other works generated by it, to States, counties, municipalities, corporations, partnerships, or individuals, according to the policies hereinafter set forth; and to carry out said authority, the board is authorized to enter into contracts for such sale for a term not exceeding twenty years, and in the sale of such current by the board it shall give preference to States, counties, municipalities, and cooperative organizations of citizens or farmers, not organized or doing business for profit, but primarily for the purpose of supplying electricity to its own citizens or members: *Provided*, That all contracts made with private companies or individuals for the sale of

power, which power is to be resold for a profit, shall contain a provision authorizing the board to cancel said contract upon five years' notice in writing, if the board needs said power to supply the demands of States, counties, or municipalities. In order to promote and encourage the fullest possible use of electric light and power on farms within reasonable distance of any of its transmission lines the board in its discretion shall have power to construct transmission lines to farms and small villages that are not otherwise supplied with electricity at reasonable rates, and to make such rules and regulations governing such sale and distribution of such electric power as in its judgment may be just and equitable: *Provided further*, That the board is hereby authorized and directed to make studies, experiments, and determinations to promote the wider and better use of electric power for agricultural and domestic use, or for small or local industries, and it may cooperate with State governments, or their subdivisions or agencies, with educational or research institutions, and with cooperatives or other organizations, in the application of electric power to the fuller and better balanced development of the resources of the region: *Provided further*, That the board is authorized to include in any contract for the sale of power such terms and conditions, including resale rate schedules, and to provide for such rules and regulations as in its judgment may be necessary or desirable for carrying out the purposes of this Act, and in case the purchaser shall fail to comply with any such terms and conditions, or violate any such rules and regulations, said contract may provide that it shall be voidable at the election of the board: *Provided further*, That in order to supply farms and small villages with electric power directly as contemplated by this section, the board in its discretion shall have power to acquire existing electric facilities used in serving such farms and small villages: *And provided further*, That the terms "States", "counties", and "municipalities" as used in this Act shall be construed to include the public agencies of any of them unless the context requires a different construction.

Sec. 11. It is hereby declared to be the policy of the Government so far as practical to distribute and sell the surplus power generated at Muscle Shoals equitably among the States, counties, and municipalities within transmission distance. This policy is further declared to be that the projects herein provided for shall be considered primarily as for the benefit of the people of the section as a whole and particularly the domestic and rural consumers to whom the power can economically be made available, and accordingly that sale to and use by industry shall be a secondary purpose, to be utilized principally to secure a sufficiently high load factor and revenue returns which will permit domestic and rural use at the lowest possible rates and in such manner as to encourage increased domestic and rural use of electricity. It is further hereby declared to be the policy of the Government to utilize the Muscle Shoals properties so far as may be necessary to improve, increase, and cheapen the production of fertilizer and fertilizer ingredients by carrying out the provisions of this Act.

Sec. 12. In order to place the board upon a fair basis for making such contracts and for receiving bids for the sale of such power, it is hereby expressly authorized, either from appropriations made by

Congress or from funds secured from the sale of such power, or from funds secured by the sale of bonds hereafter provided for, to construct, lease, purchase, or authorize the construction of transmission lines within transmission distance from the place where generated, and to interconnect with other systems. The board is also authorized to lease to any person, persons, or corporation the use of any transmission line owned by the Government and operated by the board, but no such lease shall be made that in any way interferes with the use of such transmission line by the board: *Provided*, that if any State, county, municipality, or other public or cooperative organization of citizens or farmers, not organized or doing business for profit, but primarily for the purpose of supplying electricity to its own citizens or members, or any two or more of such municipalities or organizations, shall construct or agree to construct and maintain a properly designed and built transmission line to the Government reservation upon which is located a Government generating plant, or to a main transmission line owned by the Government or leased by the board and under the control of the board, the board is hereby authorized and directed to contract with such State, county, municipality, or other organization, or two or more of them, for the sale of electricity for a term not exceeding thirty years; and in any such case the board shall give to such State, county, municipality, or other organization ample time to fully comply with any local law now in existence or hereafter enacted providing for the necessary legal authority for such State, county, municipality, or other organization to contract with the board for such power: *Provided further*, That all contracts entered into between the Corporation, and any municipality or other political subdivision or cooperative organization, shall provide that the electric power shall be sold and distributed to the ultimate consumer without discrimination as between consumers of the same class, and such contract shall be voidable at the election of the board if a discriminatory rate, rebate, or other special concession is made or given to any consumer or user by the municipality or other political subdivision or cooperative organization: *And provided further*, That as to any surplus power not so sold as above provided to States, counties, municipalities, or other said organizations, before the board shall sell the same to any person or corporation engaged in the distribution and resale of electricity for profit, it shall require said person or corporation to agree that any resale of such electric power by said person or corporation shall be made to the ultimate consumer of such electric power at prices that shall not exceed a schedule fixed by the board from time to time as reasonable, just, and fair; and in case of any such sale, if an amount is charged the ultimate consumer which is in excess of the price so deemed to be just, reasonable, and fair by the board, the contract for such sale between the board and such distributor of electricity shall be voidable at the election of the board: *And provided further*, That the board is hereby authorized to enter into contracts with other power systems for the mutual exchange of unused excess power upon suitable terms, for the conservation of stored water, and as an emergency or breakdown relief.

SEC. 12a. In order (1) to facilitate the disposition of the surplus power of the Corporation according to the policies set forth in this Act; (2) to give effect to the priority herein accorded to States, counties, municipalities, and nonprofit organizations in the purchase of such power by enabling them to acquire facilities for the distribution of such power; and (3) at the same time to preserve existing distribution facilities as going concerns and avoid duplication of such facilities, the board is authorized to advise and cooperate with and assist, by extending credit for a period of not exceeding five years to States, counties, and municipalities and nonprofit organizations situated within transmission distance from any dam where such power is generated by the Corporation in acquiring, improving, and operating (a) existing distribution facilities and incidental works, including generating plants; and (b) interconnecting transmission lines; or in acquiring any interest in such facilities, incidental works, and lines.

SEC. 13. Five per centum of the gross proceeds received by the board for the sale of power generated at Dam Numbered 2, or from and other hydropower plant hereafter constructed in the State of Alabama, shall be paid to the State of Alabama; and 5 per centum of the gross proceeds from the sale of power generated at Cove Creek Dam, hereinafter provided for, or any other dam located in the State of Tennessee, shall be paid to the State of Tennessee. Upon the completion of said Cove Creek Dam the board shall ascertain how much additional power is thereby generated at Dam Numbered 2 and at any other dam hereafter constructed by the Government of the United States on the Tennessee River, in the State of Alabama, or in the State of Tennessee, and from the gross proceeds of the sale of such additional power 2½ per centum shall be paid to the State of Alabama and 2½ per centum to the State of Tennessee. These percentages shall apply to any other dam that may hereafter be constructed and controlled and operated by the board on the Tennessee River or any of its tributaries, the main purpose of which is to control flood waters and where the development of electric power is incidental to the operation of such flood-control dam. In ascertaining the gross proceeds from the sale of such power upon which a percentage is paid to the States of Alabama and Tennessee, the board shall not take into consideration the proceeds of any power sold or delivered to the Government of the United States, or any department or agency of the Government of the United States, used in the operation of any locks on the Tennessee River or for any experimental purposes, or for the manufacture of fertilizer or any of the ingredients thereof, or for any other governmental purpose: *Provided*, That the percentages to be paid to the States of Alabama and Tennessee, as provided in this section, shall be subject to revision and change by the board, and any new percentages established by the board, when approved by the President, shall remain in effect until and unless again changed by the board with the approval of the President. No change of said percentages shall be made more often than once in five years, and no change shall be made without giving to the States of Alabama and Tennessee an opportunity to be heard.

SEC. 14. The board shall make a thorough investigation as to the present value of Dam Numbered 2, and the steam plants at nitrate

plant numbered 1, and nitrate plant numbered 2, and as to the cost of Cove Creek Dam, for the purpose of ascertaining how much of the value or the cost of said properties shall be allocated and charged up to (1) flood control, (2) navigation, (3) fertilizer, (4) national defense, and (5) the development of power. The findings thus made by the board, when approved by the President of the United States, shall be final, and such findings shall thereafter be used in all allocations of value for the purpose of keeping the book value of said properties. In like manner, the cost and book value of any dams, steam plants, or other similar improvements hereafter constructed and turned over to said board for the purpose of control and management shall be ascertained and allocated.

The board shall, on or before January 1, 1937, file with Congress a statement of its allocation of the value of all such properties turned over to said Board and which have been completed prior to the end of the preceding fiscal year, and shall thereafter in its annual report to Congress file a statement of its allocation of the value of such properties as have been completed during the preceding fiscal year.

For the purpose of accumulating data useful to the Congress in the formulation of legislative policy in matters relating to the generation, transmission, and distribution of electric energy and the production of chemicals necessary to national defense and useful in agriculture, and to the Federal Power Commission and other Federal and State agencies, and to the public, the board shall keep complete accounts of its costs of generation, transmission, and distribution of electric energy and shall keep a complete account of the total cost of generating and transmission facilities constructed or otherwise acquired by the Corporation, and of producing such chemicals, and a description of the major components of such costs according to such uniform system of accounting for public utilities as the Federal Power Commission has, and if it have none, then it is hereby empowered and directed to prescribe such uniform system of accounting, together with records of such other physical data and operating statistics of the Authority as may be helpful in determining the actual cost and value of services, and the practices, methods, facilities, equipment, appliances, and standards and sizes, types, location, and geographical and economic integration of plants and systems best suited to promote the public interest, efficiency, and the wider and more economical use of electric energy. Such data shall be reported to the Congress by the board from time to time with appropriate analyses and recommendations, and, so far as practicable, shall be made available to the Federal Power Commission and other Federal and State agencies which may be concerned with the administration of legislation relating to the generation, transmission, or distribution of electric energy and chemicals useful to agriculture. It is hereby declared to be the policy of this Act that, in order, as soon as practicable, to make the power projects self-supporting and self-liquidating, the surplus power shall be sold at rates which, in the opinion of the board, when applied to the normal capacity of the Authority's power facilities, will produce gross revenues in excess of the cost of production of said power and in addition to the statement of the cost of power at each power station as required by sec-

tion 9 (a) of the "Tennessee Valley Act of 1933", the board shall file with each annual report a statement of the total cost of all power generated by it at all power stations during each year, the average cost of such power per kilowatt-hour, the rates at which sold, and to whom sold, and copies of all contracts for the sale of power.

Sec. 15. In the construction of any future dam, steam plant, or other facility, to be used in whole or in part for the generation or transmission of electric power the board is hereby authorized and empowered to issue on the credit of the United States and to sell serial bonds not exceeding \$50,000,000 in amount, having a maturity not more than fifty years from the date of the issue thereof, and bearing interest not exceeding 3½ per centum per annum. Said bonds shall be issued and sold in amounts and prices approved by the Secretary of the Treasury, but all such bonds as may be so issued and sold shall have equal rank. None of said bonds shall be sold below par, and no fee, commission, or compensation whatever shall be paid to any person, firm, or corporation for handling, negotiating the sale, or selling the said bonds. All of such bonds so issued and sold shall have all the rights and privileges accorded by law to Panama Canal bonds, authorized by section 8 of the act of June 28, 1902, chapter 1302, as amended by the act of December 21, 1905 (ch. 3, sec. 1, 34 Stat. 5), as now compiled in section 743 of title 31 of the United States Code. All funds derived from the sale of such bonds shall be paid over to the Corporation.

Sec. 15a. With the approval of the Secretary of the Treasury, the Corporation is authorized to issue bonds not to exceed in the aggregate \$50,000,000 outstanding at any one time, which bonds may be sold by the Corporation to obtain funds to carry out the provisions of section 12a of this Act. Such bonds shall be in such forms and denominations, shall mature within such periods not more than fifty years from the date of their issue, may be redeemable at the option of the Corporation before maturity in such manner as may be stipulated therein, shall bear such rates of interest not exceeding 3½ per centum per annum, shall be subject to such terms and conditions, shall be issued in such manner and amount, and sold at such prices, as may be prescribed by the Corporation with the approval of the Secretary of the Treasury: *Provided*, That such bonds shall not be sold at such prices or on such terms as to afford an investment yield to the holders in excess of 3½ per centum per annum. Such bonds shall be fully and unconditionally guaranteed both as to interest and principal by the United States, and such guaranty shall be expressed on the face thereof, and such bonds shall be lawful investments, and may be accepted as security, for all fiduciary, trust, and public funds, the investment or deposit of which shall be under the authority or control of the United States or any officer or officers thereof. In the event that the Corporation should not pay upon demand, when due, the principal of, or interest on, such bonds, the Secretary of the Treasury shall pay to the holder the amount thereof, which is hereby authorized to be appropriated out of any moneys in the Treasury not otherwise appropriated, and thereupon to the extent of the amount so paid the Secretary of the Treasury shall succeed to all the rights of the holders of such bonds. The Secretary of the Treasury, in his discretion, is authorized to purchase

any bonds issued hereunder, and for such purpose the Secretary of the Treasury is authorized to use as a public-debt transaction the proceeds from the sale of any securities hereafter issued under the Second Liberty Bond Act, as amended, and the purposes for which securities may be issued under such Act, as amended, are extended to include any purchases of the Corporation's bonds hereunder. The Secretary of the Treasury may, at any time, sell any of the bonds of the Corporation acquired by him under this section. All redemptions, purchases, and sales by the Secretary of the Treasury of the bonds of the Corporation shall be treated as public-debt transactions of the United States. With the approval of the Secretary of the Treasury, the Corporation shall have power to purchase such bonds in the open market at any time and at any price. No bonds shall be issued hereunder to provide funds or bonds necessary for the performance of any proposed contract negotiated by the Corporation under the authority of section 12a of this Act until the proposed contract shall have been submitted to and approved by the Federal Power Commission. When any such proposed contract shall have been submitted to the said Commission, the matter shall be given precedence and shall be in every way expedited and the Commission's determination of the matter shall be final. The authority of the Corporation to issue bonds hereunder shall expire at the end of five years from the date when this section as amended herein becomes law, except that such bonds may be issued at any time after the expiration of said period to provide bonds or funds necessary for the performance of any contract entered into by the Corporation, prior to the expiration of said period, under the authority of section 12a of this Act.

SEC. 16. The board, whenever the President deems it advisable, is hereby empowered and directed to complete Dam Numbered 2 at Muscle Shoals, Alabama, and the steam plant at nitrate plant numbered 2, in the vicinity of Muscle Shoals, by installing in Dam Numbered 2 the additional power units according to the plans and specifications of said dam, and the additional power unit in the steam plant at nitrate plant numbered 2.

SEC. 17. The Secretary of War, or the Secretary of the Interior, is hereby authorized to construct, either directly or by contract to the lowest responsible bidder, after due advertisement, a dam in and across Clinch River in the State of Tennessee, which has by long custom become known and designated as the Cove Creek Dam, together with a transmission line from Muscle Shoals, according to the latest and most approved designs, including power house and hydroelectric installations and equipment for the generation of power, in order that the waters of said Clinch River may be impounded and stored above said dam for the purpose of increasing and regulating the flow of the Clinch River and the Tennessee River below, so that the maximum amount of primary power may be developed at Dam Numbered 2 and at any and all other dams below the said Cove Creek Dam: *Provided, however,* That the President is hereby authorized by appropriate order to direct the employment by the Secretary of War, or by the Secretary of the Interior, of such engineer or engineers as he may designate, to perform such duties and obligations as he may deem proper, either in the drawing of

plans and specifications for said dam, or to perform any other work in the building or construction of the same. The President may, by such order, place the control of the construction of said dam in the hands of such engineer or engineers taken from private life as he may desire: *And provided further,* That the President is hereby expressly authorized, without regard to the restriction or limitation of any other statute, to select attorneys and assistants for the purpose of making any investigation as he may deem proper to ascertain whether, in the control and management of Dam Numbered 2, or any other dam or property owned by the Government in the Tennessee River Basin, or in the authorization of any improvement therein, there has been any undue or unfair advantage given to private persons, partnerships, or corporations by any officials or employees of the Government, or whether in any such matters the Government has been injured or unjustly deprived of any of its rights.

SEC. 18. In order to enable and empower the Secretary of War, the Secretary of the Interior, or the board to carry out the authority hereby conferred in the most economical and efficient manner, he or it is hereby authorized and empowered in the exercise of the powers of national defense in aid of navigation, and in the control of the flood waters of the Tennessee and Mississippi Rivers, constituting channels of interstate commerce, to exercise the right of eminent domain for all purposes of this Act and to condemn all lands, easements, rights-of-way, and other area necessary in order to obtain a site for said Cove Creek Dam, and the flowage rights for the reservoir of water above said dam, and to negotiate and conclude contracts with States, counties, municipalities, and all State agencies, and with railroads, railroad corporations, common carriers, and all public-utility commissions, and any other person, firm, or corporation, for the relocation of railroad tracts, highways, highway bridges, mills, ferries, electric-light plants, and any and all other properties, enterprises, and projects whose removal may be necessary in order to carry out the provisions of this Act. When said Cove Creek Dam, transmission line, and power house shall have been completed, the possession, use, and control thereof shall be intrusted to the corporation for use and operation in connection with the general Tennessee Valley project and to promote flood control and navigation in the Tennessee River.

SEC. 19. The Corporation, as an instrumentality and agency of the Government of the United States for the purpose of executing its constitutional powers, shall have access to the Patent Office of the United States for the purpose of studying, ascertaining, and copying all methods, formulae, and scientific information (not including access to pending applications for patents) necessary to enable the Corporation to use and employ the most efficacious and economical process for the production of fixed nitrogen, or any essential ingredient of fertilizer, or any method of improving and cheapening the production of hydroelectric power, and any owner of a patent whose patent rights may have been thus in any way copied, used, infringed, or employed by the exercise of this authority by the Corporation shall have as the exclusive remedy a cause of action against the Corporation, to be instituted and prosecuted on the equity side of the appropriate district court of the United States for the recovery of

reasonable compensation for such infringement. The Commissioner of Patents shall furnish to the Corporation, at its request and without payment of fees, copies of documents on file in his office: *Provided*, That the benefits of this section shall not apply to any art, machine, method of manufacture, or composition of matter discovered or invented by such employee during the time of his employment or service with the Corporation or with the Government of the United States.

SEC. 20. The Government of the United States hereby reserves the right, in case of war or national emergency declared by Congress, to take possession of all or any part of the property described or referred to in this Act for the purpose of manufacturing explosives or for other war purposes; but, if this right is exercised by the Government, it shall pay the reasonable and fair damages that may be suffered by any party whose contract for the purchase of electric power or fixed nitrogen or fertilizer ingredients is hereby violated, after the amount of the damages has been fixed by the United States Court of Claims in proceedings instituted and conducted for that purpose under rules prescribed by the court.

SEC. 21. (a) All general penal statutes relating to the larceny, embezzlement, conversion, or to the improper handling, retention, use, or disposal of public moneys or property of the United States, shall apply to the moneys and property of the Corporation and to moneys and properties of the United States intrusted to the Corporation.

(b) Any person who, with intent to defraud the Corporation, or to deceive any director, officer, or employee of the Corporation or any officer or employee of the United States (1) makes any false entry in any book of the Corporation, or (2) makes any false report or statement for the Corporation, shall, upon conviction thereof, be fined not more than \$10,000 or imprisoned not more than five years, or both.

(c) Any person who shall receive any compensation, rebate, or reward, or shall enter into any conspiracy, collusion, or agreement, express or implied, with intent to defraud the Corporation or wrongfully and unlawfully to defeat its purposes, shall, on conviction thereof, be fined not more than \$5,000 or imprisoned not more than five years, or both.

SEC. 22. To aid further the proper use, conservation, and development of the natural resources of the Tennessee River drainage basin and of such adjoining territory as may be related to or materially affected by the development consequent to this Act, and to provide for the general welfare of the citizens of said areas, the President is hereby authorized, by such means or methods as he may deem proper within the limits of appropriations made therefor by Congress, to make such surveys of and general plans for said Tennessee basin and adjoining territory as may be useful to the Congress and to the several States in guiding and controlling the extent, sequence, and nature of development that may be equitably and economically advanced through the expenditure of public funds, or through the guidance or control of public authority, all for the general purpose of fostering an orderly and proper physical, economic, and social development of said areas; and the President is further authorized in making said surveys and plans to cooperate with the States affected

thereby, or subdivisions or agencies of such States, or with cooperative or other organizations, and to make such studies, experiments, or demonstrations as may be necessary and suitable to that end.

SEC. 23. The President shall, from time to time, as the work provided for in the preceding section progresses, recommend to Congress such legislation as he deems proper to carry out the general purposes stated in said section, and for the especial purpose of bringing about in said Tennessee drainage basin and adjoining territory in conformity with said general purposes (1) the maximum amount of flood control; (2) the maximum development of said Tennessee River for navigation purposes; (3) the maximum generation of electric power consistent with flood control and navigation; (4) the proper use of marginal lands; (5) the proper method of reforestation of all lands in said drainage basin suitable for reforestation; and (6) the economic and social well-being of the people living in said river basin.

SEC. 24. For the purpose of securing any rights of flowage, or obtaining title to or possession of any property, real or personal, that may be necessary or may become necessary, in the carrying out of any of the provisions of this Act, the President of the United States for a period of three years from the date of the enactment of this Act, is hereby authorized to acquire title in the name of the United States to such rights or such property, and to provide for the payment for same by directing the board to contract to deliver power generated at any of the plants now owned or hereafter owned or constructed by the Government or by said Corporation, such future delivery of power to continue for a period not exceeding thirty years. Likewise, for one year after the enactment of this Act, the President is further authorized to sell or lease any parcel or part of any vacant real estate now owned by the Government in said Tennessee River Basin to persons, firms, or corporations who shall contract to erect thereon factories or manufacturing establishments, and who shall contract to purchase of said Corporation electric power for the operation of any such factory or manufacturing establishment. No contract shall be made by the President for the sale of any of such real estate as may be necessary for present or future use on the part of the Government for any of the purposes of this Act. Any such contract made by the President of the United States shall be carried out by the board: *Provided*, That no such contract shall be made that will in any way abridge or take away the preference right to purchase power given in this Act to States, counties, municipalities, or farm organizations: *Provided further*, That no lease shall be for a term to exceed fifty years: *Provided further*, That any sale shall be on condition that said land shall be used for industrial purposes only.

SEC. 25. The Corporation may cause proceedings to be instituted for the acquisition by condemnation of any lands, easements, or rights-of-way which, in the opinion of the Corporation, are necessary to carry out the provisions of this Act. The proceedings shall be instituted in the United States district court for the district in which the land, easement, right-of-way, or other interest, or any part thereof, is located, and such court shall have full jurisdiction to divest the complete title to the property sought to be acquired out of all persons or claimants and vest the same in the United States in fee simple, and to enter a decree quieting the title thereto in the United States of America.

Upon the filing of a petition for condemnation and for the purpose of ascertaining the value of the property to be acquired, and assessing the compensation to be paid, the court shall appoint three commissioners who shall be disinterested persons and who shall take and subscribe an oath that they do not own any lands, or interest or easement in any lands, which it may be desirable for the United States to acquire in the furtherance of said project, and such commissioners shall not be selected from the locality wherein the land sought to be condemned lies. Such commissioners shall receive a per diem of not to exceed \$15 for their services, together with an additional amount of \$5 per day for subsistence for time actually spent in performing their duties as commissioners.

It shall be the duty of such commissioners to examine into the value of the lands sought to be condemned, to conduct hearings and receive evidence, and generally to take such appropriate steps as may be proper for the determination of the value of the said lands sought to be condemned, and for such purpose the commissioners are authorized to administer oaths and subpoena witnesses, which said witnesses shall receive the same fees as are provided for witnesses in the Federal courts. The said commissioners shall thereupon file a report setting forth their conclusions as to the value of the said property sought to be condemned, making a separate award and valuation in the premises with respect to each separate parcel involved. Upon the filing of such award in court the clerk of said court shall give notice of the filing of such award to the parties to said proceeding, in manner and form as directed by the judge of said court.

Either or both parties may file exceptions to the award of said commissioners within twenty days from the date of the filing of said award in court. Exceptions filed to such award shall be heard before three Federal district judges unless the parties, in writing, in person, or by their attorneys, stipulate that the exceptions may be heard before a lesser number of judges. On such hearing such judges shall pass de novo upon the proceedings had before the commissioners, may view the property, and may take additional evidence. Upon such hearings the said judges shall file their own award, fixing therein the value of the property sought to be condemned, regardless of the award previously made by the said commissioners.

At any time within thirty days from the filing of the decision of the district judges upon the hearing on exceptions to the award made by the commissioners, either party may appeal from such decision of the said judges to the circuit court of appeals, and the said circuit court of appeals shall upon the hearing on said appeal dispose of the same upon the record, without regard to the awards or findings theretofore made by the commissioners or the district judges, and such circuit court of appeals shall thereupon fix the value of the said property sought to be condemned.

Upon acceptance of an award by the owner of any property herein provided to be appropriated, and the payment of the money awarded or upon the failure of either party to file exceptions to the award of the commissioners within the time specified, or upon the award of the commissioners, and the payment of the money by the United States pursuant thereto, or the payment of the money awarded into the registry of the court by the Corporation, the title to said property and the right to the possession thereof shall pass to the United

States, and the United States shall be entitled to a writ in the same proceeding to dispossess the former owner of said property, and all lessees, agents, and attorneys of such former owner, and to put the United States, by its corporate creature and agent, the Corporation, into possession of said property.

In the event of any property owned in whole or in part by minors, or insane persons, or incompetent persons, or estates of deceased persons, then the legal representatives of such minors, insane persons, incompetent persons, or estates shall have power, by and with the consent and approval of the trial judge in whose court said matter is for determination, to consent to or reject the awards of the commissioners herein provided for, and in the event that there be no legal representatives, or that the legal representatives for such minors, insane persons, or incompetent persons shall fail or decline to act, then such trial judge may, upon motion, appoint a guardian ad litem to act for such minors, insane persons, or incompetent persons, and such guardian ad litem shall act to the full extent and to the same purpose and effect as his ward could act, if competent, and such guardian ad litem shall be deemed to have full power and authority to respond, to conduct, or to maintain any proceeding herein provided for affecting his said ward.

Sec. 26. Commencing July 1, 1936, the proceeds for each fiscal year derived by the board from the sale of power or any other products manufactured by the Corporation, and from any other activities of the Corporation including the disposition of any real or personal property, shall be paid into the Treasury of the United States at the end of each calendar year, save and except such part of such proceeds as in the opinion of the board shall be necessary for the Corporation in the operation of dams and reservoirs, in conducting its business in generating, transmitting, and distributing electric energy and in manufacturing, selling, and distributing fertilizer and fertilizer ingredients. A continuing fund of \$1,000,000 is also excepted from the requirements of this section and may be withheld by the board to defray emergency expenses and to insure continuous operation: *Provided*, That nothing in this section shall be construed to prevent the use by the board, after June 30, 1936, of proceeds accruing prior to July 1, 1936, for the payment of obligations lawfully incurred prior to such latter date.

Sec. 26a. The unified development and regulation of the Tennessee River system requires that no dam, appurtenant works, or other obstruction affecting navigation, flood control, or public lands or reservations shall be constructed, and thereafter operated or maintained across, along, or in the said river or any of its tributaries until plans for such construction, operation, and maintenance shall have been submitted to and approved by the board; and the construction, commencement of construction, operation, or maintenance of such structures without such approval is hereby prohibited. When such plans shall have been approved, deviation therefrom either before or after completion of such structures is prohibited unless the modification of such plans has previously been submitted to and approved by the board.

In the event the board shall, within sixty days after their formal submission to the board, fail to approve any plans or modifications,

as the case may be, for construction, operation, or maintenance of any such structures on the Little Tennessee River, the above requirements shall be deemed satisfied, if upon application to the Secretary of War, with due notice to the Corporation, and hearing thereon, such plans or modifications are approved by the said Secretary of War as reasonably adequate and effective for the unified development and regulation of the Tennessee River system.

Such construction, commencement of construction, operation, or maintenance of any structures or parts thereof in violation of the provisions of this section may be prevented, and the removal or discontinuation thereof required by the injunction or order of any district court exercising jurisdiction in any district in which such structures or parts thereof may be situated, and the Corporation is hereby authorized to bring appropriate proceedings to this end.

The requirements of this section shall not be construed to be a substitute for the requirements of any other law of the United States or of any State, now in effect or hereafter enacted, but shall be in addition thereto, so that any approval, license, permit, or other sanction now or hereafter required by the provisions of any such law for the construction, operation, or maintenance of any structures whatever, except such as may be constructed, operated, or maintained by the Corporation, shall be required, notwithstanding the provisions of this section.

SEC. 27. All appropriations necessary to carry out the provisions of this Act are hereby authorized.

SEC. 28. That all Acts or parts of Acts in conflict herewith are hereby repealed, so far as they affect the operations contemplated by this Act.

SEC. 29. The right to alter, amend, or repeal this Act is hereby expressly declared and reserved, but no such amendment or repeal shall operate to impair the obligation of any contract made by said Corporation under any power conferred by this Act.

SEC. 30.¹ The sections of this Act are hereby declared to be separable, and in the event any one or more sections of this Act be held to be unconstitutional, the same shall not affect the validity of other sections of this Act.

SEC. 31. This Act shall be liberally construed to carry out the purposes of Congress to provide for the disposition of and make needful rules and regulations respecting Government properties entrusted to the Authority, provide for the national defense, improve navigation, control destructive floods, and promote interstate commerce and the general welfare, but no real estate shall be held except what is necessary in the opinion of the board to carry out plans and projects actually decided upon requiring the use of such land: *Provided*, That any land purchased by the Authority and not necessary to carry out plans and projects actually decided upon shall be sold by the Authority as agent of the United States, after due advertisement, at public auction to the highest bidder, or at private sale as provided in section 4 (k) of this Act.

¹ Section 15 of the amendatory Act provides as follows:

"That the sections of this Act are hereby declared to be separable, and in the event of any one or more sections of this Act, or parts thereof, be held to be unconstitutional, such holding shall not affect the validity of other sections or parts of this Act."

TENNESSEE VALLEY AUTHORITY

Memorandum from Arthur Morgan:

To H. A. Morgan
David Lillienthal

I should like to bring up again the question of a policy in regard to the generation and distribution of power. Our present course, in the lack of a declared policy, in itself is establishing a policy which may not be easily reversed. The time to meet the situation should not be further postponed. If we delay much longer, the temper of the situation may be so set as to make revision impossible.

The following I hold to be the chief functions of power generation and transmission by the Tennessee Valley Authority:

1. To promote the orderly and well proportioned development of the economic and social resources of the Tennessee River area, including the generation and transmission of power, as a beginning and as a laboratory of planned development.
2. To provide "a yardstick" by which to measure the relative effectiveness and economy of public and private ownership and operation in the power field.

The first of these purposes is stated in the law. The second is part of the program of President Roosevelt, and under all the circumstances his program and policy are relevant to the situation. The aim is not to begin a contest for the general substitution throughout the southern states of public for private operation at the present time.

A power system, like a railroad or a telephone system, is in some respects a natural monopoly. The Interstate Commerce Commission will properly discourage the building of a new railroad in a region already adequately served. To build two paralleling and competitive power systems in a region is an economic waste, if the "yardstick" idea can find expression otherwise. The private utilities compete with each other in occupying virgin territory, or in acquiring independent systems, but they very properly refrain from paralleling each others lines and from competing for the same customers in the same area. Only technical difficulties of transmission and interconnection prevent the power systems of the country from gradually becoming in effect a single monopoly like the Bell Telephone System.

(Only inexpertness and inefficiency in government can justify any such public service monopoly as a great power system remaining in private ownership. Whether publicly or privately controlled, it is, in effect, a part of the common public life.)

For the Tennessee Valley Authority to best work out a planned economy with reference to power in its area it should have a monopoly of generation and transmission in that area. (If the technical difficulties of transmission can be so eliminated that transmission lines can become common carriers, then transmission lines can receive power from any available source on an equitable basis, and generation need not be a monopoly. The private utilities have recognized this in being willing for the government to generate power if it did not transmit or distribute power.)

If the Tennessee Valley Authority must establish itself by paralleling the lines of private companies, serving some municipalities along a transmission line, and missing others, then there will be great duplication of plant and personnel, and great waste. The cost of generation and transmission for the Tennessee Valley Authority may be higher than in a territory served by a single system, and the comparison of public and private ownership will be unfair to public ownership. Only by having a substantial monopoly of a territory, as the private utilities do, can a fair comparison be had.

From the standpoint of a planned development of the Tennessee Valley Authority territory in all respects, the same considerations hold good. This territory can be served best by a single system of transmission such as characterizes other areas. If the Tennessee Valley Authority area must experience the warfare of the duplication of facilities and personnel, with the hard feeling and bitterness and other unfavorable developments that would accompany such warfare, then the Tennessee Valley Authority for a considerable period will be less effective, and will be less representative of what economic planning can accomplish. (If such strife is inevitable, then economic planning should nevertheless proceed as best it can, for disturbance must sometimes precede progress.)

