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ELECTRIC POWER RELIABILITY

GOVERNMENT

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HEARINGS

BEFORE THE

COMMITTEE ON COMMERCE

UNITED STATES SENATE

NINETIETH CONGRESS

SECOND SESSION

ON

S.1934

AMENDING THE FEDERAL POWER ACT AND RELATED BILLS,
S. 683, S. 1834, AND S. 2227

Part 3

APRIL 26 AND 29, 1968

Serial No. 90-30

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ELECTRIC POWER RELIABILITY

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ELECTRIC POWER RELIABILITY

FRIDAY, APRIL 26, 1968

U.S. SENATE,
COMMITTEE ON COMMERCE,
Washington, D.C.

The committee met at 10 a.m. in the Governor's Board Room, State Capitol, Salt Lake City, Utah, Hon. Frank E. Moss presiding.
Present: Senator Moss.

OPENING STATEMENT BY THE CHAIRMAN

Senator Moss. The hour of 10 having come, the committee will come to order.

This is a hearing before the Senate Committee on Commerce, directed by the chairman to be held this morning in Salt Lake City. The purpose of our hearing—and today is the second set of field hearings—is to hear testimony concerning S. 1934, entitled "The Electric Power Reliability Act," which was introduced in the Congress last year at the request of the Federal Power Commission.

The draft of the legislation was prepared by the Federal Power Commission at the President's request to insure that major blackouts, such as the one which struck the Northeast in 1965, can be eliminated or at least reduced to a bare minimum in the future. All of us realize how important it is to the national interest to keep a continuous supply of electrical energy in our powerlines.

S. 1934 attempts to meet the problem of electric reliability by making the Federal Power Commission responsible for coordinating and strengthening the interrelated grids of utility systems by authorizing the establishment of appropriate regional councils made up of the various electric systems in that particular area. Under this bill, the Federal Power Commission would be empowered to review and approve the construction of the extra-high voltage lines that link individual utilities. It would be empowered to require interconnections between utilities when they are in the public interest, and would also authorize the Commission, after consultations with regional councils of utilities, to "set forth reasonable criteria" for "reliable planning and operation of bulk power supply facilities."

S. 1934 is one of the major bills before the 90th Congress and the President has consistently stressed the importance of this bill in discussing his legislative program.

The Senate Commerce Committee's hearings on S.1934 opened in Washington, D.C., in August of last year. At that time, this committee heard extensive testimony from Lee White, Chairman of the Federal Power Commission, on the problems of electric reliability and how

Staff members assigned to this hearing: Frederick J. Lordan and John D. Hardy.

the instant legislation would further minimize the chances of cascading power failures such as the Northeast blackout in 1965, and the Pennsylvania-Jersey-Maryland (PJM) power interruption in 1967.

From the beginning it was apparent to this committee that not only did the problems of electric power reliability vary in kind and number throughout the many sections of the United States, but that there was considerable difference of opinion among the parties affected by S. 1934 as to any need for this legislation, and as to the role which the Federal Power Commission would play under it.

Because of the fundamental national policy questions involved, the complexity of the legislation, and the awareness that the electric power systems differ considerably throughout the country, the committee decided to go into the field to hear how the proposed legislation would affect operations in different regions of the country.

On December 20 and 21 of last year, the committee heard 2 days of testimony in Seattle, Wash. Today, of course, we are here in Salt Lake City, and on Monday there will be one day of hearings in Las Vegas, Nev. Later the committee expects to hold additional field hearings in other regions of the country so that we will eventually develop a record which will accurately reflect the present state of electric power reliability throughout the Nation and what, if any, legislation is needed to further enhance reliability.

The testimony we shall hear today will, I am sure, greatly aid the committee in its deliberations on this most important legislation.

We have a very distinguished list of witnesses that we will hear today. We have invited these witnesses specifically because of their particular knowledge or connection with the electric power distribution and generation.

In addition there were other mayors of our various cities, the State director of the Council of Defense and the executive director of the Mid-West Electric Consumers Association, who were invited and did not respond. If they have come, any of them, we simply did not receive notice. We will certainly be glad to hear from them, too, because our purpose is to make as full and meaningful a record as possible.

Mr. Simonton is here and he will be heard from.

As I am sure you know, the hearings are assembled and printed up in a transcript which is available automatically to anybody who appears as a witness. But anyone who wishes to write and get a copy of the hearings may do so. These are copies of the transcript of the hearings that have been held so far. There will be additional booklets printed as we get all of this information before us.

I want to stress again the purpose is to make the record. I am here neither to defend nor condemn the bill before us, but to try to get into the record as best as I can all of the pertinent information and the points of view. We welcome criticism and opposition points of view, as much as approval of the legislation. So I don't want any misunderstanding on that.

I am sure, with the most knowledgeable group of witnesses that we have, that we are going to get a very fine record from the hearings we hold today.

We will begin by hearing from the chairman of the Public Service Division of Utah, Mr. Donald Hacking. I don't see him. He was listed as our first witness. Perhaps he has been delayed.

Commissioner J. Burns Beal, the Idaho Public Utility Commission, is our next witness. Will you come forward, Commissioner Beal? We do appreciate your coming down from Boise to appear at this hearing.

Mr. Beal represents the Idaho Public Utilities Commission. You may proceed in any manner that you see fit.

I might explain, if any witness feels that it would be more effective to have us include the whole transcript of his statement in the record and highlight or emphasize parts, you may do that. You may certainly depart from the text any time you like.

STATEMENT OF COMMISSIONER J. BURNS BEAL, IDAHO PUBLIC UTILITY COMMISSION, BOISE, IDAHO

Mr. BEAL. Thank you, Senator Moss.

I am Commissioner James Burns Beal of the Idaho Public Utilities Commission. I wish to thank the committee for the privilege of being here today.

The Idaho Commission has had a continuing interest in electric reliability legislation ever since it was first proposed. We have given testimony before Senator Magnuson in a similar regional hearing last December in Seattle, Wash. I have this testimony with me and would appreciate the opportunity to reinsert the prior testimony along with some further comments.

Senator Moss. It has already been printed.¹

Mr. BEAL. Senator, I would reiterate that the Idaho Commission desires and insists that every utility under its jurisdiction must furnish quality service to its customers. In fact, we are so service oriented that we continuously urge the acquisition of reserve capacity for emergency use.

Our economy in Idaho cannot afford electrical service interruptions as any interruption causes loss of employment to the workers and production and financial losses to industry. Each of these reduces income to the State of Idaho for the rendition of necessary government services.

We feel cooperation in the avoidance of blackouts still seems the most advantageous solution. The Pacific Northwest has had a cooperative agreement amongst all utilities regardless of ownership for the interchange of electric power. This pooling arrangement has not only proven economically sound, but has contributed to the security of the electric system for the entire area.

Technological advancements have made possible the interchange of bulk power between regions. Present plans envisage the construction of a 500,000-volt a.c. line between the Pacific Northwest and Pacific Southwest. Also proposed are 750,000-volt d.c. lines between these same regions. More sophisticated techniques are necessary to assure stability of service with these new extra-high-voltage transmission facilities. Consequently, a new interregion organization was founded which is named the Western Systems Coordinating Council. This new organization includes 40 electrical systems including Federal, cooperative, municipal, and private enterprises. In fact, the president of the Idaho Public Utilities Commission, Mr. Wickberg, could not attend

¹ See pt. 2, Electric Power Reliability, hearings before the Senate Committee on Commerce, Serial No. 90-30.

this hearing today because of a meeting being held in Washington, D.C., with the Federal Power Commission and the Western Systems Coordinating Council.

This new organization is maintained by assessment of its members, and it is using the most modern computers to analyze stability studies for reliability purposes.

We feel that this itself is a great step in guarding the very fact that S. 1934 proposed to do this.

We as a nation have progressed from local self-contained electrical utilities to regional cooperative arrangements, to interregional associations. Most problems have been solved on a voluntary basis. Outages have occurred in the Pacific Northwest, have immediately been solved through cooperative steps and by understanding the underlying problem.

Our personal experience as a regulatory body convinces us that local, regional, and interregional problems can be solved quickly by cooperative action between the electrical industry and Federal and State commissions.

I might add for the record, Senator Moss, that Idaho is a State of small population, approximately 700,000 to 800,000 people. Our commission has prided itself that each of these people has available for them a hearing by telephone, by a call at the house, by contact with field men, at no cost to themselves, on legitimate complaints of power failures or power blackouts, and we have had most excellent cooperation in immediately solving these problems. The utilities have been most cooperative.

As a commission we are and we feel most able and willing to cooperate with the Federal Power Commission, with any type of power utility, with regulators of the United States in this region, to do the thing that we would like to do to enhance the power reliability of this region that could be carried forth in the United States.

Thank you Senator Moss.

Senator Moss. Thank you very much, Commissioner Beal.

How long has this council been in existence that you spoke of, this Northwest Council?

Mr. BEAL. To my knowledge about a year and a half.

Senator Moss. Is the Northwest connected into Canada with any kind of connection this same manner?

Mr. BEAL. The proposal will of course be to extend, or could very well be extended. At the present time I can't answer that question. In discussion, I have heard it discussed that of course throughout the region it could very well be included in the Canadian area as well as coming through into Mexico, this area, through the area of interties.

Senator Moss. I wondered if it had advanced that far. Of course it would be logical to go north into Canada.

Mr. BEAL. Yes. At the present time it is not included.

Senator Moss. To your knowledge has there ever been a major outage or blackout in the Northwest area in, say, the last 10 years?

Mr. BEAL. Not that would be at all like the area on the eastern coast. There have been a series of small blackouts that have reached across the State borders, of course. Recently there was one in Idaho, I think the first part or middle of January, where a problem developed that did reach across the State lines into two or three States. It was

fixed as soon as possible. As I recall it was in the Hells Canyon area, a rugged terrain. Helicopters were flown in during inclement weather. A neutral wire was iced up and touched and arced, out, causing failure in the powerplant. It wasn't major like the area of the Northeast.

Senator Moss. By leafing through I see you gave some interesting testimony before Senator Magnuson in Seattle.

Thank you very much, Commissioner Beal. We appreciate this appearance.

Senator Moss. L. J. Chambard, chairman of the Public Service Commission of New Mexico. We appreciate your coming up before this committee and we welcome you.

STATEMENT OF L. J. CHAMBARD, CHAIRMAN, PUBLIC SERVICE COMMISSION, STATE CAPITOL, SANTA FE, N. MEX.

Mr. CHAMBARD. Thank you, Senator Moss.

In order to eliminate being repetitious, I think I will be as brief as possible in presenting a summary of the presentation that has already been made a part of this record.

Senator Moss. That may be done. Your statement will appear in full in the record. You may summarize it or comment on it as you wish.

Mr. CHAMBARD. To summarize the comments of my prepared statement, previously filed with the Commission, I would like to state briefly that S. 1934 appears to be superfluous in many respects and contains provisions that could adversely affect the facilitating of planning and construction. It duplicates to a great degree the declared policy of New Mexico in its preamble setting forth the duties and responsibilities of the New Mexico Public Service Commission, and through this duplication of responsibility it appears obvious that in the end costs to attain the same objectives would also be duplicated.

S. 1934 appears to remove from the local scene matters which are much more readily understandable on the local level, and can be best dealt with by representatives at these local levels.

We feel a fair opportunity should be afforded both the Federal Power Commission and the various State agencies to combine their efforts in attaining a higher degree of reliability as it applies to the entire electric industry. We believe it is reasonable that an effort in this direction be given a fair trial and an opportunity to observe the results from that effort.

I wish to express my appreciation on behalf of the New Mexico Public Service Commission, for the time and the convenient location that this committee has provided so that we may be afforded an opportunity to appear before you.

Thank you.

Senator Moss. Thank you very much, Mr. Chambard. We appreciate having your testimony.

(Prepared statement of Lee J. Chambard follows:)

PREPARED STATEMENT OF LEE J. CHAMBARD

Mr. Chairman, and members of this Committee, my name is Lee J. Chambard, Chairman of the New Mexico Public Services Commission. I have served on this Commission for over seven years and welcome the opportunity to present this statement regarding the proposed Electric Power Reliability Act of 1967. My

purpose in appearing today is to express concern over three fundamental implications of S. 1934. In my opinion, they are:

1. Federal and state regulation of electric utilities, the existing balance and what S. 1934 portends.

2. The effect of the Reliability Bill on the expressed policy of the State of New Mexico.

3. An overall question if this type of legislation benefits reliability.

Speaking on point 1, it is our concern the licensing provisions of Section 409 effectively and practically restricts, if not eliminates state regulatory ability to approve planning and routing of transmission lines. Despite the bulk nature of transmission lines, they nonetheless involve detailed planning affecting relationships of local interests, and we feel this can be best handled at the local level. Broad review of regional and inter-regional planning is certainly of national concern, and we feel these reviews can be made under existing law or on a voluntary basis. For both state and national regulatory bodies it would be a dangerous practice to become so involved in planning that balanced regulatory judgment with which we are charged might be severely damaged or distorted.

Secondly, the declared policy of the State of New Mexico states, "The public interest, the interest of the consumers and the interest of the investors require the regulation and supervision of such public utilities to the end that responsible and proper services shall be available at a fair, just and reasonable rate, and to the end that capital and investment may be encouraged and attracted so as to provide for the construction, development and extension without unnecessary duplication and economic waste of proper plants and facilities for the rendition of service to the general public and to industry." This statement of New Mexico's policy is taken directly from the Public Utility Act as defined in Section 68-3-2.

I would like to discuss briefly with you four specific subpoints of our stated policy, which we feel this bill adversely affects:

(a) That reasonable and proper services be rendered.

(b) The services are rendered at fair, just and reasonable rates.

(c) That capital investment be encouraged, and

(d) That plant be installed, extended and expanded without unnecessary duplication and economic waste.

Point (a)—Relates to reasonable and proper services—It is our concern that portions of the Act, which provide for authoritative regional planning as set forth in Section 404 of the Act, is burdensome and detrimental to responsive service by a utility. The additional time delay imposed by such procedures and the remoteness of the point of petition does not lead to reasonable and proper services. Additionally, approval of system plans required by this Act, and therefore the strategic responsibility for the proper operation of the systems covered by this plan, ultimately rests in Washington. This removes response to local area problems from local access.

Point (b)—Services required at fair, just and reasonable rates—From a regulator's point of view, we must analyze plans presented to us, provide suggestions and assistance and even at times reject plans, but in the end, we pass judgment. The responsibility for placing systems in service and expanding these systems rests with management. The effect of S. 1934 is to expect management to relinquish their authority to provide proper planning, yet maintain financial responsibility. This is not compatible. The responsibility to obtain a reliable bulk power supply lies with the utility. With the effective dilution of responsibility which would result from S. 1934, it would seem that you have replaced the economic and public compulsion of running an efficient system and replaced these with an undue regulatory burden. This is contrary to the concepts of regulation which has fostered the most efficient and reliable, although imperfect but still rapidly improving, power system in the world. By replacing an efficient management's authority, we in effect find ourselves regulating an industry responsible merely for constructing a series of approved plans and suffer the ultimate effect of increasing rates implicit with a remote controlled operation.

Point (c)—Capital and investment should be encouraged—For the reasons discussed above, and to the end that the investor, either private or governmental, would provide monies to be used implementing a plan over which the organization in which he is investing has little control is not conducive to promote or encourage capital investment. Our state policy requires that an attractive financial climate exist so that the utility is more readily capable of carrying out its

responsibility in extending and expanding their facilities to provide the most efficient and reliable service.

Point (d)—Provide utility plant without unnecessary duplication and economic waste—It seems to us that the effect of the Reliability Act of 1967 is to duplicate existing planning mechanisms that are already created within the utility industry. Additionally, we are in many instances duplicating the prevailing regulatory process. The resulting duplication will certainly lead to costly delay and economic waste. Finally, with regard to point 3, we are concerned that reliability might be impeded rather than improved as anticipated by the authors of this legislation. Related issues, such as land use, beautification, territorial integrity and others are extremely complicated to deal with on the scene, even with accessibility, environmental and historical facts available, solution of these detailed matters in a national forum rather than at local level, seems highly unlikely. One related point is the availability of technical competence. There is a limited supply. To further diffuse this supply and remove some from the scene of the problems, seems contrary to the stated purpose of the Act.

In closing, the necessity of regional coordinating councils seems to have been preempted by cooperative organizations. West Associates, formed in 1964, involves twelve investor-owned utilities, six municipals, three REA generation and transmission cooperatives, one irrigation district and one state power authority. An outgrowth of this well diversified group of utilities is the Western States Coordinating Council (WSSC), an inter-regional group. The most recent tally, if my figures are correct, indicates WSSC consists of 529 systems, a very sizeable and impressive number of utility companies planning for and striving for the utmost in efficiency and reliability.

As regulators, we conclude that New Mexico's public policy is not being served by S. 1934. We believe that consumers would be losing their point of contact with those responsible for providing reliable service in our area.

The New Mexico Public Service Commission enjoys an excellent and cooperative relationship with the Federal Power Commission. We expect this cooperation will continue and have every reason to believe by this very satisfactory and cooperative attitude that all desired goals to be attained can be done so by our combined efforts. The effect of this bill seems to isolate the consumer and provides no additional implements that would provide a higher degree of reliability. We believe that full application of all means at our command will provide the highest degree of efficiency and reliability, and recommend that S. 1934 not be enacted.

Senator Moss. Does one utility serve most of New Mexico, or do you have several within the State?

Mr. CHAMBARD. We have several electric utilities. El Paso Electric serves the southern portion of our State. Southwestern Public Service, which headquarters in Amarillo, serves on the eastern and south-eastern part. Public Service Co. is located in the central part of New Mexico. They all provide a very reliable service considering, of course, we do have short outages through acts of God, you might say, violent windstorms, icing conditions, which are very quickly corrected. We have had only one serious interruption of power. That was about 2 years ago I believe. El Paso Electric Co. had an outage there that was rather far reaching. I wouldn't call it a normal interruption because it was an outage over a duration of time. It was caused mainly by faulty fuel being supplied to them. There were great amounts of liquids in that fuel. While the sumps by the electric company were large and had proved adequate in the past, the supply was diverted from a certain location to a new location, and because of the great amount of liquids that came into the fuel supply it did affect the regulators to the boilers.

They had two regulators. One was affected immediately. They switched to the next one and the amount of liquid in the fuel affected it adversely so the whole plant went out.

Senator Moss. Is this gas fuel you are talking about, natural gas?

Mr. CHAMBARD. Yes. It was one of those things that is very difficult to anticipate. We did have one major interruption.

Senator Moss. Is there a volunteer interconnection now between El Paso and Amarillo?

Mr. CHAMBARD. Not between the Southwestern Public Service; no. El Paso Electric and the Public Service Co. of New Mexico are jointly engaged in the construction of a coal generating plant in the Four Corners area. The construction of the transmission lines from the Four Corners area to Albuquerque will be completed some time very soon, and they will wheel the energy from the Four Corners area to a switching station in Albuquerque.

El Paso Electric presently is in the process of constructing a 230-kilovolt line from Albuquerque to their own facilities at the Newman Station near El Paso, and there will be this very reliable intertie between these two companies. Public Service Co. has already, and has had for the past, I believe, 5 years, this intertie with Arizona Public Service Co. from the same area in Four Corners. And that is another coal-fueled generating plant, three units in fact.

I think every effort is being made to provide feasible, economical, and reliable interties and I say this based on the organization of West Associates, about 5 years ago, who are a planning group. They are not a utility but they have engaged in long-range planning for this very purpose of intertying and providing a reliable service. The outgrowth from this organization I believe is what is now known as the Western States Coordinating Council, and it has expanded considerably from the small group originally formed for this purpose.

Senator Moss. I think West Associates are going to appear at our hearing on Monday.

Mr. CHAMBARD. I will let them state their position then.

Senator Moss. Is there any intertie at all with any of the hydro-generation along the Colorado River?

Mr. CHAMBARD. We only have one small hydro installation in New Mexico and I think it is about 25 kilovolt, located at Elephant Butte. It is an installation owned by the Bureau of Reclamation. It does serve and feed energy into the Bureau line which runs from Albuquerque to Lordsburg, I believe it is. They are intertied in that respect but they contribute very little in the way of energy. We have no hydro-electric energy in New Mexico to speak of. That is the only commodity which is very small.

Senator Moss. Thank you very much.

Mr. CHAMBARD. Thank you, sir. It has been a pleasure to meet with you.

(The following information was received after the close of the hearing:)

SUPPLEMENT TO MR. CHAMBARD'S TESTIMONY

There are twenty-one rural electric cooperatives, of which one is a generating and transmission company, serving in the sparsely-settled and rural areas of New Mexico. Plains Electric Generation and Transmission Cooperative, Inc. generates electric energy serving eleven distributing electric cooperatives in the State, the balance of the electric cooperatives deriving their energy supply from other electric generating companies in various localities of the State.

Plains Electric Generation and Transmission Cooperative, Inc. is centrally located at Algodones, a short distance from Albuquerque. In order to provide

a high degree of continuity of service for the electric cooperatives to which they provide wholesale energy, they have inter-ties with Public Service Company of New Mexico at five locations strategically located in the State: One at Ambrosia Lake substation; another at Gallup; also at West Mesa switching station at Albuquerque; Storrie Lake substation near Las Vegas, New Mexico; and through a Bureau of Reclamation substation located at Deming.

In February of 1968 the New Mexico Public Service Commission approved a loan not to exceed \$2,000,000, of which \$1,086,000 was allocated for construction of a 115 KV "H" frame transmission line originating from Plains' Algodones power plant and terminating at the Bureau of Reclamation's Willard substation, covering a distance of 71 miles. To quote from the transcript, at which time Mr. Norton Davis, Manager of Plains Electric, testified before the New Mexico Public Service Commission, he said: "This proposed extension will serve the increasing load requirements of the Central New Mexico Electric Cooperative within said area. The line will not only serve the load requirements and increase reliability of service to the area, but also will firm up delivery to the southern cooperatives via the Bureau's system by means of the closed-loop concept with the closing of the loop at Willard." The remarks of Mr. Davis indicate that the scope of their planning is to provide a high degree of reliability in the areas they serve.

Also under consideration at this time, is construction of a 115 KV transmission line between Las Cruces and Deming to be jointly owned by El Paso Electric Company, Public Service Company of New Mexico and Plains Electric Generation and Transmission Cooperative, Inc. The purpose of this line is to provide a tie in the Las Cruces area with facilities, wheeling energy out of the four corners area, to relieve the already heavy load existing on the Bureau of Reclamation line originating at Albuquerque, and wheeling energy into Deming and the southwestern part of New Mexico. All of the rural electric cooperatives are under the complete jurisdiction of the New Mexico Public Service Commission, and our experience in regulating their activities is that they are desirous of performing the very best possible service at the most reasonable cost to their consumers. In view of the difficult and adverse circumstances under which they serve in the rugged and mountainous terrain in our State, it is the opinion of this Commission that they are performing an outstanding service.

It should be further pointed out that there exists a very friendly relationship between the electric cooperatives and other electric generating companies as well as a very good working relationship with our Commission. We feel the cooperative attitude by all concerned accomplishes the purpose of providing the highest quality of electric service to be found anywhere.

Senator Moss. Commissioner Zan Lewis, of the Wyoming Public Service Commission, Cheyenne, Wyo., we welcome you. We are glad to have you here.

STATEMENT OF ZAN LEWIS, COMMISSIONER, WYOMING PUBLIC SERVICE COMMISSION, CHEYENNE, WYO.

Mr. LEWIS. We appreciate the opportunity of being here and having you hold the committee meeting so close to Cheyenne.

Senator Moss. We are happy you could come.

Mr. LEWIS. Mr. Chairman and gentlemen, the Public Service Commission of Wyoming has prepared a statement for presentation to the committee concerning the extremely important matter of reliability. My comments here are a summary of the Wyoming Public Service Commission statement in an effort to conserve your time.

The full prepared printed statement is proffered for the record. I would like to make one correction on page 2, the third line of the second paragraph, the end of the line. If we could delete the words, "generation or."

The widespread and cascading effect of the Northeast power failure has, as never before, forcibly brought to the attention of the Ameri-

can public the reliability problems surrounding the ever-expanding interties in our country, and has prompted every utility regulatory agency and each electric utility of size to begin projects of study and reevaluation to determine how susceptible the electric operations within their respective purviews are to the pyramiding outages and what action should be taken to correct the same.

Specifically, the Wyoming Public Service Commission has, after full and careful review of all material available to it concerning the reliability considerations, concuded that every care should be taken to give full and continuing credence to the existing individualistic development of each type of utility, which development has been by necessity patterned and primed to meet the special needs of each utility's own consumers.

Great caution should be taken in approving legislation which would provide for and require undue administrative delays prior to accomplishing planned and needed construction, such as is provided for in the notice provision of the proposed Reliability Act which requires 2-year notice to the FPC prior to construction.

The proposed grant of authority to the FPC in S. 1934 to determine the type, size, and routing of transmission facilities would, in our opinion, by interrelation and interdependence govern the location and type of generation facilities to be constructed, thereby depriving the States themselves of the important right to determine if and where utilities may construct facilities; and could work to hamper the development of the enormous fossil fuel reserves of the State of Wyoming, and similar situated States if determinations are based wholly or in part on considerations other than feasibility and economics.

Another problem under the proposed act, which must not be discounted, concerns the determination of which utility or utilities must bear the cost of interties, and the maintenance and surveillance thereof.

Other points are raised in the statement which we hope, with the preceeding, may be helpful to the committee in its consideration of this important legislation.

The recent positive action by industry as coordinated through State regulatory commissions and FPC has resulted in accomplishments without delay. We see merit in coordinating efforts being made in the matter of interties, and FPC is the agent best suited to coordinate this effort if full cognizance and effect is given to the regulation and utility development. We must not lose sight of the fact that under the regulatory guidance of the State regulatory commissions the electric industry has been and is a well oriented, organized, and developed industry with little parallel in our country's history, and as such it is capable of reacting at all times, including times of emergency, as may be required in the best interests of the public.

It is suggested that a fair trial period be given the industry under existing State regulations and FPC guidance and advisory authority to work toward correcting existing problems.

Thank you very much, Senator.

Senator Moss. Thank you very much, Mr. Lewis. Of course your entire statement will be part of the record.

(The statement follows:)

STATEMENT BY THE PUBLIC SERVICE COMMISSION OF WYOMING

At no time during the history of our country has the present and future status of the electric utility industry come so forcibly and imperatively to our country's attention as when the massive power failure occurred in the Northeastern states on November 9 and 10, 1965. The cascading and telescoping effect of the Northeast power failure stands as a grim reminder and warning of the danger to our national safety and welfare from failures or deficiencies in the existing and expanding widespread interconnected and intertied electrical systems. An example of the present and potential extent of such interties may be seen in the attempt made on February 7, 1967 by the nation's private and public utility systems to, for the first time, accomplish a coast to coast intertie; which intertie was "opened" or "disconnected" on July 20, 1967 due to complex and uncontrollable contingencies.

The widespread, crippling and pyramiding effect of the Northeast power failure and the disastrous consequences that it portends have prompted every utility regulatory agency and electric utility company of size to begin projects of study and reevaluation, to determine how susceptible the electric operations within their respective purviews were to such massive outages and to determine what action should be taken to correct the same. All studies and efforts prompted by the Northeast power failure point out that the accomplishment of the sought after reliability is, to say the least, extremely broad, technical and complicated.

It must be first noted that the prime and overriding responsibility and stated purpose of the multitudinous segments that make up the electric industry is to adequately and safely meet the existing and ever expanding service needs of the public in a carefully planned manner suited to each customer's needs as feasibility will allow, upon which basis the very existence of the state regulatory commissions was premised. Therefore, it is axiomatic that the greatest care must be exercised in the formulation of plans and of action to be taken to accomplish reliability and extensive all inclusive interties, to not lose track of the pluralistic, individually developed character of the electric industry. A pointed effort to accomplish reliability and expanded interties without due consideration to existing service conditions and the purpose and reasons therefore, could be in a long-term sense as crippling to public service as the ills that it seeks to eliminate.

We have carefully reviewed the Electric Reliability Act and the volumes of materials in support and in opposition thereto and we are first drawn to the conclusion that this Act is a proposal in one giant legislative step to place an overwhelming authority in the FPC using the reliability problem to hopefully resolve many associated but separate matters not a direct substantive part of the reliability problem. Considering the vastness of the electric industry activities which it seeks to regulate we see merit in the criticism that the proposed Act presents an oversimplified and top heavy approach to a many faceted program. This may be seen in the fact that the proposal would place within the purview of the FPC the responsibility of determining not only when, where, and how interties may and must be made; but in addition thereto the very locally oriented determinations of the type and size of facilities required and who shall pay for the same, of who shall use the facilities and the manner and degree of use, and of how the lines shall be routed carrying with it the right of condemnation.

To point up some of the inherent difficulties in the Act we first refer to the provision requiring filing by each utility of all plans for installation of Extra High Voltage (EHV) transmission facilities two years in advance of construction. Considering the required unavoidable delays arising from the time consumed by a utility in planning and engineering and the time required for the manufacture and delivery of required equipment; we can foresee severe detriment and burden accruing to the public by additional unnecessary, unfair and overburdening administrative delays. Furthermore, it is possible that in cases where proposals are controverted or contested or otherwise suspended, the two year filing period could become indefinitely extended.

It is abundantly clear that the proposed grant of power to the FPC would effectively divest the various state commissions of their legal obligation to act in the public interest to require construction of facilities or to prevent construction, which actions are accomplished on the basis of public hearings open to and easily accessible by the public. Equally problematic is the fact that the expertise available through the affected utilities themselves would be seri-

ously discounted or overlooked. These become even more serious considerations when it is discerned that such available commission and utility expertise is grounded upon the individualistic growth of the various utilities in a manner best suited to provide adequate and safe service to the public within their particular authorized service areas. Furthermore, the procedure to be set up by the FPC, for the purpose of recommending action to it would have the effect of depriving the individual of any readily accessible forum.

Tying in with the above, another evident problem that would arise from the proposed monolithic regulatory centralization is the consideration that those persons with the financial ability or those able to marshal representation in Washington would be those most likely to prevail in matters arising under the proposed Act, to the virtually complete exclusion of the less economically capable smaller utilities and interested and affected individuals.

The authority that would be granted to the FPC under such Act relating to routing of lines is again a crucial matter that should be left to and is pre-eminently a matter of local concern. We cannot conceive of any agency better qualified to determine routing of lines than those with the firsthand knowledge of the "home" area. This aspect of the Act becomes more important when it is considered that the advent of underground construction of EHV lines, which could go a long way toward alleviating the problems involved in "beautification" insofar as utilities are concerned, is a condition that will generally occur in the future. Again, this aspect of the Act would work directly against action taken by our congressional delegation to keep at home matters concerning the development of Wyoming wilderness areas.

The responsibility that would be placed in the FPC under the Act to choose one utility over another would place it in a difficult position. In addition thereto, such requirement would tend to negate the extensive, arduous and well fought efforts of state commissions to maintain territorial integrity for the best protection of the interests of the directly affected public.

The proposed Act would effectively and in actuality give the FPC through its veto power and its "persuasive role" the responsibility of determining the necessity for generation as well as transmission facilities and the location and type thereof. This "power in fact" goes far beyond the reliability consideration which prompted the subject Act and could for all intents and purposes remove from the province of all utilities involved in bulk power supply the basic right and responsibility, while acting through state regulatory agencies, to determine and construct on an individual utility basis not only what "reserve" or "standby" transmission and generation facilities may be required by each of them, but likewise what "firm" facilities would be required by each of them to sustain a continuity and reliability of present and future service; a clear abrogation of the rights of private enterprise. The state commissions and the utilities would thus be relegated to a position of "hopeful suggestion."

It is purposefully represented by proponents of the Act that the extensive interties to occur under the operation of the Act are intended to provide reserve capacities that could "revolve," "switch" or "spin" from one utility to another as their varying and different needs would permit and require, thereby affecting economies in required investment. We can see no way under such planning to avoid the circumstances of a good portion of what would otherwise be a utility's basic "firm" facilities from being drawn into the interties. We must conclude that such admitted efforts and purpose of interties to effect economies through optimum use may, by cancelling and obviating plans for construction on a local basis of firm and adequate standby facilities, make the resulting expansive interties established under the banner of reliability even more vulnerable to cascading power failures.

Entwined in the above consideration is a most obviously burdening condition that would result under the Act by forcing transmission utilities to act as "common carriers." Among other things this again would prevent a utility from effectively planning the route, size or use of any transmission lines proposed to be built by it to meet the needs of its customers, and would deprive such utility of any protection concerning service to existing customers or potential customers.

Involved in dictating the use, size, type, and route of facilities is of course the perplexing burden and requirement that would be on the FPC to determine who shall bear the cost of the facilities, and in resolving the associated problems of placing responsibility for maintenance and surveillance of such facilities.

With the advent of nuclear power generation, which is not at present as economic as fossil fuel generation, the administrative power granted the FPC under

the Act to influence and consequently as a practical matter to actually determine the type and location of subject facilities could result in waste of resources, such as the huge coal reserves available for generation in Wyoming, if the economic consideration were made secondary to other less critical considerations in determining the type and location of a plant.

We have in our comments above dwelt upon what we deem to be obvious practical and technical problems inherent in the Act. We however do not thereby intend to discount other well reasoned criticism. Included in such criticism is that which concludes that a full integration of the total electrical industry would result in extreme vulnerability to sabotage at established key points.

Another problem inherent in such Act is that, although it ostensibly applies only to large power suppliers, it in fact would, for all practical purposes, directly include, involve, and affect all utilities including the so-called distribution utilities, especially if such utilities wanted any voice whatever in the key and essential considerations involving their power supply. The potential divestiture of the various state commissions of their rate making authority is also an obvious unavoidable problem inherent in operation under the proposed Act.

In summation we must conclude that the proposed Act extends far beyond its moving purpose of accomplishing reliability. The one clear-cut purpose which the proposed Act would seem to immediately accomplish is to place the blame for any future power failures of any scope squarely on the FPC. Just as it is clear that such placing of blame is unfair, unrealistic and improper, it is clear that attempting to centralize the resolution of so broad and complicated a problem in one agency is equally inappropriate and unrealistic.

In seeking an appropriate solution to accomplishing reliability we refer to the statements of the FPC in its Report to the President dated December 6, 1965, concerning the Northeast Power Failure, wherein concerning the actions and reactions of the electric industry to such occurrence, it was concluded " * * * that the cascading of the failure was not inevitable and should not recur if the precautions we recommend are observed—and most of them are already being implemented by the industry: * * *" (p. 2) and

"There can be no absolute assurance that outages of the November 9 magnitude will not recur. On the other hand, there is no apparent reason why operating equipment and techniques cannot be improved to the point where the likelihood of recurrence would be so remote that it would not constitute a major worry to either the industry or the public. *We believe the many steps already taken by the utilities on their own initiative together with implementation of our recommendations for immediate and long-term measures, which are set forth at a later point in the report, can achieve that goal.*" (p. 28) (emphasis ours)

The above comments show that positive action by industry as coordinated through state regulatory commissions together with the efforts of the FPC, even though confined to the review of activities of utilities to identify deficiencies affecting interstate service, resulted in important and positive accomplishment without delay. We see merit in a coordinated effort being made in the matter of interstate interties and that the FPC is the agency best suited to coordinate this effort if full cognizance and effect is given to existing regulation and utility development. But this effort should not be translated into overburdening and overtaxing Federal regulatory pitfalls. We must not lose track of the fact that under the regulatory guidance of the state regulatory commissions, the electric industry has been and is a well oriented, organized, and developed industry with little parallel in our country's history, and as such it is capable of reacting at all times including times of emergencies as may be required in the best interests of the public.

Senator MOSS. Have you had any blackout problems in Wyoming in recent years?

Mr. LEWIS. No, Senator Moss; no major blackout problems. We have had minor ones which exist in every area. They have been what you might call quite minor.

Our generation exceeds—our transmission out of the State exceeds—

Senator MOSS. You generate more than you consume?

Mr. LEWIS. That is right. I think it is about 45 percent. I can be cor-

rected on that. With the interties between the utilities and the Bureau in the State, we really haven't had any great problems on blackouts.

Senator Moss. You export some power to us in Utah from the Kemmerer; don't you?

Mr. LEWIS. From Utah Power & Light; yes.

Senator Moss. That is a large generating plant?

Mr. LEWIS. It is a coal generating plant, steamplant. I think I am correct in saying that another unit may be going in.

Senator Moss. Would the provision of this bill guard you against blackouts, do you think? How would it be helpful, if at all?

Mr. LEWIS. The provisions of the bill, as we see it; it is such a complex bill I don't think that in writing a reliability bill that you could get the reliability job done without getting into so many other facets of regulations that it would just be a gigantic thing to comprehend in the future, it seems to me.

Senator Moss. Are your utilities involved in any regional councils such as we have heard have been set up?

Mr. LEWIS. We have the Rocky Mountain Power Pool. Western Wyoming is in the Northwest Power Pool. Whether or not they are involved in the Western States coordinating systems, I just don't know. I can't answer that.

Senator Moss. Thank you, Commissioner Lewis. We appreciate your testimony very much.

Mr. LEWIS. Thank you.

Senator Moss. Commissioner Hacking, the chairman of the Public Service Commission of Utah, is now with us. We will be glad to hear from you, Chairman Hacking. I understand that copies of your statement went to Washington, and we didn't get them before we left. So you proceed in any way you wish. We will be sure that the printed statement is in the record in full.

STATEMENT OF DONALD HACKING, CHAIRMAN, PUBLIC SERVICE COMMISSION OF THE STATE OF UTAH

Mr. HACKING. I don't think that it will serve any particular purpose for me to read my statement. It is a pretty general statement without resorting to highly technical discussion.

Senator Moss. We will put the full statement in. We will be glad to have you summarize it or highlight it or emphasize any points you want to make.

Mr. HACKING. Generally the statement is opposed to specific jurisdiction of the Federal Power Commission over strictly intrastate matters. And on this reliability thing, of course, my view is that the Federal Power Commission is very valuable in an advisory way in monitoring and reporting and recommending in this field.

Senator Moss. You would prefer the FPC to remain in an advisory and consultative position, rather than have mandatory powers such as they would assume under this bill?

Mr. HACKING. That is about the purport of my statement; yes, sir. It may be that Congress may want to give the Federal Power Commission more specific directives in this field of monitoring, reporting, providing information, because, of course, there is a problem on this reliability thing. It has always been with us. It has emphasized,

of course, by some recent disasters, general blackouts, which you are familiar with.

Senator Moss. We had some tremendous blackouts in the Northeast which I am sure triggered this bill. To what extent do we have assurance that we would not have a similar type of blackout here in Utah?

Mr. HACKING. I don't think the Federal Power Commission or the Federal Government or anyone else can bring about a situation where you assuredly won't have at least localized power interruptions. The power here, of course, is in the relaying effect. And, of course, that does take some overall looking. That is why I say that perhaps the Federal Power Commission could be the best body to at least do the monitoring, reporting, and providing of public information to the State bodies and to the industry.

Senator Moss. If there is a lack of interconnection between large grid systems, then the assurance of relief in a blackout declines; is that right?

Mr. HACKING. It works both ways. Of course, the very fact of interconnections enlarges the possibility of this cascading thing. The larger you make the interconnection, the chance of accident or malfunctioning is increased.

Not talking directly about the proposed bill, but talking generally about where we ought to go and where the public necessity requires, maybe consideration should be given to curtailing of interconnections that are so broad that they may be uncontrollable. Of course, those are things that are highly technical, and things that everybody has to move along with as the situation requires.

Basically, of course, you can increase the reliability by proper interconnection and initiating economies and doing a lot of things that the public interest requires. But when you get to expressing that this is nationwide and making it all one grid with all the threats of a total grid to reliability—total reliability—then you get into something that of course, you have to move into cautiously and as circumstances seem to require, and with proper consideration to all of the aspects of that.

Senator Moss. You are fearful that we might make the grid too large by going too fast on it?

Mr. HACKING. That could be. I don't say that that is what happened in the Northwest. There was a little failure there as you know and because the entire system perhaps wasn't as fully coordinated as it should have been, we had that terrific blackout. The difficulty about the blackout is when you get damages, then the blackout goes on. I don't suppose we have reached the point in the art of electric production, transmission, and distribution, to the point where you can avoid accidental breakdowns of the service from weather conditions, accidents of various kinds, construction accidents, and all those things. Yet you haven't reached the point in the art where you can assure absolute continuous service any place. But on this interconnecting thing, you have to have the interconnection in such a manner that those accidents or failures in a given system don't act and have a prolonged and a general failure blackout in a large area.

My point is, the best experts on that that we have are in the industry itself. There is no genius in the Public Service Commission of Utah or the Federal Power Commission or any other body. The experts, and the best experts on this thing, are in the industry.

Senator Moss. Do you have a feeling that they voluntarily are trying to accomplish the same results without the necessary requirement being placed on them by the Federal Power Commission or the State utility commissions?

Mr. HACKING. Generally, I agree with that statement. "Voluntarily" may not be entirely the word.

Senator Moss. It will be for their own self-interest.

Mr. HACKING. They have the obligation, the public obligation that is there, and it isn't entirely voluntary with them what they do. They are all under regulation. If we are talking strictly of public utilities as distinguished from Government power and so forth, they are all under stringent regulation and I think the regulation extends to these matters of power reliability, the placement of plants, the construction of transmission lines, the coordinating of equipment that must necessarily be installed, safety equipment. Those are of course matters that are already under full regulation. So when you say "long," it isn't quite long.

Senator Moss. Thank you very much, Commissioner Hacking. We appreciate your testimony. Your statement will be inserted in full in the record. It is very helpful. We appreciate having you. Thank you. (The complete statement follows:)

STATEMENT OF MR. DONALD HACKING, CHAIRMAN, PUBLIC SERVICE COMMISSION OF UTAH

Proposed Federal Electric Power Reliability legislation will interfere with electric power reliability in public utility systems because it takes the planning function away from the public utility which has the responsibility for providing reliable facilities and from the State regulatory commission which historically has regulated such functions. It would also create prolonged regulatory delays between the planning and completion of facilities required to meet urgent local needs. By a system of Federally controlled Regional Councils, National Committee Representatives, Advisory Review Boards, and FPC Staff, all planning functions of public utilities would be regulated nationally by FPC. Proposed electric reliability legislation generally would require the filing by each utility of all proposals for extra high voltage facilities two years in advance of construction, and by suspense orders, referrals to regional councils, federal, interstate, state, and local agencies and public hearings make its determination and consider protests of federal agencies which protests have the effect of staying the suspense order until the protest is withdrawn.

Such regulation would make it impossible for a state to permit or require a utility to proceed with construction of facilities without FPC consent, which would result in indefinite delay. These powers, together with other similar powers proposed, are without question matters that should be regulated by the state.

The proposed legislation would shift from the state to FPC responsibility to dictate which of two or more competing utilities should build particular transmission facilities, which should use them, and the location of the lines. State regulatory jurisdiction to require or approve the construction of generating facilities would also be seriously affected, because the state agency would be deprived of the power to determine who would build and use the transmission facilities and even the routing of such facilities.

Territorial integrity and territorial relationship utilities would become a FPC regulatory function instead of a state regulatory function. The proposed legislation would strip state commissions of its power to effectively regulate public utilities under the guise of regulatory reliability. Power reliability is essentially a local function and should be regulated by state commissions where it can be effectively and promptly exercised.

The bills, as proposed, would delegate to the FPC authority of many matters unrelated to reliability. These include aesthetic values; historic values; economics of interconnection, transmission, and generating plant location; pri-

orities and purpose of land use; territorial allocations and many other problems best understood and evaluated by state commissions.

Since the beginning of utility regulation, state commissions have had the authority and the ability to insure that adequate reliability and reasonable priced electric service be provided to consumers. State commissions have performed these functions well and electric utilities under their jurisdiction have provided all of the electric service required by the commissions.

The utility's management has always had the responsibility to determine how much should be spent for additional facilities to provide reliability, subject only to the regulation of the state regulatory commission.

Our view is that state commissions and the management of utilities being closest to the problem are best equipped to determine the need. The laws of Utah and, we believe, most of the states provide the framework where the state commission can cooperate to resolve questions involving generation, transmission, and distribution of electricity and interconnections among utilities in adjoining states. The FPC role can best be filled by continuing under the present federal status on a cooperative basis with state commissions and by exercising proper authority over federal marketing agencies. The Federal Power Commission, by keeping abreast of developments by issuing recommendations from time to time and generally carrying out its present responsibility in monitoring interstate operations, can make a substantial contribution to reliability.

For these reasons we do not believe that it is necessary to pass a new law under the guise of reliability which would preempt the already adequate covered regulation of electric utility planning and construction and local functions which would be better left to management of the utilities and to the state regulatory authorities. To do so would add a burdensome and expensive delay to planning and construction, of the facilities which already require many years of pre-planning and more years in the construction process.

In summary, we believe that state commissions are adequate to resolve any problems involving electric utilities' service and power reliability and that no new law is needed which would shift this responsibility to the federal government.

Senator Moss. Our next witness will be Mr. E. M. Naughton, who is president and general manager of Utah Power & Light Co. This is the principal supplier of power in the State of Utah.

This is a joint presentation. You are to be accompanied by Mr. L. R. Patterson, vice president of the Public Service Co. of Colorado; George W. O'Connor, president of the Montana Power Co.; Albert Carlsen, president of the Idaho Power Co., and J. A. McElwain, vice president of the Montana Power Co.

We are delighted to have you gentlemen. It looks as though we have all the large power suppliers here in this upper tier of mountain States. We welcome you and look forward to your presentations.

You are going to lead out, Mr. Naughton.

STATEMENT OF E. M. NAUGHTON, PRESIDENT, UTAH POWER & LIGHT CO.

Mr. NAUGHTON. In the interest of time we propose this panel type presentation. We would like our five witnesses to be considered as a body.

My name is E. M. Naughton and I am president of Utah Power & Light Co. I plan to make an introductory statement, and at the conclusion of our statements, a short summary.

We very much appreciate this opportunity to present our views on S. 1934 called the Electric Power Reliability Act of 1967 and related bills. This proposal for new legislation would vitally affect our electric utility industry and our ability to provide reliable low-cost electric service to our customers. We particularly want to thank you, Senator Moss, for arranging this hearing in Salt Lake City so people in

our region can be heard. We want the public to know what we have done, are doing, and our plans for the future to continually increase the supply of reliable electric service. We have arranged this type of presentation to state as concisely as possible and with minimum redundancy the views of the major investor-owned electric bulk power suppliers in the five-State area of Idaho, Montana, Wyoming, Colorado, and Utah. These statements are sponsored by each of the utilities presenting witnesses and, in addition:

Pacific Power & Light Co., Wyoming Division;
California-Pacific Utilities Co., Southern Utah Division;
Southern Colorado Power Division of Western Power & Gas Co.;
Cheyenne Light, Fuel & Power Co.; and
The Western Colorado Power Co.

Representatives of these companies are here and will be available as well as our witnesses to answer your questions.

We should also note that Idaho Power Co., The Montana Power Co., Pacific Power & Light Co., and Utah Power & Light Co. were signatory to the statement presented before this committee at the Seattle, Wash., hearings on this bill on December 20 and 21, 1967, and still stand on the statements made there.

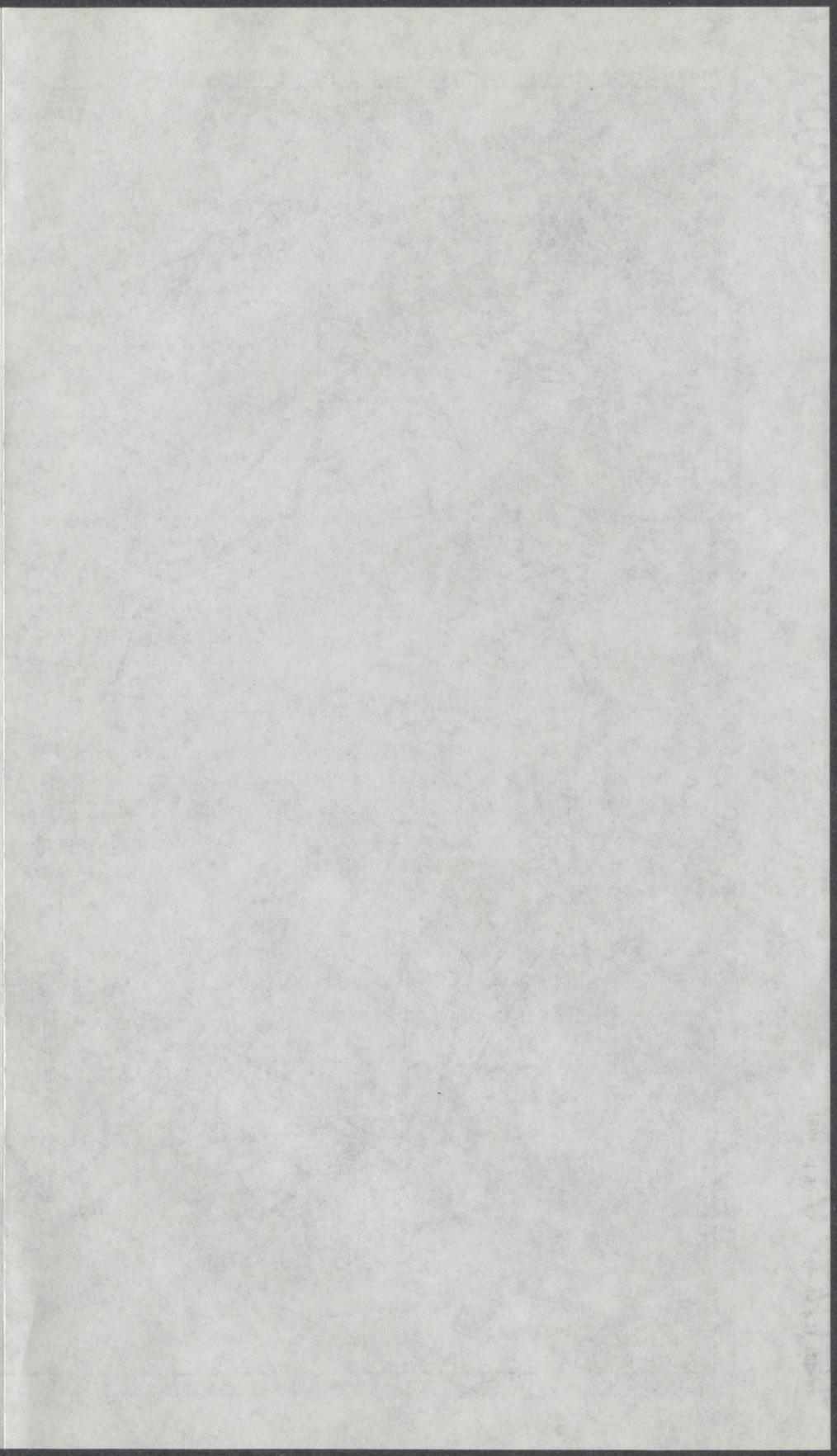
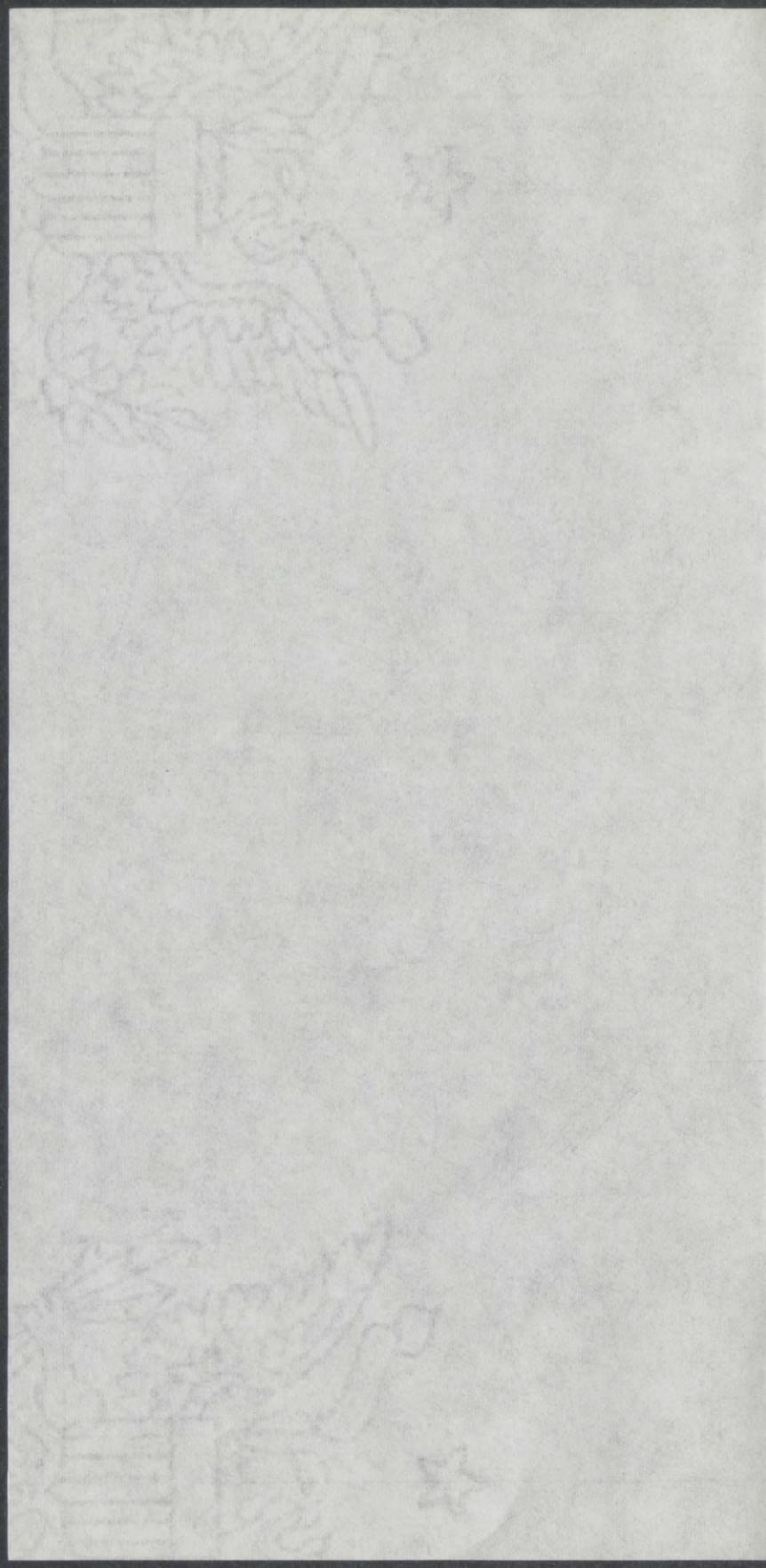
This five-State area comprises about 17 percent of the land area of the contiguous United States, but contains less than 2½ percent of the population of this country. There are, however, almost 5 million people in this vast area and the greater distances involved and the high, rugged terrain bring some special problems to the electric service supply for the area.

The companies presenting this statement represent all the major electric bulk power suppliers in this area except the Bonneville Power Administration and the U.S. Bureau of Reclamation. May I now refer you to the large map showing the electric supply systems in all of the 14 Western States. We have outlined our five-State area in heavy black and would like you to note that all the systems are interconnected. Indeed, they are interconnected with the whole United States with some small exceptions. Bonneville Power Administration has some lines in northern Idaho and western Montana. All the investor-owned electric transmission systems in the five-State area are shown in red, and the blue lines depicting other ownership are largely those of Bonneville Power Administration and the U.S. Bureau of Reclamation. The lines shown are those of high-voltage only and there is no attempt to depict the myriad of lower voltage lines extending for customer service and area coverage. We have submitted a smaller map with basically the same information, but in black and white for the record. I believe this portrays a pretty complete system with due consideration to distances and rather sparse population. My associate, Mr. Moffat, will now outline the company areas and major plants.

Senator MOSS. Mr. Moffat.

Mr. MOFFAT. In the northern Panhandle of Idaho, the territory is served by the Washington Water Power Co., shown in red. The blue lines are those of the Bonneville Power Administration. And then we come down to the territory of the Idaho Power Co., and the location of the Hells Canyon plants. You see a very heavy transmission required here to bring the hydrogenation to the load centers. And





they are intertied with the Utah Power & Light Co. here and in turn the California-Pacific Utilities Co. serves southern Utah around the Cedar City area.

Moving now to the eastern part of the territory, we are interconnected through the lines of the Bureau, to the Western Colorado Power Co. I should say, Senator Moss, that this is Glen Canyon plant here, and this is the Four Corners plant referred to earlier.

Senator Moss. They are tied together now?

Mr. MOFFAT. Yes; they are. The Western Colorado Power Co. has an interconnection agreement with the New Mexico Public Service Co.

This territory around Pueblo is that of the Southern Colorado Power Division of Western Gas—Western Power & Gas Co. Here is the territory of the Public Service Co. of Colorado, around Denver. And we move up to the territory of Cheyenne Light, Fuel & Power Co., and the rest of Wyoming here is largely served by the Pacific Power & Light Co., Wyoming division.

Then we move up to the territory of the Montana Power Co., and close the circle back to the northern Panhandle of Idaho and the Bonneville Power Administration.

Senator Moss. The line that comes down through western Colorado. That would be the Bureau power?

Mr. MOFFAT. Yes. This is a Bureau line from Albuquerque to Ship Rock, N. Mex. The Four Corners plant is right below that.

Senator Moss. Then it goes north and ties in at Cheyenne?

Mr. MOFFAT. Yes.

Mr. NAUGHTON. We have the Glen Canyon plant to the right.

Mr. MOFFAT. And there is Flaming Gorge.

Senator Moss. Thank you. That is very graphic.

Mr. NAUGHTON. The nine companies we are representing had a peak load of about 4.4 million kilowatts last year and total resources of nearly 5.4 million kilowatts, providing a margin of some 20 percent—certainly adequate for reliability as far as capacity is concerned. These companies serve approximately 1.2 million customers in a service area of over $\frac{1}{4}$ million square miles and have 9,000 miles of high-voltage transmission lines—100 kilovolts or over—2,600 miles of which operate at 230 kilovolts.

So much for the background and now to get into the subject of this hearing. Reliability is a primary objective of the electric utility industry and has been since the industry was founded in 1882. "Reliability" is a relative term and electric service will never be perfect as long as manmade machines and equipment of an exceedingly complex nature are employed. Nor will the service ever be perfect as long as it is operated by people. But these impediments in no way deter the objective of maximum reliability, but even serve to sharpen the challenge. This is particularly so as we have a vigorous industry expanding generally at about twice the rate of the expansion of the gross national product over a long period of years. It becomes more challenging, also, to properly utilize the technological developments that are constantly taking place. In only a few short years we are installing generating units 20 times as large as they were two decades ago and have about doubled the voltages of the transmission lines in service.

New equipment for system controls for maximum service continuity, voltage and frequency regulation for maximum quality, auto-

matic switching, computerized electronic facilities to control generating unit and transmission line loadings, and the vast networks of communication equipment for transmitting operating data as well as voice, all add to the complexity of the job at hand. Reliability, however, cannot be considered independently of economic value judgments. For instance, completely duplicating services would add unconscionably to the costs to our customers who pay the bill. It would also defeat the underlying long-established basic premise of utility service which was to eliminate unnecessary duplication and direct competition by substituting governmental regulation to balance the equities of the owners and the customers. This system has worked well under private business-oriented management with fair regulation and according to Federal Power Commission Chairman Lee White:

We have the best power system in the world, let there be no mistake about that.

In discussing "reliability" as it relates to this bill, we do not intend to discuss localized distribution outages. There will always be a few of them as the cost would be prohibitive to control them more than we now do. They cause some inconveniences, yes; but serious damage, no. When a car breaks off a utility pole or a trenching machine digs up an underground cable, service is interrupted. Occasionally a transformer burns out because someone has added a new large load without notifying the utility or perhaps someone has shot the insulators on a line and, again, a relatively small number of customers are out of service, usually for rather short periods.

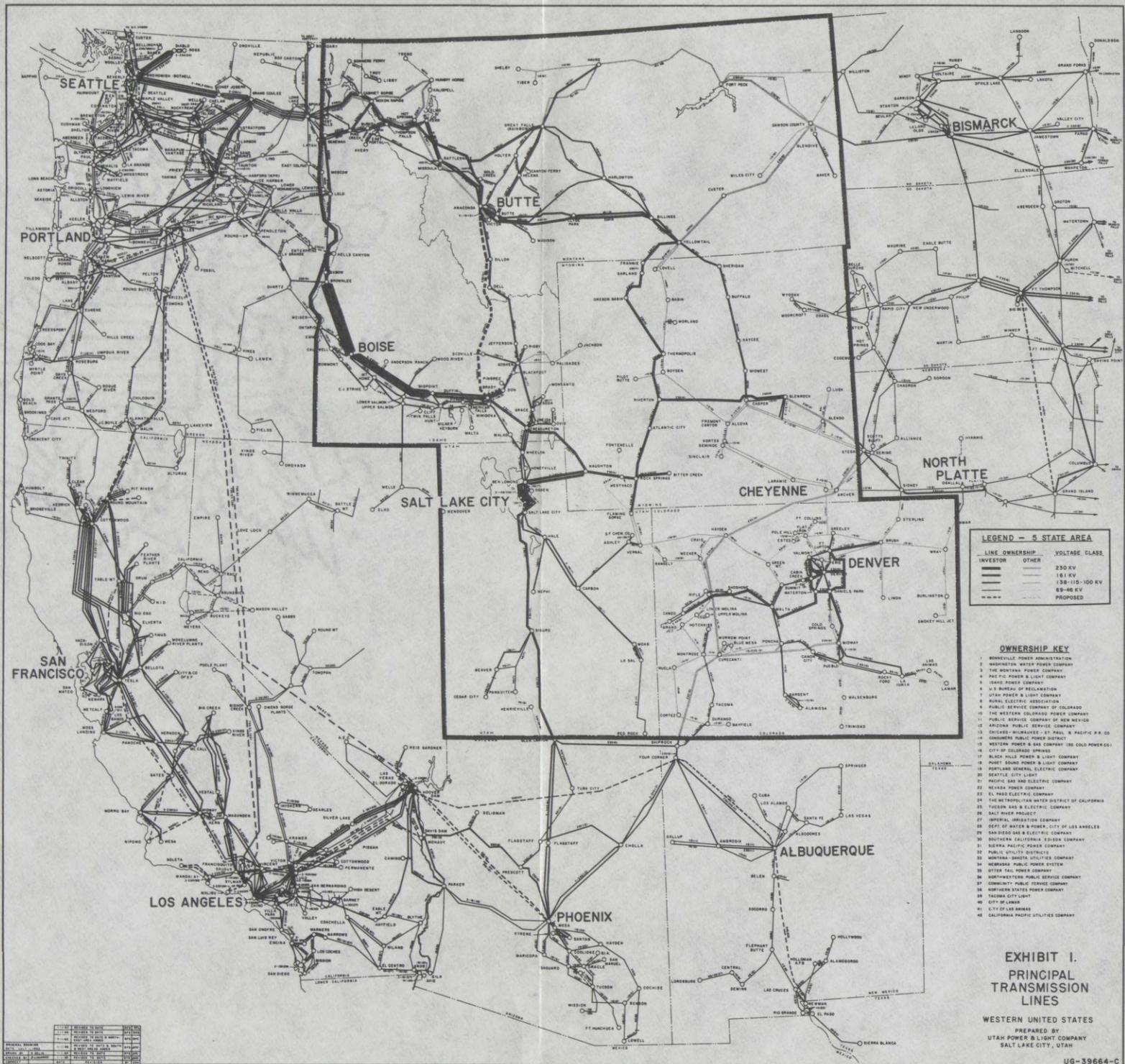
Here we are talking about high-voltage system breakups, usually affecting more than one company's system and particularly the cascading type of power failure, such as occurred in the much-publicized Northeast blackout of November 1965. Senator Magnuson, at the Seattle hearing, said:

Although the Northeast blackout and extensive power failure in PJM system, fortunately did not result in much more than a great deal of inconvenience and some extra expense to the millions of people living in these areas, we all realize that such blackouts could, under certain circumstances, lead to disaster.