Furthermore, I believe that the Tennessee Valley Authority has a responsibility to those who in good faith have invested in the securities of the private utilities. No unnecessary losses should be incurred by the sheer waste of a struggle for territory, if that can reasonably be avoided. A large proportion of those who protested against the Tennessee Valley Authority act in congress, and in favor of the Alabama Power Company, were widows or orphans. I do not know whether the Alabama Power Company specialized in widows and orphans in distributing its preferred stock, or whether it keeps a separate list of widow and orphan investors to circularize when it wants to hide behind this class of investors. In any case, these people invested in good faith. To whatever extent they invested in watered stock they should take their losses, unless the banking firms that control these companies can be made to realize their peculiar responsibility, can be brought to protect such investors.

However, so far as these investments represent legitimate expenditures, they should not be jeopardized by any action or attitude of the Tennessee Valley Authority in bringing on unnecessary duplication of facilities, if public operation can be established without such duplication.

In my opinion, the policy of the Tennessee Valley Authority with reference to power should be as follows:

1. Our board should approach the management of the Commonwealth and Southern Co., which controls the Alabama Power Co., The Tennessee Power Co., and the Georgia Power Co., and should suggest that a division of territory be made, the Tennessee Valley Authority to have entire jurisdiction in its territory, on condition that it will not compete outside its territory. Similar agreements can be proposed to the few other private companies affected. The Tennessee Valley Authority area for power distribution cannot exactly coincide with the drainage area of the Tennessee River, but can largely cover the same area. In order to have a fair "yardstick" for comparison of costs it is probable that one large city should be included in the Tennessee Valley Authority area. Large cities now in the distribution area of the Commonwealth and Southern Co. are Atlanta and Birmingham. Other large cities in reach are Memphis, Louisville, Cincinnati, and Pittsburgh. If these cities should know that the Tennessee Valley Authority would for the time being take on one of them and no more, it is probable that one of them would decide to establish a municipally owned distribution system, since some of them now contemplate such a step.
2. Such a distribution of territory should run for a limited period, say five or ten years. Prior to the end of that period there should be a reconsideration of the situation. If government operation is proving more economical and satisfactory, its range should increase. If, all things considered, private operation is more satisfactory, then an extension of government operation would not be indicated. If government operation should fail to compete successfully for a long period, say twenty-five years, it probably should be given up.
3. In taking over privately owned systems, the price paid should be on some such basis as the following:
 - a. The reproduction cost of equivalent present value should be paid, material and labor costs being estimated on a basis of average costs and wages for a considerable period, say July 1, 1923 to July 1, 1933.
 - b. Some percentage should be added to this for the cost of overhead and legitimate development expense.
 - c. There might be some other legitimate charges, or some modification of these, which would be approved by a board of disinterested accountants and economists who should make the appraisal.
4. As to municipal distribution systems, they might be taken over by the municipalities, or they might be run by their present owners until they could be taken over, or they might in special cases be taken over by the Tennessee Valley Authority with the same sort of appraisal.
5. One element of policy, suggested in my memorandum of July 28, has already been adopted by the board. It is that the Tennessee Valley Authority should oppose the granting of further licenses for water power to private companies within the drainage area of the Tennessee River, should acquire by purchase or condemnation any vested rights now existing in large private projects in that area not yet built, and should endeavor

to establish the policy that all water power development on a large scale and all large scale transmission in the Tennessee Valley Authority area shall be by the Tennessee Valley Authority. Only a system of considerable dimensions can fully demonstrate the feasibility of public operation.

6. Another policy suggested in my memorandum of about June 5, and reviewed in the memorandum of July 28, was adopted by the board. It is that the Tennessee Valley Authority shall sponsor a study to develop standard accounting, statistical and administrative methods for the management of publicly owned utilities, so that better standards can be maintained and better comparisons made. This recommendation also included the promotion of an "Institute of Publicly Owned Utility Managers" who would help develop and maintain such standards, and the promotion of a research and consulting staff to advise on fiscal, engineering, legal, and administrative policy.

7. With reference to trying to deal with the Commonwealth and Southern Company for exclusive occupation of territory, I believe that this should be done very soon for the following reasons:

a. It has been President Roosevelt's opinion, expressed to me both before the Tennessee Valley Authority bill was enacted into law, and afterward while this matter was under discussion by our board, that the Tennessee Valley Authority should limit the area of its activities in power transmission, and should, if feasible, maintain harmonious relations with private utilities, so that wasteful duplication may be avoided.

b. The present course, of discussing the sale of power with all inquirers, but with no suggestion of policy to the private utilities, is equal to a declaration of war, and tends to result in attitudes which will lead to competition through duplication of facilities over a wide area. The present course if persisted in will surely result in an attitude of strife and antagonism.

8. In case no agreement can be reached with the Commonwealth and Southern Company, then the Tennessee Valley Authority should proceed vigorously to establish itself in the field of power generation and distribution. There can be no comparison of the relative merit of public and private power supply except by actual cases, and the loss incident to establishing a system of generation and distribution will be justified by the need of having a demonstration, if peaceful means to the same end cannot be found.

I find myself embarrassed in the following manner. Mr. Wilkie, president of the Commonwealth and Southern Corporation, asked to see me to discuss our relations. After a discussion with the board I did so, and endeavored to limit information or commitment to points agreed upon in that discussion with the board. I told Mr. Wilkie that it would be the policy of our board to endeavor to work out some harmonious arrangement with the Tennessee Power Company, which would protect the interests of the Tennessee Valley Authority. I told him that we should undertake to deal directly and in a straight forward manner with him, and to find some common ground for procedure, on the assumption that the Tennessee Valley Authority will generate and transmit power. I told him that in case of misunderstandings we should take them up directly and at first hand.

Our present course leads to uncertainty, misgiving, and perplexity on the part of the Commonwealth and Southern Co. The proposal that we try together to work out a program is not being followed up. I am put in a position of either having made false representations, or of having been irresponsible. I consider it necessary that Mr. Wilkie understand that I was acting in good faith, and so I propose to send him the following letter, unless there are good reasons for my not doing so:

Dear Mr. Wilkie:

At the time of our conversation in June I expressed the hope that the Tennessee Valley Authority and the Commonwealth and Southern Company could work out a program that would result in the Tennessee Valley Authority exercising the function of generating and distributing power, under conditions that would be understood and recognized by both parties.

The Tennessee Valley Authority is in process of working out its policies with reference to power, and has not yet completed the formulation of a policy. In order to facilitate the work of the Authority, it has been found desirable to assign the various functions among the directors, though policies are to be decided by the board as a whole. The execution of policies with reference to power have been assigned to Mr. David Lillienthal, and I suggest that you get in touch with him in reference to relations of your company with the Tennessee Valley Authority. In case you desire, meetings can also be arranged with the board as a whole.

Sincerely yours,

Arthur E. Morgan,
Chairman of the Board

In conclusion, I believe that postponement of the formulation of a policy with reference to power, and a continuance of present methods of approaching municipalities who consider purchasing power from the Authority, is in effect the establishment of a policy, one that is contrary to that which the administration had in mind in promoting the Tennessee Valley Authority bill in congress, and one that may be contrary to the interests of the Tennessee Valley Authority.

Arthur E. Morgan.

AEM:EL
8-14-33

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July 21, 1933

Hon. Arthur E. Morgan, Chairman,
Tennessee Valley Authority,
Interior Building,
Washington, D. C.

Dear Chairman Morgan:

I have received your pencil note "on the distribution of power." I welcome this expression of your views: the best way for the Authority to develop a sound policy on power is through the frank exchange of views between the directors and with others directly concerned.

In the first session of the Board of the Authority, on June 16th, you will recall that you advised the Board of the receipt of a letter from Mr. Wendell L. Wilkie, President of the Commonwealth and Southern Corporation, in which he suggested the desirability of a conference between himself and the Authority, to discuss problems in which both are interested. At that time you stated that we should seek to cooperate with the private utilities operating in the area affected by your jurisdiction, that we should lay before them our views and plans as they develop, and in other ways deal with them in an open and frank manner, with the understanding that they would deal with us in the same spirit. You pointed out that in this way we might avoid ill will, and work out the policy of Congress without the unpleasantness and perhaps without the economic waste which might result from some other policy of dealing. You requested the Board for authority to state to Mr. Wilkie, in your conference with him, that such was our policy. After an exchange of views between us it was the sense of the Board that in your conferences with Mr. Wilkie the Board was not to be committed to any policy. You have furnished us a copy of your statement of what occurred at your New York meeting with Mr. Wilkie.

At a subsequent board meeting you proposed that we inform the Commonwealth and Southern Corporation that the Authority would refrain from seeking a market for our power except in a certain defined and agreed area, to which we would confine ourselves, and from which private companies would be excluded. It was your view that such a policy would avoid unpleasantness and ill will, and minimize wasteful competitive activity. To carry out such a suggested policy you stated that it would be necessary that we decline to enter into negotiations with municipalities interested in securing power from Muscle Shoals, until an arrangement could be worked out with the private utilities for such a division of territory. It was my position on this proposal that in any event it was premature, because we had not had a survey made of our available market; that until we had the facts in our possession we should make no commitments at all about our market. There was, I believe, an agreement by the Board to this position. Since that time, with the assistance of Mr. Evans, I have been trying to gather data on that market situation, and on the legal problems involved, which will be supplemented by a visit to certain cities in the territory immediately adjacent to the Wilson Dam.

The question of the Board's power policy was again raised on July 12th at a meeting of the board, at which Mr. H. A. Morgan was not present, through the medium of a letter which you suggested sending to Mr. Wilkie. In this proposed letter you wrote as follows:

"When I talked with you recently, we each assured the other that we would try to reach a friendly agreement and endeavor to find some basis for relations other than an uneconomical contest for position. I assured you that the Tennessee Valley Authority agreed it would not adopt a policy with reference to distributing power without a sincere effort to that end. We have therefore not taken any steps to secure customers for Muscle Shoals power. When inquiries have been made, we have replied that we would look into the matter. We have not visited a single locality to discuss the sale of power, nor have we invited anyone to come to see us for that purpose."

This proposed letter raised the same question of policy, and after a most courteous consideration of my views, you were considerate enough of my position to change the text of this letter so that the Authority was left entirely free to formulate a policy on this question without commitments of any kind.

I have reviewed the high points of our interchange of views on our power policy so as to bring us to your penciled memorandum, which raises the question anew.

With your objective, as therein stated, I am in hearty accord, that is, that there should, if at all possible, be no duplication of facilities. The wastefulness of such a procedure has long since been made evident.

You propose that we "ask the utilities to cooperate with us in transferring" a territory to us which we are then to serve exclusively; "that until that matter (of a transfer) is settled or has had fair opportunity to be settled we should not go into the market for contracts." Such an interim agreement with the private utilities would necessarily mean that we would not be free to deal directly with municipalities and other non-profit organizations desiring to purchase power from us (except perhaps the tri-cities near Wilson Dam). I must repeat my deeply-felt disagreement with such a policy and such a procedure.

I am convinced, after the most prayerful reconsideration of the entire subject, that any such commitment would jeopardize the program which Congress has directed us to carry out. The policy suggested presupposes that with inadequate information and therefore limited foresight we can properly agree to confine ourselves even for a term of years to an area selected by agreement with the utilities. That commitment, I venture to prophesy, we would soon find would hamper us in carrying out our legal duties and the policy of Congress, and might not fit into the other objectives defined by the law.

#3

I should very much prefer that we proceed carefully from one point to another, feeling our way as we go along acquiring more information about the territory, our other objectives, etc., rather than attempting at the outset to formulate a policy which involves the making of far-reaching commitments the consequences of which we cannot foresee.

Your memorandum to me suggests the way to the alternative policy which I suggest: namely, that we begin as soon as possible to serve a few small towns near the Wilson Dam, on a more or less tentatively and experimental rate basis. Specifically, I think we should consider seriously serving the cities of Florence, Sheffield and Tusculumbia, Alabama, at an early date. By the time this can be accomplished we will have information and experience which will aid us in determining what should be the next step. In taking each step we may well have in mind the objective of a particular area in which there will be exclusive service by the Authority, and also have in mind that we desire areas in which we can accomplish the other equally important objectives of the Authority, especially those relating to the building up of localized industry. For us to make a decision as to where we are going to sell our power and where we will refrain from doing so in the future before we have a complete comprehension of how the other interrelated objectives are going to work out, seems to me a most dangerous policy. Furthermore, it seems to me unnecessary to make any such commitments. We can, I believe, without such commitment achieve the ends which all of us have in mind.

In short, my view of our policy at this time is that we should refrain from making any commitments whatever for the time being. I have not troubled you with a discussion of the doubtful legality of any formal agreement for a division of territory.

Candor compels me to say that I am most skeptical that we can hope for genuine "co-operation" with the private utilities which would involve a voluntary relinquishment by them of part of territory they now serve exclusively. Nevertheless, as specific situations arise you may be sure that I will make every effort to reach conclusions with the private utilities which will be fair and reasonable, as I often have been able to do in the past. But to premise our power policy at this time on the willingness of the privately owned utilities to work with us, seems to me to be running counter to every reasonable expectation under the circumstances, and what is vastly more important, to expose the work of the Authority to the gravest hazards. /

I want to get as much light on this question as I can, and to keep my mind open on it. I am calling on Senator Norris (who is vacationing in Wisconsin) shortly, and will sound out his views on the matter, since he is the legislative father of the power policy in our law. It may be wise to confer with a few other time-tried men and get the benefit of their views on this issue.

#4

I spent a good deal of time with Evans before leaving Washington, and am working on data now that will make it possible for us to make some report to the Board soon as to power distribution near Wilson Dam and in that part of the territory. I am expecting to spend several days in Alabama with Evans to determine the facts in this matter, and report to you and Mr. H. A. Morgan.

Faithfully yours,

DAVID E. LILIENTHAL

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Mr. Lillienthal -

May I express myself further on the matter of distributing power. I think we should treat legitimate power development as an honorable and desirable activity, and that we should not unnecessarily stimulate any competitive activity which will destroy invested values. Moreover, I think that we should assume reasonableness, fair play and good will on the part of the utilities unless experience in our own relations with them demonstrates the contrary.

I believe we should outline an area in which we should like to take on the generation and transmission of power, and then ask the utilities to cooperate with us in transferring that territory to us on fair terms. Until that is done I believe it is unwise for us to engage to supply power, except as in the case of towns adjoining Muscle Shoals, the area would unquestionably be included in any such area taken over.

In order not to lose time I think that the working out of such an area should be one of our very first undertakings. We should not agree to permanently stay out of any area, but I think that with a reasonable area to serve we should agree to stay out of other areas for a reasonable period. To do otherwise would probably result in a very wasteful form of competition.

It may be that the utilities will refuse to relinquish any territory, or what is more likely, they may procrastinate so that we shall be obliged to break relations while the utilities take an attitude of injured innocence. Nevertheless I think we should undertake in good faith to ask them to turn over an area to us on fair terms, and that until that matter is settled or has had fair opportunity to be settled, we should not go into the market for contracts.

I am anxious that we move quickly in presenting a proposal to the utilities. I recognize the difficulty of antagonizing areas where we do not offer service, but we can supply but a small part of the power needed.

PSF:TVA

*File
Present*

~~CONFIDENTIAL~~

Richey
October 18, 1933.

MEMORANDUM FROM THE PRESIDENT
FOR DR. MORGAN

Someone told me that the T.V.A. had employed Lawrence Richey, who was Secretary to President Hoover. Surely, this is not true. Will you let me know?

CONFIDENTIAL
DO NOT
REPRODUCE
DATE: 10/10/78

THE WHITE HOUSE
WASHINGTON

200-

Dr. Morgan -
Employing Lawrence Richey
in charge of personnel?

10/10/78

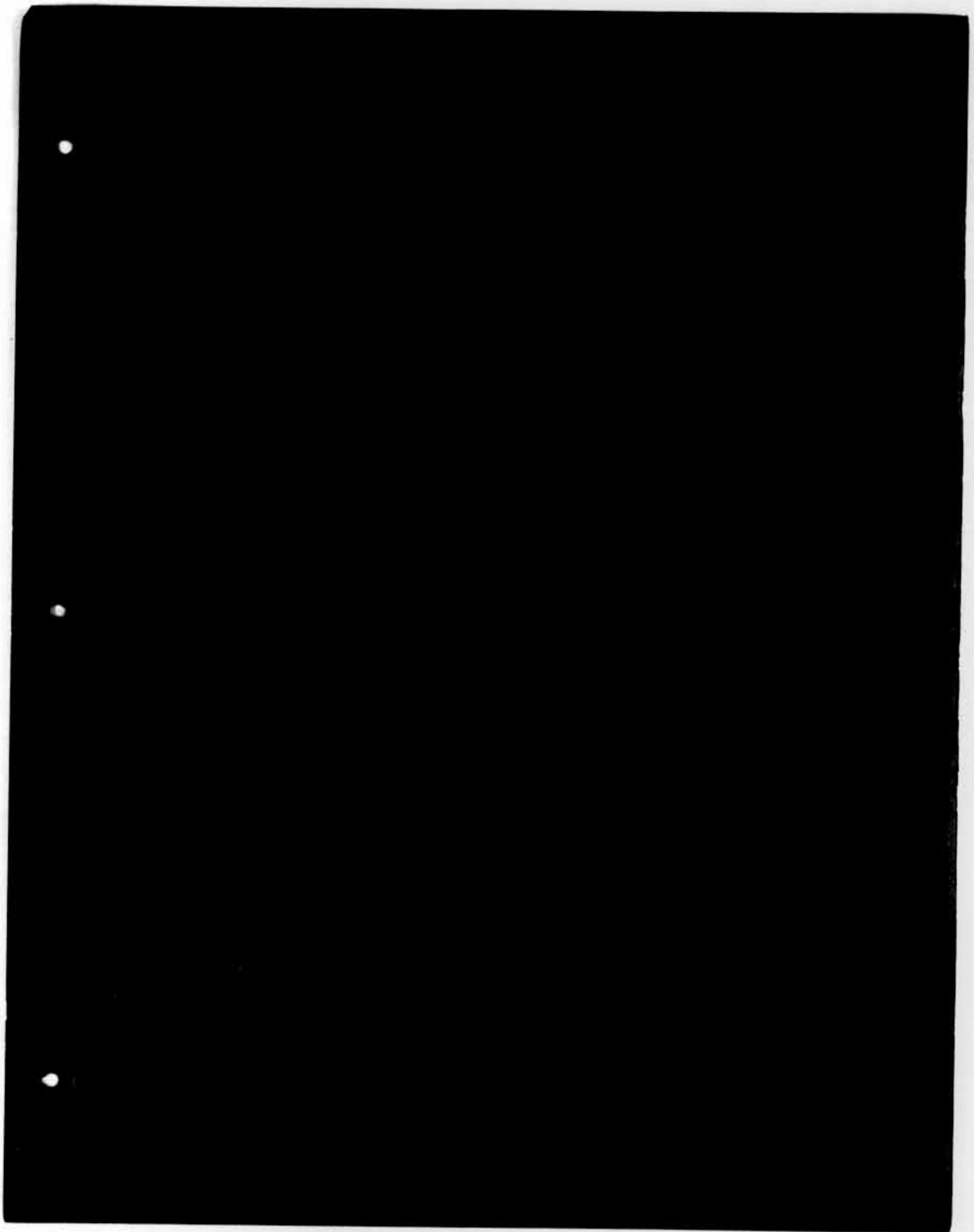
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T E N N E S S E E V A L L E Y A U T H O R I T Y

DEPARTMENT OF ELECTRICITY

DIVISION OF ENGINEERING RESEARCH AND ECONOMICS

Statistical Bulletin No. I

DEVELOPMENT AND UTILIZATION OF ELECTRICITY
IN
TUPELO, MISSISSIPPI
UNDER
TENNESSEE VALLEY AUTHORITY POWER PROGRAM

By
Edward Falok, Rate Engineer

CHATTANOOGA, TENNESSEE

AUGUST, 1934

T E N N E S S E E V A L L E Y A U T H O R I T Y

DIRECTORS

ARTHUR E. MORGAN, Chairman

HARCOURT A. MORGAN

DAVID E. LILIENTHAL

"The business of generating and distributing electric power is a public business....."

"The interest of the public in the widest possible use of power is superior to any private interest. Where the private interest and this public interest conflict, the public interest must prevail....."

"The right of a community to own and operate its own electric plant is undeniable. This is one of the measures which the people may properly take to protect themselves against unreasonable rates. Such a course of action may take the form of acquiring the existing plant, or setting up a competing plant, as circumstances may dictate....."

"The most important considerations are the furthering of the public interest in making power available at the lowest rate consistent with sound financial policy, and the accomplishment of the social objectives which low cost power makes possible....."

--- David E. Lilienthal

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DEVELOPMENT AND UTILIZATION OF ELECTRICITY
IN
TUPELO, MISSISSIPPI
UNDER
TENNESSEE VALLEY AUTHORITY POWER PROGRAM

INTRODUCTION

The City of Tupelo, Mississippi, was the first city in the Tennessee Valley to sign a contract with the Tennessee Valley Authority for supply of power generated at Muscle Shoals. From the date of initial delivery, February 7, 1934, to the present, sales have continuously increased, and there has been an ever-widening use of electricity. Tupelo has been the subject of much thought and study on the part of legislators, economists, and engineers, because performance in Tupelo is taken as illustrative of the practical execution of the power policy and program developed by the Tennessee Valley Authority.

The present study sets forth the facts and figures of the tremendous growth which has taken place during the first five months of operation in Tupelo. The material of this report was gathered from the books of the Tupelo Electric Department and from statistical records of the Tennessee Valley Authority.

UNPARALLELED GROWTH

Results for the first five months of operation of the electric business under the low TVA rates disclose an acceleration in growth within a short period of time without parallel in the history of the industry. The

extent of this growth is shown in Chart No. II and Table No. II. In March, 1934, immediately after the introduction of low TVA rates, the average residential consumption was 42 kilowatt hours per month; by July the average had increased to 70 kilowatt hours, and increase of 67%. Commercial consumption was 258 kilowatt hours per customer in July as compared with 183 kilowatt hours per customer in March, an increase of 41% in average commercial consumption. Of particular interest is the growth in the number of customers. There were added in this brief period twenty-two residential and twenty-eight commercial consumers. Table No. II shows the relative growth in consumption in terms of index numbers, starting with March, 1934, as the base month at 100. The succeeding numbers indicate the percentage increase for each month over March.

TUPELO CONTRASTED WITH THE UNITED STATES AS A WHOLE

It is interesting to compare performance in Tupelo with census figures showing averages for the seven Tennessee Valley States and for the United States as a whole. Taking the average residential consumption for the United States as a whole as an index, Base 100, it will be seen that in March Tupelo was only 82, or 18 under the average for the country. By May, 1934, Tupelo had grown to 94 and by July crossed the 100 mark and reached a high of 137, in other words, 37% better performance than the country at large. As will be seen from Chart No. III (Table No. III), the Tupelo index for July, 1934, exceeds not only the index for the United States but also the indices for each of the seven Valley States.

TUPELO PAST AND PRESENT

The phenomenal growth in Tupelo can be better shown by contrasting the consumption during this year with consumption one year ago. Chart No. IV and Table No. IV illustrate the volume of residential consumption for the months of March through July, 1933 and 1934. For this five months period, the 1934 record was 47% above that of 1933.

CAUSES OF GROWTH

It is well to remember that the very low rates for electricity announced by the Tennessee Valley Authority on September 14, 1933, have been the largest contributing factor to the increase in business. The rate policies of the Tennessee Valley Authority are predicated upon volume, and all of its efforts are directed toward securing a wider and better use of electricity. The low price of electricity induces customers to make liberal use of electric services wherever they are desired. Electric services are on the whole cheaper, more convenient, and more satisfactory in the home, and it is only through putting these services within the reach of the large number of consumers that the electric business can justify its operations. With the expanding use of electricity, the costs of generation and distribution per unit of energy sold are found to decrease. In principle, it was necessary first to set forth rates sufficiently cheap and properly designed as to form, in order that customers might be able to use electric power. When these rates were made available to the public, the public did not hesitate to take advantage of the services and to increase consumption.

The spectacular performance in Tupelo bears witness to the soundness of the "promotional" principle. On the cost side it has been found that unit costs have markedly decreased and are well below the selling price. The City of Tupelo is now earning gross revenues which are entirely adequate to cover all of its operating and fixed costs of service, as well as a substantial balance for new construction and for retirement of bonds. Chart No. V and Table No. V indicate the approximate portions of the consumer's dollar which have been required for various elements of service. As shown in Table V, out of \$1.00 of revenue, 41¢ was paid to the Tennessee Valley Authority for wholesale power supply; 12¢ went to other operating expenses; 8¢ went for taxes to be paid to the general city fund in Tupelo; 2¢ went to bond interest; and 16¢ was set aside for depreciation, contingencies, and new construction. There remained 21¢ of net income, of which 8¢ will be paid to the City as a fair return upon its investment, and 13¢ will be added to surplus. It should be noted that these figures are approximate and tentative, being based upon five months of operation. They may, however, be taken as representative of figures which will be developed for a full accounting period when sufficient time has elapsed. Table V presents these cost figures in mills per kilowatt hour sold. On this basis, the average selling price is found to be 16 mills, of which 12.6 mills represents total cost of distribution exclusive of net income, and 3.4 mills represents net income. The electric business in Tupelo is now being operated on a financially sound basis, and at the same time is yielding very substantial savings to the consumers of electricity.

On February 7, 1934, the former rates were abolished and the TVA rates put into effect. The reduction in rates charged to residential consumers averaged 55%, to commercial consumers 58%, and to industrial consumers 46%. Charts Nos. I and IA (Tables Nos. I and IA) show the savings to consumers from the introduction of TVA rates.

Due to the low TVA rates and to the activities of the Electric Home and Farm Authority, the sale of electric appliances has mounted rapidly. Within the period from May 21 to July 21, there were sold 271 refrigerators, 65 electric ranges, and 16 electric water heaters to residents in Tupelo. The operation of these electric appliances alone will increase the annual residential consumption in Tupelo 350,000 kilowatt hours per year.

CUSTOMERS, KILOWATT HOURS, AND DOLLARS

Table VI presents data on sales for the month of June, 1934, according to the four customer groups, residential, commercial, industrial, and municipal. Chart No. VIA and Table VIA show the changing character of the total sales as between groups of customers. It will be noted that during the five month period from March through July, 1934, residential consumption has accounted for an ever-increasing portion of the total business, that commercial consumption has not changed materially in respect to the total, and that industrial consumption has accounted for a smaller and smaller percentage of the total, both in kilowatt hours and in revenue. In July, 1934, residential users represented 74% of the total number of consumers, contributed 28% of the revenue, and accounted for 20% of the kilowatt hours sold. Similar ratios are given for the other groups of customers in Table VIA.

CHARACTERISTICS OF THE RESIDENTIAL LOAD

In order to determine more precisely the character of the residential load, the billing figures were classified in several ways. Table No. VII shows the distribution of consumers according to rate blocks. All the consumers using 50 kilowatt hours or less per month were classed in the first block; all of the consumers using more than 50 but less than 201 kilowatt hours per month were classed in the second block, etc. (See Table No. VII.) About 60% of the customers were found to belong to the first block, 37% to the second, and only 3% in the third and fourth blocks combined. Of the total amount of revenue collected from residential customers, 31% was contributed by customers in the first block, 57% by the customers in the second block, and 12% by customers in the third and fourth blocks combined. Chart No. VII presents the distribution of consumers according to rate blocks. The four blocks are numbered in the order indicated in Table No. VII. The width of each block represents the total kilowatt hours used by customers falling in such block, and the height of each block represents the average rate in cents per kilowatt hour paid by respective customers. The relative areas of the four blocks to each other indicate the relative revenues realized from the sale of energy.

Changes in the character of residential load may be seen by contrasting the size of the customers for the months of June, 1934, and June, 1933. Chart No. VIII shows that the gain in total consumption was realized by increases in use not only on the part of large consumers but also on the part of small and medium consumers. Table No. VIII shows the number of customers in each class for the two months. It will be noted that there was an increase of

21% in the number of customers using ten or more kilowatt hours per month, an increase of 62% in customers using twenty or more kilowatt hours per month, and an increase of 79% in customers using thirty or more kilowatt hours per month. The same story is told by the two curves drawn on Chart No. VIII; the upper curve represents distribution for June, 1934, and the lower curve for June, 1933, the vertical distance between the two curves representing the change in the percentage of the total number of customers consuming more than the number of kilowatt hours shown along the base line. The percentage distribution of size of customers is tabulated in Table No. VIIIA. It will be noted that the increase in consumption for the class has been uniform, and that the total distribution tends to become more homogeneous under the simple Standard TVA Rates.

In order more clearly to present the various factors of size, the residential consumers were arranged according to size into ten groups, (deciles), each group containing an equal number of customers. The first decile includes the first ten percent of the total number of customers, that is, the 10% of customers of smallest size; the second decile includes the 10% of customers next to smallest in size, etc., the tenth decile including the 10% of customers of largest size. The average kilowatt hours per customer in each decile is shown in Chart No. IX, and the average charge for electricity in each decile is shown in Chart No. IXA. It will be noted in the latter that the customers with the smallest monthly bills paid the highest rate in cents per kilowatt hour for energy, and conversely, the customers with the largest monthly bills paid the lowest rate per kilowatt hour.

TABLE I

OLD RATES AND NEW IN TUPELO
RESIDENTIAL SERVICE

CITY OF TUPELO COMBINATION RATE
IN EFFECT PRIOR TO FEBRUARY 7, 1934:

0 to 25 KWH @ 10¢
Over 25 KWH @ 4¢

MINIMUM MONTHLY BILL - \$1.00

AVAILABILITY

The above rate was available for residences only and the customer must have had an electric stove or refrigerator to get this rate. Otherwise the Light Rate applied.

TVA STANDARD RESIDENTIAL RATE
IN EFFECT SINCE FEBRUARY 7, 1934:

First 50 KWH per Mo. @ 3¢ per KWH
Next 150 " " " @ 2¢ " "
Next 200 " " " @ 1¢ " "
Excess
Over 400 " " " @ 0.4¢ " "

MINIMUM MONTHLY BILL

5 Ampere Meter \$0.75
15 " " 1.00
50 " " 1.50

AVAILABLE

To all residential customers at local secondary voltage either 2 wire or 3 wire service as Municipality may require.

TABLE I-A

OLD RATES AND NEW IN TUPELO

COMMERCIAL SERVICE

CITY OF TUPELO POWER RATE IN
EFFECT PRIOR TO FEBRUARY 7, 1934:

0 to 100 KWH @ 10¢
100 to 200 " @ 8¢
200 to 400 " @ 6¢
Over 400 " @ 4¢

MINIMUM MONTHLY BILL

\$1.00 allowing 10 KWH

AVAILABLE

To commercial customers.

TVA BASIC COMMERCIAL RATE IN
EFFECT SINCE FEBRUARY 7, 1934:

First 250 KWH per Mo. @ 3¢ per KWH
Next 750 " " " @ 2¢ " "
Next 1000 " " " @ 1¢ " "
Excess
Over 2000 " " " @ 0.8¢ " "

MINIMUM MONTHLY BILL

5 Ampere Meter 50 KWH \$1.00
15 " " 66 2/3 " \$2.00
50 " " 100 " \$3.00

AVAILABLE

To commercial customers taking service
from the Municipality's secondary system.

DEVELOPMENTAL SURCHARGE

Basic rate subject to a 10% Surcharge

TABLE II

FIVE MONTHS GROWTH IN RESIDENTIAL AND COMMERCIAL CONSUMPTION

MARCH, 1934 - JULY, 1934

TUPELO, MISSISSIPPI

	<u>March</u>	<u>April*</u>	<u>May</u>	<u>June</u>	<u>July</u>
<u>RESIDENTIAL</u>					
Number of Customers	974	974	974	984	996
Total Consumption (KWH)	41,100	44,100	47,100	59,900	69,600
Average KWH per Customer	42	45	48	61	70
Growth Index (March = 100)					
Total Consumption	100	107	115	146	170
Mean Consumption	100	107	114	145	167
<u>COMMERCIAL</u>					
Number of Customers	321	333	345	344	349
Total Consumption (KWH)	58,700	65,400	72,200	84,300	89,900
Average KWH per Customer	183	197	209	245	258
Growth Index (March = 100)					
Total Consumption	100	112	123	143	153
Mean Consumption	100	108	114	134	141

* Revised to account for change in billing dates.

TABLE III

COMPARISON OF TUPELO, MISSISSIPPI
WITH THE STATES IN THE TENNESSEE VALLEY
AND WITH THE UNITED STATES AS A WHOLE

Residential Consumption per Customer Index

	Index of KWH per Customer (Percent Relativos)
United States as a Whole (1932)	100
States:	
Kentucky	83
Tennessee	98
Mississippi	105
North Carolina	108
Virginia	112
Alabama	114
Georgia	123
Tupelo - March, 1933	73
Tupelo - March, 1934	82
Tupelo - April, 1934	88
Tupelo - May, 1934	94
Tupelo - June, 1934	120
Tupelo - July, 1934	137

Source: Consus of Electrical Industries - 1932
U. S. Department of Commerce
Bureau of the Consus

TABLE IV

TUPELO RESIDENTIAL CONSUMPTION

PAST AND PRESENT

1933 - 1934

	<u>1934</u>	<u>1933</u>	<u>Actual Increase</u>	<u>Percentage Increase</u>
March	41,100	33,300	7,800	23.42%
April	44,100	32,500	11,600	35.69
May	47,100	37,100	10,000	26.95
June	59,900	37,000	22,900	61.89
July	<u>69,600</u>	<u>37,900</u>	<u>31,700</u>	<u>83.64</u>
<u>Total 5 Mos.</u>	<u>261,800</u>	<u>177,800</u>	<u>84,000</u>	<u>47.24</u>

TABLE V

ANALYSIS OF DISTRIBUTION COSTS

TUPELO, MISSISSIPPI

FOUR MONTHS OPERATION

MARCH - JUNE 1934

<u>Item</u>	<u>Percent of Revenues*</u>	<u>Mills per KWH Sold**</u>
Cost of Power Purchased	41.3	6.6
Other Operating Costs	<u>11.7</u>	<u>1.9</u>
Direct Exponso	53.0	8.5
Depreciation, New Construction and Contingencies	15.9	2.5
Interest and Redemption	1.7	0.3
Taxes	<u>8.2</u>	<u>1.3</u>
Total Exponso	<u>78.8</u>	<u>12.6</u>
Not Income	21.2	3.4
Loss Equity Return to City	<u>7.6</u>	<u>1.2</u>
Not Addition to Surplus	13.6	2.2

* Revenues for period \$23,708.78
** KWH Sales for period 1,506,693

TABLE VI

CUSTOMERS, KILOWATT HOURS, AND DOLLARS

TUPELO, MISSISSIPPI

MONTH OF JUNE, 1934

	<u>Residential</u>	<u>Commercial</u>	<u>Industrial</u>	<u>Municipal</u>	<u>Total</u>
Number of Customers	984	344	7	2	1,537
Revenue (Dollars)	\$1,572	\$2,225	\$2,226	\$507	\$6,530
Consumption (KWH)	59,909	84,302	211,849	46,390	402,450
Average KWH per Customer	60.9	245	30,300	23,195	301
Average Revenue per Customer	\$1.60	\$6.47	\$317	\$253	\$4.88
Average Rate per KWH	2.62¢	2.64¢	1.05¢	1.09¢	1.62¢

TABLE VI-A

ANALYSIS OF TOTAL SALES TO CONSUMERS

TUPELO, MISSISSIPPI

	<u>RESIDENTIAL</u>		<u>COMMERCIAL</u>		<u>INDUSTRIAL</u>		<u>Total*</u>
	<u>Actual</u>	<u>Percent</u>	<u>Actual</u>	<u>Percent</u>	<u>Actual</u>	<u>Percent</u>	
<u>MARCH 1934</u>							
Number of Customers	974	74.8	321	24.6	8	0.6	1,303
Consumption KWH	41,100	12.3	58,700	17.7	232,700	70.0	332,500
Revenue Dollars	\$1,200	22.3	\$1,752	32.6	\$2,420	45.1	\$5,372
<u>APRIL 1934</u>							
Number of Customers	974	74.1	333	25.3	8	0.6	1,315
Consumption KWH	44,100	13.0	65,400	19.3	230,000	67.7	339,500
Revenue Dollars	\$1,265	22.7	\$1,904	34.2	\$2,392	43.1	\$5,561
<u>MAY 1934</u>							
Number of Customers	974	73.5	345	26.0	7	0.5	1,326
Consumption KWH	47,100	14.8	72,200	22.7	199,000	62.5	318,300
Revenue Dollars	\$1,329	23.9	\$2,042	36.7	\$2,188	39.4	\$5,559
<u>JUNE 1934</u>							
Number of Customers	984	73.8	344	25.7	7	0.5	1,335
Consumption KWH	59,900	16.3	84,300	23.7	211,849	59.5	356,049
Revenue Dollars	\$1,572	26.2	\$2,225	36.9	\$2,226	36.9	\$6,023
<u>JULY 1934</u>							
Number of Customers	996	73.7	349	25.3	7	0.5	1,352
Consumption KWH	69,600	19.1	89,900	24.6	205,600	56.3	365,100
Revenue Dollars	\$1,764	27.8	\$2,321	36.6	\$2,258	35.6	\$6,343

* Exclusive of Municipal Uses

TABLE VII

DISTRIBUTION OF CONSUMERS ACCORDING TO RATE BLOCKS

RESIDENTIAL CONSUMPTION

TUPELO, MISSISSIPPI

JUNE 1934

	<u>1st Block</u>	<u>2nd Block</u>	<u>3rd Block</u>	<u>4th Block</u>	<u>Total</u>
Number of Customers - Actual	588	362	28	6	984
" " " - Percent	59.75	36.79	2.84	0.62	100
Revenue Dollars - Actual	\$499.80	\$909.20	\$149.80	\$41.00	\$1,599.80
" " - Percent	31.24	56.83	9.37	2.56	100
Consumption KWH - Actual	13,137	36,231	7,685	2,856	59,909
" " - Percent	21.93	60.47	12.83	4.77	100
Average KWH per Customer	22	100	274	476	60.88
Average Revenue per Customer	\$0.85	\$2.51	\$5.35	\$6.83	\$1.60
Average Rate per KWH	3.80¢	2.51¢	1.95¢	1.44¢	2.62¢

1st Block - First 50 KWH per Month @ 3¢ per KWH
 2nd Block - Next 150 KWH per Month @ 2¢ per KWH
 3rd Block - Next 200 KWH per Month @ 1¢ per KWH
 4th Block - Excess over 400 KWH per Month @ 0.4¢ per KWH

TABLE VIII

CHANGES IN THE CHARACTER OF RESIDENTIAL LOAD
TUPELO, MISSISSIPPI
MONTHS OF JUNE, 1933, AND JUNE, 1934

(Frequency Distribution of the Sizes of Residential Customers)

	<u>June 1934</u>	<u>June 1933</u>	<u>Increase</u>	<u>Percent</u>
	(Number)	(Number)		
CUSTOMERS USING:				
0 or more KWH per Month	984	899	85	9.45
10 " " " " "	910	749	161	21.50
20 " " " " "	735	454	281	61.89
30 " " " " "	551	307	244	79.48
40 " " " " "	437	233	204	87.55
50 " " " " "	396	218	178	81.65
60 " " " " "	356	201	155	77.11
70 " " " " "	310	184	126	68.48
80 " " " " "	270	169	101	59.76
90 " " " " "	230	156	74	47.44
100 " " " " "	193	131	62	47.33
120 " " " " "	142	75	67	89.33
140 " " " " "	89	42	47	111.90
160 " " " " "	57	23	34	147.83
180 " " " " "	45	17	28	164.71
200 " " " " "	34	9	25	277.78
300 " " " " "	16	3	13	433.33
400 " " " " "	6	0	6	Inf.

TABLE VIII-A

PERCENTAGE DISTRIBUTION OF SIZE OF CUSTOMERS

RESIDENTIAL CONSUMPTION

TUPELO, MISSISSIPPI

JUNE, 1933 - JUNE, 1934

	<u>June 1933</u>		<u>June 1934</u>	
	<u>Cumulative Percent Customers</u>	<u>Cumulative Percent KWH</u>	<u>Cumulative Percent Customers</u>	<u>Cumulative Percent KWH</u>
0 - 9	17	2	8	1
10 - 19	50	14	25	5
20 - 29	66	23	44	12
30 - 39	74	30	56	19
40 - 49	76	32	60	22
50 - 59	78	35	64	26
60 - 69	80	38	68	31
70 - 79	81	41	73	35
80 - 89	83	44	77	41
90 - 99	85	50	80	47
100 - 109	89	60	83	52
110 - 119	92	67	86	56
120 - 129	93	72	89	63
130 - 139	95	79	91	68
140 - 149	96	82	93	71
150 - 159	97	86	94	76
160 - 179	98	89	95	79
180 - 199	99	93	97	82
200 - 299		97	98	90
300 - 399			99	95
400 - 499				98

TABLE IX

TEN GROUPS OF CUSTOMERS ARRANGED ACCORDING TO SIZE

RESIDENTIAL CONSUMERS

TUPELO, MISSISSIPPI

MONTH OF MAY 1934

<u>Deciles</u>	<u>Number Customers</u>	<u>Revenue Dollars</u>	<u>Consumption KWH</u>	<u>Average KWH per customer</u>	<u>Average Rev. per customer</u>	<u>Average Rate per KWH</u>
1	97.4	\$73.08	672.9	6.91	\$0.75	10.86¢
2	97.4	72.91	1,409.8	14.47	0.75	5.17
3	97.4	73.16	1,426.6	14.65	0.75	5.13
4	97.4	72.98	2,384.3	24.48	0.75	3.06
5	97.4	73.13	2,389.3	24.53	0.75	3.06
6	97.4	101.41	3,331.9	34.21	1.04	3.04
7	97.4	138.72	4,633.5	47.57	1.42	2.99
8	97.4	177.54	6,393.0	65.64	1.82	2.78
9	97.4	223.39	8,686.2	89.18	2.29	2.57
10	97.4	343.34	15,752.5	161.73	3.53	2.18

CHART I

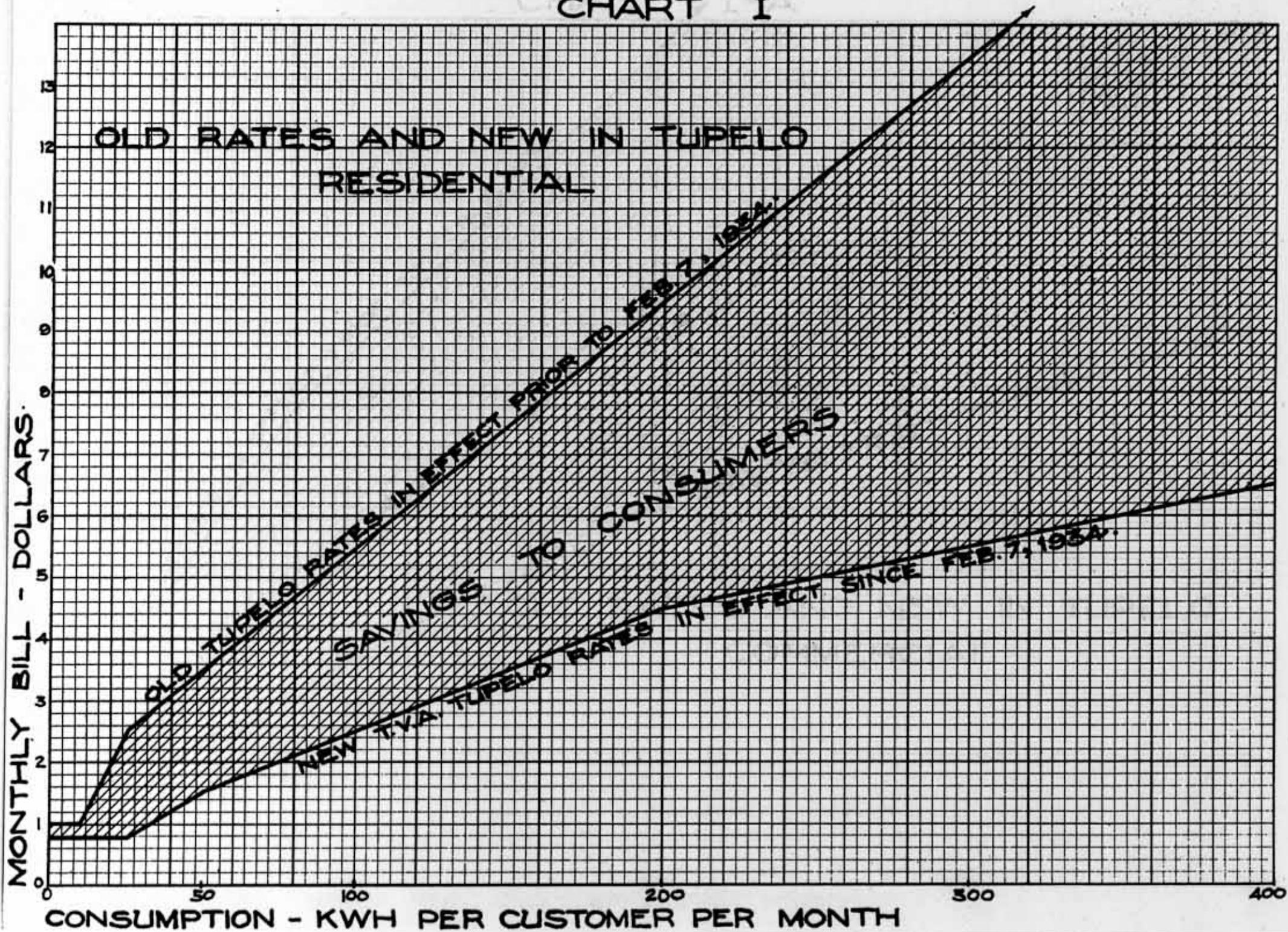


CHART I-A

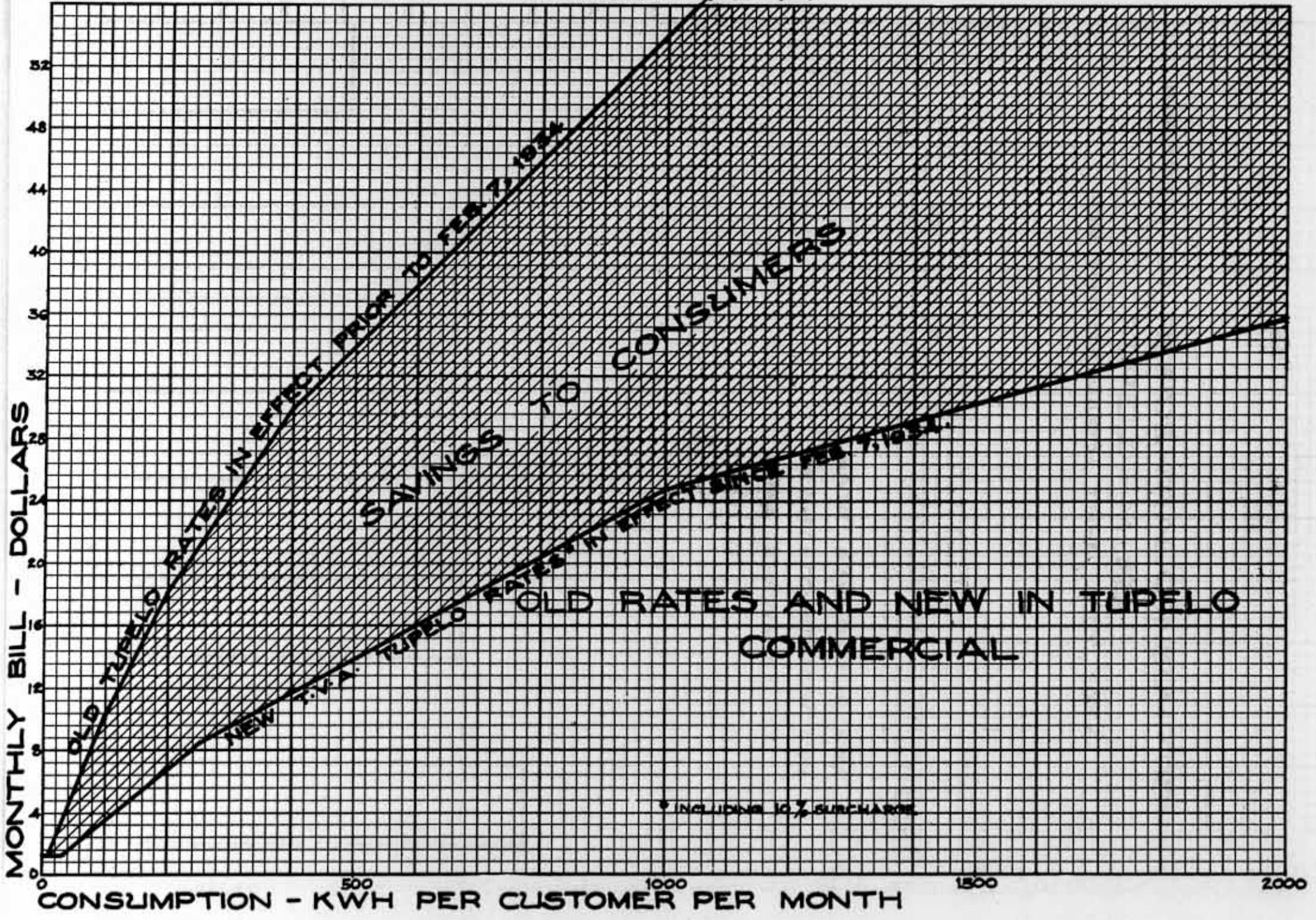
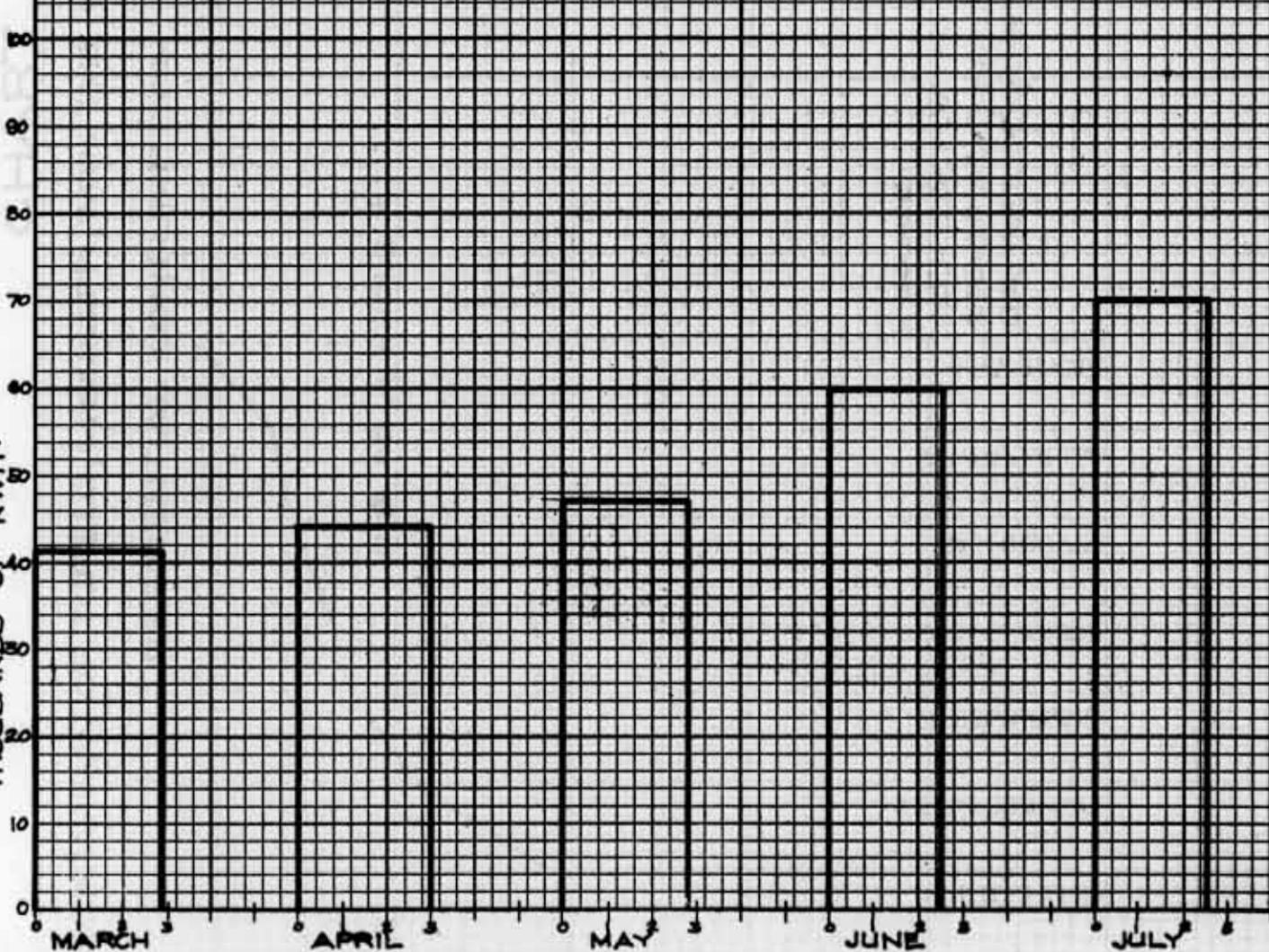


CHART II

GROWTH IN RESIDENTIAL CONSUMPTION
TUPELO - MISS.
FOR PERIOD MARCH THRU JULY, 1954.

TOTAL MONTHLY RESIDENTIAL CONSUMPTION
THOUSANDS OF KWH.



BASE = AVE. RATE ¢/KWH
HEIGHT = CONSUMPTION KWH
AREA = REVENUE

CHART III

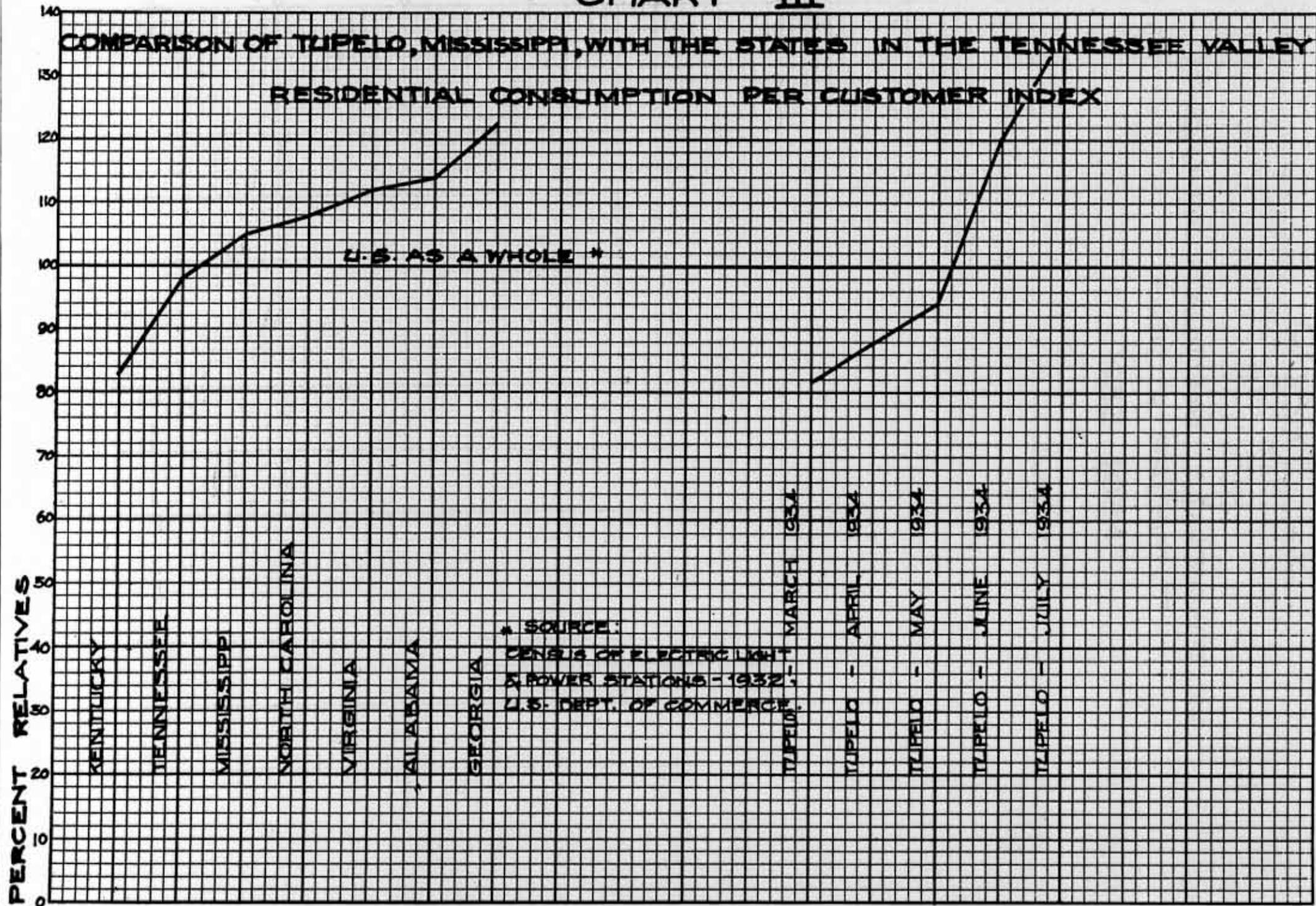
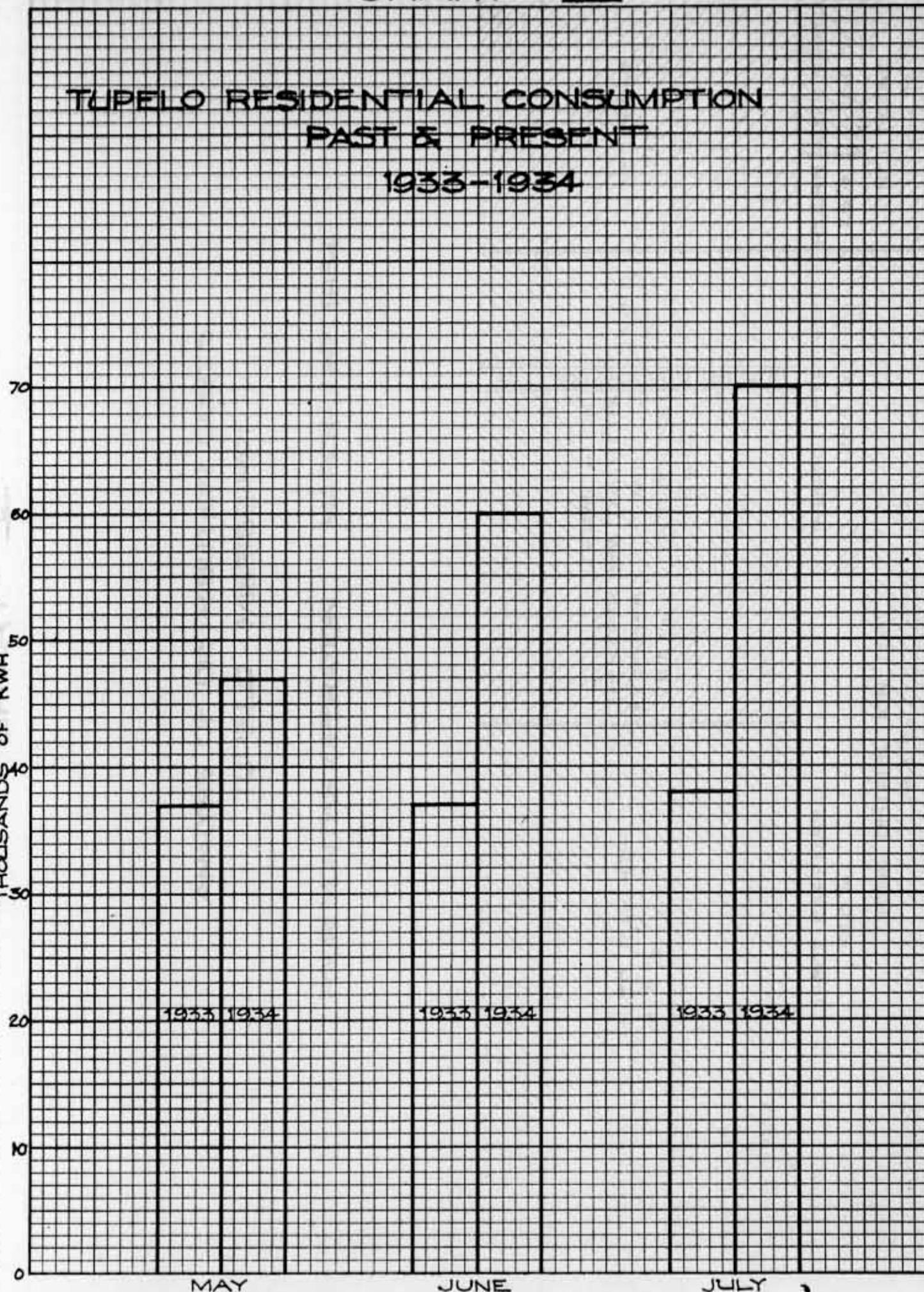


CHART IV

TUPELO RESIDENTIAL CONSUMPTION PAST & PRESENT 1933-1934

TOTAL MONTHLY RESIDENTIAL CONSUMPTION
THOUSANDS OF KWH



DEPARTMENT OF TOTAL OPERATING REVENUES

CHART V

ANALYSIS OF DISTRIBUTION COSTS TUPELO - MISSISSIPPI

FOUR MONTHS OPERATION MARCH-JUNE, 1954

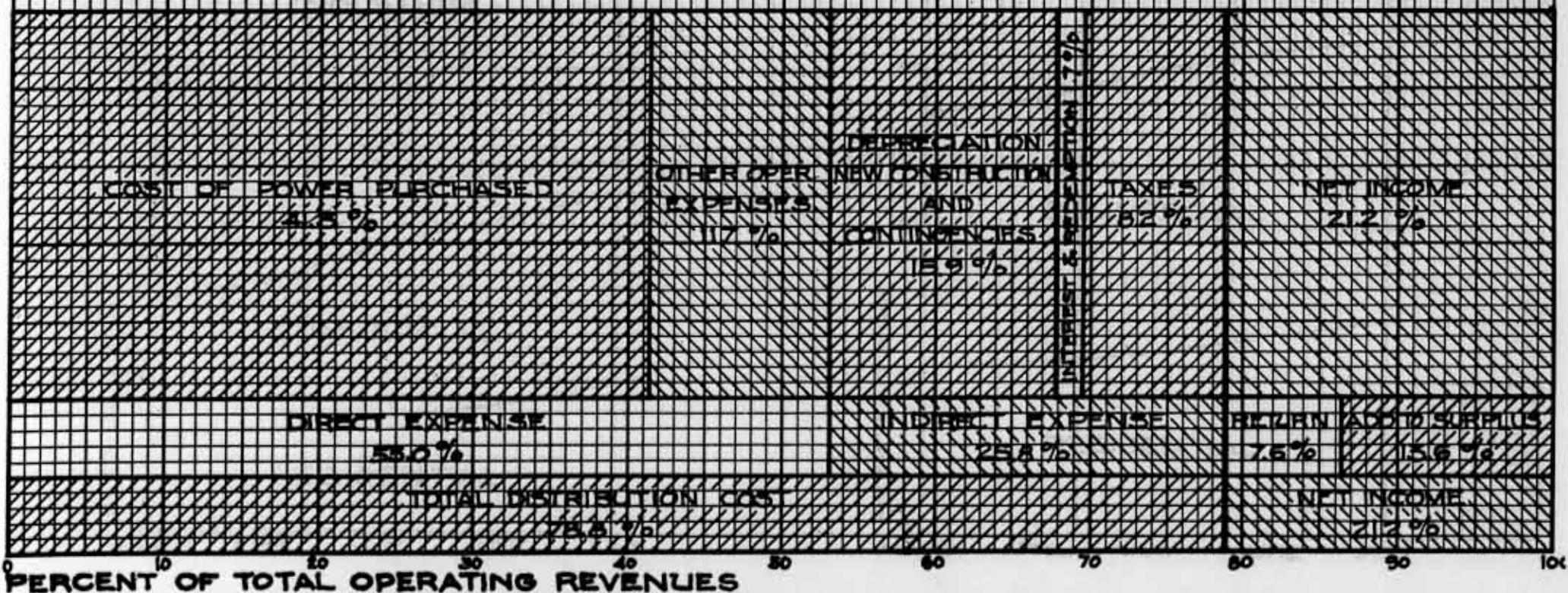


CHART VI-A

DISTRIBUTION OF KWH CONSUMPTION AND REVENUE - TIPELO 5 MONTHS: MARCH - JULY, 1954

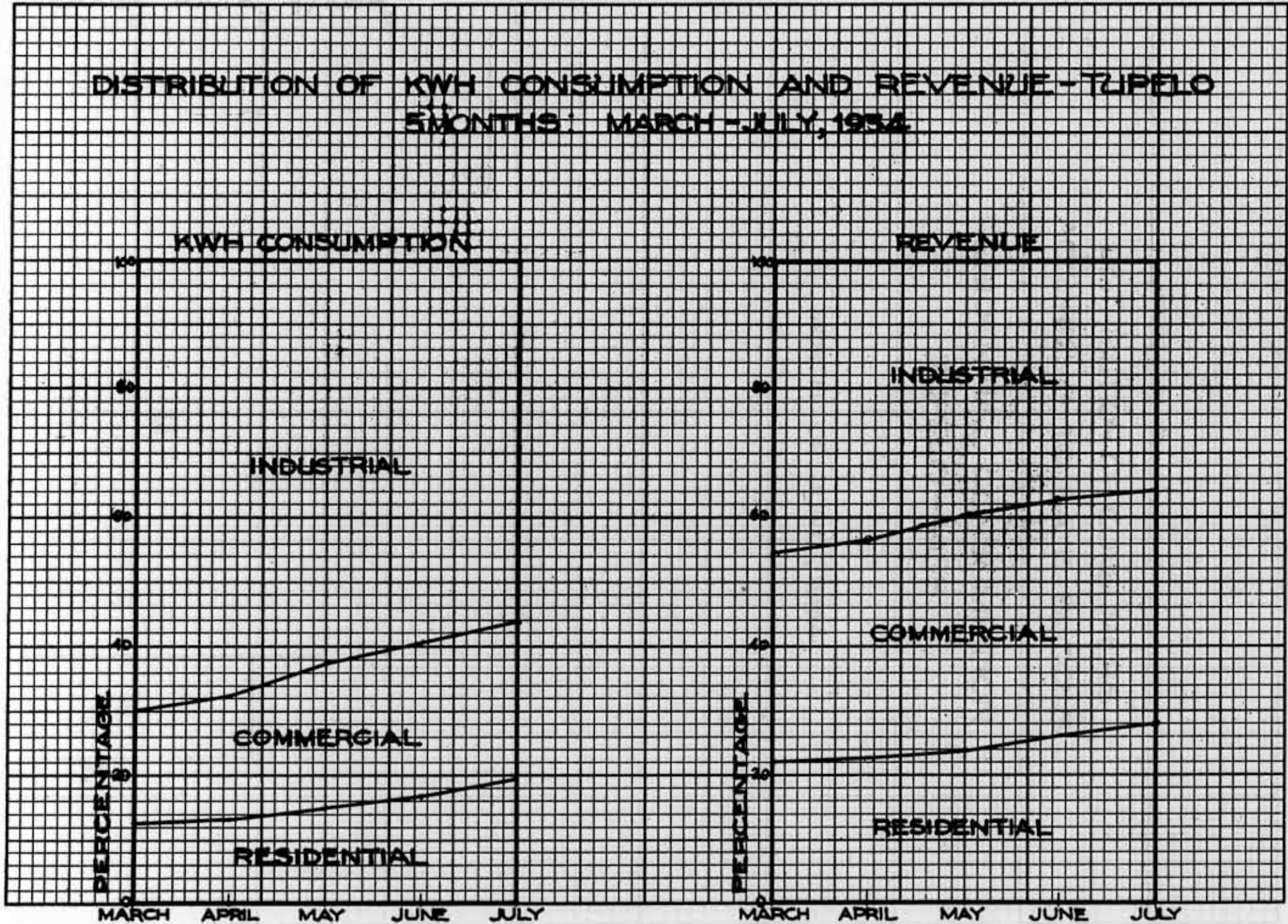


CHART VII

DISTRIBUTION OF CONSUMERS ACCORDING TO RATE BLOCKS

RESIDENTIAL CONSUMPTION TUPELO - MISS.