It is to the latter part of this statement that our presentations will be directed. These major outages, of course, have stimulated the electric utility industry to exert even greater efforts and taught us, if we had ever forgotten, that you can have more than one problem at the same time, or that one problem may precipitate others.

An electric system of a company today is founded on many intra-connections within that system. Single systems are tied in with one or more contiguous systems through interconnections. Such interconnections do increase the exposure to malfunctions, but have many advantages that accrue to the benefits of all electric customers through lower cost service. Some of these advantages are:

1. Economics of scale through using larger generating units and higher capacity, higher voltage lines.
2. Reduced total reserve requirements through ability to call on one's neighbors.
3. Staggered installations of larger units as to time among members of a pool.
4. Minimized unused capacity.
5. Planned maintenance outages.



LEGEND - 5 STATE AREA

| LINE OWNERSHIP | VOLTAGE CLASS |
|----------------|----------------|
| INVESTOR | 230 KV |
| OTHER | 141 KV |
| --- | 138-110-100 KV |
| --- | 69-46 KV |
| --- | PROPOSED |

- OWNERSHIP KEY**
1. MINNEAPOLIS POWER ADMINISTRATION
 2. WASHINGTON WATER POWER COMPANY
 3. THE MONTANA POWER COMPANY
 4. PACIFIC POWER & LIGHT COMPANY
 5. GRAND POWER COMPANY
 6. U.S. BUREAU OF RECLAMATION
 7. UTAH POWER & LIGHT COMPANY
 8. RURAL ELECTRIC ASSOCIATION
 9. PUBLIC SERVICE COMPANY OF COLORADO
 10. PUBLIC SERVICE COMPANY OF NEW MEXICO
 11. ARIZONA PUBLIC SERVICE COMPANY
 12. COLORADO POWER & GAS COMPANY (THE COLORADO POWER)
 13. COLORADO PUBLIC POWER DISTRICT
 14. WESTERN POWER & GAS COMPANY (THE COLORADO POWER)
 15. CITY OF COLORADO SPRINGS
 16. BLACK HILLS POWER & LIGHT COMPANY
 17. PUEBLO POWER & LIGHT COMPANY
 18. PORTLAND GENERAL ELECTRIC COMPANY
 19. SEATTLE CITY LIGHT
 20. PACIFIC GAS AND ELECTRIC COMPANY
 21. NIELSEN POWER COMPANY
 22. EL PASO ELECTRIC COMPANY
 23. THE METROPOLITAN WATER DISTRICT OF CALIFORNIA
 24. TUCSON GAS & ELECTRIC COMPANY
 25. SALT RIVER PROJECT
 26. IMPERIAL IRRIGATION COMPANY
 27. CITY OF SANTA BARBARA, CITY OF LOS ANGELES
 28. SAN DIEGO GAS & ELECTRIC COMPANY
 29. SOUTHERN CALIFORNIA Edison COMPANY
 30. SOUTHERN PACIFIC POWER COMPANY
 31. PUBLIC UTILITY DISTRICTS
 32. MONTANA POWER UTILITIES COMPANY
 33. NEBRASKA PUBLIC POWER SYSTEM
 34. OREGON TAIL POWER COMPANY
 35. NORTHWESTERN PUBLIC SERVICE COMPANY
 36. CONNECTICUT PUBLIC SERVICE COMPANY
 37. SOUTHERN STATES POWER COMPANY
 38. TACOMA CITY LIGHT
 39. CITY OF LANSING
 40. CITY OF LAS VEGAS
 41. CALIFORNIA PUBLIC UTILITIES COMPANY

**EXHIBIT I.
PRINCIPAL
TRANSMISSION
LINES**

WESTERN UNITED STATES
PREPARED BY
UTAH POWER & LIGHT COMPANY
SALT LAKE CITY, UTAH

UG-39664-C



1. This drawing is a preliminary sketch of a mechanical assembly, possibly a valve or pump component, shown in a perspective view. The drawing is rendered in a light, sketchy style on a textured, greyish paper. It features a central cylindrical body with various ports, flanges, and internal components. The drawing is divided into several sections by faint lines, suggesting different views or sub-components. The overall appearance is that of a preliminary design or a technical sketch.

2. The drawing shows a central cylindrical body with a flange at the top and a smaller flange at the bottom. There are several ports or openings on the side of the cylinder. The drawing is divided into several sections by faint lines, suggesting different views or sub-components. The overall appearance is that of a preliminary design or a technical sketch.

3. The drawing is a preliminary sketch of a mechanical assembly, possibly a valve or pump component, shown in a perspective view. The drawing is rendered in a light, sketchy style on a textured, greyish paper. It features a central cylindrical body with various ports, flanges, and internal components. The drawing is divided into several sections by faint lines, suggesting different views or sub-components. The overall appearance is that of a preliminary design or a technical sketch.

100-1000-1000

6. Advantages of load diversities due to system characteristics, seasonal, climatic, time, and precipitation patterns.

7. Maximized use of streamflow for hydrogeneration.

Interconnections and pooling evolved slowly at first in our region, primarily to utilize excess hydrogeneration that otherwise would have been water spilled over the dam, and this resulted in real savings. My own company interconnected with Idaho Power Co. in 1927 and with the Montana Power Co. in 1941.

In the mid-twenties, one might consider the electric facilities of all the companies in the five States as consisting of several isolated service areas. Exhibit 2 shows the transmission systems as they existed in 1925 and clearly brings out this isolated situation. As time went on and loads grew, transmission technology progressed, and it became economical to tie individual systems under one ownership more closely together and also to tie some contiguous systems together. This progress is brought out by exhibit 3 which shows the transmission systems as they existed in 1941. A number of additional transmission lines were later built within the various companies' systems appearing here today, and more and stronger interconnections were built between contiguous systems. This can be seen by comparing the transmission systems in the five States as they existed in 1941 with the transmission systems as they existed in 1967 as shown on exhibit 4. Exhibit 4, insofar as the five States are concerned, is exactly the same as exhibit 1. However, exhibit 1 has the further advantage of showing interconnections with electric systems outside the 5-State area.

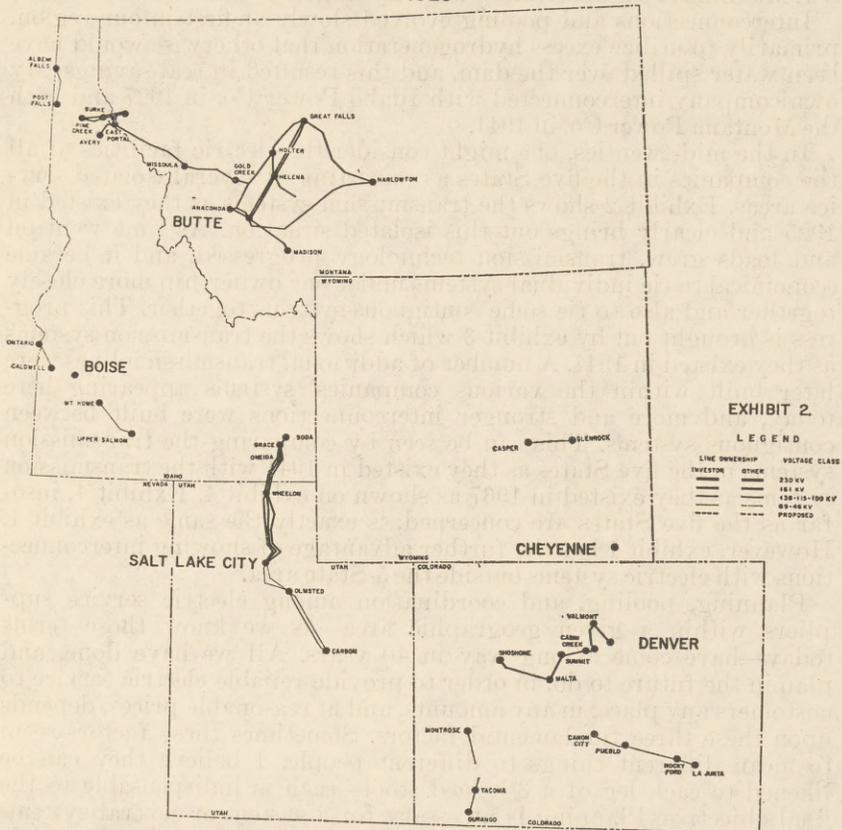
Planning, pooling, and coordination among electric service suppliers within a given geographic area—as we know those terms today—have come a long way in 40 years. All we have done, and plan in the future to do, in order to provide reliable electric service to customers any place, in any amounts, and at reasonable prices, depends upon these three fundamental factors. Sometimes these factors seem to mean different things to different people. I believe they can be likened to each leg of a 3-legged stool—each is indispensable to the final objective. Planning is necessary for a system or several systems to be physically adequate to do the job, and good planning is a basic precept of good operation. Pooling of the resources of two or more systems results in economies only if we have good plans. Coordination in developing good plans to construct and operate contiguous electric systems results in the greatest reliability of service to customers at the lowest price. Best operations are not possible without good, well-planned systems, and the best systems in the world will not produce reliable and economical service unless operated properly.

The evolution of our systems must be understood to grasp some of the problems in interconnected operations, as we feel that we have been real pioneers in this endeavor. Our region now consists of two basic operating pools. Idaho Power Co., the Montana Power Co., Pacific Power & Light Co., and Utah Power & Light Co. are members of the Northwest Power Pool which was formally organized in 1942.

This pool was rather fully described at the Seattle hearings, in which we participated, and will not be repeated here.

Utah Power & Light Co., the Montana Power Co., Pacific Power & Light Co., Public Service Company of Colo., Southern Colorado Power Division of Western Power & Gas Co., Inc., Cheyenne Light,

PRINCIPAL TRANSMISSION LINES
INTERMOUNTAIN REGION
1925

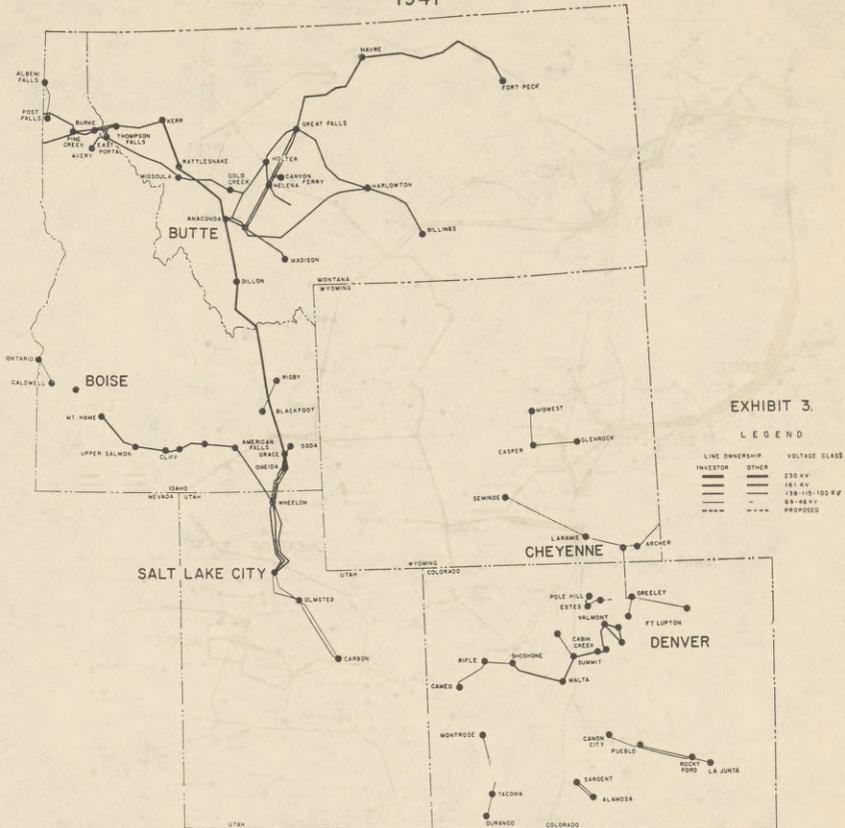


Fuel & Power Co., and The Western Colorado Power Co., all belong to the Rocky Mountain Pool which was formally organized in 1958.

This pool functions as a voluntary organization representing eight investor-owned utilities—and six of other ownership—Federal power systems, rural electric and municipal systems. It comprises the electric systems in the States of Utah, Colorado, Wyoming, Montana, and parts of Nebraska, South Dakota, New Mexico, and Arizona. The pool has policy and operating committees. The policy committee determines membership in the pool and general policy matters. The operating committee plans the operation of the electric power systems for optimum power and energy production for the greatest benefits to the pool members.

The pool establishes procedures for operation which cover such activities as load and resource planning, maintenance outage scheduling, power dispatching procedures, including operation during disturbances, pool relay, and communication coordination, voltage levels and coordination of load shedding during emergencies. The operating committee meets six times each year to consider these matters to insure

PRINCIPAL TRANSMISSION LINES
INTERMOUNTAIN REGION
1941



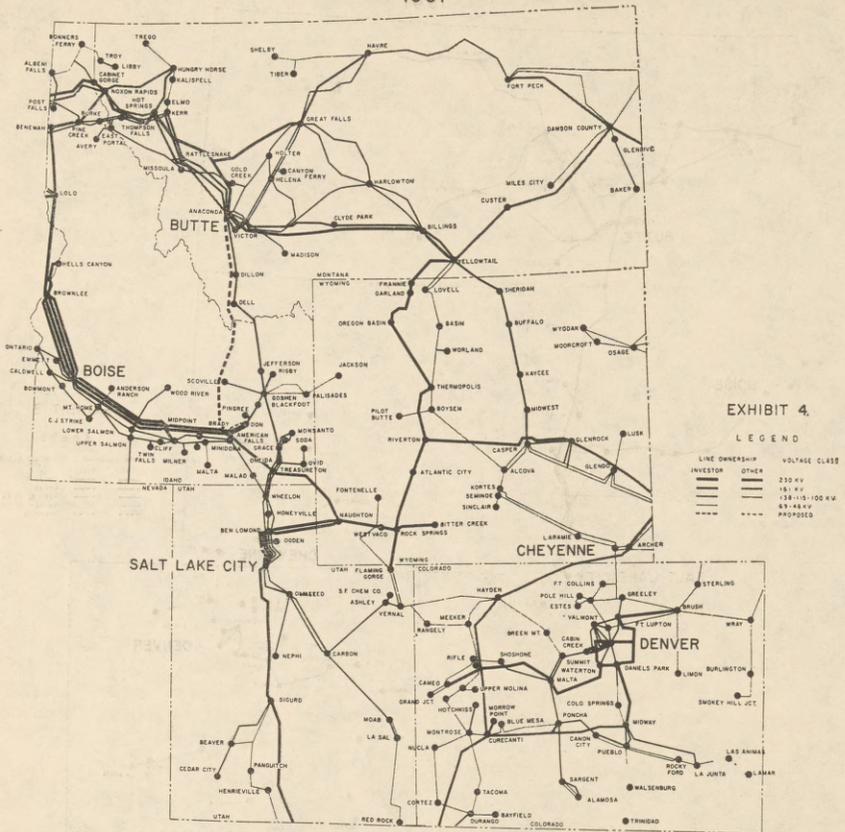
that each member is thoroughly informed as to the future planning and operation of all the systems.

It will be noted that three companies belong to the two pools which I mentioned, and while this is basically a matter of geography and interconnections, it is most helpful in achieving coordination between contiguous pools. Such continuing overlaps naturally provide the best integration, coordination, and operations that could possibly be achieved.

Today, the systems of all the companies in the five States under discussion are operated to a large degree on a fully coordinated basis. Our resources are pooled for maximum efficiency of operation to the end that our customers are served at the lowest prices. The operations of our systems are coordinated to give maximum reliability of service to our customers.

In addition to what we do by way of operation within the 5-State area, the systems in that area interconnected with all the systems that now make up the Northwest Power Pool. We have been a member of that pool, as I said earlier, since 1942.

PRINCIPAL TRANSMISSION LINES
INTERMOUNTAIN REGION
1967



We interconnected the system of Utah Power & Light Co. with that of Arizona Public Service Co. in 1964, and thus became integrated with all of the electric systems in the Pacific-Southwest Power Pool.

We have built interconnections at various times with voltages and capacities in concert with economies to be obtained to meet load requirements for the foreseeable future. As the need develops, more lines will be built and they will operate at higher voltages. For example, the Montana, Idaho, and Utah companies plan to construct in 1969 a 230-kilovolt high-capacity transmission line between Anaconda, Mont., and American Falls, Idaho, to strengthen the ties, not only between those three companies, but with the Washington Water Power Co. and the Pacific Power & Light Co.

We have power interchange contracts as between the companies operating in the five States and many as between companies operating outside the five States.

We have cordial relations and firm contracts to perform transmission services for the Bonneville Power Administration, the Bureau of Reclamation, many municipalities and rural electric cooperatives.

Some of us operate the distribution systems of certain municipalities within our area.

Through all these measures, which have come about in concert with the growth in technical knowledge as it can be applied to providing better electric service, we believe that we have achieved all of the objectives that S. 1934 would achieve insofar as planning, coordinating, and pooling our systems are concerned toward the end that our service would have maximum reliability and would be furnished at the lowest possible prices to our customers. The prices at which our wholesale service is supplied municipalities, REA's, and like entities, are under the full jurisdiction of the Federal Power Commission.

Operating as we do today is a very complex business requiring much organization dealing with operations and methods of better achieving our goal for maximum reliability. Mr. Patterson, senior vice president of electric operations, Public Service Co. of Colorado, will make this presentation.

Senator Moss. Thank you very much. If you would care to go on, we will return to question you later.

Mr. NAUGHTON. That would be better. We will save time.

Senator Moss. Mr. Patterson.

**STATEMENT OF LeROY R. PATTERSON, SENIOR VICE PRESIDENT,
ELECTRIC DEPARTMENT, PUBLIC SERVICE CO. OF COLORADO,
DENVER, COLO.**

Mr. PATTERSON. Thank you, Mr. Moss.

My name is L. R. Patterson. I am senior vice president, electric department, Public Service Co. of Colorado, Denver, Colo. I am also a member of the Executive Committee of the Western Coordinating Council and chairman of the Policy Committee of the Rocky Mountain Power Pool.

I appreciate the opportunity to appear before this committee today as a representative of one of the larger electric utility systems in the Rocky Mountain area, to discuss the role of the Western Systems Coordinating Council in enhancing electric power system reliability.

Over a long period of years the various power pools in the western part of the United States have developed to a high degree of efficiency and reliability within their own areas. As pool-to-pool interconnections have been made, it became obvious that a new order of problems was arising.

Transmission lines were longer, the interconnected systems were rapidly becoming larger, the number of individual generating units was much greater, coordination and communications were inadequate. Added to these problems of growth were the problems of environmental improvement. Generation resources had to be dispersed to more remote locations.

By 1964 the Pacific Coast Northwest-Southwest intertie was approved and it became apparent that some large-scale coordination studies had to be made. The other event which further confirm this need was the so-called Glen Canyon closure on October 20, 1964, which, established a transmission interconnection between the northwest Rocky Mountain area and the southwest portions of the region. That was the time, Senator, when the system in Utah became interconnected

with the system in Arizona and with the Colorado River storage project.

With these new ties, the western region became solidly interconnected by a ring of transmission which has been named "the Big Donut."

Mr. Moffat, could you point out the donut on the map?

Senator Moss. It is a fairly sizable donut.

Mr. PATTERSON. Yes, sir; it is, Senator, compared to some eastern areas, it is awfully big. A lot of square miles.

As a result of these interconnections, the bulk power systems of the 13 Western States operate as one system.

Recognizing this new set of system conditions which would be created by establishment of "the Big Donut," a number of organizations initiated studies of its operation. The first of these, the Pacific Intertie Engineering Guidance Committee, established September 2, 1964, had the responsibility of conducting load flow and stability studies and developing operating criteria and procedures in connection with the interconnected system after the completion of the elements of the Pacific intertie. The second, the Western Operations Subcommittee, a subcommittee of the North American Power Systems Interconnection Committee, was organized to coordinate the operations of systems in the western region in connection with the Glen Canyon closure and the later closing of certain East-West ties.

North American Power Systems Interconnection Committee, commonly known as NAPSIC, is a voluntary organization of representatives of every major power pool in the United States and Canada. Its purpose is the formulation of criteria and procedures for the coordinated operation of the interconnected systems and power pools. These "guidelines" have been reduced to writing and when approved by the member pools, become official operating manuals or "guides."

Other organizations as well as individual utilities were also concerned with certain phases of the operation of these interconnected systems. One of these, west Associates, which was formed in 1964 for the purpose of regional planning of generation and transmission facilities in Arizona, southern California, Colorado, Idaho, Nevada, New Mexico, Utah, Texas, and Wyoming, found it necessary to expand the scope of their load flow and stability studies to include the whole western region.

Studies performed by these various organizations demonstrated the need for one organization to coordinate the planning and analysis of the operation of the total interconnected systems in order to eliminate duplication of effort and to assure that opportunity was provided for participation by all the utilities in the region.

The initial step leading to the formation of such an organization covering all the 13 western States was taken in 1966 when the Pacific Intertie Engineering Guidance Committee appointed an ad hoc committee to investigate the feasibility of, and to develop basic guidelines for a regional council. In early 1967 the committee complete a report which recommended that such a council be formed. The first organizational meeting of the new Western Systems Coordinating Council was held in Los Angeles in March 1967. Widespread interest in the formation of such a council was indicated by the attendance of 68 representatives from 40 agencies throughout the western States and

Canada. These representatives unanimously agreed to form the Western Systems Coordinating Council. Subsequent meetings developed the basic principles of organization, aims, and objectives which have been heretofore stated. An invitation was extended to all the utilities operating bulk power systems in the western United States and southwest Canada to join and participate in the activities of the council. At the time of the first formal meeting of the council on October 13, 1967, 40 utilities had joined.

Thus, WSCC is a council of the representatives of 40 utilities which either generate or transmit to points of distribution electrical energy in the 13 western States and southwestern Canada.

Included in the membership of the council are 19 investor-owned utilities and 21 public agencies, including municipalities, public utility districts, generating and transmission associations, the Bureau of Reclamation, the Bonneville Power Administration, and the Department of the Army. The present membership represents substantially all of the bulk power systems in the area. However, membership in the council is voluntary and open to all power systems. It can be anticipated, therefore, that additional utilities will join the council when, as the result of progress of interconnection and the evolution of their systems, it becomes evident to them that there is a need to participate in regional coordination.

The primary purpose of WSCC is to promote the reliable operation of interconnected bulk power systems by the coordination of planning and operation of generating and interconnected transmission facilities. The council provides a formal means for exchanging information and system data and for making necessary regional studies and recommendations designed to increase reliability of the interconnected bulk power systems. In order to accomplish its objectives the council will:

1. Prepare and keep up to date a forecast of the future electrical needs of the western region;
2. Accumulate data supplied by the member systems relating to their plans for generating and transmission facilities necessary to meet these future demands;
3. Perform regional studies based on the above for the purpose of assuring the reliable operation of the western regional bulk power network;
4. Develop criteria for elements of system design and for operating procedures which affect the reliability of operation of the interconnected systems; and
5. Provide the means for coordination of the operation of the western regional network with that of interconnected systems outside the region.

Reporting to the council are two standing committees made up of representatives from each of the member systems. The first of these, the Planning Coordination Committee, will accumulate necessary system data, perform regional studies, and formulate reports and recommendations to the council. The second, the Operations Committee, will review and analyze day to day, as well as future, operation of the interconnection systems and operating procedures, and recommend to the council new or modified operating procedures as they may be required from time to time to assure reliability. The council as a whole will constitute a forum at which the results of the studies and recommendations of these two committees will be presented and dis-

cussed and new or modified criteria and procedures reviewed and approved.

Throughout the foregoing description of WSCC and its activities two terms have been used which require some explanation. The first of these is "reliability" which is a very broad term, some of the implications of which involve consideration of continuity of service to individual customers or small groups of customers. This is obviously not the proper concern of the council, but rather the responsibility of individual power suppliers. Therefore, as used in this statement, "reliability" is the degree of assurance of a bulk power supply system in the delivery of electricity to major points of distribution. The term "bulk power system" embraces generating plants, transmission lines, and substations which collectively furnish power to these major points of distribution.

The attainment of the objectives of reliability requires careful consideration of many separate and distinct aspects of power system planning, operation, and maintenance. The following is a list of some of the more important of these:

1. Carefully prepared estimates of future load requirements both short term and long term.
2. Development of transmission network and generating resources sufficient to meet these future demands.
3. Provision for adequate and properly distributed spinning reserves.
4. Adequate and reliable communications systems.
5. Adequate instrumentation of critical elements of the bulk power system including dispatching, central plants, and substations.
6. A coordinated and continuously reviewed system of protective relaying.
7. Established operating procedures to cover emergency conditions.
8. Auxiliary provisions for restoration of service including sources of power for safe shutdown as well as rapid restarting of generation facilities.
9. Careful consideration of credible contingencies upon which both system planning and operation must be based.

It is the responsibility of each utility in the first instance to plan the design, development, and operation of its system in a manner that will provide reliable service to its customers. It is also necessary that existing pools and similar associations concerned with the development of resources to meet constantly growing demands for electricity continue to carry out coordination of planning and development within their own respective areas.

Beyond, this, however, broader regional coordination must be provided. We believe that WSCC, based on the firm and proven foundation of cooperation among all segments of the industry in the West and imbued with the primary objective of maintaining and improving reliability of electrical service, provides the necessary vehicle for carrying out the required regional studies and for exposing to all participants the needs of the region. It also provides the means to implement the actions required to fulfill the objective of achieving reliability.

I am able to report to you today that WSCC has a 1968 budget of \$220,000, more than 90 percent of which has been paid in to date. The two working committees are hard at work and are well staffed with capable people.

I might explain, sir, that over and above the \$220,000 in cash which will be basically spent for rental of time on the very large computers, each member is asked to supply a capable person to serve on one of these two committees, and this service is at the expense of his regular employer. We have had no problem in staffing the committees. The member companies and systems have supplied some of their most able people. So I have a great deal of confidence in the work that they are doing.

As was mentioned here earlier today, the chairman of the WSCC and the chairmen of the two committees, are meeting today in Washington with the Federal Power Commission and some of the public utility commissions are also represented there.

I must point out, too, that when any of our committees meet, the Federal Power Commission is advised so that they can have observers at these meetings.

I believe that this description of WSCC and the brief discussion of the history of cooperation and coordination in the planning and operation of the bulk power systems in the West are conclusive evidence that additional legislation such as S. 1934 is not needed. Rather, I believe the evidence indicates that the utility systems now responsible for serving the area are and have been ready, willing, and able to meet the requirements of the area with a very high degree of reliability, and in many fields are leaders in developing and using new technology.

Thank you for the opportunity to testify.

Thank you very much, Senator Moss.

Senator Moss. Thank you, Mr. Patterson. That was a very fine statement and a good description of the Western Systems Coordinating Council which apparently is a very effective and going concern.

STATEMENT OF GEORGE W. O'CONNOR, PRESIDENT, THE MONTANA POWER CO.

Mr. O'CONNOR. My name is George W. O'Connor, and I reside at Butte, Mont. I am the president of the Montana Power Co. and chief operating officer in charge of electric operations.

We appear before this committee today in opposition to S. 1934 and similar bills before your committee.

In appearing before you, I want to make it perfectly clear that we are all concerned with reliability of service. It is a subject that is constantly with us and being reviewed almost daily to assure that the 99.99-percent record of performance of the electric industry will not only be maintained but improved upon.

The subject of reliability of our service covers every possible facet of our operations, from the distribution line to a home to the extra-high-voltage transmission lines and power grids, from the switchbox at an individual service to the large generating units providing the electricity.

The problems of maintaining reliable service embrace almost every possible behavior of man and nature, from a small boy with a .22 rifle to an earthquake or freezing blizzard, from a drunk behind the wheel of a car to a human error in dispatching where a decision must be made at an instant without the benefit of knowledge about what caused the disturbance. We are even required to plan and, to the best of our ability,

maintain reliable service in the face of great social upheavals, such as we have so sadly experienced in this country this month.

With all the hazards of operating in our complex society, I believe all segments of the electric industry have done a remarkable job in the constant chore of providing electricity to our Nation. We do not suggest that we can rest on our laurels or become complacent. We must continually strive to improve that record and correct any possibility of weakness in our system. The question is, "How do we best achieve this goal?"

Mr. Naughton and Mr. Patterson have told you how we are working together in the Rocky Mountain area to maintain our good record and to improve on it in the light of increased technology in the electric field.

We all want to perform to the best of our ability to insure a reliable and adequate supply of electricity to our customers at reasonable rates. Reliability is one of the major elements of our product. If individual, house-size or industrial-size units were more reliable than our present systems, within the realm of economics, people would have such units. If our service is not reliable, American ingenuity will seek alternatives to our service and, I suspect, will find them if we do not perform adequately.

Therefore, it is in our self-interest to maintain the highest degree of reliability within the framework of maintaining a product that is economical for our customers to use.

So the question is not do we want reliable service but, rather, how do we best achieve it? Addressing myself to this legislation only so far as it pertains to achieving reliability and leaving to others those questions which have no bearing on reliability which are embodied in S. 1934, I must answer the question, "Will S. 1934 help achieve additional reliability?" with an emphatic "No." In my opinion, it will do just the opposite.

Before addressing myself to the specific provisions of S. 1934 as they apply to reliability, let me make a point by describing briefly to you the Montana Power Co. system.

We are what might be classified as a medium-sized utility company, operating in the western two-thirds of the State of Montana, serving both electricity and gas in most of our service area. We serve some 96,000 square miles of land area, which is the largest area served by any utility company in the United States. In that area, we have a population of approximately 563,000 people. It is an area which is larger than all of the New England States, plus half of the State of New York. Our electric system includes 4,686 miles of high-voltage transmission lines and 9,733 miles of distribution lines. We have a system capability of 803,000 kilowatts. Our system serves approximately 167,000 electric customers. We have an average population of 5.8 persons per square mile in our service area. Our transmission lines traverse the Continental Divide of the Rocky Mountains in several places, some of which are over 7,000 feet above sea level. These transmission lines, as is the case in many of the areas served by the other companies of the Rocky Mountain area, go through areas where the average annual snowfall exceeds 195 inches. The temperatures in our service area range from 40° below zero in some winters to 100° above in the summer.

Let us compare this with Consolidated Edison Co. serving the New York area. Consolidated Edison has about 600 square miles in its service area, or approximately six-tenths of 1 percent of ours, and serves some 8,800,000 persons located in that area, or 1,563 percent of our population. Compared to our 5.8 persons per square mile, Consolidated Edison has 14,660 persons per square mile, or 2,528 percent of the density of our area. In New York City alone, it has 24,700 people per square mile.

As one can readily see, the problems of maintaining good, reliable, and adequate service are completely different between these two systems and must, of necessity, include completely different management decisions, as well as operating personnel to maintain each system. The planning and operation of a system to serve New York City must be adapted to its unique problems, just as the planning and operating of a system serving a comparatively sparsely populated area like Montana must be adapted to its problems. Each system has a physical makeup unique to its service area, requiring different solutions, different thinking, and different personnel training.

The same principle is true in the operation of the Rocky Mountain area as compared to the operations of the New England and New York areas. Our planning and operating problems are completely different. I know that S. 1934 has been characterized as a legislative method to prevent "cascading outages." Federal legislation or standards just are not amendable to these differences on a national basis. This is one of the principal reasons why this is not a field in which legislation will aid in our mutual goal to seek to maintain and improve our respective systems and their area reliability.

It is our firm belief that the provisions of S. 1934, if enacted, would be a serious detriment, rather than an aid, to attaining reliability of service.

Its provisions are not compatible with the management decisions required to meet our expanding loads.

Proper and successful operations of an electric utility company require constant planning and revising of plans, constant operational supervision and changes thereof, as well as constant surveillance of methods of raising the necessary capital required to finance needed system additions and maintenance.

These are decisions that must be made at both operational and management levels. They are not decisions which can await the cumbersome process of Federal administrative procedure.

To subject management decisions to Federal administrative modification and veto will create havoc in our ability to meet our responsibility to both customers and investors.

Responsibility for decisions in the planning, financing and operating field must be left with the local management. Responsibility cannot be divorced from any segment of running a utility at any level.

To give the Federal Power Commission the ultimate decisionmaking power, as this bill does, over our planning will create chaos, not only in planning but, more important, in financing. When we, in management, can no longer justify to our investors how their money will be spent, their faith in their investment will be eroded.

The bill presupposes that a Federal Power Commission can make thousands of planning decisions better than local operating people working together with other utilities. With this, I cannot agree.

The Federal Power Commission possesses no divine power. It is made up of people just like the ones who run our respective companies. For the most part, they are less equipped to cope with the planning, operations, and requirements of assuring reliable service than we are. We know our respective systems; they do not. Years of study and training have gone into building a competent personnel organization at all levels in our companies. Under this legislation, the Federal Power Commission proposes to supervise the planning for over 3,000 systems of the United States. It just cannot be done.

As I have indicated previously, my remarks are limited to the features of this legislation which purport to deal with system ability to meet its responsibility to have power available to its customers when they need it, with a minimum of interruption.

Other extraneous issues and philosophies should not be confused with the reliability of service.

Questions of ownership, land use, territory boundaries, esthetics, and comprehensive resource development should be studied in their respective contexts and not as a measure to aid reliability. For the most part, these considerations are deterrents to reliability.

This takes me to the portion of this legislation which would give the Federal Power Commission certification authority over "extra-high-voltage facilities."

In my opinion, there is nothing that can do more, legislatively, to impede the efforts of this industry to meet its responsibility to provide high quality, continuous service than this concept.

A substantial portion of the lands in the western part of the United States is in Federal ownership. Under this bill, the opportunity and right of acquisition of right-of-way over such lands, or any other lands for that matter, cannot be acquired without the hearing procedure of the Federal Power Act. This embraces the right of appeal provided by the act to the circuit courts of appeal and the Supreme Court of the United States.

Under such a procedure, any dissident landowners and malcontents may add years to necessary land acquisition by a protracted FPC proceeding and appeal and, when it is all over, the utility company involved still must go through all the procedures of condemnation to acquire needed rights-of-way which it needs.

Beyond that, this bill still gives a virtual veto in other Federal agencies to use of Federal lands for rights-of-way within their respective control.

A glaring example of the slowness of the administrative process is the case of High Mountain Sheep. This licensing proceeding has been before the Commission for 13 years, and it is no further along today than it was when the first application was filed.

Another example and more specifically as it relates to this problem in this area is the licensing of the Enterprise-Walla Walla and the Oxbow-Enterprise extra-high-voltage transmission lines. These lines were badly needed. The material was available for construction in the spring of 1966; yet it took the FPC a year prior to that and a year after that to include them in a license. This was even without hearing. The construction on them was not started until May of 1967. The absence of these lines during such period caused serious disruptions in operations which could have been avoided had the licensing procedure

not been necessary. It is obvious that had hearings been required, as contemplated in this legislation, the time would have been even longer.

We are not talking about a few proceedings under this certification section. I would estimate that throughout the United States from 300 to 500 projects for certification proceedings would be required annually. Many of these would require the hearing procedure.

Compare this tremendous workload with the fact that, in fiscal year 1967, the Federal Power Commission, under the Federal Power Act, held only six formal rate cases, five of which were settled, decided 28 security issue requests, handled 28 applications involving sale, merger or other disposition of facilities, and considered 139 license or preliminary permit applications. A total of 201. Yet the backlog of applications at the end of fiscal year 1967 was 405, compared to 362 at the beginning of the year. It would appear that section 408 would impose a completely unrealistic responsibility upon the Federal Power Commission and, because of the tremendous workload involved, would cause serious delays in construction schedules to the detriment of providing reliability.

The certification authority provided in S. 1934 does not spell out that it shall extend to generating facilities but, in fact, the authority is there because no generating plant is of any use without the necessary transmission to deliver the power to loads. The authority to grant or deny the right to transmit power from a generating station constitutes authority to dictate the size, location, and type of generation, or whether or not it should be built at all. So, if the rather vague language developed to grant authority over bulk power supply does not give control over generation, the certification of transmission lines does.

In conclusion it is our firm belief that S. 1934 will not serve the best interest of the public. This is not to say that we are against coordinated regional planning.

The development of such plans, however, should be on the voluntary basis on which we are now proceeding. Obligations between and among companies should be based upon good faith bargaining and contract, not upon legislation. You cannot legislate cooperation.

Mr. Chairman, thank you for allowing me to make this presentation.

Senator Moss. Thank you very much, Mr. O'Connor, for a very fine statement. I think it is very clear that the objections that you have to the bill that is now up for consideration, the thrust of your statement is that the power companies already are involved in pools and coordination and that they are pushing ahead with the interconnections that would be the result of this bill, so we don't need the bill; is that right?

Mr. O'CONNOR. That is right.

Senator Moss. All right, sir.

Mr. NAUGHTON. Mr. Carlsen.

Senator Moss. Mr. Carlsen?

STATEMENT OF ALBERT CARLSEN, PRESIDENT OF IDAHO POWER CO., BOISE, IDAHO

Mr. CARLSEN. Senator Moss and members of the staff, my name is Albert Carlsen, president of Idaho Power Co., and I wish at the outset to express my appreciation in being given time to discuss certain features of the proposed "reliability bill."

The companies represented herein are all companies that have had a long and continued interest in reliability of service and have taken active measures to promote reliability. For example, Idaho Power Co., a private electric utility company serving over 150,000 customers in parts of three different States, Idaho, Oregon and Nevada, is one of the original members of the Northwest Power Pool and is also a member of the Western Systems Coordinating Council, and by virtue of an agreement entered into in 1941 has been voluntarily coordinated with both Utah Power & Light Co., and the Montana Power Co.

This latter agreement was one of the first agreements between major utilities in order to obtain the advantages inherent in coordination and pooling of resources. In addition, Idaho Power Co. in 1950 entered into agreement with the U.S. Bureau of Reclamation, which agreement furnished the Bureau and its customers with the advantages of wheeling over the company's transmission system and a supply of power during short periods, and with the company acting as a customer during excess generation periods on the Government system. In 1958 the company entered into an agreement with the Washington Water Power Co. and Pacific Power & Light Co., which represented the first formal agreement in the Northwest for coordination of hydrosystems.

Recently the company entered into agreements with the Bonneville Power Administration providing for wheeling of power over Idaho Power Co. facilities from LaGrande, Oreg., which power will be used to supply Bonneville's customers in southern Idaho. As is evident from this short résumé of some of the company's commitments to coordination, pooling, and reliability, the Idaho Power Co., in concert with other companies herein represented, the Federal Government and public agencies, has been a leader in the promotion of voluntary coordination agreements and the resultant reliability benefits that accrue from such agreements.

As a result of this long experience, the companies herein represented have demonstrated in the most practical way that they are in harmony with the avowed concept of the bill to promote reliability. However, these companies sincerely believe that reliability can best be achieved by voluntary regional coordination agreements of the type exemplified by the 1941 agreement between Idaho Power Co., Utah Power & Light Co., and the Montana Power Co., the 1958 Coordination Agreement and the Northwest Coordination Agreement of 1964 and that the best interests of the public will be served by such voluntary agreements.

We further believe that power users are already adequately protected by existing State and Federal laws, and in particular, we refer to section 205 of the Federal Power Act requiring approval by the Commission of rates and charges for transmission and sale of electric energy subject to the Commission's jurisdiction. Under this section the Commission has the existing power and authority to regulate wholesale sales and to prevent preference or unreasonable difference in rates.

A careful analysis of the bill has indicated many problems inherent therein, not the least of which is the serious economic consequences that could well result from adoption of this legislation, with a resultant impairment of the financial stability of affected utilities.

The economic or financial problems that will or can arise from various provisions of the bill are readily apparent with respect to the

built-in delay in obtainment of right-of-way permission, which delay could result in long and expensive hearings and will result in increased construction costs and also much higher right-of-way acquisition costs. It is an elemental fact of life that advance knowledge by landowners of the necessity of acquiring land for construction of a large facility or structure results in an immediate and direct raising of the price that the landowner requires for acquisition. Coupled with this rise is the fact that the land price tends to increase in direct relationship to the length of time the individual has to consider the possibility of a sale of his or her land and, therefore, the longer the landowner has to think about the use of his or her land, the greater the increase in the price.

Economic consequences which are not as readily apparent, but will potentially have a much greater impact, arise from the provisions of the bill which provide for the sharing of the benefits of coordination by all utility systems. The sections of the bill which give cause for the greatest concern are 401(b) and 411. The pertinent part of 401(b) states:

By providing that all utility systems and their customers shall have access to the benefits of coordination and advancing technology on fair and reasonable terms; by assuring to the extent feasible that extra-high voltage facilities include sufficient capacity to meet area, regional, and interregional needs for transmission capacity, including reserve capacity for reliability; by respecting the territorial integrity of utility service to the extent consistent with the public interest;—

Sec. 411—

Whenever the Commission, after notice and hearing, had, upon its own motion, or upon complaint, finds such action necessary or appropriate to carry out the objectives of this part, it may by order direct any person engaged in the generation of transmission of electric energy (if the Commission finds that no undue burden will be placed upon such person thereby) to establish physical connection of its transmission facilities with the facilities of one or more other persons engaged in the generation, transmission, or sale of electric energy, to sell energy to or exchange energy with such persons. The Commission may prescribe the terms and conditions of the arrangement to be made between the persons affected by any such order.

Under these two sections the Federal Power Commission would apparently be committed to the policy that all utility systems shall receive the benefits of coordination and technology and the Commission is expressly given the power and authority to implement this policy.

It is a matter of common knowledge that there is a vast variation in size between utility systems with a large number being only small distribution systems with no generation and only minimal transmission lines, receiving their power from other suppliers. For example, in a small area centering about Rupert, Idaho, there are 14 companies or municipalities serving approximately 12,000 customers. These companies do not own any generating plants and some do not have any transmission lines. This contrasts with Idaho Power Co.'s 150,000 customers, its 16 generating plants, and its 4,050 miles of transmission lines that it has built to serve its customers and to interconnect its service area with areas to the north, west, and east of the company.

Examples of this type of small electric systems are prevalent throughout the United States. Many of these small systems are cooperatives or municipalities that already enjoy the benefits of subsidized extremely low-cost money and tax-exempt status. Yet under this proposed bill these systems would be given the right to share in

the benefits of coordination and technology that accrue to the private companies by virtue of their financial expenditures for technological advances and construction costs. This benefit would accrue without any cost to the customers of these small systems and this windfall, coupled with the already hard to justify benefit of subsidized low-cost money and tax-exempt status, which most of these smaller systems enjoy, would result in granting these types of systems an even greater competitive advantage than now exists, which could well result in the loss of customers by the very system that has expended the money and achieved the technical know-how to reduce costs.

Many of these small systems are now customers of the larger systems under wholesale rates that are generally subject to the jurisdiction of the Federal Power Commission under section 205 of the Federal Power Act. With this regulatory control, the overall benefits of coordination and technology will accrue to these systems by virtue of their wholesale rates in the same ratio as it accrues to any other customer or user and this would appear to be the fair and equitable procedure to follow.

Under S. 1934, however, this method of sharing would no longer be controlling; instead all of the advances made by the larger company would be made available to the smaller systems not in a pro rata amount; that is, giving consideration to a blend of both old and new plants, but rather by giving the full benefit of any reduction directly to these other systems, leaving the building company's other customers to continue to bear the cost of older and more expensive installations. In our view this is unfair to the customers of the private companies.

Systems which are now buying as wholesale customers or even new entities, such as municipalities, would be encouraged, in fact almost directed, to go directly into the electric business, since their customers would have the dual advantage of not only low-cost money and tax-exempt status, but also the benefit of the lowest cost power obtained from the newest plants, at the expense of the private companies' customers.

By way of example, if a company should build a new generating plant, which because of size and new technology was able to generate power at 2 mills, as contrasted with the overall cost of power on such company's system of 4 mills, the various small systems could request a share of such new plant's capacity and cost of generation, which share would go directly to the smaller system without any requirement of mixing the overall costs of the generating company. This conclusion is amply supported by the provisions of section 404 providing for regional councils.

These councils would be open for membership to each electric system in the region and presumably each would have an equal vote.

Using the example heretofore set forth, 14 systems with 12,000 customers could have 14 votes, compared to the one vote for the 150,000 customers served by Idaho Power Co.

It does not require any clairvoyance to envision the effect of this disproportionate voting power. The small systems by virtue of numbers, rather than customers, would control the council and the development of regional plans submitted by the regional council for use by the Commission.

With this control the smaller systems could well determine and then request the Commission to require the building of generating plants and transmission facilities by the larger systems irrespective of whether the larger system concurred or thought such plan was economically feasible and irrespective of the economic effect on the customers of the larger system.

By this voting power in the council, the management of a company, by a determination completely outside of its control, could be required to incur substantial capital expenditures, which might well impair its financial position, by being incurred at a point in time when financial conditions either nationwide or for the individual company would not justify such expenditures.

Also, under this situation the control of the regional council by the many small systems would take away from management its judgment factor as to when plants and lines should be built and conceivably a company could be required, primarily for benefit of the small systems, to build a plant which could not, from an economic planning standpoint, be required to be built at that time by the company or be regarded as a justifiable expenditure of money by the company.

It is conceivable that in this situation a conflict might develop between Federal and State authorities. On the one hand the Federal authority might rule that regional planning requires the plant to be built; on the other hand, the State commission finds it to be an unnecessary expenditure and an overbuilding of plant and refuses to allow all of the company's expenditures to be included in rate base. This dilemma could easily occur and the ones that would be hurt as a result thereof would be the large company and all of its customers. The smaller system would not be affected at all by this problem. Again this can hardly be considered as fair and equitable.

If this bill were enacted into law, any company would have a great deal of hesitancy to plan construction of a plant with the benefits flowing in a disproportionate amount to the other smaller systems and with the builder assuming all of the risks and problems that would accrue.

It is a matter of common knowledge that primarily the larger systems are the ones that make and contribute substantial benefits in any coordination and pooling arrangements and that the smaller systems, particularly those that have no generating facilities and relatively minor transmission systems, contribute practically nothing thereto. With this situation it is self-evident that the smaller systems should receive their benefits as a wholesale customer the same as all other wholesale customers. Under this bill this would not occur and in fact the end result would be a continued proliferation of small systems with a loss in taxes and a continued increased cost to the Government. Under existing conditions, with the ever-increasing tax burden and inflation, it is doubtful if the Federal Government could afford these consequences and certainly the already overburdened taxpayer could not.

I am certain that I do not have to call the committee's attention to the fact that these are extremely trying times with interest rates at an alltime high—over 7 percent—and with stock prices for utility stocks at a depressed price. Passage of this bill at this time with the possible

adverse economic effects that I have heretofore discussed could have no other effect but to jeopardize the utility's ability to adequately finance its necessary capital additions.

An investor puts his money in those places in which he has faith as to the future. With the quandary that would exist as to the position and vote of the regional councils as envisioned by S. 1934, and as to the subsequent orders of the Federal Power Commission, it appears to be a reasonable conclusion that adoption of S. 1934, misnamed the Reliability Act, with all of its side effects, would further compound the existing financial problems of all private utilities, an effect that in the end would directly affect all of the companies' customers and stockholders.

It is our sincere belief that existing laws are adequate to provide all necessary controls or incentives for reliability, and this conclusion is amply illustrated by the fact that electric service throughout the Nation is on the line over 99.99 percent of the time, a record no other industry can even come close to matching.

Furthermore, since the Northeast power interruption in November 1965, additional millions of dollars for increased technical research and equipment has been expended to insure greater reliability, and incidentally, many of the smaller systems have been the beneficiaries of this without any expenditure on their part.

Existing laws coupled with the ever-increasing voluntary cooperation of all segments of the industry will better serve the electric needs of this country than any attempt at force-feed action.

Again, I sincerely appreciate the opportunity to testify.

Senator Moss. Thank you very much, Mr. Carlsen, for your statement.

Do I gather from this that you think it is not now possible or likely that we could have one of these cascading outages such as they had in the Northeast?

Mr. CARLSEN. I think it is much less likely to happen, especially in the Northwest, and not of the same magnitude.

Senator Moss. Thank you.

We will hear Mr. McElwain now. Then we will break for lunch.

**STATEMENT OF JOSEPH A. McELWAIN, VICE PRESIDENT, THE
MONTANA POWER CO., BUTTE, MONT.**

Mr. McELWAIN. My name is Joe McElwain. I reside in Butte, Mont. I am a vice president and counsel for the Montana Power Co.

I would like to discuss briefly the provisions of this legislation which pertains to so-called antitrust immunity, and sections 411 and 412 dealing with compulsory interconnection of facilities and the abandonment of bulk power supply service.

Antitrust immunity: Section 404 charges the Commission with the establishment of regional councils and requires each regional council to file with the Commission a statement of its organization as well as any regional or interregional plan developed by the council.

After notice and opportunity for hearing, the Commission may determine whether any such statement of organization or any such plan is consistent with the objectives of the proposed part IV of the act. If it approves the statement or plan and finds further that its

effect upon competition will be insubstantial or will be clearly outweighed by other public interest considerations, actions pursuant to the statement or plan are not subject to suit under section 4 of the Clayton Act, which provides for private treble damage actions. By letter of July 18, 1967, Chairman White advised Senator Magnuson that the bill was intended to also provide immunity from private injunction suits under section 16 of the Clayton Act, as well as to actions for damages under section 4.

The most obvious deficiency of the limited antitrust immunity which would be provided under S. 1934 is that it would apply only to suits by private parties. No immunity whatsoever is given with respect to antitrust proceedings, either criminal or civil, which may be instituted by the Department of Justice or by State or local governments.

It places the subject utilities in an untenable position for Congress to empower one agency of the Federal Government to require action to be taken and to approve such action, while another agency of the Federal Government is left free to attack the same required action under the antitrust laws. If there is to be compulsory action, it should be required only with the unconditional assurance that actions taken pursuant thereto will be exempt from all antitrust laws.

Apparently, the bill contemplates that the heart of the work of the regional councils will be expressed in regional plans for coordination of facilities as adopted from time to time. Any such plans are required to be filed with the Commission. It is empowered not only to review the plans but to modify or set aside any which it finds not to be "in the public interest." It is completely unreasonable to require the filing of coordination plans with the Federal Power Commission, to empower that Commission to review them and approve, modify, or set them aside, but to leave parties to the plans open to prosecution by the Federal, State, or local governments for actions taken pursuant to an approved plan.

Other Federal regulatory statutes contain express exemption from the antitrust laws in respect to agreements and actions approved by a regulatory body, including the Interstate Commerce Act, the Shipping Act, 1916, and the Federal Aviation Act. In none of these is the immunity limited to private actions; in each it extends to bar proceedings instituted by the Department of Justice as well. We have been referred to nothing which would support a different treatment in the Federal Power Act.

The exemption from private suit contemplated hereunder is available only so long as the Commission's approval remains in effect. Presumably, the Commission for some reason could withdraw its approval of a plan which it had previously approved. Certainly, if the Commission's approval of a plan is withdrawn, the exposure of the parties to the antitrust laws should apply only to actions taken thereafter and not to actions taken during the time the approved plan was in effect and in accordance with it.

The Congress has before it for consideration a much more comprehensive treatment of the problem of reconciling actions taken jointly by utilities in the public interest and subject to the jurisdiction of the Federal Power Commission, with the policy of competition expressed in the antitrust laws. I refer to S. 683 introduced by Chairman Mag-

nuson of this committee last year, and on which hearings were held before this committee on February 26 and 27, 1967. S. 683 is a successor bill to S. 3136, which was introduced in the 89th Congress, second session, upon which hearings were held before this committee on July 12 and 13, 1966.

I will not lengthen this record with any detailed review of the provisions of S. 683, or S. 3136, but refer the committee to the testimony given at the hearings on those bills for a full discussion of the nature and scope of the exemption from the antitrust laws required in the interest of coordination by electric utilities. I desire to point out, however, that S. 683 deals with the very much broader problems of conflict between the antitrust laws and the increasingly joint nature of the activities of utilities resulting primarily from advances in technology with respect to the size of generating plants and capacity of transmission lines. It differs from the antitrust immunity provisions in S. 1934 in the following respects, among others:

(1) S. 683 applies to any contract hereafter filed pursuant to section 205(c) of the Federal Power Act, which provides for the sale or exchange of electric energy, the interconnection, pooling, or coordination of power systems of the joint use of facilities for the generation or transmission of electric energy. This would embrace any contractual arrangement for the specified purposes entered into as a result of any voluntary coordination plan which might be adopted by a group of utilities.

(2) Under S. 683, the Commission shall grant an order of approval of any such contract which it finds will not unduly restrain competition when considered in relation to the purposes of the act; if it finds to the contrary, it shall disapprove the contract and further action by any party under it is unlawful.

(3) If the Commission approves any such contract, then any party thereto is exempt and relieved from the operation of all Federal, State, and municipal antitrust laws in the negotiation and execution of the contract, and in the performance of its terms as approved by the Commission.

S. 683 would not broaden the scope of contracts which must be filed with the Commission, but would remove an impediment to the investment of large sums of money and the entry into long-term arrangements which must be made by utilities in order to effectuate efficient and economical construction and operation of large generating facilities and major transmission facilities. If the Commission finds that any such contract will not unduly restrain competition when considered in relation to the purposes of the Federal Power Act, its approval of the contract under S. 683 would, and, we submit, should provide the parties thereto with full immunity under the antitrust laws. The Federal Power Commission has previously approved S. 683 and S. 3136 with only minor changes. We find no explanation for a change of position since that approval was expressed in 1966 and 1967.

Other testimony has indicated the extent to which organizations of the nature of regional councils as described in S. 1934 are already in existence and functioning. We believe that the Federal Power Commission has in sections 202(a), 205, and 2027 of the Federal Power Act all of the jurisdiction it needs to accomplish the stated objectives of S. 1934.

Compulsory interconnections.—We believe the authority sought by the Commission under section 411 is completely unnecessary and unjustified.

This section would give the Commission authority on its own motion to require any person engaged in the generation or transmission of electric energy to establish physical connection of its transmission facilities with the facilities of one or more other persons engaged in the generation, transmission, or sale of electric energy, to sell energy to or exchange energy with such persons. It gives the Commission complete authority to dictate the terms and conditions of such sales or exchanges. The only limitation upon the Commission is that it find "no undue burden" will be placed on the person ordered to interconnect.

We believe that the Commission has all the authority it needs in this area under present law.

Section 202(b) of the present act gives the Commission interconnection authority in the following language:

(b) Whenever the Commission upon application of any State commission or of any person engaged in the transmission or sale of electric energy, and after notice to each State commission and public utility affected and after opportunity for hearing, finds such action necessary or appropriate in the public interest it may by order direct a public utility (if the Commission finds that no undue burden will be placed upon such public utility thereby) to establish physical connection of its transmission facilities with the facilities of one or more other persons engaged in the transmission or sale of electric energy, to sell energy or to exchange energy with such persons; Provided, That the Commission shall have no authority to compel the enlargement of generating facilities for such purposes, nor to compel such public utility to sell or exchange energy when to do so would impair its ability to render adequate service to its customers. The Commission may prescribe the terms and conditions of the arrangement to be made between the persons affected by any such order, including the apportionment of cost between them and the compensation or reimbursement reasonably due to any of them.

The differences between present law and the proposed enlargement of authority sought under Section 411 are:

1. The new authority would allow the Commission to force two unwilling parties to interconnect whereas under section 202(b) one of the parties must want the interconnection, or application for such interconnection must be made by the State commission.

2. Section 411 is applicable to anyone who generates or transmits electric energy. This could include industrial companies who have their own generation. Section 202(b) is limited to public utilities as defined in the act.

3. Under section 411, it would appear that the Commission can require enlargement of generation facilities, construction of unlimited miles of transmission lines subject only to the broad undefined limitation of "no undue burden." The interconnection requirements of 202(b) on the other hand, specifically restrict the Commission from ordering the interconnection if to do so would impair the ability of a public utility to render adequate service to its customers and specifically denies the Commission authority to require enlargement of generating facilities.

4. Section 202(b) requires that the compensation for such service be reasonable whereas the right to set the terms and conditions under section 411 is without limitation.

We believe that the present law is completely adequate to handle any situation where a person or a State commission wants an interconnec-

tion. There appears to be no justification to this broad enlargement of Commission power to force parties to interconnect when neither of the parties desire to do so and a State commission has seen no need therefor.

Abandonment: Here again, the Commission seeks broad powers over the abandonment of service, in our opinion, without any justification for such powers.

Let me give you an example. Two utility companies enter into a contract to sell and buy power for a term of years. Under section 205 of the present act, the Commission has broad powers of review over such contract, including the term.

Under section 412, even though the Commission had approved the agreement between the parties, they would still have to apply to the Commission for authority to stop service at the expiration of the term of the agreement. This seems completely redundant and unnecessary authority.

Section 412 would further require Commission approval before there can be a retirement of any generating facilities. This again is a management decision which should be left with local management and not subjected to burdensome Federal administrative authority.

These two sections are not associated with the need for reliability. Such broad powers have been sought unsuccessfully by every Federal Power Commission since 1953 and have been embodied into proposed legislation before the Congress in every year since 1959.

We do not believe that such broad powers are necessary or advisable. The present law is adequate to cover any foreseeable situation.

Thank you for the opportunity to discuss these provisions with the committees.

Senator Moss. Thank you, Mr. McElwain, for your statement pointing out very clearly the objections you find to the legislation that is now being considered here.

Mr. Naughton, did you want to sum up at this point?

Mr. NAUGHTON. It will take me about 5 minutes.

Senator Moss. All right, you can do it now.

Mr. NAUGHTON. Mr. Chairman, you have heard our witnesses. With your permission I would like to make a short concluding statement.

We believe our presentations have adequately stated and documented our case in opposition to this bill. We do not feel that this or related bills are a proper subject for legislation. At least they will not accomplish their stated objective of improvement in electric power reliability and they contain several extraneous and improperly related matters.

Our objective is, and continues to be, to provide reliable electric service to all comers whenever and wherever, and in whatever amounts they desire—and to do this as economically as possible, consistent with good service.

Our record over the years has been excellent, while admittedly something less than perfect. Our average prices have continued to go down despite inflationary factors, while the costs of almost everything else continue to go up at an increasingly rapid rate. We have wide and ever-increasing use of our service—in the home, on the farm, and business and industry. We provide good jobs, pay our fair share of taxes, and raise money at the going rates, and pay an adequate return for the savings of individuals, trusts, and pension funds.

The use of electricity is doubling about every 10 years and ours is one of the Nation's fastest growing industries. The technology of electric power supply is very complex and is becoming increasingly sophisticated. Technology and improvements have evolved over the years at an increasing rate, leading to larger generating units with higher efficiencies. Transmission line technology has also advanced and we use higher and higher voltages. Much progress in interconnections has been made, making it possible to pass on many economies and benefits to our customers.

This record has been attained because power systems are planned, built, and operated by thousands of skilled and dedicated people exercising their responsibilities at the local and regional levels where they have firsthand knowledge of complex and changing conditions. They recognize the possibility of human and mechanical failures, as well as factors beyond human control that may affect the operations of our transmission lines and powerplants. We design and operate our systems to minimize interruptions, and when something does happen, automatic equipment and competent operators react so that the customers seldom know it. Such occurrences are fairly frequent but service is only infrequently interrupted.

The evolution of electric power systems is a continuing process and we are committed to planning, building, and operating to attain the greatest possible reliability. We believe under our presently existing method we have, are doing, and will do the best job that is possible.

As was brought out in my description of the power supply facilities that existed in the five States in the year 1925, while these isolated areas were interconnected so far as power-generating resources were concerned, there was very limited interconnection between even facilities of a single company. In other words, there were a series of isolated supply centers. As we have seen from the changes between 1925 and 1941, it is obvious that interconnections of considerable magnitude and importance for those times were built and placed in operation. With the advent of these facilities, plans as to what facilities would be built, when they would be built, and how they would be operated were formulated and made part of everyday operations.

From 1941 until now, as the map clearly shows, many more transmission interconnections were built as between contiguous electric systems and these, too, in turn required many more contracts relating to detailed operations as between the participants than had been required in 1941.

Further, as exhibit No. 1 shows, by 1967 we were well interconnected with all utilities in the northwestern, southwestern, and Rocky Mountain States tied together, resulting in all the facilities of the 14 Western States operating a synchronism as though a single system.

Several years before we reached this present state of interconnection, the companies coordinated their plans not only for construction but more particularly for operation and, from this, well-organized committee and councils evolved for the planning and operation of the systems of today.

These organizations also realized that some day all the electric systems of the country would operate as one large network and coordinated with the North American Power Systems Interconnection Committee, which is a voluntary organization founded in 1963, antici-

pating an electric network for the whole of this continent. The Western States systems were interconnected with those of the rest of this Nation about a year ago and many more interconnections will certainly be built in the future. Thus, it is immediately evident that planning, pooling, and coordination for increased reliability were well established long before the idea of Federal intervention through legislation was conceived.

Our coordination agreements and plans evolved in concert with the physical enlargements of vast geographic service areas. They evolved voluntarily as the industry has developed over the years, and you may rest assured will continue to evolve as science, technology, and sophistication become more a part of our day-to-day operations. We subscribe to the recommendations presented by Gordon C. Culp, representing the Pacific Northwest group at the Seattle hearings, attached hereto as appendix A.

We feel very strongly that our customers are entitled to a highly reliable power supply, but are convinced that enactment of this bill would impede, rather than promote, that objective. We would never know where we stood with respect to our plans, thus our organizations would be continually upset. This bill would lessen the quality and increase the cost of electric service to our customers, and do financial injustice to our investors.

(App. A follows:)

APPENDIX "A"

A. REGIONAL COUNCILS

1. Voluntary regional councils on reliability should be organized in each region with appropriate representation from each electric system operating facilities that could have a substantial effect on the reliability of regional bulk power supply. The FPC and each affected State regulatory body could designate an observer or nonvoting member of each regional council.

2. Regional councils should perform the following functions: (a) Develop minimum performance guidelines for maintaining reliability of bulk power supply within the region, and (b) coordinate plans for regional bulk power reliability.

3. A full report on progress with regard to regional plans and reliability guidelines would be submitted annually to the FPC, the appropriate committees of the Congress, each affected State regulatory body, and the National Advisory Committee on Reliability. Such plans and guidelines should be subject to change by agreement of the regional councils at any time and reports of such changes should be submitted as soon as possible.

B. NATIONAL ADVISORY COMMITTEE ON RELIABILITY

1. A National Advisory Committee on Reliability should be organized with appropriate relationship to regions, the number of customers served, and readily definable types of utility ownership. It should also include representation from the Federal Power Commission and experts in the field from the scientific community at large.

2. The Committee should be authorized and encouraged to proceed, in cooperation with the industry, all branches and levels of government, and equipment manufacturers, to study all technical matters that will lead to enhance reliability. The committee could conduct such studies directly or through educational or research institutions; for example, the Electric Research Council or private contractors. Some permanent staff would be needed.

3. The committee should consult with and advise the regional councils in the preparation of performance guidelines for the region. It should also prepare minimum performance guidelines calculated to minimize the cascading of service failures from one region to another insofar as practicable with present technology and within acceptable economic limits.

4. All proceedings of the committee should be published.

Mr. NAUGHTON. Thank you very much.

Senator Moss. Thank you, Mr. Naughton. That is a very full presentation. There may be some questions that we would like to ask. I think, however, we will take the luncheon break. We will reconvene promptly at 2 o'clock.

(Whereupon, at 12:23 p.m., the committee was recessed, to reconvene at 2 p.m., this same day.)

AFTERNOON SESSION

Senator Moss. The hearing will come to order. We will resume.

All of the gentlemen who were here just before the noon recess have now returned. We may have a few questions on matters we would like to clarify in the record.

I thought I might ask you, Mr. Naughton: You showed by this exhibit with the overlays how the interconnection has grown in these four Mountain States since 1925. And you do have one projection or there running between Anaconda and Idaho Falls or somewhere in that area. Are there other projected connections that are now actually planned or that are definite enough that they could appear on here?

Mr. NAUGHTON. This is definitely planned. Also our company and the Public Service Co. of Colorado have an arrangement that would build a transmission line from about this point at Grand Junction over to the system of the Utah Power & Light Co. That is not in sufficient definitive stage to justify putting on the map. It is my firm belief, and I believe Mr. Patterson would agree with me, that without a question of a doubt that line will be built in the not too distant future. At the present time it is not needed because the Colorado system, and all of the other major supplies, are now tied together with the transmission systems shown. This is a 161,000-volt line (Anaconda-Goshen), built in 1941, put in service early that year. This is to augment that line (Anaconda-Brady). Other than that there are no lines contemplated because we don't need them.

Mr. O'CONNOR. If it is any help to you, we have an internal line, 230,000-volt line contemplated between Great Falls and Billings that will add somewhat to the 230-volt bus. This is not sufficiently definite that we can put it on the map.

Senator Moss. It is accurate to say, as there is demand, you hope to be able to anticipate and build in lines for further interconnection?

Mr. NAUGHTON. That is correct. This line that we are talking about we began discussing about 6 years ago and we set a target date for 1969 for the construction of the line. One of the problems that we have is that a portion of the route of that line will be on Government land. If we have a delay in building this line, as the Idaho company and Pacific Power & Light Co. had, as was mentioned this morning, then we won't get it built in 1969. It is a matter of coordinating Government agencies having jurisdiction over our plans. And those are the things that in my judgment will deter better reliability rather than add to it. What we need is quicker coordination, quicker action out of governmental bodies that have jurisdiction over the land.

Senator Moss. Another thing that struck me when we were talking about the "doughnut" in this great western area was there seemed to be no connections at all across the hole in the doughnut, but specifically

down there at Hoover Dam, where so much hydropower comes in, none of it flows eastward or north from the dam.

Mr. NAUGHTON. We are now out of this five-State section.

Yes, here is Hoover. You remember, as I recall there are about 1,100,000 kilowatts there. Practically all of that power goes into southern California. There is some power, that allocated to Nevada, that comes up here, but that is a lower voltage line and as I said in my direct testimony, lines of less than 100,000 are not on the map.

You raise the point that you come down here, and of course that is where people live, the density is quite heavy and is growing, and there is little density here. All the populated areas are served where you have reasonable population density.

We have many other lines that give us coverage in Utah, and also in Idaho and other areas, but they are not of sufficiently high voltage to justify discussion here.

Senator Moss. Wouldn't it be advantageous to have some power flowing from Hoover to interconnect more directly than down through Phoenix where the line is projected to go, apparently?

Mr. NAUGHTON. Let me elaborate a little bit on that question. We have in this business the concept of what we call displacement and it is used constantly. In other words, we can generate power here in Glen Rock, 400,000 kilowatts from Pacific Power & Light Co. That power can come into the Salt Lake area, for example, over existing lines. It can go into the Pocatello area and it can serve part of Utah Power & Light Co's., load, part of Idaho Power Co's. load. In turn Idaho's generation, at the west end of its system, over a million kilowatts of capacity, instead of going this way (east), can move that way (west). The same as Hoover. You can come to Phoenix and carry that load, and facilities here that normally go to Phoenix can be sent up here (north). That is what we call displacement and it is simple to do and it is done all the time. We have run into this sort of a concept in operation quite early because the distances between populated areas are very great.

We had to learn a lot of things concerning relays and transmission design years ago from sheer necessity. From Salt Lake to Phoenix is 560 miles. Salt Lake City to Denver is another 450 miles. So we had long lines, greater exposure, and we had to learn how to employ things, to design things, to work with the manufacturer in order to solve our problems.

Senator Moss. What you are saying is by the use of displacement that the interconnection is adequate?

Mr. NAUGHTON. Yes, sir.

Senator Moss. How many of these regional councils are in existence now?

Mr. NAUGHTON. I will refer that to Mr. Patterson because this gets into his area.

Senator Moss. Nationally, I mean.

Mr. PATTERSON. I am not sure of the exact number, Senator. I am sorry I didn't write that down and bring it with me. You are probably aware that they have organized in the New England area—

Mr. O'CONNOR. It is 12, Senator.

Senator Moss. It seems to me I had heard there were 12.

Mr. PATTERSON. There is the Carolina-Virginia Power Pool; the East-Central Reliability Group; the Mid-American Interpool Net-

work, referred to as MAIN; and then there is the Middle Atlantic Area Coordination Group; there is the Mid-continent Area Power Planners, MAPP, up in Minnesota, and the upper Missouri River Basin; then there is the Northeast Power Coordinating Council; there is the Texas Interconnected Systems; there is an agreement worked out between the Southern Company and the Florida Power Corp.; there is the Southwest Power Pool, which worked out the interconnection with the TVA, whereby they interchanged their diversity capacity—you may be familiar with that—TVA having a winter peaking system and the Southwest Power Pool Group having a summer peaking system. So they built some 500-kilovolt interconnecting lines which they have used to coordinate their systems.

I believe that includes about the whole area of the United States.

Senator MOSS. The western one is by far the largest, isn't it, in area?

Mr. PATTERSON. Yes, sir. Incidentally, Senator MOSS, there was a meeting in January of the chairman of these various groups held in Los Angeles to explore organizing a national council on which each of these individual areas would have members. That is moving right along. They are working on the drafting of an agreement and they will be sure to be having an additional meeting to either ratify that agreement or make such changes as they feel are necessary.

Senator MOSS. Is that the meeting they held in New York on general reliability?

Mr. PATTERSON. It could be. The one meeting in Los Angeles was in January. I am advised by Mr. Blanchard, who is the secretary-treasurer of Western Systems Coordinating Council, that there have been two meetings where they were all present, one at Los Angeles and one at Chicago. There may have been another meeting in New York. There is some reason to think of a nationwide council. In addition to interconnections within an area there will be interconnections between other areas. So we do need to have some coordination to check those interconnections to make sure they are adequate.

If you don't mind, sir, I would like to add one more line to the discussion that we are talking about now. This is in between our system and the Bureau of Reclamation. It would extent from Fort Lupton, Colo., up to Archer, which is the substation of the Bureau of Reclamation east of Cheyenne. The reason that we got interested in this line is as a result of the closing of the east-west ties between the Missouri River Basin and the western part of the country. We found that there was some inadvertent flow of power through our systems that were induced as the result of east-west ties. So our engineers and the Bureau engineers have been working on this and we decided that it would be very helpful in assuring reliability if we made this 230,000-volt interconnection. In fact, we have a meeting with the Bureau people on Monday morning to further develop our plans.

The reason we can't give you a scheduled date on it right now is because the Bureau is uncertain as to what they can budget until the financial situation of the country improves. They hope, by the latter part of this year, they will be able to determine what year they might be able to do this. Our board of directors has told us that whenever the Bureau can budget it, that we will budget ours. I think it will be a very worthwhile one.

If you don't mind, I would like to correct or add to two spots in our testimony about Western Systems Coordinating Council. This

is to amplify it, where it says, "Thus, WSCC is a council of the representatives of 40 utilities." I would like to add after "utilities: "two of which are in Canada."

We had neglected to point out how many of these 40 were in Canada.

And then I stated: "I am able to report to you today that WSCC has a 1968 budget of \$220,000, more than 90 percent of which has been paid in to date." Our treasurer advises me that he has received the checks from everybody.

Senator MOSS. All the hay is in the barn.

Mr. PATTERSON. Yes, sir. I thought for the record we might put that in.

Mr. NAUGHTON. Senator, if I might supplement Mr. Patterson's answer to your overall question at the outset, as to what we have in America by way of total pools and interconnections. I want to emphasize again that the North American Power Systems Interconnection Committee, which was founded in 1963, is an operating committee and similar to that, delegated to geography, is the Western Systems Coordinating Council Operating Committee. These are both operating committees.

Western Systems will have a policy committee, as will the so-called National Electric Reliability Council for the whole country. You will have in addition to the operating committee which does day-to-day and week-to-week work, the policy committees, and that is what we had reference to, that you had a meeting Chicago and in Los Angeles. You have to have two levels of committees, one the day-to-day operators and the other the policy planning and so forth.

Senator MOSS. I now have a copy of the telegram that I had seen that caused me to think there had been a meeting in New York. This is a protest of the Missouri Systems Basin Group that they had been excluded from the meeting that was held in New York on April 25 concerning the formation of a National Electric Reliability Council. It is addressed to Mr. Rice, of the Allegheny Power System. I don't know how large a gathering it was. It was apparently for the purpose of talking about this National Electric Reliability Council.

Mr. PATTERSON. I don't believe that was anything that our Western Systems Coordinating Council was involved in. At least I am not aware of it.

(The telegram follows:)

Mr. J. LEE RICE, JR.,
Allegheny Power System, Inc.,
New York, N.Y.

DEAR MR. RICE: NRECA has been informed of a meeting of representatives of the National Electric Reliability Council on April 25. We are disturbed, however, over the reported failure to invite the Missouri Basin Systems Group, and other consumer-owned planning organizations. If any council is to meaningfully attack the problem of reliability, it must do so on the basis of bulk power supply, not the nature of ownership of the system.

If the purview of this proposed council is to be truly national in scope, then rural electric cooperatives involved in bulk power supply must be included. For this reason, I am asking you to forward to NRECA, as is to be done with respect to EEL, copies of the proceedings of this above-mentioned meeting. In this manner, NRECA can be kept abreast of the accomplishments of this "national" committee.

ROBERT D. PARTRIDE,
General Manager, NRECA.

Senator Moss. Let me say that you would expect that this National Council would come into being and begin to function because there is a lot of movement toward that.

Mr. PATTERSON. Yes, sir.

Senator Moss. If that did come into being and functioned and if all these regional councils were coordinated into it, would you think this might be the place where the Federal Power Commission in an observer status or by constant reference might exercise a degree of supervision and advice and comment.

Mr. PATTERSON. Yes. I would think that they could certainly advise and offer suggestions and so on in that area.

Senator Moss. With the powers they already have under law, being fully informed and advised, there are some things that they might regulate if they were properly observing and consulting there.

Mr. PATTERSON. Yes, sir.

Senator Moss. Would that be your opinion?

Mr. PATTERSON. Yes; I would think so. Under the existing act, I believe that they have the authority in connection with interstate interconnections to regulate rates and so forth.

Senator Moss. In your opinion would this be an adequate additional function on reliability that might then make the provisions of S. 1934 unnecessary?

Mr. PATTERSON. Well, yes. I think that it would. I think that there is one thing in this whole picture, too, Senator, and that is I believe that the most compelling force on utilities on reliability is public opinion. I believe that is the strongest force there is. We certainly have to be pretty responsive to public opinion. We just must maintain the highest continuity of service that we can possibly do. We are only advancing slowly into these long interconnections between one large area and another large area of the country. As we gain more experience in these, I am certain there will be many more of them made. As an example, our company and the Kansas Gas & Electric Co. at Wichita, Kans., are exploring the possibility of a long interconnection between our two companies. We have made no announcements of this because our engineers are looking at it on a computer to find out if there are any booby traps here, that it would not be wise to build this at this particular stage. I am sure that if we are doing this, a lot of other people are doing it, too.

Mr. NAUGHTON. Senator, if I might add a comment.

Senator Moss. Yes.

Mr. NAUGHTON. I might supplement some of this. As I tried to point out, in 1925 we had a lot of isolated systems and it became desirable to coordinate our operations. In 1941 we became interconnected with the Montana Power Co. and thus the Northwest Power Pool. From 1941 on it became necessary that everybody coordinate their operations, and we planned this. We were the first area in the United States to carry it a step further and I will not prolong the discussion. Mr. Patterson mentioned pools. It is just recently, relatively, that we had a line going from the Northwest area down into the California area. It took about 6 months to learn how to run that line after we built it. We put it on the computer with all the brains we had in the industry, and it took 6 months to learn how to make that line work.

We have other things going through, where other lines are going to be built. So much for the western part of the United States.

In cooperation with us the Bureau of Reclamation, within the last year closed four lines, I believe it was, that tie us to the midwest part of the United States over here. We just had a mess for several months. The operators had to build new controls to learn how to set relays, how to anticipate power flows. You can't always put this on a computer and make sure that the answers are right. There was a time when we had to wire the office of the Secretary of the Interior and require that these lines be opened because up until that time we simply hadn't had the time to understand and study the data in order to make sure that our reliability would not have been impaired rather than enhanced.

After those studies were completed the operators again closed the circuit with the new controls and today, I believe I am right, we are operating the system quite satisfactorily. It is absolutely imperative that the operators, if they are going into a larger pool, sit down and get together whether they like it or not. Fortunately, everybody recognizes this and the cordiality between all of them so far, the Bonneville Power Administration, the Bureau of Reclamation, the municipalities, the whole kit and kaboodle, all get along very well. Now we have to have an elevation above that to cover planning and financing. This has to come about in a natural fashion. Our foremost interest is reliability. As Mr. Patterson said, the public demands it, and we want to supply it. Unless we are generating power, we get no money for it. One of our desires is to make a little money.

Senator Moss. Thank you, Mr. Naughton.

I think your point about the need to build it sort of a block at a time and know that you can manage the next step is certainly important.

I was going to ask Mr. O'Connor if in his opinion the Federal Power Commission would have an adequate staff to take over the functions called for in this bill, and be able to assemble in a reasonably short time a staff?

Mr. O'CONNOR. Without seeming to be abrupt, the answer is "No," they just couldn't possibly do it with their existing staff. These people work hard, they are competent and they do a good job, I presume, in most things. But they have a greater backlog of cases today than they had a year ago today. That is with their existing staff. If we pile 300 or 400 more cases on them they will not have adequate staff. I would go further than that and say I don't think they can get adequate staff. I don't know a utility in the western part of the United States at least that isn't having some problem recruiting sufficient engineering help. I know that we come to the colleges of your State, and I am sure that the utilities from Idaho and Utah come to the colleges of our State interviewing your graduates to see if we can get them to come into this business. If we take this responsibility and give it to the Federal Power Commission staff we will still require the same number of engineers on our staff and I just don't think the help is available.

Senator Moss. I am glad to have that in the record. It seems to me that that in part is inherent in your testimony. I thought that point should perhaps be in the record.

I wonder, Mr. McElwain, perhaps you could tell us, under the provisions of S. 1934, what is the power provided for FPC to control the membership of the regional councils?

Mr. McELWAIN. FPC to control it?

Senator Moss. Yes.

Mr. McELWAIN. I think they have under a section, any member who may not want to be a party, they have the right to require them to become a member of a council under this act. I believe that is in section 404(f), page 6 of the bill:

"The Commission after notice and after opportunity for hearings, if it determines that any person engaged in the generation or transmission of electricity refuses to participate in the general council or effective regional or inter-regional coordination, may require such person by order to participate.

This can require action. However, I doubt that any such action is necessary for these people. In order to preserve their system and to be able to operate efficiently, for the most part they want to cooperate to get the best job done.

Senator Moss. Another question. Do not the agreements for service and reliability between the electric utilities embrace agreements for price and quantity and hence place these utilities under the anti-trust provisions?

Mr. McELWAIN. This is one of the problems, and this was the problem at which S. 683 and its counterpart, S. 3136, was leveled. And it arose, I believe, specifically by reason of the intertie lines, large intertie lines between the Pacific Northwest and Pacific Southwest, and some of those agreements did have a price setting and allocation of certain markets which the Justice Department had concern itself about. It is for this reason that in order to be able to promote the most efficient generation and transmission facilities that the type of legislation of S. 683 was suggested, and Senator Magnuson has sponsored it.

If it is in the public interest to have this sort of thing promoted, we feel that the utilities who are in the activity should not be subjected to criminal or civil liability for trying to promote public interest.

Senator Moss. Thank you, gentlemen. This has been a very fine addition to our record. Certainly it is one that is rather heartening to see the great growth that is going on in this utility electric power field, and that the steps are indeed going forward for interconnection and consequently reliability flows from that.

We appreciated your presence here, all of you, and for contributing to this hearing. Thank you very much.

Mr. Berry Hutchings, who was to appear, is unable to be here today and may submit his testimony in writing, so that it may go into the record. We will not hear him in person.

Senator Moss. The next witness that will be before us is Mr. E. C. Schlender, manager of Raft River Power.

**STATEMENT OF E. C. SCHLENDER, EXECUTIVE SECRETARY OF
SNAKE RIVER POWER ASSOCIATION, INC.**

Mr. SCHLENDER. Thank you, Senator.

My name is Ed Schlender, and I am appearing here as executive secretary of the Snake River Power Association, Inc.

I appreciate the privilege of appearing before the members of this committee to express our views on the proposed Electric Power Reliability Act of 1967.

We support the principles and purposes of the proposed act and have participated in formulating recommendations for further clarifying of some provisions, which recommendations I believe have been incorporated in H.R. 12322.

Mr. LORDAN. For the purpose of identification, who introduced that bill?

Mr. SCHLENDER. I believe that was Congressman Moss.

Mr. LORDAN. Moss of California?

Mr. SCHLENDER. Yes.

There is urgent need for an authority on a Federal basis to coordinate bulk power supply planning, establish bulk power supply system reliability criteria, certificate EHV transmission, and require the interconnection of bulk power supply systems.

Giant regional power supply systems are expanding to the point where they are physically and electrically beginning to come together and overlap; and interregional transmission interties are being made without overall planning or even the requirement that the resulting system operational characteristics be studied as to the results of what will happen when the ties are made.

It is my purpose here today, to call to your attention a situation that has thus developed and needs immediate attention to determine what needs to be done to prevent what could be a real threat to electric power reliability in the western part of the intermountain region, particularly in south Idaho and northern Utah.

I call your attention to the map attached hereto which is one prepared by Utah Power & Light, showing the principal transmission lines in Western United States. The latest revision date of the map is January 1, 1967.

Senator, I believe that this was the only map this small that I could get hold of. I believe it is the same map on the easel, only smaller.

Beginning in the Northwest, principally in the States of Washington and Oregon, you will notice a very heavy transmission grid. Then to the southwest the heavy grid in California and Arizona. These two regions are now being intertied with four transmission lines of tremendous capacity, two 500-kilovolt a.c. lines and two 750-kilovolt d.c. lines.

From the Northwest into Idaho, through Utah and Arizona are other transmission lines which in effect create a giant loop around eastern Oregon, Nevada, western Utah, and northwestern Arizona. But the ties on the eastern side of this giant loop are very small and weak compared to those on the western side, particularly in southeast Idaho between the Utah Power & Light Co. system and the Idaho

Power Co. system and in southern Utah between Salt Lake City and Glen Canyon.

This connecting link in southern Utah is a 300-mile-long, 230-kilovolt line and it is carrying capacity less than one-tenth that of the connecting lines on the western side of the loop.

So here we have a giant system which no one planned, no one designed, and no one operates.

Just what the power flow characteristics of this system will be when the two 750-kilovolt lines are energized, no one knows.

Engineers in the Northwest and Southwest who worked on the planning of interties between their regions were cognizant of the problem and fearful of what will happen when one of the large interties might open under fault.

In southeast Idaho we have already experienced serious damage due to power interruptions.

In 1964, during the heavy irrigation season in July and August, there were 50 voltage disturbances which caused the irrigators great damages.

The damage was in the form of lost irrigation time in critical watering periods, burned out motors, panels, and fuses.

At Raft River Electric, where we serve some 430 irrigation pumps, we complained to Bonneville Power Administration, which is our supplier. Also Congressman Ralph Harding asked the Federal Power Commission to look into the matter. FPC suggested that BPA and Idaho Power Co. make a joint study of the electrical facilities of the power company which transmit the power both for the company and BPA. Mr. Roach of Idaho Power Co. refused. Copies of the letters between BPA and Idaho Power Co. on this matter are attached.

I will have to get those.

Mr. LORDAN. Can they be supplied for the record?

Mr. SCHLENDER. I have them. I just failed to give them for the record. Senator Moss. Thank you; they will go in the record at this point. (Letters follow:)

U.S. DEPARTMENT OF THE INTERIOR,
BONNEVILLE POWER ADMINISTRATION,
Portland, Oreg., November 17, 1964.

HON. JOSEPH C. SWIDLER,
Chairman, Federal Power Commission,
Washington, D.C.

DEAR MR. CHAIRMAN: On receipt of a copy of your letter of October 6, 1964, to Congressman Ralph Harding regarding electrical disturbances in Southern Idaho during July and August 1964, we wrote to the Idaho Power Company offering to participate in joint studies of electrical facilities in Southern Idaho as suggested by the Commission. A copy of our letter to the Idaho Power Company and the Company's reply are attached for your information.

Sincerely yours,

CHARLES W. KINNEY,
Acting Administrator.

Enclosures.

IDAHO POWER CO.,
Boise, Idaho, November 10, 1964.

Mr. CHARLES F. LUCE,
Administrator, Bonneville Power Administration,
Portland, Oreg.

DEAR MR. LUCE: Our long-range planned additions to our 230 KV and 138 KV transmission system are being carried out in accordance with conclusions reached as a result of numerous board studies extending over a period of almost five years.

including a recent EHV study by General Electric. We are, therefore, in possession of comprehensive and adequate data for essential planning for our service area needs, including preference customer wheeling service, as well as for effective coordination with interconnected systems. For this reason we see no need for further studies at this time.

As the FPC review indicates, the origin of the disturbances referred to were almost entirely outside our system. The few isolated and coincidental occurrences on our system were largely uncontrollable under any circumstance and were minor in character. The real aggravation during our heavy summer load period was the loss of generating capacity at Palisades and Minidoka, along with similar losses on the Utah and Colorado system. Basically, however, the problems complained about were largely within the Raft River system itself.

The increased transmission capacity construction now finally under way, following abnormal delay in receipt of FPC approval, includes plans for adequately expanding both our 230 KV and 138 KV supply capacity before the 1965 pumping season, providing the necessary additional public land occupancy permits are promptly forthcoming. Should permit processing or imposition of unwarranted permit conditions delay the planned 230/138 KV interconnection, *the service situation, under conditions similar to those experienced this year, could be much worse in the summer of 1965.* We are prepared to fully do our part in avoiding such an occurrence.

Very truly yours,

T. E. ROACH.

Mr. SCHLENDER. FPC did make an investigation and report which is available from their files under date of October 12, 1964.

During the summer of 1967, we again experienced 19 disturbances in 20 days that caused widespread damages. Some of these disturbances originated as far away as Los Angeles, Wyoming, and eastern Montana.

The Magic Valley Pumpers Association called a meeting in Burley and asked Idaho Power Co. to explain what was happening. The Idaho Power Co. officials laid the blame to trouble originating on other systems to which they were tied but mostly to the fact that they did not have enough transmission capacity to bring the 400 megawatts they needed from the Northwest to carry their loads.

Already this spring in the last month we have had several area disturbances with the irrigation load being only a fraction of what it will be in July and August.

The 22 BPA customers in southern Idaho who depend on Idaho Power Co. to wheel their power to them do not know and have no way of finding out just what the power flows are in the Company's system or what their system capacity it, therefore we don't know what degree of reliability to depend upon.

Someone is needed with the authority to demand the system data from the company whose systems are involved in the giant western loop I have described, and further, be given the responsibility to make a study and find the answer to the problem. They should also have the authority to see that the problem is remedied.

It seems logical that the Federal Power Commission is the agency to do this.

Therefore we believe that an Electric Power Reliability Act should be enacted.

Senator Moss. Thank you, Mr. Schlender. We are glad to have this and the matters that you called to our attention where there have been interruptions and apparently of considerable magnitude, at least recurring many times.

If this National Reliability Council came into being, would it be able to function as a coordinating and planning agency of the kind that you suggest this bill would lodge in the Federal Power Commission?

Mr. SCHLENDER. I believe it would, providing that there were an opportunity for some of the lesser organizations to be heard. This is our problem now. If this happens again this summer and these damages occur—and I mean there are real damages; if you had heard those farmers at Burley tell about how many pump motors they lost—and these are large motors and cost a lot of money—how much irrigation time they lost, right during the critical time of this short irrigation season, growing season, if you would see it as I had seen it, you would realize it is very serious.

We don't have any place to go. As I said, we complained to Bonneville. They tell us that Idaho Power has not divulged the system data to them so that they know what to tell us.

So all we do is go ring-around-the-rosy and we don't know what to expect and we feel like we have no place to go to get an answer.

Senator Moss. You think the thing that is necessary is for the distributors who are out on the end distributing the power from the bulk power suppliers to have a voice in these councils to assure reliability of supplies?

Mr. SCHLENDER. I certainly do, because I think that the customers of one system, no matter what the identity of the system is, are just as important as the customers of another system.

In southeast Idaho there are a considerable portion of the consumers served by these distributing agencies.

I believe probably at least half as many consumers are served by the public agencies and cooperatives as are by the power companies.

Senator Moss. I understand the other part, you express concern that this "donut" we talked about has great carrying capacity on the west-side and inadequate sections on the eastside of the loop.

Mr. SCHLENDER. That is right.

Senator Moss. And as a result there would be a potential for this cascading load that could bring a large outage.

Mr. SCHLENDER. That is exactly it. I purposely didn't go into any technical terms here. And I purposely didn't want to clutter this up with any of the exact dates and data and so forth in which these disturbances had occurred in southern Idaho. But they occurred all through this area. They were a sort of cascading type of thing.

When they lose a generator in Los Angeles and it knocks us off of the line clear up at Burley, it is because we are depending on a transmission line. In this particular area it is a generation-short area, and we are served mostly by the large transmission link in that area.

If there isn't a strong enough tie so that they can absorb the shock of a loss of load, or an interruption of the heavy line that is carrying the heavy load, it is going to cause serious disturbances.

Not only do we have an outage but the most serious disturbances, as far as damages are concerned, are caused by sustaining low voltage and out-of-phase, out-of-frequency fluctuation of the power flow that did remain on the line.

Senator Moss. Thank you very much, Mr. Schlander. We appreciate your statement.

(Mr. Schlender upon correcting his statement added the following:)

SNAKE RIVER POWER ASSOCIATION, INC.,

Malta, Idaho, May 17, 1968.

HON. WARREN G. MAGNUSON,
Chairman, Committee on Commerce,
New Senate Office Building, Washington, D.C.

DEAR SENATOR: While I have, in my statement, taken a rather harsh slap at the Power Companies, particularly Idaho Power and Utah Power and Light Company, I must say that these Companies have been placed in a very difficult situation and are not entirely to blame for all the problems we have, and I think, are not in a position to remedy the situation by themselves.

I think your Committee should take a real hard look at the problem, and consider and make recommendations as to how the problem can be remedied, and who is going to do it. Let me explain.

The Power Companies mentioned are not the ones who built the West Coast Tie Lines that put these Companies on the weak side of the "Donut."

It is largely the United States Government that is building the strong Coast Tie Lines.

Even if the Companies wanted to build tie lines on the East Side of the Loop strong enough to match the Western Side, they just could not find the economic feasibility to do so. The benefits of such lines would accrue to many other entities, and the general public, but no revenues to pay for the lines would come to the companies.

For instance, let us consider the line that Utah Power and Light Company built from Salt Lake City to Glen Canyon. I am sure the Company would have desired to build a heavier, higher voltage line for purposes of reliability and emergency capacity, but they could just not afford to do so at the time, because they could not use that much capacity to produce revenue in the immediate future, I think what we should be thinking about is that when such a line is to be built, and the overall planning Agencies can see that this needs to be a much greater tie than the Power Company can presently afford, then some provisions should be made to aid them in building the proper line at the initial outset. One solution would be to have the Government loan them the funds for the difference between the cost of what they could afford and what should be built.

They would not have to pay this back until they began to use the extra capacity provided and the repayment could be pro rata to the extra capacity used.

For the reliability of electric power on which our welfare and flow of commerce have to come to depend, and will even more so in the future, I think we must give this matter our utmost attention.

Very sincerely yours,

EDWIN C. SCHLENDER,

Executive Secretary, Snake River Power Association.

Senator Moss. Mr. Frank Stevenson, president of district 22, United Mine Workers of America. We are glad to have you.

STATEMENT OF FRANK M. STEVENSON, PRESIDENT, DISTRICT NO. 22, UNITED MINE WORKS OF AMERICA

Mr. STEVENSON. Thank you very much for the opportunity to appear before this committee.

I am Frank M. Stevenson, president, district No. 22, United Mine Workers of America. I live in Price, Utah. I am appearing here as a representative of the coal miners in my district, which includes Utah, Wyoming, and parts of Arizona, to oppose the legislation proposed in Senate bill 1934.

We oppose this legislation because we believe it would be very detrimental to the electric utility industry and thus do further damage to the struggling coal industry in our area and the rest of the Nation.

The coal industry in district No. 22 cannot stand further injury and survive as a major taxpaying business and employer of many coal mining families in Utah and Wyoming. Coal miners have watched their jobs being whittled away by subsidized competition from other fuels such as the Government subsidies to atomic fuel, natural gas, and oil. And I might add there, hydroelectric power. I would like to state some statistical matters of what has happened in our industry, because of these subsidies and competitions of other fuel.

In the year 1948 in the State of Wyoming, there were 4,200 miners working. As of this date, April 1968, there are only 128. However, there are approximately 60 additional miners who are in the top northeast section of Wyoming, which is in another district of the United Mine Workers. I can speak only for the people I represent. This is quite a difference to what we had at that time in 1948. Out of these 128 working miners, 72 of them are working only because of the Utah Power & Light Co.'s generating plants and their use of coal to supply their power.

In Utah during the same period, employment dropped from 4,500 to 944 working miners, 160 of whom are dependent upon the Utah Power & Light Co. for their employment.

With the dieselization on the railroads, the heavy market for coal has dwindled away. The Government, permitting gaslines to be snaked throughout the Nation, took away the heating market—the home-heating market—for coal. We had been in a depressed condition for a considerable number of years until the electric industry started to build powerplants that are consuming our coal. As a result, the coal mining industry has started back into its own.

We have also suffered from unfair competition from foreign products dumped on our markets. Eastern coal miners are losing jobs to residual fuel oils dumped at eastern ports from foreign lands. The Federal Power Commission allows gas pipelines to cross the Nation and wipe out our coal markets. The Fuel Research Council determined some years ago that western coal from the area I represent is the best source of fuel for west coast and Rocky Mountain markets. Our people have struggled beside the electric utility people to keep subsidized, nontaxpaying Bonneville Power out of our area so that the electricity to supply the industries and jobs in Wyoming and Utah could come from coal burning plants of private industry.

On two separate occasions the United Mine Workers of America has appeared before the Public Works Subcommittee of the House Appropriations Committee opposing Government-subsidized power coming into our already depressed coal mining areas where our mines must sell coal to survive. The miners and their families were most grateful when the committee realized the effect that such a project would have on them, and the committee did, in fact, deny such a request by the Bonneville Power Administration.

In addition, and within the past 10 days, the Public Service Commission of the great State of Utah, realizing the effect that such Federal subsidized power projects and Federal intervention into the free enterprise system would have on the private power companies, power company employees, and related industries such as the coal industry, did in fact deny, and rightfully so, the request of the Raft River Rural

Electric Cooperative to provide an electric service to a proposed industry from Government-subsidized powerplants located in the Pacific Northwest.

Our future progress is tied to the future progress of the electric utility industry. In 1967, approximately 490 million tons of coal was consumed in the United States. Of this amount, electric utilities burned more than 280 million tons, almost 60 percent. In 1967 an estimated 4,150,000 tons of coal was produced or shipped into the State of Utah, of which 1,248,000 tons was produced by commercial mines. Coal used by the electric utility in 1967 was estimated at 479,000 tons, or 38 $\frac{1}{3}$ percent of all commercial coal mined or shipped into the State.

During the same period in 1967 and estimated 3,650,000 tons of coal was produced or shipped into the State of Wyoming. Of this total figure an estimated 2,291,000 tons was used by electric utilities, or 63 percent of the estimated tonnage.

Of the combined total of commercial production of 4,898,000 tons of coal for the two mentioned States, 2,770,000 tons, or 56 percent was consumed by the private utilities.

This tonnage used by electric utilities is increasing every year. We still have tremendous quantities of coal in the Carbon and Emery County areas, the Kaiparowitz Plateau in southeastern Utah, and the Black Mesa area in northeastern Arizona, that we are confident will be developed in the near future if the Government planners stay out of the picture. We have full confidence that investor-owned utilities will continue to develop the coal resources in an orderly manner, and as needed, if permitted to do so without Government intervention.

The Kaiparowitz Plateau area is undeveloped at this time. The State of Utah has provided the necessary water. This area, I'm told, is ready now to start development. The Black Mesa area of Arizona, I think it is the southern California Edison, is building a powerplant at Needles, Calif., and coal will be shipped through coal pipelines from the Black Mesa area to California. As I'm told, and as I understand, the production of that area alone—of the Black Mesa—within the next few years—and I understand the powerplant is to be cut in sometime in 1969—will mean, when it gets into its peak production, somewhere around 7 million tons of western coal.

The coal industry has been in a very depressed condition in Utah, Wyoming, and the Nation as a whole. Now when we get to the point where we can come back into our own and start beefing up the economy of our areas and putting a little bread on the coal miner's table, then Government intervention may stop this from coming to pass. We have waited too many years in the coal industry to have anything stand in the way of our future.

It is obvious that the electric utility industry and the coal industry are mutually dependent upon each other for continued prosperity. We believe the Federal Government should seek ways to allow both industries to grow and prosper—not seek ways to delay, harass, and damage the growth of the industry as Senate bill No. 1934 would certainly do. This bill is supposed to promote reliable electric service, but so far as we can determine it would only add another layer of Government controls and set up a number of roadblocks in the way of progress for construction of new plants and new lines for the electric industry.

such as in the Kaiparowitz and Black Mesa areas as I mentioned. This could only add to the cost of doing business. It has been our experience as coal miners that Federal intervention in the electric business has resulted in higher taxes, higher power costs, less use of coal in the production of power, and fewer jobs for the coal miner.

We have pleaded with the Federal Government to release its hold on land, fuel, and water so that coal-burning plants can be built in any district without further delay and added expense which might cause them not to be built at all.

We urge you, Mr. Chairman, and this committee, to turn down this Senate bill No. 1934, which is just another attempt of another Federal agency to gain a bigger foothold in the regulation of the electric energy production in this country.

I thank you.

Senator Moss. Thank you, Mr. Stevenson, for your testimony and the views that the United Mine Workers of District 22 have concerning this bill.

You seem to fear that it will cut down on power generation rather than enhance it. We are glad to have you put your viewpoint in the record.

Mr. STEVENSON. This is our fear, Senator. As I mentioned, we went so long, for such a long period of time, and we have picked ourselves up by our own bootstraps. We are not fearful of competing with the other competitive fuels that are nonfederally subsidized. We are not afraid to compete with these. But we cannot compete with Federal subsidization, Federal control over these plants, particularly now when we are starting back on the upgrade to come back on the beam where we think we, the miners, are entitled to live in dignity in this country.

I thank you.

Senator Moss. Thank you, Mr. Stevenson.

I am going to have to recess for 15 minutes, as I have an appointment with the Governor. Mr. Simonton will be our witness when I come back.

Mr. SHERROD. May I ask a question while Mr. Stevenson is here?

Senator Moss. Would you do this when I come back?

Mr. SHERROD. Yes, sir.

Senator Moss. We will recess for 15 minutes.

(Recess.)

Senator Moss. The committee will be in order.

Mr. Sherrod, you had a question you wanted to get in. Would you go ahead and do that right now.

QUESTION BY THOMAS SHERROD

Mr. SHERROD. I don't know whether the representative from Wyoming is here or not.

In reference to another question that Mr. Stevenson asked, what I wanted to ask, Senator, with reference to this bill, to amend the Federal Power Act, and to facilitate reliability of abundant and economic power supply by strengthening the existing mechanism for coordinating electric utility systems and encouraging the installation and use of products, advancing technology with due regard for the proper

conservation of science and other natural resources, what I want to ask is: Due to the advancing technology and the conservation of our resources as referred to under part 4 of the regional coordinating council, and item 19 listing new mechanisms for coordinating of the electrical utility industry, I was wondering if in reference to this bill, and referring to the representative from Wyoming, paragraph 1, page 1, and paragraph 1, page 5, and Mr. Stevenson's statement with reference to our natural resources, that the Federal Government would be just a power to use the technical and advancing scientific knowledge to further the supply of our power that would be distributed by the various legal companies now established.

What I mean by that, would it be a mass electric system derived from the new technical knowledge and take from the vast resources in the States of Colorado, Wyoming, Utah with reference to amber products of which we have an immense supply; I think the largest on the face of the earth?

To make it very short: Would the Federal Government, under the Federal Power system, use these resources to further the advancing supply of power?

Thank you.

Senator Moss. Thank you for that statement in the record.

Mr. SHERROD. I need no answer at the present time.

Senator Moss. The question will be standing there before the committee when it sees the record.

Now Mr. Simonton, executive director of the Mid-West Electric Consumers Association.

I might state at this point that Mr. Wayne Johnson, the executive director of the Intermountain Consumer Power Association, was here this morning and was unable to return this afternoon and left his prepared statement, which will go into the record at this point.

(Statement of Mr. Wayne Johnson follows:)

STATEMENT BY WAYNE H. JOHNSON, EXECUTIVE DIRECTOR, INTERMOUNTAIN
CONSUMER POWER ASSOCIATION, SALT LAKE CITY, UTAH

My name is Wayne H. Johnson. I am the Executive Director of Intermountain Consumer Power Association. I appreciate the opportunity to appear today on behalf of the Association. Our Association represents eighteen municipal electric systems and four electric cooperatives operating in Utah. We support the objectives and stated purposes of the Reliability Act, but urge that certain safeguards be included in the act which will permit the small, isolated distribution systems such as we represent assurance that they will not be placed in a captive position regarding a future source of electrical energy without some procedure to obtain relief.

Specifically, the systems we represent in Utah are in most instances distribution systems engaged in the sale of electrical energy and are too small in size to construct local generating facilities whose cost would not compare economically with the total costs associated with large generating plants remotely located, including the transmission cost necessary to deliver the power into our systems. It is our desire to participate in such large remotely located plants either on an undivided interest basis or as a customer; however, for this to be possible we must rely on support in the form of a regulating body which will assure that the associated transmission costs are just and reasonable. In order to facilitate this request, I respectfully suggest that Sec. 411 of S1934 be modified as follows: on line 14 after "such persons" add "or transmit energy for such persons or their agent".

In addition to the above, we respectfully suggest that the Commission in its acceptance of regional councils under Sec. 404 take special notice of the financial structure of such councils so as not to eliminate the participation of small systems such as those we represent by allowing a prohibitive financial burden in the form of membership fees, study cost sharing and other necessary expenses associated with the councils compliance with the intent of the Act.

It is our desire to participate as a member of the appropriate council and we support the position taken by American Public Power Association particularly with regard to open membership in regional councils without restriction to size of utility or of ownership, that the meetings should be open to the public and plans should be made available for public inspection. The systems we represent must not be legislated out of business by restrictions in this Act which will prohibit them from taking direct advantage of the economies of large scale generation and transmission of power.

Thank you.

STATEMENT OF FRED G. SIMONTON, EXECUTIVE DIRECTOR, MID-WEST ELECTRIC CONSUMERS ASSOCIATION, DENVER, COLO., ACCOMPANIED BY WILLIAM WISE, ATTORNEY, WASHINGTON, D.C.

Mr. SIMONTON. Senator Moss, we appreciate your interest, which is shared by Chairman Magnuson, we know, and other members of the committee for all segments of the electric power industry, small, medium sized and large, public and private. We and some of us in the Missouri Basin at least have learned to trust the democratic process, even including the regulatory processes.

My name is Fred G. Simonton. I am executive director of Mid-West Electric Consumers Association, with headquarters in Denver, Colo.

Mid-West Electric Consumers Association is a regional organization representing 264 rural electric cooperatives, municipal systems, and public power districts engaged in the business of furnishing electric service in the Missouri River Basin. As a service association, our sole purpose is to further the interests of the electric consumers in the Basin. Our members are located in the States of Colorado, Iowa, Minnesota, Montana, Nebraska, North Dakota, South Dakota, Wyoming, and Kansas.

The Electric Power Reliability Act which was introduced in the Congress in 1967, is in our opinion, one of the most far-reaching legislative proposals which has been considered in recent years. It has been given careful attention by our association.

Early in 1967, at the direction of the board of directors of Mid-West, a special study committee was established to examine S. 1934, and related bills. The committee members are: James Grahl, general manager, Basin Electric Power Cooperative, Bismarck, N. Dak., who acted as chairman; V. T. Hanlon, manager, East River Electric Power Cooperative, Madison, S. Dak., Aric Verrips, general manager, Missouri Basin Municipal Power Agency, Sioux Center, Iowa; Charles Ham, manager, Wheatbelt Rural Electric Cooperative, Sidney, Neb.; and James McNear, director, Highline Rural Electric Cooperative, Sterling, Colo. Ex officio members of this special study committee were Dennis Lindberg, president of Mid-West Electric Consumers Association and president of the Missouri Basin Systems Group, Odebolt, Iowa; Robert Marritz, executive director and staff counsel, Missouri Basin Systems Group, Denver, Colo.; and me.

The committee made several recommendations to the full board of directors of Mid-West Electric Consumers Association, which is made up of four directors from each of the nine States represented in our association.

The recommendations were:

1. Mid-West Electric Consumers Association should testify in favor of the purposes and objectives of the Electric Power Reliability Act. The Moss version of the bill (H.R. 12322) seemed to our committee to be the best version, although important modifications are recommended, and will be so stated here today.

The bill should give the regional councils advisory roles rather than making them a part of the regulatory process, as now provided by the bill. The language of the bill should be modified so that the regional transmission plans recommended to the Federal Power Commission by the regional councils would be advisory and for the approval of the Commission. However, the Commission should have the authority to study alternative lines and to finally certify those lines most in the public interest.

A power system's independent request for FPC certification of a transmission line should be treated by the Commission without prejudice although the proposed line may not correspond to the plan approved by the regional council.

A utility should be required to explain to the Federal Power Commission why its proposed line does not correspond to the regional plan, but its request should otherwise be handled under the same procedures as requests for certification for lines which do correspond to the regional plan. Otherwise, the rural electric cooperatives and public power systems will be at a disadvantage because they would be outvoted on the regional councils.

2. To make the above provision workable, the Moss bill should be amended to provide that the Federal Power Commission establish a qualified staff of engineers to make studies and develop its own plans for transmission in the various regions as necessary. This would give FPC the technical competence needed to be independent of the proposals of the regional industry councils. This kind of provision also seems important because the Federal Power Commission is the only protection that most of the electric consumers in the country have.

As the protector of the consumer interests, the Commission should conduct its own studies with its own personnel to reach conclusions of its own.

3. The Federal Power Commission should be empowered to require establishment of open connections between power systems which FPC can order closed in emergencies to provide assistance to systems experiencing an outage.

The public cannot be expected to tolerate an outage in one village or rural area when a neighboring power system has the capability of providing emergency power.

The board of directors of Mid-West Electric Consumers Association was authorized at our 10th annual meeting, December 6-8, 1967, to determine the position of Mid-West on the electric power reliability legislation on the basis of the recommendations of our special study committee.

Consequently, at its regular quarterly board meeting, April 2 and 3, 1968, the following resolution was adopted unanimously:

RESOLUTION ON ELECTRIC POWER RELIABILITY ACT

Whereas there have been introduced into the 90th Congress several versions of a bill to amend the Federal Power Act, generally referred to as the Electric Power Reliability Act, which would grant to the Federal Power Commission broad new authority "to facilitate the provisions of reliable, abundant, and economical power supply"; Now, therefore, be it

Resolved, That we endorse the principles and objectives of the Electric Power Reliability Act, as most clearly enunciated in H.R. 12332 introduced by Congressman Moss of California; and, be it further

Resolved, That we believe the legislation would more adequately protect consumer-owned electric systems if the bill were strengthened in certain respects, such as by giving the FPC greater regulatory authority over the "regional councils;" the power to execute an independent study of a proposed regional plan when objections are voiced by members of a "regional council;" and the power to require establishment of open connections between power systems for use in emergencies to avoid outages; and, be it further

Resolved, That a representative of Mid-West Electric Consumers Association appear at one of the upcoming regional field hearings to present testimony for this Association to this effect.

Consistent with the changes we have suggested above, our attorney, Mr. William Wise, Washington, D.C., is prepared to supplement our testimony before this committee with suggested amendments to the Electric Power Reliability Act.

As the policy and legislative association of the members of the Missouri Basin Systems Group, which is our regional coordination group and pool of 125 consumer-owned systems in the Mid-West, including the U.S. Bureau of Reclamation, we recognize the clear purpose of the proposed electric power reliability bill which is as Congressman Moss emphasized, "not merely to prevent more cascading power failures, but to further the national policy, adopted in 1935, of assuring an abundant supply of electric energy throughout the United States with the greatest possible economy and with due regard to the proper utilization and conservation of natural resources."

We call the committee's attention to the fact that our association and the American Public Power Association were the only witnesses to appear in support of appropriations for the Federal Power Commission for the fiscal year 1968 before the Senate Subcommittee on Independent Offices.

We are concerned that as presently constituted, the Federal Power Commission, if assigned the additional responsibilities it would have under the Electric Power Reliability Act, would have to depend far too greatly on the recommendations developed by regional councils which are likely to be controlled by the private power companies.

In our opinion, it is not equipped at present to do an adequate job to protect the public interest if it is assigned the additional responsibilities it would have under the Electric Power Reliability Act. To do this job properly, the Federal Power Commission should be authorized and directed to develop a staff which is professional enough to become expert on the needs for EHV transmission in all regions of the country.

We are very much aware that many of the private power companies are opposing the Electric Power Reliability Act. We have witnessed the urgent gathering together of the companies in coordinating coun-

oils or regional councils. These companies have protested that they have achieved a high level of reliability without regulation despite regular, widespread outages.

At this point I would like to depart from my written statement and say that we frankly have little criticism of the efforts to coordinate power supply in the various regions, especially when the consumer-owned systems have been a part of these efforts. But we are, sir, seriously concerned with interregional and national transmission grid that will be constructed. The gifts of the scientists and the engineers and the manufacturers, their technology is upon us. Today we heard a great deal about interregion connections, but the control and operation of even the high voltage of 500 kv. and 750 kv., and even a million-volt lines, raise questions which are of vital concern to the consumer-owned groups in our region.

They claim the industry can solve the problems of interconnections and long-range planning for the nation's electric power needs. Indeed, only yesterday, a group of power suppliers met in New York City to sign an agreement establishing what they chose to call the National Electric Reliability Council.

It is clear that this group is suggesting that it is responsible for and capable of assuring electric reliability in the Nation.

But the facts are, Senator Moss, that this group has deliberately excluded from its deliberations and from membership the Missouri Basin Systems Group, the coordinating planning agency and the operating power pool in our region for 125 consumer-owned and public power systems.

The Missouri Basin Systems Group has been a responsible power pool and coordinating body. For example, in 1965 it completed its study costing \$100,000 of a long-range power supply plan for the Missouri River Basin. At the present time there are initial appropriations of \$30,000 for additional studies from this group.

At this juncture, Senator Moss, I ask your permission to have put into the record certain documents pertaining to the National Electric Reliability Council and its actions relative to the Missouri Basin Systems Group:

(1) A letter, dated April 5, 1968, from 320 Park Avenue, New York, N.Y., and signed by Floyd L. Goss, A. Gruhl, W. B. McGuire, J. R. Welsh, G. O. Wessenauer, and J. Lee Rice, Jr., chairman.

(2) A draft copy of agreement, dated March 27, 1968, and sent to: Carolinas-Virginia Power Pool, East Central Area Reliability Group, Florida Power Corp., Mid-America Interpool Network, Mid-Atlantic Area Coordinating Group, Mid-Continent Area Planners, Northeast Power Coordinating Council, Southwest Power Pool, the Southern Co., Tennessee Valley Authority, Texas Interconnected System, and Western Systems Coordinating Council.

(3) A copy of the telegram to J. Lee Rice, Jr., chairman of the board, Allegheny Power System, Inc., from Robert Marritz, executive director and staff counsel, Missouri Basin Systems Group, Denver, Colo., dated April 23, 1968.

(4) The statement which I issued to the news media on April 24, 1968, by Mid-West Electric Consumers Association.

At the very time the Senate Committee on Commerce is seeking information on the proposed Electric Power Reliability Act, yesterday some of the largest power systems in the Nation are meeting in the board room of the Allegheny Power System, Inc., to form what amounts, in our opinion, to a private club which is sole judge of whether a system or an entire regional power pool is worthy of admission to what purports to be a national power reliability group.

In our view, this suggests that the purpose of the meeting is to marshal forces against the Electric Power Reliability Act, now under consideration.

Our association protests most vigorously the intentional exclusion of the systems group from the National Electric Reliability Council, and will protest its exclusion from any national group that purports to concern itself with the reliability of electric service in this Nation.

As I have stated previously, the Missouri Basin systems group includes the U.S. Bureau of Reclamation, which markets nearly 2 million kilowatts of Federal power over the only regionwide transmission system in the Missouri Basin.

The Missouri Basin systems group also includes Basin Electric Power Cooperative which operates the Nation's largest lignite burning generating plant, serving its 106-member rural electric cooperatives in eight States.

In a telegram to several Senators, high administration officials (including Secretary Udall and Chairman of the FPC, Lee White), I suggested that "it is not enough for this self-appointed group of giant companies to call itself a 'reliability council.'"

If this group is sincere in its efforts to prevent the massive blackouts experienced in the recent past, and accomplish the objectives set forth by Congressman Moss, it would seek to coordinate with all groups.

As documented by Robert Marritz' telegram to Mr. Rice, the deliberate exclusion of the Missouri Basin systems group—members of which were the key element in establishing the national east-west intertie last year—raises a question about the real purpose of their proposed organization.

The deliberate exclusion of most municipal systems, rural electric cooperatives and the Missouri Basin systems group, suggests to us, all the more need for national legislation which, through responsible and informed regulation, would require objective and fair planning of the rapidly expanding national electric power grid, that will have to traverse the basin.

We are apprehensive, Senator Moss, after the experience of this week, that giant power companies are not truly interested in coordination of all power systems for the purpose of electrical reliability.

It seems to us too often that they appear to be building moats around their ancient baronies, refusing to recognize that smaller electric systems need to avail themselves of the economies to be gained from the technology of large-scale generating units and extra-high-voltage transmission lines, the 500's, the 750's, the millions that are coming.

In conclusion, we support the legislation under consideration and respectfully urge that electric reliability legislation protect the small consumer-owned electric systems and respect their desire to have a meaningful voice in determining their destiny.

We believe that the way in which a national electric grid is built and the manner in which it will be operated will be of vital importance to every segment of the Nation and every person in the Nation.

We believe that the public interest will be served if the voice of the consumer-owned systems is heard at the planning tables and heard now.

We appreciate very much the opportunity you have given us to appear before the committee to present our views.

Senator Moss. Thank you, Mr. Simonton.

Attached to the statement are the documents you referred to?

Mr. SIMONTON. Yes, sir.

Senator Moss. They will be placed in the record at this point.

(The documents follow:)

NEW YORK, N.Y., April 5, 1968.

ERNEST R. ACKER*,
Northeast Power Coordinating Council.
F. M. AUSTIN
Texas Interconnected System.
D. W. ANGLAND*,
Northern States Power Co.
ANTHONY W. BENKUSKY*,
Mid-Continent Area Power Planners.
HARLEE BRANCH, JR.,
Southern System.
ROBERT BRANDT*,
New England Power Co.
E. B. CRUTCHFIELD*,
Carolinas-Virginias Power Pool.
EARL EWALD,
Mid-Continent Area Power Planners.
WILMER S. KLEINBACH*,
Pennsylvania-New Jersey-Maryland Interconnection.
L. F. LISCHER*,
Commonwealth Edison Co.
J. H. MCGUIRE*,
The Southern Co.
B. HUDSON MILNER*,
East Central Area Reliability Group.
A. P. PEREZ,
Florida Group.
P. H. ROBINSON*,
Houston Lighting & Power Co.
THOMAS W. TRICE,
Mid-Atlantic Area Coordinating Group.

GENTLEMEN: At a meeting called by Floyd L. Goss, Chairman of the Western Systems Coordinating Council on February 19, 1968, the undersigned were appointed an Ad Hoc committee to draft an agreement under which there would be organized nationally the twelve regional groups concerned with the reliability of bulk power supply in North America. The results of the deliberations of this Committee are set forth in the attached draft, two copies of which are enclosed.

This draft represents the distillation of the views of the representatives of six of the organizations involved. That we have been able to agree on the language of it is a substantial accomplishment. It is in this same spirit that we suggest you and your member organizations consider it. If you have major disagreement with it, that should be considered; minor differences we hope can be forgotten.

In the interest of expediting the consideration of this draft, a meeting will be held on April 25, 1968, at 9:30 A.M. in the Board Room of Allegheny Power System, Inc. on the 31st floor at 320 Park Avenue, New York, N.Y. At this meeting we hope agreement can be reached on a final wording of the Agreement. Will you please arrange to have a representative of your regional organization attend to present your views.

*Present at the February 19th meeting.

In between now and then, organizations with more than one member can present the Agreement to their membership, it will be most helpful. The East Central Area Reliability Group have authorized its execution if the Agreement remains in substantially in its present form.

Will you please advise Mr. Rice (J. Lee Rice, Jr., 320 Park Avenue, New York, N.Y. 10022) of the representation you will have at the April meeting.

This letter is being sent to those present at the February 19 meeting representing regional reliability organizations, and to those who, I have been informed, head or are responsible for the operation of the twelve regional reliability organizations.

Very truly yours,

Floyd L. Goss*
A. Gruhl*
W. B. McGuire
J. R. Welsh*
G. O. Wessenhauer
J. Lee Rice, Jr.,* *Chairman.*

DRAFT OF AGREEMENT

Agreement, dated April, 1968, among Carolinas-Virginias Power Pool, East Central Area Reliability Group, Florida Power Corp., Mid-American Interpool Network, Mid-Atlantic Area Coordinating Group, Mid-Continent Area Power Planners, Northeast Power Coordinating Council, Southwest Power Pool, The Southern Company, Tennessee Valley Authority, Texas Interconnected System, and Western Systems Coordinating Council (hereafter referred to separately as a Regional Organization, collectively as the Regional Organizations).

WITNESSETH

Each Regional Organization is concerned with the reliability of bulk power supply in the area in which it or its members, serve.

ARTICLE I.—NAME

1.01 This organization shall be known as the National Electric Reliability Council.

ARTICLE II.—PURPOSE OF AGREEMENT

2.01 The purpose of this Agreement is further to augment the reliability of bulk power supply in the electric utility systems of North America.

To this end the Council will

- (a) encourage and assist the development of inter-regional reliability arrangements among Regional Organizations or their members;
- (b) exchange information with respect to planning and operating matters relating to the reliability of bulk power supply;
- (c) periodically review regional and inter-regional activities on reliability;
- (d) provide independent reviews of inter-regional matters referred to it by a Regional Organization; and
- (e) provide information to the Federal Power Commission and, where appropriate, to other federal agencies with respect to matters considered by the Council.

ARTICLE III.—MEMBERSHIP

3.01 In addition to the founder Regional Organizations, any other regional organization may be admitted to the Council if its facilities are found to have a significant effect on the reliability of bulk power supply in North America.

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4.01 The Council shall consist of the principal officer or other authorized representative of each Regional Organization. In addition, should the membership of the Council not include representatives of all segments of the electric utility industry (i.e., (a) Federal, (b) investor-owned, (c) rural electric cooperative, and (d) state and municipal), the Council shall appoint from a list, provided for this purpose by the Regional Organizations, additional members as required to effect such industry representation. Each member of the Council shall be a representative of a participant in a Regional Organization.

4.02 Regular meetings of the Council shall be held on the third Wednesday of April and October in each year; special meetings may be called by the Chairman on his own initiative or upon request of two or more members. As far in advance of each meeting as practical, an agenda therefor shall be distributed to the members. At any meeting a majority of the Council shall constitute a quorum for the transaction of business.

4.03 At the April meeting, which shall be the annual meeting of the Council, the members of the Council shall select, by majority vote, one of their members to serve as Chairman and one as Vice Chairman, and a Secretary-Treasurer, who need not be a member, each for a term of two years.

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4.06 The expenses of each member of the Council, its committees and task forces and of the Secretary-Treasurer shall be borne by the party by whom he is regularly employed or the Regional Organization in which such party is a participant. Administrative expenses of the Council, itself, will be authorized by the Council at a duly-called meeting through the adoption of an annual budget.

4.07 Any member of the Council may designate an alternate to represent him at any Council meeting.

4.08 The Council may appoint such committees and task forces as it deems necessary to carry out the purposes of this Agreement.

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5.01 To implement the purpose of this organization set forth in Section 2.01 (e), the Chairman of the Federal Power Commission shall be invited to designate an observer to attend all meetings of the Council.

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6.01 This Agreement shall continue until terminated by unanimous agreement of the parties, but any party of this Agreement may cease to be such by giving the others at least 30 days written notice of its intention. Any such party shall nevertheless continue to be liable for any obligation it may have had to pay a share of the expenses of the Council incurred prior to the end of the calendar year in which such notice is given.

ARTICLE VII.—ASSIGNMENT

7.01 Any party may assign this Agreement to a successor organization or organizations having the same function with respect to bulk power supply.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly executed.

*Chairman, Executive Committee,
 Carolinas-Virginias Power Pool Agreement.*

*Chairman, Executive Board,
 East Central Area Reliability Coordination Agreement.*

COPY OF TELEGRAM SENT BY MID-WEST ELECTRIC CONSUMERS ASSOCIATION ON APRIL 23 AND 24 AND DELIVERED TO CERTAIN SENATORS, HIGH ADMINISTRATION OFFICIALS AND NATIONAL ELECTRIC LEADERS

The members of Mid-West Electric Consumers Association support the objectives of the Electric Power Reliability Act. In our view, the goals of this proposed legislation are not served by dubious efforts to create the illusion of national utility coordination which does not, in fact, exist. One such effort involves a proposal to form a National Electric Reliability Council.