MONTH OF JUNE, 1934

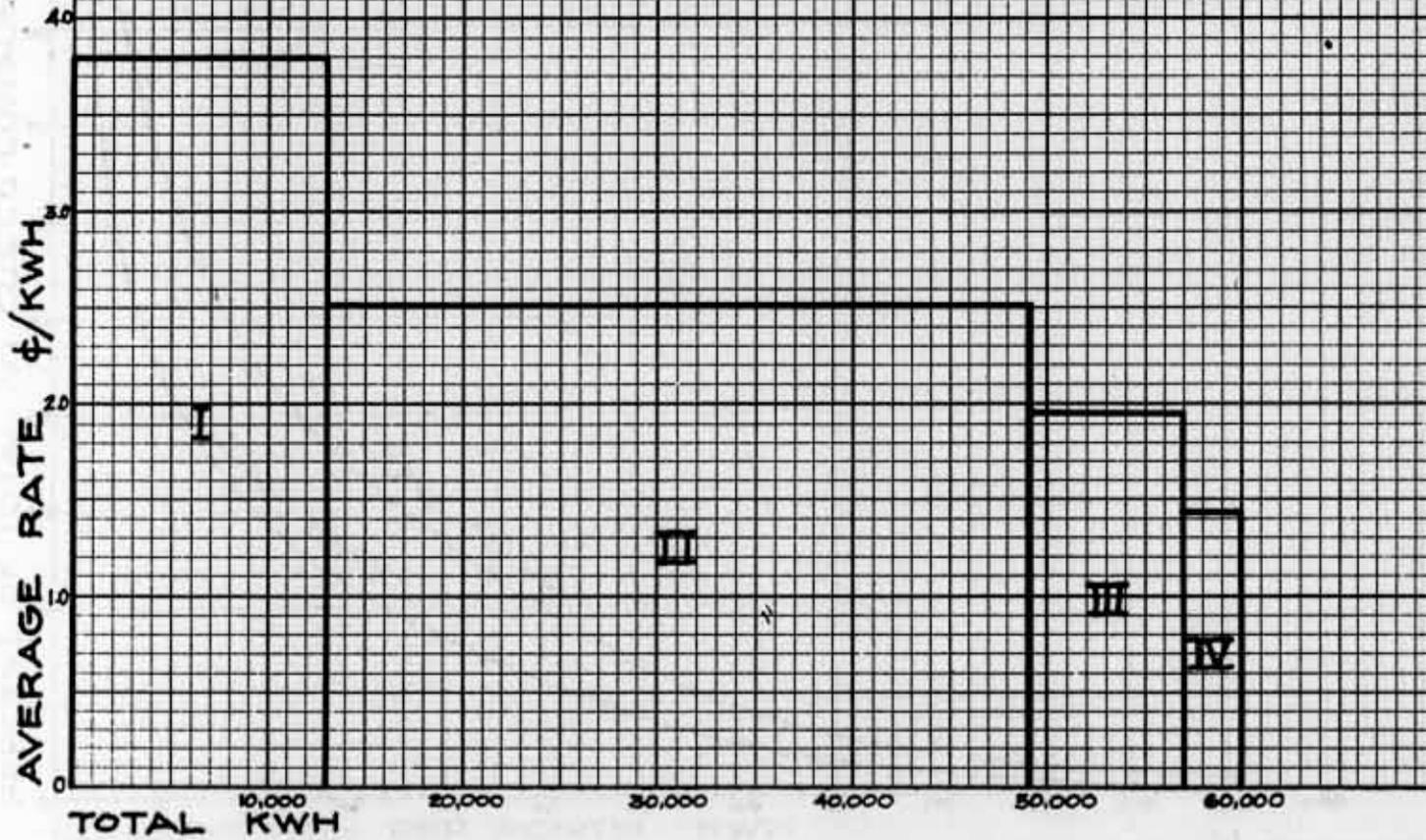


CHART VIII

PERCENTAGE DISTRIBUTION OF SIZE OF CUSTOMERS RESIDENTIAL CONSUMPTION TUPELO - MISS.

JUNE 1933 - JUNE 1934

PERCENT OF TOTAL NO. CUST'S CONSUMING MORE THAN BASE KWH PER MONTH

CONSUMPTION PER MONTH KWH

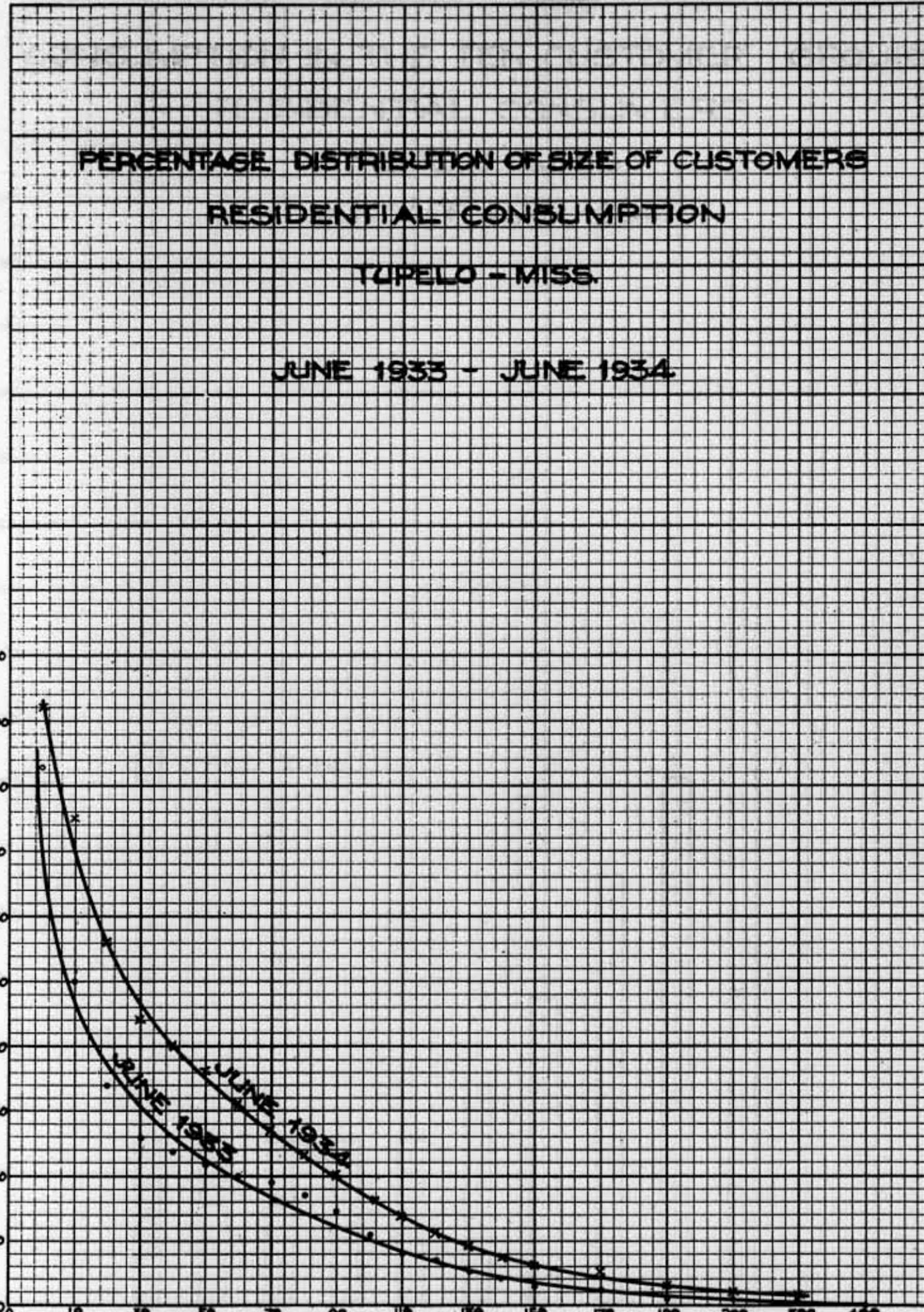


CHART IX

CONSUMPTION IN THE TEN CUSTOMER GROUPS
RESIDENTIAL CONSUMERS
TUPELO - MISS
MONTH OF MAY, 1934

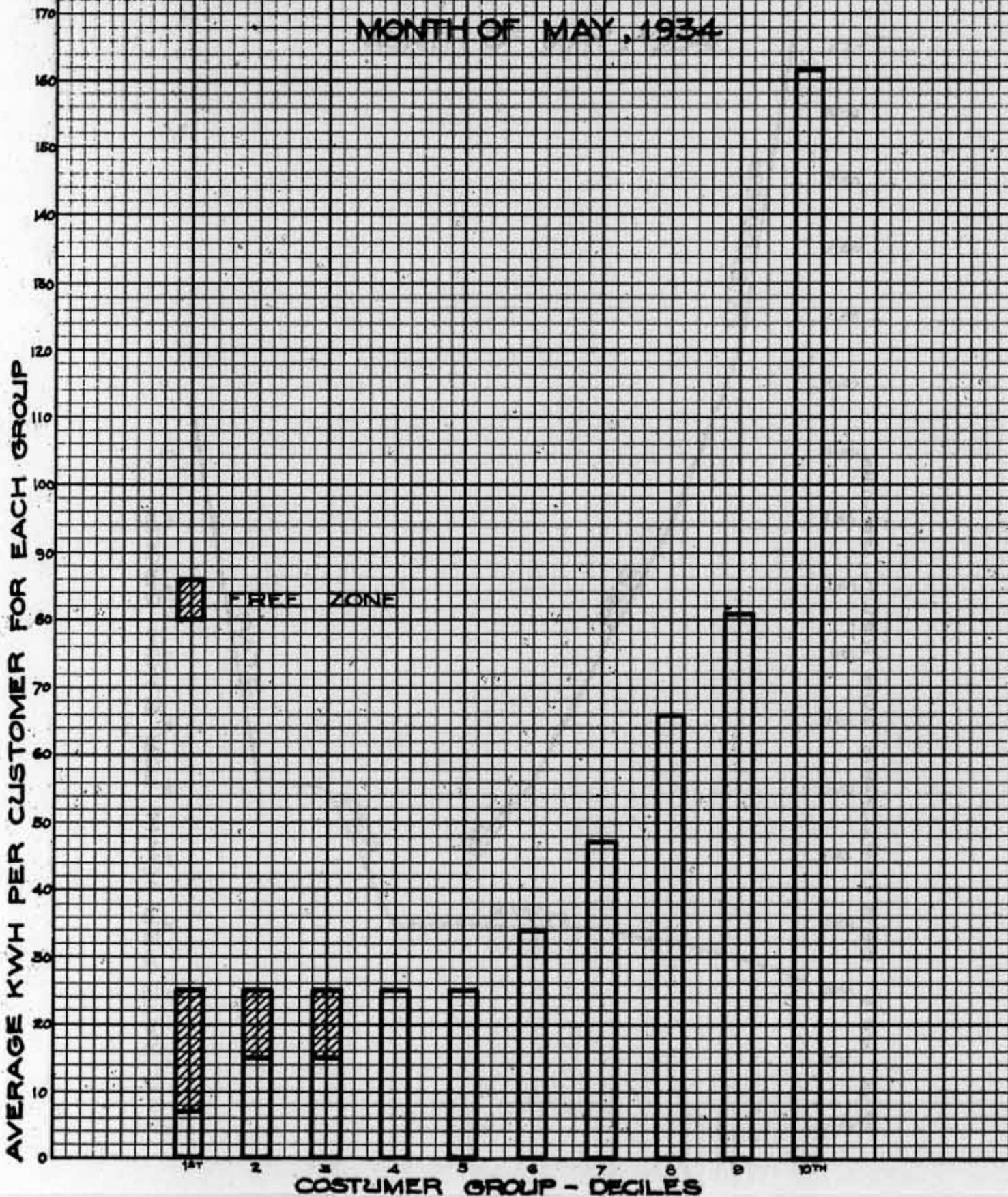
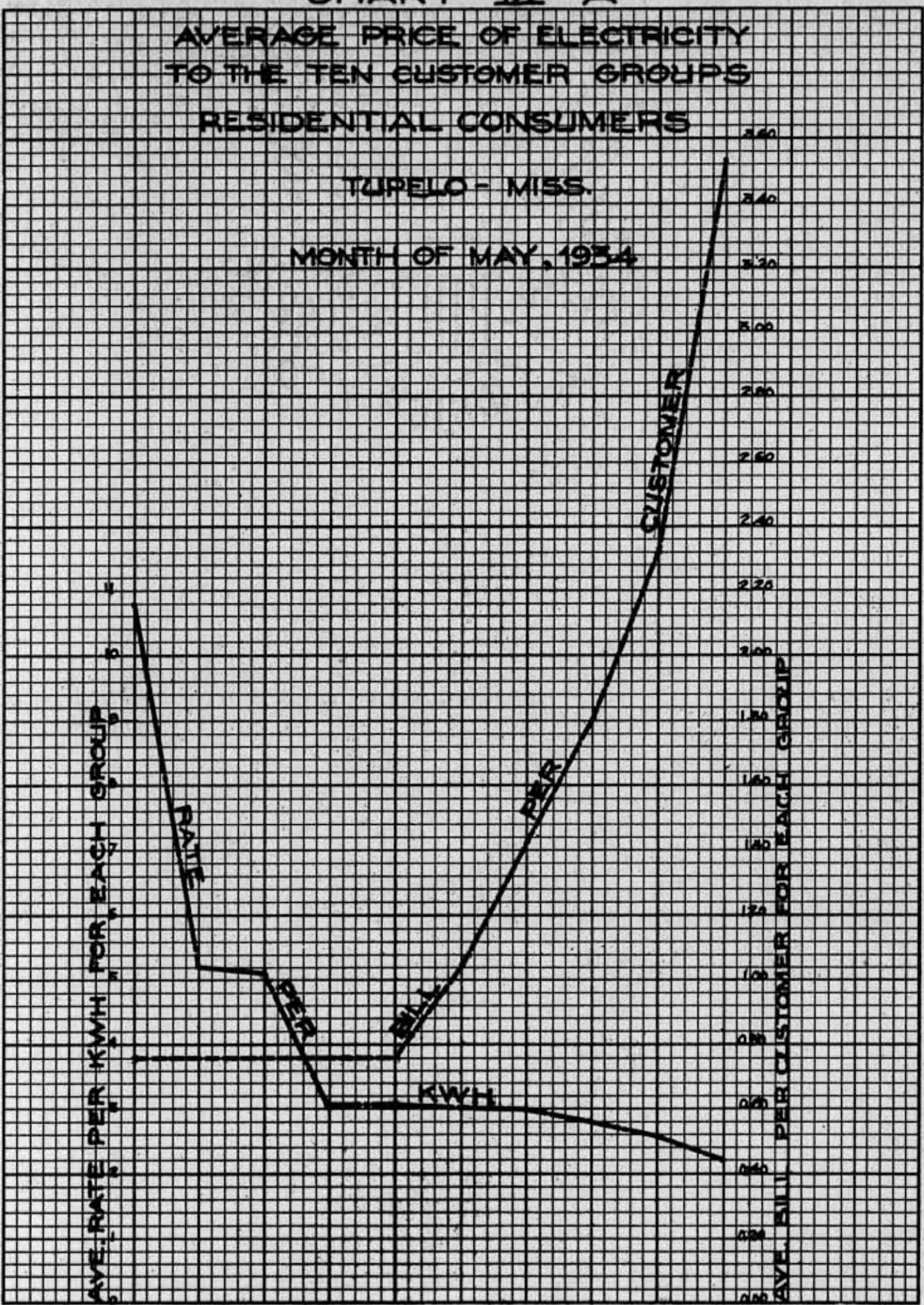


CHART IX - A
AVERAGE PRICE OF ELECTRICITY
TO THE TEN CUSTOMER GROUPS
RESIDENTIAL CONSUMERS

TUPELO - MISS.

MONTH OF MAY, 1934



TVA.
"Start file -
Power Policy"

PSF

COST OF DISTRIBUTING ELECTRICITY

Alcorn County Electric Power Association

(a non-profit corporation)

Three Months Ended August 31, 1934

	<u>Amount</u>	<u>Share of Consumers Dollar</u>
Operating Revenues	\$17,774.23	
Non-Operating Income (Net)	73.00	
	<u>\$17,847.23</u>	100¢
Operating Expenses:		
1. Operating Maintenance and Expense (Including Energy Purchased) (4977.20)	5,826.12	33¢
2. General Administrative New Business and Commercial Expense	2,094.59	12¢
3. <u>Taxes</u>	1,508.48	<u>8¢</u> ^(*)
4. Depreciation	1,232.06	7¢
5. Interest	964.43	5¢
	<hr/>	
Total Expenses and Deductions	\$11,625.68	65¢
	<hr/>	
6. Balance Available for New Construction and Retirements	6,221.55	35¢
	<hr/>	
	\$17,847.23	100¢

^(*) 8% of gross revenue, based
on city's tax rate, applied
to distribution facilities alone.

BF
TVA

TENNESSEE VALLEY AUTHORITY

Department of Electricity
Division of Rates, Research and Economics

STATISTICAL BULLETIN No. 1

SUPPLEMENT No. 1

DEVELOPMENT AND UTILIZATION OF ELECTRICITY
IN
TUPELO, MISSISSIPPI
UNDER
TENNESSEE VALLEY AUTHORITY POWER PROGRAM

By EDWARD FALCK
Rate Engineer

Chattanooga, Tennessee
October, 1934

T E N N E S S E E V A L L E Y A U T H O R I T Y

DEPARTMENT OF ELECTRICITY

DIVISION OF RATES, RESEARCH, AND ECONOMICS

Statistical Bulletin No. I

DEVELOPMENT AND UTILIZATION OF ELECTRICITY
IN TUPELO, MISSISSIPPI
UNDER TENNESSEE VALLEY AUTHORITY POWER PROGRAM
(First Supplement to Statistical Bulletin No. I)

by
Edward Falck, Rate Engineer

CHATTANOOGA, TENNESSEE
OCTOBER, 1934

T E N N E S S E E V A L L E Y A U T H O R I T Y

DIRECTORS

ARTHUR E. MORGAN, Chairman

HARCOURT A. MORGAN

DAVID E. LILIENTHAL

"The business of generating and distributing electric power is a public business....."

"The interest of the public in the widest possible use of power is superior to any private interest. Where the private interest and this public interest conflict, the public interest must prevail....."

"The right of a community to own and operate its own electric plant is undeniable. This is one of the measures which the people may properly take to protect themselves against unreasonable rates. Such a course of action may take the form of acquiring the existing plant, or setting up a competing plant, as circumstances may dictate....."

"The most important considerations are the furthering of the public interest in making power available at the lowest rate consistent with sound financial policy, and the accomplishment of the social objectives which low cost power makes possible....."

--- David E. Lilienthal

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DEVELOPMENT AND UTILIZATION OF ELECTRICITY
IN TUPELO, MISSISSIPPI
UNDER TENNESSEE VALLEY AUTHORITY POWER PROGRAM
(Supplement No. I)

INTRODUCTION

Since August, 1934, there has been further marked increase in the use of electricity in the City of Tupelo, Mississippi. The rate of growth established during the first five months of operation under the standard rates of the Tennessee Valley Authority has continued during the sixth and seventh months. Among the factors governing this continued rate of growth are the low and non-discriminatory rates, the excellence of the local management, and the response which the people of Tupelo have given to the entire electricity program. The further electrification of homes has continued, and a large number have already been fully equipped with electric appliances.

FINANCIAL RESULTS

The growth in load has resulted in a tremendous increase in gross revenues to the City of Tupelo, which distributes electricity to ultimate consumers. Residential revenues have increased from \$1,764 in July to \$2,060 in September, commercial revenues from \$2,321 in July to \$2,544 in September, and industrial revenues from \$2,258 in July to \$3,378 in September. During this period, total revenues have increased from \$6,807 to \$8,867, this increase amounting to more than 30% in two months. The trend in total consumption and revenues is shown in Table I and Chart I.

Operating expenses, exclusive of cost of power purchased, have not increased in proportion to the increase in revenues. Power purchased at wholesale from TVA has been purchased at gradually lowered average rates, due to improvement in load factor and to the increase in volume of consumption. Volume of sales has expanded rapidly, and net income available for fixed charges has increased accordingly, month by month.

RESIDENTIAL CONSUMPTION

Average consumption per residential customer reached a maximum of 89 kilowatt hours for the month of September. This compares with 70 kilowatt hours for the month of July and 42 kilowatt hours for the month of March. See Table II.

During the seven months, the total number of residential consumers increased by 31, and the mean consumption increased 112%. Total consumption for the same period increased 118%.

During recent months, the technical press has been burdened with various statements by electrical engineers to the effect that the use of averages in public utility comparisons is misleading. It has been argued that averages of customer consumption do not disclose true conditions and are, in fact, meaningless and without purpose. Such statements must be studied with circumspection. It is true that residential consumption varies throughout a wide range from 10 or 20 kilowatt hours per customer per month to more than 1000 kilowatt hours per customer per month. However, a large proportion of customers range in consumption between much narrower limits. To the extent that this range of variation is reduced, average figures become more and more significant. The statistical facts relating to consumption in Tupelo, Mississippi, are given in this report. In these facts, there is evident a central tendency and direction. The mean consumption in Tupelo is a very useful figure and can safely be compared with average consumption in other communities. For the United States as a whole, the average consumption of electricity for the census year 1932 was approximately 611. Taking this figure as an index at 100, mean consumption in Tupelo has been computed as a percent relative for the months March, 1934, through September, 1934, as shown in Table III. The index reached 175 during September and is far in excess of the index for any of the states in the Tennessee Valley Basin. The behavior of customer usage as reflected in this index of growth is clear and unmistakable.

TUPELO PAST AND PRESENT

The record for residential consumption for the year 1934 bears extremely favorable comparison with the record of 1933. Examination of Table IV shows increases for the months March through September, 1934, as compared with the same months in the previous year. The percent gain has increased steadily from a value of 23% in March to 126% in September, the weighted average for the seven months period being 67%.

DISTRIBUTION OF CUSTOMER REVENUES

The trend of average consumption and average revenue for all classes of customers is shown in Chart II. The proportional shares

of consumption and of revenue accounted for by the several classes of customers are shown in Charts III and IV and also in Table I. It should be noted that each of the major classes has shown an upward trend, the trend of the totals showing the cumulative effect of all individual class trends.

ERRORS OF ESTIMATE

Under the Tennessee Valley Authority Standard Residential Rate Schedule, the residential customers in the City of Tupelo purchased approximately 41,000 kilowatt hours in the month of March of this year. For this amount of energy, the City derived a revenue of approximately \$1,200, representing an average rate of 2.9¢ per kilowatt hour, or \$1.23 per customer. In September of this year, approximately 89,500 kilowatt hours were used, and approximately \$2,060 was paid for this use. The resulting average rate was 2.3¢ per kilowatt hour, involving an average bill of \$2.05 per customer. In the determination of the average rate per kilowatt hour, it should be noted that the figures in this report have been determined by computing the ratio of actual revenue in dollars to actual consumption in kilowatt hours. This actual average rate is somewhat lower than the average rate which would be paid by an ideal customer consuming an amount equal to the mean consumption per customer. The discrepancy is in the order of 5 to 10%, and this should be borne in mind in the computation of savings realized by consumers by the application of Tennessee Valley Authority rates. The discrepancy referred to results from the fact that consumption distributions are always positively skewed. In other words, those consumers who used more than the average consumer account for a greater portion of the total than those who used less.

In the interpretation of rates and rate policies, the experience statistics for the City of Tupelo, Mississippi, are significant. As indicated above, the use of these actual statistics results in conclusions more conservative than would be the case were hypothetical statistics employed. The averages which are set forth herein have a validity which cannot be questioned, and their use for comparative purposes is justified within a region of stability of 5 to 10%.

TABLE I

TREND OF CONSUMPTION AND REVENUE

TUPELO, MISSISSIPPI

MARCH THROUGH SEPTEMBER, 1934

	<u>March</u>	<u>April*</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>Sept.</u>
<u>RESIDENTIAL:</u>							
Consumption KWH	41,114	44,097	47,080	59,909	69,628	85,787	89,489
Revenue Dollars	\$1,200	\$1,266	\$1,330	\$1,573	\$1,764	\$2,010	\$2,060
<u>COMMERCIAL:</u>							
Consumption KWH	58,680	65,434	72,187	84,302	89,903	100,301	101,596
Revenue Dollars	\$1,752	\$1,904	\$2,042	\$2,225	\$2,321	\$2,509	\$2,544
<u>INDUSTRIAL:</u>							
Consumption KWH	232,724	230,000	199,037	211,849	205,568	247,801	385,143
Revenue Dollars	\$2,421	\$2,392	\$2,188	\$2,226	\$2,258	\$2,456	\$3,378
<u>SEASONAL INDUSTRIAL:</u>							
Consumption KWH	.....	.....	.....	.....	.....	.....	15,400
Revenue Dollars	.....	.....	.....	.....	.....	.....	\$388
<u>MUNICIPAL:</u>							
Consumption KWH	36,250	38,000	39,640	46,390	43,350	50,270	48,360
Revenue Dollars	\$217	\$228	\$238	\$507	\$464	\$500	\$497
<u>TOTAL SALES:</u>							
Number Customers	1,305	1,317	1,328	1,337	1,354	1,363	1,369
Consumption KWH	368,768	377,531	357,944	402,450	408,449	484,159	639,988
Revenue Dollars	\$5,590	\$5,790	\$5,798	\$6,531	\$6,807	\$7,476	\$8,867
Aver. KWH/Cust.	283	287	270	301	302	355	467
Aver. Rev./Cust.	\$4.28	\$4.40	\$4.37	\$4.89	\$5.03	\$5.48	\$6.48
Aver. Rate/KWH	1.52¢	1.53¢	1.62¢	1.62¢	1.67¢	1.54¢	1.39¢

* Revised to account for change in billing dates.

TABLE II

GROWTH INDICES

RESIDENTIAL AND COMMERCIAL CONSUMPTION

TUPELO, MISSISSIPPI

MARCH THROUGH SEPTEMBER, 1934

	<u>March</u>	<u>April*</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>Sept.</u>
<u>RESIDENTIAL</u>							
Number of Customers	974	974	974	984	996	1,001	1,005
Total Consumption (KWH)	41,100	44,100	47,100	59,900	69,600	85,800	89,500
Average KWH per Customer	42	45	48	61	70	86	89
Growth Index (March=100)							
Total Consumption	100	107	115	146	170	209	218
Mean Consumption	100	107	114	145	167	205	212
<u>COMMERCIAL</u>							
Number of Customers	321	333	345	344	349	353	352
Total Consumption (KWH)	58,700	65,400	72,200	84,300	89,900	100,300	101,600
Average KWH per Customer	183	197	209	245	258	284	289
Growth Index (March=100)							
Total Consumption	100	112	123	143	153	171	173
Mean Consumption	100	108	114	134	141	155	158

* Revised to account for change in billing dates.

TABLE III

COMPARISON OF TUPELO, MISSISSIPPI
WITH THE STATES IN THE TENNESSEE VALLEY
AND WITH THE UNITED STATES AS A WHOLE

Mean Residential Consumption Index

	<u>Percent Relatives</u> <u>Mean Residential Consumption</u> <u>Index</u>
United States as a Whole (1932)	100
States:	
Kentucky	83
Tennessee	98
Mississippi	105
North Carolina	108
Virginia	112
Alabama	114
Georgia	123
Tupelo - March, 1933	73
Tupelo - March, 1934	82
Tupelo - April, 1934	88
Tupelo - May, 1934	94
Tupelo - June, 1934	120
Tupelo - July, 1934	137
Tupelo - August, 1934	169
Tupelo - September, 1934	175

Source: Census of Electrical Industries - 1932
U. S. Department of Commerce
Bureau of the Census

TABLE IV

TUPELO RESIDENTIAL CONSUMPTION

PAST AND PRESENT

1933 - 1934

<u>Month</u>	<u>1934</u>	<u>1933</u>	<u>Actual Increase</u>	<u>Percentage Increase</u>
March	41,100	33,300	7,800	23.42%
April	44,100	32,500	11,600	35.69
May	47,100	37,100	10,000	26.95
June	59,900	37,000	22,900	61.89
July	69,600	37,900	31,700	83.64
August	85,800	44,500	41,300	92.81
September	89,500	39,500	50,000	126.58
<u>Total 7 Months</u>	<u>437,100</u>	<u>261,800</u>	<u>175,300</u>	<u>66.96%</u>

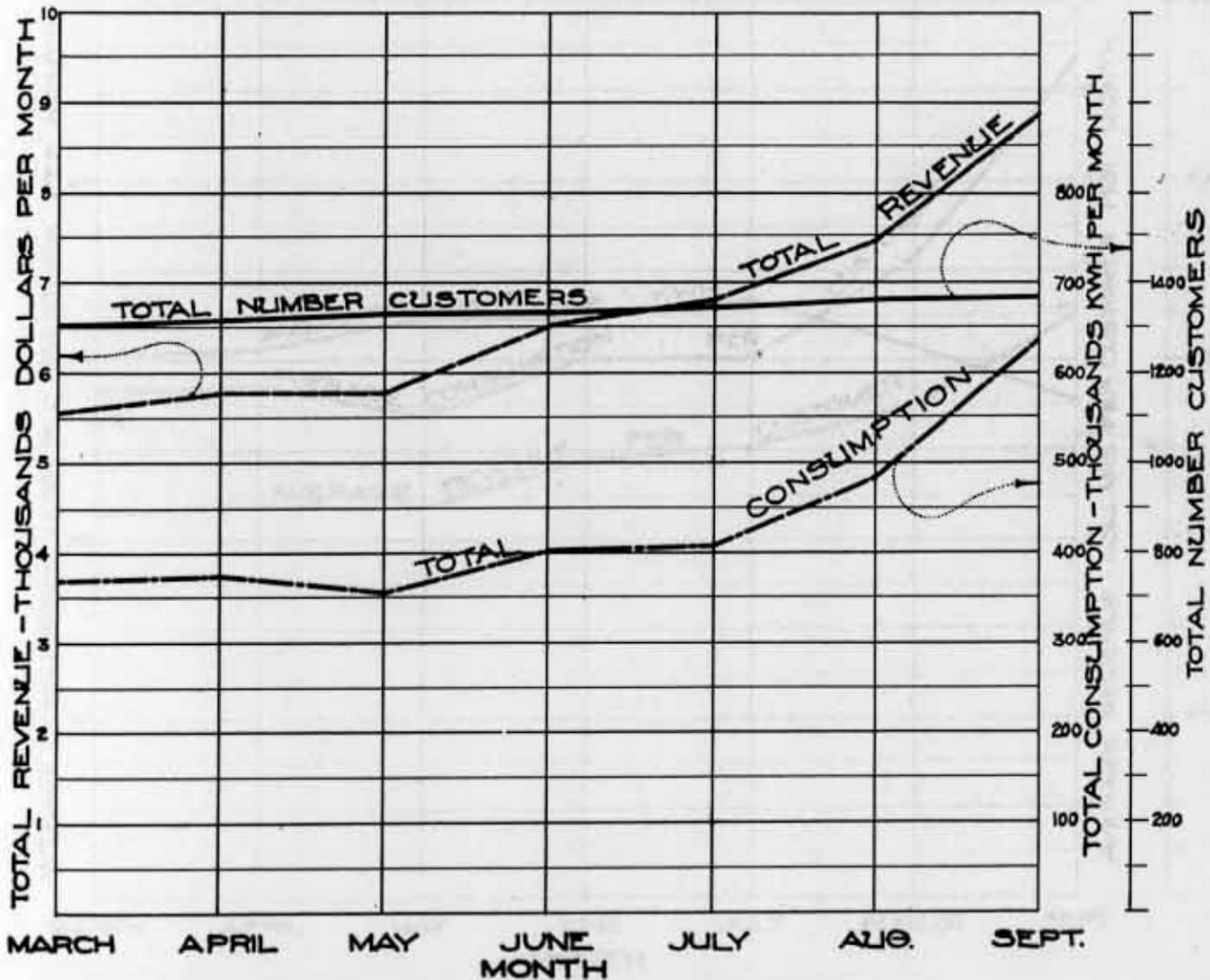
CHART I

TREND OF CUSTOMERS, CONSUMPTION AND REVENUE⁽¹⁾ TUPELO - MISS.

AVERAGE CONSUMPTION PER CUSTOMER PER MONTH
MARCH THRU SEPTEMBER, 1934
AVERAGE REVENUE PER CUSTOMER PER MONTH
AVERAGE RATE PER KILOWATT HOUR

TUPELO - MISS.

MARCH THRU SEPTEMBER, 1934



(1) INCLUDES ALL CLASSES OF CUSTOMERS SERVED

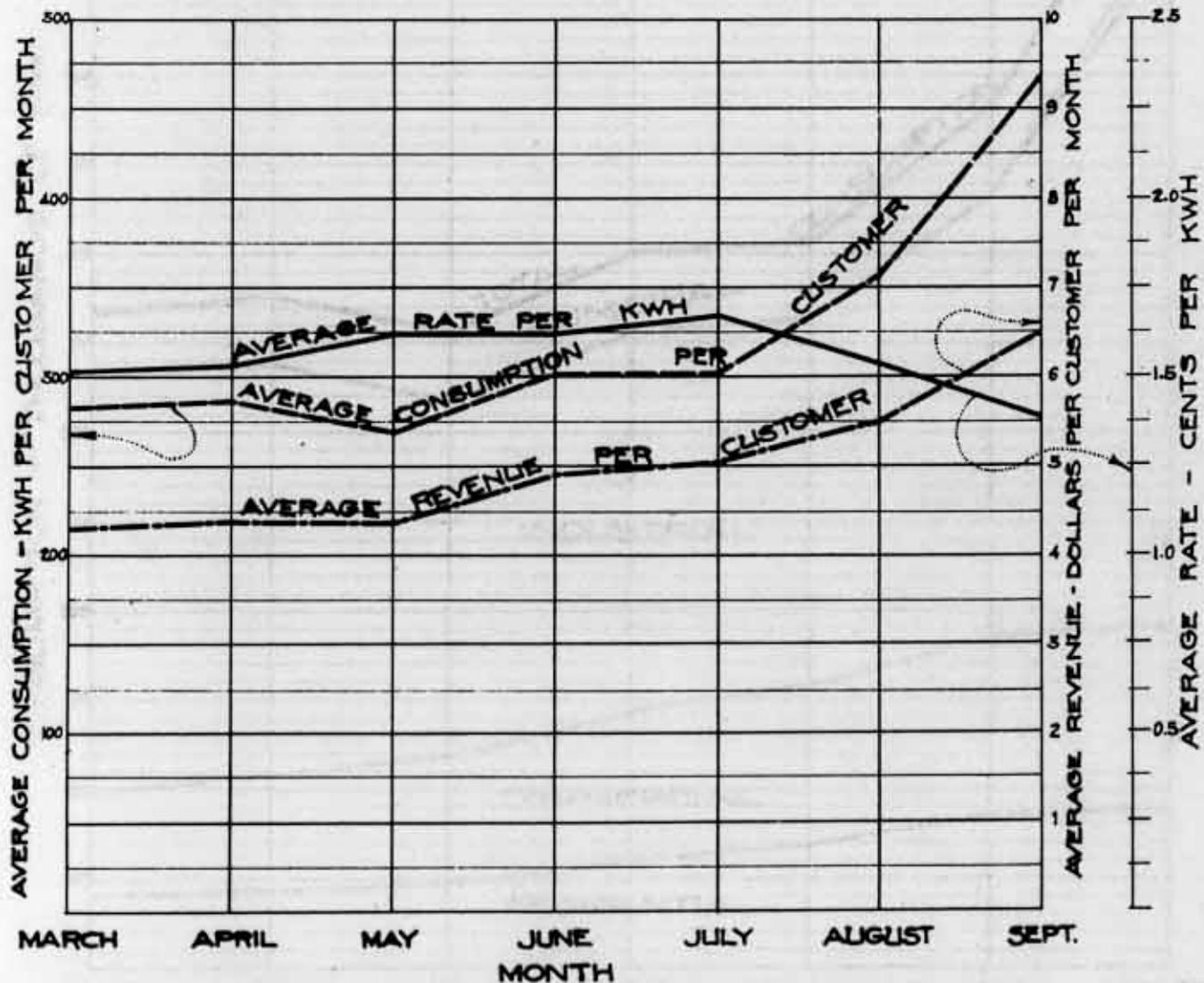
CHART II

CHANGES IN MONTHLY AVERAGE CONSUMPTION AND REVENUE ⁽¹⁾

AVERAGE CONSUMPTION PER CUSTOMER PER MONTH
AVERAGE REVENUE PER CUSTOMER PER MONTH
AVERAGE RATE PER KILOWATT HOUR

TUPELO - MISS.

MARCH THRU SEPTEMBER, 1934



⁽¹⁾ AVERAGES INCLUDE ALL CLASSES OF CUSTOMERS SERVED.

CHART III

TREND OF CONSUMPTION

TUPELO - MISS.

MARCH THRU SEPTEMBER, 1934

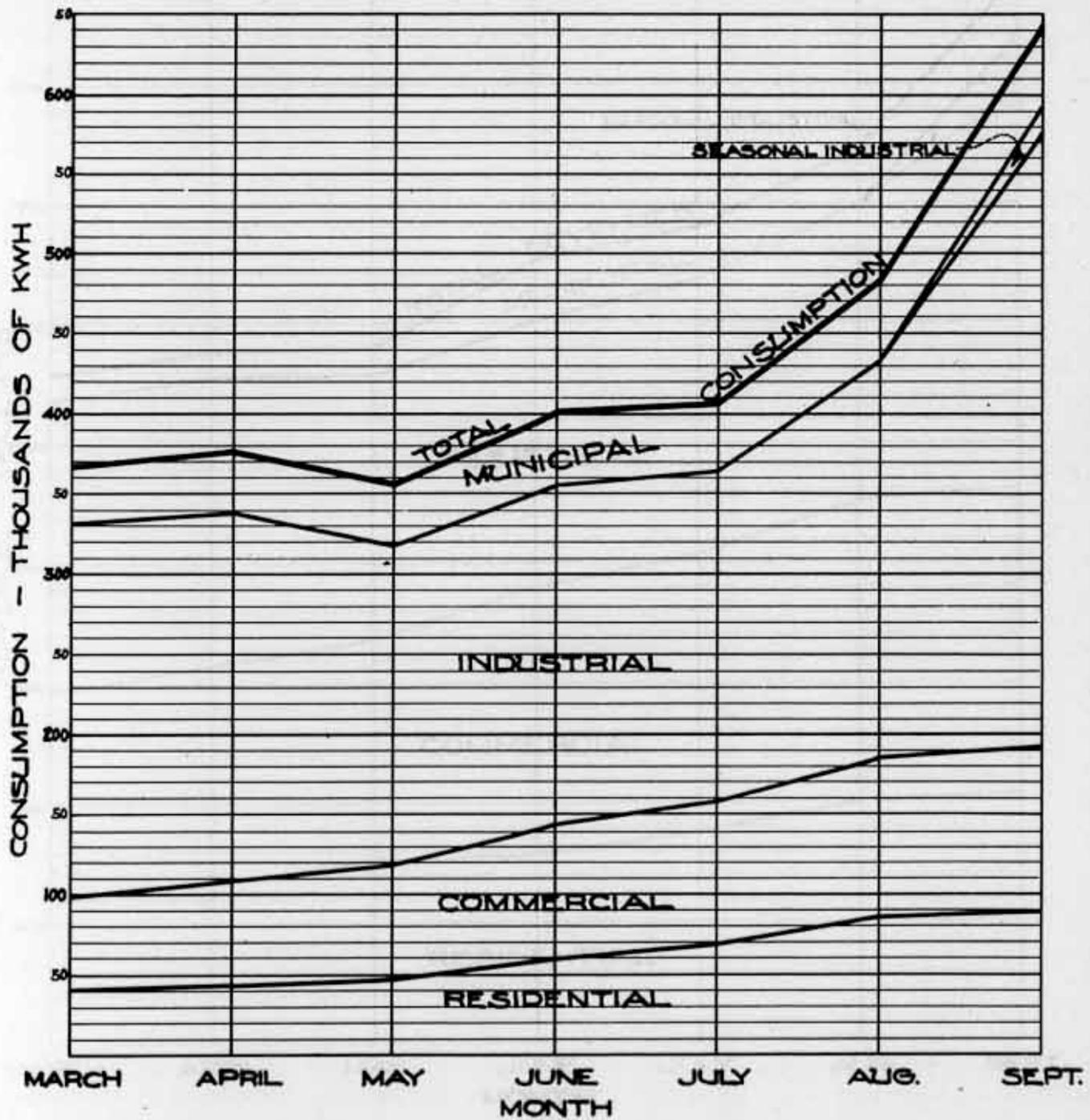
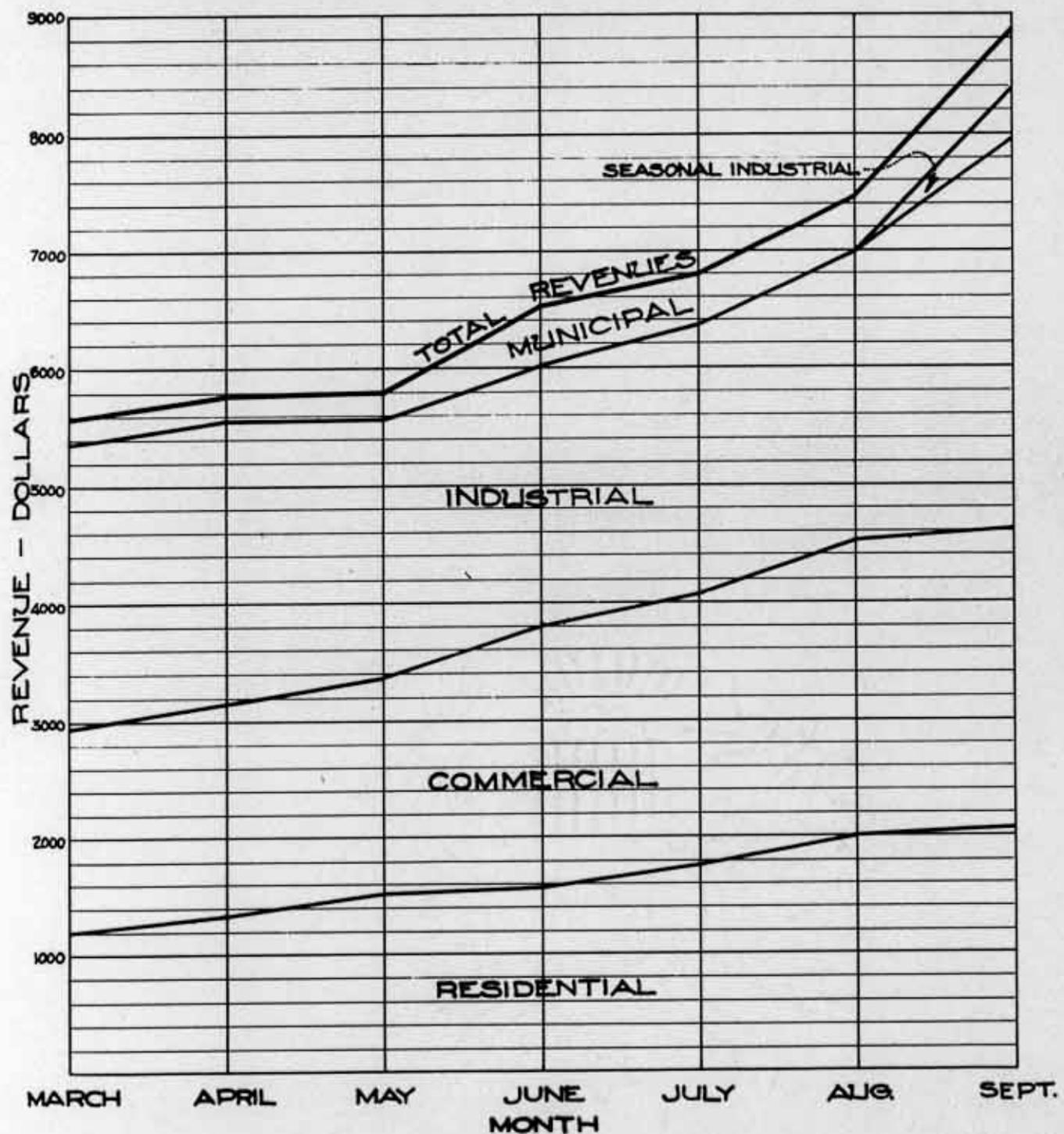


CHART IV
TREND OF REVENUES
TUPELO - MISS.
MARCH THRU SEPTEMBER, 1934



PSF
TVA

TENNESSEE VALLEY AUTHORITY

Department of Electricity
Division of Rates, Research and Economics

STATISTICAL BULLETIN No. 2

PROGRESS IN THE UTILIZATION OF ELECTRICITY
IN
ATHENS, ALABAMA
UNDER
TENNESSEE VALLEY AUTHORITY POWER PROGRAM

By EDWARD FALCK
Rate Engineer

Chattanooga, Tennessee
October, 1934

T E N N E S S E E V A L L E Y A U T H O R I T Y

DEPARTMENT OF ELECTRICITY

DIVISION OF RATES, RESEARCH, AND ECONOMICS

Statistical Bulletin No. II

PROGRESS IN THE UTILIZATION OF ELECTRICITY
IN ATHENS, ALABAMA
UNDER TENNESSEE VALLEY AUTHORITY POWER PROGRAM

by

Edward Falck, Rate Engineer

CHATTANOOGA, TENNESSEE
OCTOBER, 1934

T E N N E S S E E V A L L E Y A U T H O R I T Y

DIRECTORS

ARTHUR E. MORGAN, Chairman

HARCOURT A. MORGAN

DAVID E. LILIENTHAL

"Declaration of Policy. This contract is entered into in a spirit of cooperation and with the desire on the part of AUTHORITY and CONTRACTOR so to administer the relationship established by this contract as to operate to the benefit of CONTRACTOR and its residents and of the residents of the Tennessee Valley. In furtherance of this cooperative relationship AUTHORITY will, by every means within its power, seek to further the economic welfare of CONTRACTOR by fostering and promoting the increased use of electricity within CONTRACTOR'S corporate limits, and by such other means as are provided by law. CONTRACTOR agrees to cooperate with AUTHORITY in such program within CONTRACTOR'S area of operation and to work with AUTHORITY in furthering the economic well-being of the entire Tennessee Valley. This contract shall be construed and administered in accordance with this statement of policy."

--- Extract from the Power Contract between
Tennessee Valley Authority and City of
Athens, Alabama, March 7, 1934.

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PROGRESS IN THE UTILIZATION OF ELECTRICITY
IN ATHENS, ALABAMA
UNDER TENNESSEE VALLEY AUTHORITY POWER PROGRAM

INTRODUCTION

The power contract between the City of Athens, Alabama, and the Tennessee Valley Authority became operative on June 1, 1934. At that time, the consumers received a very material reduction in the rates charged for electricity, and the City of Athens, which owns its municipal distribution system, received an extensive reduction in the wholesale rate at which it purchases its power supply. During the four months of operation subsequent to June 1, there has been a substantial increase in both consumption and revenues.

The record of the City of Athens should be of particular interest to students of the Tennessee Valley Authority Power Program for the reason that this City is the commercial center of a prosperous farming area and does not contain any large industries at the present time. Residential and commercial consumers account for the utilization of the entire electricity supply, and no part of the revenue from electric operations is provided by industrial consumers.

The fact that the City of Athens has demonstrated the financial soundness of Tennessee Valley Authority rate policies is a matter of great significance. The present study sets forth statistical information relating to the development which has taken place during the months from June through September.

RATE REDUCTIONS

Upon commencement of operations under TVA rates, the consumers in Athens received a rate reduction, the extent of which is indicated in Chart I and Tables I and I-A. Among residential users, those using lights and small appliances received a reduction of approximately 60%. Those who had, in addition, a refrigerator and a range received a reduction of approximately 42%. Those who had completely electrified homes, including electric water heaters, received a reduction of approximately 50%. Similarly, commercial users received reductions ranging from 45 to 60%. While the new rates are among the lowest in the United States, the City of Athens has not undertaken to subsidize consumers in any way whatsoever. At the time that the rate

reduction was put into effect for residential and commercial users, the City of Athens received a reduction of approximately 50% in the cost of its power supply. Prior to June 1, 1934, Athens purchased wholesale power from the Alabama Power Company. The reduction in the cost of electricity is shown in Chart II and Table II.

GROWTH IN CONSUMPTION

The trend of consumption is shown in Tables III and IV and Charts III and IV. Mean residential consumption for September was exactly twice mean residential consumption for May, 1934, the last month prior to the introduction of Tennessee Valley Authority rates. Mean commercial consumption increased 22% during the four months period. The average revenue per residential customer was \$1.94 in September as compared with \$1.57 in June. Average per customer revenue for commercial users was \$5.97 in September as compared with \$5.25 in June. It should be noted that the number of residential customers increased from 561 to 602 (Cf. Table IV). The addition of new customers is a factor which frequently depresses the average figures during the first two or three months for the reason that new customers are frequently low usage customers for sometime pending the purchase of appliances and the fuller electrification of their homes.

ATHENS CONTRASTED WITH THE UNITED STATES AS A WHOLE

The mean consumption per customer for residential users in Athens has been computed as a percent relative of the mean residential consumption for the United States as a whole. The response to promotional rates has been such that the Athens relative has increased from 91 in May, 1934, to 183 in September. The relative performance in Athens is contrasted with the census figures for the seven Tennessee Valley states and for the United States as a whole in Chart III and Table III-A. The tremendous increase which has taken place in Athens suggests that the residential demand for electricity is a highly elastic quantity. The actual residential revenue for the United States as a whole in 1932 was \$650,000,000, for which approximately 11,790,000,000 kilowatt hours were supplied. If the United States as a whole were put upon precisely the same basis as Athens, Alabama, the total consumption would have been 21,000,000,000 kilowatt hours and the total revenue would have been \$463,000,000. In other words, if the consumption in the United States were to increase from 1932 figures to the level now obtaining in Athens (August, 1934), there would take place an increase of approximately 9,000,000,000 kilowatt hours, and there

would be a saving to residential users throughout the country of approximately \$187,000,000 per year. In other words, residential users would receive 78% more electric service and would pay for the greater amount 28% less than they now pay. Were the residential consumption to increase 9,000,000,000 kilowatt hours per year, there would be required in the order of 3,000,000 kilowatts of additional productive capacity to supply this increase.

RESIDENTIAL CONSUMPTION PAST AND PRESENT

The changing character of residential consumption is shown in Chart VII and Table VII. In August, 1933, only 55% of the customers used more than 20 kilowatt hours per month, while in August, 1934, 77% used more than 20 kilowatt hours per month.

In 1933, there were only 28% of customers using more than 70 kilowatt hours per month as compared with 37% of the customers in 1934.

CHARACTERISTICS OF THE RESIDENTIAL CLASS

An analysis of the distribution of consumers according to rate blocks is shown in Chart V and Table V. It will be noted that 57% of the consumers use less than 50 kilowatt hours and account for 15% of the total consumption. The consumers in this block average only 23.6 kilowatt hours per customer. Customers in the second block represent 31.5% of total number of customers, contribute 42.4% of the revenue, and use an average of 109 kilowatt hours per customer. The fourth block contains customers whose use exceeds 400 kilowatt hours per month. Three percent of the customers were in this block, and they contributed 11.8% of the revenue. Their consumption averaged 695 kilowatt hours per customer and accounted for 23.3% of total consumption. They paid an average of \$7.68 per customer, equivalent to 1.1¢ per kilowatt hour.

The distribution of consumers according to the size of their consumption is shown in Chart VI. It will be noted that the mean consumption for August was 90.9 kilowatt hours per customer. This is at the rate of more than 1,000 kilowatt hours per customer per year. The modal consumption is only 23.6 kilowatt hours, the lower quartile being 21 and the higher quartile being 108, indicating a positive skewness of more than 50%. A close examination of Chart VI indicates that a secondary mode may soon become apparent at a point in the neighborhood of 85 kilowatt hours per customer. If the sale of refrigerators continues, there is every reason to believe that this change will take place and that the mode will shift from the lighting mode of 24 to a lighting plus refrigeration mode of

around 85. During the five months from May to September, there were sold in Athens 122 refrigerators, which is in the order of one to every five customers. In addition, there were sold 61 ranges and 24 water heaters.

Table VI shows the consumption and revenue of residential customers arranged in quartile groups. The first quartile group includes the 25% of the total number of customers smallest in point of use. The second quartile group represents the next succeeding 25% of customers in order of size. The average usage and the average bill paid indicate roughly the classifications into which residential consumers fell for the month of August. If present trends continue, and there is every reason to believe that they will, the average consumption in the second and third quartile groups will be substantially greater.

CONCLUSION

From the statistics contained in this report, one may infer the characteristic behavior of residential consumption under a low level of rates. This behavior has been the same wherever TVA rates have been applied and is in accord with the classical laws of supply and demand. In determining the characteristic price-volume relationships, one must note that it is necessary not only to reduce rates but to reduce them to a sufficiently low level, - low with respect to encouraging abundant use. There are many deterrents to increased use of electricity, but there is little doubt that the most important of these is the deterrent of price. At the present time, the City of Athens has vanquished the price problem and is covering the whole cost of distributing electricity to its residential and commercial users.

TABLE I

OLD RATES AND NEW IN ATHENS, ALABAMA

RESIDENTIAL SERVICE

CITY OF ATHENS COMBINATION RATE
IN EFFECT PRIOR TO JUNE 1, 1934:

First 30 KWH @ 7.5¢ per KWH
Next 100 KWH @ 3.75¢ per KWH
Next 450 KWH @ 2.25¢ per KWH

MINIMUM MONTHLY BILL:

\$1.50 per Meter

AVAILABILITY:

The above rate was available for residential use and represents a combination of several separate rates available to different classes of customers, i.e., lighting, refrigeration, and cooking.

TVA STANDARD RESIDENTIAL RATE
IN EFFECT SINCE JUNE 1, 1934:

First 50 KWH per Mo. @ 3¢ per KWH
Next 150 KWH per Mo. @ 2¢ per KWH
Next 200 KWH per Mo. @ 1¢ per KWH
Next 1000 KWH per Mo. @ 0.4¢ per KWH
Over 1400 KWH per Mo. @ 0.75¢ per KWH

MINIMUM MONTHLY BILL:

\$0.75 per Meter

AVAILABILITY:

To all residential customers at local secondary voltage either two-wire or three-wire service as Municipality may require.

TABLE I-A

OLD RATES AND NEW IN ATHENS, ALABAMA

COMPARISON OF TYPICAL BILLS

COMMERCIAL

<u>Monthly Consumption KWH</u>	<u>Old Athens Rate Monthly Bill Dollars</u>	<u>New TVA Athens Rate Monthly Bill Dollars</u>	<u>Saving Under TVA Dollars</u>	<u>Percent</u>
41	\$3.08	\$1.35	\$1.73	56.17%
50	3.75	1.65	2.10	56.00
90	6.75	2.97	3.78	56.00
137	9.72	4.52	5.20	53.50
224	14.94	7.39	7.55	50.54
289	18.84	9.11	9.73	51.65
538	33.78	14.59	19.19	56.81
1841	65.10	34.00	31.10	47.77

TABLE II

ACTUAL TVA WHOLESALE ELECTRICITY BILLS
AND COMPARABLE BILLS AT ALABAMA POWER COMPANY RATES

ATHENS, ALABAMA

JUNE 1934 - SEPTEMBER 1934

<u>Month</u>	<u>KW Demand</u>	<u>KWH Energy Consumption</u>	<u>Computed Alabama Power Bill</u>	<u>Actual TVA Bill</u>	<u>Saving</u>	<u>% Saving</u>
June, 1934	340	122,400	\$1,536.80	\$773.20	\$763.60	49.69%
July, 1934	373	142,800	1,720.85	864.10	856.75	49.79%
August, 1934	394	152,000	1,811.50	905.52	905.98	50.01%
September, 1934	433	149,600	1,843.45	938.77	904.68	49.08%

TABLE III

FOUR MONTHS GROWTH IN RESIDENTIAL AND COMMERCIAL CONSUMPTION

ATHENS, ALABAMA

MAY 1934 - SEPTEMBER 1934

	<u>May*</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>
<u>RESIDENTIAL</u>					
Number of Customers	575	561	574	590	602
Total Consumption (KWH)	26,603	33,124	46,106	53,767	55,680
Average KWH per Customer	46.27	59.05	80.32	91.13	92.49
Growth Index (May = 100)					
Total Consumption	100	125	173	202	209
Mean Consumption	100	128	174	197	200
<u>COMMERCIAL</u>					
Number of Customers	170	176	182	191	203
Total Consumption (KWH)	31,830	34,112	37,737	42,254	46,305
Average KWH per Customer	187.24	193.82	207.35	221.23	228.10
Growth Index (May = 100)					
Total Consumption	100	107	119	133	145
Mean Consumption	100	104	111	118	122

*May is last month prior to use of TVA power.

TABLE III-A

COMPARISON OF ATHENS, ALABAMA
WITH THE STATES IN THE TENNESSEE VALLEY
AND WITH THE UNITED STATES AS A WHOLE

Mean Residential Consumption Index

	<u>Percent Relatives</u> <u>Mean Residential Consumption</u> <u>Index</u>
United States as a Whole (1932)	100
States:	
Kentucky	83
Tennessee	98
Mississippi	105
North Carolina	108
Virginia	112
Alabama	114
Georgia	123
Athens - June 1933	94
Athens - May 1934	91
Athens - June 1934*	115
Athens - July 1934	161
Athens - August 1934	179
Athens - September 1934	183

* First Month under TVA Rates

Source: Census of Electrical Industries - 1932
U. S. Department of Commerce
Bureau of the Census

TABLE IV

TREND OF CONSUMPTION AND REVENUE

RESIDENTIAL AND COMMERCIAL

ATHENS, ALABAMA

JUNE 1934 - SEPTEMBER 1934

	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>
<u>RESIDENTIAL:</u>				
Number Customers	561	574	590	602
Consumption KWH	33,124	46,106	53,767	55,680
Revenue Dollars	\$878	\$1,096	\$1,183	\$1,170
Average KWH per Customer	59	80	91	92
Average Revenue per Customer	\$1.57	\$1.91	\$2.01	\$1.91
Average Rate per KWH	2.65¢	2.38¢	2.20¢	2.10¢
<u>COMMERCIAL:</u>				
Number Customers	176	182	191	203
Consumption KWH	34,112	37,737	42,254	46,305
Revenue Dollars	\$924	\$1,059	\$1,242	\$1,211
Average KWH per Customer	194	207	221	228
Average Revenue per Customer	\$5.25	\$5.82	\$6.50	\$5.97
Average Rate per KWH	2.71¢	2.81¢	2.94¢	2.62¢

TABLE V

DISTRIBUTION OF CONSUMERS ACCORDING TO RATE BLOCKS

RESIDENTIAL CONSUMPTION

ATHENS, ALABAMA

AUGUST 1934

	<u>1st Block</u>	<u>2nd Block</u>	<u>3rd Block</u>	<u>4th Block</u>	<u>Total</u>
Number of Customers - Actual	338	186	48	18	590
Number of Customers - Percent	57.29	31.52	8.14	3.05	100
Revenue Dollars - Actual	\$289.64	\$498.66	\$249.08	\$138.25	\$1,175.63
Revenue Dollars - Percent	24.63	42.42	21.19	11.76	100
Consumption KWH - Actual	7,979	20,283	12,884	12,516	53,662
Consumption KWH - Percent	14.87	37.79	24.02	23.32	100
Average KWH per Customer	23.31	109.05	268.42	695.53	90.94
Average Revenue per Customer	\$0.86	\$2.68	\$5.19	\$7.68	\$2.00
Average Rate per KWH	3.63¢	2.46¢	1.93¢	1.10¢	2.20¢

1st Block - First 50 KWH per Month @ 3¢ per KWH
 2nd Block - Next 150 KWH per Month @ 2¢ per KWH
 3rd Block - Next 200 KWH per Month @ 1¢ per KWH
 4th Block - Excess over 400 KWH per Month @ 0.4¢ per KWH

TABLE VI

QUARTILE GROUPS OF CUSTOMERS ARRANGED ACCORDING TO SIZE

RESIDENTIAL CONSUMERS

ATHENS, ALABAMA

AUGUST 1934

<u>Quartiles</u>	<u>Number Customers</u>	<u>Revenue Dollars</u>	<u>Consumption KWH</u>	<u>Average KWH per Customer</u>	<u>Average Rev. per Customer</u>	<u>Average Rate per KWH</u>
1	147.5	\$110.87	2,052	13.91	\$0.75	5.40¢
2	147.5	125.80	4,169	28.26	0.85	3.02¢
3	147.5	308.21	11,595	78.61	2.09	2.66¢
4	147.5	630.75	35,846	243.02	4.28	1.76¢

TABLE VII

PERCENTAGE DISTRIBUTION OF SIZE OF CUSTOMERS

RESIDENTIAL CONSUMPTION

ATHENS, ALABAMA

AUGUST 1933 - AUGUST 1934

<u>KWH per Customer</u>	<u>August 1933</u>		<u>August 1934</u>	
	<u>Cumulative Percent Customers.</u>	<u>Cumulative Percent KWH</u>	<u>Cumulative Percent Customers</u>	<u>Cumulative Percent KWH</u>
0 - 10	10	1	6	1
11 - 20	45	10	23	3
21 - 30	53	14	43	9
31 - 40	64	20	53	13
41 - 50	66	22	57	15
51 - 60	68	24	60	17
61 - 70	72	28	63	18
71 - 80	76	33	65	21
81 - 90	77	35	70	25
91 - 100	81	41	73	28
101 - 120	85	48	78	34
121 - 140	88	56	82	40
141 - 160	91	64	85	44
161 - 180	94	71	87	49
181 - 200	95	74	89	53
201 - 300	98	88	95	70
301 - 400	99	97	96	77
401 - 500		99	97	81
501 - 600			98	84
601 - 800			99	89
801 - 1000				96

CHART II

CHART I

LOW ACTUAL TVA WHOLESALE ELECTRICITY BILL
PAID BY CITY OF ATHENS, ALA.