For your information, below is a copy of a wire to an executive of the Allegheny Power System, Inc., which is hosting a meeting in its Board Room in New York City, on April 25, to organize such a National Council. However, it appears the proposed Council will exclude the only regional coordination

group of consumer-owned utilities in the country—the Missouri Basin Systems Group, which represents the heartland of this country's electric grid.

APRIL 23, 1968.

DEAR MR. RICE: As Executive Director of the Missouri Basin Systems Group, I must strongly object to the exclusion of MBSG from your April 25 New York meeting concerning formation of a National Electric Reliability Council.

MBSG is a regional coordination group and pool of 125 consumer-owned systems in the upper mid-west, including the U.S. Bureau of Reclamation. Present facilities of the group's members include the backbone 230 kv transmission grid in the region. Planned facilities of the group's members include generating units of substantial size and hundreds of miles of EHV transmission line. By any standard, these bulk power facilities constitute a significant segment of the area's facilities and have a substantial effect upon the reliability of the regional system, not to say the national interconnected system. As you may know, the East-West ties linking 94% of the country's generation are accomplished within MBSG's area and by MBSG member system facilities.

If there is any question as to whether MBSG is a coordination group or a pool, I would say that it is both. MBSG's Planning and Operating Committees conduct studies to ensure that Member's plans are coordinated to provide a low-cost reliable supply of electric energy in the region. Pooling in the group presently involves the hydro-electric facilities of the Bureau of Reclamation and the thermal generating facilities of Basin Electric Power Cooperative.

Since MBSG participated by invitation in a Feb. 19, 1968 meeting in Los Angeles concerning formation of a National Reliability Council, and I later called Mr. Floyd Goss of the Los Angeles system reaffirming MBSG's interest in participating in such an effort, I am disturbed by the complete failure of your group to keep us informed of its progress. Not only were we not invited to the New York meeting, held for the purpose of considering a draft agreement—we were not even informed of it, or sent a draft copy of the agreement, nor have we received any correspondence on this matter to date.

Having learned of the exclusion of MBSG from the New York meeting and the National Council, I telephoned Mr. Goss on April 15 and later wrote him on April 16 to ask that we be allowed to participate in the New York meeting. Mr. Goss telephoned me on April 22 to say that MBSG should not have a representative at the New York meeting, and that he would inform us of what transpired there.

Thus, it seems that our exclusion from the meeting was deliberate, that our comments on the draft agreement are not wanted, and that our role in the National Council, if any, will be distinctly second class. Whatever the objectives of your National Council, I sincerely believe that they cannot be served by denying participation to groups such as MBSG.

ROBERT O. MARRITZ,
Executive Director and Staff Council,
Missouri Basin Systems Group.

FRED SIMONTON,
Executive Director, Mid-West Electric
Consumers Association.

[News release from Mid-West Electric Consumers Association, Denver, Colo., Apr. 24, 1968]

DENVER, COLORADO.—The Executive Director of a consumer-owned electric association today protested "most vigorously" the intentional exclusion of a major regional electric power coordinating group from a council purporting to be national in scope.

Fred G. Simonton, Executive Director of Mid-West Electric Consumers Association, Inc., with headquarters in Denver, Colorado, said that "the Missouri Basin Systems Group, a regional power pool serving 125 electric systems, most of whom also belong to Mid-West, was deliberately excluded from a meeting to be held to create a 'National Electric Reliability Council'."

Simonton noted "that Systems Group Executive Director, Robert Marritz had objected to the exclusion by telegram to J. Lee Rice, Jr., Chairman of the Board, Allegheny Power System, Inc., New York City, and Chairman of the council meeting in New York to be held April 25.

Excluded from the New York meeting of the council, called to draft an agreement among some of the major power entities in the country, are the 125 electric

systems in the Missouri Basin, which make up the Systems Group. Included in the Missouri Basin Systems Group are the United States Bureau of Reclamation, which markets power over the only region-wide transmission system in the Missouri Basin, and Basin Electric Power Cooperative which operates the nation's largest lignite burning generating plant.

In a telegram to Senators, high Administration officials and national electric leaders, Simonton said, "it is not enough for this self-appointed group of giant companies to call itself a 'reliability council.' If it is sincere in its efforts to prevent the massive blackouts experienced in the recent past, it will seek to coordinate with all groups. The deliberate exclusion of the Missouri Basin Systems Group, members of which were the key element in establishing the national East-West intertie last year—raises a question about the real purpose of their proposed organization. Exclusion of major coordinating groups, and regional systems from this 'agreement writing' session in New York suggests that the purpose of the meeting is to marshal forces against the Electric Power Reliability Act, now under consideration by the Senate Committee on Commerce."

Simonton's statement said, "that if the power company dominated proposed council is more than organized subterfuge to avoid such legislation, it would have sought to include representatives of all power suppliers in the nation. The deliberate exclusion of most municipal systems, cooperatives and the MBSG, suggests all the more the need for national legislation which would require objective and fair planning of the national electric power grid."

Simonton said his organization expects to testify in favor of legislation which would accomplish the purposes sought by the present legislation under consideration. He said that the action of the council, "confirms our apprehension that giant monopolistic power companies are not truly interested in coordination of all power systems for the purpose of reliability."

"We go to Salt Lake City Friday to tell the Senate Committee of our views and of the serious need to protect the small, consumer-owned electric system, as well as to assure the customers of the giant power companies that they can expect reliable service at fair rates."

Senator Moss. We are glad to have you come here to help us get this picture rounded out and before the committee fully.

How do the consumer-owned systems in the Missouri River Basin provide for their power supply?

Mr. SIMONTON. We have the dams out there, the hydrodams, the peaking power, and we have the Basin Electric Power Cooperative which is a federation of cooperatives. They are their own power suppliers. This is the combination of lignite and hydro. And the 7,000 miles of transmission lines of the Bureau of Reclamation.

Incidentally, I would like to throw in here, that the coal suppliers for Basin Electric, located at Stanton, N. Dak., the site of the plant is Truax-Traer and the employees are United Mine Workers. The general offices of Basin Electric are at Bismarck, N. Dak.

Senator Moss. So the large continuing volume is thermal-burning lignite and you use the hydro as peaking power, and that is generally the way it is produced?

Mr. SIMONTON. That is generally it.

Senator Moss. Is this functioning well now? Is it having problems?

Mr. SIMONTON. As I have said, Basin is the largest lignite-burning plant in the world. It went into operation—it was built 2½ years ago. It is working very well. Power is available in this new plant 80 to 85 percent of the time. It is capable of producing energy for less than 3 mills and delivers for the farflung members—Iowa, Mont.—at 5.6 mills. The coal costs are interesting, 12 cents per million Btu.

Senator Moss. I understand from your testimony that you have been trying to work toward this reliability factor and it is your feeling that you have not been included in some of this planning that seems to be going on with the private utility groups?

Mr. SIMONTON. Yes, sir. I read all my testimony. I felt I had to, as I didn't have enough copies. They will be furnished in Washington.

Senator Moss. We are certainly glad to have this as part of the record. Do you have anything you want to add, Mr. Wise?

Mr. WISE. Yes, if I may, Senator Moss. I have a statement which goes into suggested amendments which we have.

Senator Moss. All right. We will hear you.

STATEMENT OF WILLIAM C. WISE, COUNSEL, MID-WEST ELECTRIC CONSUMERS ASSOCIATION

Mr. WISE. If I might have my statement entered in the record I will try to summarize it.

Senator Moss. I would appreciate that. The full statement may go in.

(Mr. Wise's prepared statement follows:)

STATEMENT OF WILLIAM C. WISE, COUNSEL, MID-WEST ELECTRIC CONSUMERS ASSOCIATION

Mr. Chairman and Members of the Committee, my name is William C. Wise. I am counsel to Mid-West Electric Consumers Association. As indicated by Mr. Simonton, I shall discuss a few specific provisions of the originally proposed Electric Power Reliability Act of 1967, which we feel require modification if the public interest is to be fully served by its enactment into law.

At the outset, I wish to emphasize that we strongly urge the passage of the Act with but a few amendments. It is our feeling that the Federal Power Commission is to be highly commended for proposing legislation with the objectives of the proposed Act. The technical characteristics of electric systems today are such as to require the fullest possible coordination among such systems if electric consumers are to receive reliable service. The massive black-outs occurring in the East in late 1965 and 1967, as well as the several smaller, but still sizeable, power failures which have plagued various parts of the nation since that time, underline the need for corrective action which will assure coordination between all electric systems regardless of size or ownership. Investor-owned, publicly-owned and cooperatively-owned systems must be properly coordinated with each other if the maximum reliability of service is to be attained. While much worthwhile coordination within the industry is voluntarily taking place at the present time, it falls far short of the complete coordination between all segments of the electric industry which is so sorely needed to provide maximum reliability of service. Since power failures lack respect for state lines, it is obvious that the required degree of coordination will be effected only if Congress bestows upon the Federal Power Commission the necessary authority and provides it with a sufficient staff to enable it to vigilantly oversee such coordination.

Although Mid-West enthusiastically endorses the passage of an electric power reliability act along the lines of the act prepared by the Federal Power Commission, which has been introduced in the Senate as S. 1934 and in the House as H.R. 10721, it would respectfully suggest the following changes are necessary to protect the public interest.

1. Section 401(b) lists various actions by which the policy of the Federal Power Act is intended to be furthered by the Reliability Act. One reads: "by respecting the territorial integrity of utility service to the extent consistent with the public interest:"

We suggest the deletion of this language. Our concern over this language arises from the fact that somewhat similar language has been seized upon in some states to stop rural electric cooperatives from building necessary generating plants and transmission lines on the theory that a power company had generation facilities in the general area.

2. In the second sentence of Section 404(a), the words "direct or indirect" should be deleted and the words "or of its facilities" should be added following the word "ownership".

It is essential that each electric system, regardless of its size or regardless of whether it operates only distribution facilities, be permitted to participate directly in the activities of a regional council. It is not clear what was intended by the use of the word "indirect" in Section 404(a), but it might be interpreted to mean small electric systems might only be represented through larger generating systems from which it purchases power at wholesale.

The changes suggested above in respect of Section 404(a) have been adopted in the so-called Moss bill, which was introduced in the House by Congressman Moss of California as H.R. 12322. Many of our suggested changes have been adopted in the Moss bill, as we shall point out as we proceed.

3. In Section 404(b), we would suggest the insertion of the following words at the end of the first sentence: "which statement shall provide for representation of all segments of the industry."

We deem it most important that the act should make certain that the organization of the regional council afford fair representation to all segments of the electric industry.

4. Sections 404(c) and 404(d) provide for immunity from Section 4 of the Clayton Act (15 U.S.C.) in certain circumstances, and the title of Section 4 includes the words "antitrust immunity". We feel that all provisions for antitrust immunity should be deleted. It does not seem to us that any action which might be taken by a regional council which is not harmful to consumers would constitute a violation of the Clayton Act. As a representative of consumers, Mid-West favors much stronger enforcement of the antitrust laws rather than any granting of immunity from such laws.

The Moss bill deletes the antitrust immunity provisions.

5. It is felt that Section 404(b) should provide that copies of the filing of any plan by a regional council should be published in the Federal Register and that the plan should be available for public inspection. The Moss bill carries out this suggestion.

6. It is, also, felt that Section 404 should provide for amendments to plans which have been filed. The Moss bill provides for such amendments in a Sub-section (g) which it adds to Section 404.

Our members would feel better if the Commission were given more authority under Section 404. As it is now, the Commission may modify or set aside a plan suggested by a regional council if it is not consistent with the objectives of the Act, but there is no authority on the part of the Commission to develop a plan of its own if a regional council fails to submit a desirable plan. Section 404(d) should grant such authority to the Commission.

Certain members of Mid-West feel that the council should be advisory in nature only and that the final plan should be developed by the Commission with the advice of the regional council. One of our good farmer members describes the proposed procedure of having the industry devise the plan as "putting the fox in charge of the hen house."

Our members are also concerned that under Section 404, the small municipal electric systems and the rural electric cooperatives may not have any real voice in the workings of the regional council. It is important that some procedure be evolved which will assure the small systems such a voice. It is suggested that it might be more appropriate to have a Federal Power Commission Staff member serve as the chairman of a regional council rather than having the council select a chairman from among its own membership.

7. It is our feeling that Section 408 requires strengthening. We should do this by substituting the word "shall" for "may" and the word "govern" for the word "criterion". These changes have been made in the Moss bill. This section is of great importance, in our opinion.

8. Section 411 authorizes the Commission, after hearing, if it finds that no undue burden will be placed upon a person engaged in the generation or transmission of electric energy, to establish physical connection of its transmission facilities with the facilities of one or more other persons engaged in the generation, transmission or sale of electric energy and to sell energy or exchange energy with such persons. From the standpoint of municipalities, cooperatives and the ultimate consumers, it is essential that the Commission also be authorized to order persons in such circumstances to wheel energy for such other persons.

An addition should be made to Section 411 to make certain that that section does not take away any of the rights granted to preference customers under the various Federal power marketing statutes. The Moss bill takes care of both of these points.

The Moss bill also contains several other changes which we have not suggested. However, we endorse each such changes contained in that bill.

As a general rule, cooperatives and small municipalities have found it most difficult to participate in the voluntary regional groups which the investor-owned companies have set up. There has been instance after instance in which participation by the consumer-owned groups has been refused. At the present time, there is a most patent effort being made by the industry to head off the enactment of an Electric Power Reliability Act. All kinds of voluntary councils are being set up. However, there is no indication that the public interest is being given any major consideration by these councils. Most recently, an attempt has been made to set up a National Electric Reliability Council. As a matter of fact, that group is meeting in New York City today to put the finishing touches on the organization of the National Council.

We have in the Missouri Basin a group known as Missouri Basin Systems Group (M.B.S.G.) which works closely with Mid-West. The M.B.S.G. is a regional coordination group and pool of 125 consumer-owned systems, including the United States Bureau of Reclamation. Originally, M.B.S.G. was invited to participate in a meeting in Los Angeles concerning formation of a National Reliability Council, held on February 19 of this year. Since that meeting, M.B.S.G. has not been informed of the activities of the group, nor been permitted to participate in its meetings. M.B.S.G. expressly requested permission to attend the meeting being held in New York City today and was expressly told that it was not to attend. This National Council is obviously being set up to create the impression that there is no need for the enactment of an Electric Power Reliability Act. The extent to which cooperatives and small municipalities would be permitted to operate in such a council is clearly reflected in the denial of M.B.S.G.'s request to attend the meeting. We are attaching to our testimony a letter from Robert M. Marritz, Executive Director and Staff Counsel of M.B.S.G., to the chairman of the meeting which was held in Los Angeles, and a copy of a telegram from Mr. Marritz to the chairman of the New York meeting. This letter and telegram tells the story of the denial of the request of M.B.S.G. to attend the New York meeting. We are also attaching to our testimony a copy of the wire from the General Manager of the National Rural Electric Cooperative Association to the chairman of the New York meeting. This wire evidences the concern of the cooperatives throughout the nation of not being permitted to participate fully in any reliability councils which are set up. I am also attaching a draft of a proposed agreement to set up the proposed National Electric Reliability Council. It seems to us that the Record should contain this material.

In conclusion, we thank this Committee for holding these hearings throughout the country and permitting us to testify. We ask the Committee to give consideration to our suggestions and urge it and the Congress to enact a strong Electric Power Reliability Act.

MISSOURI BASIN SYSTEMS GROUP,

April 16, 1968.

Mr. FLOYD L. GOSS,
*Chairman, Western Systems Coordinating Council,
Los Angeles, Calif.*

DEAR MR. GOSS: This letter is in elaboration of our telephone conversation yesterday, in which we discussed the Missouri Basin Systems Group's interest and participation in the proposed National Electric Reliability Council.

As I mentioned to you yesterday, I was surprised at the omission of MBSG from the list of regional organizations concerned with reliability of bulk power supply. MBSG was, as you know, invited to and represented at an exploratory meeting held in Los Angeles on February 19. Following that meeting, I telephoned you to express MBSG's likely interest, as a regional coordination organization, in participating in a national coordination group, should one develop.

It is my understanding that a second meeting is to be held in New York City on April 25, at which time various regional organizations will consider a draft of agreement for a National Council. MBSG has not been invited to that meeting, or even officially informed of it. MBSG would like to be considered, as it originally was, an organization concerned with the reliability of bulk power supply in the area in which its members serve and, consequently, interested in a national coordination effort. We hope that our interest in and qualifications for membership on the National Council can be clarified in time to permit our participation in the New York meeting.

I would appreciate your advising me as soon as possible whether MBSG may be expected to have representation at the April 25th meeting.

Enclosed for your interest is a brochure published by Mid-West Electric Consumers Association, a regional trade association of consumer-owned electric systems, outlining power supply plans for the Missouri Basin which were developed through MBSG.

Sincerely,

ROBERT O. MARRITZ,
Executive Director and Staff Counsel.

[Telegram]

APRIL 23, 1968.

MR. J. LEE RICE, Jr.,
c/o Allegheny Power System, Inc., New York, N.Y.

As executive director of the Missouri Basin Systems Group, I must strongly object to the exclusion of MBSG from your April 25 New York meeting concerning formation of a national electric reliability council.

MBSG is a regional coordination group and pool of 125 consumer-owned systems in the upper Mid-West, including the U.S. Bureau of Reclamation. Present facilities of the group's members include the backbone 230 kv transmission grid in the region. Planned facilities of the group's members include generating units of substantial size and hundreds of miles of EHV transmission line. By any standard, these bulk power facilities constitute a significant segment of the area's facilities and have a substantial effect upon the reliability of the regional system, not to say the national interconnected system. As you may know, the east-west ties linking 94% of the country's generation are accomplished within MBSG's area and by MBSG member system facilities.

If there is any question as to whether MBSG is a coordination group or a pool, I would say that it is both. MBSG's planning and operation committees conduct studies to ensure that member's plans are coordinated to provide a low-cost reliable supply of electric energy in the region. Pooling in the group presently involves the hydro-electric facilities of the Bureau of Reclamation and the thermal generating facilities of Basin Electric Power Cooperative.

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Whatever the objectives of your national council, I sincerely believe that they cannot be served by denying participating to groups such as MBSG.

ROBERT O. MARRITZ,
Executive Director and Staff Counsel, Missouri Basin Systems Group.

DRAFT OF AGREEMENT

AGREEMENT, dated April , 1968, among Carolinas-Virginias Power Pool, East Central Area Reliability Group, Florida Power Corporation, Mid-America Interpool Network, Mid-Atlantic Area Coordinating Group, Mid-Continent Area Power Planners, Northeast Power Coordinating Council, Southwest Power Pool, The Southern Company, Tennessee Valley Authority, Texas Interconnected System, and Western Systems Coordinating Council (hereafter referred to separately as a Regional Organization, collectively as the Regional Organizations).

WITNESSETH :

Each Regional Organization is concerned with the reliability of bulk power supply in the area in which it, or its members serve.

ARTICLE I.—NAME

1.01 This organization shall be known as the National Electric Reliability Council.

ARTICLE II.—PURPOSE OF AGREEMENT

2.01 The purpose of this Agreement is further to augment the reliability of bulk power supply in the electric utility systems of North America.

To this end the Council will

(a) encourage and assist the development of inter-regional reliability arrangements among Regional Organizations or their members :

(b) exchange information with respect to planning and operating matters relating to the reliability of bulk power supply ;

(c) periodically review regional and inter-regional activities on reliability ;

(d) provide independent reviews of inter-regional matters referred to it by a Regional Organization ; and

(e) provide information to the Federal Power Commission and, where appropriate, to other federal agencies with respect to matters considered by the Council.

ARTICLE III.—MEMBERSHIP

3.01 In addition to the founder Regional Organizations, any other regional organization may be admitted to the Council if its facilities are found to have a significant effect on the reliability of bulk power supply in North America.

ARTICLE IV.—ORGANIZATION

4.01 The Council shall consist of the principal officer or other authorized representative of each Regional Organization. In addition, should the membership of the Council not include representatives of all segments of the electric utility industry (i.e., (a) Federal, (b) investor-owned, (c) rural electric cooperative, and (d) state and municipal), the Council shall appoint from a list, provided for this purpose by the Regional Organizations, additional members as required to effect such industry representation. Each member of the Council shall be a representative of a participant in a Regional Organization.

4.02 Regular meetings of the Council shall be held on the third Wednesdays of April and October in each year ; special meetings may be called by the Chairman on his own initiative or upon request of two or more members. As far in advance of each meeting as practical, an agenda therefor shall be distributed to the members. At any meeting a majority of the Council shall constitute a quorum for the transaction of business.

4.03 At the April meeting, which shall be the annual meeting of the Council, the members of the Council shall select, by majority vote, one of their members to serve as Chairman and one as Vice Chairman, and a Secretary-Treasurer, who need not be a member, each for a term of two years.

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4.08 The Council may appoint such committees and task forces as it deems necessary to carry out the purposes of this Agreement.

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5.01 To implement the purpose of this organization set forth in Section 2.01 (e), the Chairman of the Federal Power Commission shall be invited to designate an observer to attend all meetings of the Council.

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6.01 This Agreement shall continue until terminated by unanimous agreement of the parties, but any party to this Agreement may cease to be such by giving the others at least 30 days written notice of its intention. Any such party shall nevertheless continue to be liable for any obligation it may have had to pay a share of the expenses of the Council incurred prior to the end of the calendar year in which such notice is given.

ARTICLE VII.—ASSIGNMENT

7.01 Any party may assign this Agreement to a successor organization or organizations having the same function with respect to bulk power supply.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly executed.

Chairman, Executive Committee,
Carolinas-Virginias Power Pool Agreement.

Chairman, Executive Board,
East Central Area Reliability Coordination Agreement.

Mr. WISE. I am suggesting amendments to S. 1934 and a few amendments even to the Moss bill, H.R. 12322.

I want to reiterate what Mr. Simonton said, that Mid-West fully and enthusiastically supports a strong electric reliability bill, and we think the record has shown it is absolutely necessary.

The massive blackouts in the East drew all the attention, but the type of situation Mr. Slender, of Iowa, described to you a little while ago may be occurring all over the country.

The companies have done an excellent job of coordination, of building the type of lines shown here. And I don't want to belittle it. But it falls far short of what is needed to be done by way of coordination if really reliable service is to be furnished to the ultimate customer and to the distribution group.

Also to have coordination you must have coordination of all suppliers, regardless of their size, or regardless of the nature of the owner-

ship—investor-owned companies, the cooperative-owned, municipally owned, and federally owned, must all be coordinated together.

This National Council which—I assume the agreement was signed, setting it up in New York yesterday—simply cannot do the job. First of all, as pointed out, it did not let the Missouri Basin Systems Group even attend the meeting. It wouldn't have the authority, and it doesn't have the facilities whatsoever to do a coordinating job which is needed here. And the State commission cannot do it because unfortunately these power failures do not recognize State lines, as was shown in the Northeast in the PGM failure. They had lines much more extensively interconnected than the companies have out here. I, myself, would not have believed that a power failure could have taken part in the Northeast or in the PGM system with which I am familiar. But it did take place. It shows how much more has to be done today.

I should say for the benefit of the gentleman from the Mine Workers, there is nothing in this bill which could in any way result in a reduction of the use of coal. As a matter of fact the more reliable electricity is, the more coal is going to be used.

I should also point out to him, in talking about the Federal Government, by far the largest coal burner in the country today is the Tennessee Valley Authority. We feel there is a real need for this.

I might point out the Missouri System Basin group also in its study, and it works very closely with the Bureau of Reclamation—proposed a 345 line from Stanton, where its line is located—near Bismarck—to the Twin Cities in Minnesota. They were told the company would not join with them in doing that, but if the cooperatives, the municipalities built it through Basin, they would not be permitted to interconnect at the Twin Cities, which would make it completely an unfeasible project. It is that kind of action which cannot be solved by any private council, but which must be done by some agency which has some authority to require this to be done.

In S. 1934 these are our suggestions. Many have been adopted in the Moss bill. A few haven't. We will indicate which have and have not. The first one has not.

Do you have a copy of the statement?

Senator Moss. Yes.

Mr. WISE. In section 401(b), there are listed various actions by which the policy of the Federal Power Act is intended to be affected by the Reliability Act. One reads, quoting from the bottom of page 2 "by respecting the territorial integrity of utility service to the extent consistent with the public interest."

We ask that this be deleted for the reason that a principle of law quite similar to this has been used in two or three cases to hold that a cooperative might not build a generating plant because a company had a plant in the general area. It happened in the famous Colorado U. case in the State of Colorado, involved in this hearing. We ask that that be deleted.

In the second sentence of section 404(a) describing membership, "direct or indirect" we ask that those words, "direct or indirect" be stricken, and be left that all systems are entitled to membership. We are concerned about that word, "indirect." It might mean that the smaller systems, such as Mr. Schlender was describing, would not be permitted to participate directly but only through the larger systems

from which it purchased power, and that would really defeat, in our opinion, the purpose of the act.

Also the reason for putting in, "or of its facilities" it says now regardless of the nature of the ownership. We would like to add also, regardless of the nature of its facilities. The reason for that being, if it owns distribution facilities only, it still should be permitted to participate in the council in our opinion if the ultimate consumer interest is to be properly represented.

The Moss bill took care of that. We feel it is so important that every segment of the industry participate in these councils. Otherwise they are not going to accomplish what was hoped to be accomplished. For that reason, in section 404(b) we would suggest to add to the end of the first sentence, the words, "which statement shall provide for representation of all segments of the industry." That suggestion is not in the Moss bill and we would like to have that added.

Section 404(c) and 404(d) of the original bill provide for immunity from section 4 of the Clayton Act. One of the speakers this morning indicated it did not go far enough. We urge, sir, that that be deleted from the bill entirely. We can see no purpose for it if the action taken by the council is in the public interest, and if it is in the interest of the consumer it can't possibly violate the Clayton Act. We think immunity from the Clayton Act should come out completely. It appears in two places in the bill. It also appears in the title of the section. Congressman Moss' bill deletes that exemption. We urge that that be taken out of the final bill.

It is also felt that section 404(b) should provide that these claims when filed should be open for the public. We think the meetings of the council should be open to the public and any final action which is filed in Washington with the FPC should be open for public inspection, and Congressman Moss's bill provides for that.

Otherwise one of the statements referred to the impact of public opinion. That public opinion cannot really be brought to bear unless all the action taken by the council as well as the final result is open to public inspection and the public may learn of it.

We also think that section 404 should apply for amendments to plans which have been filed. The Moss bill provides for that. However, most of our members feel that even in the Moss bill, instead of being given too much authority, the Federal Power Commission has not been given sufficient authority. Mr. Simonton pointed out he thought it should be advisory. If it were to go further than being advisory, it at least should have a provision that if they don't come up with a plan which is satisfactory, then that the Commission can institute a plan. Under the present bills, including the Moss bill, the Commission can reject a plan proposed by the council. It can also modify a plan. But it can't initiate a plan of its own.

If no satisfactory plan is submitted by the council, the Commission would be stymied and the purpose of the bill could not be attained. We feel at most if the councils are given the authority to work out these plans and not merely an advisory authority, that if they failed to come up with a satisfactory plan, one which the Commission can modify to be satisfactory, then the Commission should be given the authority to initiate a plan. This is going to require some additional staff, of course. But nothing nearly to the extent that was suggested

here this morning. No matter what plan is used, even if they are only advisory, the basic planning will be done by the council. For each individual company the planning will be done by that company. This isn't taking away from management the right to work out their plans. Obviously they need the right to function successfully. It does mean that once they have worked out the plans it must be subject to scrutiny to be certain it fits into an overall plan, which assures reliability and which is in the public interest.

Another reason that the national council of the companies themselves could not do the job, there is a lot of public interest involved here in which the companies are not primarily interested such as air pollution, water pollution, the problems arising out of the big transmission lines, the running out of the land on which these lines can be placed, the eventual necessity of placing them underground which will require a lot of research first.

We feel that research should be done by the company but also by the Federal Government in a cooperative plan, but must be done in a hurry, because the public is no longer cooperating—and this applies to the cooperative lines, municipal and Federal lines, as well as the private lines—the public is no longer tolerating putting up these unsightly lines and taking over historic sites, scenic sites, going smack through a farmland which is very valuable as development land.

Only a nonindustry, noncooperative, nonmunicipal, will come up with a decision in that respect which is in the public interest and not in our own self-interests. That is another reason the council cannot do the final job. We are also concerned, and the Moss bill doesn't take care of this, and I have no specific language, but we are concerned that somehow either in the bill or in the organization of the council, a procedure be established which will provide a voice to the small system. This becomes awfully difficult when you have one of these huge systems, several of them in the council, and in these number a very small number of municipal and cooperative systems. If you don't do that we are going to be out of luck. Obviously the worry is that what is referred to as the pluralistic industries, the different segments to it, are going to disappear.

One spokesman for the industry, one of the leaders, one of the most competent, one who has done an excellent job of running his own company, Mr. Donald Cook, a former Federal official, now the president of American Power Co., a big holding company, has suggested the country should be reduced to 10 or 12 big utility companies.

We suggest that that is going to cost the consumer and the public a terrific amount of money. The main contribution made by the municipalities and cooperatives is the so-called yardstick. Regulation is fine, but a little bit of competition is necessary if regulation is to be effective, and that has been proven over and over again. If we had the time we could cite all kinds of examples to prove that.

One of our good farmer members is worried about turning this over to the council, not having them merely in an advisory position. He said it is like putting the fox in charge of the henhouse when you put the persons to be regulated in charge of the regulations.

There is a lot of logic to that position, it seems to me. We are worried that we won't have a voice, the small fellow won't have a voice,

and that this will result in not accomplishing what is intended. One suggestion is maybe a Federal Power Commission staff member could act as chairman of each of the regional councils and that that would accomplish it.

The advisory work which this national coordinating council could do is provided for in the bills. There is a regional council in the industry set up to advise the FPC and regional council, but it would be an official one under this act and not the one that is being set up.

We seriously and sincerely make the charge here that these regional councils and this National Coordinating Council are set up for the sole purpose, and I emphasize the sole purpose, of trying to show there is no necessity for the Electric Reliability Act. There were pools long before that. However those pools didn't come about until there was a lot of goading by the governmental agencies I can well remember leading industry spokesmen scorning these high-voltage lines which are now being bragged about, and the large units. These were inaugurated in this country, instituted by the TVA and the large transmission lines by Bonneville.

We are a little embarrassed to say that they were goaded into it by, of all places, Russia, which originated the high-voltage line. Our industry spokesmen generally said they were not practicable or feasible. They are turning out to be the solution, solving our problems. This was only brought about by a lot of pressure being brought upon the industry, and that pressure we submit must continue.

We were a little puzzled this morning to understand why the spokesmen for the Western Coordinating Council, Western System, did not know about the meeting in New York yesterday, because if you turn to the agreement, which was proposed to be entered into yesterday, setting up the council on a contractual basis, one of the parties to it is Western Systems Coordinating Council. This is shown in the draft of the March 27, 1968, draft of agreement, attached to my testimony. It is also attached to Mr. Simonton's testimony.

There is also attached to my testimony a telegram which is not attached to Mr. Simonton's, a telegram dated April 24, 1968 from the manager of the National Rural Electric Cooperative Association, to the chairman of the New York meeting, also protesting the lack of representation of consumer-owned planning organizations, particularly the denial of the right of the Missouri Basin System Group to attend. That shows the deep interest in this problem by the cooperatives throughout the country. It is not limited to our Missouri Basin situation.

We also urge in section 408—and we think this is very important, this is the one which says the Commission may issue a criterion to enhance reliability—we think the word “may” in section 408 should be changed to “shall” and the word “enhance” should be changed to “govern.”

Regardless of how much authority the regional councils may be given, it seems crystal clear that the Commission should have the authority to issue standards and criteria to be followed which will bring about reliability, and Congressman Moss has made those changes in the bill introduced by him.

We also think that section 411 should be amended to make certain that the rights granted to preference customers in the various Federal

power marketing statutes, it should be made clear that they are not taken away, and the Moss bill also does that.

Most important in section 411, where the Commission is authorized to order interconnections, and the sale or exchange of energy with other parties, we think the word "wheeling" should be put in there. The small consumer, the small distribution system, described by Mr. Schlender, if it is to get real service from this, it must have the right to have power wheeled to it. We have the situation here in Utah, Mr. Schlender's own cooperative, which needs power to serve northern Utah. I'm sure you are familiar with the situation, Senator. If wheeling were put in this bill his problem would disappear. Assuming he showed the public necessity for it and it was in the public interest, that power could be wheeled down there. We think that is a very important amendment and we are very pleased that Mr. Moss has that in his bill.

I won't go into any more detail about the National Council. It has been covered by Mr. Simonton. We do request that you give consideration to these amendments to the original bill, most of which are taken care of by the Moss bill, but not all.

Also that you report out and the Congress enact, a very strong reliability bill, which won't guarantee against but will make much more unlikely, the massive blackout, and more than that, the smaller ones, which have occurred throughout the country since that time.

We would also like to mention S. 2889, introduced in the Senate by Senator Edward Kennedy and Senator Clark, House No. 1497. It has a lot of other provisions which personally I think are highly desirable, which Mid-West is not taking action on. We have not been authorized to testify on it. The fact that we have not discussed that bill does not mean that we don't think it is a good bill, except it was introduced after the time our association took up these bills.

Thank you very much.

Senator Moss. Thank you, Mr. Wise. Your full statement will be in the record that you have summarized for us. We appreciate having specific recommendations applying to the provisions of the bill that enable us to study them and make a decision as a committee on them. We are appreciative of this.

I believe that completes the list of witnesses that we have. I appreciate your coming here to help us make the record.

As I announced before, any of you—and many of you have stayed all day to listen—any of you who wish to have a copy of the hearings when they are printed and bound, simply drop me a note.

Mr. Hedquist, we are glad to have you.

STATEMENT OF RALPH A. HEDQUIST, BUSINESS MANAGER, LOCAL UNION 57, INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS, ACCOMPANIED BY JOE S. DUFFEY, BUSINESS MANAGER, LOCAL UNION 111, DENVER, COLO.

Mr. HEDQUIST. We appreciate the opportunity of being heard. I am R. A. Hedquist, business manager of Local 57 of the International Brotherhood of Electrical Workers. I have with me Mr. Joe Duffey, who is the business manager of local union 111 of Denver, Colo., and I would have had with me Mr. Francis A. Crowley, who is the business manager of local union 44, of Butte, Mont. I have a telegram

from Mr. Crowley. He is ill and he authorized me, however, to speak for him before this committee.

Senator Moss. Very good.

Mr. HEDQUIST. The telegram reads:

DEAR RALPH: Because of illness I will not be able to attend the Senate Commerce Committee hearing on S. 1934, related bills concerning reliability. I, therefore, give you permission and would appreciate it if you would represent and speak for me at the hearing.

Senator Moss, we are here to represent our membership who are employed in the electric utility industry and as you can well understand, the groups we represent are vitally interested in the generation and distribution of electrical energy because it affects our lives in a critical manner.

We have offered statements and have appeared before on matters of rules and regulations affecting the utility industry where we felt we had a stake in the outcome of certain legislative proposals. We are aware of and fully support the need for regulation, both State and Federal, of the utility industry for the protection of the consumer interest.

The members we represent are completely familiar with the electric industry and its ramifications and depend upon it completely for a livelihood.

We are opposed to the passage of S. 1934 and related bills because we believe this proposed legislation to be against the best interests of our groups as union members and we are convinced that this opinion reflects the best interests of the entire country.

It is not our purpose here to discuss any of the technical aspects of this matter as there are others who are appearing here from whom this kind of discussion is more appropriate.

It is our belief that passage of this legislation will give an unfair advantage to the operators of so-called public power systems who already enjoy cost advantages in the nature of financing subsidies from the public tax system or operate without the requirements of paying certain taxes paid by most businesses and private citizens.

I refer here to the income tax. This advantage which would be received by municipalities and others together with the operation of the so-called preference clause would tend to encourage the growth of municipal systems by holding out to them the prospect of taxpayer-subsidized, artificially low-priced electrical energy.

Why are we generally opposed to the extension of municipally owned electrical systems? May I give you an example.

Some years ago in a municipality south of Salt Lake City, one which distributes electrical energy through a municipally owned system, we received representation authorization from 75 percent of the employees employed by the city in this enterprise. In a routine manner we presented our claims to the mayor of the city preliminary to asking for recognition as the bargaining agency for these employees. The attitude of the mayor was expressed in his statement and I quote, "Any of these employees who join your union will be fired," unquote. We were forced to drop our efforts to assist these people, since there are no protective laws in this State to prevent such action by the mayor. The conditions which prevailed then in the above-mentioned city still

exist; wages and working conditions much below what we believe to be adequate.

In January 1960 the Salt Lake Desert News was quoted before the Subcommittee on Irrigation and Reclamation of the Committee on Interior and Insular Affairs as follows:

Attorney General Walter Budge was completing a formal opinion stating it is unlawful for political officials to negotiate on wage or working conditions with labor union leaders. The attorney general pointed out that the public agencies and public officials are excluded from laws providing for collective bargaining. It is impossible for them to negotiate with labor organizations on hours and working conditions, because they must be governed by statute.

I was most interested in a statement which Mr. Wise made a few moments ago about the necessity of municipal systems because they provide the yardstick. What he didn't say was that part of the yardstick, the lesser cost which these people provide power for, comes out of the hides of the employees who work for these municipalities.

And you can see, the objectives of our union cannot be achieved under a system that refuses to recognize our objectives or our rights in reaching those objectives. We would be less than intelligent to believe that we could hold with legislation which we believe would further compass us about with systems of employment with whom we cannot negotiate.

We do not wish to further burden the record with more examples such as the one quoted above. Let me assure you that our records are full of such experiences. Let me assure you that there is more and more unanimity of opinion on this matter by electrical workers across the country.

We believe that problems arising in the electric industry stemming from more sophisticated needs of consumers of electrical energy should be solved through voluntary cooperation between the operators of electrical systems, both public and private, and with the government, both Federal and State.

We believe that government and private industry should not be at loggerheads with each other, and we believe also that the rights of citizenship rightfully belonging to American corporations should not be diluted nor destroyed by the government to which they belong.

We sincerely believe that legislation such as proposed in S. 1934 should not be enacted and we are most grateful for the opportunity to express our views.

If we could, Mr. Duffey would like to make a short verbal statement. He doesn't have a prepared statement.

Senator Moss. I'm sure we can hear you, Mr. Duffey. Go ahead.

Mr. DUFFEY. Senator Moss, I appreciate the opportunity to speak before this committee and its chairman.

I do represent 2,600 members in the State of Colorado. And as I review carefully those members, I find that none are employed in municipalities within that State. Although there are some rural electrification systems that are organized in the State of Colorado, it is without exception that these particular employers do in all cases pay a substandard wage to that of the private investor-owned utilities. And in every instance of my association with employees and representing their rights and their bargaining, this is throughout this Nation true, that the private investor-owned utility takes a more

appropriate view of the laboring individual, especially those in the electrical industry.

And it is with sincere effort we would oppose S. 1934, on the basis of restrictions to those industries, private, investor-owned industries, that they would no longer be able to bargain with us in the free and collective bargaining system that is now carried on.

Senator Moss. How would S. 1934 affect that? This just has to do with reliability and interconnections and this sort of thing.

Mr. DUFFEY. Regulation of growth, Senator, will undoubtedly restrict the free enterprise of these investor-owned utilities, the regulation of growth to be determined by demand only. As the demand is needed to be met, these investor-owned utilities have that ability now to negotiate for land, to negotiate with other power companies within their pools, and to institute new lines. And this creates a free and collective bargaining condition with us who represent their employees. They are not closely regulated, as this bill would do.

Senator Moss. Thank you, Mr. Duffey, and Mr. Hedquist. We appreciate very much having you come to testify. We appreciate your coming at our invitation to be here.

Did Mr. Smick come? From the Idaho Cooperative Utilities? Apparently he did not arrive.

This record will not be closed until we finish this series of hearings. Therefore if any who are present here want to submit a supplementary statement or an original statement, so long as it is reasonable in length and pertains to the matter we have before us, it may be submitted either directly to me or directly to the Committee on Commerce, to be included in the record.

Our testimony has been somewhat controversial, and it may be that either one or the other of those whose views differ might want to make a short rebuttal or explanatory statement, perhaps, on something that was said that they had no opportunity to answer.

We don't want to make it just a debate, but we do want the fullest exposure of the viewpoints of all who are concerned with this problem. We don't want to cut anyone off. That may be put in the record.

I am reminded by Mr. Lordan that in the event any members of the Committee on Commerce, in reading the record, have some questions, interrogatories to make to any of the witnesses, we reserve for him the right to submit a letter to whoever testified, with an interrogatory to explain anything in there that he questions or wants clarified.

With that, I will declare this particular hearing now closed.

I thank you all very much.

(Whereupon, at 4:10 p.m., the hearing was adjourned.)

STATE OF COLORADO,
THE PUBLIC UTILITIES COMMISSION,
Denver, Colo., May 6, 1968.

HON. FRANK E. MOSS,
U.S. Senate,
Senate Office Building,
Washington, D.C.

DEAR SENATOR MOSS: The Colorado Public Utilities Commission, due to prior commitments, was unable to attend the hearings which you conducted in Salt Lake City on April 26, 1968. Since we were unable to attend, we would like, however, to convey to you our feelings in regard to the Electric Reliability Act of 1967.

This Commission, as did other Commissions throughout the United States after the Northeast Blackout of November 9, 1965, contacted the various electric utilities operating in Colorado. A meeting was held in Denver, Colorado, December 15, 1965, attended by representatives of the investor-owned utilities, municipal utilities, rural electric associations, and the Bureau of Reclamation on behalf of the Missouri and Colorado River Basins. The purpose of the meeting was to discuss with these representatives the reliability of the electric power sources in Colorado. Members of the Rocky Mountain Power Pool and the Colorado Power Pool were present at this meeting, and it was the consensus of all present that the utilities were voluntarily doing everything they could to safeguard the electric power supply in Colorado. However, because of the Northeast Blackout, the utilities themselves undertook to review their operating procedures and formed a "Pool Security Committee" of the Rocky Mountain Power Pool to carry on not only a present investigation in regard to operational procedures, but to study any necessary changes for the future to further safeguard the power supply in Colorado.

There is currently being formed in Colorado a voluntary group involving all the above-mentioned suppliers of electric power in Colorado to be known as the "Colorado Systems Coordinating Council." For your information, we are attaching hereto a copy of the "AGREEMENT" of this Council.

We believe that in Colorado under the present Public Utilities Act (Chapter 115, Colorado Revised Statutes, 1963) that we have the authority to compel, if necessary, interconnections, pooling of power supply, allocation of cost, etc., to do whatever is necessary to provide safe and reliable electric power for the people of Colorado. If any additional laws are needed, we feel they should be adopted at the local level to be enforced by State Commissions who are on the scene and understand the problems even though they might encompass power pools that would cross state lines. To the extent that action is needed where power pools cross state lines, we believe the present system of cooperation is functioning very well. The principal bulk suppliers of electricity in Colorado are presently members of the Western Systems Coordinating Council, and this Organization provides for the necessary cooperation to cross state lines. We further believe that to enact a law which would in effect impose national criteria will not always be helpful to improve a local situation.

We would also like to join in the statement made by Commissioner Ralph H. Wickberg of Idaho in his testimony given before Senator Magnuson last December in Seattle, Washington. We believe that much can be gained by cooperative action rather than resorting to laws, either at the federal or state level. If cooperation fails, then we would suggest local laws, and only as a last resort those of national scope.

Very truly yours,

HENRY E. ZARLENGO,
Chairman.

[Enclosure]

COLORADO SYSTEM COORDINATING COUNCIL AGREEMENT

ARTICLE I.—PURPOSE

Section 1. The purpose of the Colorado Systems Coordinating Council is to coordinate the planning and operation of generating and transmission facilities of bulk power systems in the State of Colorado in order to achieve reliable operation and economic utilization of such facilities. The Council will provide means of exchanging information and systems data for such purposes.

Section 2. The Council recognizes that attainment of its objectives requires continued close cooperation between it and other interconnected systems outside the area of the Colorado Systems Coordinating Council.

ARTICLE II.—MEMBERSHIP

Section 1. Membership in the Colorado Systems Coordinating Council is voluntary and is open to all bulk power systems within the State of Colorado. The initial members of the Council are those systems signatory hereto. Other systems may become members by executing these Articles of Agreement.

Section 2. For the purposes set forth herein bulk power systems are those systems which generate or transmit electric energy to points of distribution.

ARTICLE III.—ORGANIZATION

Section 1. *Steering Committee.*—

a. The Council shall have a Steering Committee which shall be its governing body and which shall be composed of ten (10) members of the Council with representation from all major operating areas and from all types of systems. The Steering Committee shall be elected by a majority vote of the members represented at the annual meeting of the Council, provided that nominations to the Steering Committee shall be only as follows: three (3) of such members shall be nominated by the municipal electric system members in the Council, three (3) by the investor-owned electric system members, three (3) by the rural electric cooperative systems members, and one (1) by the United States Bureau of Reclamation. The members of the Steering Committee shall hold office for one year or until their successors are elected.

b. The officers of the Council shall be a Chairman, a Vice Chairman, and a Secretary. These officers shall be members of the Council and the Steering Committee, and shall be elected by a majority vote of the Steering Committee at the first meeting of such Committee following the annual meeting of the Council. Officers shall hold office for one year, or until their successors are duly elected. The Chairman shall be the principal administrative officer of the Council.

c. The Steering Committee shall direct and coordinate the activities necessary to carry out the purposes of the Council.

d. The Steering Committee, in close coordination with the Western Systems Coordinating Council shall:

(1) Accumulate necessary data and perform statewide studies of the operation of the interconnected systems.

(2) Accumulate necessary data and perform statewide studies for transmission interconnections and for construction of bulk power supply facilities.

(3) Review and analyze operating procedures to determine their conformity to procedures adopted by the Western Systems Coordinating Council.

(4) Recommend new or modified operating policies and procedures for the guidance of the member systems of the Council as may be required to more closely coordinate with the Western Systems Coordinating Council.

Section 2. *Other Committees.* The Steering Committee may establish such other committees, subcommittees, work groups, or task forces as it deems desirable to assist the Steering Committee in carrying out its activities.

ARTICLE IV.—MEETINGS

Section 1. The Council shall meet not less than once each year. Special meetings may be called from time to time by the Chairman or by 50% or more of the members of the Council. The Secretary shall keep the records of the Council meetings. A notice and agenda of all meetings of the Council, stating the time and place, shall be given in writing to each member by mailing at least thirty (30) days prior to the date of the meeting. At any meeting a majority of the total membership shall constitute a quorum for the transaction of business.

Section 2. The Steering Committee shall meet not less than twice each year. Special meetings may be called by the Chairman or by three or more members of the Committee. A notice and agenda of all meetings, stating the time and place, shall be given in writing to each member by mailing at least two weeks prior to the date of the meetings. At any meeting a majority of the total membership of the Committee shall constitute a quorum for the transaction of business.

ARTICLE V.—COORDINATION

Section 1. The Chairman shall report to the Council for its consideration any findings, conclusions and recommendations of the Steering Committee with respect to operating procedures or coordinated planning.

ARTICLE VI.—INTER-AREA COORDINATION

The Council, through its Chairman, will establish liaison with the Western Systems Coordinating Council and other coordinated areas contiguous to that of the Council.

ARTICLE VII.—FINANCES

The expenses of each member of the Council, Steering Committee, and other committees, subcommittees, work groups or task forces shall be borne by each respective member system participating therein.

ARTICLE VIII.—TERMINATION

Notwithstanding any amendment to this Agreement, any member may terminate its membership in the Council at any time upon thirty days' notice, whereupon it shall cease to be a member of the Council.

ARTICLE IX.—GENERAL

Section 1. No member shall be liable for the failure of any other member to perform its obligations under this Agreement.

Section 2. Each member shall retain sole control of its own facilities and the use thereof unless such member otherwise specifically agrees thereto, and nothing in this Agreement shall require a member to construct or dedicate facilities for the benefit of any other member or be deemed to impair its ability to take such actions as it deems necessary to maintain reliable service to its own customers or to fulfill its obligations to others.

ARTICLE X.—AMENDMENT

This Agreement may be amended at the annual meeting of the Council or at a special meeting of the Council called for that purpose, by a vote of two-thirds of the Council.

In witness whereof, the parties hereto have caused this Agreement to be duly executed as of the — day of —, 1968.

Attest:

_____.
_____.

ARTICLE IV - MEMBERSHIP

SECTION 1 - MEMBERSHIP

Membership in the Society shall be open to all persons who are of legal age and who are of good moral character and who are of the same race and color as the members of the Society.

SECTION 2 - APPLICATION

Any person desiring to become a member of the Society shall file with the Secretary a written application containing the following information: (a) Name, address, occupation and profession; (b) Date of birth; (c) Race and color; (d) Education; (e) Marital status; (f) Name and address of references; (g) Name and address of the person who introduced the applicant to the Society; (h) Name and address of the person who sponsored the applicant; (i) Name and address of the person who recommended the applicant; (j) Name and address of the person who interviewed the applicant; (k) Name and address of the person who interviewed the applicant; (l) Name and address of the person who interviewed the applicant; (m) Name and address of the person who interviewed the applicant; (n) Name and address of the person who interviewed the applicant; (o) Name and address of the person who interviewed the applicant; (p) Name and address of the person who interviewed the applicant; (q) Name and address of the person who interviewed the applicant; (r) Name and address of the person who interviewed the applicant; (s) Name and address of the person who interviewed the applicant; (t) Name and address of the person who interviewed the applicant; (u) Name and address of the person who interviewed the applicant; (v) Name and address of the person who interviewed the applicant; (w) Name and address of the person who interviewed the applicant; (x) Name and address of the person who interviewed the applicant; (y) Name and address of the person who interviewed the applicant; (z) Name and address of the person who interviewed the applicant.

SECTION 3 - APPROVAL

The application of any person shall be considered by the Board of Directors at the next meeting of the Board after the application has been received. The Board may approve or disapprove the application at its discretion.

In witness whereof, the Board of Directors has caused this Agreement to be duly executed on this _____ day of _____, 1924.

Secretary

Witness:

ELECTRIC POWER RELIABILITY

MONDAY, APRIL 29, 1968

U.S. SENATE,
COMMITTEE ON COMMERCE,
Washington, D.C.

The committee met at 10 a.m., in room 5-50, the Federal Building, 300 Las Vegas Boulevard South, Las Vegas, Nev., the Honorable Howard W. Cannon presiding.

Present: Senators Cannon and Moss.

Senator CANNON. The hearing will come to order.

The witnesses do not have a microphone available, so we will ask you to please speak up so that everyone in the back can hear you.

Today the Senate Commerce Committee holds the third of its field hearings on S. 1934, the electric power reliability bill. The legislation would add a new part IV to the Federal Power Act and is designed to enhance the reliability and efficiency of electric bulk power systems.

The key provisions of this legislation would direct the Federal Power Commission to secure the establishment of regional councils among utilities for coordinating their systems, certificate proposals to build extra-high-voltage transmission lines, and order interconnection among utilities to carry out the objectives of the bill.

The bill was drafted by the Federal Power Commission at the President's request in an attempt to insure that the possibilities of major blackouts such as that which darkened the Northeast in 1965 can be minimized. Although that blackout and the extensive power failure in the Pennsylvania-Jersey-Maryland (PJM) system in 1967 fortunately did not result in much more than a great deal of inconvenience and extra expense, with a little imagination I am sure everyone can visualize the disastrous consequences that could have followed.

Because of this concern, the President has consistently stressed the importance of this bill in discussing his legislative program. This committee began hearings on S. 1934 in August of last year in Washington, D.C. It heard extensive testimony from Lee White, Chairman of the Federal Power Commission, to the effect that despite a remarkably high level of performance, a problem exists within the electric utility industry which requires correction, and that there is a need to take action to avoid the kind of cascading power failures which have occurred in this country over the past few years.

The committee then decided to go into the field and hold regional hearings to determine the extent to which problems of reliability exist or may exist in the future in different sections of the country; what should be done to correct them; and, as to any measure which should be undertaken, whether the Federal Government is the proper party to undertake them.

On December 20 and 21 of last year, this committee held its first regional hearings in Seattle, Wash. Last Friday, April 26, hearings were held in Salt Lake City, and today, of course, we are here in Las Vegas. Later on, hearings will be held in other regions of the country. Eventually, the committee expects to conclude hearings on the bill in Washington, D.C.

As these hearings have progressed, it has become more and more apparent that the bulk power facility systems, and consequently, any reliability questions, differ widely from region to region.

The systems and operational plans in the western region of the country are, I expect, quite different than those which serve other parts of the Nation.

How the far-reaching policy questions involved in S. 1934 will finally be resolved, whether and to what extent any legislation is feasible, and how far existing and potential problems should be left to the various State commissions and the utility industry itself for resolution, are questions which the committee hopes to resolve by the time it has concluded its extensive hearings on the bill. I would like to emphasize that as yet I have reached no conclusions on the need for legislation of this kind and, in fact, I have grave reservations about certain provisions in S. 1934.

I am sure the testimony we shall hear today will be of great assistance to the committee, and when considered in conjunction with what we have already heard in Seattle and Salt Lake City, will give us a good picture of the utility industry in the western part of our country and how it operates.

I will call on Senator Moss at this time to see if he wishes to make some opening remarks, and then we will proceed with the hearing.

Senator Moss. Thank you, Mr. Chairman. I don't really have any opening remarks other than to emphasize what the Chairman said that is of course factfinding. We are trying to get every point of view that we can. What we are engaged in is making a record. All that we have will go into the record and will be very carefully studied.

For that reason it is not a hearing in which we have any preconceived notions. If we ask questions it is simply to try to make the record clear and get everything in there that we think should be in the record either pro or con. I appreciate this opportunity to come and participate and hear the testimony today.

Senator CANNON. Thank you, Senator Moss.

The first witness will be Reese H. Taylor, Jr., chairman of the Public Service Commission of Nevada. He is accompanied by Noel A. Clark, commissioner, Evo A. Granata, commissioner, and George Anthony, chief engineer.

STATEMENT OF REESE H. TAYLOR, JR., CHAIRMAN, PUBLIC SERVICE COMMISSION OF NEVADA; ACCOMPANIED BY NOEL A. CLARK, COMMISSIONER; EVO A. GRANATA, COMMISSIONER; AND GEORGE ANTHONY, CHIEF ENGINEER

Mr. TAYLOR. Thank you, Mr. Chairman. The Public Service Commission of Nevada is here today for the purpose of setting forth our views with respect to certain pending bills which would amend the Federal Power Act in the name of enhancing electric power system re-

liability. Our commission has studied the legislation in question at some length, and as the commission's chairman, I would like to express our comments in terms of the effect of the pending amendments on the regulatory responsibilities of our agency, on the electric consumers of Nevada, and on the electric utilities we regulate.

Let me begin by saying that the Nevada Public Service Commission has consistently maintained that the regulation of all public utilities, whenever reasonably possible, should be exercised at the State level. In taking this position, rest assured there is no suggestion that Federal regulatory authority be abolished, for we fully appreciate such authority is essential to the orderly regulation of public utilities in interstate commerce.

However, we strongly believe that even with respect to interstate operations, there is ample room for cooperation between State and Federal agencies. We believe further that such cooperation is a necessary part of accomplishing the sound and systematic regulation of electric utilities, which, in turn, is the basis of achieving reliable service for the electric consumer.

The evolution of power system coordination is a continuing process. As of now, there are 18 publicly owned and privately owned electric utilities operating in Nevada pursuant to certificates of public convenience and necessity issued by our commission. Each of these suppliers of electric service operating under our commission's jurisdiction is responsible for providing service continuity within the certificated area the particular supplier has been assigned.

In connection with this responsibility, it is our commission's fundamental purpose, through the exercise of our regulatory authority, to see that a reliable electric power supply is available in each certificated area, regardless of the fact that some areas are served by interstate suppliers located beyond the State borders of Nevada.

The results of our regulatory efforts, in terms of the reliable and economic service Nevada's electric power industry has been able to provide its customers, have established an enviable record indeed. The average electric customer in this State receives uninterrupted service more than 99.98 percent of the time.

In addition, transmission systems continuity in Nevada, during 1967, was 100-percent uninterrupted. The same perfect record was achieved in 1966 with the exception of one minor 20-minute outage in southern Nevada. On Sierra Pacific's northern Nevada transmission system, there have been only 2 minutes of interrupted service from 1964 to the present time.

The average price of a kilowatt-hour has continued downward, despite inflationary factors, while the cost of living has continued upward. The wide and ever-increasing use of electric energy—in the home, on the farm, and in business and industry—testifies to customer satisfaction. Moreover, these realities bolster our conviction that State regulation has done an outstanding job in handling the complex problems of regulating electric utilities.

In the pursuit of our regulatory purpose, the Public Service Commission of Nevada has necessarily cooperated with Federal agencies on interstate matters. Such cooperation is essential, we believe, in providing the citizens of our State with the benefit of utility products whenever they are needed.

Within the certificated service area of each electric utility, product developments have a direct bearing on the standard of living of the people and the growth of the area's economy. These factors, in turn, directly affect the growth and profitability of the electric utility, be it publicly or privately owned.

Recognizing this, it has been our commission's longstanding and active policy to promote vigorously, for the public benefit, the maximum possible cooperation between publicly owned and privately owned electric utilities. This approach has paid off handsomely, since our rates for highly reliable electric service, in all areas throughout the State, are geared entirely to the cost of providing such service.

Furthermore, in the wake of declining hydroelectric sources available to Nevada, and in view of the increased efficiency of thermal-electric production facilities, we safely anticipate the electric utilities in this State will be able to continue supplying an abundance of reliable electrical energy at costs comparable with or below the national average.

In this regard, it is worthy of note that our commission recently authorized Nevada Power Co.'s participation with Southern California Edison in the large, new coal-fired generating facility that will be known as the Mojave plant, a facility, by the way, which will include a 500-kilovolt intrastate transmission link.

We would also like to point out that in exercising our regulatory authority, contractual arrangements dealing with interstate power supplies are reviewed and approved by the Public Service Commission of Nevada. While the specific contractual conditions vary between publicly owned and privately owned electric utilities, our commission does have the responsibility of seeing that a utility's plans for generation, transmission, and other relevant matters are reviewed and evaluated. Where appropriate, modifications are recommended.

For this purpose, our commission maintains a highly qualified technical staff to make continuing studies and investigations concerning such matters as the overall adequacy of transmission facilities, generation reserves, and operational practices and procedures.

Turning now to a brief evaluation of the pending amendments to the Federal Power Act, we would like to identify certain dangers to the regulatory interests of our commission and other State commissions, which dangers, we feel, are inherently a part of the legislation in question.

First, it must be recognized that at the heart of the proposed amendments there exists a provision authorizing the Federal Power Commission to exercise complete control over extra-high-voltage lines. This provision contains a requirement that electric utilities must file all proposals for the construction of extra-high-voltage facilities 2 years in advance, and as a result no construction of these facilities can commence until the Federal Power Commission's approval has been obtained. Consequently, it should be readily apparent the State commissions will have lost all power to order the construction of extra-high-voltage lines, or, on the other hand, to order that such lines not be built.

Second, the proposed legislation shifts to the Federal Power Commission the authority to determine the routing of extra-high-voltage lines and also the authority to authorize condemnation proceedings

with respect to such routing. Since the determination of transmission line routing almost always depends on purely local considerations—for example, the effect on the citizenry of alternative locations within the State and the costs which the choice of one location over another will impose on the citizenry—we feel this aspect of the pending legislation is especially objectionable.

Moving the question of route determination of extra-high-voltage lines to Washington can only result in an unwarranted delay while depriving these most familiar with the local situation of the authority to make an informed decision. In addition, determinations would most likely turn on who makes the most convincing presentation in Washington, and as a consequence, the wealthy objector to a particular route might well be able to pass the burden to his less wealthy neighbors who are not as financially able to meet the costs of a Federal Power Commission proceeding.

In Nevada, the Public Service Commission exercises control over the building of lines through its certificate power. Eminent domain proceedings by the utility are available but only after a certificate has been obtained from our commission. Accordingly, we have both the power and the responsibility to see that an electric utility does not choose routes which could adversely affect the public interest, and we see no sound reason why this power and responsibility, or any portion thereof, should be withdrawn from us and moved to a Federal agency in Washington.

Third, the pending amendments also contain certain provisions which could significantly alter the relationship of electric utilities within this State, particularly the relationship between investor-owned electric utilities and others. It is quite clear that under the terms of the pending amendments, the Federal Power Commission, in many instances, would dictate which of two or more competitive electric utilities should build particular transmission facilities and which of the competitive utilities should use the transmission facilities.

Moreover, it must be presumed that similar controls over generation facilities will eventually follow from the authority exercised over transmission facilities. Since the proposed legislation speaks of "respecting the territorial integrity of utility service to the extent consistent with the public interest," it is obvious the Federal Power Commission could even change territorial relationships, and we feel such a far-reaching extension of the Federal Power Commission's authority is without justification.

The Nevada statutes contain provisions establishing territorial protection for rural electric cooperatives and investor-owned electric utilities. This being so, we can find no logical basis for surrendering the territorial authority of our commission to the Federal Power Commission in pursuance of a declared "national policy" which is stated in such broad terms as to permit the Federal Power Commission to do substantially as it pleases.

The Public Service Commission of Nevada is most willing to concede the desirability of some Federal agency maintaining a comprehensive and continuing review of the adequacies of extra-high-voltage transmission lines on a basis not limited to State boundaries. Furthermore, while we concede the Federal Power Commission is plainly the appropriate agency to maintain this comprehensive and continuing review, we most strongly urge that the Federal Power Commission's

functions should be confined to a review of the activities of individual electric utilities for the purpose of identifying deficiencies affecting interstate service so that proper corrective measures can be taken.

We view our approach as a radical departure from the one taken by the proposed legislation, wherein we see our commission being ousted from the regulatory responsibility of maintaining power system reliability within the State of Nevada because of a shift in the task of initial planning to either the Federal Power Commission or one of its regional planning bodies.

Our commission is even willing to admit that there may be cases of extreme emergency when Federal authorities must step into purely intrastate matters to put out a particular fire. However, past history is evidence of the fact that the interval between such fires has been of long duration in Nevada, and as a result, what we are really saying is that between these highly infrequent fires, we just do not see the need of having a Federal firetruck parked in our front yard 24 hours a day every day of the year.