AND
OLD RATES AND NEW IN ATHENS
COMPARABLE HIGHER BILL
UNDER ALA. RESIDENTIAL CO RATES

MONTH OF AUGUST, 1934

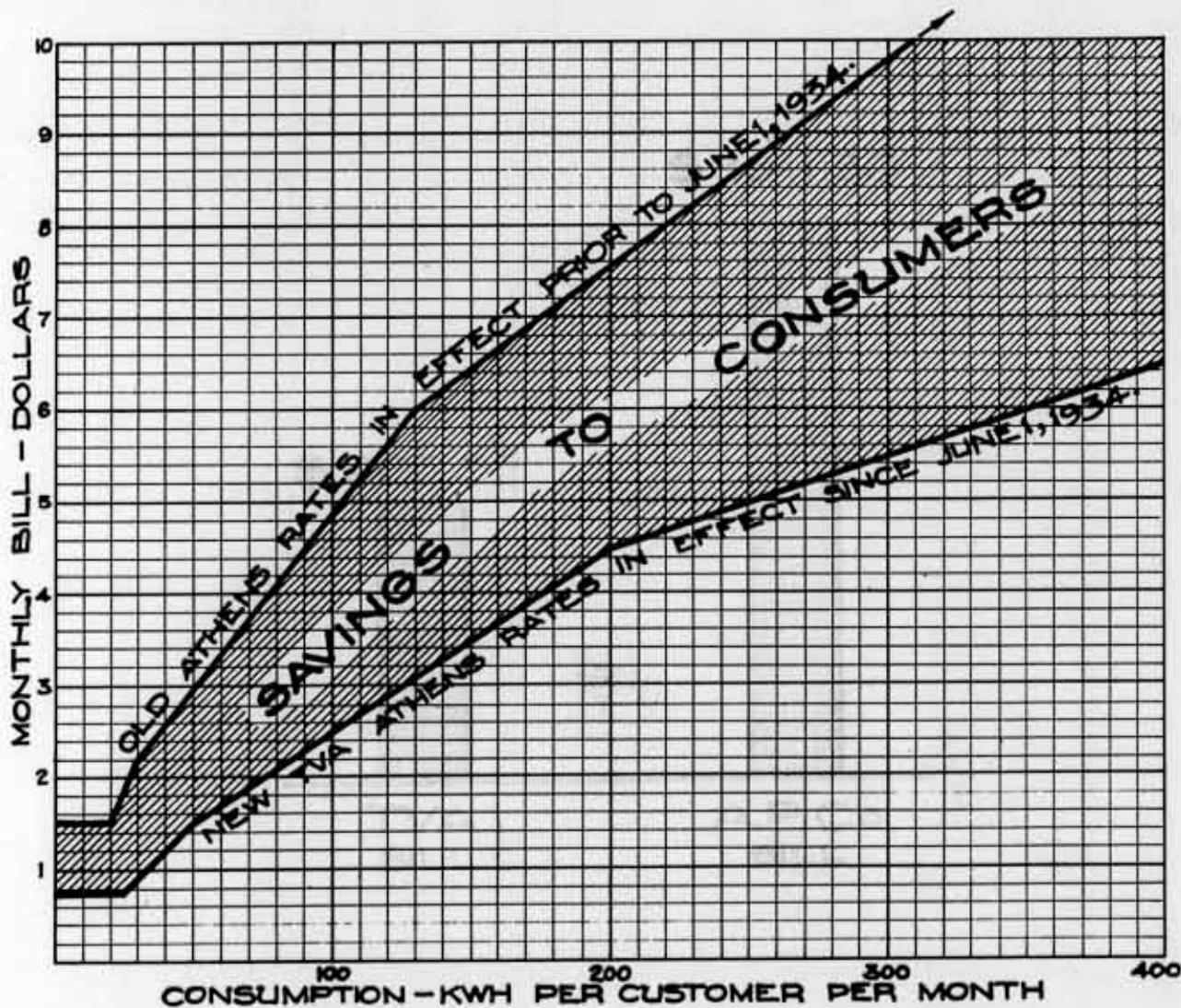


CHART II

LOW ACTUAL TVA WHOLESALE ELECTRICITY BILL
PAID BY CITY OF ATHENS, ALA.

RESIDENTIAL CONSUMPTION AND PER CUSTOMER INDEX

COMPARABLE HIGHER BILL
UNDER ALABAMA POWER CO. RATES

MONTH OF AUGUST, 1934

SOURCE: BUREAU OF ELECTRICAL INDUSTRIES, 1934
U. S. DEPT. OF COMMERCE

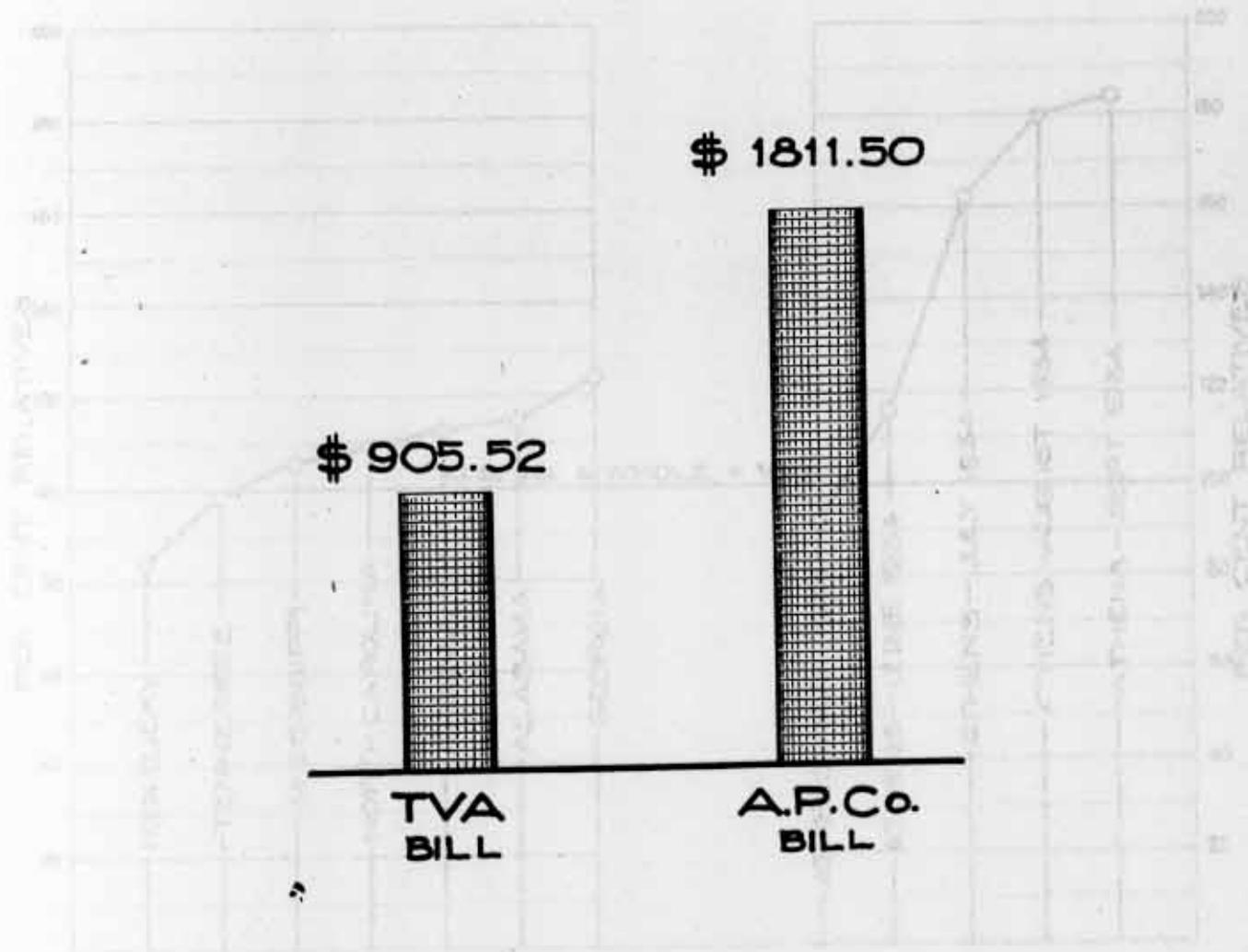


CHART III

COMPARISON OF ATHENS-ALABAMA WITH SEVEN TENNESSEE VALLEY STATES RESIDENTIAL CONSUMPTION PER CUSTOMER INDEX

ATHENS - ALA.

APRIL THRU DECEMBER, 1934

* SOURCE.—CENSUS OF ELECTRICAL INDUSTRIES : 1932
U. S. DEPT. OF COMMERCE

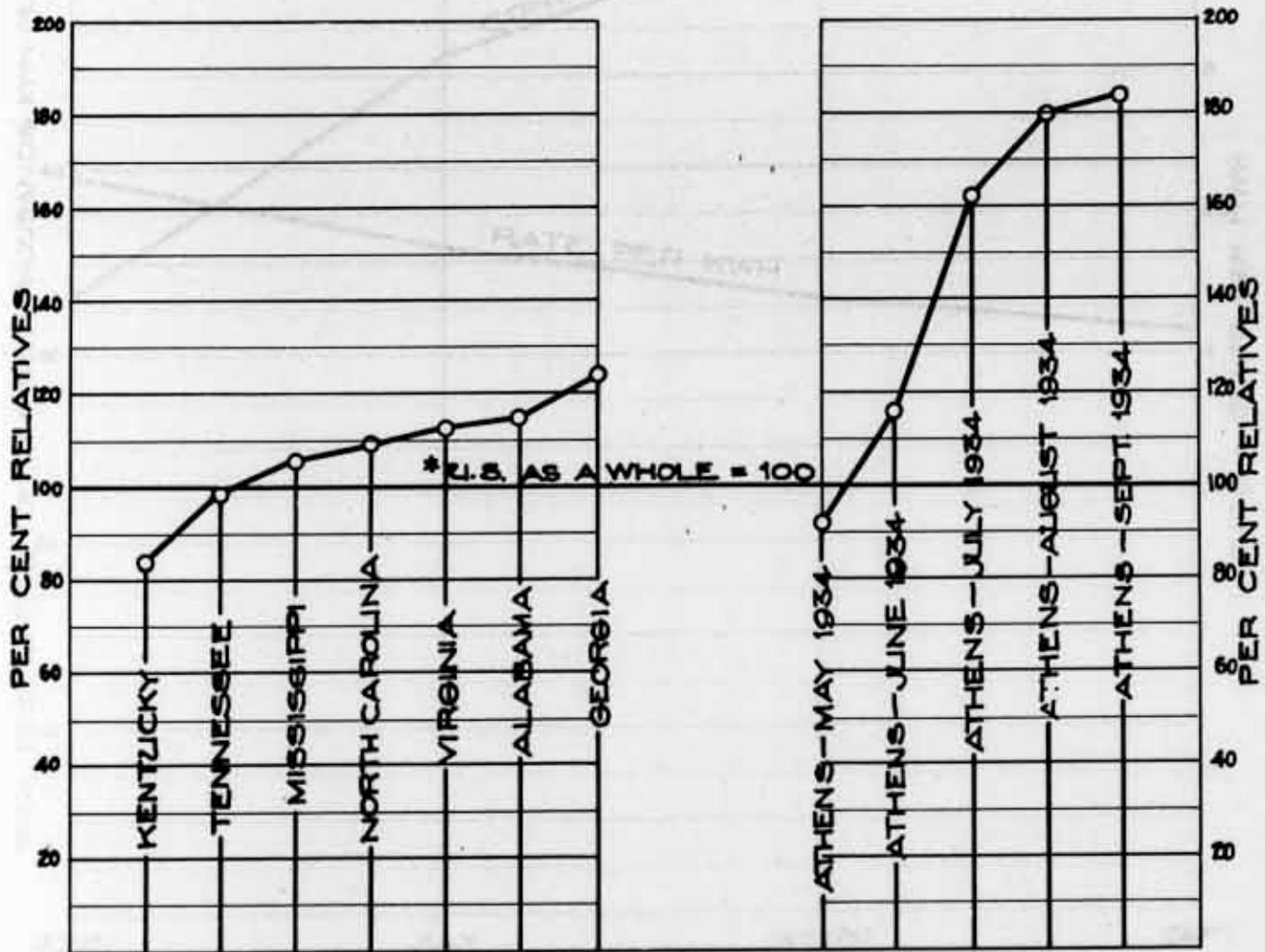


CHART IV

TREND OF TOTAL CONSUMPTION AND AVERAGE RATE PER KILOWATT HOUR

RESIDENTIAL
ATHENS - ALA.

JUNE THRU SEPTEMBER, 1934.

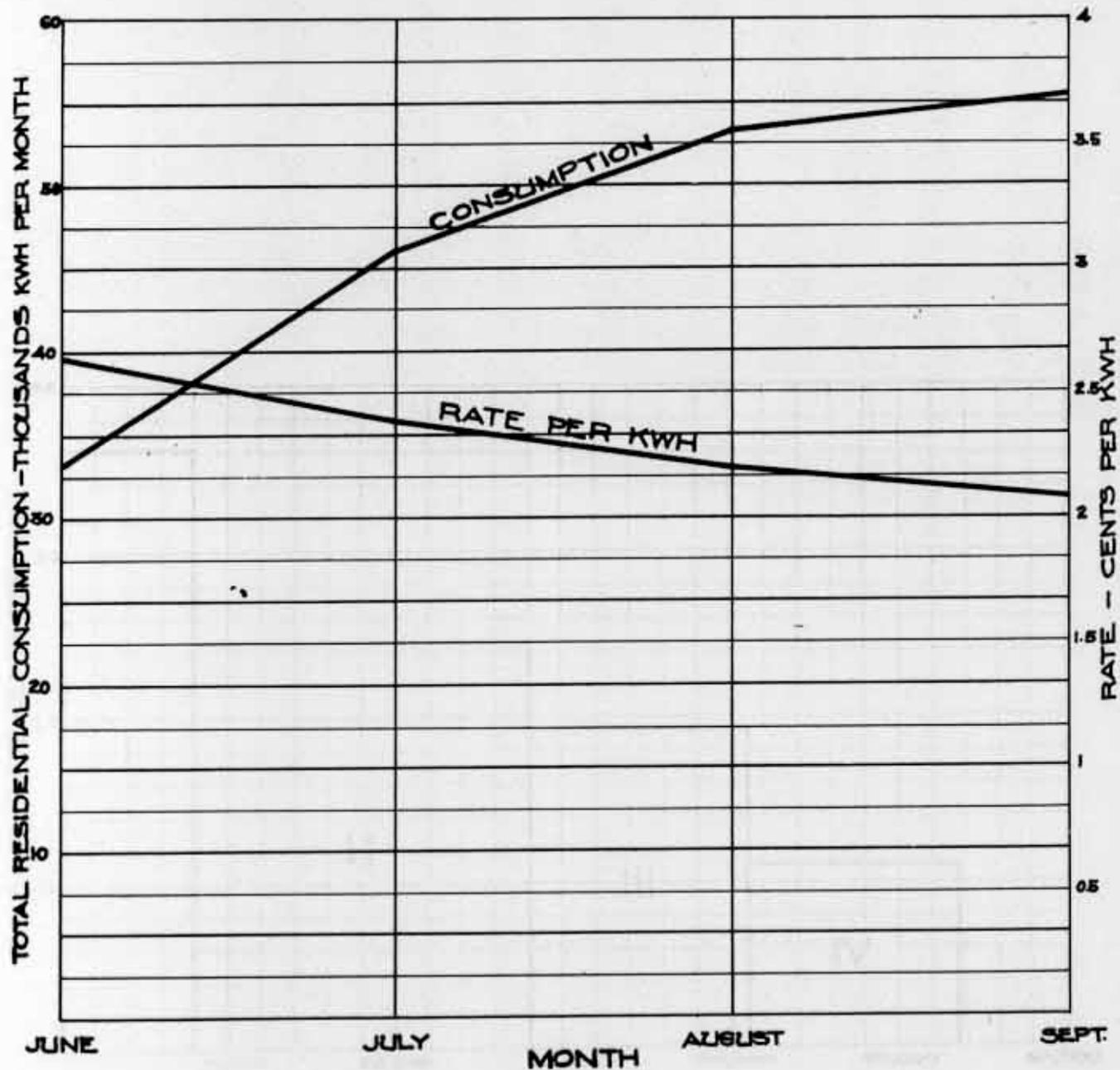


CHART V

DISTRIBUTION OF CONSUMERS ACCORDING TO RATE BLOCKS USE

FREQUENCY DISTRIBUTION

RESIDENTIAL CONSUMPTION ATHENS - ALA.

MONTH OF AUGUST, 1934.

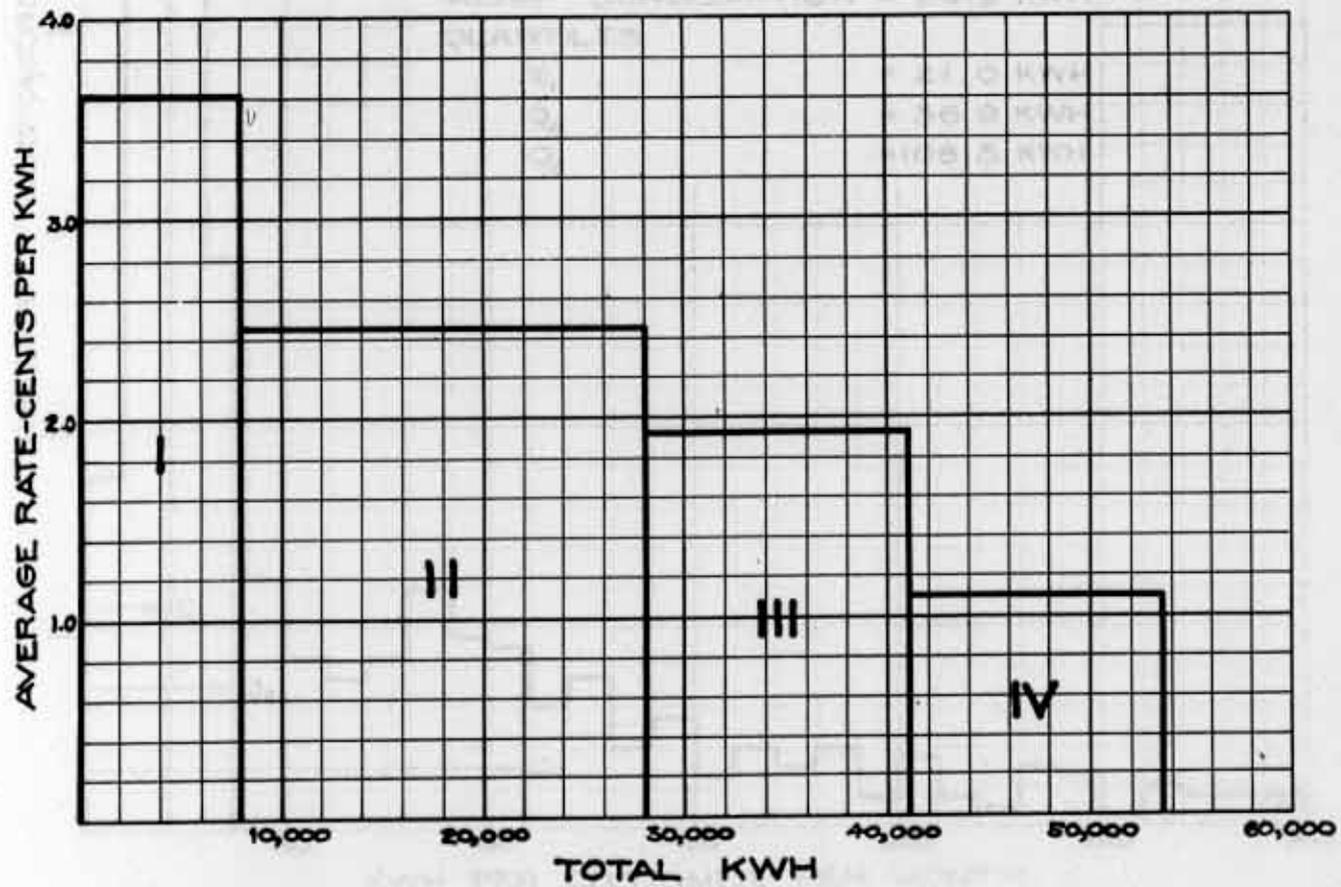


CHART VI

DISTRIBUTION OF CONSUMERS ACCORDING TO AMOUNT OF KWH USE

FREQUENCY DISTRIBUTION

RESIDENTIAL CONSUMPTION

ATHENS - ALA.

MONTH OF AUGUST, 1934.

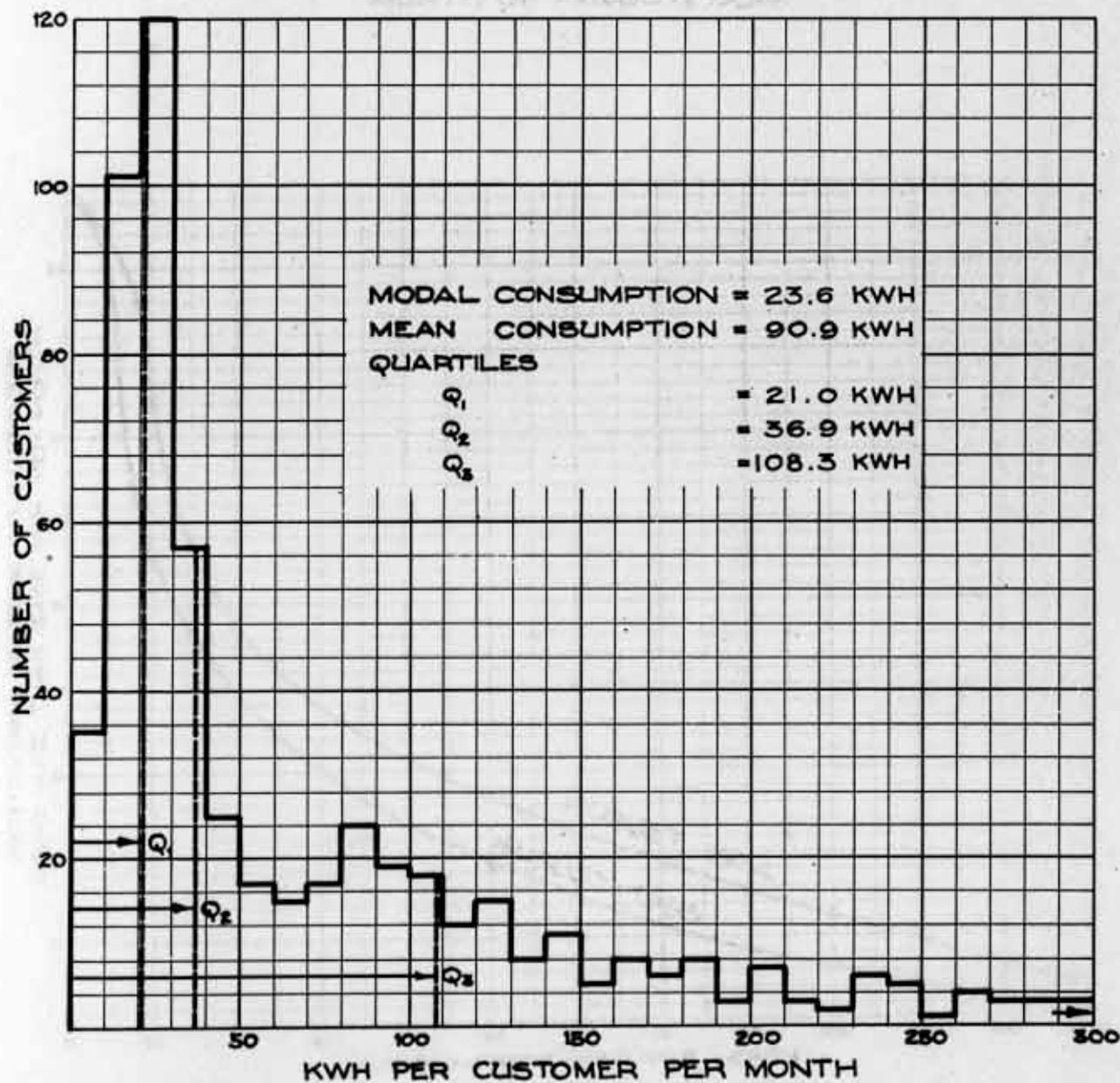


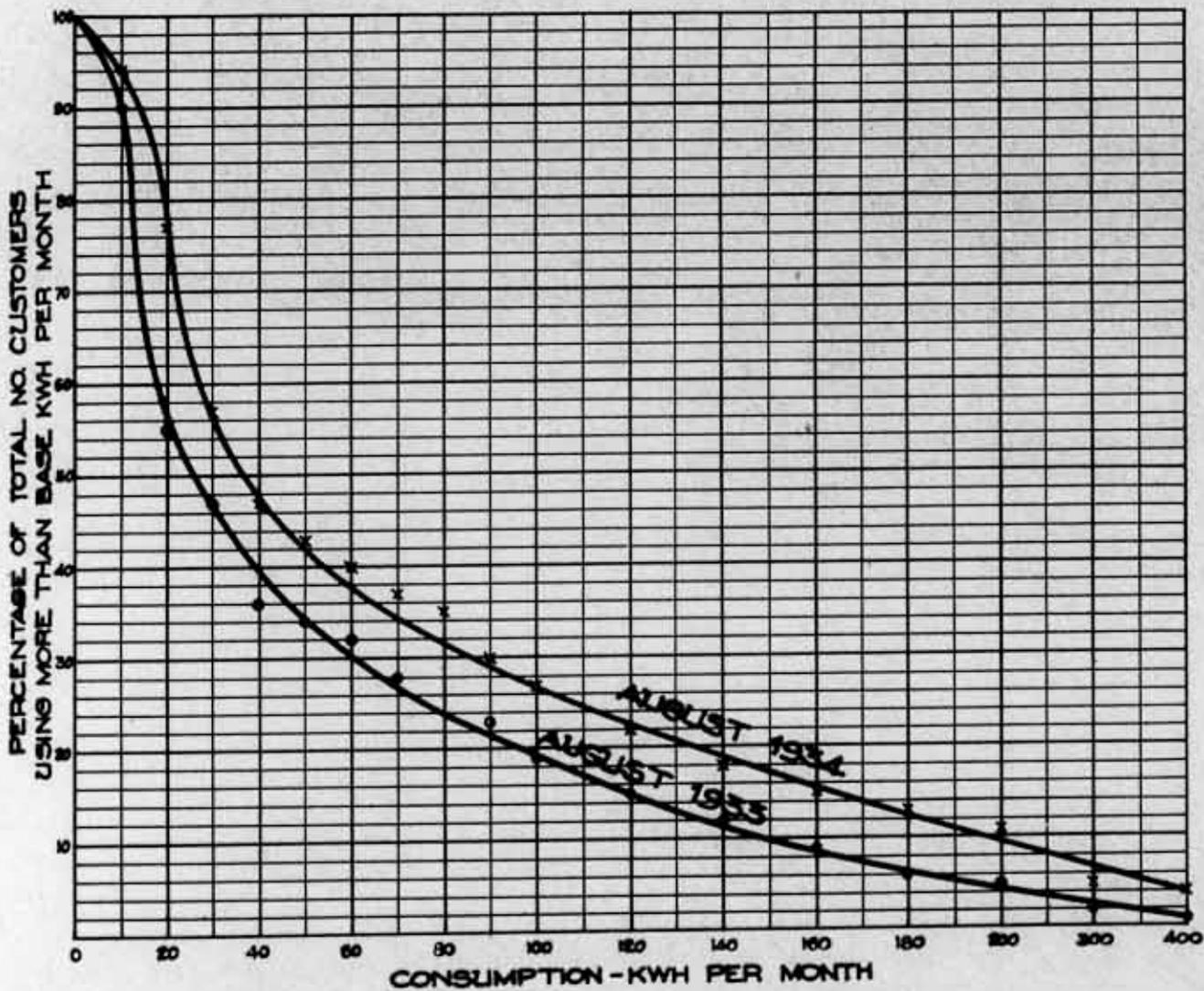
CHART VII

PERCENTAGE DISTRIBUTION OF SIZE OF CUSTOMERS

RESIDENTIAL CONSUMPTION ATHENS - ALA.

MONTH OF AUGUST, 1933.

MONTH OF AUGUST, 1934.



BF *File T.V.A. on file*

SCRIBNER'S MAGAZINE

VOL. XCVI · NO. 4



OCTOBER, 1934

Business, Regimentation, and the New Deal
Three articles on important phases of the social and economic present by
PAUL HUTCHINSON · JOHN T. FLYNN · W. M. KIPLINGER

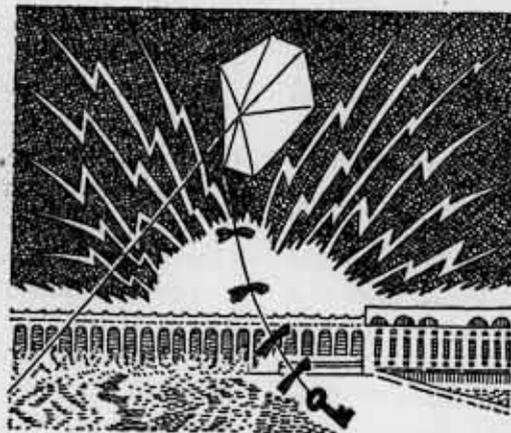
Revolution by Electricity

The significance of the Tennessee Valley experiment

By Paul Hutchinson

It is possible that history's verdict on the Roosevelt administration is being formed, not in Washington, but in the valley of the Tennessee River. Washington today is a city of desperate expedients, of brilliant (or not so brilliant) improvisations, of a frantic battle to hold things together until familiar processes can be induced to resume their working. But the Tennessee Valley is a vast proving-ground on which immediate construction is fitted to the framework of long-range planning in a deliberate effort to produce a new social order. Washington is trying to save the present from disintegration. The Tennessee Valley project is trying to fashion the future of a new America. Washington seeks recovery today. The Tennessee Valley contemplates revolution tomorrow. If Roosevelt loses at Washington he will, of course, lose everywhere. But if Roosevelt wins in the Tennessee Valley he will enter the pantheon of immortal Americans.

By now our wise men are fairly well agreed that the basic requirement to insure the American future is the substitution of some sort of economic planning for the get-rich-quick exploitation of our pioneer period. They differ violently as to the forms which that planning should take, but they agree that the headlong individualism of the days when a virgin continent was being



occupied must be subjected to some sort of control in which the needs of the population, the resources of the land, the productive plant and the consumptive power of the economic order are brought into balanced relationship. Can this be attained under capitalism? The Tennessee Valley is the region in which the administration is trying to find out; the Tennessee Valley Authority is its attempt to prove that economic planning and capitalism are not incompatibles—at

least, not when capitalism is State capitalism. On other fronts the administration is forced to proceed by rule of thumb, letting today's events control tomorrow's projects. But in the Tennessee Valley the blueprint rules. On this terrain Mr. Roosevelt is making his great gamble to find out whether the sort of future America that must be, can be attained under the sort of American Government that now is.

When he picked this region as the scene for his great test it must be admitted that Mr. Roosevelt chose about as difficult a field of operations as the nation affords. In the Tennessee Valley it cannot be claimed that the cards are stacked in favor of any new scheme of things; if anything, they are stacked against it. If there is a more conservative region in the country, I cannot think of it offhand. Follow the Tennessee River along its 650 miles



across the seven States which form parts of its watershed and basin, and at almost every step you are among people who look on any intrusion from the outside, any serious regulation of conduct with suspicion and resentment. In the Tennessee, Kentucky, Virginia and Carolina mountain fastnesses, where the river takes its rise, dwells the hill-farmer whose traditional greeting for federal authority has been extended while squinting along the sights of a squirrel rifle. In the recently burgeoning industrial centers it has been the boast of chambers of commerce—loudly repeated in the hope of luring factories from other sections—that wages are low and regulations few. And on the cotton flats of Alabama and Mississippi there has survived, despite civil war and constitutional amendments, a form of social and economic feudalism but little removed from peonage.

There are a few comparatively prosperous manufacturing towns in this region; a few spots in which the countryside gives the impression of ample income and expansive living. But taken as a whole, it is a region of pervasive poverty. There are statistics which show that the average cash income of all the farmers in the territory of the TVA has been about eighty dollars a year; more eloquent than statistics are the gaunt cabins in the folds of the hills and the miserable shacks on the cotton bottoms. Yet the administration dares to hope that, in two or three decades, this region of dire poverty and ingrained social conservatism can be transformed into one of general abundance and continuous social experimentation. It dares to believe that counties which, on the charts of the relief agencies, have been among the most needy may be brought to the level of the most prosperous in the nation. And it claims that if Mr. Roosevelt's kind of revolution can be won in the Tennessee Valley it can be won anywhere. Which is probably a sound claim.

Is there a chance that the hopes which the administration has for the transformation of the Tennessee Valley may be realized? And if they are realized, will that have as revolutionary implications for the rest of the nation as the friends of the project believe? I desire to answer both those questions in the affirmative (though

none too confidently) and to suggest that the reasons for these affirmatives may lie entirely outside the usual field of discussion concerning sources and methods of revolution.

II

Revolution today is an economic rather than a political issue. Rudolf Brunngraber recognized this when, on the title-page of his novel, *Karl and the Twentieth Century*, he contrasted a phrase spoken by Napoleon at the beginning of the nineteenth century with a phrase spoken by Walter

Rathenau. "Politics are destiny," said Napoleon. "Economics are destiny," said Rathenau. Modern revolutions take a multitude of differing forms; Stalin, Mussolini, and Hitler have alike learned that they are judged finally by their balance-sheets.

In the past, economic thinkers of all schools have rested their hopes for the solution of man's problems of livelihood on the activities of some sort of personified being. It would be hard to decide whether the "economic man" of the economic classicists or the "class-conscious proletarian" of the Marxists was more of an abstraction; in terms of American life it would have been practically impossible to dig up an actual specimen of either. But as the actualities of the contemporary situation are studied, and the impersonal and amoral character of the power-driven machine appears, there is increasing readiness to harbor the idea that economic revolution may come to pass as a result of the operation of forces which are almost beyond human control or guidance.

A cursory knowledge of recent popular economic discussion is sufficient to make this suggestion familiar. Here is Stuart Chase, for instance, talking about "technological imperatives" which will revolutionize society without regard to the readiness of society to embrace any of the standard programs of revolution proffered by radicals of various stripes. Or here is Lewis Mumford, hailing the arrival of an age of neotechnics in which the transformation of society hinges on an intelligent use of the machine. To such men it is quite conceivable—as the technocrats asserted—that the day has about come in which the slogans of the capitalists, the socialists, the fascists and the communists will take on a thin and hollow sound, for men will discover that the real revolutionary is the machine.