In truth, the record shows nothing but great advancement and progress with respect to the continuity of service provided by electric utilities operating in this State under our commission's jurisdiction. Such advancement and progress has basically been accomplished by the electric utilities themselves under our commission's continuing surveillance, and insofar as interstate power supplies are concerned, our commission has done its utmost to be fully cooperative with other State and Federal regulatory agencies, including the Federal Power Commission.

As already indicated, we strongly believe that continued local orientation efforts and cooperation are absolutely essential if the service continuity objectives of State regulatory bodies are to be achieved.

Heretofore, our cooperative efforts have worked wonderfully well, and it is with great pride that we point to the outstanding reliability record of Nevada's electric utilities. Accordingly, we can only be perturbed when a paternalistic Federal agency, in total disregard of the record we so esteem, seeks to expand its authority, under the guise of reliability, to the extent that if the proposed legislation is adopted in its present form, the operational decisions of this country's electric utilities will ultimately have to be approved in Washington, and the effectiveness of the State commissions in regulating this country's electric power systems will, for all practical purposes, be at an end.

We strongly oppose the demise of our regulatory responsibility in an area where we feel the excellence of the performance record speaks for itself, and therefore, Mr. Chairman, we urge the Congress of the United States to reject, in their present form, the pending amendments to the Federal Power Act.

In closing, our commission has asked me to express our sincere thanks to your honorable committee for this opportunity to come before you and state our views.

Mr. Chairman, I have 10 signed copies of a resolution. In view of the number of people in the hearing room, perhaps it would be expeditious to read the resolution in the record. It is brief and we could do so if you like.

Senator CANNON. I think it would be perfectly proper for you to just summarize from it, if you desire, and the resolution itself will be

made a part of the record. I take it the resolution is apparently based on the testimony you have just presented.

Mr. TAYLOR. That and the testimony of Mr. Anthony, who also has some comments. It is very short.

Whereas the advent of larger production units and increasing transmission capacities over longer distances have resulted in new and complex planning and operating problems; and

Whereas the delivery of bulk power to a transmission pooling operation without adequate spinning reserves and other operating procedures for the protection of individual and connected systems has resulted in system power failures; and

Whereas there exists a growing national concern over the increasing number of major power system failures in the United States; and

Whereas the establishment of regional planning organizations that are not maintained under the paramount jurisdiction of the State regulatory commissions would circumvent State commission responsibilities in the regulation of intrastate utility operations and rates; and

Whereas authorizing the Federal Power Commission to establish regional planning organizations under the exclusive control of the Federal Power Commission would centralize and complicate presently reliable procedures of intrastate utility regulation and frustrate cooperation between Federal and State regulatory agencies: Now, therefore, be it

Resolved, That the Public Service Commission of Nevada urge the Congress of the United States to reject, in their present form, certain proposed amendments to the Federal Power Act, including S. 1934, S. 683, S. 1834, and S. 2227; and be it further

Resolved, That with respect to the matter of the reliability of electric power systems, the Public Service Commission of Nevada makes the following recommendations:

1. The complex issues of coordinating and planning regional electric utility system integration demand that before any legislative or administrative action is taken, there should be a thorough study of said problems by appropriate committees of the Congress of the United States. Such study should include advice from the State regulatory commissions.

2. The pluralistic nature of our electric utility systems in the United States is well recognized, but the balance between Federal and local public and private systems should not be influenced by the establishment of reliability standards that relate solely to planning and operating criteria.

3. Any regional planning organizations that are established should be placed under the combined jurisdiction of the State regulatory commissions and the Federal Power Commission; provided, however, paramount jurisdiction should remain with the State regulatory commissions.

THE PUBLIC SERVICE COMMISSION OF NEVADA.

- (S) REESE H. TAYLOR, Jr., *Chairman*.
 (S) NOEL A. CLARK, *Commissioner*.
 (S) EVO A. GRANATA, *Commissioner*.

We have handed to the committee 10 signed copies of this resolution. On the last page there is a certification of the secretary, Mr. Milligan, who states:

* * * having charge of the records and seal of said commission, do hereby certify that the attached resolution, entitled "Resolution Opposing Proposed Amendments to the Federal Power Act (S. 1934 and Certain Related Bills, Including S. 683, S. 1834, and S. 2227), the Stated Purpose of Such Amendments Being the Alleged Enhancement of the Reliability and Efficiency of Electric Power Systems," is a full, true and correct copy of the original resolution on file and of record in the offices of the Public Service Commission of Nevada, such resolution having been unanimously adopted by said commission at a regular general session held in the commission's offices at 201 South Fall Street, Carson City, Nev., on April 26, 1968.

(SEAL)

(S) GENE MILLIGAN, *Secretary*.

Dated Carson City, Nev., April 26, 1968.

Senator CANNON. The resolution will be made a part of the record. I am sure that, obviously from your testimony, you have been able

to do a very good job here in Nevada. You certainly recognize that there may be sections of the country, for example, the Northeast, that we have had some experience with, where the industry or regulation has not progressed as far as you have been able to progress here, else we would not have had the results which have occurred so far.

Mr. TAYLOR. Essentially, we can only speak for Nevada.

Senator CANNON. Has your national association taken a position on this business?

Mr. TAYLOR. As I understand it, the matter is under study. Commissioner Clark is on the executive committee of the National Association of Regulatory Utility Commissioners, and attended the last executive committee meeting. There was an ad hoc committee that had the matter under study.

Whether there has actually been a report as yet I don't know.

STATEMENT OF NOEL A. CLARK, COMMISSIONER, PUBLIC SERVICE COMMISSION OF NEVADA

Mr. CLARK. Mr. Chairman, as of this date there has been no report. However, it is contemplated the report will be forthcoming in the very near future. A copy of that report will be transmitted to your committee.

Senator CANNON. Fine. Do either Commissioner Clark or Commissioner Granata have anything to add to Commissioner Taylor's statement?

Mr. GRANATA. I have no statement.

Senator CANNON. Mr. Anthony, do you have anything you wish to add?

Mr. ANTHONY. Nothing other than my own statement.

Senator CANNON. You have a prepared statement?

Mr. ANTHONY. Yes, sir.

Senator CANNON. Your statement will be made a part of the record. If you have any additional comments to add we will be glad to have you make them.

Mr. ANTHONY. Do you want me to make it?

Senator CANNON. No; your statement will be submitted for the record. If you desire to make any particular points here at this time, in addition to the points that Mr. Taylor has made, you may do so. But your statement itself will be submitted and will be a part of our record.

STATEMENT OF GEORGE ANTHONY, CHIEF ENGINEER, PUBLIC SERVICE COMMISSION OF NEVADA

There is little if any argument, either within regulatory circles or the electric industry, on the desirability of the objective of providing the consumer with safe and reliable electric energy. Nobody wants power failures or shortages. Whether technically achievable or not, both regulation and management see the 100 per cent mark as a desirable goal for continuity of service, and they are working hard towards that goal. The disagreement comes about, of course, when the discussion turns to how best to achieve the ultimate in reliable electric service.

The Federal Power Commission, after many months of study, offered what is unanimously recommended as a good prescription for reliability when it submitted the proposed Electric Power Reliability Act to Congress. Members of the Federal regulatory agency have expressed the hope that the industry and the states would support, not oppose, the bill.

There is, nevertheless, opposition to the legislation for various reasons. The proposal has been tagged as the "unreliability" bill by some utility spokesmen, and it is seen as a regulatory invasion into the responsibility of management.

Since the beginning of utility systems, reliability has been the watchword of an industry dedicated to public service, with constant surveillance over adequacy of control procedures to enhance and improve continuity of service.

Similar to a daily theatrical production, the system dispatcher and his assistants must act every part with seasoned precision to meet the scheduled curtain calls—frequency regulation, daily peak loads, reserve requirements, probability of failures, maintenance schedules, switching and special setups are all part of the act.

But like everything else, all matter and things are subject to progressive changes. As systems grew larger, it was necessary to decentralize and automate such physical functions that would enhance reliability and efficiency of centralized control procedures commensurate with a firm power supply and service area obligations. The past history of electric operations has shown utilities have been able to maintain excellent continuity of service through this process.

At the other end of the spectrum—interconnecting the highly complex and sophisticated utility systems are matters involving literally thousands of public, private, state and Federal officials at every level of policy, administration and technical evaluation—a function that must remain with specialized people who operate the electric utility business.

Of all the myths, none is greater fiction than the premise that low cost bulk power philosophy, large interconnections and the continuing failures in the continuity of electric service have given birth to a nationwide complexity of problems that must fall back on the Federal Power Commission for all the answers.

Under the proposed Electric Reliability Act (S.B. 1934), the Federal Power Commission hopes to provide these answers by furthering the national policy declared by subsection 202(a) of the Federal Power Act in favor of a mythical factor by:

"... assuring an abundant supply of electric energy throughout the United States with the greatest possible economy and with regard to the proper utilization and conservation of natural resources, by enhancing the reliability of bulk power supply; by strengthening existing and establishing new mechanisms for coordination in the electric utility industry; by encouraging the comprehensive development of power resources of each area and region of the United States, to take advantage of advancing technology with due regard for the conservations of land, scenic and other limited resources; by providing that all utility systems and their customers shall have access to the benefits of coordination and advancing technology on fair and reasonable terms; by assuring to the extent feasible, the extra-high-voltage facilities include sufficient capacity to meet area, regional, and inter-regional needs for transmission capacity, including reserve capacity for reliability; by respecting the territorial integrity of utility service to the extent consistent with the public interest; and by drawing upon the cooperation of all segments of the electric industry."

The Federal Power Commission's present responsibilities for the administration and coordination of interstate power transmission in accordance with its existing authority under the Federal Power Act are clearly defined. The pertinent factors related thereto read as follows:

"Section 202 (As amended August 7, 1953) (a) For the purpose of assuring an abundant supply of electric energy throughout the United States with the greatest possible economy and with regard to the proper utilization and conservation of natural resources, the Commission is empowered and directed to divide the country into regional districts for the voluntary interconnections and coordination of facilities for the generation, transmission, and sale of electric energy, and it may at any time thereafter, upon its own motion or upon application, make such modification thereof as in its judgment will promote the public interest. Each such district shall embrace an area which, in the judgment of the Commission, can economically be served by such interconnected and coordinated electric facilities. It shall be the duty of the Commission to promote and encourage such interconnection and coordination within each district and fixing or modifying the boundaries thereof the Commission shall give notice to the *State commission of each State situated wholly or in part within such district, and shall afford each such State commission reasonable opportunity to present its views and recommendations*, and shall receive and consider such views and recommendations."

"Section 202(c) During the continuance of any war in which the United States is engaged, or whenever the Commission determines that any emergency exists by reason of sudden increase in the demand for electric energy, or a shortage of electric energy or of facilities for the generation or transmission of electric energy, or of fuel or water for generating facilities, or other causes, the Commission shall have authority, either upon its own motion or upon complaint, with or without notice, hearing, or report, to require by order such temporary connections of facilities and such generation, delivery, interchange, or transmission of electric energy as in its judgment will best meet the emergency and serve the public interest. If the parties affected by such order fail to agree upon the terms of any arrangement between them in carrying out such order, the Commission, after hearing held either before or after such order takes effect, may prescribe by supplemental order such terms as it finds to be just and reasonable, including the compensation or reimbursement which should be paid to or by any such party."

"Section 205(b) No public utility shall, with respect to any transmission or sale subject to the jurisdiction of the Commission, (1) make or grant any undue preference or advantage to any person or subject any person to any undue prejudice or disadvantage, or (2) maintain any unreasonable difference in rates, charges, service, facilities, or in any other respect, either as between localities or as between classes of service."

"Section 207. Whenever the Commission, upon complaint of a State commission, after notice to each State commission and public utility affected and after opportunity for hearing, shall find that any interstate service of any public utility is inadequate or insufficient, the Commission shall determine the proper, adequate, or sufficient service to be furnished, and shall fix the same by its order, rule, or regulation: PROVIDED. That the Commission shall have no authority to compel the enlargement of generating facilities for such purposes, nor to compel the public utility to sell or exchange energy when to do so would impair its ability to render adequate service to its customers."

The increasing number of intertie pooling and wheeling arrangements have produced a series of tragic developments that are perhaps far more significant than the introduction of the Electric Reliability Bill. The thrust towards attempting to convert interties into common carriers is without question the largest contributor to the deterioration of utility operations.

A common carrier is defined as a utility which dedicates its facility to public offering of complete electric services and which is subject to public utility regulation. Present agitation for protection against failures should not be used as an excuse for increasing the capacity of interties, without carefully reviewing the existing regulatory procedures of Federal and state commissions with the pitfalls of intertie marketing policies.

In this context, state regulatory influences are directed to the adequacy of utility operations. Many investor-owned utilities, with the indorsement of state commissions, have leaned over backwards in solving the firming problems of public agencies in intrastate operations, such as the Pacific Gas and Electric Company's firming contract with the United States Bureau of Reclamation's Central Valley Project in California.

Nonetheless, interpreters immediately jump on this assistance, somehow perverting it into a warning that State commissions in cahoots with regulated utilities have a propensity to ram through firm support rate structures that are not in the best interests of publicly owned utilities and their customers. This rather appalling situation has a widespread appeal because those advocating low cost bulk power perceive it is impossible to prove a negative.

Ironically, the reliability problem stems from exchanging bulk power supplies in interstate wheeling and pooling arrangements without full compliance with sections 205 and 207 of the Federal Power Act—for these are inseparable elements essential to Federal regulation.

This brings the basic and serious question of how important Federal or State assets—power generated at dams constructed with public funds—should be sold. It cannot be said that such sales are in the public interest if the obligation to intertie transmission is without meaningful regulatory jurisdiction. It is pure poppycock to assume that expected economy of interties will solve the problem of reliability when "an undesirable relay operation" can without warning plunge 30 million people into darkness.

In view of the present complexities of power grids and power exchanges between utilities and in the face of an increasing top-heavy bigness that haunts

the present national integration concept, the well organized and progressive utility business is far beyond the need for a "grandfather complex" that is infiltrating the demobilizing the effectiveness of the nation's electric utility control centers.

With due respect for the Federal Power Commission's objectives to enhance the reliability of bulk power, one must view with concern the events that are leading towards a national system of cumbersome regulatory procedures, that will completely circumvent the rightful responsibilities of all electric utilities and the proper functioning of State regulatory authority.

Although this matter is tinged with emotion and prejudice among public and private utilities, the "captive" influence of intertie operation has circumvented the territorial integrity of utility service with respect to reliability.

For example, the nation's private and public electric systems were tied together in a coast-to-coast transmission grid on February 7, 1967. This nationwide interconnection created largely at the insistence of Federal agencies was made possible by the addition of transmission interties built by both public and private suppliers. Under normal operating conditions, the grid was expected to result in substantial benefits for individual power systems and their customers. The participants hoped that surplus power could be exchanged between the nation's four different time zones to level out daily peaks that occur at various hours in each of the zones. It was further anticipated that even greater supplies of power would be available to help utilities meet increasing demands that would otherwise require them to install additional generating capacity. Ultimately, it was hoped, generating plants across the United States would automatically respond to emergencies in any area to stabilize systems, pool operations, and limit service interruptions.

As with any innovation so complex and vast in scope, the East-West grid operation confronted the sponsors with new problems almost from the beginning. Constant frequency excursions resulted in voltage fluctuations and uncontrollable power swings through the entire grid affecting the reliability of customer services in all connected systems. These excursions were caused by a variety of conditions, including electrical disturbances, the shedding or addition of large blocks of consumer loads, inadequate transmission capacity in individual systems and the critical limitations in the frequency response capability of generators that were not adaptable to this kind of regulation.

At the request of participating utilities the tie was opened on July 20, 1967, without accomplishing the Bureau of Reclamation's objective of shipping power from their eastern regions to the west for more efficient use of water in their several watersheds.

With or without intertie exchanges, public and private utilities cannot be relieved from the responsibility for reliable service even recognizing the normal expectancy of failures that will occur within their own distribution networks.

Unless intertie power is "firm" to the receiving utility there is no assurance of service continuity to anyone. This fact was clearly demonstrated in a recent failure that blacked out an area from eastern Oregon to western Wyoming.

Comments made by a utility spokesman are well worth repeating, when he said, "The failure was caused by a large system disturbance that spread like falling tenpins throughout the area connected by the intertie system . . . we're connected all the way and when one area goes, the rest follow . . . but what actually happened we do not know."

The public should be aware that such exploitation of utility service continuity in order to extract the last kilowatt out of hydroelectric projects is the same "cat and mouse" routine that has converted the once beautiful rivers of the Sierra's into snake pits and garbage troughs.

It is time to review the objectives of an expanding system of interties that are being built in the wake of a decade of arguments between public and private power interests, to determine whether or not these objectives are within the purviews of effective regulatory processes. The increasing number of unnecessary widespread failures is a crystal clear indication they are not.

Intrastate power utilities in this country have operated on the basis that each utility is responsible for the service it renders and should therefore be fully responsible for the facilities needed to assume reliability.

The choice between locating generation at the fuel source or at load center has, in the past, been determined by economic comparisons of delivering fuel for generation by transport as opposed to transport of energy by wire.

Fossil fuel and atomic generating units have reduced the unit cost of generation to the lowest level in history, and it is now generally more economical to

transport fuel for local generation than it is to import power over an extensive intertie system. Over the years this principle has had the understanding and approval of State regulatory commissions.

It is time to recognize:

That the great hydroelectric age of the United States is over and we are moving into an era where the rapidly increasing demands for electricity must be generated from fossil-fueled or nuclear-fired steam plants located at or near load centers.

That utilities cannot afford to build interties unless they are reasonably loaded with firm power. And, of course, when they are loaded they become a dangerous threat to the reliability of electric service when a trip-out occurs, unless alternate sources or spinning reserves are maintained. That the thousands of miles of exposure in a national intertie system could be an open invitation for saboteurs to pick the most vulnerable spots and shut down our entire national electrical industry.

The need for periodic test separations from intertie systems to demonstrate each utility's ability to maintain its area load obligations under adverse conditions.

That the maintenance of continuing surveillance over intrastate economy and reliability considerations, has been and should continue to be, under the regulatory jurisdiction of State commissions.

That the Federal Power Commission already has a proper role to play in assuring an abundant supply of electrical energy throughout the United States with the greatest possible economy.

That the Federal Power Commission's role can best be filled by continuing to work on a cooperative basis with State commissions, by exercising proper authority over Federal marketing agencies, by keeping abreast of developments, by issuing recommendations from time to time and generally carrying out its present responsibilities in monitoring the reliability of interstate operations. From the results of past performance it would appear that the Federal Power Commission has not had the capability to discharge in full its present responsibilities. The addition of new responsibilities, in accordance with the proposed reliability legislation, can only result in a greater gap between statutory responsibility and the Federal Power Commission's capacity to perform. The final product could well be a further deterioration of intrastate and interstate reliability rather than an improvement.

CONCLUSION

It is time to reaffirm the principle that State commissions will regulate intrastate operations, and the Federal Power Commission will regulate interstate operations, similar to established procedures relating to communication services.

Telephone companies are engaged in furnishing both intrastate and interstate communication services. The intrastate services are subject to the jurisdiction of State regulatory bodies and interstate services are subject to the jurisdiction of the Federal Communications Commission.

The major portion of telephone property of the companies is used in common for both intrastate and interstate services. Similarly, the major portion of the expense is incurred in the joint service rendition. Therefore, a uniform method of separation is established so that property costs, revenues, expenses, taxes and resources of each company subject to the respective jurisdiction may be determined.

Both Federal and publicly owned communication facilities when integrated with intrastate and interstate systems conform to rate structures and service standards of the appropriate regulatory jurisdiction. As a result, telephone companies in the United States provide the most economical and reliable communications in the world.

We should not be asked to settle for less with the power industry, since the results of this bewildering situation are material today only to the extent that the individual utility system is alert and conscious of its obligations for service continuity to the area it serves.

Senator Moss. Commissioner Taylor, does Nevada import or export power, or is it totally self-contained?

Mr. TAYLOR. We have interstate power supplies in Nevada.

Senator Moss. Do you import more than you export?

Mr. TAYLOR. I will defer to Mr. Anthony for specific figures.

Mr. ANTHONY. No, sir, we import power. We export very little.

Senator MOSS. Have you had any problems with working out interconnections in that regard, on the power you bring in?

Mr. ANTHONY. No, sir. All our so-called interconnections are radial feed, that is, a direct line into the State.

Senator MOSS. And you have had no problems of cascading power failure in Nevada in any recent times?

Mr. ANTHONY. No, sir.

Senator MOSS. Thank you.

Senator CANNON. On this Mojave plant, what will be the system of distribution once that plant is put into operation? How will the distribution take place?

Mr. ANTHONY. It will be one 500-kilovolt radial line into the Nevada system. It will begin at the Mojave plant and go to a main substation called El Dorado. From there they will integrate.

Senator CANNON. Where does it get into Southern California Edison's system?

Mr. ANTHONY. Through the El Dorado station and other lines interconnecting with Mojave.

Senator CANNON. Thank you very much. We appreciate your appearing here and giving us your views. Mr. Anthony's statement has been made a part of the record.

Mr. TAYLOR. Mr. Chairman, Commissioner Clark does have one additional comment he would like to make.

Mr. CLARK. Mr. Chairman, I am quite sure you are familiar with S. 5401, the motor carrier law of some time back, where the States were given some 5 years to come up with certain standards within the motor carrier industry before the Federal Government promulgated rules and regulations for an orderly conduct of an interstate motor carrier.

It might be interesting to note such condition might be worthy of examination by your committee before any ultimate legislation took place in this particular field.

Senator CANNON. In other words, following along that type of a pattern, is that what you are saying?

Mr. CLARK. Yes, sir. I am saying it worked very well and might be well to consider this particular matter.

Senator CANNON. Thank you very much.

The next witness will be Mr. Floyd Goss, chief electrical engineer and assistant manager, Los Angeles Department of Water and Power. Mr. Goss did testify at the hearing in Seattle in another capacity. You wish to make some additional points in your present capacity today; is that correct?

Mr. Goss. That is correct.

Senator CANNON. You may proceed.

STATEMENT OF FLOYD L. GOSS, CHIEF ELECTRICAL ENGINEER AND ASSISTANT MANAGER, LOS ANGELES DEPARTMENT OF WATER AND POWER

Mr. Goss. Senator Cannon, Senator Moss, my name is Floyd L. Goss. I am chief electrical engineer and assistant manager of the Los Angeles Department of Water and Power, a municipally owned utility serving the city of Los Angeles and its population of 2,900,000.

I appreciate this opportunity to appear before your committee to make the following statement on behalf of the department of water and power concerning the general subject of electric power system reliability with particular reference to Senate bill 1934 and related bills.

After careful consideration of S. 1934 and related bills, it is my opinion that there is no need for such legislation. Furthermore, although the stated objective of the legislation is to enhance reliability, it is my personal belief that enactment of this legislation would, in fact, adversely affect reliability rather than enhance it.

My opinion that there is no need for legislation such as this is based first of all upon careful consideration of any possible effect it might have on the reliability of the department's electric system. Reliability is already our primary concern. Furthermore, this preoccupation with reliability is not a new attitude. I think this can best be illustrated by citing the history of one power development that is particularly appropriate to today's hearings. It involves the Hoover Dam project and the transmission system designed and built by the Los Angeles Department of Water and Power to deliver to Los Angeles its allotment of electrical energy from this giant, multipurpose project.

This transmission system had to be designed and built to withstand the risk inherent in crossing almost 300 miles of mountainous and desert terrain. More than half of the line would traverse desert terrain and would be exposed to flash floods, lightning storms of high intensity occurring 20 to 30 times a year, and high winds, as well as other hazards and difficulties associated with this environment. On its way to Los Angeles it would also cross two high mountain ranges with attendant problems of snow and ice.

For reasons of economy and efficiency, a voltage of 287,500 volts was selected. This was at that time, and for 20 years thereafter, substantially higher than the voltage used for transmission elsewhere throughout the United States.

The department was aware of the significant effect that these environmental factors and its choice of a new higher plateaus in transmission voltage could have on the reliability of its system. Therefore, in 1927, 9 years before this line was to go into operation, an intensive research and development program was initiated by Mr. E. F. Scattergood, the founder of the city's electric system and for many years its chief electrical engineer and general manager.

I should like to quote an excerpt from a paper that Mr. Scattergood presented before the American Institute of Electrical Engineers in 1936 because I feel it is illustrative of our attitude toward reliability:

The desire to achieve the utmost in high standards of continuous service, and the fact that this line will provide a relatively large portion of the total system power of the Department of Water and Power has made it necessary to regard reliability as the foremost consideration in the design of the line.

A very liberal policy has been followed in conducting research to develop or verify and refine each step in the design of the line, and in establishing safety factors in order that the desired reliability might be assured. The newly developed features of the line, therefore, not only have a definite purpose, but have their performance well verified in advance by exhaustive investigation.

This liberal policy to which Mr. Scattergood refers included, for example, equipping the H. J. Ryan Laboratory at Stanford University so that artificial lightning flashes of 2,200,000 volts could be arced

across distances of 34 feet in order to verify insulation levels for the line and related equipment, such as switchgear and transformers. It was necessary to develop an entirely new method for interrupting fault currents on this line.

Existing equipment was simply not fast enough. An improvement of almost 5 to 1 was necessary. Working with engineers of the General Electric Co., at Schenectady, giant impulse breakers were developed which would operate in one-twentieth of a second.

In order to determine the effect of wind vibration on the life of transmission line conductors, a test span was erected on the desert near the foot of Death Valley. The work at this small research station was soon expanded to encompass other environmental factors, including the actual measurements of the extremely high currents associated with lightning strokes. This very interesting research project, beginning in 1933 and continuing until the line went into service in 1936, was my particular responsibility.

The careful consideration of the effect of this transmission system on the reliability of the Los Angeles electric system was not limited to the research and development program which I have just described. It was also necessary to establish loading limits for the transmission lines. The maximum load than can be carried on a transmission system is not, in most cases, determined by the thermal capacity of the conductors, but is rather that amount of load, which when interrupted due to loss of the transmission line, will not cause instability on the system as a whole.

The determination of this is a very complicated procedure involving not only the characteristics of the line, but also those of the system to which it is connected. These computations are carried on today through the use of large-scale digital computers. Thirty-five years ago our computer was a slide rule 3 feet long, and the amount of time required to make these determinations of load limits was enormous.

The Hoover transmission system was first placed in service in October 1936. During the ensuing period of almost 32 years, a remarkable record of reliability has been established. There have been only two occasions when, as a result of faults on this transmission system, electric service in Los Angeles was interrupted for 15 minutes or more: one on December 7, 1943, when an airplane dragged a tow cable across the conductors of all three circuits, interrupting service for 15 minutes; the second on March 12, 1946, when an airplane crashed through the conductors at a desert location. In this case the maximum service interruption was 22 minutes.

This outstanding record, we feel, results solely from recognition by the management of the department of water and power of the importance of reliability and from the intensive research and development program that provided the design and construction criteria that made it possible.

As you are aware, there was at that time no regulatory agency—Federal, State, or local—which had the authority to require the department to use this high degree of care to assure reliability and, obviously, none was needed.

I have singled out a specific reliability program undertaken many years ago by the department of water and power, but I know that like examples involving similar programs of careful research and planning

to assure reliability could be cited by other electric utilities across the Nation.

For example, in the early twenties the Southern California Edison Co. advanced the plateau of transmission voltage to 220,000 volts. They did a tremendous amount of research. The system went into operation and is operating today as a reliable system from their Big Creek project.

As a result of this work the transmission system voltage all over the United States was extended to 230. Later the Ohio Power Co. and other Midwest utility companies raised this plateau to 345,000 volts, and that became the standard voltage throughout the country.

Later on in the history of the utility business, this was raised to 500,000 volts, and a tremendous lot of research was done at that time by TVA, Virginia Electric Power, and other electric utilities working with the manufacturers. There is now development work going on on the next plateau, which no doubt will be 750,000 volts a.c., and the Los Angeles Department of Water is now building a 750,000-volt d.c. line shown as the orange and green line, the eastern one on the map.

Senator CANNON. A few years ago when Senator Moss made a trip to Russia and returned, one of his comments, if I remember correctly, at that time was on the tremendous strides they were making in increasing the capacity of their high-voltage transmission. That has been how long ago?

Senator Moss. Nearly 10 years ago.

Mr. Goss. I believe the remarks made by Senator Moss had a great deal to do with our going into the 750,000-volt d.c. project.

During my more than 40 years in this business, I have participated in a great many meetings with executives, engineers, and operators of electric systems throughout this Nation. I have found that the attitude of these representatives of other systems toward reliability as well as their performance in providing for it is much same as ours. I would like to think that we do the job better although I would probably have to admit this is not necessarily so.

As I said at the beginning of this statement, it is my personal belief that enactment of this legislation would, in fact, adversely affect reliability rather than enhance it. There are several reasons why I believe this to be a correct appraisal:

1. The extended time required for the proposed Federal Power Commission certification process, because of necessary staff review and public hearings, could easily delay construction schedules to the point where the utilities would be unable to meet increasing load demands on their systems.

For example, on the Boulder line I mentioned, there were 9 years of research. Actually, some of the research was completed the day the line went into service. We couldn't have presented a complete package to FPC, because we never had the line completely designed.

I think this is usual, and it is a good thing, because the advancement of the art is allowing us to go forward during the time the line is being designed, and many times during construction.

2. The authority which this proposed legislation would grant to the Federal Power Commission to force interconnection by utilities could, in itself, inhibit the efforts of the utilities to maintain reliability. This

overemphasis of the importance of interconnections could result in a failure to consider all the many aspects of individual systems involved in the interconnection, and the interconnection itself could become the source of cascading failures that spread outages over extended service areas.

What I am saying here—a source of difficulty in the electric system is primarily transmission. This is where the faults occur. This is where the airplane drags a cable, and this is where the lightning strikes. And therefore you have to consider this as the source of the fault, and what would the loss of this line do to the system itself.

In many cases, of course, the fault occurring on the interconnection could be the source of difficulty with the system itself. So you must consider all the factors involved and not just overemphasize, as this bill appears to do, the importance of interconnection.

3. Engineering advancement in the field of production, transmission, and distribution which has made it possible for the industry to continue to meet the constantly increasing demands for electricity while at the same time reducing its cost to the customer, would be seriously impeded by this legislation.

It proposes a review process which would require freezing the design of extra-high-voltage projects early enough to provide for the time required for FPC review. This would make it impossible for the utility to take advantage of any advance in technology during the review period, and would necessarily limit the commitment of funds for research and development into new equipment, materials, and methods.

We have just recently decided, within the last month, to raise the voltage on the Boulder lines to 500,000 volts because we need additional capacity to bring some power from the Mojave plant that has been mentioned here.

We expect to have the power available in 1970, so we must have the line in service 2 years from now. This means we have to start construction in this year. If we had to go through a review process with the very essential public hearings that might arise out of this, and the careful review by FPC which should be done, obviously we couldn't make 1970 as of today.

And I think this is the general case.

Senator CANNON. Don't you think it might in effect force you to do a little more advance planning, force you to project more into the future?

Mr. Goss. Senator, all you have to do to see what the effect of this would be is to look back 5 years and see what we were planning for this year and how much better we are going to do than we planned. This industry is advancing so fast that you should not make decisions until the last moment before you are required to in order to make your schedules.

In many instances—and the last sentence here covers that—utilities might simply be forced to utilize currently available equipment and methods in order to meet construction schedules.

4. Under present conditions, interconnection and coordination agreements between utilities are voluntary and based upon consideration of mutual economic benefits and the contribution to reliability of the systems involved. This relationship could be seriously upset by Federal Power Commission intervention. The present free and open discussions of the terms and conditions relating to these agreements

could under these circumstances become, in effect, adversative proceedings.

5. The agreements under which regional organizations or councils are formed must remain sufficiently flexible so they can be modified from time to time to accommodate changing system conditions. The degree of control by FPC provided for in this legislation would severely limit this essential flexibility and could, in my opinion, result in slowing down or perhaps even bringing to a halt the present progress that is being made in the area of cooperation and coordination between utilities.

6 The planning of production and transmission resources is a continuing process. To require, as the proposed legislation appears to do, that the planning be arrested while the Commission conducts an exhaustive examination of the extra high voltage facilities, would inhibit the development of an electric system adequate to meet the demands placed upon it by its customers.

It would, in some cases, make it necessary that electric utilities develop alternative plans with a consequent increase in cost to cover the possibility that the commission might either disapprove or delay approval of the facilities as originally planned.

7. This proposed legislation would require that the FPC conduct detailed reviews of plans for system expansion. It is obvious this would require a very substantial number of highly skilled technical personnel with experience in this phase of the utility business. Since it is a well-established fact that there is already a critical shortage of just this type of technical personnel, it does not appear to be in the public interest to add to the already serious recruitment and training problem faced by the electric utilities.

In conclusion, based on the foregoing considerations, I believe there is no need for legislation such as that proposed by S. 1934 and related bills, and that if enacted, such legislation would adversely affect reliability rather than enhance it.

Senator CANNON. Thank you very much, Mr. Goss, for your statement.

Senator Moss, do you have any questions?

Senator Moss. I would like to ask Mr. Goss: Since we did have these two serious outages in the Northeast, isn't there something that should be done? You say this legislation is not necessary. Maybe this doesn't fit exactly. I wonder what your recommendation would be.

Mr. Goss. Senator Moss, I certainly agree with you that something needs to be done, and something is being done. It is being done in the Northeast, and certainly is being done in the Pennsylvania-New Jersey-Maryland area as a result of those two outages.

My position is that you can't legislate this. This is in an area where the state of the art is advancing so fast that any legislation would merely inhibit the efforts that are necessary to correct the situation, such as the Northeast blackout.

The Northeast blackout was, serious as it was, and great as was the inconvenience from it, of tremendous benefit to this country. I think all the companies learned from that blackout as from the PJM experience. And I am sure, based on my belief that reliability is already the primary consideration of all utilities, the last thing we want to happen is for our systems to go down.

They are going to take advantage of anything that happens that will help them to prevent that.

Senator Moss. Did I understand you to say: "Interconnection itself could become the source of cascading failures and spread outages over extended service areas"? Would you amplify on that?

Mr. Goss. An interconnection was the source of the Northeast blackout.

Senator Moss. Yes; I am aware of that. If you carry it a step farther, though, if the interconnection is such that there are places where power could flow in and take over at a point like that, then you would escape, wouldn't you, from the cascading failure?

Mr. Goss. At that time, under those load conditions, interconnection wouldn't have saved it. They had interconnection. You must realize that you can design a system and study it and with these tremendously large computer programs, you can analyze all the contingencies, all the things that could happen, and find it completely reliable.

It will be stable. But on a particular day, under a particular load condition, with one line out due to maintenance or due to difficulty, you can still run into conditions such as caused this outage. I was on the committee for FPC that reviewed this and filed the first reliability report. We were very interested in this. As a utility man and also as a member of this committee, we felt some responsibility there.

The Northeast outage was triggered by a relay and the failure of that relay to be set properly for that particular load at that particular time caused it. I can't imagine any legislation that could have made that relay behave. Yet this was an interconnection, and that was the source of the difficulty.

Senator CANNON. Is it possible that such research and development would have resolved that problem? Much of your statement was directed toward the tremendous research and development programs you carried out in getting ready for the job you are doing. Can we assume from that and the type of thing that occurred in the Northeast situation, they hadn't done enough research on the problem?

Mr. Goss. The problem in that particular case, the one single incident that initiated it, was the failure of some man to remember to set this relay, or to reset it. I think in the final analysis you are still going to have to deal with human beings for quite a while.

Under the present state of the art computers are tremendously valuable in accumulating information and making it available to the operators. But as of now, and I think for some years in the future, we will have to still depend on human beings to do the things that are required to make the plans work as they should.

Senator Moss. What about the case where the airplane dragged a cable across your Boulder line? If this had been interconnection, couldn't power have flowed on to the line then for Los Angeles during the period of the time it took to get that corrected?

Mr. Goss. Not at that particular time. At that time we had a very large aluminum reduction load in Los Angeles. As you can see from the date, it was during the period when we were restricted in adding to our facilities.

Actually, the outage was limited as a result of an interconnection. We lost over 500,000 kilowatts of power at the time this occurred. And it was through the operation of an interconnection that we were able to limit this to 15 minutes.

Senator Moss. Then interconnection did serve the purpose. It didn't come in instantly, but in a short period of time you were able to bring in power by interconnection.

Mr. Goss. That is right, Senator; and I am certainly not opposed to interconnection. We have been interconnected for more than 50 years to other utilities. My point is, considering the interconnection itself is not enough. You have to look at the whole system and the other systems interconnected on both sides of you.

Senator Moss. Your testimony, then, should not be construed that you are opposed to interconnection, as this seems to be on page 6.

Mr. Goss. I am not the best writer in the world, Senator, and I did not intend to give that impression. My point was that we shouldn't overemphasize the interconnection as something that is going to solve all of our problems. The Northeast blackout, the area it covered, resulted from a fault on an interconnection and was transmitted to other systems by interconnection.

You have to consider the whole system, the reserves, where the reserves are, the loads served by the various systems, the characteristics of all the other generating units.

Senator Moss. Aren't there instances of smaller distribution systems that are unable to get an interconnection that may be desirable and have to be ordered by someone in order to get the interconnection?

Mr. Goss. I don't know of any in the Western Systems Coordinating Council—who are unable to get interconnections. They are all interconnected, as far as I know.

Senator Moss. Thank you, Mr. Goss.

Mr. Goss. I think we have been fortunate in the West by the fact that the Hoover project resulted in a lot of interconnections in Arizona, Nevada, and California.

Senator CANNON. Thank you very much Mr. Goss.

The next witness is Mr. William Symons, commissioner of the California Public Utilities Commission, accompanied by Bernard Peeters, counsel, legal division; and Walter Cavagnaro, engineer, utilities division.

Mr. Symons, I have just been handed a copy of your statement. If the rest of them were as voluminous as this, 1 day isn't going to be enough. So may I suggest that we will submit your statement in the complete context for the record and you simply summarize it, if you will.

STATEMENT OF WILLIAM SYMONS, COMMISSIONER, CALIFORNIA PUBLIC UTILITIES COMMISSION, ACCOMPANIED BY BERNARD A. PEETERS, SR., COUNSEL, LEGAL DIVISION; AND WALTER J. CAVAGNARO, PRINCIPAL ENGINEER, GAS AND ELECTRIC BRANCH, UTILITIES DIVISION

Mr. SYMONS. If I could, I would like to cover the first 14 pages of it. This is all I intended to do anyway. It will take about 18 minutes.

Senator CANNON. All right. You may proceed. That will run us quite late into the day at that rate. If you can't summarize rather than going verbatim on that, proceed

Mr. SYMONS. Thank you.

The purpose in appearing before your honorable committee is to voice the position of the California Public Utilities Commission to the proposed legislation, S. 1934. The commission's position is based upon its experience in regulating electric utilities, which antedated by many years the Federal Power Commission. Furthermore, its position is based on an analysis of S. 1934 and the present law.

CALIFORNIA EXPERIENCE

At this point a brief review of the experience over decades of cooperation of the California public utilities with the California commission and with voluntary power pools may be enlightening to the members of the committee.

The power of the California commission to regulate electric public utilities dates from 1911 and stems from article XII, section 23 of the Constitution of the State of California. The legislative implementation of this power is found in the California Public Utilities Code, sections 201, and the following.

Under the above powers, the commission has successfully secured the cooperation of the public utilities in California. For example, as early as 1924, the commission was faced with an emergency situation due to abnormally low precipitation. The commission promptly appointed a power supervisor who acted under the direction and supervision of the commission to supervise the distribution of power during the emergency, thus preventing any large scale power failures.

A similar situation occurred in 1948. Again, by prompt action, the commission averted any large-scale power failures through the appointment of a power director. In both of these situations, the utilities cooperated with the commission and the director-appointed, to avert irreparable injury and damage to the electric power supply and to the users thereof.

The California commission utilizes a continuing program of informal and formal activities to keep abreast of the conditions and reliability in the electric utility industry. One such source of information is the annual power survey conducted by the commission. Another source is the continuing activity of the staff in meeting with individual utilities with respect to reliability, planning, pooling, interties, et cetera. The California commission since its inception in 1912 has had general orders covering rules for construction of overhead transmission and distribution lines to assure safe and reliable service.

In the certification area, the California utilities request certification of electric generating plants. Their applications include the directly related high voltage transmission lines from the plant to the high voltage transmission network.

Under the regulation of the California commission, the utilities subject to its jurisdiction have established an effective and efficient electric generation, transmission and distribution system incorporating large generating units and high voltage interconnections. Central to this system has been substantial reliance on load center generation, extensive spinning reserves and load shedding programs.

The California commission has formally exercised its authority whenever necessary to assure adequate and reliable service. These formal proceedings have included certification of electric generating

units and related plant as well as investigations on its own motion into the adequacy of electric service.

Experience indicates that electric reliability can be achieved under the broad general authority vested in the California PUC. This authority is formally exercised only if voluntary cooperation has not resulted in agreements between the utilities to meet the requirement for adequate service.

California's utilities have voluntarily interconnected, not only among themselves, but with utilities to the north and east. Agreements have been entered into involving not only the public utilities which the California commission regulates, but also public agencies in California including the Los Angeles Department of Water and Power, the Metropolitan Water District, Sacramento Municipal Utility District, California Department of Water Resources, and many others. These public agencies have, through the years, cooperated with the California commission in providing data and studies relating to power requirements, supply and reliability. The public agencies have also observed the commission's general orders as standards of care in matters dealing with safety and adequacy of service.

Experience emphasizes that voluntary cooperation is both possible and practical under State regulation and negates the necessity for compulsion as proposed by the Federal Power Commission.

The commission believes that the California experience demonstrates that cooperative actions on the part of both utilities under the direct jurisdiction of the CPUC and of the public agencies acting in comity with the commission have assured reliable electric service in California.

If the California commission needs or will need the assistance of the FPC it will willingly initiate appropriate proceedings under section 202(b) or 207 of the Federal Power Act. If, on the other hand, the FPC is of the view that there is inadequate and unreliable service in the State of California, the California commission would willingly entertain any suggestions from the FPC for implementation of such sections.

PROPOSED LEGISLATION

The sponsors of S. 1934 allege that the provisions of the bill will insure greater reliability of the electric power supply in the United States through (1) the establishment of regional planning organizations to ensure that plans for bulk power supply are adequate; (2) authorizing the FPC to establish planning and operating standards of extra high voltage systems to enhance reliability; (3) the provision for FPC review and approval of EHV transmission lines; and (4) authorization of the FPC to require interconnections between bulk power generating facilities.

The FPC claims that the key to the implementation of the purpose of the legislation would be regional councils, which are made necessary because technology is now too large for any one utility or power pool to manage and control effectively. This has not been the experience in California with any of the local electric utilities or with the California power pool. The California utilities have kept abreast of changes in technology and are in the forefront of implementing them. It would be difficult to conceive how the management of the FPC could improve upon the management of the California power pool.

The FPC position stresses that public power systems must be able to participate in the benefits of this rapidly changing technology. This, too, has been voluntarily accomplished in California. The cooperation of Pacific Power & Light, P. G. & E., Southern California Edison Co. and the Los Angeles Department of Water and Power to bring the Bonneville extra-high-voltage line into southern California is an example of this.

Another example of public and private cooperation is the tremendous plan of the California Department of Water Resources to pump water from northern California to southern California in which the California electric utilities are both purchasing and delivering energy. Bolsa Chica is still another example of public power system participation with investor-owned utilities in the benefits of rapidly changing technology. The FPC says that the issue of wise land use requires extensive consultation with conservation groups and other land planners in the location of extra-high-voltage lines. However, the extra-high-voltage lines within a State is a matter of purely local concern to be met by extensive consultation of State commissions with conservation groups and local planning commissions.

USURPS STATE'S AUTHORITY AND CENTRALIZES POWER

While the proposed bill is directed at greater reliability of bulk power transmission, it encompasses extensive interference with and usurpation of State and regulatory powers.

Some idea of the nature of this concentration of authority can be gleaned from a brief review of certain aspects of the proposed legislation. For example, the bill gives the FPC veto power over the organization and structure of the regional councils, as well as the power to compel utilities to participate on the regional councils. All coordination agreements would be required to be filed with the FPC. Authority would be granted FPC to establish and administer reliability standards for transmission systems. Power would also be given the FPC to suspend construction of any designated transmission facility and to redesign transmission proposals. This would include an implied power of denial of a transmission facility as well. The power to order direct interconnection and prescribe the terms of such interconnection is granted.

The proposed centralization of authority in regional councils, under the control of the FPC, suggests a viable organization with a dichotomy between planning and responsibility for the operations of an electric system. These essentials of planning and responsibility cannot be separated and the resulting chaos would slow and delay the efforts of the present electric power industry to meet the rapidly growing needs of the public.

There is no known reason why the FPC should establish itself as a planning agency for the State of California. Not only does the proposed legislation cover the compulsory interconnection of transmission facilities, but it also covers certifications of transmission lines which will be either entirely, or primarily, intrastate in character.

For example, there presently exists in California about 9,600 circuit miles of 230-kilovolt transmission lines and 1,400 circuit miles of 500-kilovolt transmission lines which are primarily for the purpose of

providing intrastate service. Even the new 500-kilovolt circuits were required for adequate interconnection of northern and southern California service areas.

The major portion of these circuits would have been constructed even if there had not been the economic advantage of interconnection with the Northwest. The California commission succinctly stated its position with respect to these lines in *Duncan v. PG&E Co.*, 64 CPUC 788 (1965) :

Although the lines would be used for both intrastate and interstate transmission, even if only for the latter, such matters as the location of the lines, their electrical and structural adequacy, their safety and their meeting of the needs of the public within this State are clearly, by law, subject to the jurisdiction of of this Commission.

The proposed legislation goes far beyond the matter of electric reliability, the matter it purports to be principally concerned with. It also provides that the FPC will determine matters of land use and of an esthetic nature. It also implies that the FPC will determine economic matters now subject to determination by the California commission.

BUILT-IN CONFLICTS

The bill, as drafted, has built-in conflicts, as well as the conflict between planning and responsibility pointed out above. The bill purports to supplement parts I, II, and III of the Federal Power Act and states that nothing herein shall modify or abridge authority previously granted unless specifically provided for. Significantly, all limitations contained in part II are omitted from part IV. Chairman White's answers regarding present powers contained in section 202(b) and proposed powers in section 411, printed on pages 78-79 of the record of hearings on August 22, 1967, serial No. 90-30, are particularly illuminating. He admits the deliberate elimination of the restrictions and confirms the additional sweeping powers sought by the FPC.

ECONOMIC IMPACT

In its report to the President on the prevention of power failures, the FPC indicated the direct cost of reliability between now and the year 1975 to be \$3 billion. It was also estimated that this represents about 2 percent of the electric utility industry's total cost of doing business. On an annual basis, this would exceed \$3 million for the United States and about \$30 million for the ratepayers of California at current levels of business. An impact of this magnitude should be carefully reviewed to be sure that the FPC efforts not be misdirected.

It is suggested that there are other alternative areas in which money could more profitably be used to improve reliability, such as urban nuclear plant siting to provide more adequate generation capacity at load centers. Undergrounding and esthetics are still other areas of public interest. In these latter areas, it is noted—page 87 of the record of August 22, 1967, hearing—that Chairman White admitted the FPC has worked, on a nonregulatory basis, in these areas.

PRESENT LAW—CONGRESSIONAL INTENT

The proposed legislation would grant sweeping powers to the FPC and would repeal by implication the present expression of congress-

sional intent to retain in the States their traditional powers of regulation. Mr. White admits this in his answer to the question whether the authority presently contained in section 202(b) is sufficient to accomplish the purposes of proposed section 411—page 78, report of Senate hearing August 22, 1967, serial No. 90-30.

Congress very clearly expressed its intent to grant only limited powers to the FPC in section 201(a), which reads in part that "such Federal regulation, however, to extend only to those matters which are not subject to regulation by the States."

PRESENT AUTHORITY

Sections 202, 203, 204, 205, 206, and 207 now provide considerable authority to the FPC. For example, the emergency powers contained in section 202(c) permit the FPC to act on its own motion to declare an emergency. Although Mr. White expresses doubt whether these provisions were intended to authorize the FPC to act generally to improve long-term reliability, the Commission did exercise the power recently in the *Georgia Power Co.* case where Georgia had repeated power failures. It is suggested that it is not necessary for the FPC to wait for repeated power failures to invoke its emergency power.

(See answer (c) to question 2 in FPC's letter of Sept. 18, 1967, Rept. No. 90-30, p. 78.)

The FPC could take the initiative in the El Paso Electric Co. and Southwestern Public Service Co. situation to improve reliability by invoking its emergency powers, rather than wait unduly on the utilities or for a power failure.

(See answer to question 3 on pp. 78-79 of the committee's printed report No. 90-30.)

CONCLUSIONS AND RECOMMENDATIONS

The inconveniences and public concern over the Northeast blackout and the PJM power failure are fully understandable. The desire of the administration and the FPC to preclude a recurrence is appreciated, yet it is the California commission's appraisal that the solution proposed by the Electric Reliability Act is misplaced.

Transmission failures typically represent a small fraction of power outages. An analysis of interruptions of the major California electric utilities indicates that such interruptions aggregate from 40 to 80 customer minutes per customer per year. Of this amount only about one customer minute per customer per year can be attributable to high voltage transmission line failures. The bulk of electric system interruptions relate to failure of low voltage distribution facilities.

The proposed legislation may render the difficulties more serious, by concentrating on transmission and organizing the entire electric power industry around large-scale grids and interregional power ties to the neglect of load center generation and proper assumption of individual utility responsibility.

It is suggested that, in lieu of adding a new, untried part, which has built-in conflicts with the present act, the Commission now has authority to insure reliability. In fact, Chairman White states in his answer to question 6 contained in his letter of August 4, 1967—pages 87-88,

report No. 90-30—that the Commission has the power to promote reliability, citing sections 202 (a), (b), (c), and 207. He does state, however, that no State commission has ever requested the FPC to act to determine “adequate service” under section 207. The States are just as much interested in avoiding power failures as is the FPC, and we are sure that the States would cooperate with the FPC wherever and whenever requested to insure adequacy of service.

The California commission’s analysis shows that the present law includes broad powers, some of which could be used more imaginatively as adverted to above, which constitute a basis for implementation of a program similar to that conducted successfully in California.

Rather than enacting a new part, it is suggested that a section-by-section analysis of the present law be made to determine specifically wherein it is deficient to meet present-day conditions and problems. The questions and answers contained in the FPC letters of September 18 and August 4, 1967—pages 77-85 and 86-88 of the committee’s report No. 90-30—contain an excellent start on such an analysis. A deficiency pointed out by Mr. White is the alleged lack of authority in the FPC to act on its own motion under section 202(b).

The California commission believes the FPC can accomplish much more than has been accomplished under its emergency powers since it has jurisdiction to declare what constitutes an emergency; under its powers of suspension of rates, schedules and service and through cooperation with the States under sections 202(b) and 207. The California commission would have no objection to the FPC being specifically permitted to act on its own motion under section 202(b) and 207 assuming the FPC cannot exercise its emergency powers, cannot effectively act under its power to suspend rates, or cannot establish a cooperative effort with the States in this area.

The present law is well established, understood by the industry and the regulators, and has been interpreted by judicial decision. It thus affords a sound basis for insuring reliability. Amendments to particular sections appear to be the more logical approach, rather than enactment of a new, separate section which will raise additional problems of its own.

The California commission recognizes the necessity for proper regulation of electric reliability. It is respectfully urged, however, that many matters of electric power supply are matters of local concern and subject to regulation by the States. It is believed that the regulation of electric reliability can be effective under a statutory scheme that provides for Federal regulation only where State regulation is nonexistent.

The Congress of the United States recognizes the value of State regulation in the Natural Gas Act and throughout the Federal Power Act. These clearly defined boundaries were wisely provided by Congress.

The California Public Utilities Commission strongly recommends that the Congress continue the clear distinction in the present law which provides for Federal regulation only where State regulation is nonexistent.

I want to thank the committee for the opportunity to present the California commission’s views on the proposed legislation.

Senator CANNON. Thank you very much, Mr. Symons.

Mr. Peeters and Mr. Cavagnaro, do you have anything to add?

Mr. PEETERS. No, sir.

Mr. CAVAGNARO. No, sir.

Senator CANNON. Senator Moss, do you have any questions?

Senator MOSS. No, I have no questions, Mr. Chairman.

Senator CANNON. Thank you.

Mr. SYMONS. Thank you.

Senator CANNON. The next witness is Mr. John F. Bonner, senior vice president, Pacific Gas & Electric Co.

Mr. Symons, the attachment to your statement will be made a part of the record.

Mr. SYMONS. Thank you.

(The attachment referred to follows:)

[Attachment]

CALIFORNIA PUBLIC UTILITIES COMMISSION'S AUTHORITY AND PRACTICES IN REGULATING THE ADEQUACY OF ELECTRIC UTILITIES SERVICE

The California Commission's power to regulate public utilities stems from Article XII, Sections 22 and 23 of the Constitution of the State of California.

Section 23 declares, among other things, that "Every private corporation, and every individual . . . owning, operating, managing, or controlling any commercial . . . plant or equipment within this State, for . . . the production, generation, transmission, delivery or furnishing of . . . power . . . either directly or indirectly, to or for the public, . . . is hereby declared to be a public utility subject to such control and regulation by the Railroad Commission as may be provided by the Legislature . . ."

Various sections of the Public Utilities Code, set forth below, represent the legislative implementation of the Constitutional powers granted in Article XII, Section 22, pertaining to electric utilities.

Section 216 defines public utilities as including, among others, electrical corporations and declares them to be subject to the Commission's jurisdiction, control and regulation.

Sections 217 and 218 define "electric plant" and "electrical corporation," respectively.

Section 451 declares that a public utility's charges must be just and reasonable and that every public utility shall furnish and maintain adequate service . . . equipment and facilities necessary to promote the safety, health, comfort and convenience of . . . the public.

Section 453 provides that no public utility shall . . . make or grant any preference or advantage . . . or subject any . . . person to prejudice or disadvantage. Also that no public utility shall establish . . . any unreasonable differences as to rates, charges, service, facilities or in any other respect . . .

Section 454 provides that no public utility shall raise any rate or alter any classification, contract, practice, or rule as to result in any increase . . . except upon a showing . . . and finding by the Commission that such increase is justified.

Section 489 provides that every public utility . . . shall file with the Commission . . . schedules showing all rates, tolls, rentals, charges, and classifications . . .

Section 491 provides that no change shall be made by any public utility in any rate or classification, or in any rule or contract . . . except after 30 days notice to the Commission and the public.

Section 581 provides for the furnishing to the Commission in such form and detail as prescribed all tabulations, computations, and all other information required by it to carry into effect any of the provisions of this part . . .

Section 582 requires every public utility, when required by the Commission, to provide copies of any or all maps, profiles, contracts, agreements, franchises, reports, books, accounts, papers, and records in its possession . . . and also a complete inventory of all its property . . .

Section 584 requires annual reports to be furnished the Commission by every public utility. It also provides for the filing of monthly reports of earnings and expenses and periodical or special reports as required.

Section 701 is a broad "catch-all" provision which provides that the Commission "may supervise and regulate every public utility in the State and may

do all things, whether specifically designated in this part, or in addition thereto, which are necessary and convenient in the exercise of such power and jurisdiction."

Sections 761 through 773 pertain to equipment, practices, facilities and service of utilities.

Section 1001 provides for the certification of specified utilities, which includes electric utilities.

Sections 8037 and 8056 confer additional powers on the Commission with respect to surface and underground facilities for the transmission of electric energy.

Under the above powers, the Commission has acted and exercised its jurisdiction with respect to electric utilities in various ways on a formal and continuing basis.

As early as 1924, the Commission, on its own motion, instituted an investigation into the construction and operation of certain electric utilities and the distribution and transfer of electric energy during an emergency resulting from abnormally low precipitation. (Case No. 2013, Dec. No. 13746, 25 CPUC 104.)

In the case above, the Commission appointed a power supervisor, who acted under the direction and supervision of the Commission, to supervise the distribution of power in southern California during the emergency. At the same time the Commission recognized the importance of treating transmission of power problems on an area, rather than on an individual utility basis, thus antedating the proposed federal regulation by many years. The results of the Commission's prompt action prevented any large-scale power failures and permitted, through interconnections of the various systems, an equitable distribution of power on a curtailed basis.

In 1948 the Commission again invoked its powers over electric utilities. This time it promulgated a set of rules and regulations to cope with another power shortage emergency due to lack of precipitation in northern California. The emergency rules were established in order that "irreparable injury and damage to said electrical power supply and to the users thereof be avoided and prevented." Case No. 4939, Dec. No. 41256, 47 CPUC 769.

One month later, the Commission ordered the appointment of an Emergency Power Director to carry out and effectuate, during the emergency, the Commission's policy and emergency regulations. Dec. No. 41309.

Since its inception in 1912, the California Commission has established rules for the construction of overhead electric transmission and distribution lines. These rules have been changed, amplified, and revised many times to reflect progress in the art and construction and development of new materials. The purpose of the present General Order No. 95 is to formulate statewide uniform requirements to insure safety of workmen and the public and to insure adequate and reliable service.

Other formal actions of the Commission, involving electric utilities and relating to power transmission, have been in the form of complaints filed with the Commission.

Ligda v. P.G.&E. Co., 61 CPUC 1 (1963) was a complaint which involved the proposed construction of a 220 kv transmission line in San Mateo and Santa Clara Counties. The complaint sought an order requiring the rerouting or undergrounding of the proposed line for aesthetic reasons. A temporary restraining order was issued. After a hearing the Commission determined that it had jurisdiction to consider the question of aesthetics in regulating the use of property, but that these values alone are not controlling. It was held that the complainants had failed to establish any facts which would entitle them to any relief with respect to the relocation or undergrounding of the transmission lines.

City of Woodside v. P.G.&E. Co., 64 CPUC 51 (1965) was a complaint which involved transmission facilities. The complainants sought an order compelling the underground rather than overhead construction of facilities for a 220 kv line to the Stanford Linear Accelerator.

The complaint was denied since a federal agency over which the Commission had no jurisdiction, rather than the defendant utility, was to construct the power line.

Duncan v. P.G.&E. Co., 64 CPUC 788 (1965), was another complaint involving a transmission line. Here the location of a 500 kv transmission line across the Sacramento Valley was contested. PG&E contended that California law did not require it to obtain a certificate of public convenience and necessity since the line was only an extension within the meaning of Section 1001; and further,

that the Commission had no jurisdiction in the matter because of preemption by the Federal Power Commission.

The Commission resolved the jurisdiction issue by finding that the complainant was properly before it and that "although the lines would be used for both intrastate and interstate transmission, even if only for the latter, such matters as the location of the lines, their electrical and structural adequacy, their safety and their meeting of the needs of the public within this State are clearly, by law, subject to the jurisdiction of this Commission."

Complainants sought judicial review of the *Duncan* decision before the California Supreme Court, which was denied on March 16, 1966. (*Duncan v. P.U.C.*, S.F. No. 22213.) However, since complainants had invoked the jurisdiction of the Commission in the first place, they did not make it an issue before the Supreme Court.

With respect to certification proceedings under Section 1001, the major California utilities have requested certification of electric plant. These applications request certification of the generating plant as well as related high voltage transmission lines from the plant to the high voltage transmission network. Significant distances of such high voltage transmission have sometimes been involved.

The most recent certification proceeding, Application No. 49051 (1967) covered a nuclear generating plant of 1060 mw in San Luis Obispo County. The proposal was reviewed extensively, during twenty days of hearing with respect to load growth and resources, site selection, estimated plant costs, estimated cost of power, transmission line routing, safety, ecological effects, conservation and aesthetics. Approximately 160 miles of 500 kv transmission lines were involved.

The staff participation in certificate applications is primarily devoted to a determination of load and resource estimates, economic feasibility and safety. The load and resource estimates are particularly significant with respect to the continuation of adequate electric service and with reliability of electrical supply. The economic aspects are significant with respect to the Commission's rate-making authority. Safety aspects pertain both to a review of compliance with the Commission's general orders as well as a review of any unique facets of the installation which require special investigation.

In its program of formal and continuing staff activities with respect to electric reliability, the California Commission keeps completely informed with respect to electric reliability. An analysis of interruptions of the major California electric utilities indicates that such interruptions aggregate from 40 to 80 customer minutes per customer per year. Of this amount only about one customer minute per customer per year can be attributable to high voltage transmission line failures. The bulk of electric system interruptions relate to failure of low voltage distribution facilities.

Another part of the program of continuing review by the California Commission of the adequacy of electric service and of electric system reliability is the annual power survey. Loads and resources are reviewed statewide and the adequacy of demand and energy margins and of utility construction programs is tested. A review of operation and maintenance practices, interconnections, system protection, spinning reserve practices, and load-shedding programs are also made on a periodic basis.

The California utilities under the active regulation of the California Public Utilities Commission have established large and economical generating units and appropriate extra high voltage interconnections. There has been no problem in California with which the California Commission has been unable to deal and satisfactorily resolve. In addition to heavy reliance on load center generation, the California utilities have maintained necessary high voltage transmission, interconnections, appropriate distribution of spinning reserves and automatic load-shedding programs to assure continued reliability of service. Under these programs the infrequent interruptions caused by loss of large generating capacity have been controlled without widespread or longtime loss of electric service.

SECTION 1 (C) OF THE NATURAL GAS ACT

"(c) The provisions of this Act shall not apply to any person engaged in or legally authorized to engage in the transportation in interstate commerce or the sale in interstate commerce for resale, of natural gas received by such person from another person within or at the boundary of a State if all the natural gas so received is ultimately consumed within such State, or to any facilities used by such person for such transportation or sale, provided that the rates and service of such person and facilities be subject to regulation by a

State commission. The matters exempted from the provisions of this Act by this subsection are hereby declared to be matters primarily of local concern and subject to regulation by the several states. A certification from such State commission to the Federal Power Commission that such State commission has regulatory jurisdiction over rates and services of such person and facilities and is exercising such jurisdiction shall constitute conclusive evidence of such regulatory power or jurisdiction."

Senator CANNON. Mr. Bonner is our next witness, accompanied by Mr. Robert P. O'Brien and Robert N. Coe, and Mr. C. M. Laffoon, appearing with him. Mr. Bonner is going to be the spokesman.

STATEMENT OF JOHN F. BONNER, SENIOR VICE PRESIDENT, PACIFIC GAS & ELECTRIC CO., SAN FRANCISCO, CALIF.; ACCOMPANIED BY ROBERT P. O'BRIEN AND ROBERT N. COE, VICE PRESIDENTS, SOUTHERN CALIFORNIA EDISON CO.; AND C. M. LAFFOON, VICE PRESIDENT, SAN DIEGO GAS & ELECTRIC CO.

Mr. BONNER. Thank you, Mr. Chairman.

I am John F. Bonner, senior vice president of Pacific Gas & Electric Co., appearing here on behalf of the California Power Pool companies. With me are representatives of the other two California Power Pool companies. On my right, Mr. Robert P. O'Brien and Mr. Robert N. Coe, vice presidents of Southern California Edison Co., on my extreme right, Mr. C. M. Laffoon, vice president of San Diego Gas & Electric Co.

Also with us at the table is Malcolm A. MacKillop, senior attorney, Pacific Gas & Electric Co.

At this time I would like to present a summary of our full statement regarding S. 1934. We respectfully ask that the full statement appear in the record of the hearing.

Senator CANNON. That will be done, Mr. Bonner.

Mr. BONNER. Pacific Gas & Electric Co. provides electric service in northern and central California. The Southern California Edison Co. system interconnects with the P.G. & E. system and serves an extensive area in central and southern California and a portion of Nevada. San Diego Gas & Electric Co. is interconnected with the Edison Co. and serves San Diego County and a portion of Orange County in the southwestern part of California.

These three pool companies serve 5,150,000 customers, operate 172,000 circuit miles of transmission and distribution lines and 131 generating plants. They have a combined generating capacity of 18,730,000 kilowatts, 7 percent of the generating capacity of the United States.

These pool systems, through various physical interconnections and operating arrangements, are operated in parallel with all other power systems having generation in California: the Los Angeles Department of Water and Power, the U.S. Bureau of Reclamation, the State of California, the Sacramento Municipal Utility District, certain public water agencies, and the cities of San Francisco, Pasadena, Glendale, and Burbank.

These interconnected systems serve an extensive region of about 160,000 square miles, approximately the size of 11 Northeast States. The large areas served separately by P.G. & E. and by Edison are

each the equivalent in size to those encompassed by power pools in many other regions of this country.

Interconnections of the California systems with others in neighboring States soon will be increased by the full operation of the Pacific Northwest-Southwest intertie.

The intertie will provide transmission capacity of about 3 million kilowatts over the two 500-kilovolt a.c. lines and one 750-kilovolt d.c. line, extending 900 miles from the Columbia River to Los Angeles. About 1.3 million kilowatts of additional capacity will be provided when the 750-kilovolt d.c. line is built from the Columbia River to Mead substation near Hoover Dam.

We have prepared a map which shows major generating plants, major substations and all transmission lines in California. The base map shows the Pacific intertie lines in California, i.e., the two 500-kilovolt a.c. lines on your left, and one 750-kilovolt d.c. line which Mr. Goss referred to. On the first overlay are the transmission lines between 201 kilovolts and 300 kilovolts. The second overlay shows the transmission lines between 100 kilovolts and 200 kilovolts. The third overlay shows the remaining transmission lines, 50 kilovolts to 99 kilovolts.

Turning now from our sketch of the California Power Pool companies and their interconnections with themselves and others, we propose to show that reliable power supply is a fact in California. It was a fact before the Northeast power failure of November 1965. Since that time, the California electric utilities have thoroughly reevaluated all aspects of the reliability of their systems. They have found their systems to be stable and their operating and maintenance practices to be sound. To the extent that improvements were indicated, they have been or are being made.

We believe our experience demonstrates that a reliability bill is not needed and that its enactment would seriously hamper rather than promote the achievement of reliability.

BULK POWER SYSTEM RELIABILITY

The bulk power facilities of an electric system are the generating facilities, the major distribution substations at load centers, and the main artery transmission lines that connect them.

S. 1934 was introduced after the failure of bulk power systems in the Northeast in November 1965 and in the PJM area in June 1967. These were cumulative, cascading, domino-effect power failures that led, through successive deterioration of transmission and generation capability, to a total failure of power throughout entire electric systems.

The possibility of a total, cascading failure of power supply was not unknown to power system engineers before the Northeast failure of 1965. Because of the requirement of constantly balancing generation and load and maintaining synchronism of generating units, a rapid, cascading, and total deterioration of generation and transmission capability has always been an ever-present possibility.

Prevention of such a catastrophe is the very essence of utility system planning, design, and operation. Indeed, if it were not, such failures would occur more often. The success of the industry in avoiding such

failures is attested by the fact that they have occurred so rarely in the modern history of the industry that the public at large, until the Northeast blackout, was generally unaware that they could occur.

RELIABILITY IN CALIFORNIA

The elements required for a reliable power supply system are not shrouded in mystery. They were set out very plainly by an industry task force, assembled by the Federal Power Commission after the Northeast failure of 1965 to advise the FPC on what these elements are. The report of these industry experts forms volume II of the 1967 FPC Report to the President on Prevention of Power Failures. These elements have been summarized by the FPC under eight key categories on page 42 of volume I of the FPC report to the President.

We would like to discuss these eight key categories as applied to the California systems to show how a high degree of power supply reliability has been achieved in California.

1. Carefully prepared projection of load requirements sufficiently far in advance to permit orderly planning, construction and testing of new facilities.

For more than 25 years, utilities in California have, through the Pacific-Southwest Power Interchange Committee, made load-resource studies covering the critical planning periods fixed by construction timetables and manufacturing leadtimes. The California Public Utilities Commission has made similar studies on an annual basis.

Currently, the California pool members make semiannual forecasts of monthly load requirements for 7 years in the future. In addition to these detailed 7-year forecasts, longer range projections are periodically made.

Based on these forecasts, plans are developed to provide adequate power production and transmission facilities to serve customer load and provide reserves for scheduled maintenance, unscheduled outage of facilities, and unanticipated loads. In planning new resources extensive use is made of large-scale digital computers.

2. A transmission network designed to withstand possible disturbances of major proportions.

Planning for the design and operation of major transmission facilities is and always has been an integral part of total system planning and is carefully coordinated by the California systems.

The transmission requirements for each system to withstand major disturbances are first determined and the effect on the regional interconnected networks is investigated. Such investigations have been made not only by the California Power Pool companies, but also by all power supply agencies in the West through such coordinating groups as the Pacific Intertie Engineering Guidance Committee and the Western United States Transmission Study Group. The Western Systems Coordinating Council now provides broader means for acquiring the necessary information for such studies and will sponsor joint studies of performance of the regional systems.

3. A frequently reviewed and updated system of operating controls and protective devices.

Many types of complex and accurate relay and control devices are required for the reliable operation of today's power systems.

The major California utilities and agencies have regular schedules for the maintenance and testing of relays, relay circuits, breaker operating mechanisms, and breaker and generator controls as well as other control devices. This work is performed only by qualified technicians who receive frequent training to keep up with new developments. Close cooperation between operating, maintenance, and planning personnel is insisted on to avoid errors in relay settings. New relay developments are followed closely to take full advantage of improving technology. In addition to the primary protection system, backup facilities, redundant to the primary system, are installed at all major transmission substations and major generating plants to insure maximum reliability of power supply protective equipment.

4. Rigorous adherence to well-planned and continually updated operating practices, including provision of spinning reserves, emergency load shedding and, where appropriate generator dropping.

To a great extent, the reliability of any power system depends upon the knowledge and competence of the operating personnel in the various generating plants, switching centers, substations, and dispatching offices. The California systems have for many years followed a selective policy in assigning key operating personnel to these important locations.

Continuous training programs keep operating personnel familiar with new equipment developments, system additions—and operating policies. Operating guides, which are revised when required, have been provided for each generating plant, switching center, and substation, outlining procedures to be followed under emergency conditions. Each operating location is delegated authority to take independent action to restore service in the local area in the event of an interruption. Training programs and operating guides were reviewed after the Northeast and Middle Atlantic interruptions, and were revised where necessary.

The California pool companies and the Los Angeles Department of Water and Power use on-line computers to control a major portion of their generation. These computers automatically adjust generation for frequency control and the loading of interconnecting ties. They also control generators for the most economic production of power to meet changing load conditions.

GENERATING RESERVES

The major California systems have long recognized that adequate generating reserves sufficient to carry loads and provide substantial margins in the form of spinning reserves, ready reserves and cold reserves are a necessity for system reliability. These systems consider the term "spinning reserve" in its strictest sense; that is, connected to the line and ready to respond instantly should the need arise.

Furthermore, it is the practice to maintain spinning reserve in a large number of units operating below their maximum capability at the time of the peak. The California Power Pool Agreement establishes minimum spinning reserve and minimum capacity resource requirements.

Monetary liability for failure to fulfill these requirements provides an additional incentive for compliance. Experience has shown that spinning reserves on each of the pool companies systems, and that of

the Los Angeles Department of Water and Power, have typically ranged between 8 and 17 percent, and in some cases higher, at the time of the peak. In California ready reserves in the form of large amounts of hydrogeneration can be placed on the line in 5 to 10 minutes, or sooner, whenever needed to restore spinning reserve to an adequate level. As a further backup, cold reserves can be placed on the line within 6 to 12 hours.

LOAD SHEDDING

The California pool companies have provided for automatic emergency load shedding since the late fifties. The Los Angeles Department of Water and Power also has this system protection. Load shedding is, of course, an emergency measure, and not a substitute for adequate design. The California systems are designed and operated to withstand the loss of at least the largest credible first contingency risk without the need to resort to load shedding. Their load shedding program is in accordance with the provisions established by the California power pool. Each utility sheds approximately 15 percent of its load in steps as the frequency decays to 58.5 Hz. At 58.4 Hz the interconnecting ties open automatically. Further automatic load shedding at frequencies of 58.4 Hz and lower continues as determined to be necessary by each utility. As the frequency is restored, load that has been shed is reconnected to the system and the ties are reclosed.

5. Continuous power, isolated from the effects of a system disturbance, for communications, data collection and switching operations.

The California pool companies and the Los Angeles Department of Water and Power use their own extensive communications networks for voice communication, supervisory control of unmanned stations and generating plants, remote alarms from unmanned stations and generating plants, data collection, protective relaying, computer control circuits for automatic generator control, and radio between control centers and mobile radio cars. The need for continuous power for these important facilities, as well as for switching operations is well recognized.

All the major powerplants and operating centers are equipped with either, or in some cases both, standby generators or batteries for the operation of communication equipment in the event of loss of system power. Batteries have sufficient capacity for 8 hours' operation.

In addition, all major plants and major operating centers are equipped with at least two completely independent communication channels carried over different routes and used exclusively for operating functions.

Furthermore, at each of the 500-kilovolt substations one of the two channels is fully battery operated with battery capacity sufficient to last for 8 hours if power is lost to the battery charger. Standby generator sets are provided at each mountain top microwave installation which will start automatically if the normal power source fails. Standby batteries and generator sets are tested at frequent intervals and maintained to be sure they are in operating condition at all times. As a third backup, commercial telephone facilities are installed at all major plants and control centers.

All power circuit breakers at the major substations and switching centers use direct current for control power supplied from batteries

independent from those used for communication circuits. Standby battery chargers are provided and multiple sources of alternating current supply are available to the battery charges. The major transmission breakers are either pneumatically or hydraulically operated, and the air compressors or oil pumps maintain sufficient stored energy for four or five operations of the breaker. All hydraulically operated breakers have hand operated oil pumps which can be used in an emergency.

In the case of pneumatically operated breakers, provisions are made for the use of high pressure nitrogen bottles to charge the pneumatic system in the event of loss of station power or failure of air compressors. Standby power for the operation of air compressors is provided by diesel or gasoline driven generators or batteries.

6. Standby power for the safe rundown of generating units if system power is lost.

If a thermal generating unit is separated from the system, there must still be a source of power available to permit it to be shut down without damage to the unit. To prevent damage it is particularly important that means be available to continue the operation of the bearing lubricating oil, the hydrogen seal oil, the turbine turning gear and, in addition, the instrument air supply and emergency lighting.

The California systems have various types of facilities to assure that ample power will be available at all times for these important auxiliaries. For example, thermal plants at strategic locations are equipped with house units which have more than ample capacity for shutdown purposes. At many other plants engine-driven generating sets are installed for emergency operation of auxiliaries. Storage batteries are in all cases used for emergency lighting and, in addition, in a number of cases are used for emergency operation of the lubricating oil pumps and the hydrogen seal oil pumps.

As an additional backup for the operation of the turbine turning gear, some plants are equipped to use portable air motors. Necessary air supply during emergencies is provided by amply sized compressed air storage tanks.

7. Standby power for rapid restarting of generation facilities.

In the event a thermal plant has been completely shutdown, an auxiliary or outside source of power is required to restart the units. The major California systems operating thermal plants have a variety of sources available for startup power whenever required. Hydro-generating capacity, which can be started almost immediately without an outside power source, can be used at many of the large thermal plants by means of interconnecting transmission lines. The previously mentioned turbine-driven house units can be used at a number of large thermal plants for startup power at these and nearby plants. Gas turbine generating units capable of being started without electric power in less than 3 minutes are also being provided in some areas.

8. Use of equipment specially designed to withstand adverse environmental conditions in areas where they occur frequently.

The use of equipment specially designed to withstand environmental conditions has an important bearing on system reliability. This is particularly true with respect to high-voltage transmission lines.

It has long been the practice of the California systems to design their transmission lines to withstand adverse conditions in areas where

they occur. For example, in the coastal areas overhead aluminum conductors treated with grease are used to prevent corrosion by salt air. Improved coatings for the steel core of reinforced aluminum cable are used to better resist corrosion. More or heavier insulators are used in coastal areas and other areas where high contamination is experienced to better guard against flashover that can occur in such locations. Design criteria for transmission lines constructed in the mountains, where high winds and heavy snows occur, are more stringent than for those constructed in the valleys. Accordingly, towers are of heavier construction, conductors are steel reinforced and insulators have a higher mechanical rating.

As a matter of prudent routine preventive maintenance, insulators on certain overhead lines are washed with high-pressure water on a regular schedule to remove surface contamination and prevent flashovers.

That completes our brief review of various design, operating, and maintenance practices which provide the reliability of the California systems. These practices reflect the best engineering and operating standards in the electric industry, and they have proved their dependability in the course of actual operations over many years. We shall now turn to some illustrations which show that these practices are effective.

CALIFORNIA SYSTEMS WITHSTAND MAJOR DISTURBANCES

Severe disturbances which have occurred on the California interconnected systems have demonstrated the ability of these systems to prevent cascading failures and to recover quickly from such disturbances without materially impairing service to customers. We shall review briefly three of these disturbances, one on each of the three largest systems in California.

1. On May 8, 1965, at 8:24 p.m., 895 mw in interconnected generation within Pacific Gas & Electric Co.'s control area was suddenly interrupted. This was approximately 19 percent of the area load then being carried. By the combined action of the automatic control system and that of unit governors, generation was immediately increased. The momentary deficiency in generation caused the tie to the Southern California Edison Co. to open because of excess power flow to P.G. & E. Frequency relays on P.G. & E.'s system then operated to temporarily disconnect selected loads.

The combination of these several actions prevented the frequency from going below 58 Hz, and available spinning reserve returned frequency to normal in 6 minutes. As frequency recovered, the loads which had been automatically disconnected were automatically picked up in 1 to 5 minutes. The great majority of customers in northern, central, and southern California were unaware of any trouble with their power supply.

2. On January 24, 1966, at 6:12 a.m., a severe disturbance occurred in Los Angeles when the 138 kv and 230 kv transmission systems of the Los Angeles Department of Water and Power became separated. As a result, approximately 500 mw of excess generation remained connected to the 230 kv system, while the 138 kv system was deficient by approxi-

mately the same amount. The 230 kv tie between the department and Southern Edison Co., as well as other ties, remained in service. The frequency rose to 60.3 Hz on the 230 kv system and returned to normal within 25 minutes. No thermal units were lost on overspeed.

On the 138 kv system, the frequency immediately decreased because of a deficiency in generation. Frequency relays automatically disconnected loads and the frequency stabilized at 58 Hz. System conditions immediately commenced to return to normal. Much of the load was restored within 11 minutes and all loads were restored within 31 minutes.

3. On July 19, 1966, at 1:11 p.m., two 230 kv circuit breakers failed at a major thermal plant of Southern California Edison Co., causing a total loss of power to its system of 1,532 mw, an amount greater than that which initiated the Northeast blackout. Area load prior to the trouble was 5,770 mw.

Ties with Pacific Gas & Electric Co. and the Los Angeles Department of Water and Power were opened on indications of severe overload and the tie with San Diego Gas & Electric Co. opened automatically. Frequency relays on the Southern California Edison system operated to shed load and some additional load was shed manually. These actions, combined with automatic generation control, prevented the frequency from dropping below 58.3 Hz. Service interruptions were limited to from 3 minutes, to a maximum of 27 minutes.

No service interruptions occurred on the adjacent interconnected systems in any of these cases, and all systems remained stable during these severe disturbances.

REGIONAL ORGANIZATIONS

Thus far we have shown why the major California power supply systems are highly reliable. From such systems strong regional coordinated networks are developed.

To achieve maximum reliability of the regional network in the West and Southwest, the California utilities are coordinating their planning and operations with their interconnected neighbors.

Toward this end, the California utilities have participated in the following regional organizations:

- Pacific Southwest Power Interchange Committee.
- Pacific Intertie Engineering Guidance Committee.
- Pacific Intertie Design and Construction Task Force.
- Pacific Intertie System Technical Studies Task Force.
- Pacific Intertie Operations Task Force.
- WEST Associates.
- Western U.S. Transmission Study Group.
- Western Operations Committee.

The activities of most of these regional organizations are now being combined under the recently formed Western Systems Coordinating Council.

In addition to the Western Systems Coordinating Council, there are 11 other similar regional organizations across the country which effectively blanket the United States.

The California pool companies also are active in the following

nationwide committees of the Edison Electric Institute dealing with matters relating to power system reliability:

Executive Advisory Committee of the Power Systems Coordination Division.

Committee on Coordinated Area Planning.

Committee on Coordinated Area Operation.

Committee on Interconnection Arrangements.

Electric Power Survey Committee.

Joint Task Force on DC Transmission.

In addition, it should be noted that utilities in California have contributed extensively to the national development of technical knowledge about power supply systems. We have participated in the work of the North American Power Systems Interconnection Committee—NAPSIC—since its formation in 1963. We also have provided much assistance to the Federal Power Commission in various regional and national committees, including the comprehensive National Power Survey of 1964. We participated in the FPC Advisory Committee that prepared volume II of the 1967 FPC Report to the President on Prevention of Power Failures. We are currently represented on the FPC Executive Advisory Committee for the National Power Survey, the FPC West Regional Advisory Committee and many of its subcommittees.

We have also worked closely with the California Public Utilities Commission throughout the years in matters relating to the reliability of power supply. As a recent example, immediately following the Northeast blackout, a joint task force of the California pool companies and the Los Angeles Department of Water and Power was formed to make a thorough study of reliability of power supply in California and, at the request of the commission, made an extensive report of its findings for review by the commission staff.

These are examples of past and continuing, voluntary and cooperative action by the California utilities to achieve reliable electric service through regional and national coordination.

REVIEW OF S. 1934

Having in mind what it takes to achieve reliability and what the electric power industry in California—and elsewhere—is doing to achieve it, let us turn to S. 1934 to see what, if anything, it would contribute to the work of achieving this reliability.

The most striking feature of S. 1934 is that it contains many provisions that have no real bearing on reliability of power supply. Some of these unrelated provisions have been before the Congress for years. This was forthrightly acknowledged by Commissioner Bagge when he appeared before the Senate for confirmation in July of last year and said:

But the point is that many of our bills that we have advocated for the past 10 or 15 years have been merged into aspects of the reliability bill.

The sweeping nature of the bill in reaching matters not related to reliability is shown by its provisions dealing with: economics of power supply (sec. 401(b)); sharing of facilities (sec. 401(b)); esthetics, location, and land use (secs. 401(b), 409(e), 410); antitrust exemptions (sec. 404(c)(d)); exclusive territorial arrangements (sec. 401(b)):

curtailment or abandonment of wholesale power service (sec. 412).

Some of these are matters which Congress may wish to consider separately on their merits, but they certainly are not matters directed to the achievement of reliability.

Clearly, this is a bill which deals with reliability of power supply only incidentally. Basically, it is a bill that provides for centralized Federal management of the entire electric power industry in this country, both public and investor owned. The scheme of the bill is to set up regional councils to achieve this formidable objective, and to place the FPC atop a pyramid of authority with the power to approve, veto or amend all that the regional councils established by the bill might propose.

Enactment of this bill would preempt to the Federal Government not only numerous management functions but also numerous functions, mainly unrelated to reliability, that now are regulated at State or local levels. We repeatedly hear protestations that such is not the intent. But the intent must be judged by the provisions of the bill—and its language, reinforced by the FPC's own analysis of the bill, is clear.

Aside from the philosophic conflicts that would arise from the drastic changes in the power business proposed by this bill, the fact is that the proposed changes would actually inhibit and delay the work of achieving reliability.

Demand for electric power in this country doubles every 10 years. In addition, the electric utility industry is so capital-intensive that it is the Nation's largest single industry in terms of investment required for new plant and equipment each year. These two facts give some idea of the sheer volume of work required to expand the Nation's power facilities each year on an orderly and reliable basis.

There are thousands of experts employed by the public and investor-owned agencies across the country engaged in designing and planning the construction and operation of power supply systems. Their plans, which under this bill would all be subject to FPC review, take years to develop and are under constant study and change as later information becomes available.

The manpower that would be required by the FPC for a sensible review would be enormous. The delays inherent in such a review would be intolerable. Leadtimes for constructing major power supply facilities are already approaching 6 years.

The delays occasioned during the past decade in obtaining FPC certifications to construct natural gas pipelines, much less complicated matters, should give some idea of the problems which would be created.

As Commissioner Carver acknowledged recently, although the natural gas certificate caseload has been relatively level, the number of average pages of transcript has virtually doubled, from 1,400 pages to 2,500 pages; the average elapsed number of days from start to finish has increased by half, up almost to a thousand days, while the number of days from beginning to end of the shortest contested case in the 1962-66 period doubled from 142 to 300 days.

Besides the delays which would be occasioned by FPC staff review, further delays would be caused by the procedural aspects of S. 1934. The proposal is replete with requirements for rulemaking—at least six different instances—and hearings—at least seven instances—each subject to court review and inherent delays in a situation where the

exact opposite is needed; namely, a swift response by the Nation's power industry to the ever-growing demands for abundant and reliable electrical energy. This industry, which already has developed the most highly efficient and reliable power supply in the world, is ready, willing, able, and eager to do the job. No legislative compulsion is needed.

It is right that the Congress seek to assure itself that the Nation will have reliable power supplies by holding these hearings. You will find, however, that the electric industry across the country, as in California, is acutely aware of the need for reliable power supplies, and has been and is taking the steps required to assure it without the drastic, and deadening, changes in the utility business that this legislation would bring about.

We appreciate the opportunity to present facts bearing on this legislation and will be pleased to provide any further information that the committee may believe helpful.

Senator CANNON. Thank you very much, Mr. Bonner, for a very fine and very comprehensive statement.

Senator Moss, do you have any questions?

Senator Moss. I don't have any questions. I do want to congratulate Mr. Bonner for the presentation. It is very well done.

Mr. BONNER. Thank you, sir.

Mr. Chairman, Southern California Edison Co. has gone to a great effort to prepare a film on reliability. I would like to call on Mr. O'Brien to present the film, if it meets with your pleasure.

Senator CANNON. Mr. Bonner, I am going to suggest that we go through the witnesses first. We are not going to recess for lunch. We are going to try to finish everything because I have to catch a mid-afternoon plane for Washington. I would rather be sure to get all the witnesses and give them an opportunity to present their statements. I am going to suggest that they be brief and try to summarize as you did much of your statement.

I am suggesting that we held the film for the very last item of presentation.

Mr. Bonner. Thank you very much.

(The statement of Mr. Bonner follows:)

STATEMENT BY JOHN F. BONNER, SENIOR VICE PRESIDENT PACIFIC GAS AND ELECTRIC COMPANY ON BEHALF OF THE CALIFORNIA POWER POOL COMPANIES

Mr. Chairman, members of the Committee. I am John F. Bonner, a Senior Vice President of Pacific Gas and Electric Company, appearing here on behalf of the California Power Pool Companies. With me are representatives of the other two California Power Pool Companies, Mr. Robert P. O'Brien and Mr. Robert N. Coe, Vice Presidents of Southern California Edison Company, and Mr. C. M. Laffoon, Vice President, Electric of San Diego Gas & Electric Company.

California Power Pool

While over the years coordinated operation of individual electric systems throughout the nation was developing largely through interconnection and pooling agreements, in California the integration of the industry was resulting largely from mergers of small utilities. For example, Pacific Gas and Electric Company represents the consolidation of more than 500 separate corporations founded to serve local areas. Its electric service territory has an area of about 90,000 square miles. This exceeds the combined area of the states of New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New Jersey, Delaware, Maryland and West Virginia. It also approximates the combined area of New

York and Pennsylvania. It is larger than the area encompassed by the Northeast power failure of November 1965, which was 80,000 square miles according to the Report of the Federal Power Commission.

Thus Pacific Gas and Electric Company and Southern California Edison Company each have become the equivalent of what is an extensive, fully integrated power pool in other parts of the country.

For a number of years, now, these two extensive systems, together with that of San Diego Gas & Electric Company, have been members of the California Power Pool. Soon, hopefully, the Department of Water and Power of the City of Los Angeles, the largest municipal electric system in the nation, will also become a member.

The Pool Agreement

The California Power Pool Agreement is a comprehensive document which provides the basic framework for coordinating the planning, construction and operation of the electric systems of the parties. It is administered primarily by a body of representatives of the parties called the Board of Control, with the assistance of an Engineering and Operating Committee. Under the Agreement the parties exchange load forecasts and resource programs at least twice a year to assure that all parties will have adequate reserve margins at the most economical cost. By separate agreement two or more of the parties may agree upon joint ownership of generation, as San Diego Gas & Electric Company and Southern California Edison Company have done in the case of their San Onofre nuclear generating station. Similarly, they may agree upon the coordinated planning, construction and operation of major transmission lines, as in the case of the Pacific Intertie. The California Power Pool Agreement establishes certain minimum reserve margin requirements for capacity and energy resources and for spinning reserves, recognizing that good operating practices will ordinarily require greater reserve margins. It also enables the parties to share these reserve margins by means of six specific services, including emergency assistance. With the advent of the Pacific Northwest-Southwest Intertie the parties have agreed upon comprehensive operating criteria related to reliability, including minimum spinning reserve requirements and a coordinated load shedding program in the case of emergency.

Pool Statistics

The electric service area of the California Power Pool Companies is about 160,000 square miles. It has a population of over 19 million people, including the City of Los Angeles, of which about 6 million are listed as electric customers. In 1966 these customers used about 85 billion kilowatt-hours of electricity. This was about 90% of the total energy sales to ultimate customers in California.

The California utilities have available more types of power producing facilities than any other area in the country. These include (1) hydro electric generation, (2) conventional thermal plants fueled with natural gas or oil and coal by 1969, (3) nuclear power plants, (4) gas turbine and diesel generation, and (5) geothermal generation from natural steam found 400 to 5,000 feet below the earth's surface.

The generating capacity of the electric systems of the California Power Pool Companies and the Department of Water and Power of the City of Los Angeles is over 22 million kilowatts in 147 generating plants. This is about 93% of the generating capacity in California. About 85% of this 22 million kilowatts is in 33 thermal-electric plants, and the rest is in 114 hydro-electric plants.

The transmission networks of the California Power Pool Companies include about 1100 miles of 500 kv lines now in operation and about 200 additional miles to be placed in operation in 1968. They also include about 6600 circuit miles of 230 kv transmission lines and about 6800 circuit miles total of 115 kv, 138 kv, and 161 kv transmission lines. Lower voltage transmission, sub-transmission and distribution lines make up another 157,000 circuit miles of power lines.

The transmission network of the Department of Water and Power of the City of Los Angeles includes about 800 circuit miles of 287 kv lines, 440 circuit miles of 230 kv lines, 160 circuit miles of 138 kv lines and 45 circuit miles of 115 kv lines. Lower voltage transmission, subtransmission and distribution lines total about 13,000 additional circuit miles of power lines. As part of the Pacific Intertie the Department is building a 750 kv dc line, to be jointly owned with Southern California Edison, from Los Angeles to the Nevada-Oregon border.

| The individual all-time peak loads of these four entities are as follows : | |
|--|------------------|
| Pacific Gas & Electric Co. : | <i>Kilowatts</i> |
| Net system----- | 7, 950, 200 |
| Area ----- | 8, 688, 500 |
| Southern California Edison Co. : | |
| Net system----- | 7, 001, 000 |
| Area ----- | 7, 164, 000 |
| Department of Water and Power of the City of Los Angeles : | |
| Net system----- | 2, 679, 000 |
| San Diego Gas & Electric Co. : Net system----- | 1, 089, 000 |

As these statistics suggest, and as will be further illustrated later in this statement, these electric systems are each extensive, strong and reliable. They are sound building blocks for coordinating arrangements on a statewide and on a regional basis. For many years they have been voluntarily moving forward in the development of such coordinating arrangements. Many of these are described in the appendix to this statement (Exhibit A). Before referring to them, we will briefly describe the facilities that interconnect these electric systems to each other and to other electric systems in California and in the western part of the nation.

Interconnections of California Systems

Pacific Gas and Electric Company and Southern California Edison, interconnected since 1941, are now interconnected by a 500 kv transmission line which is part of the Pacific Intertie. Early in 1968 another such interconnection will be put into operation.

Southern California Edison Company and San Diego Gas & Electric Company have been interconnected at 138 kv since 1940.

Southern California Edison Company is also interconnected with the Department of Water and Power of the City of Los Angeles by a short 230 kv tie. When their jointly owned 750 kv dc Pacific Intertie transmission line is completed, three additional 230 kv lines will be constructed between the systems of these two utilities. The City of Los Angeles Department of Water and Power is in turn interconnected with the systems of the cities of Burbank, Glendale and Pasadena, Southern California Edison Company also has a 230 kv interconnection with the Metropolitan Water District of Southern California which in turn is interconnected with the U.S. Bureau of Reclamation 230 kv system in Arizona.

By 1969 the 500 kv transmission system used by Southern California Edison Company will be extended to the Four Corners area of New Mexico to coal-fired generation jointly owned by certain WEST Associates members. By 1971 it will be extended to a similar generating plant to be constructed on the Colorado River below Davis Dam. These 500 kv lines will provide additional interconnections with the systems of Los Angeles Department of Water and Power, Bureau of Reclamation, Nevada Power Company and Metropolitan Water District and others in Arizona and New Mexico.

In northern California there are several public agencies whose electric operations are interconnected with Pacific Gas and Electric Company and operate within its control area in an essentially integrated operation. These include the Central Valley Project of the U.S. Bureau of Reclamation, Sacramento Municipal Utility District, City and County of San Francisco, East Bay Municipal Utility District and Modesto and Turlock irrigation districts. In addition, the system of Sierra Pacific Power Company is connected with Pacific Gas and Electric Company, which serves a substantial portion of Sierra's load under a firm obligation which is included in the area load of Pacific Gas and Electric Company under the California Power Pool Agreement.

Pacific Gas and Electric Company and Pacific Power & Light Company, interconnected since 1918, are now interconnected with a 500 kv line.

This line is part of the Pacific Intertie. The use of the segment owned by Pacific Power & Light Company has been made available to the California Power Pool Companies under a long-term contract.

The Pacific Intertie, which is discussed at greater length in the appendix to this statement (Exhibit A), has been the subject of considerable publicity and is well known to the members of this committee, and especially to its chairman. We will say only a few words about it here.

The Pacific Intertie will provide transmission capacity of about three million kilowatts over two 500 kv ac lines and one 750 kv dc line extending 900 miles from the Columbia River to Los Angeles. About 1.3 million kilowatts of additional capacity will be provided when the 750 kv dc line is built from the Columbia River to Mead Substation near Hoover Dam.

The lines are being constructed by Bonneville Power Administration, the United States Bureau of Reclamation, the City of Los Angeles Department of Water and Power, Portland General Electric Company, Pacific Power & Light Company, Pacific Gas and Electric Company and Southern California Edison Company. Existing transmission ties between the Los Angeles area and Hoover Dam will be reinforced by the addition of 500 kv ties as required. It is also contemplated that the Bureau and Arizona Public Service Company will each build a 345 kv line from Mead substation to Phoenix.

An all-Federal tie between the Bonneville and Central Valley Project power systems will be completed by Bureau ownership of certain facilities in the PG&E substation at Round Mountain and a 230 kv line now being built by the Bureau from Round Mountain to connect with existing Central Valley Project lines at the Cottonwood Substation.

This joint enterprise brings together, in cooperation for the public benefit, the large Federal power projects, the principal investor-owned power systems and the major government-owned power agencies of the entire area.

The northern California link of the Pacific Intertie, connecting with southern Oregon, was placed in operation at 230 kv in April 1966. It began operating at 500 kv in 1967. As a result of this and other tie closures, all major electric systems in the eleven western states have been in parallel operation. This massive interconnected system takes the form of a large closed loop from California to Oregon, to Washington, to Idaho-Montana-Wyoming, to Utah-Colorado, to New Mexico-Arizona and back to Nevada-California.

Reliability

Turning now from our outline of the California Power Pool Companies and their interconnections with themselves and others, we propose to show that reliable bulk power supply is a fact in California. It was a fact before the Northeast power failure of November 1965. Since that time, the California electric utilities have thoroughly re-evaluated all aspects of the reliability of their systems. They have found their systems to be stable and their operating and maintenance practices to be sound. To the extent that improvements were indicated, they have been made.

To carry out this re-evaluation, the California Power Pool Companies and the Department of Water and Power of the City of Los Angeles formed the California Electric Systems Reliability Task Force. This task force rendered its final and comprehensive report to the California Public Utilities Commission in July 1966.

Since that time these major California utilities have continued to analyze and improve where possible the design, planning, operation and maintenance of their systems, particularly in connection with the EHV transmission system of the Pacific Intertie. Although they have always been aware of the essentiality of reliability, they are, of course, more keenly aware of it now as a result of the Northeast and Middle East power failures. Those occurrences have dramatically shown that no reasonable effort must be spared to achieve overall power system stability and reliability. And we are sparing none.

Before describing briefly what we are doing to assure bulk power system reliability, we will discuss the meaning of that term.

Bulk Power System Reliability

When we speak of a bulk power supply system, as distinguished from a distribution system, we are referring to the generating capacity of an electrical system together with the main artery transmission lines that connect the generating capacity with the load centers of the system at major distribution substations.

The reliability of a bulk power supply system is the result of its ability to continue to operate in equilibrium in the face of system disturbances which tend to upset the essential balance between energy input and energy output on the system. Such ability is called overall power system stability. A stable system is a reliable system.

Stability and reliability are matters of degree and must be considered in the context of the particular occurrence which is disturbing the equilibrium of the system. Such disturbances may be (1) a sudden imbalance between load and

generation or (2) a sudden disruption in the transmission network connecting generation and load. A system may be stable in the event of a particular disturbance but not in the event of another. The more stable a system is, the more numerous and more severe disturbances it can absorb without becoming unbalanced. The most reliable system is the one which can withstand the worst disturbances.

The determination of the reliability of a system depends on studies of its stability under all conceivable sets of hypothetical disturbances and on performance of the system in the face of actual disturbances. We will show that by both of these measures the major California systems are highly reliable.

The reliability of the bulk power supply system must be distinguished from the reliability of the lower voltage distribution system. Failures or disruptions in a distribution system are local in nature and do not affect the overall power system stability. They are not considered in the July 1967 Report to the President by the Federal Power Commission. Nor are they within the scope of the Reliability Bill. Although electric systems are constantly striving for 100 percent reliability of distribution system performance, it is universally recognized that as a practical matter perfect uninterrupted service to all consumers is not attainable. Even if duplicate service facilities were installed for every consumer, which is an economically prohibitive alternative, natural causes, such as storms or floods, could still interrupt service in a local area. The integrity of local distribution systems is constantly being disrupted by forces over which the electric system management has no control. For example, in the service area of Pacific Gas and Electric Company alone more than 2,000 poles are damaged each year by wayward vehicles. Although disruptions in the distribution system caused by such accidents are usually confined by use of alternate circuits, the result in many cases is that a small group of individual consumers is deprived of electric power until the damaged facilities can be restored to service. Such interruptions in service are regrettable but as a practical matter unavoidable. They are not within the subject of these hearings.

Another important distinction to recognize is that between service reliability and equipment reliability. Equipment failures are more or less random occurrences that defy all reasonable efforts to avoid them. The risk of their occurrence is recognized and guarded against by the provision of reserve generating capacity, alternate transmission circuits with reserve capacity and high-speed protective equipment. Equipment failures in a properly designed, constructed and operated system are ordinarily isolated immediately by protective equipment and have little or no effect upon service to the consumer. Usually they are detectable only by a slight flickering in the lights. Thus a system with a high degree of transient and dynamic stability will assure service reliability in the face of a failure of bulk power supply equipment.

As suggested by the foregoing discussion of reliability, the most prevalent and least serious kind of disruption in electric service, a distribution outage or an equipment failure, is often impossible to prevent. On the other hand, a cascading power failure usually can be guarded against. It is not simple or inexpensive to do so, but it is physically possible.

RELIABILITY IN CALIFORNIA

The elements required for a reliable power supply system are not shrouded in mystery. They were set out very plainly by an industry task force, assembled by the Federal Power Commission after the Northeast failure of 1965 to advise the FPC on what these elements are. The report of these industry experts forms Volume II of the FPC's Report to the President on this subject. These elements have been summarized by the Federal Power Commission under eight key categories on page 42 of Volume I of its Report to the President entitled "Prevention of Power Failures," as follows:

(1) "Carefully prepared projections of load requirements sufficiently far in advance to permit orderly planning, construction and testing of new facilities to serve the projected loads."

(2) "A transmission network designed to withstand possible disturbances of major proportions."

(3) "A frequently reviewed and updated system of operating controls and protective devices."

(4) "Rigorous adherence to well-planned and continually updated operating practices, including provision of spinning reserves, emergency load shedding, and where appropriate, generator dropping."

(5) "Continuous power, isolated from the effects of a system disturbance, for communications, data collection, and switching operations."

(6) "Standby power for the safe rundown of generating units if system power is lost."

(7) "Standby power for rapid restarting of generating facilities."

(8) "Use of equipment specially designed to withstand adverse environmental conditions in areas where they occur frequently."

We will now take up each of these elements as they apply to the major California electric systems and show that no effort is being spared in California to assure overall power system reliability and to prevent cascading power failures.

1. *"Carefully prepared projections of load requirements sufficiently far in advance to permit orderly planning, construction and testing of new facilities to serve the projected loads."*

The first step in planning a reliable power supply system is a careful projection of load growth, followed by a thorough analysis of alternate programs to provide the necessary resource additions. Such load and resource planning must be done sufficiently far in advance of need so as to permit orderly planning, construction and testing of new facilities.

The California Power Pool members currently make semiannual forecasts of monthly load requirements for seven years into the future. Based on these forecasts, plans are developed that will assure adequate power production facilities to serve the customer load, provide for scheduled maintenance and allow for forced outage of facilities. The frequency at which these load forecasts and resource plans are made offers ample opportunity to include new information on new loads and resources.

In addition to these detailed seven year forecasts, longer range projections are from time to time made for longer future periods. Such projections are usually made on five-year intervals. The principal uses of these projections are for rights-of-way and plant site considerations. Also, such projections provide information designed to insure that plans developed for the near future will be coordinated with long range needs.

In planning new resources, extensive use is made of large-scale digital computers using programs specifically designed for the systems being considered. This is done on a six month cycle.

Hydro-electric generation is still a significant part of the total resources for the state. In northern and central California the present hydro-electric capacity is about one-third of the total installed capacity. The outlook for the future is that most new generating capacity will be thermal-electric with nuclear power being a principal source of energy.

The proper use of the several types of power resources available in California requires a careful and continuing study. The problems associated with major equipment deliveries, site and rights-of-way acquisition, acceptance of plans and regional coordination require these studies to be completed and plans formulated five to six years in advance of operating dates. Every effort must be made to reduce the lead time so that changes can be made as conditions require.

We have mentioned the need for reserve generating capacity if a reliable power supply system is to be achieved. The latest load and resource planning study for the California Power Pool shows the minimum planned pool reserve in each of the next seven years ranging between 17.5 and 18.5 percent after allowance for scheduled maintenance. After the completion of additional interconnections within the Pool and reliable operating experience, it is hoped that this level of installed reserve capacity can be reduced. Any reduction will be approached with caution and only after thorough study.

2. *"A transmission network designed to withstand possible disturbances of major proportions."*

Before a resource plan can be adopted it is necessary to make detailed studies to determine the performance of the existing transmission system and the effect of any proposed modifications. (These studies may also determine the size and location of a new generating unit.) After determining the internal transmission system requirements, it is necessary to investigate the effect on the regional interconnected transmission systems. It is due to the consideration of system performance on a regional basis that we were involved in studies by the Pacific Intertie Engineering Guidance Committee and the Western U. S. Transmission Study Group. The Western Systems Coordinating Council now provides a means of acquiring the necessary information for such studies and will sponsor joint

studies of performance of the regional system. We will have more to say about these and other coordinating organizations later.

The two new 500 kv circuits which are part of the Pacific Northwest-Southwest Intertie are connected to an extensive 230 kv transmission network at nine locations between the California-Oregon border and Lugo Substation in the Los Angeles area. These interconnections increase the reliability of both the 500 kv Intertie lines and the underlying 230 kv system. This is accomplished by the mutual support given during severe disturbances on either system.

Stability investigations made several years ago on the Pacific Gas and Electric Company system proved that its transmission system was stable for three phase faults on the most critical lines. As the system continued to expand, new substations were constructed on existing transmission circuits, resulting in shorter line sections. The effect of this construction was to increase the stability margins already existing. Also, as the load developed in areas closer to the remote hydro generation, there was a decrease in the amount of power to be transmitted long distances. This unloading of long 230 kv transmission lines also added to the stability margins.

It again became necessary to undertake further system stability studies in connection with plans for larger generating units and for 500 kv transmission lines which would each have several times the capability of a 230 kv circuit.

During the past eight years studies on various plans for interconnections with the Northwest have been made. Since 1964, concentrated joint studies on the approved Pacific Northwest—Pacific Southwest Intertie have taken place on an almost continuous basis. During this time various improvements in study methods and techniques have developed until today we are using methods as sophisticated as any in the world in making our joint studies.

3. *"A frequently reviewed and undated system of operating controls and protective devices."*

Many types of relays and control devices are required for the reliable operation of today's power systems. Relays are devices that function automatically to remove facilities quickly from service in the event of failure. To perform this function the relays are preset to sense changes in system parameters at some predetermined value. When this value is exceeded, the relay will operate to initiate the opening of a circuit breaker to disconnect the faulty element from the system. They also permit rapid restoration of service following the removal of temporary faults.

Relays are complex but accurate devices. However, they must be maintained properly and their settings must be changed to correspond with changing system requirements. The control circuit between the relay and the breaker, the breaker operating mechanism, and breaker and generator controls are equally important and require equally efficient maintenance and testing. In addition to the primary relays, a back-up relay system is necessary for complete reliability of any bulk power system. The importance of close coordination between planning, operating and maintenance personnel is essential to eliminate any errors in relay settings.

The major California utilities and agencies have regular schedules for maintenance and testing of relays, relay circuits, breaker operating mechanisms, and breaker and generator controls as well as other control devices. This work is performed only by qualified technicians who receive frequent training to keep up with all new developments. Close cooperation between operating, maintenance and planning personnel is insisted on to avoid errors in relay settings. New relay developments are followed closely to take full advantage of improving technology. In addition to the primary protection system, back-up facilities, redundant to the primary system, are installed at all major transmission substations and major generating plants to insure maximum reliability of power supply protective equipment.

4. *"Rigorous adherence to well-planned and continually updated operating practices, including provision of spinning reserves, emergency load shedding, and where appropriate, generation dropping."*

Operating Practices

To a great extent the reliability of any power system depends on the knowledge of the operating personnel in the various generating plants, switching centers, substations and dispatching offices. Key operating personnel for these assignments must be carefully selected. Typically, only those who have displayed outstanding ability under a variety of operating situations for a number of years

should advance to the key operating positions. Furthermore, continuing training programs and updated operating guides are a necessity.

The California systems have for many years followed a selective policy in assigning key operating personnel to these important locations. Continuous training programs have been utilized to keep operating personnel familiar with new equipment developments, system additions, and operating policies. Operating guides, which are revised when required, are provided for each generating plant, switching center and substation, outlining procedures to be followed under emergency conditions. Each operating location is delegated authority to take independent action to restore service in the local area in the event of an interruption. Training programs and operating guides were reviewed after the Northeast and Middle East interruptions and were revised where necessary.

The California Pool Companies and the Los Angeles Department of Water and Power use on-line computers to control a major portion of their generation. These computers automatically adjust generation for frequency control and the loading of interconnecting ties. They also control generators for the most economic production of power to meet changing load conditions.

Generating Reserves

Adequate generating reserves over and above the system peak load are an important requirement for system reliability. Generating reserves consist of spinning reserves, ready reserves and cold reserves.

Spinning reserve is defined as generating capacity connected to the line and ready to respond instantly should the need arise. For the greatest effectiveness spinning reserve should be in generating capacity spread among a large number of units which are operating somewhat below their maximum capability at the time of the daily peak. Ready reserves are defined as generating capacity not spinning which is available within a short time, generally five to ten minutes. This includes gas turbine, diesel, and hydro generation or any other off-the-line capacity of this type. Cold reserves are usually defined as generating units shut down temporarily depending on load conditions.

The California systems consider spinning reserve in its strictest sense, i.e., connected to the line and ready to respond instantly should the need arise. Furthermore, it has been the practice of the California systems to maintain their spinning reserve in a large number of units operating below their maximum capability at the time of the peak. The California Power Pool Agreement provides that a spinning reserve of five percent of the peak for any day is mandatory as a minimum requirement. Except in an emergency, any company whose spinning reserve is allowed to drop below five percent of peak is required to pay a penalty. This financial liability is an additional incentive for the participating companies to maintain resources above the prescribed minimum. In view of this requirement, it is the policy of the large California utilities and the Los Angeles Department of Water and Power to maintain spinning reserves on the line *at least* equal to the largest unit or single source of power to that system or five percent of the peak, whichever is greater. As a matter of normal practice, past experience has shown that spinning reserves have typically ranged between eight percent and seventeen percent, and in some cases higher, at the time of the peak.

Ready reserves in the form of hydro generation, which can be placed on the line in five to ten minutes, are available to the California systems to restore spinning reserve to normal when needed. As a further back-up, cold reserve can be brought on the line within six to twelve hours.

Load Shedding

Coordinating programs of automatic load shedding to match load with generation are a necessary adjunct to system reliability. Load shedding should not be considered a substitute for adequate system design and operation. However, severe system disturbances resulting in a fast decay of frequency are possible, and without an adequate program of automatic emergency load shedding system failure is possible under these conditions.

The California Pool Companies have been using automatic load shedding, as an emergency measure, since the late fifties. The Los Angeles Department of Water and Power also has this system protection. These systems are designed and operated to withstand the loss of *at least* the largest credible risk without the need to resort to load shedding. Their load shedding program is in accordance with the provisions of the California Power Pool Agreement. These provisions call for each utility to shed approximately fifteen percent of its load

in steps before the frequency decays to 58.5 Hz. At 58.4 Hz the interconnecting tie will be opened automatically. Further automatic load shedding at frequencies of 58.4 Hz and lower will be continued as determined necessary by each utility. As the frequency is restored, much of the load that has been shed will be restored automatically (and the balance manually) and the ties reclosed.

5. *"Continuous power, isolated from the effects of a system disturbance, for communications, data collection and switching operations."*

It is impossible for power systems to operate reliably and efficiently without adequate communications. Reliable communications are essential within a power system, between systems, and between control areas. During system disturbances, it is vital that these communications networks remain in service.

The major uses for communications in a power system include voice communication both within a system and between systems, supervisory control of unmanned stations and generating plants, remote alarms from unmanned stations and generating plants, data collection, protective relaying, computer control circuits for automatic generator control and radio between control centers and mobile radio cars. Continuous power for these communication circuits, isolated from the effects of a system disturbance, is essential and, in addition, alternate circuit routes for all critical circuits have been strongly recommended.

The California systems have extensive communications networks which are used primarily for operational purposes. These networks comprise all the usual media, i.e., microwave, power line carrier, wire lines, cable, telephone line carrier, and VHF radio. All of the major power plants and operating centers are equipped with either, or in some cases both, standby generators or batteries for the operation of the equipment in the event of loss of system power. Batteries have sufficient capacity for eight hours' operation, and are independent of the batteries for switching operation. In addition, all major plants and major operating centers are equipped with at least two completely independent communication channels carried over different routes and used exclusively for operating functions. Furthermore, at each of the 500 kv substations one of the two channels is fully battery-operated with battery capacity sufficient to last for eight hours if power is lost to the battery charger. Standby generator sets are provided at each mountain top microwave installation which will start automatically if the normal power source fails. Standby batteries and generator sets are tested at frequent intervals and maintained to be sure they are in operating condition at all times. As a third back-up, commercial telephone facilities are installed at all major plants and control centers.

All power circuit breakers at the major substations and switching centers use direct current for control power supplied from batteries independent from those used for communication circuits. Standby battery chargers are provided and multiple sources of ac supply are available to the battery chargers. The major transmission breakers are either pneumatically or hydraulically operated, and the air compressors or oil pumps maintain sufficient stored energy for four or five operations of the breaker. All hydraulically operated breakers have hand operated oil pumps which can be used in an emergency. In the case of pneumatically operated breakers, provisions are made for the use of high pressure nitrogen bottles to charge the pneumatic system in the event of loss of station power or failure of air compressors. Standby power for the operation of air compressors is provided by diesel or gasoline driven generators or batteries.

6. *"Standby power for the safe rundown of generating units if system power is lost."*

If a thermal generating unit is separated from the system, there must still be a source of power available to permit it to be shut down without damage to the unit. To prevent damage it is particularly important that means be available to continue the operation of the bearing lubricating oil, the hydrogen seal oil, the turbine turning gear and, in addition, the instrument air supply and emergency lighting.

When a hot turbine is shut down, the shaft must continue to rotate until the temperature has been reduced to approximately ambient to prevent the shaft from bowing. Bearing lubricating oil and hydrogen seal oil are required to prevent damage to the bearings and escape of hydrogen.

The California systems have various types of facilities to assure that ample power will be available at all times for these important auxiliaries. For example, thermal plants at strategic locations are equipped with house units which have more than ample capacity for shut down purposes. At many other plants engine driven generating sets are installed for emergency operation of auxiliaries.

Storage batteries are, in all cases, used for emergency lighting and, in addition, in a number of cases, are used for emergency operation of the lubricating oil pumps and the hydrogen seal oil pumps. As an additional back-up for the operation of the turning gear, some plants are equipped to use portable air motors. Necessary air supply during emergencies is provided by ample sized compressed air-storage tanks.

These facilities will provide the necessary emergency means for the safe shut down of thermal units in the California systems.

7. *"Standby power for rapid restarting of generating facilities."*

Thermal plants, whether fueled by coal, oil, gas or nuclear energy, require power to operate the motors that drive pumps, compressors, fans and other auxiliary equipment. When a thermal plant has been completely shut down, an auxiliary power source is required for restarting of the units. This start-up power can be obtained from hydro generating sources, gas turbine or diesel generating units, house units, or from the interconnection with other systems.

The California systems operating thermal plants would have a variety of sources for start-up power whenever required. For example, the City of Los Angeles Department of Water and Power has about 600 mw of hydro generating capacity which can be started without outside power sources. From this hydro capacity the required amount of start-up power can be made available to thermal plants.

San Diego Gas & Electric Company has installed in one of its plants a 21,300 kw gas turbine which is capable of being started in less than three minutes without any source of external power. This turbine can provide start-up power for the other units installed in the plant and, if necessary, for other plants as well. San Diego also has a house unit that can be used for start-up power in one plant. In addition, San Diego could obtain start-up power from Southern California Edison Company through their San Onofre interconnection.

The Southern California Edison Company has about 690 mw of hydro generating capacity on its own system and about 270 mw available to it from the Metropolitan Water District of Southern California. Both sources can be used for start-up power by most of their thermal plants. In addition, they have a 70 mw unit and 7.5 mw house unit at one of their thermal plants remote from the hydro sources. These units are continuously in operation and can provide an immediate source of auxiliary power to three other units in the same plant and to large thermal units in nearby plants.

The Pacific Gas and Electric Company has house units in four of its large thermal plants which are so operated that they can provide immediate start-up power for units in the same plants and nearby large plants. In addition, a large amount of hydro generating capacity is well dispersed over the system. About 1867 mw of hydro generating capacity can be started almost immediately without an external power supply, and about 570 mw can be started in about one hour without an external power supply. Start-up power from these sources can be made available to some of the large thermal plants in a short period of time.

These facilities will provide for the necessary start-up power for the California systems' thermal plants if the need should occur.

8. *"Use of equipment specially designed to withstand adverse environmental conditions."*

The use of equipment specially designed to withstand environmental conditions has an important bearing on system reliability. This is particularly true with respect to high voltage power supply lines.

Transmission lines in California must be located in areas of widely varying environment ranging from the coastal areas to the high mountain areas. The lines are subjected to contamination from salt air and industrial plants in the coastal and heavily industrialized areas, to high winds and heavy snows in the mountain areas, and to some extent lightning.

It has long been the practice of the California companies to design their transmission lines to withstand the adverse conditions most likely to occur in the areas where the line is to be located. For example, in the coastal areas greased conductors are used to prevent corrosion of the aluminum conductor exposed to salt air. A larger number of insulator units are used in the insulator strings in coastal areas and in highly contaminated areas to resist the increased tendency for flashovers to occur in such locations.¹ Improved coatings for the steel

¹ In addition to design criteria to reduce contamination problems, as a routine maintenance practice, insulators on certain overhead lines are washed with high pressure water from portable or permanently installed facilities on a regular schedule to remove surface contamination and prevent flashovers as a matter of prudent preventative maintenance.

core of reinforced aluminum cable are used to better resist corrosion. Design criteria for transmission lines constructed in the mountains, where high winds and heavy snows occur, are more stringent than for those constructed in the valleys. Accordingly, towers are of heavier construction, conductors are steel-reinforced and insulators have a higher mechanical rating. Lightning does not present too much of a problem in California, but shield wires are used in some cases where their use is considered necessary.

That completes our brief review of various design, operating and maintenance practices which provide the reliability of the California systems. These practices reflect the best engineering and operating standards in the electric industry, and they have proved their dependability in the course of actual operations over many years. We shall now turn to some illustrations which show that these practices are effective.

Examples of the Ability of California Interconnected Systems to Withstand Major System Disturbances

Several severe disturbances have occurred on the California interconnected systems within the last few years which illustrate the ability of these systems to quickly recover from such disturbances without materially impairing service to customers.

1. On May 8, 1965, at 8:24 p.m., 895 mw of interconnected generation within Pacific Gas and Electric Company's control area was suddenly interrupted. This was approximately 19 percent of the area load then being carried. By the combined action of the automatic control system and that of unit governors, generation was immediately increased. The momentary deficiency in generation caused the tie to Southern California Edison Company to relay because of excess power flow to Pacific Gas and Electric Company. Frequency relays on Pacific Gas and Electric Company's system then operated to temporarily disconnect selected loads.

The combination of these several actions prevented the frequency from going below 58 Hz, and available spinning reserve returned frequency to normal in six minutes. As frequency recovered, the loads which had been automatically disconnected were automatically picked up in one to five minutes. The great majority of customers in northern, central and southern California were unaware of the loss of such a large block of generation which initiated this chain of events.

2. On January 24, 1966, at 6:12 a.m., a severe disturbance occurred in Los Angeles when the 138 kv and 230 kv systems of the Los Angeles Department of Water and Power became separated. As a result, approximately 500 mw of excess generation remained connected to the 230 kv system, while the 138 kv system was deficient by approximately the same amount. The 230 kv tie between the Department and Southern California Edison Company, as well as other ties, remained in service. The frequency rose to 60.3 Hz on the 230 kv system and returned to normal within 25 minutes. No thermal units were lost on overspeed.

On the 138 kv system, the frequency immediately decreased because of a deficiency in generation. Frequency relays automatically disconnected loads, and the frequency stabilized at 58 Hz. System conditions immediately commenced to return to normal. Much of the load was restored within 11 minutes, and all load restored within 31 minutes.

3. On July 19, 1966, at 1:11 p.m., two 230 kv circuit breakers failed at a major thermal plant of Southern California Edison Company, causing a total loss of power to their system of 1,532 mw, an amount larger than that which precipitated the Northeast blackout. Area load prior to the trouble was 5,770 mw. Ties with Pacific Gas and Electric Company and the Los Angeles Department of Water and Power were opened on indications of severe overload, and the tie with San Diego Gas & Electric Company opened automatically. Frequency relays operated to shed load, and some additional load was shed manually which, combined with automatic generation control, prevented the frequency from dropping below 58.3 Hz. Service interruptions were limited to from 3 minutes to a maximum of 27 minutes.

4. On March 16, 1967, at 4:39 a.m., during a heavy storm, a jumper failed at a Pacific Gas and Electric Company 230 kv substation bus, as a result of a lightning strike. This caused two 230 kv lines to relay, following which several other 230 kv and 115 kv lines relayed, separating 1,025 mw of hydro generation from the system. Ties to Pacific Power & Light Company and Southern California Edison Company also opened automatically.

The system load was approximately 4,000 mw at the time of the trouble, and loss of the hydro generation caused Pacific Gas and Electric Company's system frequency to drop to 58.4 Hz. Because of the combined action of the Company's automatic generation control, the response of generator governors, and its underfrequency load shedding, frequency recovered to 59 Hz in a fraction of a minute and to normal in approximately 2 minutes.

The majority of the load that was automatically shed was restored automatically within about 2 minutes, and all load was restored in 8 minutes.

It is significant that no service interruptions occurred on the adjacent interconnected systems in any of these cases, and all systems remained stable during these severe disturbances.

REVIEW OF S. 1934

Having in mind what it takes to achieve reliability and what the electric power industry in California—and elsewhere—is doing to achieve it, let us turn to S. 1934 and to see what, if anything, it would contribute to the work of achieving this reliability.

The most striking feature of S. 1934 is that it contains many provisions that have no real bearing on reliability of power supply. Some of these unrelated provisions have been before the Congress for years. This was forthrightly acknowledged by Commissioner Bagge when he appeared before the Senate for confirmation in July of last year and said: "But the point is that many of our bills that we have advocated for the past 10 to 15 years have been merged into aspects of the reliability bill."

The sweeping nature of the bill in reaching matters not related to reliability is shown by its provisions dealing with: economics of power supply [§ 401(b)]; sharing of facilities [§ 401(b)]; aesthetics, location and land use [§§ 401(b), 409(e), 410]; antitrust exemptions [§ 404(c)(d)]; exclusive territorial arrangements [§ 401(b)]; and curtailment or abandonment of wholesale power service [§ 412]. Some of these are matters which Congress may wish to consider separately on their merits, but they certainly are not matters directed to the achievement of reliability.

Clearly, this is a bill which deals with reliability of power supply only incidentally. Basically, it is a bill that provides for centralized federal management of the entire electric power industry in this country, both public and investor-owned. We repeatedly hear protestations that such is not the intent. But the intent must be judged by the provisions of the bill—and its language, reinforced by the FPC's own analysis of the bill, is clear.

The scheme of the bill is to set up regional councils to achieve this formidable objective and to place the FPC atop a pyramid of authority with power to approve, veto or amend all that the regional councils established by the bill might propose. Enactment of this bill would preempt to the federal government not only numerous management functions but also numerous functions, mainly unrelated to reliability, that now are regulated at state or local levels. As an example of local regulatory authority, we have set forth in Exhibit B excerpts from the California Public Utilities Code showing the comprehensive powers of the California Public Utilities Commission over utility equipment, plants, apparatus, facilities, and physical properties.

Aside from the philosophic conflicts that would arise from the drastic changes in the power business proposed by this bill, the fact is that the proposed changes would actually inhibit and delay the work of achieving reliability.

Demand for electric power in this country doubles every ten years. In addition, the electric utility industry is so capital-intensive that it is the nation's largest single industry in terms of investment required for new plant and equipment each year. These two facts give some idea of the sheer volume of work required to expand the nation's power facilities each year on an orderly and reliable basis.

There are thousands of experts employed by the public and investor-owned power agencies across the country engaged in designing and planning the construction and operation of power supply systems. Their plans, which under this bill would all be subject to FPC review, take years to develop and are under constant study and change as later information is available. The manpower that would be required by the FPC for a sensible review would be enormous. The delays inherent in such a review would be intolerable. Lead-times for constructing major power supply facilities are already approaching six years. The delays occasioned during the past decade in obtaining FPC certifications to construct natural

gas pipelines, much less complicated matters, should give some idea of the problems which would be created. As Commissioner Carver acknowledged recently, although the natural gas certificate caseload has been relatively level, the number of average pages of transcript has virtually doubled, from 1400 pages to 2500 pages; the average elapsed number of days from start to finish has increased by half, up almost to a thousand days, while the number of days from beginning to end of the shortest contested case in the 1962-66 period doubled from 142 to 300 days.