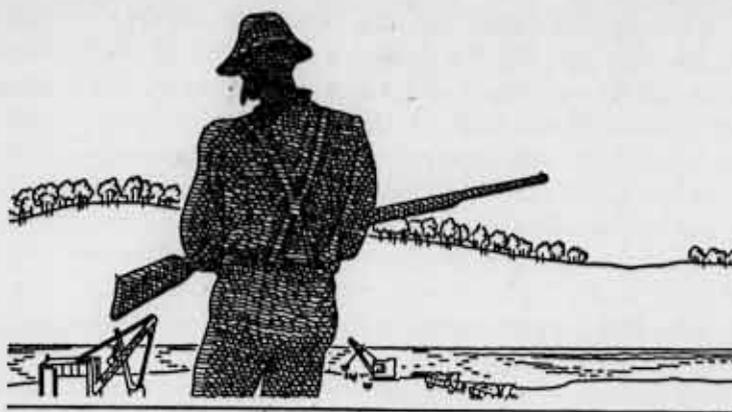
Of course, the human element has not dropped out of such a revolution. After all, the machine must have intelligent use or it is a potential agent of destruction. It has not had intelligent use in this century, and accordingly it has been an agent of destruction. But if the human element can be induced to give the machine its chance under conditions which do not make its suc-

cess as a productive agent subordinate to the interests of any special class, then the machine may prove as much of a liberating and regenerative agency as the dreamers of the early days of the industrial revolution declared it would be.

The Tennessee Valley Authority is the first attempt in the United States to free the machine from control by a group of individuals and to discover what revolutionary results may follow from its maximum functioning in behalf of a total society. The world has seen nothing like this project before, except in the case of Russia's five-year plans. There are obvious sources of inspiration for the TVA in the soviet *Piatiletka*; we might as well admit that at once and give the people who are intent on pinning a red tag on this experiment something to chew on. But the TVA will, if reasonably successful, prove more important for history than its Russian prototype. The technological competence available for the service of the machine is much greater in this country; the favorable results will appear against the background and measuring-rod of a much more highly developed continental area; and it will be proved that modern revolution does not require a political cataclysm as its forerunner.

III

To talk of the TVA in such terms will seem as misleading to many of its staff as to those social radicals who will resent what they will construe as a disparagement of the Russian plan. The project in the Tennessee Valley is still in its early stages. Many parts of it are still no more than blueprints. Those who are closest to it are most wary about describing what its final forms will be. The fact is that when a group of imaginative and socially minded technicians are given almost unlimited authority to embark on an enterprise in "national planning for a complete river watershed" which is expected to "touch and give life to all forms of human concerns"—those are the terms in which Mr. Roosevelt first described the scheme to Congress—they quickly find themselves dealing with a project which ramifies so far and so fast that there is no way of telling where the thing is going to stop. "All forms of human concerns" takes in a lot of territory. The TVA has been given a blanket charter to make over "all forms of human concerns" for a region in which live two million people, with six million more immediately dependent on it. And the President has already announced that, if he is satisfied with what is accomplished in the Tennessee Valley he will enlarge the scheme so that finally "all forms of human concerns" will apply to all the human beings in all the principal river valleys of the United States!



In one sense, the TVA is a genuine result of economic planning. In another, it is something of an accident. The planning, according to the testimony of the chairman of the TVA, has come because of the determination of the President that not all the activities of his administration shall be in the nature of emergency measures. The accident seems to have decided the location of the experiment. Perhaps I should put that in the plural, for it seems to have been a combination of accidents that led Mr. Roosevelt to pick the Tennessee Valley for this venture. If the time ever comes when the historian settles down to tell how the TVA came to be, here are some of the factors that he will have to mention:

First of all, the United States got into a war. It needed nitrates in the manufacture of munition. Nitrates were coming from Chile; they must encounter the dangers of ocean transport in wartime, when interruption could not be countenanced. Money was no object. Chemists assured the government that, with a sufficient supply of electric power, nitrates could be extracted from the air. Accordingly, the government ordered the building of the dam at Muscle Shoals, with the nitrate plants beside it.

Long before that \$150,000,000 investment could be completed, the war was over. Not long after that German chemists, in that annoying way they have, perfected processes for extracting nitrates from the air which made the processes at Muscle Shoals obsolete. The dam stood there and the nitrate plants stood there, and nobody knew what to do with either. Senator Norris kept pounding away at Congress to turn the place into the nation's largest experiment in public manufacture and distribution of electric power. Twice he pushed bills authorizing such use through Congress; twice presidential vetoes checkmated him. In return, however, he had the satisfaction of checkmating all attempts to turn the place over to private interests, including one made when Henry Ford, in a moment of expansive generosity, offered \$5,000,000 for the whole outfit.

Then came Roosevelt. As governor of New York he

had become convinced that the private power companies were gouging the public. At Portland, in the most specific and liberal of his campaign speeches, he had spoken of the right of communities to publicly owned and operated utility services, and of the value of keeping a "birch rod in the cupboard" in the form of publicly set rates as a means of bringing the charges of private power companies into line. To top it all, as a traveller to and from the sanitarium at Warm Springs, Ga., he had become interested in the social and economic problems of the Tennessee Valley region.

Senator Norris supported Mr. Roosevelt in the 1932 campaign. Senator Norris led the cheering for the Portland speech. It was no surprise, therefore, when Mr. Roosevelt appeared, shortly after election, at Muscle Shoals, guided there by Senator Norris. Whether, on that visit, Senator Norris talked about anything more than the utilization, under public control, of the potential 260,000 horsepower of electric energy in that single plant, may never be known. But Mr. Roosevelt evidently saw more than Muscle Shoals, more than a chance to whittle out there his famous "yardstick" by which to measure utilities' charges in other parts of the country. He saw an entire region transformed by the introduction of practically unlimited supplies of power at the rates which he believed public ownership would make possible. And so the scheme when it reached Congress, immediately after the emergency measures of the inaugural period were out of the way, was this scheme for "national planning for a complete river watershed."

If space permitted it would be a pleasure to write of the sort of men who have been recruited for this enterprise, beginning with the three whom Mr. Roosevelt picked as the directors—Arthur E. Morgan, engineer and educational experimenter; Harcourt A. Morgan, university president and rural economist; David E. Lilienthal, lawyer and graduate of the LaFollette school of politics and utilities control. Under these men labor as varied and competent a crew as has ever served the nation in time of peace. The true "professor's paradise" just now is not Washington; it is Knoxville, and the other centers of the TVA, where are to be found professors drawn from a dozen faculties, not merely talking about new ways of doing things, but actually being given a chance to do them.

What would you think of construction crews recruited by a species of civil service examination? They have that in the TVA. The 1700 men on the job at the Norris dam when I was there had been picked after most careful examination—physical, mental, and moral—from about eight times that many applicants. As a result, they had a construction camp practically free from the social problems which traditionally run rampant in such places, and most of the men were taking courses in their leisure time (they work in four shifts of five and a

half hours each) designed to prepare them for jobs as foremen in later construction work or as industrial leaders in the community factory projects of which I will speak in a minute.

Perhaps the most unusual thing about the whole job is the absence of politics. To be sure, you cannot put \$100,000,000 into a region, or distribute construction jobs along 650 miles of territory, without having certain political factors enter in. But in the most objectionable sense, there seems to be next to no politics in the TVA. The directors of the TVA do not answer to any government department. They are not subordinate to Mr. Ickes, or to Jesse Jones, or least of all to Mr. Farley. They control, in the words of the President, "a corporation clothed with the power of government." They are responsible only to Congress and the President. And each of the three directors—whose normal term of office is to be for nine years—hates the very smell of politics of the old *quid pro quo* type. As a result, I found a general feeling in the TVA region that if you wanted to get a job on a TVA project about the worst way in the world to go about it was to get a letter of recommendation from your congressman! A letter from your pastor might be of some help, but a letter from your congressman was regarded as roughly equivalent to labelling yourself a political suspect.

IV

But now let us consider the much more important question as to what TVA means. The general public, I am sure, has a very confused idea of the significance of this project because of the number of things which are being undertaken. For ten months now the press has been telling of building dams, building model towns, building roads, building or taking over power lines, fighting soil erosion, experimenting with crop changes and crop control, reforestation, re-locating populations, establishing new industries, and a dozen other things of a similar nature, until the whole enterprise has come to be just a jumbled whirl to the ordinary citizen, who is prone to jump to the conclusion that it must be the product of a crew of dizzy theorists off on a tax-spending spree.

It is nothing of the sort. It is not a confusion, and it is not a joy-ride. To deal with the latter notion first, the TVA has operated on \$50,000,000 up to date and expects to use only as much more in direct government appropriations. Now a hundred million dollars is no trifle, even in these days of ten-billion-dollar Congresses. But it is approximately only 1 per cent of the spending of the Roosevelt administration so far, and it is a form of spending that the directors of the TVA claim will be repaid inside of twenty years! When you understand that this envisages the economic rehabilitation of a region in which about half the population has recently

been on some form of relief, the charge of extravagance falls flat.

Still less basis is there for the idea that the TVA is just a jumble of contradictory and confusing schemes, the product of an undisciplined mob of visionaries. The truth is that the basic idea, the controlling idea, which underlies and gives unity to the whole project, is very simple. It can be put in the form of a mathematical problem: Given a limitless supply of cheap power, how can you use it to best advantage in a definitely defined but poverty-stricken region? That's the TVA—an attempt to answer that question. To attempt to label what is going on in the Tennessee Valley region as socialism or communism or fascism or any other kind of *ism* is stupid. It is none of these things. Rather, it is an attempt to work out in terms of a definite locality and a definite population an experiment in the most satisfactory use of a definite commodity. That commodity is power—cheap power.

The TVA may thus be said to be, in its fundamental aspect, an attempt at revolution through electricity. It is trying to turn electricity free in this entire region, just to see what will happen. It wants to see what will happen because it expects that a revolution will transpire. It expects that, if electricity is turned loose in the Tennessee Valley for twenty or thirty years, every part of the life of that valley will be drastically changed—so drastically that it will be said to have been revolutionized. If Doctor Wirt and Mr. Sullivan and Congressman Beck are really looking for a revolution in this country, somebody should tell them to stop worrying about what's going on at Washington, which lives in a perpetual fog of talk, and turn their attention to the Tennessee Valley, where things are really happening. But if they do, the agents of revolution they will have to overcome are not human at all, but the potential power of the 3,000,000 harnessed horses soon to be charging out of the turbines scattered along the banks of the Tennessee River and its tributaries.

To be sure, the securing of an answer to the problem about using electricity is rapidly forcing the TVA to grapple with a lot of other problems. For instance, one way in which electricity ought certainly to be used in a rural region is on the farm, and the TVA intends to provide it so cheaply that even the struggling farmers of that region will depend on it to serve them in dozens of ways. But what use is there in planning to carry electricity to the farmer when his very farm is disappearing through soil erosion? All over the Tennessee Valley region there are fields which, after bearing three or four crops, have become unfit for further use. In the vicinity of Norris Dam, erosion has already permanently destroyed 445,000 acres of farm land; only 300,000 acres remain worth fighting for. In the entire TVA territory it is estimated that about a quarter of the farming land

has been thus put out of production. Naturally, facing a situation such as this, the TVA is forced to fight erosion. But it does so in order to protect its potential market for electricity!

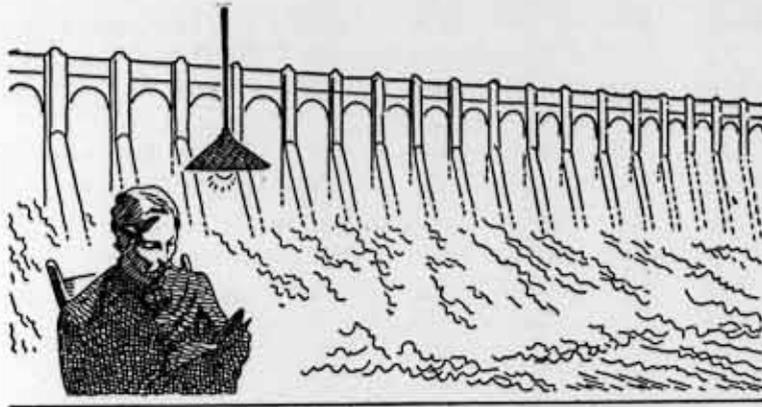
So it has been with a number of other developments. Viewed superficially, they show little interrelation. But viewed carefully, they all have their part in working out the problem of how to use immense quantities of cheap power most wisely. Electricity is the subversive agent which is undermining the valley's former status.

Consider, for example, what is likely to happen to the farmer of the Tennessee Valley region with electric power available at the astonishingly low rates which the TVA is already offering. (Present rates are figured on the basis of the available Muscle Shoals output; when the entire 3,000,000 horsepower system is in operation there should be further reductions.) If he is a hill-farmer it is probable that he, or members of his family, have handicraft ability which holds promise of a substantial increase in the family income. But if this ability has been used at all, it has been by means of such primitive tools that output has reached only the tiniest fraction of the potential market.

Now, however, the hill-farmer reads in his Southern farm paper the slogan, "Light up on a dozen eggs a week!" and the promise that costs will be so low to patrons of the rural co-operative lines that the operation of power-driven looms or lathes will involve an expenditure of not more than a couple of dollars a month.¹ With government credit available by which to begin operations and government aid offered in marketing, even the isolated dweller in the Tennessee mountains may therefore look forward to possessing the one thing that the hill-dweller has always lacked—a cash income. Both the hill-dweller and the sociological pundit will assure you that the hill-dweller with money in his pockets will never be the same again!

Equally direct will be the effect on farming in the lowlands, especially in those extensive regions which should become one of the richest dairying sections of the country. The completely electrified farm in the Tennessee Valley, with every desirable electrical device at work in house, tool shed, pump house, thirty-cow dairy barn and silo, is offered at a charge of about ten dollars a month. If, as Southern economists have been contending for years, the immediate salvation of the Southern farmer depends on his escape from bondage to a single crop, and his long-range salvation requires that vast stretches of his now-starving soil be afforded the rejuvenation of grass crops, then a TVA monthly power bill of this sort may well prove the emancipation

¹ Actual TVA rates at the moment, for residential use, are 3 cents per kilowatt hour for the first 50 KWH; 2 cents for the next 150 KWH; 1 cent for the next 200 KWH, and 4 mills for all over 400 KWH. For industrial and commercial use, the rates are still lower. Compare these with the rates on your last electric light bill.



of men who have lost all hope of ever getting on the right side of their cotton and tobacco ledgers. But if they stick to growing these two "robber crops," then TVA comes forward with the promise of substantial reductions in the cost of fertilizer, as a result of the phosphate experiments now under way in the old nitrate plants at Muscle Shoals.

V

But after all, this is a poor way to approach the social revolution which cheap electricity may bring to the valley, since it is the most unimportant of the changes in prospect. None of the bosses of the TVA would admit it, if you were to put the question to them, but I have a persisting suspicion that they do not care very much what happens to the isolated farm; at least, it seems clear to me that if this enterprise works out logically there are not going to be many isolated farmers left after a few years. And this for causes other than the transplanting of farmers to make way for the lakes which are to be backed up by the new dams, or to get them off the marginal lands which have already lost their productive power. Certainly the social group which most interests the TVA at present, and the one which it is expected will be altered most drastically and swiftly, is the village. And if the villages of this region become even partially the units of prosperity which it is claimed cheap power will make them, then I do not see how they are going to restrain the isolated farmers from moving into town. Perhaps the old folks may hold out for the cabin up the branch or the farmstead in the bend of the river, but not the youngsters.

After you have studied the plans they are making for the villages of the valley for a while, you begin to suspect that Henry Ford, rather than Arthur E. Morgan, must be the real director of the whole scheme. For this is really Mr. Ford's proposal for decentralized industry on an agricultural base, now to be tried on an enormous scale. Mr. Ford believes that the most stable and most humanly rewarding type of industry is that which plants the worker on the land, as a source

of food and bodily vigor, and then gives him access to the factory, as a source of supplementary cash income. The TVA believes that it can make every village in its territory the site of a factory enterprise of some sort, from which the village inhabitants may secure sufficient cash income greatly to lift their living standards, while from the village they will go out to cultivate the farms in the surrounding region. No insoluble difficulty is expected in making the calendar of the farm fit the calendar of the factory.

At this point appears one more reason why the Tennessee Valley offers a logical place in which to launch this large-scale experiment in planning. In no other part of the United States have there been made as inclusive and careful studies of the resources, both available and potential. Soil studies, geological surveys, plant experiments—all that sort of thing has been pushed here as nowhere else. Especially in the laboratories and social science classes of the University of Tennessee, under the presidency of Doctor Harcourt A. Morgan, has this study of economic resources been prosecuted, and Doctor Harcourt A. Morgan is now one of the directing triumvirs of the TVA. The result is that, given this principle of village reorganization around power-driven industry, the TVA is ready to locate industries in the appropriate villages just as fast as the dam-builders along the rivers can provide the necessary power.

This means, of course, an end to the senseless methods by which industries have been located in the past. No one is going to open an ice-cream factory in Hicksville, Tenn., because the Hicksville chamber of commerce has a smooth-tongued secretary, or because the Hicksville bank has an abandoned brewery on its hands, or because Hicksville is willing to grant tax exemption for ninety-nine years, or least of all because the people of Hicksville can be induced to work for next to nothing. If an ice-cream factory is planted in Hicksville it will be because a collection of figures, charts and maps in TVA headquarters at Knoxville proves that Hicksville is a natural dairy center with proper transportation connections with the other valley markets in which ice cream can be profitably sold.

At this point I might as well speak of one factor in this village planning that I am convinced is going to be considerably modified with experience. This is the distinct flavor of localism which now marks the TVA proposals. Localism is in the air these days; the leading industrial nations have a bad case of it—they call it autarchy or national self-sufficiency. Nor do I wonder that the TVA leaders encourage the same idea, for they have reason to guard against the howl which will go up from industry in other parts of the country when these new factories open up all over this region. It is the fashion, therefore, to talk as though these Tennessee Val-

ley plants are to have merely enough capacity to provide for the needs of the valley; that idea is even carried so far as to suggest that pay in the valley factories may take the form, in considerable part, of a sort of valley scrip exchangeable only for valley-produced goods, so that workers in one village will be practically confined to the purchase of products from other villages in the same territory. In practice, however, it will inevitably be discovered that the Tennessee Valley region, rich as it is in natural resources, will require importations, while many of the projected products of the valley are to be of such a specialized nature that they will be sold nationally, and perhaps even abroad.

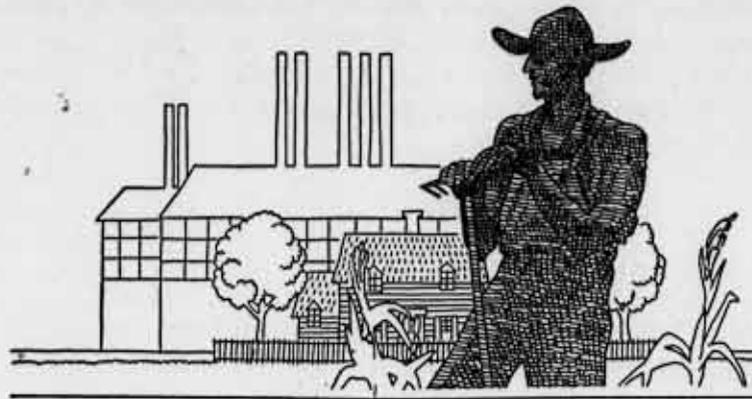
Leaders of the TVA believe that these factory-plus-farm villages can be made different from anything that the United States has known, not only in the economic security of their inhabitants but in their social arrangements as well. As a demonstration of the sort of community they hope to see grow up under the impetus of cheap electricity and social planning, they offer the new town of Norris. Properly to discuss Norris would require an article in itself. Here it can only be said that, instead of building a makeshift camp for the construction crew now working on the Norris dam, the TVA is building an entire town planned for a permanent community of about two thousand people. What will those two thousand do? It is obvious that the town will not be populated by the permanent force at the dam; two dozen men can look after the dam and power plant, once they are constructed. Some sort of factory industry will have to be established; undoubtedly the TVA experts are now studying the reports which will determine what that industry will be. But note the number of other ways in which Norris will differ from the towns with which Americans are familiar:

It will have no real-estate speculation. Houses and lots will be available only to workers, and deeds will be so drawn as to preclude both booms and sags in the real-estate market.

It will have no competing retail stores. Essential retail stores will provide goods which have passed the tests for government standards at prices that are reasonable for both buyer and seller, but there will be none of the economic massacre which usually goes on in retail trade in small towns.

It will have no competing churches or other social or philanthropic organizations making an inordinate drain on the resources of the inhabitants. A community centre is already operating, in a plant which provides every cultural facility. Later, there may be a church—but only if the denominations can agree on a single non-competitive institution.

Every family will control enough land to provide a



large garden, and a network of good roads will make transportation to farms within a radius of twenty miles or so both quick and easy.

Houses will be well built (most of them are of brick), heated by electricity, with electric cooking, electric lighting, electric laundry, electric refrigeration and a general use of electric appliances.

In such a town workers with a cash income of, say, \$1200 a year can live on a basis of comfort and economic security which three times that income might not provide elsewhere. It is not expected, of course, that all the towns in the Tennessee Valley will be transformed into other Norrises overnight. But it is expected that, as knowledge of Norris spreads, the other towns which have the same basic commodity of cheap electricity on which to build will progressively make themselves over after the Norris pattern. Most of the TVA leaders seem to be confident that after the people of the region have become accustomed to the idea that living and working conditions are to be transformed in an era of cheap power, they will go on naturally to the idea that conditions which have characterized politics, education, merchandising and even recreation are to be transformed likewise.

Plans for the larger towns are substantially like those for the villages, with the scale altered a bit here and there. The village factory is to be a small enough affair so that the worker can spend half his time—or more if necessary—on his farm. The factory in the larger town, designed to serve a market perhaps as large as the entire valley, will leave the worker with only time enough to cultivate a garden. But this garden should produce most of his food staples; the worker is still to have his roots in the soil. Only in the cities will that be impossible.

In the city the TVA will spend no effort to increase the present factory population; factory decentralization is one of the major results which electricity, as revolutionary agent, is expected to achieve. Such industries as remain in the cities will, it is expected, be those which are producing for a national and international market. But the change in living standards which electricity

holds out to urban factory workers will result from wage scales which will make normal the use of labor-saving electric appliances which can be bought for far less than in the past, and operated at the low TVA power rates.¹

VI

It hardly needs to be said that such a project will be bitterly fought. There will be opposition from the Tennessee hills and the Mississippi cotton flats, from the individualists of those regions who view any new proposal with suspicion and are quite content with their present mode of life, uninviting as it may seem to others. Local politics will begin to make trouble before many of the TVA plans can be carried out, although this factor is not likely to play much of a part until the initial government appropriations have been fully spent. And national politics may pick this for a major battlefield. Most of the TVA workers seem to take it for granted that a Republican victory in 1936 would be equivalent to an order for abandonment of the entire enterprise, although one might think that thoughtful Republicans—assuming that there are such—would be in no hurry to junk the one experiment by which we are trying, as a nation, to discover whether we can have economic planning under any form of capitalism.

More important will be the opposition from business interests in other parts of the country. These are bound to see the projected TVA factories as government-fostered competitors—and who can blame them? The excitement that managed to get stirred up in Congress over Mrs. Roosevelt's modest little furniture factory project in a West Virginia subsistence community offers a prophecy of the hurricane that the TVA will have to ride out after the various trade associations (probably with union labor support) go into action on this tremendous undertaking. And of course the private utilities do not intend to see the TVA yardstick for electric rates or the TVA appraisals for purchasing

¹ As a result of pressure from the TVA, the General Electric Company has already put on the market an electric refrigerator for \$74.50, and an electric range for \$72 (the two together for \$139.50). Frigidaire has brought out a refrigerator for \$77.50, and other companies are making similar reductions in prices for electrical appliances built to government specifications. Through its Electric Home and Farm Authority—an \$11,000,000 subsidiary—the TVA will finance the purchase of such appliances for any responsible family in the valley, spreading the payments, with negligible carrying charges, over four years.

plants and power lines established as precedents without moving heaven and earth. Already Electric Bond & Share (which is to say, the Morgan interests) has fought one bitter battle—which it lost—over the price offered for the Knoxville utility plant. The organization of the American Federation of Utility Investors, Inc., to fight the whole idea of putting government money into such projects is equally a notice of coming war, for on the board of this body will be found not only some of the country's best known financiers, but eminent representatives of Catholic, Protestant, and Jewish bodies—all of them, presumably, with endowments in which utility securities play an important part.

On the basis of political precedents, I would predict that any such combination of opposition as will be marshalled against the TVA program would win. But in this instance, I am not so sure. Perhaps the Roosevelt administration will continue until 1941; perhaps the present TVA leaders will retain their free hand and their adequate government financial support at least that long. In that case, they are by no means foredoomed to defeat. This much, at least, is in their favor: they expect a fight and are not afraid of it; they expect the thing which they are doing to produce a social revolution, and are not afraid to face and fight for it. On no other basis do they believe that the government's investment or their own labors can be justified. Men who are in that mood, and have the resources of the United States of America at their backs, are not licked—yet.

Of course I have hardly begun to forecast in this single article the extent of the social changes which will take place in a region where cheap power is made available to every one. Even the TVA workers do not claim that they can foresee more than a small part of the differences which their venture will ultimately make in living conditions in the Tennessee Valley. But to those Americans who instinctively draw back from experimentation, may I offer this single suggestion: The air is full of talk about the coming of an "economy of abundance," but the TVA offers us our first chance to see, in American terms, what this may actually mean. The technicians who have been turned loose in the Tennessee Valley are starting out with an abundance of a basic commodity—power. Before damning what is going on as socialism or communism or anything else, why not give it a little time to see what will happen? It is just possible that the result may turn out to be no *ism* at all, but a richer American life.

DEPARTMENT OF STATE
THE SECRETARY

To Mr. Early,
President to go
to Bernadotte
November
may want this

THE WHITE HOUSE
WASHINGTON

712-4
RSE
TVA

10-20-34

Memorandum for Mr. Early:

Mr. McBride brought this over.
Thinks it might be helpful to you
and the President.

He wants it returned for Secre-
tary Hull's files when you are through
with it.

M.H.M.

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TELEPHONE
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MERVIN MCINTYRE=

NELSON HOUSE POUGHKEEPSIE NY=

GEORGE CREEL MAILED ARTICLE FRIDAY TO THE PRESIDENT AT WASHINGTON
STOP ARTICLE DEALT WITH NEW LAND AND WATER CONSERVATION PROGRAM
STOP MANUSCRIPT GOES TO PRESS FRIDAY THIS WEEK STOP MR EARLY
SUGGESTS YOU MIGHT HAVE THE MANUSCRIPT AT HYDE PARK STOP WE HAVE
A COPY BUT WOULD APPRECIATE WORD AS SOON AS CONVENIENT STOP SINCE
ORIGINAL INFORMATION CAME FROM PRESIDENT M. CREEL AND WE EAGER
TO LEARN IF TREATMENT IS SATISFACTORY STOP APPRECIATION AND
REGARDS=

WILLIAM L CHENERY EDITOR COLLIERS WEEKLY. 15

THE WHITE HOUSE
WASHINGTON

November 8, 1934

BF

*file
TVA.*

MEMORANDUM FOR MR. EARLY:

The President wants this to use in the
preparation of his TVA speech.



M. H. M.

Collier's

THE NATIONAL WEEKLY

P. F. COLLIER & SON COMPANY
250 PARK AVENUE
NEW YORK

November 2nd, 1934.

The Honorable Franklin D. Roosevelt,
The White House,
Washington, D.C.

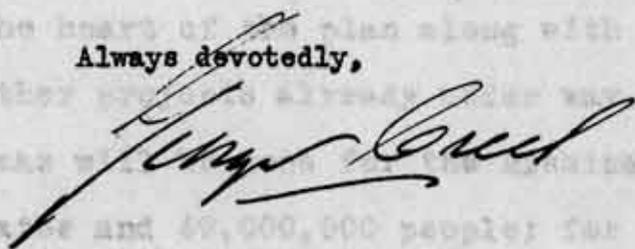
Dear Mr. President:-

I hate to add to your burden but it is my hope that you may find time to read the enclosed article. Collier's agrees with me that it is a tremendous idea, holding more hope for a prosperous and permanent America than any yet advanced.

The date set for publication is December 8th. As I understand it, this will be about the time that you will make announcement of the plan. Any changes you may desire, or suggestions that you have to offer, will be deeply appreciated.

As I am flying to California tomorrow, will you be good enough to communicate with Mr. William L. Chenery, the Editor of Collier's?

Always devotedly,



P. S. Is there any chance of an expression from you on the article that could be used as a foreword? It would be more than helpful and I think the importance of the subject justifies it.

*Mr. D. W. ...
...
...
...
... in July*

power, rural electrification, irrigation, recreation, rural water supply and drainage.

" PLAN OR PERISH "

By George Creel

An end to the pull and haul of the past, with geographers, engineers, foresters, sanitarians, city planners, soil experts, industrial and agricultural authorities all working side by side, shoulder to shoulder. The earth restored to its former fertility; Congress for a planned, continuous campaign against the floods, and the owners taught to till intelligently; vast stretches returned to grass, to crop-bearing trees and hardwood forests, or to wild life the very life of the nation. Not the usual haphazard battle on a hundred unrelated fronts, but a scientific, coordinated attack that will view the country as a whole, enlisting every agency of government, and considering all natural resources down to every drop of running water, every inch of earth.

The Tennessee Valley development, that far-flung adventure in regional reclamation, lies at the heart of the plan along with Boulder Dam, Grand Coulee and other projects already under way.

What is being done for these areas will be done for the Mississippi Valley with its twenty-seven states and 49,000,000 people; for the Arkansas Valley that winds a tortuous way from Colorado down through Kansas, Oklahoma and Arkansas; for the Central Valley of California where a score of rich, populous counties are threatened with economic extinction; for the ravaged lands at the headwaters of the Ohio and the Delaware, and for every other watershed where ignorance and greed have wasted and squandered nature's wealth, dooming populations to poverty and hopelessness.

A great and unparalleled plan in the boldness and breadth of its sweep; a plan that offers the shining, confident hope of a happy, prosperous and permanent America. Dams built not for one purpose merely, but all purposes; flood control, low water control,

power, rural electrification, irrigation, recreation, rural water supply and drainage.

An end to the pull and haul of the past, with geographers, engineers, foresters, sanitarians, city planners, soil experts, industrial and agricultural authorities all working side by side, shoulder to shoulder. The earth restored to its former fertility, and the owners taught to till intelligently; vast stretches returned to grass, to crop-bearing trees and hardwood forests, or to wild life preserves; planned rural communities with the development of local trades, arts and crafts, thus achieving a better balance between agriculture and industry so that superfluous city workers may be drawn back to the land.

Not regimentation in any sense of the word, but a recovery of individualism in the highest sense of the word; an opportunity for countless thousands to make the best of their lives instead of the worst.

Five hundred millions a year for a span of years! A staggering sum, but the men behind the idea ask that it be viewed as a sound investment with every project having a good chance to prove self-liquidating. Boulder Dam, costing \$165,000,000, already has water and power contracts in sufficient amount to insure repayment of the money in fifty years with 4 per cent interest, and this takes no account of the millions that will be saved through flood and silt control.

The Columbia river irrigation and power project contemplates an ultimate expenditure of \$394,000,000, but its waters will be sold for the irrigation of 1,200,000 acres of land, a vast, rich acreage that would otherwise be lost to productivity. Even if the

manner of gains to rob the soil of nourishment and protection, and Tennessee Valley Authority spends up to \$350,000,000 by the time of worked with equal enthusiasm to deplete the underground water supply. the task's completion, a large part of the money will come back from the sale of power and cheap fertilizer. More than that, the experiment expects to effect economies in the production of power and electrical equipment that will save the consumers of electric current twice the cost of the project.

In the last analysis, however, the question is one of self-preservation rather than profit. For years the scientists have warned against the waste of soil and water, pointing to Spain, Greece, Palestine and Portugal as proof that even the most fertile land can go back to desert. These warnings have grown increasingly explicit until today many authoritative voices declare that the end of another hundred years may see American centres of population as deserted and desolate as the cities uncovered by archaeologists in the jungles of Chiapas and Yucatan.

Those who laugh at this as farfetched should travel through the Dakotas where mile after mile of once tillable land is now white with alkali; through the barren, gullied regions of the South where America's oldest and purest strain now scrabbles a meagre, wretched existence from land their fathers ruined, the average annual cash income of a farmer ranging from \$45 to \$86 a year; through the Mississippi Valley, that granary of the world, so ravaged by flood, so burned by drought, so exhausted by stupid farming that great stretches have been abandoned, and earth that used to harvest forty bushels to the acre now yields ten and fifteen.