Besides the delays which would be occasioned by FPC staff review, further delays would be caused by the procedural aspects of S 1934. The proposal is replete with requirements for rule-making (at least six different instances) and hearings (at least seven instances), each subject to court review and inherent delays in a situation where the exact opposite is needed—namely, a swift response by the nation's power industry to the ever-growing demands for abundant and reliable electrical energy. This industry, which already has developed the most highly efficient and reliable power supply in the world, is ready, willing, able, and eager to do the job. No legislative compulsion is needed.

It is right that the Congress seeks to assure itself that the nation will have reliable power supplies by holding these hearings. You will find, however, that the electric industry across the country, as in California, is acutely aware of the need for reliable power supplies, and has been and is taking the steps required to assure it without the drastic, and deadening, changes in the utility business that this legislation would bring about.

We appreciate the opportunity to present facts bearing on this legislation and will be pleased to provide any further information that the Committee may believe helpful.

APPENDIX

COORDINATING ARRANGEMENTS OF CALIFORNIA ELECTRIC SYSTEMS

PACIFIC NORTHEAST-SOUTHWEST INTERTIE

California Power Pool members now own and operate in excess of three million kilowatts of hydroelectric generating capacity and 15 million kilowatts of thermal electric generating capacity. This is approximately 65% of the hydro and 80% of the thermal capacity in California. By reducing generation of a portion of this thermal plant capacity, Pool members will be able to utilize in their systems a substantial quantity of surplus interruptible Northwest energy. Their thermal plants also could provide support during interruptions of deliveries of Northwest power in California and produce power for use in the Northwest.

The Pool members own extensive high voltage transmission systems extending throughout most of California. Their systems are interconnected and power is interchanged between members to achieve optimum efficiency, economy and reliability in the operation of the integrated systems.

The integration of resources and facilities of Pool members provides a favorable base for exchanges of power with the Pacific Northwest.

Pacific Gas and Electric Company has constructed a system of 500 kv transmission lines. These 500 kv lines are a part of the Company's program, announced early in 1963, which has added to PG&E's system more than 1000 miles of 500 kv line.

The 500 kv lines provide a strong backbone within the Company's interconnected transmission system, permitting the economical and efficient transmission of large quantities of electric power from generating plants to load centers in the Company's service area.

Construction of the 500 kv lines serves a dual purpose, for it has made possible the early establishment of high capacity interconnections with other systems to the North and South of PG&E's system.

The Pacific Northwest-Southwest Intertie will provide total transmission capacity of about 3 million kilowatts over two 500 kv ac lines and one 750 kv dc line extending 900 miles from the Columbia River to Los Angeles. About 1.3 million kilowatts of additional capacity will be provided when the 750 kv dc line is built from the Columbia River to Mead Substation near Hoover Dam.

The lines are being constructed by Bonneville Power Administration, the United States Bureau of Reclamation, the City of Los Angeles Department of Water and Power, Portland General Electric Company, Pacific Power & Light Company, Pacific Gas and Electric Company and Southern California Edison Company.

Existing transmission ties between the Los Angeles area and Hoover Dam will be reinforced by the addition of 500 kv ties as required. The Bureau and Arizona Public Service Company will each build a 345 kv line from Mead Substation to Phoenix.

An all-Federal tie between the Bonneville and Central Valley Project power systems will be completed by Bureau ownership of certain facilities in the PG&E substation at Round Mountain and a 230 kv line being built by the Bureau from Round Mountain to connect with existing Central Valley Project lines at the Cottonwood Substation.

This joint enterprise brings together, in cooperation for the public benefit, the large Federal power projects, the principal investor-owned power systems and the major government-owned power agencies of the entire area.

The EHV lines will serve as system backbones and will transmit large blocks of power within each Company system in which they are located. The 500 kv lines between the PG&E and SCE systems will provide a necessary high capacity interconnection and provide for the pooling of power resources between companies and regions which will benefit the power customers of all parties. These lines will make possible, by transmission and displacement, the sale of surplus Northwest interruptible power in California, and exchanges of power between the two regions which will provide some firm Northwest capacity for use in California. Benefits of diversity between the Northwest and Nevada and Arizona, and between those states and Southern California, also will be made available by use of these lines and the lines between Los Angeles and Hoover Dam.

The ac lines and the dc line extending from the Northwest through Nevada and California to Los Angeles will provide strong interconnections between the large hydro power resources of the Northwest and the equally large thermal power resources in California. Each area can rely to a substantial extent on the resources of the other for emergency reserves. Interregional coordination will afford an opportunity to reduce the reserves which power agencies in each region otherwise would be required to provide for their own customers, and this benefit will accrue to the electric customers in the entire area.

Proposals for joint construction and use of the Intertie which would give benefits "at least equal to those to be derived from Federal construction" were invited in 1963 and approved in 1964 by Congress.

Contracts implementing these proposals were negotiated during a period of two years and were submitted to Congress in the fall of 1966.

After review by interested members of Congress, the Departments of Interior and Justice and the Federal Power Commission staff, the contracts were executed last July and August.

The contracts will be in effect for about 40 years and provide for:

1. Use by the Pool Companies and others of the Los Angeles dc line, the Bureau line to Round Mountain, the PP&L line in California and the Edison lines;
2. Use of the PG&E lines by the Pool Companies, the Bureau of Reclamation, State of California, Sacramento Municipal Utility District, and Los Angeles;
3. Joint ownership by PG&E and the Bureau of facilities at Round Mountain Substation;
4. Connection of the Bureau's 230 kv line to PG&E's Cottonwood Substation;
5. Purchase by the State of California, Sacramento Municipal Utility District, Los Angeles, Burbank, Glendale and the Pool Companies of Canada's entitlement to power developed in Bonneville plants as a result of Canada's treaty with the United States for construction of reservoirs on the Upper Columbia River in Canada;
6. Sales and exchanges of power between BPA and the foregoing public and private agencies;
7. Sales of energy between PG&E and PP&L, Portland General, Puget Sound Power and Light Company and Washington Water Power Company (these contracts are still under negotiation);
8. Interim purchase by PG&E, Edison and San Diego of Canadian Entitlement and Northwest power sold to the State and SMUD in advance of their needs. The Companies will cease such purchases whenever these agencies need the power. The Companies also will resell power from a "bank" to the State at the price paid by the Companies, adjusted for changes in their costs of generation;

9. Extension of the existing contracts between PG&E and the Bureau for support and wheeling of CVP power. The Company also will "bank" Northwest and CVP capacity and energy for the Bureau;

10. Reduction of purchases of capacity and energy by SMUD from PG&E when SMUD is able to purchase and use Canadian Entitlement and Northwest capacity and energy.

These contracts will enable many public agencies in California to receive large amounts of power at a price no greater than they would pay for power delivered over Federal transmission lines.

Five hundred (500) kv ac line capacity in California is committed for use by such agencies as follows: 400,000 kilowatts for the Federal Central Valley Project and 50 federal and local public agencies served by the project; 300,000 kilowatts for the pumping facilities of the California Water Plan; and 200,000 kilowatts for the Sacramento Municipal Utility District, plus an additional 200,000 kilowatts for that District from April 1, 1971 through March 31, 1976. Moreover, the extra-high-voltage alternating current lines of the California Companies will provide essential support for the direct current line to be built by the Los Angeles Department of Water and Power.

Operation of the lines will be so scheduled that sufficient capacity will be available for transmission of power from the Northwest and also from the hydroelectric and thermal electric plants of the Companies to meet their power requirements.

The support and wheeling contract between the Bureau and PG&E extends, for 40 years, provisions of existing contracts which were entered into in 1951, with amendments to include Northwest power imported by the CVP over the Intertie. The new contract will enable the Bureau not only to meet rapidly increasing project pumping loads but also to serve its 50 preference customers at CVP rates with 2½ times as much Federal power as they could obtain without the support of the PG&E system. Wheeling service to preference customers over an area of 30,000 square miles in the Company's system will be available for the Bureau at the low basic rate of one mill per kilowatt-hour.

A 40-year extension of the existing contract provisions was one of the proposals submitted in writing by PG&E to the Senate Appropriations Committee in 1964 as part of the Intertie program of the California Companies. Benefits to preference customers during the 40-year term were set forth by the Secretary of the Interior in his 1964 Intertie report to Congress recommending adoption of this program. The Senate committee based its approval of the Intertie upon the Secretary's acceptance of the proposals he recommended in his report. The contract incorporates the proposals thus approved by the Department of the Interior and the Congress.

The Intertie contract between the Pool Companies and Sacramento Municipal Utility District implements contractual arrangements between the District and PG&E begun in 1955 under which their power systems have been integrated and the District purchases power and energy from the Company when power available to the District from its own hydro generation or from the Central Valley Project is not sufficient for its needs. Under a contract entered into in 1966 the Company will supply standby support to the District until the District has constructed an 800 mw nuclear thermal plant which is expected to commence commercial operation in the summer of 1973. The parties now are negotiating a contract under which the District thereafter will sell its surplus power to the Company and obtain the benefits of economies of scale and reliability through the integration of the District's power resources with the Company's widespread power system. Such an arrangement contemplates joint planning of resource additions in light of area needs.

Construction of the interties by the California Companies and the Los Angeles Department of Water and Power will—

1. Make possible exchanges of energy between California and the Northwest to the benefit of electric customers in both regions;
2. Provide a reliable and stable interregional transmission system on the West Coast supported by the generating resources and transmission systems of the major California electric utilities, both public and private;
3. Permit participating governmental agencies, including the California State Water Plan, to purchase and deliver to their systems surplus Northwest power at a price no greater than if the interties were to be built with Federal funds;

4. Provide a market for surplus Federal power, thus reducing Bonneville's operating deficit;
5. Save the nation's taxpayers an expenditure of more than \$225 million;
6. Create Federal, State and local tax revenues of at least \$275 million over the 50-year amortization period;
7. Provide markets in California to permit implementation of the treaty with Canada which will bring about the full development of the Columbia River.

IRRIGATION DISTRICT INTEGRATION WITH PACIFIC GAS & ELECTRIC CO.

PG&E has, for a great many years, cooperated with irrigation districts in the development by the districts of their water resources by purchasing their falling water and surplus power generated by their hydroelectric works.

As early as 1924 PG&E made a contract with the Nevada Irrigation District of Nevada County, California, providing payments for the power value of the District's water used through PG&E's power plants. Proceeds from this contract enabled the District to develop water storage sufficient to meet its irrigation needs.

From 1924 to 1965 PG&E and a predecessor company purchased the power output of the Merced Irrigation District's Exchequer Power Plant. Since 1955 PG&E has also purchased the surplus power output of the East Bay Municipal Utility District's hydroelectric plants.

Beginning in 1952 PG&E began entering into a new type of arrangement with irrigation districts and similar entities. That year it signed a 50-year contract with the Oakdale and South San Joaquin irrigation districts, guaranteeing these districts substantial payments each year for the power to be generated by their proposed Tri-Dam Project on the Stanislaus River, California. Using this contract as security, the two districts sold sufficient revenue bonds to enable them to construct the project. The project power plants are in effect integrated into the PG&E system and are dispatched by PG&E to meet area load, consistent with the districts' irrigation needs.

Since 1960 PG&E has entered into a series of fundamentally similar contracts with other governmental entities: The South Fork Feather River Project of the Oroville-Wyandotte Irrigation District (1960); the Middle Fork American River Project of the Placer County Water Agency (1963); the Yuba-Bear Rivers Project of the Nevada Irrigation District (1963); the Merced River Development of the Merced Irrigation District (1964); and the Yuba River Development of the Yuba County Water Agency (1966).

All together these six contracts have enabled these water agencies to construct, when all facilities are completed, more than 2,900,000 acre-feet of water storage and more than 860,000 kilowatts of generating capacity. PG&E owns about 2,200,000 acre-feet of water storage capacity, and owns about 2,400,000 kilowatts of hydroelectric generating capacity.

In each instance the agencies own, operate and staff all water storage and electric generating facilities. In each instance the power plants are integrated electrically into the PG&E system, with both generation and maintenance scheduled to meet area load needs, consistent with the irrigation needs of the water agencies.

INTERCONNECTIONS OF SOUTHERN CALIFORNIA EDISON CO. WITH CITY OF LOS ANGELES AND METROPOLITAN WATER DISTRICT

Southern California Edison maintains two electrical interconnections with governmental agencies in the Los Angeles area, one with the Los Angeles Department of Water and Power and one with the Metropolitan Water District. The Edison-District arrangement also provides for dispatch by Edison of the District's power plants to meet area load and the sale and exchange of energy.

INTERCONNECTION BETWEEN PACIFIC GAS & ELECTRIC CO. AND PACIFIC POWER & LIGHT CO.

PG&E and its predecessors have maintained interconnections and purchase and sale arrangements with Pacific Power & Light Company and its predecessors since 1918. In 1962 the then existing agreement, entered into in 1952, was revised in contemplation of the construction of the 500 kilovolt Pacific Intertie Lines and to establish emergency and exchange service. The 1962 agreement was in turn

this year superceded by a new agreement which makes full provision for the operation of the Pacific Northwest-Southwest Intertie.

PACIFIC NORTHWEST-SOUTHWEST INTERTIE—COORDINATING ORGANIZATION

Immediately upon agreement among the principals on the construction of the Pacific Northwest-Southwest EHV Intertie System, careful coordination of all phases of the design, construction, and operation of the project was begun. An Engineering Guidance Committee was named to give the project overall policy guidance. The Guidance Committee in turn named three task forces, one having to do with technical studies, the second with design and construction problems, and the third with operations. Other working groups were formed to coordinate matters relative to communication facilities, system protection, and maintenance. Taking part in the work of all these coordinating groups were representatives of the various private systems and governmental agencies participating in the Pacific Northwest-Southwest Intertie System.

With the performance of the primary responsibilities of the Engineering Guidance Committee and the design and construction task force, those two groups dissolved. The technical studies and operations task forces are now continuing their work under the guidance of the Operations Committee of the Western Systems Coordinating Council.

PACIFIC NORTHWEST-SOUTHWEST INTERTIE—DEVELOPMENT OF OPERATING CRITERIA AND PROCEDURES RELATED TO RELIABILITY

The Pacific Intertie Operations Task Force held its first meeting on September 17, 1964. It has met regularly to discuss and formulate operating procedures and criteria for the operation of this major EHV interconnection. On September 26, 1967, the Task Force made a progress report to the Engineering Guidance Committee. This report discusses many specific areas where agreement has been reached and studies are continuing with regard to the operation of the Pacific Intertie Operations during the initial phases of its operation.

The California Power Pool Board of Control with the concurrence of the Los Angeles Department of Water and Power published Board of Control Ruling No. 4 dated September 28, 1966. This document spells out criteria to be observed by these major utility systems during the initial phases of the Pacific Intertie System operations. A copy is attached hereto as Exhibit C.

CALIFORNIA SUPPLIERS CONTRACT WITH STATE OF CALIFORNIA

The previously described EHV transmission contract between the California Pool Companies and the State of California among other things provided the State with transmission and exchange service between the Oregon-California border and six EHV substations, or "bulk delivery points", within California. The state required additional arrangements to transmit the power it received under that contract to its various facilities within California. Therefore in 1966 the three Pool Companies, the Los Angeles Department of Water and Power, and the State entered into a long-term contract, known as the "Suppliers Contract", for such service. This contract also provides a sale and exchange arrangement for the supply of additional power needed by the State for its State Water Project.

WEST ASSOCIATES

Southern California Edison, San Diego Gas & Electric Company, the cities of Los Angeles, Burbank, Glendale and Pasadena, and the Imperial Irrigation District, are participants in WEST Associates, which is fundamentally a joint resource planning group. It is a convenient vehicle for its members, and third parties, to coordinate their study of the generation and transmission needs of the Southwestern United States, so that facilities can be planned from the standpoint of area-wide economy and reliability without unnecessary duplication. This study and planning does not obligate the participants to any specific construction programs, but does point out areas of possible joint action. The joint venture projects of the Mojave and Four Corners power plants are outgrowths of WEST Associates.

PACIFIC SOUTHWEST POWER INTERCHANGE COMMITTEE

The Pacific Southwest Power Interchange Committee is composed of operating representatives from investor-owned systems, municipal systems, federal systems,

irrigation districts, and power authorities serving the major portions of California, Arizona, and Nevada. The Committee was organized in 1942 for the purpose of cooperating in an effort to assure an adequate power supply to support the national war effort. The Committee has continued to meet semi-annually to exchange operating information and to discuss operating problems. The Committee has also served to coordinate the preparation of load and resource studies for the area for the Edison Electric Institute. In the years past, a Load Frequency Control Subcommittee coordinated the application of load and frequency control equipment to the various areas. In 1964, an Interconnected Operation and Control Subcommittee was formed. It has been utilized to disseminate operating information to the systems and to solicit comments with regards to proposed guides and practices related to interconnected system operation.

It now appears that the activities of this group may be incorporated into the functions of the Western Systems Coordinating Council.

NORTH AMERICAN POWER SYSTEMS INTERCONNECTION COMMITTEE (NAPSIC)

The North American Power Systems Interconnection Committee (NAPSIC) was formed in January 1963 to deal with the problems of coordination of interconnected systems on a national level. NAPSIC is an informal, voluntary organization of operating personnel representing ten major interconnected regions, including members from both the public and private sectors of the industry. Representation is limited to two members from each region. The regions represented at present are—

1. The Canada-US Eastern Interconnection (CANUSE)
2. The Pennsylvania-New Jersey-Maryland Interconnection (PJM)
3. The NE Region of the Interconnected Systems Group (ISG)
4. The SE Region of the Interconnected Systems Group
5. The NW Region of the Interconnected Systems Group
6. The SW Region of the Interconnected Systems Group
7. The New Mexico Power Pool
8. The Rocky Mountain Power Pool
9. The Northwest Power Pool
10. The Pacific SW Interconnected Systems, which has representatives from both Southern California Edison Company and Pacific Gas and Electric Company.

NAPSIC is not concerned with the many operating matters which are of a local nature requiring the attention of individual systems, or a limited number of adjacent systems. NAPSIC is concerned with only those matters which require overall coordination, such as:

1. Frequency standards.
2. Time error standards.
3. Time error correction procedures.
4. Tie-line bias settings.
5. Methods of handling inadvertent interchange (or deviation from tie-line schedules).
6. Any other operating matters which need to be coordinated to effect reliable and efficient operation of the interconnected regions.

The NAPSIC Operating Manual at the present time includes 20 Approved Operating Guides. NAPSIC is continuing its effective work in national coordination of interconnected systems and will develop additional operating guides as conditions warrant.

EDISON ELECTRIC INSTITUTE

The California Power Pool members are represented on a large number of Committees of the Edison Electric Institute for the purpose of considering problems of mutual interest and concern. The EEI Power Systems Coordination Division, as the name implies, is concerned with problems of coordination between individual or groups of systems. In addition to the Division Executive Committee the following four Committees are in this Division: Committee on Coordinated Area Planning, Committee on Coordinated Area Operation, Committee on Interconnection Arrangements, Electric Power Survey Committee.

Each of these five Committees has at least one representative from a California Power Pool member system. Through this participation the California utilities are afforded the opportunity to exchange information relating to reliability throughout the country. The studies and discussions carried on by these groups of experienced engineers from the industry are valuable contributions to coordination and reliability.

WESTERN OPERATIONS COMMITTEE

About four years ago NAPSIC recognized that the western systems, which were not yet interconnected to the degree found in the East, were about to be tied together through major interconnections. To assist in establishing some basic operating guides for interconnected system operation in the West, NAPSIC formed what was called the Western Operations Subcommittee. This organization brought together key operators from both the private and public systems in the West to deal with problems associated with each new interconnection. This Subcommittee served the western systems until the completion of its final assignment, the test closure of the East-West ties in early 1967. At that time NAPSIC released its Western Operations Subcommittee of any further responsibilities. Those who had participated in this work of the Western Operations Subcommittee recognized the need for continued coordination among the operators of the western systems. Consequently, the group continued its activities under the name *Western Operations Committee*. At that time the Western Operations Committee proposed to fill a possible vacuum until such time as a larger, more formalized coordinating group could be established in the West, such as the Western Systems Coordinating Council which was being discussed then. The Western Systems Coordinating Council became a fact on November 6, 1967, and one of the provisions of its organizing agreement is that the Western Operations Committee become the Operating Committee under the Council.

WESTERN U.S. TRANSMISSION STUDY GROUP

In addition to the joint studies carried on by the Pacific Intertie Engineering Guidance Committee and its three Task Forces and various working groups, a separate Western U.S. Transmission Study Group has been operating for about two years. This group has representation from all major utilities in the eleven western states. The work of this group has been to study the line loadings of the interconnected systems under various interchange schedules and operating conditions. The cost of making these computer studies is shared by 16 investor-owned and 12 public-owned systems.

WEST—DEPARTMENT OF INTERIOR STUDY GROUP

Southern California Edison Company is also a participant in the WEST—Department of Interior Study Group. This group is jointly conducting load-flow and stability studies of the systems expected to exist in the future in the Southwestern United States in order to determine whether they will meet the needs of the area.

FPC EXECUTIVE ADVISORY COMMITTEE

The President of Pacific Gas and Electric Company, Mr. S. L. Sibley, is a member of the Federal Power Commission's Executive Advisory Committee, a group concerned with updating the National Power Survey. This Committee provides advice on a national basis to supplement the advice received from various Regional Advisory Committees and provides liaison between the Federal Power Commission and the industry.

FPC WEST REGIONAL ADVISORY COMMITTEE

Working under the FPC Executive Advisory Committee in updating the National Power Survey are six Regional Advisory Committees. There are about a dozen members on the West Regional Advisory Committee. The California representatives have been S. B. Nelson, then General Manager of the Los Angeles Department of Water and Power, Robert P. O'Brien, Vice President of Southern California Edison Company and John F. Bonner, Senior Vice President of Pacific Gas and Electric Company.

FPC ADVISORY COMMITTEE ON RELIABILITY OF ELECTRIC BULK POWER SUPPLY

In February 1966 the Federal Power Commission established an Advisory Committee on Reliability of Electric Bulk Power Supply for the purpose of assisting the Commission in receiving and investigating the problems involved in assuring the reliable supply of bulk power and to recommend general criteria and guidelines for system planning and operation and maintenance of facilities to assure the reliability of bulk power supply on an area or regional basis. The

work of this Advisory Committee resulted in a report contained in Volume II of the FPC Report to the President on Prevention of Power Failures. Mr. C. C. Whelchel, the former Vice President—Engineering of Pacific Gas and Electric Company, was a member of this Advisory Committee and participated in the preparation of its report.

WESTERN SYSTEMS COORDINATING COUNCIL

Early in the work of the Pacific Intertie Engineering Guidance Committee it was recognized that after the Pacific Northwest-Southwest Intertie began operating, it would be necessary to establish a permanent organization to continue to coordinate the planning and operation of the interconnected western power systems.

At first consideration was given to having two coordination councils in the eleven western states. Such a division would result in fewer members on each council and possibly be more manageable. Also, the geographic and electric load size would be nearer the size of other councils being formed elsewhere in the country. However, due to the electrical configuration of the transmission network and the type of reliability studies to be studied, it was decided to have only one Western Systems Coordinating Council. The demonstrated ability of all segments of the industry to work together effectively removed the concern of manageability.

Mr. Floyd Goss, the Chief Electrical Engineer and Assistant Manager of the Los Angeles Department of Water and Power, and the Chairman of the Western Systems Coordinating Council, described the details of the Council at the December hearings of this Committee in Seattle, Washington. We only wish to point out that the work of the Pacific Intertie Guidance Committee and its Task Forces, the Western U.S. Transmission Study Group and the Western Operating Committee, previously described, will be undertaken by the new Western Systems Coordinating Council. This shows the evolution of voluntary coordination in this area.

CALIFORNIA PUBLIC UTILITIES COMMISSION

In addition to working with the various states, regional and national groups just mentioned, the California Pool Companies have also worked closely with the California Public Utilities Commission throughout the years in matters relating to the reliability of power supply. As a recent example, immediately following the Northeast blackout, a joint task force of the Pool Companies and the Los Angeles Department of Water and Power was formed to make a thorough study of reliability of power supply in California and, at the request of the Commission, made an extensive report of its findings for review by the Commission staff.

EXTRACTS FROM DIVISION I, PART I OF THE PUBLIC UTILITIES CODE OF THE STATE OF CALIFORNIA

§ 451. Public utilities charges to be just: Equipment, etc., to be safe and convenient: Rules to be reasonable. All charges demanded or received by any public utility, or by any two or more public utilities, for any product or commodity furnished or to be furnished or any service rendered or to be rendered shall be just and reasonable. Every unjust or unreasonable charge demanded or received for such product or commodity or service is unlawful.

Every public utility shall furnish and maintain such adequate, efficient, just, and reasonable service, instrumentalities, equipment and facilities as are necessary to promote the safety, health, comfort, and convenience of its patrons, employees, and the public.

All rules made by a public utility affecting or pertaining to its charges or service to the public shall be just and reasonable.

§ 581. Duty to furnish information to commission: Filling of blanks. Every public utility shall furnish to the commission in such form and detail as the commission prescribes all tabulations, computations, and all other information required by it to carry into effect any of the provisions of this part, and shall make specific answers to all questions submitted by the commission.

Every public utility receiving from the commission any blanks with directions to fill them shall answer fully and correctly each question propounded therein, and if it is unable to answer any question, it shall give a good and sufficient reason for such failure.

§ 582. Duty to furnish commission copies of books, contracts, etc., and inventories upon request. Whenever required by the commission, every public utility shall deliver to the commission copies of any or all maps, profiles, contracts, agreements, franchises, reports, books, accounts, papers, and records in its possession or in any way relating to its property or affecting its business, and also a complete inventory of all of its property in such form as the commission may direct.

§ 584. Utilities' annual reports: Commission's authority to require other reports: Oath for reports. Every public utility shall annually furnish a report to the commission at such time and in such form as the commission may require in which the utility shall specifically answer all questions propounded by the commission. The commission may require any public utility to file monthly reports of earnings and expenses, and to file periodical or special reports, or both, concerning any matter about which the commission is authorized by any law to inquire or to keep itself informed, or which it is required to enforce. All reports shall be under oath when required by the commission.

§ 702. Compliance by public utilities with commission's orders and directions required. Every public utility shall obey and comply with every order, decision, direction, or rule made or prescribed by the commission in the matters specified in this part, or any other matter in any way relating to or affecting its business as a public utility, and shall do everything necessary or proper to secure compliance therewith by all of its officers, agents, and employees.

§ 761. Authority to fix rules, equipment, services, etc.: When compliance by public utility required. Whenever the commission, after a hearing, finds that the rules, practices, equipment, appliances, facilities, or service of any public utility, or the methods of manufacture, distribution, transmission, storage, or supply employed by it, are unjust, unreasonable, unsafe, improper, inadequate, or insufficient, the commission shall determine and, by order or rule, fix the rules, practices, equipment, appliances, facilities, service, or methods to be observed, furnished, constructed, enforced, or employed. The commission shall prescribe rules for the performance of any service or the furnishing of any commodity of the character furnished or supplied by any public utility, and, on proper demand and tender of rates, such public utility shall furnish such commodity or render such service within the time and upon the conditions provided in such rules.

§ 762. Authority to require changes in physical property of public utilities. Whenever the commission, after a hearing, finds that additions, extension, repairs, or improvements to, or changes in, the existing plant, equipment, apparatus, facilities, or other physical property of any public utility or of any two or more public utilities ought reasonably to be made, or that new structures should be erected, to promote the security or convenience of its employees or the public, or in any other way to secure adequate service or facilities, the commission shall make and serve an order directing that such additions, extensions, repairs, improvements, or changes be made or such structures be erected in the manner and within the time specified in the order. If the commission orders the erection of a new structure, it may also fix the site thereof. If the order requires joint action by two or more public utilities, the commission shall so notify them and shall fix a reasonable time within which they may agree upon the portion or division of the cost which each shall bear. If at the expiration of such time the public utilities fail to file with the commission a statement that an agreement has been made for a division or apportionment of the cost, the commission may, after further hearing, make an order fixing the proportion of such cost to be borne by each public utility and the manner in which payment shall be made or secured.

§ 767. Authority to order use of conduits, etc., of one company by another: Liability for damage. Whenever the commission, after a hearing had upon its own motion or upon complaint of a public utility affected, finds that public convenience and necessity require the use by one public utility of all or any part of the conduits, subways, tracks, wires, poles, pipes, or other equipment, on, over, or under any street or highway, and belonging to another public utility, and that such use will not result in irreparable injury to the owner or other users of such property or equipment or in any substantial detriment to the service, and that such public utilities have failed to agree upon such use or the terms and conditions or compensation therefor, the commission may by order direct that such use be permitted, and prescribe a reasonable compensation and reasonable terms and conditions for the joint use. If such use is directed, the public utility to whom the use is permitted shall be liable to the owner or

other users for such damage as may result therefrom to the property of the owner or other users thereof, and the commission may ascertain and direct the payment, prior to such use, of fair and just compensation for damage suffered, if any.

§ 768. Authority to direct use of safety devices.

The commission may, after a hearing, by general or special orders, rules, or otherwise, require every public utility to construct, maintain, and operate its line, plant, system, equipment, apparatus, tracks, and premises in such manner as to promote and safeguard the health and safety of its employees, passengers, customers, and the public, and may prescribe, among other things, the installation, use, maintenance, and operation of appropriate safety or other devices or appliances, including interlocking and other protective devices at grade crossings or junctions and block or other systems of signaling, establish uniform or other standards of construction and equipment, and require the performance of any other act which the health or safety of its employees, passengers, customers, or the public may demand. *Provided, however, that the commission shall not regulate the safety of operation of passenger stage corporations, highway common carriers, and petroleum irregular route carriers.* [Amended by Stats 1963 ch 2148 § 2.]

§ 770. Authority to fix standards. The commission may after hearing:

(a) Ascertain and fix just and reasonable standards, classifications, regulations, practices, measurements, or service to be furnished, imposed, observed, and followed by all electrical, gas, water, and heat corporations.

(b) Ascertain and fix adequate and serviceable standards for the measurement of quantity, quality, pressure, initial voltage, or other condition pertaining to the supply of the product, commodity, or service furnished or rendered by any such public utility.

(c) Prescribe reasonable regulations for the examination and testing of such product, commodity, or service and for the measurement thereof.

(d) Establish reasonable rules, specifications, and standards to secure the accuracy of all meters and appliances for measurements.

(e) Provide for the examination and testing of any and all appliances used for the measurement of any product, commodity, or service of any such public utility.

§ 771. Authority for entry on premises for tests, etc.: Presence of public utility's employees. The commissioners and their officers and employees may enter upon any premises occupied by any public utility, for the purpose of making the examinations and tests and exercising any of the other powers provided for in this part, and may set up and use on such premises any apparatus and appliances necessary therefor. The agents and employees of the public utility may be present at the making of such examinations and tests.

§ 851. Approval of highway of property: Effect of approval on franchises: Exception as to unnecessary property: Inapplicability to interchange of equipment in course of transportation.

No public utility other than a common carrier by railroad subject to Part I of the Interstate Commerce Act (Title 49, U.S.C.) shall sell, lease, assign, mortgage, or otherwise dispose of or encumber the whole or any part of its railroad, street railroad, line, plant, system, or other property necessary or useful in the performance of its duties to the public, or any franchise or permit or any right thereunder, nor by any means whatsoever, directly or indirectly, merge or consolidate its railroad, street railroad, line, plant, system, or other property, or franchises or permits or any part thereof, with any other public utility, without first having secured from the commission an order authorizing it so to do. Every such sale, lease, assignment, mortgage, disposition, encumbrance, merger, or consolidation made other than in accordance with the order of the commission authorizing it is void. The permission and approval of the commission to the exercise of a franchise or permit under Article 1 (commencing¹ with Section 1001) of Chapter 5 of this part, or the sale, lease, assignment, mortgage, or other disposition or encumbrance of a franchise or permit under this article shall not revive or validate any lapsed or invalid franchise or permit, or enlarge or add to the powers or privileges contained in the grant of any franchise or permit, or waive any forfeiture.

Nothing in this section shall prevent the sale, lease, encumbrance or other disposition by any public utility² of property which is not necessary or useful in

¹ Deleted: "at".

² Deleted: "or".

the performance of its duties to the public, and any disposition of property by a public utility shall be conclusively presumed to be of property which is not useful or necessary in the performance of its duties to the public, as to any purchaser, lessee or encumbrancer dealing with such property in good faith for value; provided, however, that nothing in this section shall apply to the interchange of equipment in the regular course of transportation between connecting common carriers. [Amended by Stats 1965 ch 117 § 1.]

§ 1001. Corporations requiring certificate to commence construction: Construction of article: Interference with public utility or water system of public agency.

No railroad corporation whose railroad is operated primarily by electric energy, street railroad corporation, gas corporation, electrical corporation, telegraph corporation, telephone corporation, or water corporation shall begin the construction of a street railroad, or of a line, plant, or system, or of any extension thereof, without having first obtained from the commission a certificate that the present or future public convenience and necessity require or will require such construction.

This article shall not be construed to require any such corporation to secure such certificate for an extension within any city or county and county within which it has theretofore lawfully commenced operations, or for an extension into territory either within or without a city or county contiguous to its street railroad, or line, plant, or system, and not theretofore served by a public utility of like character, or for an extension within or to territory already served by it, necessary in the ordinary course of its business. If any public utility, in constructing or extending its line, plant, or system, interferes or is about to interfere with the operation of the line, plant, or system of any other public utility or of the water system of a public agency, already constructed, the commission, on complaint of the public utility or public agency claiming to be injuriously affected, may, after hearing, make such order and prescribe such terms and conditions for the location of the lines, plants, or systems affected as to it may seem just and reasonable. [Amended by Stats 1963 ch 2078 § 1.]

OPERATING CRITERIA FOR THE PACIFIC INTERTIE

Ruling No. 4

Date: September 28, 1966

Subject: Operating Criteria for the Pacific Intertie

Authority: Paragraph 10.06(c) and 10.06(e) of the Agreement

Revisions: None

The following Operating Criteria are hereby established for the Pacific Intertie.

I. PREFACE

The Pacific Intertie will provide strong interconnections between the California electric systems and the interconnected systems in the Pacific Northwest and the Arizona-Nevada area. When the Intertie begins operation, the California utilities will enter a new era of interconnected operation. The Operating Criteria which follow deal principally with the Pacific Intertie, but also recognize that some aspects of system operation not directly related to the Intertie must be coordinated to achieve maximum benefits.

The Criteria will apply during the first three phases of Intertie development, beginning with Phase I, the operation of one 500 KV AC line, Phase II, two 500 KV AC lines, and Phase III, two 500 KV AC lines and one 750 KV DC line. However, the applicability of the Criteria for Intertie Scheduling and Accounting and Coordination of Controls and Communications are essentially independent of the phase of Intertie development.

A principle basic to all of the Criteria is that they are not rigidly fixed, but are subject to periodic review based upon operating experience and continuing engineering studies. The Criteria will be reviewed routinely by the Engineering and Operating Committee and the Board of Control at such times as significant developments or events make a review advisable.

It is intended that the Criteria will be made available to interested parties in each of the Power Pool Companies and the Los Angeles Department of Water and Power; particularly those persons serving on the various Pacific Intertie Task Forces. The Criteria should not be circulated outside of the Companies or the Department of Water and Power without specific authorization from the Board of Control.

II. SPINNING RESERVE

A. Objective

In the daily operation of the California systems, the objective of each system is to provide capacity and energy to meet its load reliably and economically. Forecasting errors, equipment failures and the need for regulating margin must be considered in addition to anticipated daily peaks.

B. Criteria

During the initial periods of Phases II and III as determined by the Board of Control who will review the performance of the Intertie at intervals not exceeding three months, each California Power Pool Company will provide minimum spinning reserve equal to the larger of (1) minimum spinning reserves as required by Section 7.01 of the California Power Pool Agreement, or (2) spinning reserves in an amount not less than the amount of deliveries from outside its Area System scheduled at any given time for use in its Area System¹ as defined in the California Power Pool Agreement from all 500 KV AC Intertie lines between the California-Oregon border and Vincent Substation and the 750 KV DC line between the Oregon-Nevada border and Sylmar Switching Station then in operation.

C. Comments

The California Power Pool Agreement specifies that the Spinning Reserve Requirement of each system will be at least 5% of its daily peak demand.² The spinning reserve of a system as defined by the California Power Pool Agreement is the algebraic sum of

1. its unloaded Capacity Resources connected and ready to take load upon demand, plus
2. its Capacity Resources loaded with Economy Energy Service and ready to supply other load upon demand, plus
3. Economy Capacity being made available to it as Receiver, to the extent that such Economy Capacity is unloaded or is loaded by Receiver or Supplier with Economy Energy Service and ready to supply other load upon demand, minus
4. Economy Capacity being made available by it as Supplier, plus
5. such other Capacity as may from time to time be deemed in advance by the Board of Control to be includible in the spinning reserve of such party.

It is recognized that systems may possess other types of reserve capacity which may also assist in meeting an Area System deficiency. These may be in the form of generating capacity which is shut down, but subject to fast start (less than five minutes), interruptible customer loads which are automatically shed at frequency levels well above a normal load shedding program, or other means which may be available to system dispatchers to assist in bringing system generation and load into balance. Although valuable, these alternate forms of reserve are to be considered in addition to but not a part of the Spinning Reserve Requirements.

III. NORMAL AND EMERGENCY LOADING

A. Objective

It is the intent of this Ruling to establish criteria which will lead to effective utilization of the 500 KV AC and 750 KV DC transmission facilities during their initial periods of operation while assuring that high standards of service reliability are maintained.

B. Criteria

Normal loading—Initial period

1. Loading of the Pacific Intertie during the initial periods of Phases II and III shall normally be restricted to a level which will assure that the loss of all of the Pacific Intertie lines then in operation or the single contingency loss of a power resource on any of the Area Systems connected to the Pacific Intertie will not result in instability, interruption of firm load or voltage swings which could result in interruption of load.

¹ In regard to delivery of Northwest Power for use by the Central Valley Project, the Pacific Gas and Electric Company is deemed to use in its Area System the amount of such delivery less the amount of Central Valley Project pumping load which is subject to automatic interruption in the event of an emergency involving Pacific Intertie facilities.

² "An absolute minimum only and is not intended to be a standard."

2. Power, including spinning reserve located in the Northwest, under contract at the Oregon border by any party receiving power over the Intertie shall not exceed the amount of Intertie transmission capacity available to the party at the time.

3. A prudent margin to cover differences between assumed and actual conditions shall normally be maintained between actual loading and the estimated or demonstrated stability limit of the Intertie.

C. Emergency loading

Loading of the Intertie during and immediately after an emergency loss of generation or transmission is uncontrollable and will be limited only by the dynamic and electrical characteristics of the systems.

In the event of a facility outage other than momentary, which increases the loading of the Intertie, or any portion thereof, beyond the limits established in B. 1 and B. 3, it is essential that loading of these portions of the Intertie so loaded beyond such limits, be reduced to a level which will allow a subsequent facility loss without causing instability, interruption of firm loads, or voltage swings which could result in interruption of load.

Such reduction should be accomplished as quickly as practicable. If the facility outage is an emergency loss of generation on the Area System of a California Power Pool Company, such reduction shall be accomplished by such Company. If the facility outage is an emergency loss of Intertie facilities, such reduction shall be accomplished by such of the California Power Pool Companies as are at the time receiving power by means of the Intertie facilities so loaded beyond such limits; the amount of reduction to be made by each of such Companies shall be equal to the difference between the amount they are then receiving and the proportionate amount which they would be entitled to receive under paragraph 8.02 of the California Companies Pacific Intertie Agreement dated August 25, 1966 through the Intertie facilities under the then prevailing conditions of reduced loading.

To the extent that reserves are available, loading of the Intertie will be further reduced so as to reconstitute the margin delineated in B. 3, preceding.

D. Comments

The Engineering and Operating Committee will recommend loading limits based upon the application of the foregoing principles as soon as required studies can be completed. These recommendations will be reviewed periodically as operating experience is gained and further studies are completed.

IV. EMERGENCY LOAD SHEDDING AND TIE SEPARATION

A. Objective

It is the objective of the procedures here outlined (i) to provide for the maximum service reliability for the customers of each of the California Power Pool systems and reflects the fact that the integrity of each system as a whole can best be preserved and maintained by deferring as long as practicable the time when an interconnection between any two or more systems must be opened in an emergency affecting any one of such systems; (ii) and to give due recognition to the new situations raised by the joint ownership of facilities by various of the companies and the fact that under such circumstances a disconnection of one system from another can have the effect of depriving other participants from utilizing their portion of their jointly owned contractual rights or facilities; in this connection, the emergency procedures were designed to preserve, insofar as feasible, the interest of each utility's system to its share in its own jointly owned resources and to provide for protection through complete separation where the emergency had developed to the point that such separation was necessary to protect the particular utility's own system.

Such procedures are intended to implement, and are subject to, the rights and obligations of the parties to the California Power Pool Agreement thereunder and to the basic intention of each of the systems not to dedicate its facilities to the service of any of the other companies.

B. Criteria

Until experience or studies indicate that a change is desirable, the following criteria is adopted:

1. An Emergency Condition shall be deemed to exist at 59.0 c/s and an Extreme Emergency Condition at 58.4 c/s.

2. All systems shall maintain interconnected operation during Emergency Conditions and shall shed load in agreed upon amounts on a coordinated basis.

3. Under Extreme Emergency Conditions, systems may open interconnections.

4. Restoration of load and reclosure of ties following separation will be carefully coordinated between systems.

C. Implementation

Until experience or studies indicate that a change is desirable, the following guide is adopted:

1. Each system will shed approximately 15% of its load before frequency decays to 58.5 c/s. This will be accomplished in steps of approximately 5% each at 59.0, 58.8, and 58.6 c/s. If it is not feasible for a system to carry this out in 3 steps, an equitable 2 step or 1 step procedure can be established with approval of the Board of Control.

2. Systems may open interconnections at 58.4 c/s.

3. Further load shedding at frequencies of 58.4 c/s and lower will be at the discretion of each individual system.

V. INTERCHANGE SCHEDULING AND ACCOUNTING

A. Criteria

1. Each system shall at all times either operate a control area or be included within another system's control area.

2. All interchange shall be accounted for on a net area basis in accord with interchange schedules between control areas involved. Interchange scheduled to be received by, or to be delivered by a system included within another system's control area shall be accounted for on the basis of procedures agreed to by such system and the system operating the control area.

3. Since energy associated with certain transactions involving California systems is to be accounted for at specific locations such as "the Oregon border," with transmission losses deemed to be incurred on certain intermediate systems, the full scheduled quantity shall be accounted for by both the supplying control area and the receiving control area. The receiving control area by separate schedules shall account for delivery of transmission losses due each intermediate system which in turn schedules and accounts for receiving these transmission losses into its control area. Transmission losses associated with any transaction shall be established and accounted for to the nearest 1/10 of a megawatt.

4. Schedule changes shall normally be accounted for as occurring on the hour. Control schedule changes associated with these changes shall normally be made at a constant rate over a twenty-minute period starting ten minutes before the hour and terminating ten minutes after the hour. These requirements do not preclude schedule changes on the half hour, or such other time as the control areas concerned may find desirable provided (1) energy involved is accounted for by clock hours, and (2) control schedule changes associated with such changes are properly coordinated.

In an emergency, control schedule changes may be made at any time and at any rate agreed to by the control areas concerned.

5. In an emergency involving loss of generating plant, the control area concerned shall make use of available spinning reserves to restore its net interchange to schedule. In the event the deficient control area is unable to restore its net interchange to schedule, control schedule changes should be made with one or more systems willing and able to assist the deficient control area. Accounting for capacity and energy associated with this assistance shall be in accordance with applicable contracts.

6. Schedules made in advance shall be communicated when practicable in writing either by mail or by teletype, or other suitable means.

Schedules made on short notice may be made by telephone with written confirmation when required by either supplier or receiver. All schedules shall be communicated to each control area which requires the information in sufficient detail to provide both control setting and energy accounting data.

B. Comments

The need for uniform criteria for interchange scheduling to account for the capacity and energy associated with these schedules and consistent with the provisions of the various agreements is self-evident. Coordination of control

schedules and accounting schedules is essential to provide basic data for both proper control and for billing purposes.

It is recognized that certain aspects of these criteria may vary from previously established procedures. It is recommended that the parties review and revise any conflicting procedures if practicable to minimize the need for special and non-standard treatment.

VI. COORDINATION OF CONTROLS AND COMMUNICATIONS

A. Objective

In order to maintain the high degree of reliability which they have demonstrated in the past, the California Power Pool systems will coordinate their activities as follows:

1. In providing communication facilities for voice, metering, and control purposes and in the use of these facilities both within the individual systems and between the Dispatching Offices of the member systems.
2. In applying both manual and automatic controls to the problems of interconnected system operation.
3. In developing procedures for the scheduling and delivery of capacity and energy between the Pacific Northwest and the California systems.

B. Criteria

Communication Facilities

1. Each system should determine what information is vital to its operation as a part of the Pacific Intertie system and provide necessary communications facilities. Informational links should be as direct as possible so as to expedite any necessary corrective action.
2. Vital communication facilities should be provided with an emergency power supply capable of operating for an extended period and which can be automatically cut over in the event of a failure of the normal source.
3. Member Systems should provide both main and alternate voice channels between their respective dispatching offices and those of adjacent control areas and suppliers of Northwest power. These channels should be restricted in their use to operating matters with the highest priority given to communications between system dispatching offices.
4. Communications between the System Dispatchers of member systems should be informative but concise and limited to those matters which are essential to the operation of a well coordinated interconnection. Dispatchers should be instructed to discriminate between known facts and hearsay.
5. A reliable communication network will require periodic outages for preventive maintenance. Work performed by communication techniques requires detailed coordination both between the communication organizations of the respective systems and the dispatching organizations. All maintenance work on communication channels whether utilized for voice, metering, or controls must be arranged for in advance by the System Wire Chiefs with the dispatching Office having jurisdiction over the facilities before any work is begun.

C. Control Systems

1. It is essential that ties between systems be provided with appropriate telemetering for Automatic Control and System Dispatcher information. Alternate telemeter channels should be provided which transfer automatically in the event of failure in the primary channel.
2. Telemeter channels used for system control should fail safe. In the event of failure, Dispatchers on the system involved should receive an alarm.
3. Emergencies may arise which will require immediate action by Dispatchers without the benefit of Communication with adjacent control areas. Such conditions should be postulated and emergency plans prepared in advance which will make this kind of action possible.
4. Although the record on the reliability of dispatch control equipment is very good, procedures should be developed for handling situations which may arise as a result of the failure of the automatic dispatch equipment in any control area.

D. Scheduling

1. Arrangements for agreed upon transactions are to be made through normal communication channels in the control areas through which the energy will be transported. This is necessary so that the effect of each transaction may be

duly considered in evaluating other power schedules, line, and station equipment outages, etc.

2. If a requested transaction will in any way jeopardize the operation of any of the member systems, the request may be denied by the system in which the problem will be created. Cancellation of a transaction should be made through the same channels through which the original arrangements were made. All cancellations are to be confirmed in writing.

3. Each control area should have the capability which automatically permits a change in the delivery schedule to begin at a given time, and to be completed in a specified time at a uniform rate.

By the Board of Control.

R. N. COE.
H. P. BROWN.
E. M. FRAFFSON.

Senator CANNON. The next witness is Mr. Roland C. Dansby, committee member of Texas Municipal Power Pool, accompanied by Cary Young, city attorney, Garland, Tex. Mr. Dansby, and Mr. Young.

STATEMENT OF ROLAND C. DANSBY, COMMITTEE MEMBER OF TEXAS MUNICIPAL POWER POOL, BRYAN, TEX.; ACCOMPANIED BY CARY YOUNG, CITY ATTORNEY, GARLAND, TEX.; AND MAYOR JIM TOLER, OF GARLAND, TEX.

Mr. DANSBY. And the mayor of the city of Garland, Mr. Toler.

Senators, we want to say thank you for permitting us small operators from central Texas to appear before this group.

The Texas Municipal Power Pool represents the cities of Bryan, Garland, Greenville, and the Brazos Electric Power Cooperative, Inc. of Waco. The TMPP was established in 1963 and, at the present time, represents a combined generating capacity in excess of 400 mw.

From its inception, the TMPP has been dedicated to the proposition that a well-planned power pool will enable its members to serve their customers more reliably and economically. The TMPP has established operational procedure and planning guidelines to assure economic service and adequate spinning reserves to maintain a firm power system.

In evaluating the goals of electrical utility systems, both public and private, we feel that first consideration must be given to the goals of providing reliable and economic service. To achieve these goals, the Federal Government, in consultation with the electric utility industry, should be authorized to establish guidelines for planning and development of electrical power facilities; to set reliability standards; and, to assure that all utilities cooperate in achieving these goals.

Voluntary regional organizations should be formed to coordinate generation and transmission planning. Membership in these organizations must be open to all electrical utilities with legal recourse available to those denied membership or meaningful participation.

All extra-high voltage transmission lines should be consistent with comprehensive regional planning designed to fully develop the area's power resources to provide economic and reliable electrical power. Legal recourse should be available to any utility which is denied participation in planning transmission facilities or denied use of excess capacity upon reasonable payment. Any EHV transmission line not consistent with regional planning must be certified approved by the Federal Power Commission before construction is permitted.

The FPC should be authorized to allocate reserves between utilities unless it finds that, as a matter of fact, this would place an undue hardship upon a particular utility.

In planning transmission lines, consideration must be given to esthetic environmental values. The Federal Government and the electric industry should support research directed toward sophistication of transmission facilities. Investigation should be made on controlling the placement of EHV lines and upon restricting transmission lines from certain land use classifications.

The investor-owned utilities of Texas operate on an intrastate basis with no effective control on the State level. If the previously mentioned goals and policies can be implemented through the FPC, the consumers and public of Texas will benefit in several ways. To illustrate the situation with an example: The elected officials of the member cities of the TMPP are responsible to their consumers through the democratic process. On the other hand, the investor-owned utilities have no such system to assure that the public interest will be protected.

In view of the massive power failures that have occurred across the United States, and in view of the many inequities that exist throughout the electric utility industry, and particularly from Texas, the Texas Municipal Power Pool presents this statement and the accompanying resolution in support of Senate bill 1934 to assure the provision of reliable and economic electric power.

Senator Moss. Thank you very much, Mr. Dansby. Your resolution will be made a part of the record.

Mr. DANSBY. Thank you.

(The resolution follows:)

RESOLUTION OF TEXAS MUNICIPAL POWER POOL IN SUPPORT OF S. 1934, THE
ELECTRIC POWER RELIABILITY ACT

Whereas, the Texas Municipal Power Pool was organized by the cities of Garland, Greenville and Bryan, Texas, and the Brazos Electric Power Cooperative, Inc., Waco, Texas, for the purpose of making available economically feasible emergency electrical power for the customers served by the member entities; and

Whereas, S. 1934 and companion bills introduced in the 90th Congress would amend the Federal Power Act to provide rules and standards for assuring continuation of electrical power service throughout the nation in the event of emergency; and

Whereas, the membership of the Texas Municipal Power Pool are in complete accord with the purposes of the proposed Electric Power Reliability Act; now, therefore,

Be it resolved that the Texas Municipal Power Pool, acting by and through its Technical Operating Committee, does hereby endorse its support of S. 1934 and its companion house bills; and

Be it further resolved that Mr. Roland Dansby of Bryan, Texas, be and he is hereby authorized and directed to appear before the Subcommittee Hearing to be held on April 29, 1968 in Las Vegas, Nevada, to present to such Subcommittee a copy of this resolution, together with the statement of policy of the Texas Municipal Power Pool concerning the proposed Electric Power Reliability Act.

I, Edward Krause, President of the Technical Operating Committee, the governing board of the Texas Municipal Power Pool, do hereby certify that the above and foregoing is a true and correct copy of a resolution duly passed at a meeting of said committee held at Waco, Texas, on the 11th day of April, 1968.

EDWARD KRAUSE,
President.

Senator CANNON. Where do you acquire your power?

Mr. DANSBY. The generation of the individual members. Each has a certain section of his own generation. We are just working into this thing. We were hopeful of being able to develop a pool to where we will have common generation.

Senator CANNON. Do you have any outside sources now? Do you buy from outside sources, or is it all your own generating units?

Mr. DANSBY. All of the power now that we are allowed to consume is within the four members' generating capacity. We have, through Brazos Transmission Co-op, a connection with outside power.

Senator CANNON. Have you had any experience there where you have not been adequately served through these connections? You have heard a lot of testimony here this morning, that frankly I was very impressed by, as to what these companies have done to be sure that we didn't run into an outage such as we experienced that was to the contrary, where you are relying at least in part on an outside purchase of power.

Mr. DANSBY. Sir, I appreciate the testimony that I have heard this morning. I just wish that we had a little, in Texas, of what they have in Nevada and California, that is, the cooperation which I have heard testified to here this morning. You see, many, many years we operated as a small private city, all by ourselves, the city of Bryan, with which I have been personally involved for 26 years. All through those years we were never able to get any help from anybody under any circumstance. The total effort was to choke us to death. We were able to break out and form our own little pool through the good transmission facilities of Brazos Electric Transmission Co-op and connect ourselves with two other cities. And now the investor-owned utilities will recognize that we exist, but only through Brazos River are we able to have any interconnections at all. They still ignore us completely. And insofar as the individual cities are concerned.

Senator CANNON. So far as specific problems, I take it that you have not had any great outage problems up to the present time because of the lack of interconnection facilities?

Mr. DANSBY. We have had no interconnection available to us, so we had to provide our own reliability, and it has been an intensely expensive process.

Senator CANNON. But you have been able to provide it, and it is operating satisfactorily now?

Mr. DANSBY. For ourselves. But not with other people.

Senator CANNON. I would say, being from Nevada, and on behalf of the other people who have spoken here from Nevada and California, we want to thank you for the very fine compliment you paid our companies. I will say to the mayor and city attorney, we would be glad to have you come here and join us. You have heard the old story, if you can't whip them, join them. Join us. We can assure you of some pretty good power supplies here.

Mr. DANSBY. I would say the 750 DC transmission line that you are talking about here interests us considerably. We might accidentally try to get you to come to Texas and help us out. [Laughter.]

Senator CANNON. Senator Moss, do you have any questions?

Senator Moss. I want to congratulate Mr. Dansby, and what he has said, under the questioning of the chairman, indicates why he

stressed that the membership of these regional councils be open to all electric utilities, and that they not be selective. This is somewhat the same line of questions that I presented to Mr. Goss when he was here, asking if he had been excluded. From what you say, there are instances of being excluded from the interconnection.

Mr. DANSBY. Mr. friend, sir, Senator, the little people are excluded wherever they happen to exist. The city of Los Angeles, 40 years ago, I can recall when they were excluded in pretty much the same manner. But the city of Los Angeles and their production today is large enough that they are taken into account. Us little people, who are still little, have been completely ignored historically. We have tried to stick our nose in on the Federal Power Commission on several occasions, and we were estopped from having any participation whatsoever by our good friendly competitors who were large enough to override our desires.

I would like to make one statement in finalizing this. I am fearful, from the testimony presented here this morning, that if and when this does finally reach the floor, it is very possible it will be emasculated to the point where we would like to hold it open so that we can oppose it at that time, because I am fearful that the changes that will come about will destroy the philosophy. We are here today supporting the philosophy behind this, which makes all people equal, which up until now we have not been equal.

Thank you.

Senator CANNON. Mayor, or the city attorney, do you have anything to add?

Mayor TOLER. No, sir.

Mr. YOUNG. No, sir. Thank you very much.

Senator CANNON. The next witness is Neil W. Plath, president, Sierra Pacific Power Co.

You may proceed, Mr. Plath. You have two able assistants with you, I see.

STATEMENT OF NEIL W. PLATH, PRESIDENT, SIERRA PACIFIC POWER CO., RENO, NEV., ACCOMPANIED BY MERLE H. ATCHESON, SENIOR VICE PRESIDENT IN CHARGE OF OPERATIONS AND ENGINEERING, AND RICHARD CAMPBELL, COUNSEL

Mr. PLATH. Thank you, Senator.

Senator Cannon, Senator Moss, I have with me Dick Campbell, our counsel, and Merle Atcheson, senior vice president in charge of operations and engineering.

I am very pleased to be able to appear before this committee.

You have never seen a successful business yet which could not meet the demands of its customers * * * given sufficient advance knowledge of customer's needs and the availability of customers. Unlike the auto business or the clothing business there is very little style in the electric utility business, so we are dealing with two basic facts. First, we need to know, or project or estimate, how many customers we will have 5 years from now and, second, how much electricity these customers will need.

Armed with these basic facts and a record of accomplishment in providing all our customers with adequate and constant electric energy,

we need no superior planning force or extra involvement with the Federal Power Commission.

A few days ago the western editor of one of our largest industry trade magazines inspected our company unknown to me but with the approval and assistance of our public activities department. He freely interviewed, individually and privately, several of our top management people. He examined our plant free of interference or press agency. He examined our computer operations and our plans for growth.

He told us just before he left Reno that while Sierra Pacific Power Co.'s manpower level was at about industry level he believed our company had the capability and experience to operate an electric business four times the size of Sierra Pacific; that our resources are unbelievable for a company serving 70,000 customers.

This outsider's observations are more valuable than my own in stressing that we can do what our customers want, and what regulatory agencies require, without Federal interference.

Gentlemen, we have 45 years of intertie experience behind us, interties which have bound us to our power sources over some of the roughest mountains and through some of the lousiest weather man can imagine. It is true that we had a major and prolonged outage in 1960, but no mechanical or computerized device or regional or Federal decisions could have instantaneously restored the man-caused forest fire damage.

However, we have found a cure, at least a partial cure, for that catastrophe. Back in 1960 we purchased virtually all our electricity and we were a distribution company. Today, less than a decade later, we are generating, in our own plants, more than half the electricity our customers demand and in a few short months, probably will be able to generate all but the top of our peak load demands should the necessity arise.

Sierra Pacific changed this aging picture of unilateral reliance on Pacific Gas & Electric Co. through modern business practices, through the cooperation of an investing public, through the understanding of State regulatory commissions. It is doubtful this success story could have been written if the Congress and the Federal Power Commission had earlier added two layers conspicuously defined in the reliability bill.

Do not mistake my contentions. We recognize the value of outside sources of supply having lived with them for so many years. Right now we are in the discussion stage with Pacific Gas & Electric Co. for an additional emergency intertie in northeastern California which will benefit Sierra Pacific and Plumas-Sierra REA Co-op.

We are members of the Western Systems Coordinating Council, a joint effort by 19 private and 21 public utilities to voluntarily assure reliability of operations and service in over a billion square miles of 13 Western States and Canada.

We are charter members of WEST Associates and you will hear a separate statement from the organization at these hearings.

The electric power reliability bill which you are studying proposes regional planning organizations to insure that plans for bulk power facilities are adequate. We participate actively in two groups doing the same thing voluntarily now. In addition, such planning is a management function of a corporation even if done cooperatively with other companies in the same industry.

The reliability bill would authorize the FPC to establish planning and operating standards to enhance reliability. We, today, deliver reliability on a scale which no government function can match and we do it in the spirit of the free enterprise system; by planning, by technical excellence, by going into the marketplace to secure the finances necessary to match the growth of a service territory prescribed by two State regulatory commissions.

The bill provides for commission review and approval of extra high voltage transmission lines. The review procedure, the massing of authority in Washington, D.C., and the impossible confusion which would result all dictate that decisions such as these should be left to those who know the business best; those of us who must manage the bulk of the electric industry on the basis of sound economic judgments.

The fourth major requirement of the bill, authorizing the commission to require interconnections between bulk power generating utilities defeats the industry's own goal of building reliability through the orderly, and voluntary, process of interconnection and coordination of electric utility systems on the basis of manageable geographic areas.

Today, through the corporate laws of Nevada, Sierra Pacific's management with the specific authority of the board of directors meet the electrical energy needs of 209,000 good Americans. I do not believe our customers would enjoy improved reliability if that management authority was split and shared with regional councils of doubtful ability and a Federal Power Commission.

Back in 1935 the Congress, in its wisdom, virtually abolished certain types of holding companies in the utility industry. Today the Commission's own analysis of the proposed act shows that the regional councils would become permanent large-scale legal entities with many of the powers of a super holding company * * * without a holding company's financial ownership and responsibility. This noninterested holding company was what the Public Utility Holding Company Act of 1935 sought to eliminate.

Last July Sierra Pacific bid bonds for the construction of new transmission and generating facilities at the highest interest rate in the experience of the company. To pay 6½ percent interest on bonds to support generating and transmission facilities to supply service to others, something which the proposed act would allow the regional councils to do, would be a marriage with dubious prospects. To support others without the desire or ability to pay their share would burden us, impair reliability and to the misfortune of our customers, very likely increase the cost of electric service.

Our customers are loyal and they pay reasonable rates. Would it be fair to burden them with the expenses and problems of a marginal cooperative which some higher regional or Washington authority might order?

Plans by regional councils, approval by the FPC and the restrictive regulations relating to extra-high-voltage lines all spell trouble. If a mining company in Nevada needs extra high voltage to process new ores now it does not need the delays, the red tape, the complications which are built into the cumbersome and inefficient procedures incorporated in the so-called reliability bill. If that company needs power now we do not intend to delay service by ascending a progressively

more authoritarian chain of command. We are well regulated by the State and know what we can deliver.

Speaking of States, this proposed act seems to take away from the States some of their authority to regulate us. The proclamations of a regional authority where we could be outvoted would lessen the effectiveness of local management and reduce our ability to cooperate in local services. No Federal or regional authority should interfere with local regulation nor should they steer Sierra Pacific or any other utility away from primary objectives. The bill contains authority which could seriously impair local service and could lead to diminished control by local authorities which have the welfare of their own States, cities and people to consider.

It is not our intention to operate Sierra Pacific as a service facility for marginal cooperatives or municipals. Through WEST we do have a working planning relationship with government-type power suppliers but they are substantial and could hardly be classed as marginal. It is our impression that this bill may have been written to help save marginal municipal and public suppliers at the expense of investor-owned utilities. These same suppliers, when the record is complete, just might be able to outvote us at the regional conference table. Most of them can contribute little, though they certainly could interfere with-out reliability and sound business management.