At every point a reckless, careless people seem to have made it a business to defy nature's laws. We cut down the forests, we ploughed up the sod, we drained the ponds and sloughs, we took all

manner of pains to rob the soil of nourishment and protection, and worked with equal enthusiasm to deplete the underground water supply. Experts warned that these subterranean reservoirs were not inexhaustible, but we sank artesian wells without number and gaily left the pipes uncapped. For the last ten years the Dakotas have had better than the average annual rainfall, yet aridity is progressive. America's topsoil is only from two to three feet deep, and beneath that is hardpan, but we have gone on the assumption that it had no bottom, and that all of it was fixed to the spot by some sort of anchor. As a consequence, three billion tons of good growing earth is lost to the fields of the United States every day. In the Mississippi Valley it is as if six thousand truck loads of topsoil were hauled away every minute of every year. When the topsoil goes from the upper levels, sand and clay are washed down into the lowlands, destroying productivity. What is not washed away is blown away, for we have chopped down trees, torn up the grass and left ploughed and harrowed soil at the mercy of the wind. As a consequence, dust storms are increasingly common, and the East may yet become familiar with "Black Blizzards" such as that which started last summer on a front stretching from Oklahoma to the Dakotas, dumping Western soil up and down the Atlantic seaboard.

As a good illustration of waste and shortsightedness, take the great Central Valley of California. Lying in the basins of the San Joaquin and Sacramento rivers, it is five hundred miles long, forty miles wide, has 3,000,000 acres of irrigated land and a population of 900,000. There too, as in so many other sections, people assumed that the underground water supply was limitless, and today,

valued at \$50,000,000 a year; that the annual output of the Suisun
 factories is \$100,000 a year, and that eight counties in the San
 Joaquin Valley alone have an annual value of \$250,000,000 in the
 tall sales. A buying power five times that of Idaho, twice that of
 Wyoming or New Mexico, and greatly in excess of Montana, Utah or
 Arizona.

as a result of excessive pumping, lowered water tables threaten to
 send the Valley back to desert and salt marsh. Vineyards and orchards
 have died in large numbers, others are dying, and fields once green
 with alfalfa and golden with wheat are now as barren as the sandy
 stretches of the Mojave.

The Delta, formed by the confluence of the San Joaquin and Sac-
 ramento, contains one half million acres of exceedingly rich land,
 all reclaimed by levees. Due to the Sacramento's diminished flow, the
 result of unregulated irrigation, the salt water from San Francisco
 Bay, brought up twice daily by the tides, is ruining the fertile
 desert lands. The same saline incursion has also worked heavy dam-
 age to the industrial district on Suisun Bay, and if unchecked,
 factories may be compelled to desert the area.

It is not as if there were a lack of water, for every winter
 sees the Sacramento in flood, working damage and even ruin as it
 roars down to the Pacific. It is now the plan, after ten years of
 study and the expenditure of two millions on surveys, to build a
 great dam far up the Sacramento, where water will be stored during
 the winter months for flood control, and released during the summer
 months to meet the demands of domestic water supply, irrigation,
 navigation and salinity control. A canal will provide fresh water
 for the industries along Suisun Bay, and water diverted from the
 Delta will be transported southward, using the channel of the San
 Joaquin as a conduit, and other canals will ~~connect~~ branch out
 from a dam at Friant. The estimated cost of the entire project
 is in the neighborhood of \$170,000,000, and federal aid is a
 necessity.

Should the government provide that aid? By way of answer, the
 Californians point to the fact that the Delta lands produce crops

valued at \$30,000,000 a year; that the annual output of the Suisun factories is \$100,000 a year, and that eight counties in the San Joaquin Valley alone have an annual volume of \$254,000,000 in re-tail sales. A buying power five times that of Idaho, twice that of Wyoming or New Mexico, and greatly in excess of Montana, Utah or Arizona. It is as if six Western states were faced with annihilation, and aside from the collapse of a great state, the Californians emphasize the loss of federal taxes and the millions that would have to be spent on relief. Attention is also called to the fact that mining engineers estimate that there is still \$650,000,000 worth of gold in California's gravel deposits, easily recoverable by hydraulic operations, and that the construction of the Central Valley water project would make recovery possible.

Land going back to desert; a large percentage of farmers turning into hopeless nomads; floods destroying life and property; droughts working ruin and misery; precious topsoil either washed away or piled roof-high by winds; unhappy people packing themselves like sardines in the cities because there is not a living for them in the country; the unhappy situation that thousands now on relief will have to be continued on relief, growing to accept charity as a vested right.

These are some of the conditions that have led to the President's plan for conservation and restoration on a national scale, asserting the federal government's right of control over every drop of runningwater in the United States, insisting that water resources must be treated as a whole, and that only the complete watershed can be considered as the proper operating unit. The states have made a botch of it with their bickerings, fighting between

The Wheeler Dam is being built fifteen miles above the Wilson Dam at Muscle Shoals, and far up on the Clinch river, some eighty miles beyond its junction with the Tennessee, the mighty Norris Dam is in process of construction. As a result of this highly coordinated system of dams, not only is power assured the whole year, but flood control is guaranteed and also low water control.

The federal government itself has squandered millions through lack of planning and intelligent coordination. Several years ago one department decided to build a dam for the triple purposes of flood control, navigation and power development. Soon afterwards another department built a million dollar bridge and three millions worth of highways, all squarely in the centre of the area that would be covered by the dam's storage reservoir.

One federal authority sets aside lakes as game preserves and wild fowl nurseries, and another authority drains the lakes to provide new farm lands, only to find that the soil at the bottom of the lakes is non-productive. Millions have been spent to restrain floods, but little thought has been given to their prevention. Levees on the Lower Mississippi may have value, but how much more intelligent to spend the money on the Miami, the Monongahela, the Alleghany and other tributaries of the Ohio where the floods start? Because dam builders have not called in the foresters and soil experts, silt from gullied hillsides has filled the storage reservoirs.

A stop will be put to this sort of thing, just as states are going to be asked to quit their wrangling and join with the federal government in wholehearted cooperation. Unified and comprehensive regional planning is commanded by commonsense and by every instinct of self-preservation. Hit or miss conservation and development must give way to order, design and forethought. The experience of the Tennessee Valley Authority, gained in the comparatively short time of a year and a half, proves conclusively that these objectives can be attained.

The Wheeler Dam is being built fifteen miles above the Wilson Dam at Muscle Shoals, and far up on the Clinch river, some eighty miles beyond its junction with the Tennessee, the mighty Norris Dam is in process of construction. As a result of this highly coordinated system of dams, not only is power assured the whole year, but flood control is guaranteed and also low water control.

One of the principal attacks on the Tennessee Valley Authority, and on every other federal project for the development of hydroelectric power for that matter, is that the country is already over-supplied. By way of answer, a recent survey showed that sixty per cent of the farmers of the United States owned automobiles, forty per cent had telephones, twelve per cent running water and only five per cent used electricity. All of which would seem to indicate that while automobile manufacturers and the telephone companies have been up and doing, power people have slept on the job.

The Tennessee Valley Authority, studying these figures, proceeded on the theory that the trouble was under-consumption, not over-production, insisting that the demand could be doubled and trebled very quickly if the prices on electric current and electrical equipment were lowered. As a consequence, the Electric Home and Farm Authority was brought into being, a million dollar government corporation backed by a credit of ten millions from the Reconstruction Finance Corporation.

Today a housewife in the Tennessee region can walk into her local dealer and buy an electric range, an electric refrigerator, an electric water heater and a portable motor on time. The dealer collects the full amount in cash from the Electric Home and Farm Authority, and each month the local electric company adds an item

to the housewife's bill that in four years amortizes the total cost of the appliances together with interest. The money, of course, is duly remitted to the EHFA. Due to discovered economies, inventions and mass production, prices are about one half what they used to be. In Tupelo, Mississippi, for example, the monthly bill for a completely electrified home is \$6.88, and monthly installments on the electrical equipment average \$5.83. Highly excited by the leaping demand from both towns and countrysides, the manufacturers are now working to lower the costs of washing machines, electric irons and electric sewing machines.

What has been done in the Tennessee Valley can be done, and will be done in every other region. This does not mean government competition with private industry in any harsh sense of the word. The TVA is commanded to avoid construction of duplicate physical facilities and to guard against wasteful competitive practices. Some private lines have been purchased in Alabama, Mississippi and Tennessee, but in most cases working arrangements are made for transmission and distribution. The Electric Home and Farm Authority has the right to operate in any state in the Union, and will undoubtedly do so, but its activities build up local dealers.

The master minds in Washington are sublimely convinced that cheap current and cheap electrical appliances, sold on easy payments at low rates of interest, will result in the complete electrification of small towns and rural regions. In the Scandinavian countries, they point out, and also in Ireland, Bavaria and Alsace-Lorraine, the farmers have running water and electric lights not only in their homes but also in their barns.

Soil erosion in the Tennessee Valley had reached the stage of stark tragedy. Out of 742,000 acres of non-forest land in

one drainage area, more than 500,000 acres had been washed away, and the land ruined for agriculture. Hillsides, once thick with magnificent hardwood forests, had been bought up for twenty-five cents an acre, and cut bare. One poor struggling wretch had tried eleven farms in succession and was found starving on the last.

A first step of the TVA was to retire submarginal land from cultivation, putting it back into grass and trees. Instead of hitting or missing, however, as in the past, experts set up nurseries to find the best crop-bearing trees, both for human consumption and as food for stock. They are experimenting with the pecan, the hickory nut, the walnut, the filbert, the hazelnut, the persimmon, the honey locust, the carob and the mulberry. A cross of the carob and the honey locust is being tried to get a new feed for cattle, and it has been discovered that the Asiatic chestnut is not subject to blight. All this that is being done in the Tennessee Valley can be done in other regions, and the Great Plan contemplates doing it.

Agricultural experts are working side by side with the ~~farm~~ foresters, explaining the necessity of changing from plough crops to grass crops, showing the advantage of "wood lots," of contour ploughing and "strip farming." A stretch of alfalfa or clover between corn, cotton or tobacco conserves moisture and protects the topsoil against rain and wind. Does anyone imagine that such instruction is not needed in the Mississippi Valley, the Arkansas Valley and many other agricultural areas where the wastes and ignorances, of the past are taking heavy toll today?

When it came to housing the workers for the building of the great Norris Dam on the Clinch, the TVA did not throw together the

usual ramshackle construction camp, doomed to abandonment, but set about the creation of a permanent rural community. Simple, comfortable homes, completely electrified, were put up to rent for \$25 a month, each with four or five acres of ground for garden plots. One house in the town was set apart for the construction of a "home expert," and other experts laid out a model garden for the purpose of showing the workers just how a family could feed itself through the summer, and lay by enough for the winter months.

A dairy farm and a poultry plant were likewise established, not only to supply the community, but also to teach dairying and poultry raising to the workers themselves as well as the farmers of the countryside. The comfortable theory, held through long years, that anybody can raise chickens or handle cows has ruined more hopeful farmers than any other one thing.

A further activity in connection with the TVA is the establishment of shops where the workers and the country people can receive thorough courses in vocational training. They are taught wood work in all of its branches, plumbing, mechanics of every kind, electrical construction and repair, rug and carpet making and other things calculated to fit the dam workers for trades and to make the farmers ~~th~~ sufficient to themselves instead of driving into the nearest town every time a piece of machinery goes wrong or an electric light fuse happens to blow out.

President Roosevelt stands convinced that what has been done in the Tennessee Valley can be done in similar regions throughout the United States, and that it has got to be done. Water must be conserved and wisely administered if we are to endure as a nation. Agriculture, all too often as it is practiced today, leads to abandonment of the soil. More and more the truth is being driven

home that no man has the right to say, "I am the absolute owner of my ground, and will do with it as I please." He is merely the custodian, and should be made to see to it that he passed on good land to the next generation instead of barren stretches.

It is not the purpose of the Great Plan to add blindly to our annual agricultural output. For every new acre brought into cultivation, an old acre will be retired. All over the country today, farmers are pouring the sweat of their bodies and souls into soil that can never yield an adequate return. Such as these must be transferred to more fertile soil, and submarginal lands put back into grass and forest, or turned over to the President's Committee on Wild Life Restoration for upland game, insectivorous birds, migratory fowl and furbearing animals. Seventeen million acres have already been requested, a fairly sizable chunk to start off with.

An end to the ravages of floods and the terror of droughts; cheap current and inexpensive electrical equipment for the home, the barn and the field, lifting humanity above the animal drudgeries; a cure for the congestion and savage competition of cities through the development of local industries where the workers will have their garden plots, a generous supplement to their wages; a larger measure of happiness for all, and the recovery of self-respect for countless thousands.

Out of the Great Idea too may come town planning, for just as the Tennessee Valley Authority built a permanent rural community at Norris Dam, so will other watershed developments necessitate the construction of similar communities. In many states there are dying towns, due to the cessation of mining or some other industry, and the populations should be moved to more advantageous sites where life offers a better chance. These new communities, together with

slum clearance in the cities, the government's housing program, and garden colonies near industrial districts, may well effect profoundly the whole nation's mode of living.

Strange as it may seem, the Great Plan is not new. The Aztecs and the Incas thought in terms of national planning and regional development centuries before the Pilgrims touched Plymouth Rock or Captain John Smith crept through the Virginia forests. Water and soil were the sole concern of the central government, and by a system of land tenure, colonization and scientific conservation, these ancient people knew neither poverty nor hunger.

Is it too radical, too visionary, to ask that Twentieth Century Americans equal the Incas and the Aztecs in the ordering of human life and natural resources?

TENNESSEE VALLEY AUTHORITY

Knoxville, Tennessee

November 6, 1934

BOARD OF DIRECTORS
ARTHUR E. MORGAN, CHAIRMAN
HARCOURT A. MORGAN
DAVID E. LILIENTHAL

*Tennessee
file PSF
T.V.A.*

Memorandum to the President
From: David E. Lilienthal

Subject: The Knoxville Electric Utility Situation

1. The Principle Involved. "Therefore, I lay down the following principle: That when a community or a district is not satisfied with the service rendered or the rates charged by a private utility, it has the undeniable right as one of its functions of government, one of its functions of home rule, to set up, after a fair referendum has been taken, its own governmentally-owned and operated service." (Portland Speech, September 21, 1932.)

2. Knoxville's efforts to secure reasonable rates from the private company. Long before the creation of the Tennessee Valley Authority, the City of Knoxville sought to secure reasonable electric rates from the private company serving the area. A survey of a municipally-owned plant was ordered three years before TVA was created. These efforts toward fair rates were renewed after the creation of TVA. The results were unsatisfactory, in the judgment of the people of Knoxville.

Accordingly, on November 25, 1933, "a fair referendum" was taken, and by a vote of two to one the electors of the City voted "to set up..... its own governmentally-owned and operated service". Since that referendum the private company made a reduction in electric rates. This reduction the representatives of the City, with support of public opinion, hold to be still inadequate and present rates charged unreasonable.

3. Effort to buy existing system. The City tried to buy the existing utility system at a fair price, but its offer was not seriously entertained by the Company.

4. TVA's effort to avoid competition. In an effort to avoid the necessity for competition between a new

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TENNESSEE VALLEY AUTHORITY

BOARD OF DIRECTORS
ARTHUR E. MORGAN, CHAIRMAN
HARCOURT A. MORGAN
DAVID E. LILIENTHAL

Memorandum to the President -3- November 6, 1934

(b) The City of Knoxville has borrowed the funds from the Public Works Administration with which to construct its own plant and thus give expression to its "undeniable right...to set up...its own...service".

7. Knoxville situation presents a typical case.

(a) The private company has long secured inordinate profits from the people of Knoxville.

(b) These profits have paid huge dividends on watered stock, of which \$4,388,157.00 represents an over-night "write-up".

(c) The people have sought to secure reasonable rates from the private utility, through resort to the State Commission, and otherwise.

(d) The people have sought to purchase the existing property.

(e) The Federal Government, through TVA, on behalf of the consumers, has sought without success to acquire the property at a fair price.

(f) It may therefore be said that the people of Knoxville have exhibited patience and reasonableness in their efforts to secure this necessity of community life at fair prices.

THE CAUSE OF THE PEOPLE OF KNOXVILLE IS THE CAUSE OF ALL THE PEOPLE OF THE UNITED STATES.

8. Need for action.

On January 1, 1929 you used these words:

"In the brief time that I have been speaking to you, there has run to waste on their paths toward

TENNESSEE VALLEY AUTHORITY

BOARD OF DIRECTORS
ARTHUR E. MORGAN, CHAIRMAN
HARCOURT A. MORGAN
DAVID E. LILIENTHAL

ELECTRIC HOME AND FARM APPLIANCES

Memorandum to the President -4- November 6, 1934

Report to the President, 1934

the sea, enough power from our rivers to have turned the wheels of a thousand factories, to have lit a million farmers' homes - power which nature has supplied us through the gift of God. It is intolerable that the utilization of this stupendous heritage should be longer delayed by petty squabbles and partisan dispute. Time will not solve the problem; it will be more difficult as time goes on to reach a fair conclusion. It must be solved now." (Inaugural address as Governor of New York.)

1. Production of electric equipment

Through negotiations with the manufacturers of electrical equipment, the following have been secured, ranging from 1934 to 1936: For example, Westinghouse, General Electric, and others have agreed to supply the largest quantity of quality refrigerators at \$115.00 per unit, a price which is now \$75.00. Electric range reductions have been made and marked. Several other manufacturers agreed to make their best prices available.

2. Progress in volume of production and requirements

This program has already resulted in great volume in the production of electric equipment. For example, three other manufacturers participating in the plan increased their output of refrigerators in 1934 over 1933 by 400%, output increased 80% and other makers 200%, a total of 1,000,000 units. The volume of sales compared with other manufacturers' output in the Tennessee Valley area have been similar, and the industry as a whole (including other manufacturers) has increased its output in other parts of the country, several times the amount of sales in the Tennessee Valley area.

STANDARD ELECTRICITY
INDUSTRIAL PRODUCTS
MADE IN U.S.A.
MADE IN U.S.A.

ELECTRIC HOME AND FARM AUTHORITY

Report to the President with recommendations

Fair prices and good quality of electric-using appliances are equally as necessary as fair rates for electricity in furthering the President's program for widespread use of electricity in the home and on the farm. T.V.A. is bringing lower rates. It is the job of Electric Home and Farm Authority to secure lower prices and better quality of electric equipment.

Results of first six months of E.H.F.A.

1. Price reductions.

Through negotiations with some sixty manufacturers substantial reductions have been secured, ranging from 25% to 40%. For example, when E. H. F. A. began operations the least expensive standard quality refrigerator was \$115.00; it is now \$72.50. Electric range reductions have been even more marked. Recently the manufacturers agreed to make these lower prices available nationally.

2. Increase in volume of production and reemployment.

This program has already resulted in great stimulation in the production of electric equipment. For example, three power companies participating in the plan increased their sales of refrigerators in 1934 over 1933 by 406%, ranges increased 653% and water heaters 2876%, a total of about 12,000 units. The volume of sales compared with manufacturers' quotas in the Tennessee Valley area have been twice as great as in the country as a whole (155% compared with 290%). Because the manufacturers have recently agreed to extend these low prices to the whole country, a comparable result is being felt in other parts of the country, except where electric rates have not been reduced.

3. Increase in use of electricity.

Based on results to date, continuation of E.H.F.A., with continued rate levels, will by 1937 increase total residential consumption by 250,000,000 kilowatt hours, or 67% increase.

4. Promotional and educational work.

This is perhaps the most important work which has been done. The social benefits of the widespread use of electricity at low rates, and with low priced, high quality equipment, has been carried to the public. Educational features have been emphasized; schools in the use of electricity have been conducted in cooperation with Universities, parent-teachers associations, etc. Pamphlets have been used by other public agencies, e.g., New York Power Authority.

5. Standardization and improvement of design and protection of quality.

Through negotiations with manufacturers, standard specifications have been agreed upon which will tend to reduce costs and increase usefulness. Quality standards have been written into the specifications. Testing of quality has been initiated. To be fully useful a laboratory is needed and is recommended. Pressure on manufacturers to re-design equipment to meet the needs of the average home has resulted in new designs of refrigerators, ranges and water heaters, and substantial progress has been made in re-designing of water pumps for rural uses.

6. Financing of customer paper.

E.H.F.A. has power to buy customer paper at a moderate financing rate. It was recognized that if this practice became widespread among private agencies, it would have a tendency to loosen credit in an exceptionally sound financial field. From the start it was hoped that private capital would adopt E.H.F.A. methods of customer financing. E.H.F.A. itself is handling an insignificant volume of paper, and unless the volume is greatly increased in the ensuing months, it will not be self-supporting. The E.H.F.A. example, however, has resulted in the

spread of this method of customer financing, not only throughout the Tennessee Valley area but in other sections of the country. Leading electrical manufacturers and utilities have joined in pressing the E.H.F.A. financing device, accounting for part of the unusual activity in the electrical products field.

RECOMMENDATIONS as to the future program:

The Act (N.I.R.A.) under which E.H.F.A. was created provides that it shall expire on June 30, 1935. In order to make plans for the coming months, a decision as to the future program is necessary. The following recommendations are submitted:

1. In general.

The program should be continued as part of N.I.R.A. extension, or separately, as a necessary supplement to the President's program as to supply of electricity. Electricity supply and electric equipment should be linked together, not merely in the Tennessee Valley, but wherever the "yardstick" areas are set up.

2. Financing.

It is recommended that the experiment of public financing be continued for the next three months. At the end of that period there are two alternatives: Private capital may be induced to continue this activity, or the need for public financing under the E.H.F.A. plan may produce a sufficient volume to be self-supporting. In any case financing should be continued to the extent electric users in T.V.A.-served communities will be provided with lower financing terms. Losses, if any, should be charged against new business expense of electric operations.

Knoxville, Tennessee
October 13, 1934

TENNESSEE VALLEY AUTHORITY
Knoxville, Tennessee

PSF
TVA

BOARD OF DIRECTORS
ARTHUR E. MORGAN, CHAIRMAN
HARCOURT A. MORGAN
DAVID E. LILIENTHAL

PSF
TVA

November 9, 1934

Col. Marvin H. McIntyre,
Secretary to the President,
The White House,
Washington, D. C.

Dear Col. McIntyre:

For the President's information I am enclosing
a brief statement of the program of research and
plant adjustments that has been set up by the
Authority for fertilizer production under the Act.

The President may have the opportunity to
glance over this enroute to Muscle Shoals on the
seventeenth.

Very cordially yours,

H. A. Morgan
H. A. Morgan

HAM:R

Results to Date of the Fertilizer Program

of the Tennessee Valley Authority

- I. Agreement among soil experts of the country:
 1. That the soils of the nation are too low in phosphorus content to permit the building of a permanent agricultural program without generous supplemental applications;
 2. That, of all plant food elements, phosphorus is of the greatest concern in any program of national economy;
 3. That applications of phosphates supplemented with lime assure the growing of legumes for soil cover, restoration of vegetable matter, and thus provide a cheap source of nitrogen;
 4. That soil erosion control in areas of large annual rainfall, such as the Tennessee Valley, can best be accomplished by generous applications of phosphates to sods, grains and legumes in association with a readjusted program of agriculture that carries live stock sufficient, at least, for self-containment and the consumption within the area of products and by-products carrying the largest amounts of those elements of the soil that are now costing millions to restore in the form of commercial fertilizers.
- II. An agreement with all the agencies of the Valley states and Federal departments to unite in a regional program of national significance.
- III. Have developed adequate facilities for experimentation and information in connection with fertilizer and soil erosion control projects.
 1. The experiment stations and extension forces of the seven Valley states have offered their researches, equipment and personnel for carrying out this regional program.
 2. Have, in addition to making minor changes in Nitrate Plant No. 2,

designed, built, and are now testing two new type electric furnaces for the production of elemental phosphorus.

3. Have designed and constructed two phosphoric acid producing plants now under test.
4. Have designed a new type of blast furnace for the production of elemental phosphorus. After critical study, this design will be the basis for the construction of a furnace which we expect to begin during the early part of next year.
5. Have designed, constructed and equipped a commercial size demonstration plant for the manufacture of the new plant food products and concentrations which seem necessary to a soil rehabilitation program.
6. Have leased about fifteen thousand acres of phosphate ore areas in Middle Tennessee counties and have already brought into production areas heretofore regarded as unworkable. The land is mined in such a manner as to permit its economical restoration to crop production conditions.
8. Through cooperation with the Valley states' agricultural experiment stations, all new fertilizer products are thoroughly studied by the soil research departments of these institutions to determine the value of these products to farm practice of the various areas.
9. More than twenty chemical engineering projects are under way, looking to the development of new processes which will:
 - a. Make possible new and improved fertilizer products;
 - b. Make available plant food resources now unused;
 - c. Lessen to a marked extent the cost of fertilizers to the farm lands of the nation.

THE TVA FERTILIZER PROGRAM

The T. V. A. Act, in providing for the development, manufacture and demonstration of new and improved forms of fertilizer, fulfills certain imperatives of the Administration's program. Widespread use of non-cultivated cover crops through the effective use of phosphates is basic to the maintenance of navigation and power projects in that streams and dam basins are protected from the infiltration of silt; land is conserved for future generations by prevention of soil erosion and restoration of nitrogen content; the immediate objective of reduction of basic farm commodities is effectively served, by encouraging reliance upon subsistence crops and wide diversification, rather than too great an emphasis upon production of crops for sale on a surplus market. Because of the wide diversification of soil types and topographical and climatic conditions, measures successfully prosecuted along these lines in the Tennessee Valley area will have national application.

The significance of the loss of soil fertility through erosion and extended cultivation may not be too strongly emphasized, since depressed farm purchasing power is attributable with nearly equal force to debilitation of the land and to a persistence of the single crop system. The situation is one in which cause and effect are welded in a vicious circle to prevent effective leverage of the price level, and where sound industrial development based on cheap power is impaired at its source through silting.

The distribution of much cheaper phosphate fertilizer, conditioned upon the use of farm lands for sod crops, legumes and small grains, will effect a readjustment of agriculture on a basis of live stock and systematic diversification. The land will thus be replenished of its nitrogen and protected from erosion; and, although retired from basic crop production, will meanwhile provide a basis for self-containment under conditions

best suited to the maintenance of power and navigation projects.

Obviously, the administration of this program is limited at every turn by the sympathy and understanding of the farmers who must, in the final analysis, carry it out. This plan can materialize no faster than it can be thoroughly understood. For this reason, care has been taken at every stage to utilize the experience, facilities, and personnel of existing agencies enjoying the confidence of farmers. To whatever extent may be feasible, farmers will be called upon to act aggressively through their organized groups in the use of the opportunities to which they are entitled under the statute. The net objective is an elevation of our rural civilization through conscientious stewardship of the land.

With the foregoing considerations in mind, the plans and activities of the Authority will be described briefly in terms of the pertinent sections of the act authorizing or directing each such activity.

(1) Under Section five (h), the Board is authorized to "establish, maintain and operate laboratories and experimental plants, and to undertake experiments for the purpose of enabling the corporation to furnish nitrogen products for military purposes, and nitrogen and other fertilizer products for agricultural purposes in the most economical manner and at the highest standard of efficiency." Thus, chemical engineering laboratories have been established at the University of Tennessee and at Nitrate Plant No. 2 respectively, in which an active program is being carried on in the development of new fertilizers and new types of electric furnaces and acid equipment.

This section in respect to experimental plants is supplemented by subsection (f) authorizing "alterations, modifications or improvements in existing plants and facilities" and the construction "of new plants." Besides using all available and adaptable facilities of Nitrate Plant # 2,

it was found necessary to construct a plant of commercial size for demonstration purposes. Although the capacity of this plant is the minimum for commercial production, it should be possible to demonstrate whatever economies may reside in the processes, and will permit the conduct of experiments in distribution, and the educational program hereinafter discussed.

According to sub-section (c) of Section 5, the Board is authorized to "cooperate with National, state, district or county experimental stations and demonstration farms, for the use of new forms of fertilizer or fertilizer practices during the initial or experimental period of their introduction." The act thus recognizes the prime importance of accurately checking the practical application of new fertilizer types. To this end, the land grant colleges in the seven Valley States are collaborating with the Authority in testing out the effect of the new forms of fertilizer under varying conditions, and in comparing the results with commercial fertilizers now in common use. This project is under the general supervision of the Authority and preliminary reports indicate satisfactory results with the materials tested.

Sub-section (b) authorizes the Board to "arrange with farmers and farm organizations for the large-scale practical use of the new forms of fertilizers under conditions permitting an accurate measure of the economic return they produce." Much to the same point, sub-section (e) permits "donations or sales of the product of the plant or plants - - - to be fairly and equitably distributed" through various farm agencies and organizations. The intent of Congress in these sections is obviously to insure that the fertilizers be properly applied, that the utmost economy in distribution be accomplished by dealing directly with farmers through their agencies and organizations, and perspective be maintained throughout, by a careful analysis of results. Thus, plans are now being formulated

to distribute fertilizer in concentrated form to selected areas where it will be available to all farmers wishing to participate in its use. Cooperating farmers will agree to terrace and improve the land and to engage in a farm program consisting of proper ratios of sod crops, legumes, small grains and diversified produce of larger economic value. County agents and leaders of farm groups will assist in locating lands of greatest demonstration value and in the general supervision of the program.

The ultimate cost of fertilizer will be materially reduced by farmers assuming its distribution through their agencies and organizations. They will be assisted in establishing demonstrations of small, inexpensive mixing plants at numerous centers of consumption where concentrated phosphates can there be mixed with other plant food concentrates and with dolomitic or other limestone drawn from local sources. These demonstrations will give farmers the opportunity of accumulating the basic facts regarding the blending and use of various fertilizer elements and of measuring the relative cost to the land of important items of distribution such as freight, handling, bagging and storage. They will also offer the farmer an opportunity to restrict his cultivated cash crops in accordance with the saving effected in the fertilizer bill and thereby reduce the drain upon the land.

It will be recalled that one of the two nitrate plants was constructed at a time when information and experience in the Haber process were scarcely available, so that this plant could not be operated efficiently without the expenditure of many millions of dollars. However, the ammonia process demonstrated by this plant has been applied in the last seventeen years with such success that the cost of nitrogen was decreased by sixty-six per cent. Nitrate Plant No. 2 is a cyanamid plant of very large capacity; researches with the product of this plant are in the direction of making cyanamid a more suitable source of the nitrogen in mixed fertilizers. The nitrogen element in land improvement, however, is not as serious as was formerly

regarded because the air as a source of nitrogen for commercial synthetic plants is equally available to the farmer through nitrogen fixing vegetation. It is here that phosphate becomes so important in its application to nitrogen fixing vegetation to enable the farmer to supply his own nitrogen.

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

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TENNESSEE VALLEY AUTHORITY

BOARD OF DIRECTORS
ARTHUR E. MORGAN, CHAIRMAN
HARCOURT A. MORGAN
DAVID E. LILIENTHAL

Knoxville, Tennessee

November 16, 1934

Memorandum to the President
From: David E. Lilienthal

Subject: Facts About Tupelo

1. Tupelo was the first city to sign a contract with TVA for wholesale power generated at Wilson Dam. The contract was signed on November 11, 1933, and current was initially supplied on February 7, 1934.
2. Upon receiving TVA-Muscle Shoals power, the City of Tupelo put into effect the new low TVA rates, which for residential consumers start at 3¢ per kilowatt hour and range downward to four mills per kilowatt hour. These rates represented a very substantial reduction to consumers of electricity, in almost every case more than 50%. Before TVA, residential consumers paid as much as 10¢ per kilowatt hour for electricity, the average price being approximately 7¢. Under TVA rates, the highest price is 3¢ per kilowatt hour and the average price has been 2.5¢ and less.
3. Before TVA, the City of Tupelo purchased wholesale power from a private company (Mississippi Power Company) at a rate of approximately 1.7¢ per kilowatt hour. Power from the same source and over the same lines (purchased by TVA from the private company) is now sold to Tupelo at a rate which has averaged 5.4 mills during the past eight months. Since its contract with TVA, Tupelo has been able to save about 68% in its wholesale power bill. Because of this tremendous saving in the cost of power and by reason of a tremendous increase in use which has come about since the low rates were made available, the experience of the City of Tupelo has been a profitable one. Because of the increase in use and by reason of the excellent load factor, better than 50%, the City of Tupelo has been a profitable customer to TVA.
4. The experience which Tupelo has had under TVA rates illustrates how electric utilities can drastically reduce their rates, increase consumption and continue to prosper. Gross revenues for the City of Tupelo from its electric operations were only \$5600 in the month of

TENNESSEE VALLEY AUTHORITY

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ARTHUR E. MORGAN, CHAIRMAN
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DAVID E. LILIENTHAL

Memorandum to the President -3- November 16, 1934

\$1400 to the private utility which supplied it with power. There remained to the City of Athens about \$1600 for covering its cost in distributing electricity. This situation can be compared with the month of September under TVA. During this month, the total revenues of the City of Athens were \$2790, out of which \$940 was paid to TVA for wholesale power. There remained \$1850 for covering the costs of distribution. In other words, although Athens reduced its resale rates almost half, consumption increased at such a rapid rate that in four months the net revenues available for distribution were actually 15% greater than before.

6. What the TVA rate method means to the country as a whole. The actual revenue from residential consumers in the United States as a whole in 1932 was \$650,000,000, for which approximately 11,790,000,000 kilowatt hours were supplied. If the United States as a whole were put on the same basis as Athens, Alabama, the total consumption would have been 21,000,000,000 kilowatt hours, and the total revenue would have been \$463,000,000, an increase of 9,000,000 kilowatt hours, and a saving to residential consumers of approximately \$187,000 per year.

Financial result. The TVA rates will be criticized by all manner of special interests, but the fact is THAT THEY WORK. In actual practice in Tupelo, in northeast Mississippi, in Athens, Alabama, it has been demonstrated that they work.