With more than 30 years in the utility business behind me, I can visualize the management of the act as something chaotic. The FPC is physically unable to cope with the extended authority granted it to regulate natural gas rates from the fields and has had to resort to blanket approvals.

The commission's extended jurisdiction over hydroelectric developments illustrates how Government supervision leads to complications. The agency had 405 applications for licensing pending at the end of 1967. The FPC has informed the President that it expects to have 485 pending at the end of 1968 and 512 at the end of 1969. This hardly stands as an admirable record of swift handling, yet swift handling and sound, impartial judgments are absolutely necessary if the electric utility industry is to continue its record of progress.

Granting the commission additional authority creates logjams and these logjams reduce efficiency. Extend this authority to reliability controls, couple with it a secondary bureaucracy in the regional councils and the system just won't work. The inherent weakness of extended authority becomes even more apparent when one stops to assess the manpower situation. Electric system planners, those with the training, intelligence and competence to handle high-level interconnections are virtually unavailable. The need for technical excellence prohibits routine bureaucratic handling yet we would probably be subjected to just that because such planners are more valuable in the utility manpower marketplace than the commission or the regional councils could afford. Massing all these experts or Government payrolls by any technique would strip the utilities of their own key staff people.

May I quote from my own Nevada State Journal and the Wall Street Journal:

So far, the most reliable thing about (the bill) seems to be that it would increase governmental supervision and control of electric power producers, without in any way increasing electric power reliability for the consumer.

That reliability now is being advanced through voluntary cooperation among power companies (ours included), the FPC and its several committees organized to coordinate planning. Unless, and until, these voluntary efforts fail, the so-called electric power reliability bill should be short-circuited.

Gentlemen, I believe it is impossible to legislate out of existence technical failures such as the blackouts which precipitated this proposed act. I also believe it is impossible to legislate perfection no matter how sincere you may be.

But it is possible to write and enact bad legislation which will, in the end, handicap an industry which already enjoys a record of better than 99 percent reliability.

If it is the sincere desire of the Federal Power Commission and the Congress solely to improve electric system reliability then now is the time to implement this desire in two ways.

First, support and perpetuate the participation by appropriate Government agencies and public power suppliers in such effective groups as the Western Systems Coordinating Council and WEST Associates.

Second, write and pass a new and simple bill permitting voluntary Federal participation, through money and manpower, in research projects which will lead to technical perfection.

Joint research, open lines of communication, increased voluntary cooperation; these are the answers.

Authoritarianism is not the way to generate scientific achievement in a free enterprise society. Let us cooperate.

Senator CANNON. In this group that your coordinating council has with WEST Associates do you have any joint research programs there that you undertake?

Mr. PLATH. I think I would have you address, for the details of that, questions to WEST, Mr. Laffoon and Mr. Goss, also active on this. Mr. Atcheson is on the committee involved in research.

Senator CANNON. Do you undertake your own research program yourself, as was indicated by one of the witnesses a while ago?

Mr. PLATH. No, we do not. We don't feel that we are quite large enough to take research on as a project ourselves. So we join into various research things through the industry associations, the Edison Electric Institute. We support their research program. We have been involved in two nuclear powerplant participation programs in which we just put some funds in the pot that were designed to getting more knowledge in the atomic energy field. This is our participation researchwise.

Senator CANNON. Your only major interruption of power in recent history was that of the forest fire?

Mr. PLATH. That was the only major interruption. It is one thing we couldn't have conceived of, and I don't think anybody else thought it could have happened. Lines in places 3 to 4 miles apart, and the Donner Ridge fire burned 30,000 acres, a strip probably 15 to 18 miles long, and in places 4 and 5 miles wide. It wiped us out, and finally got the last 120-kv. line at 4 o'clock one afternoon. We were back in business to a great extent by 4 o'clock the following afternoon, and 4 hours after that had restored service to the whole area. This was when we had no generation of any significance of our own. We have done something about that in the interim.

Senator CANNON. Thank you Moss?

Senator MOSS. Thank you for a very good statement, Mr. Plath.

You stress voluntary cooperation. In a case where you couldn't get voluntary cooperation, don't you think it would be desirable to have some authority, say, in which all should participate?

Mr. PLATH. Yes. If there are places and people that can't get voluntary participation and action, that is a real unfortunate place to be. I feel that we in northern Nevada are exceedingly fortunate to have good neighbors at P.G. & E. We have been tied to them a good many years and we don't have a problem of noncooperation. We try to be good neighbors.

Senator MOSS. It works out happily for you. Some other places might have trouble.

Thank you.

Senator CANNON. Thank you very much, Mr. Plath, Mr. Campbell, and Mr. Atcheson.

The next witness is Mr. A. H. Forman, president, Arizona Public Service Co.

You may proceed, Mr. Forman.

STATEMENT OF A. H. FORMAN, PRESIDENT AND GENERAL MANAGER, ARIZONA PUBLIC SERVICE CO., PHOENIX, ARIZ.

Mr. FORMAN. Mr. Chairman and members of the committee, my name is A. H. Forman. I am president and general manager of Arizona Public Service Co.

This statement is given on behalf of Arizona Public Service Co., an electric and gas utility company which serves over 220,000 electrical customers in 11 of Arizona's 14 counties.

We are members of WEST Associates and support fully the statement which will be given to this committee on their behalf.

In addition, I would like the committee to know of a statement made by my company before the Arizona Corporation Commission on January 11, 1966. Our statement was made in compliance with their order 38364. This order directed the electric suppliers under ACC jurisdiction to appear before that body to discuss system reliability, and to testify as to steps taken to insure reliability. Nonregulated suppliers were also invited and did attend.

After a lengthy review of our system conditions, the statement closed with the following conclusion:

It is the company's position that legislative measures to attempt to insure service reliability are not needed and, in fact, could be detrimental.

The potential developer of equipment might be inhibited since he would have the dual responsibility of selling his ideas to both the utility and the regulatory commissions.

If detailed operating regulations were prescribed by law, the system operators may comply only to the extent of the law, whereas now the operators' job is never done until the electric service is restored.

Lastly, the problem of writing, passing, enforcing and updating such legislation, would be quite burdensome.

This statement still reflects the considered opinion of our company.

Thank you very much for the opportunity to appear before you.

Senator CANNON. Thank you, Mr. Forman.

What position do the nonregulated suppliers take before your corporation commission?

Mr. FORMAN. Precisely the same as ours.

Senator CANNON. They did take the same position?

Mr. FORMAN. Yes, sir.

Senator CANNON. Thank you very much for your statement. We appreciate it.

Mr. FORMAN. Thank you.

Senator CANNON. The next witness is Mr. Elmer F. Johnson, president, Nevada Power Co.

Mr. Johnson, we are happy to have you here today. You may proceed.

STATEMENT OF ELMER F. JOHNSON, PRESIDENT, NEVADA POWER CO., FOURTH STREET AND STEWART AVENUE, LAS VEGAS, NEV.

Mr. JOHNSON. My name is Elmer Johnson. I am president and chief executive officer of Nevada Power Co., Fourth and Stewart Streets, Las Vegas, Nev.

I first want to thank this committee for affording me the opportunity to express my views and those of my company on the proposed "Electric Power Reliability Act of 1967," Senate bill 1934. My comments, which I will make as brief as possible, represent the point of view of a relatively small investor-owned electric utility, with less than 6,000 shareholders, locally managed, and with a board of directors all of whom have important interests in the State of Nevada and most of whom are residents of Las Vegas. Except for a modest amount of wholesale energy supply to two nearby utilities in Needles and Death Valley, Calif., all of our 81,000 customers are in the State of Nevada and 96 percent of these are supplied from our system in southern Nevada that serves the Greater Las Vegas area, including the Nellis Air Force Base near North Las Vegas and the Atomic Energy Commission and National Aeronautics and Space Administration test sites in nearby Nye County.

While we are small in size as compared to most of the utilities that will testify before this committee, I do want to emphasize that we attach the same importance to reliability of service. Good electrical service is vital to this thriving community. In more than 35 years of employment in the investor-owned electric utility industry I have had it drummed into me that there are three basic jobs for us to do, and in the following order:

1. Provide efficient and reliable service to our customers at low rates.
2. Assure stable working conditions and adequate compensation for our employees.
3. Assure for our investors, security of their investment and a fair return.

Other utility executives may express these principles in a different manner, but they will all agree that efficiency and reliability of service are uppermost with all of us. Nevada Power Co., has its service problems as do all other suppliers but a recent index of reliability report filed with the Edison Electric Institute showed that in 1967 our average customer received service 99.98 percent of the time, with comparable figures of 99.97 percent, and 99.98 percent in 1966 and 1965.

Our planning is directed toward further improvement of this performance over the next 5 years, although we must recognize that there is not a very great margin to be improved upon. This improvement is to be gained in all three segments of our operations, that is, in the low voltage distribution supply system to our customers as well as in the main transmission and in the generation facilities. The distribution system is the least romantic part of our business and while outages in segments of this system generally affect relatively few customers at a time, it is a matter of fact that the customer's power goes off more often from low voltage distribution system failures than from all high voltage transmission and generation troubles. The technology of distribution system construction is constantly improving and we take full advantage of this and of upgrading construction quality at every opportunity to minimize these outages.

Most of the electric requirements of our Greater Las Vegas customers are produced in generating units connected directly to our own system. We presently have only one 230,000-volt transmission line interconnection to the outside, with the Parker-Davis transmission grid of the Bureau of Reclamation which in turn ties to the systems of the various utilities in Arizona and to the Upper Colorado River storage project. By 1972 we will have three additional 230,000-volt transmission line interconnections with this system as well as with the new extra-high-voltage system being built by members of WEST Associates and which is outlined in the detailed statement of aims and objectives or to be presented today for the record by the WEST Associates representative.

As a member of WEST Associates, my company is participating to the extent of 14 percent in the 1,510,000-kilowatt Mohave generating station, which is also outlined in the aforementioned statement, as well as in a segment of the new extra-high-voltage system. The construction of this station and the other project of WEST members at Four Corners of equal size, interconnected through the new extra-high-voltage system with the eight members of WEST participating in these projects will result in an agreement between these parties dealing with required generation reserves as well as with normal and emergency operating practices for their interconnected systems.

All of this planning was done before the advent of Senate bill 1934. Had this proposed reliability act been in effect at the time, I fail to see how it could have been of any help to us or how it could have improved the reliability aspect of our planning. On the contrary, if there had existed the need to comply with the provisions of such an act, with the inevitable delays involved in Federal regulatory control, in addition to the many other complex problems involved in joint ventures of this type, the present time schedule for the various projects probably could not have been achieved.

I also wish to touch upon what might have happened to electric service in the Greater Las Vegas area in the 4 years from 1961 to 1965 when we experienced a population growth of nearly 80 percent, had the proposed act been in force.

In the latter part of 1961 we had just installed our third steam unit of 74,000 kilowatts net capability and entered 1962 with a total of our own generation and Hoover Dam power allocation of some 30 percent in excess of peak demand. Our planning was geared to an 8 per-

cent annual growth in line with general thinking at that time. Resumption of large-scale atomic bomb testing at the end of 1961, and the development of a nuclear propulsion site, coupled with Las Vegas becoming a major convention center, triggered a population growth that finally resulted in an increase of nearly 80 percent in the following 4 years. This presented a change of trend of growth that in the company's opinion dictated a total revision of our planning, and immediate action. In less than 2 years, in 1962 and 1963, we initiated construction of 75,000 kilowatts of added 230,000 volt interconnection facilities, a 30,000-kilowatt emergency diesel-electric station, a fourth steam unit of 85,000 kilowatt net capability and the first 120,000-kilowatt steam unit of a two-unit coal-fired plant that involved 230,000-volt transmission lines and facilities. These additions were completed barely in time to meet the requirements of the population expansion. I can assure you that any delays other than those required for site selection, engineering, design, and construction would have been of serious consequence. If we had been faced with the inflexibility imposed by the proposed act and the applications and statutory periods of delay resulting from it, not to mention the added manpower required for these purposes, which, incidentally, we did not have, the ensuing paralysis would have resulted in a critical power situation in the area.

The bill states that one way of assuring an abundant supply of electric energy with the greatest possible economy is by providing that all utility systems and their customers shall have access to the benefits of coordination and advancing technology on fair and reasonable terms. Existing regulatory patterns, both Federal and State, have already resulted in the customers of all utility systems benefiting from coordination and advancing technology on fair and reasonable terms, as attested to on page 278 of the 1964 National Power Survey of the Federal Power Commission. The survey notes that the ultimate consumers of electricity in 1926 paid an average of 2.7 cents per kilowatt-hour, which by 1940 had been reduced to 2.1 cents, to 1.8 cents by 1950 and to 1.68 cents by 1962. Subsequent statistics published by the Edison Electric Institute on page 63, section VII, of its Statistical Year Book of the Electric Utility Industry for 1966 show that the price has continued to decline to 1.56 cents per kilowatt-hour in 1966.

In the case of Nevada Power Co. the ultimate consumer on its Southern Nevada system in 1967 paid an average of 1.2 cents per kilowatt-hour and we had an unusually low average residential rate of 1.14 cents per kilowatt-hour. It would appear that the proposed act is not needed to assure a declining cost of electric energy in our country.

We are opposed to the formation of regional councils with compulsory membership such as are envisaged in the proposed law to be superimposed on groups that have already been formed by electric utilities. We also believe the councils as proposed will result in additional inflexibility and delays. Nevada Power Co. favors voluntary organizations such as we now have. We are members of WEST Associates which is doing a splendid job in the Southwest and which in turn supported the formation of the system coordinating group known as Western Systems Coordinating Council. We expect to join WSCC

when the grid system tying in the Mohave plant is placed in service or at such earlier time as we feel that we have something to contribute to this group.

In summing up I would state that Nevada Power Co.'s position on Senate bill 1934 is as follows:

1. It tends to cause unreliability, not reliability, by bringing in construction postponements through statutory periods of delays for plant expansion and hearings which tend to bring about litigation and further delays.

2. It interposes the additional administrative bodies of a regional council and the Federal Power Commission in the planning function. Applications, et cetera, before these bodies will consume time which would better be used in the construction of facilities.

3. During the 4-year period from 1961 to 1965 the population of the Greater Las Vegas service area increased nearly 80 percent. If the proposed act had been in effect the company would have been faced with serious and unnecessary roadblocks in its obligation to supply adequate and reliable service.

4. The bill tends to move the Commission from a regulating agency into the management of the utility. We believe these functions should not be mixed.

5. We see no way in which the bill will benefit the company or our customers.

6. Finally, who will pay for these compulsory regional councils, Commission activities, and the salaries of the utility personnel who will be required to submit annual reports, data, and so forth, to the councils and the Commission? The bill, if enacted into law, will require a bigger Commission which means more taxes; it will require the formation of regional councils and additional manpower for the utilities.

Nevada Power Co. is proud of maintaining the lowest residential rates of any taxpaying utility in the country—1.14 cents per kilowatt-hour—but it can maintain low rates only if it keeps its overhead expenses to a minimum and if it does not have to pay higher tax rates and higher costs due to added requirements of Federal and regional regulating authorities. Senate bill 1934 means higher taxes, higher costs to the utility, and higher costs to our own customers. We are opposed to it.

Thank you.

Senator CANNON. Thank you very much, Mr. Johnson.

What do you think the answer is, or is there a necessary answer to this problem of noncooperation which has been mentioned several times today?

Mr. JOHNSON. I have no personal knowledge of noncooperation from my own personal experience. In the Southwest we were one of the charter members of WEST Associates. We had some fear of this association with different types of organizations in it. We decided that we had to face it. I think in WEST Associates we have complete coordination between all utilities, publicly and privately owned. I believe the Western Systems Coordinating Council is the same way. It is my belief that the trend in the country is that way at the present time. It is also my belief, from what I have heard from the legal committee of WEST Associates—I am not prepared to testify on the legal

aspects of this, but from what they have told me—the Federal Power Commission has ample facilities at this time in dealing with coordination of power systems for nudging private power companies and others to get together. Certainly until the Federal Power Commission uses its present authority, or can prove conclusively that it does not have authority, and there is resistance all over the country or in parts of the country to this cooperation, until that time, I believe it would be unwise to attempt legislation. I think the burden of the proof is on the Federal Power Commission that it cannot obtain this cooperation.

Senator CANNON. Thank you very much, Mr. Johnson, for a very fine statement.

The next witness is Mr. C. M. Laffoon, chairman, Management Committee, Western Energy Supply and Transmission Associates. You are on here in two capacities.

Mr. LAFFOON. Just one.

Senator CANNON. You are listed twice. Whatever statement you will have to make, you will make right now?

Mr. LAFFOON. Right now.

Senator CANNON. You may proceed.

STATEMENT OF C. M. LAFFOON, CHAIRMAN, MANAGEMENT COMMITTEE, WESTERN ENERGY SUPPLY AND TRANSMISSION ASSOCIATES, ALBUQUERQUE, N. MEX.

Mr. LAFFOON. I have a brief statement which I will present, and a longer statement which we have requested to be filed.

Senator CANNON. Very well. Your lengthy statement will be submitted and made a part of the record. You may proceed.

Mr. LAFFOON. Thank you.

My name is Carthrae M. Laffoon, vice president—electric, of San Diego Gas & Electric Co., and I am the chairman of the Management Committee of Western Energy Supply and Transmission Associates.

This statement was authorized by the directors of Western Energy Supply and Transmission Associates on behalf of the WEST Associates membership.

Consisting of 23 electric power suppliers, both public and private, WEST Associates is a regional power planning and coordinating group for a nine-State area in the Pacific Southwest, which includes the Rocky Mountain area. Among the 23 WEST members are 12 investor companies, six municipal systems, three rural electric power supply cooperatives, one irrigation district, and one State power authority. The WEST membership roster is attached to this statement.

The primary objective of WEST is to foster, encourage, and promote the integrated regional planning of generation and transmission facilities of member electric systems. Technological development in generation facilities, fuel sources, and high voltage transmission are among the considerations in such planning.

We believe that a brief account of the formation and accomplishments of WEST Associates will be of value as your committee deliberates the proposed legislation to amend the Federal Power Act.

There are two chief reasons why we presume to say that the experience of WEST Associates will be of interest and value to you gentle-

men. First, the aims and objectives of WEST closely parallel the objectives stated in the Federal Power Commission's National Power Survey.

Also, in considering legislation such as that before your committee, it is important to know that the members of WEST were actively and voluntarily working together effectively long before S. 1934 was proposed by the FPC.

The solid record of accomplishment by WEST member utilities is contained in the statement filed for the record of this committee. We also wish to refer the committee to the statement made by Mr. Floyd L. Goss, chairman of the Western Systems Coordinating Council, on December 20, 1967, at the regional hearing in Seattle. WEST and WSCC are excellent examples of what is being done in the West on a voluntary basis.

The members of WEST Associates recognize there is public interest to be considered in the matter of electric reliability.

The directors of WEST have discussed the necessity for legislation of the type proposed by S. 1934.

They are not in favor of such legislation. The main reasons are:

1. WEST members believe that the indicated planning procedures would hamper rather than enhance reliability by extending the already lengthy time lag between initial planning of facilities and their ultimate operational date.

2. The separation of responsibility from authority is unwise and unworkable. Particularly when a Federal agency proposes to assume final authority to accept, reject, modify, or initiate utility system planning—but expects the utility to continue its responsibility to raise money to finance the planned facilities, to construct them on schedule, and to operate the system.

3. The FPC in this legislation seeks far-reaching controls over the electric industry in matters that have nothing to do with reliability, such as aesthetics, land use, economics, historical values, and territorial integrity.

4. Based on the experience of the members of WEST, it is believed that voluntary regional planning organizations such as WEST Associates and the broader WSCC (which was supported by WEST so there would be an embracing organization devoting its attention to reliability) will adequately protect the public interest in reliability.

5. If there are areas of the United States which do not have active, effective voluntary regional planning organizations such as WEST Associates and WSCC, they should be encouraged by the FPC under its existing authority to form "interconnection(s) and coordination" for the purpose of reliability. This authority for "interconnection(s) and coordination" exists in the Federal Power Act, 16 U.S.C. 824.

In conclusion, we repeat that WEST Associates is not in favor of S. 1934; its provisions are not only unnecessary in order to assure reliability, but they would in fact be detrimental to reliability.

We have made an effort to keep these remarks brief and to the point. However, we do request the committee's permission to file for the record a more detailed statement of the aims and objectives as well as the record of accomplishments of WEST Associates.

Thank you for the opportunity to make this statement.

(The membership roster follows:)

MEMBERSHIP ROSTER, WESTERN ENERGY SUPPLY & TRANSMISSION ASSOCIATES

Arizona Public Service Company.
 Arizona Electric Power Cooperative, Inc.
 Arizona Power Authority.
 City of Burbank.
 City of Colorado Springs.
 Colorado-Ute Electric Association, Inc.
 El Paso Electric Company.
 City of Glendale.
 Imperial Irrigation District.
 City of Los Angeles.
 Nevada Power Company.
 Pacific Power & Light Company.
 City of Pasadena.
 Plains Electric Generation and Transmission Cooperative, Inc.
 Public Service Company of Colorado.
 Public Service Company of New Mexico.
 Salt River Project.
 San Diego Gas & Electric Company.
 Sierra Pacific Power Company.
 Southern California Edison Company.
 Southern Colorado Power Company.
 Tucson Gas & Electric Company.
 Utah Power & Light Company.

Senator CANNON. Thank you very much, Mr. Laffoon.

Your longer statement will be made a part of the record.

Mr. LORDAN. Mr. Laffoon has another statement with respect to another aspect of this?

Senator CANNON. No.

Mr. LAFFOON. We found that the statements of WEST and the other members covered all the area we wished to cover.

(The statement referred to by Mr. Laffoon follows:)

STATEMENT BY WESTERN ENERGY SUPPLY AND TRANSMISSION ASSOCIATES

This report presents the historical background of WEST Associates and supplements the statement made to the U.S. Senate Commerce Committee regional hearing at Las Vegas, Nevada on April 29, 1968.

The board of directors of WEST Associates authorized this statement on behalf of the association.

Utility Responsibility in the Pacific Southwest and Rocky Mountains

Following World War II, the entire Rocky Mountain and Pacific Southwest region has experienced an amazing growth. Between 1950 and 1960, population increased 39 per cent, compared with 19 per cent for the nation as a whole.

But population increases do not tell the entire story. With the advent of the atomic, electronic and missile ages, thousands of new industries located in these areas. Thousands of supporting industries followed, plus all the smaller businesses and services required to complement the mushrooming economic activity of the region.

The economy diversified, and almost overnight these areas discovered they had matured into a man-sized economy with a superman-sized appetite for electric energy.

The utility systems that have the responsibility for supplying this energy are heterogeneous. Many are combination gas and electric companies; some are all-electric systems; there are big ones and little ones; compact systems and sprawling systems.

And there is also a mixture of types of systems: investor-owned companies, municipals (including the nation's largest), power and irrigation districts, rural electric power supply cooperatives, and others.

While many of the systems differ in organizational philosophy, they also have much in common. Foremost among the common interests is an overriding

dedication to giving customers the best possible service at fair and reasonable rates.

Working toward these goals, the utility systems in this region have engaged for more than 20 years in a fairly comprehensive program of interconnection and pooling. The utilities and their customers all shared in the economies and operating benefits inherent in such a program.

However, in the past decade particularly, the utilities found they also shared many common problems. Inflationary trends in the costs of labor, materials, fuel and money were offsetting the benefits of technological advances and cost-cutting measures.

In this relentless battle against costs, the utilities began taking even longer range views of fuel supplies, larger-scale generating units, and the advantages of integrated EHV transmission systems.

Many of the utilities concluded that if they were to continue to plan, build and transmit power independently of each other, they would lose the advantages and economies inherent in the real large scale generating units and EHV systems.

The Magnitude of the Utility Challenge

At the urging of one of the utility companies in the area, the internationally known consulting engineering and construction firm of Stone and Webster Corporation in 1963 conducted a preliminary survey of the future power requirements of the Pacific Southwest region.

The findings of this survey were so impressive that several utility companies commissioned Stone and Webster to conduct a more comprehensive study of the region's power requirements through 1985.

This latter study, completed in 1964, showed that within 20 years the growth of the region would require the installation of a minimum of 36 million kilowatts of new generating capacity.

It also revealed that tremendous benefits would accrue to the utilities and their customers if the approach to providing the necessary facilities was based on regional planning concepts.

Western Energy Supply and Transmission Associates

Based upon the philosophy stated above, articles of association forming an organization to encourage integrated regional planning and study were signed in Albuquerque, New Mexico, on September 22, 1964. The birth of WEST Associates marked an expansion of cooperation among power suppliers in a nine-state region.

Obviously, the 11 founding members believed in the concept of regional planning. Equally as important, they believed that if this concept was to be effective, the organizational structure of WEST Associates had to be flexible enough and broad enough in concept and vision to accommodate the various types of power suppliers in the region.

The great diversity of WEST's present membership speaks for itself. Among today's 23 members are 12 investor companies, 6 municipal systems, 3 rural electric power supply cooperatives, 1 irrigation district, and 1 state power authority.

The WEST membership roster (Exhibit A) is included among the attachments to this statement.

The Aims and Purposes of WEST

WEST was established with the following objectives:

1. to foster, encourage and promote the integrated regional planning of generation and transmission facilities of member electric systems engaged in the sale of electrical energy in the States of Arizona, California, Colorado, Idaho, Nevada, New Mexico, Utah, Texas, Wyoming and such other States as may, from time to time, be determined by the Board of Directors, giving recognition to, among other matters, technological developments in generation facilities, fuel sources and high voltage transmission facilities;
2. to foster, encourage and promote for the integration of the facilities of, and the cooperation among, member electric systems and other electric power suppliers owning generating and transmission systems in order to realize and effect the maximum benefits for the individual systems and the public, including, without limitation, the utilization of peak load diversity and the reduction of generating reserve margins to insure the lowest cost power;
3. to render research, technical, informational and advisory services to members in connection with the foregoing; and

4. to provide for the dissemination of all types of information relating to the foregoing for the use of the members; provided, however, that the absolute right of each member of the Association to retain the local control and responsibility for, and to own or otherwise provide facilities for, the generation and transmission of electric energy in order to meet the electric power requirements of its own customers shall not in any way be abridged or affected by membership in the Association.

The Magnitude of the WEST Program

The planning program proposed was of a magnitude never before attempted by any group of power suppliers, in the United States or abroad.

First, the region represented by WEST member systems was an area equal to approximately one-fifth the size of the United States.

Second, WEST members were ready to invest \$10.5 billion during the first 20 years to provide the necessary facilities to serve their respective customers.

One of the most important concepts of WEST is that it *does not construct or own any facilities; it operates as a planning and coordinating group only.*

Individual member utilities sponsor and own projects, undertake the necessary financing and share costs and kilowatts. The WEST concept remains one of encouraging joint planning and cooperation by the members, with individual members systems free to conduct those programs they feel necessary to fulfill their responsibilities to their own customers.

WEST membership is made up of systems which own major generating and transmission facilities, and which have local utility responsibility for meeting the electric power requirements of their customers.

West Member Projects

On the following pages is an accounting of the various projects in which various WEST member utilities are involved. These are indicative of WEST member cooperation with systems sharing mutual interests in geographical areas contiguous to the WEST region.

Four Corners Power Plant

A 1½-million-kilowatt addition to a 575,000 KW coal-fired power plant in the Four Corners area of northwestern New Mexico.

Construction of two 755,000 KW units. Target date for the first unit is June of 1969, with the second one year later. Construction is about 30 percent completed.

When the present expansion is completed, the total generating capacity of 2,085,000 KW will rate the facility as one of the largest thermal electric plants in the world.

The cost of construction and operation of the new units will be shared by each utility in the same proportion as its share of kilowatt output. Participating are: Southern California Edison Company, the project manager; Arizona Public Service Company (owner of the existing plant and, on completion; operator of the entire plant); Public Service Company of New Mexico; Salt River Project; Tucson Gas and Electric Company and El Paso Electric Company.

Coal for the existing and expanded plant is supplied by Utah Mining and Construction Company from a strip mine at the site. Coal deposits are leased from The Navajo Tribe. The plant site, also leased from the Navajos, is on Reservation land.

The plant will cost about \$150 million, with another \$30 million invested in the mine.

Mohave Generating Station

This project now under way is called the Mohave Generating Station. This is a \$189 million project involving construction of two 750,000 kilowatt coal-fired generating units in Clark County, Nevada. They are being built alongside the Colorado River, about three miles downstream from Davis Dam and Lake Mohave.

WEST members participating in the Mohave project include Southern California Edison Company, the Los Angeles Department of Water and Power, the Nevada Power Company and the Salt River Project.

An unusual feature of the plant is the fact that coal for fuel will be transported 275 miles through a slurry pipeline from Black Mesa, Arizona. This will be the only slurry pipeline of its type in the United States, a shorter one having operated previously for a brief time in Ohio. Over a 35-year period, up to 117 million tons of coal will be used to fuel the two units. Mohave Unit No. 1 is

scheduled to be ready for commercial operation in October of 1970. The target date for Unit No. 2 is June, 1971.

Construction progress on the Mohave units now stands at about 5% complete. Concrete placement has been completed for the turbine-generator mats, and structural steel is beginning to rise.

Kaiparowits Development

Another example of imaginative planning is the proposed development of the vast coal resources of the rugged Kaiparowits Plateau area of southern Utah.

Subsidiary companies of three WEST members are conducting studies to determine the feasibility of locating a large, coal-fired generating plant in the area. Coal reserves are believed to be sufficient to support a 5 million kilowatt plant for its economic life.

The three participants have been conducting protracted negotiations with the U.S. Bureau of Reclamation for a water withdrawal contract. The state of Utah has allocated 102,000 acre feet of Colorado River water for the proposed project. The water would come from an arm of Lake Powell behind Glen Canyon Dam.

Several major coal companies submitted preliminary proposals for mining and delivering the coal to the proposed plant. The subsidiary companies are now investigating the most feasible physical layout and development of the mine.

Participating in the preliminary investigation are subsidiary companies of Arizona Public Service Company, San Diego Gas and Electric Company and Southern California Edison Company.

Navajo Plant

The Salt River Project is proceeding with plans to construct a coal-fired thermal generating plant near Page, Arizona. This plant, tentatively named "Navajo," will be jointly owned by several southwestern private utilities and public agencies and will be unique in that a block of capacity will be reserved for the pumping requirements of the Central Arizona Project.

Present plans call for construction of three 750,000 kilowatt units. Turbine generators have been ordered and the first unit will be available for service in June, 1974. Coal for this plant will be from the Navajo reservation near Kayenta in northeastern Arizona. The mine will be operated by the Peabody Coal Co. and the coal will be delivered to the plant site, a distance of some 60 miles, by unit train.

The water that is needed to operate this plant will be diverted from Lake Powell. The entire program has been discussed with representatives of the Bureau of Indian Affairs and the Bureau of Reclamation. The culmination of these meetings will be a water contract for the use of water.

EHV Helps Make it Possible

The huge power generating projects already described have been made feasible by improvements in the technique of economically transmitting electricity over long distances—the phenomenon called "extra-high-voltage" or EHV.

With power plants often located hundreds of miles from load centers, WEST member utilities are deeply involved in operating, constructing and planning EHV lines. These range from the giant Pacific Northwest-Southwest Intertie to the relatively smaller transmission projects in the sparsely populated inland areas.

Western United States Power Transmission Study

It became apparent that an even larger concept than the Pacific Northwest-Southwest Intertie was needed.

The utilities in the 11 western states have become part of a vast interconnected power system.

The Western U.S. Power Transmission Study is investigating the behavior of 46 million kilowatts of electrical power and energy that will flow through the 50,000 miles of this interconnected power network covering about one-third of the United States.

Although originated by the WEST engineering and planning committee, the study is not restricted to WEST members. It includes high voltage and EHV transmission systems of investor-owned utilities, municipal systems and various Federal power agencies.

The first phase of this study indicated some of the effects of large blocks of power traveling in either direction over an oval-shaped transmission loop, often referred to as "The Donut." (The interconnected system around the perimeter of the central area somewhat resembles the shape of a doughnut.)

Western Systems Coordinating Council

Another important outgrowth of the WEST program has been the formation of the Western Systems Coordinating Council.

Initially, WEST planners looked at the present and proposed transmission system within the WEST area. This logically grew into the Western U.S. Transmission Study outlined above. In turn, the load flow and stability studies of the "Donut" helped stimulate the organization of Western Systems Coordinating Council.

The intent here is not to describe the objectives or workings of the Council since this has been done adequately in a statement to this committee at the regional hearing in Seattle on December 20, 1967.

We do want to emphasize, however, that the Council is not intended to supplant the work being done by regional groups such as WEST. The Council's primary duty is to study the interconnected systems in the interests of promoting reliability.

Northwest-Southwest Intertie and Other EHV Lines

One of the most dramatic demonstrations of the industry's willingness and ability to work voluntarily and cooperatively to advance the technology of the nation's power system has been the development of the widely publicized Intertie.

There is no need to detail this project for you gentlemen. Suffice to say that among the utilities involved are a number of WEST members: Pacific Power & Light Company, Southern California Edison Company and the City of Los Angeles Department of Water and Power.

Nearly every WEST member utility has at least one EHV project in the building or planning stage. Among these are:

Arizona Public Service Company is building a 500 kv line from the Four Corners Plant to the Colorado River, 366 miles to the west. There it will connect with Southern California Edison Company's 500 kv line to the Los Angeles area. In mid-1967, Public Service Company of New Mexico built a 345 kv line from the Four Corners area to Albuquerque. A second 345 kv line along the 156-mile route is to be completed this year.

El Paso Electric Company is building a 345 kv line from a point north of El Paso to Albuquerque, a distance of 230 miles. Salt River Project plans a 500 kv network from its proposed Page Plant to the pumping plants of the Central Arizona Project, and to help tie together the Four Corners Plant, Phoenix area generation and the Mohave Plant.

Nevada Power Company, Salt River Project and Southern California Edison Company are jointly building a 57-mile 500 kv line from the Mohave Project to a substation in the vicinity of Hoover Dam.

Southern California Edison Company is also building a 176-mile 500 kv line from the Mohave Project to the Los Angeles Area.

Nuclear Generation and Desalination Projects

WEST Associates members have a special incentive for developing nuclear power generation, particularly the dual-purpose desalination plants.

The region covered by the WEST planning program is largely desert or semi-desert. The population of the area is expected to triple within the next 20 years, and the utilities are well aware that water supply will be an ever-growing problem.

Following are brief descriptions of four nuclear generating and/or desalination projects involving WEST member systems:

Bolsa Chica Island, the world's largest sea water desalting plant, with ultimate capacity of 150 million gallons daily, has been proposed to be located on this man-made island off the coast of southern California. The Metropolitan Water District of Southern California would construct multi-stage flash evaporator facilities to distill sea water. Three WEST members have proposed to build nuclear generating units to produce power for their systems, and to supply low-cost steam for the desalting operation. Los Angeles Department of Water and Power would finance, build and operate one of the two 750,000 kw nuclear generating units; Southern California Edison Company and San Diego Gas & Electric Company would have a similar arrangement to share in the second 750,000 kw unit.

San Onofre Nuclear Generating Station, a 450,000 kw plant dedicated in January, 1968, is one of the largest commercial nuclear power plants in the United

States. Southern California Edison Company and San Diego Gas & Electric Company built and own this plant.

The new *San Diego Saline Water Test Facility* is testing modules for desalination plants that will produce up to 50 million gallons of fresh water a day. As a result of its proposal to the U.S. Department of Interior, the San Diego Gas & Electric Company modified one of its major generating units to provide low cost thermal energy and electricity for operation of the test facility, and provided free use of land for the Office of Saline Water test facility.

Fort St. Vrain Nuclear Generating Station, development and design work is proceeding on this 330,000 kw proposed plant to be built and operated by Public Service Company of Colorado. (Brief status report to come from PSC.)

Resource Study Program

A comprehensive "total environment" study of the resources needed to produce electric power for one-fifth of the continental United States to 1980 is under way by WEST Associates.

The resource study program will identify, catalog and analyze the potential resources for power development throughout the entire nine-state WEST region. Resources being studied include fuel (thermal, hydro and nuclear), water availability, and potential plant sites.

Along with reliability and economy of electric service, a vital objective of this study program is the development of resources on a total environment basis. This applies to conservation of natural resources, recreational facilities, air and water pollution controls, aesthetic considerations, and other matters of public interest.

The resources study represents a further extension of the WEST-developed regional planning concept.

WEST and the Federal Government—A New Era of Cooperation

You have read how WEST Associates was organized and what our purposes are. You have read, too, how WEST members are actively carrying out these objectives through numerous projects which are already under way or in advanced stages of planning.

But WEST's history also constitutes another extremely important development. This is the real accomplishment of reducing friction and creating harmony among the Federal government, other public agencies, and private utilities. WEST has spawned a new era of cooperation.

Some of you may recall that Secretary of the Interior Stewart Udall met with WEST's Board of Directors on June 1, 1965, about nine months after WEST was organized. Mr. Udall related that he and President Johnson had talked about finding a formula for joint public and private resource development in the Colorado Basin that would be a model for our country. The Secretary said, if the Department and WEST members planned together and worked together on a regional basis, consumers would benefit from the economies of modern large-scale electric technology, and that this need not sacrifice the independence and integrity of the many private and public electric utility systems serving the region.

Only a scant week later, WEST members appeared before the Federal Power Commission and stated that we believed the WEST program indeed would substantially increase understanding between private and public power operations, including those of the Federal government.

Recent history shows that we now are enjoying a new era of cooperation.

Today, WEST is the unique example in America of how all types and sizes of utilities and agencies—rural cooperatives, municipal utilities, private companies, and Federal agencies—can work together voluntarily to accomplish regional developments, while each retains its local control and service responsibility.

Senator CANNON. Thank you.

The next witness is Mr. H. A. Dalton, general manager, Brazos Electric Power Co-op, Inc.

You may proceed, Mr. Dalton. We are happy to have you here.

**STATEMENT OF H. A. DALTON, GENERAL MANAGER, BRAZOS
ELECTRIC POWER CO-OP, INC., WACO, TEX.**

Mr. DALTON. Mr. Chairman and members of the committee, my name is H. A. Dalton. I am general manager of the Brazos Electric Power Cooperative, Inc., a power supply cooperative with headquarters in Waco, Tex. The Brazos Electric Power Cooperative is owned by and serves 19 rural electric distribution cooperatives and provides electricity to over 80,000 consumers in 57 of the 254 counties in the State of Texas. The Brazos Electric Power Cooperative and its 19 member-owners are Texas corporations operating under the Electric Cooperative Corporation Act of the State of Texas.

In order to conserve the valuable time of this committee, this statement will not repeat the detailed suggestions urged by the Brazos Electric Power Cooperative and the other rural electric cooperatives of the Nation in collaboration with the National Rural Electric Cooperative Association, most of which have been incorporated in the bill introduced by Congressman John Moss as H.R. 12322 and compared with the administration bill, S. 1934, in the Congressional Record, Senate of January 30, 1968, pages S615-S621.

The major interest of the Brazos Electric Power Cooperative and its 19 members relate to their belief that the Electric Reliability Act of 1967 may, for the first time, place Brazos in a position of receiving the full benefits of coordination and advanced technology on fair and reasonable terms. Over the 27-year life of the Brazos Cooperative, an excellent record of continuity of service has been achieved. Such achievement, however, has been costly. Economies have been obtained by interconnecting with municipal electric systems in the Brazos service area and by the formation of the Texas Municipal Power Pool consisting of Brazos and the cities of Bryan, Garland, and Greenville, Tex. Such economies would have been greater and could be greater, however, if the concepts of the Electric Reliability Act of 1967 were in effect.

The service area of the Brazos Electric Power Cooperative is dominated by investor-owned utilities operating intrastate. The agreements which the Brazos Cooperative has been able to negotiate with such investor-owned utilities have been beneficial to the cooperative but do not come close to achieving the benefits of coordination and advanced technology as envisioned by the Electric Reliability Act of 1967. The agreements between the Brazos Cooperative and the investor-owned utilities, for instance, require that the Brazos system not be interconnected either directly or indirectly with any other electric system operating interstate.

It is the opinion of the Brazos Cooperative that savings to it and the interconnected cities of hundreds of thousands of dollars would be available if the objectives of section 401(b) of the Electric Reliability Act of 1967 became law without dilution by amendments offered by the investor-owned utilities. As an example of the savings, the smaller generating units now required in the Texas Municipal Power Pool cost approximately \$135 per kilowatt of generating capacity to install whereas larger units which technology now makes available can be constructed for \$100 less per kilowatt. Thus, there is a potential savings in investment cost of \$10 million or more by constructing one 350,000-

kilowatt unit as compared to four 80,000-kilowatt units. Further, the efficiency of the larger unit may well enable the generation of electricity with 25 to 30 percent less fuel, which with 20 cents per million British thermal unit fuel costs could save \$30,000 to \$36,000 on each 50 million kilowatt-hours of electricity produced.

While it is clear that the intent of the Electric Reliability Act is to include cooperatives and small municipalities, it would be extremely helpful to such smaller utilities if the sections of the act providing for such inclusion could be strengthened. The Brazos Cooperative is responsible for service to a quarter million Texans which, though very small in comparison to the millions affected by the Northeast blackout of November 1965, is extremely vital to each Texan affected. And, such smallness should certainly not preclude the Brazos Cooperative from active participation in regional planning and having an accepted voice on the requirements in the area it serves.

Attached to this statement as exhibit A is a copy of the resolution passed by the board of directors of the Brazos Electric Power Cooperative, Inc., at its meeting held in Waco, Tex., on Wednesday, April 3, 1968. Through that resolution and by this statement, the Brazos Electric Power Cooperative urges the enactment of the Electric Reliability Act of 1967, amended only where necessary to assure the accomplishment of the objectives so plainly stated in section 401(b) and specifically excluding self-serving amendments not designed to be in the public interest.

Mr. Chairman, that is my statement. Should I read the resolution?

Senator CANNON. It will not be necessary to read the resolution. It will be made a part of the record.

(The resolution follows:)

EXHIBIT A

CERTIFIED COPY OF RESOLUTION IN SUPPORT OF THE FEDERAL AID PROPOSED ELECTRIC POWER RELIABILITY ACT

Whereas, the Brazos Electric Power Cooperative, Inc. is the power supplier for nineteen member owner rural electric distribution cooperatives which serve consumers in 57 counties in the State of Texas; and

Whereas, because of the intrastate operations of the privately owned utilities in the area served by the Cooperative, great difficulties have been encountered over the years by the Cooperative in procuring economically feasible emergency power and energy for transmission and generation outages; and

Whereas, the Cooperative is fully cognizant of the continuing need to provide dependable electric power and energy to the some 250,000 Texas citizens who look to the Cooperative for such dependable service; and

Whereas, the Cooperative is of the unqualified opinion that the best interest of its consumers and the best interest of the people will be served by an adequate Electric Power Reliability Act empowering the Federal Power Commission to develop the necessary rules, regulations and procedures to assure such citizens of continuity and reliability in the receipt of electric service: Now, therefore, be it

Resolved, That the Brazos Electric Power Cooperative, Inc. record its support of the principles set out in Senate Bill 1934 and companion House Bills HR 10721, HR 10722, HR 10727, HR 10772, HR 10779, HR 10816, HR 10885, HR 10935 and HR 12322 and hereby instructs its General Manager, H. A. Dalton, to furnish Senators Frank E. Moss and Howard W. Cannon with a copy of this resolution and to assist, for the security of the consumer, in securing the passage of such Electric Power Reliability Act.

Senator CANNON. I do not quite follow you on why the bill would help you on this type of plant you are talking about. By constructing one 350,000-kilowatt unit as opposed to four 80,000 units.

Mr. DALTON. If we were interconnected into the north and south Texas power pool as now exists as a member, and were allowed to participate, rather than as an interconnection, this would allow us to purchase power from the interconnected system to back up the 350,000-kilowatt unit, whereas without this we could not.

Senator CANNON. You are really talking in terms of basic supply of power here, rather than just in terms of interconnection to provide reliability; aren't you?

Mr. DALTON. No. This would provide reliability, too.

Senator CANNON. Obviously, it would provide reliability, Isn't this involved in your problem of basic supply, what you are talking about here, rather than just the reliability problem?

Mr. DALTON. I see it as an interconnecting problem, with the companies in the area. We have had very good—don't misunderstand me—we have had very good cooperation with the utilities in the area. But we just haven't had it as good as we think we are entitled to have.

Senator CANNON. One thing I read into your statement, you are trying to make it clear that you are not getting involved in the interstate operation. I am wondering, in view of the recent hassle on the so-called Holland-Smathers bill, whether if you get into a situation as you are describing you may find yourself under the thumb of the FPC. Do you think there is any possibility of that?

Mr. DALTON. We would have no objections, really. We feel that the regional committees could handle any obstacles that have been brought out here today. It is our feeling that they could. Under the interpretation of the act, the Reliability Act is somewhat exaggerated upon in that the Federal Government is proposing to come in under the act and take over and manage the business of the utilities. I don't see it in that light at all.

Senator CANNON. I would be inclined to agree with you that I wouldn't necessarily read that into it. But I would certainly agree that any time any of these commissions get started, the next step is one to get additional power, not less power. That is pretty well established historically. It is continuously an extension of power rather than a reduction of possible power.

Mr. DALTON. I certainly agree with you that you can't take away much.

Senator CANNON. Thank you very much, Mr. Dalton.

Mr. DALTON. Mr. Chairman, do you have a request from J. R. Cobb, general manager of the Texas association, to permit me to file his statement?

Senator CANNON. I am not aware of it, but you certainly may file his statement. We will make it a part of the record.

Mr. DALTON. It was sent to you on April 23, or possibly later, and to Senator Moss.

Senator CANNON. It will be filed and made a part of the record if you will give it to committee staff.

(The statement follows:)

STATEMENT OF JAMES R. COBB, GENERAL MANAGER, TEXAS ELECTRIC COOPERATIVES, INC.

Mr. Chairman, my name is James R. Cobb, General Manager of the Texas Electric Cooperatives, Inc., an association of 79 Rural Electric Systems serving approximately 454,000 members in the state of Texas.

Members of our organization have quite a stake in the availability and reliability of electric power in our state. Well over 60% of the electric power our systems purchase direct or have delivered to them is provided by Investor Owned Electric Utilities in our state.

Although Texas has been blessed with an abundance of natural gas at reasonable rates for economic electric power production, we can forecast the time when this fuel will to a great extent be supplemented by lignite, coal, or nuclear fueled generating plants.

As a matter of fact, the newest and one of the largest new electric power plants in our state is to be a lignite fueled 500 megawatt power facility.

The Federal Power Commission study completed several years ago by electric power industry committees pointed rather strongly to the need for larger E.H.V. transmission lines to be built to carry power from large generating plants established in various parts of the nation. In addition, this F.P.C. study pointed out that to properly make use of maximum time and seasonal diversity so necessary for economical and reliable electric power production, that much of the power in Texas could be exchanged with out-of-state utilities (both private and public) which could result in lower new costs to the Texas utilities as well as those in other areas. As a matter of fact, Texas utility companies, municipally owned electric systems, and cooperatives could realize sizeable economies in the exchange of approximately 1,500 megawatts of power with other regions located outside the state. We believe that in addition to the economy of exchanging power with other areas of the nation through the use of E.H.V. transmission lines that such interconnections will also result in greater reliability of service for all of the utilities in Texas. Several companies operating in Texas are already operating interstate and are availing themselves of power interchanges which will provide more reliable service and the economies that come from time and seasonal diversity of power requirements.

As stated in the Resolution from our Board of Directors, electric cooperatives are naturally interested in securing their wholesale power at the most economical rates. Equally important to our members is the real necessity to know that everything is being done to assure continuous uninterrupted power to electric cooperative consumers. We know that Texas does not have a Public Service Commission or any other regulatory body that concerns itself with generation or transmission of power from a reliability or economic standpoint.

We therefore, believe that it would be of state and national interest for the Federal Power Commission to establish the necessary rules, regulations, and procedures to assure our 454,000 consumers that they will receive continuous reliable and adequate electric service. We respectfully urge favorable consideration of Senate Bill 1934.

Thank you.

J. R. COBB.

Whereas, Texas Electric Cooperatives, Inc. is the state association of the rural electric cooperatives in Texas, both generation and transmission cooperatives and distribution cooperatives, and

Whereas, the rural electric cooperatives in Texas serve some 454,000 member consumers who are entitled to electric service at the lowest possible cost and the highest level of reliability; and

Whereas, an Electric Power Reliability Act which would empower the Federal Power Commission to develop rules and procedures to assure the citizens of the United States with an abundance of reliable electricity is in the best interest of this state and nation: Now, therefore, be it

Resolved that Texas Electric Cooperatives, Inc. record its support for the passage of an Electric Power Reliability Act embodying the principles contained in Senate Bill 1934 and House Bills HR 10721, HR 10722, HR 10727, HR 10772, HR 10779, HR 10816, HR 10885, HR 10935 and HR 12322 and that copy of this resolution be furnished to Senators John E. Moss and Howard W. Cannon and that the General Manager furnish to the Senate Sub-Committee such information and testimony as may be appropriate in support of such legislation.

Senator CANNON. The next witness is Charles G. Thrash, Jr., Esperanza Building, Houston, Tex., representing South Texas Interconnected System.

Mr. THRASH. The South Texas Interconnected System decided last

week that it would not present its statement here today and I so notified Mr. Lordan, but he had already printed up the list.

Senator CANNON. The next witness is Mr. William M. Bennett, commissioner, California Public Utilities Commission, San Francisco, Calif.

STATEMENT OF WILLIAM M. BENNETT, COMMISSIONER, CALIFORNIA PUBLIC UTILITIES COMMISSION, SAN FRANCISCO, CALIF.

Mr. BENNETT. Senator Cannon, thank you for the opportunity of appearing.

By way of background, I have been assistant attorney general of the State of California, chief counsel of the California Public Utilities Commission, its president and now a member thereof.

I would say at the outset, so the committee may not have any false notions that we are not talking about free enterprise. We are talking about regulated enterprise, which is the way it ought to be.

We have a partnership arrangement of strong utilities, and hopefully, strong regulation, and there is a partnership arrangement, and the regulatory tie is what makes it. All the arguments you heard speak of bookkeeping, records, and delay and this is part of the function and obligation the utilities took when they got a franchise from the people to serve them, to do something which Government itself might otherwise do. They are public utilities.

As a commissioner, I have no authority under the Public Utility Act of California concerning energy sources in Oregon, Nevada, or any other States. As the utilities and populations grow we will one day in California have energy from the State of Washington and conceivably Canada itself.

We are not just talking here about California. We are talking about the Eastern States, such as Rhode Island, Maine, and other States where this is critical. And I view it as critical in California.

I fully support this legislation. I think it is necessary. I think it is long overdue. If you don't enact it you are going to have a regulatory gap here.

As a commissioner, when an interstate line comes into California I have no authority over it whatsoever. I say that as a matter of law. The California Public Utility Act specifically excludes control upon my part and that of my commission, over an interstate line.

Second, whether the act excludes it or not, it is stating what is basic constitutional law. The Federal courts or Congress would quickly remove any authority I had to place a burden or interfere with or stop an interstate line. For that reason the projects such as WEST—a vast capital investment of the western utilities, and the Bonneville arrangement, and the lines coming here from Nevada, you must have Federal control over this. Otherwise there will be no control.

Senator CANNON. Let me ask you. How do you account for such a good record that has been achieved here in the Western States if what you say is a fact?

Mr. BENNETT. To the great credit of the utilities, there is no question about it. If you were to ask me that question 2 or 3 years ago, whenever it was, and I had been a commissioner from the State of

New York, I would have said, "Because we have excellent management and excellent utility practices," and then came the power blackout.

No one can guarantee that it will not occur in the West. In fact, it is conceivable that it will because of the inadequacy of human nature and equipment.

What we are simply asking here is that you insure, through Federal control, the minimum exposure the public of the State of California and other States have to a blackout. And I think that it is just as necessary here as it is in the eastern jurisdictions, and there is no guarantee that it isn't going to happen.

If we judge by the experiences in not only the East, but the Rocky Mountain States, conceivably it will happen. Somebody has to plan for it. Because of the nature of the utilities they should be subject to rigid control, not only in their present practices but in their planning so far as this is concerned.

I am vitally interested in the matter of conservation. The cases cited by the commission paper of California indicates in each instances that the plea of the conservationists was denied. In the Duncan case with respect to a line coming across the northern part of the State, a rice field, 40 farmers filed a complaint. I dissented to the commission which denied relief. The lines came across the ricelands of northern California. Even if the commission wanted to deny that line, I maintain as a matter of law, we would have been prevented from so doing by appeal to Federal court based upon the fact we would have been placing a burden upon interstate commerce. We don't have that good a record on conservation in California.

Morro Bay has been in a sense destroyed as to beauty and life in the city itself, by P.G. & E., which placed the steamplant there and went through a period of claims for property damage because of fallout. P.G. & E. tried to place a plant at Bodega Bay, and it wasn't until the Atomic Energy Commission said you shall not build here that they withdrew.

It is necessary, in view of the fact that the lines are going to be interstate, and must be planned, and they don't go through historic sites or places of beauty, that some Government authority tell utility management you shall not do this.

Utility management occasionally is at variance with the commonly accepted good taste, conservation, esthetics. The record in California shows it quite clearly. I think it is necessary, so far as California is concerned, simply because you have a utility system in our State and in the United States supported by the ratepayer. He is paying for all of this. They talk about the cost of additional regulations. Who is to measure the cost of a blackout if it is to come, involving San Francisco or Los Angeles? That's the other side of the coin.

Senator CANNON. Do you think, though, that the proposed steps here are going to really get at the heart of this problem on blackout? There have been several claims here this morning that I was somewhat impressed by, that kind of leave a question in my mind as to whether or not any of the type of regulations we are considering here would have that type of effect.

Mr. BENNETT. I can't predict with certainty, obviously, because this is legislation to apply to future events and not present events. You

have an industry completely regulated, except for something like this and you have management decisions and unless you pass this bill, they are beyond any public control or review. Management is not infallible. Neither is Government, I'm quick to admit. At least it is the historic system whereby we have had some regulatory or control agency second-guessing management decisions. That is what this is all about.

Senator CANNON. What about the time delay that we heard about this morning for the FPC to act when these people need to go ahead with decisions and not be confronted with long regulatory and administrative delay.

Mr. BENNETT. I am not impressed with that, Senator. We hear this all the time from the utilities. It is just a polite way of saying in less blunt words that they don't like regulation.

The natural gas industry under the Federal Power Commission and the National Gas Act has grown to sixth, fifth, or possibly higher industry in terms of capital assets and size in the United States, all under Federal regulation, and properly so. The electric industry has reached its present point of preeminence in our economy under Federal and State regulation, and properly so. These are the usual arguments you hear, that in some way bureaucrats—that's how we are usually styled—are going to hamper industry, are going to be confiscatory, interfere with industry practices, or as one industry man said, lose all personnel to the Federal agencies. They should check Federal salaries before they get too alarmed.

I suggest it will not happen. These are the old arguments. From the time I first heard them—I heard social security was some form of Marxism. And it is the same here.

What I am trying to impress on this committee is that utilities are supposed to be regulated. If they are not then the monopoly laws should be brought down full upon them. I take exception, for example, to the propriety of the Power Commission provision that they should be immune from the antitrust laws. They should not be immune from the antitrust laws.

Unless you pass this legislation, we run afoul of the probability that all these regulations may indeed violate the antitrust statutes of the United States. You cannot leave an industry such as this affected with a vital public interest delivering a commodity at the unfettered discretion of management.

It has occasionally been known in the past that utility management has committed error. I am suggesting that it might happen again. Utilities have lived with regulation. They do in California. They do here. This scare talk here is simply that. They will work well under it. Above and beyond that is the U.S. Constitution which protects them very well. No Federal or State statute can run afoul of that.

In my judgment, borrowing on my experience and knowledge of the California utilities, it is in the interest of the California ratepayer that this legislation be enacted, otherwise you will have a hiatus, one day a blackout, and there will be nobody with any authority on the side of Government to do anything about it. If something occurs in Oregon, there is nothing my commission, despite anything it desires, can do about that. That is where it can begin.

I wholeheartedly urge that the legislation be enacted. I think it is not only good for Californians but it is desirable and necessary for the country as a whole.

Senator CANNON. Thank you very much, Mr. Bennett. We appreciate your testimony. Your written testimony will also be made a part of the record. Thank you.

(Mr. Bennett's prepared statement follows:)

STATEMENT OF COMMISSIONER WILLIAM M. BENNETT, MEMBER, CALIFORNIA PUBLIC UTILITIES COMMISSION

I am appearing today in complete support of legislation which is both desirable and necessary and particularly to the State of California.

I have been in public law for 20 years and have practiced regulatory law since 1954. I have represented California before most of the federal regulatory agencies including the Federal Power Commission and have presented cases involving regulatory principles to most of the federal courts including the United States Supreme Court. I have been a Deputy Attorney General of the State of California, Chief Counsel of the Public Utilities Commission, President of the Commission, and now in 1968 still a member of that Commission.

It is obvious that in 1968 with the sources of energy located beyond state borders that a state possess neither the physical resources nor the jurisdictional power to control blackouts. California's major electric utilities have arrangements with bordering states whereby energy generated in Oregon or Nevada, and in the future in further distant western states, bring electrical energy across state lines.

The process of interstate energy precludes effective or indeed any state regulation in this field and because of the nature of the federal-state relationship federal authority is required.

The Public Utilities Act of the State of California is deliberately designed to exempt from state regulation matters of interstate commerce such as here. Section 202 of the Public Utilities Act provides "Neither this part nor any provision thereof, except when specifically so stated, shall apply to commerce with foreign nations or to interstate commerce . . ." It is apparent, of course, that the State of California could not enact law giving it power over failures originating in Oregon, Nevada, or any other state. California's jurisdiction is limited to its territorial area. I have read the presentation to be made on behalf of the majority of the California Commission and note that it is an interesting dissertation and is valid only if one ignores interstate arrangements. All of the activities, safeguards, commission-utility conferences, "voluntary cooperation" arrangements—these are simply the historic exercise of jurisdiction on matters occurring within California. There is no possible way in which the Commission of which I am a member—and I am speaking now as a matter of law—can do anything about power failure at Bonneville or in Nevada. The recently enunciated Colton Case of the United States Supreme Court makes this very plain.¹

So far as land use is concerned it is imperative that the Federal Power Commission be given authority to preserve California insofar as possible consistent with public power needs. This Commission has no power in my judgment to deny or to restrict a power line from Oregon because of aesthetic considerations simply because state action which prohibits the construction of an interstate power line would be struck down as a burden on commerce. Further than that this state agency in the past has shown no disposition whatsoever to curtail utility activity in the name of conservation of aesthetics. The Duncan case cited on page 8 of the Commission report (Duncan v. PG&E Co., 64 CPUC 788 (1965)) represented a refusal of this Commission to change the routing of a power line upon the complaint of a number of Californians. The same is true of the other cases cited. As an aside but relevant this Commission with a clear power of certification over nuclear plants has not yet, in the face of heated objections of conservationists as well as myself, refused a utility application for a beautiful beach site or wherever. (See Bodega Bay Atomic Park Decision No. 65701, Diablo Canyon Nuclear Plant C. 7871). And in my judgment, in view of the sad fact of a weakened Commission dominated by a business oriented administration, the public may expect even less protection.

¹ FPC v. Southern California Edison, 376 U.S. 205, 1964.

This committee should realize that a public utility by nature must be subject to broad public controls. They are in the literal and legal sense public servants, corporations privately managed for the benefit of the public. No California utility official can give any guarantee or present any program whereby blackout can be controlled through the exercise of state power. The experience of the eastern states demonstrates that. Power blackouts at the local level are not uncommon, are recurring and visit selected areas of California sometimes with annoying regularity. To conceive that this Commission, PG&E, or Southern California Edison can in some way control energy sources in other jurisdictions is unthinkable.

The best case for this legislation lies in the fact that California's electric utilities have interconnected not only with themselves but with utilities to the north and east. And the anachronism that voluntary cooperation or self-regulation can accomplish that which the force of law can accomplish is wishful thinking.

I should point out that the position of the regulated electric utilities of California and that of the present California Commission are identical. Both positions in my judgment are contrary to the public interest. In view of the reality of a now utility oriented California Public Utilities Commission whose present position paper is the product of conferences and consultation with California's electric utilities, PG&E and Southern California Edison, I deem it imperative that the Federal Power Commission have clear unmistakable authority to compel regional planning in view of the increasing interstate nature of electric energy; to establish standards for extra high voltage stands to insure reliability; to require federal authority for the construction of such lines as well as interconnections between bulk power generating facilities.

It is necessary that the public interest and particularly that of California's electric consumers be represented by government. It has happened in the past and may conceivably occur in the future that the judgment of PG&E may occasionally be self-serving or at variance with the public interest or conceivably contrary to it. It has been my experience that utility management does upon occasion fail to detect let alone respect the true interest of consumers. Hopefully this may be a thing of memory but to guarantee against such recurrence the legislation as here proposed is necessary.

My views are those of one who has been in regulation for more than a decade. It is contrary to the present view and philosophy of the current administration of the State California which places heavy emphasis upon state's rights—never really defined and "matters of local concern" never really defined. The reasons advanced by the PG&E Company, Southern California Edison, and the majority of the California Public Utilities Commission are the same reasons which have historically been advanced against most, if not all, protective federal legislation in this or in any other field. The growth and financial health of the public utility sector of the United States demonstrates quite clearly that legislation such as here has not only been in the public interest, indeed it has been in the interest of the public utilities themselves despite utility preference to disregard public utility statutes and regulation. In my view the position of the other members of the California Public Utilities Commission is a return to laissez-faire doctrine, a thing of impossibility in view of the now interstate nature of California's public utility electric corporations. California is no longer the simple nonindustrial agricultural community of the early part of the century. Its dependence upon electric energy is vital and correspondingly the need of its people for federal protection has increased. I think it safe to state with accuracy that present California Commission thinking plans no such efforts as are proposed by this legislation, indeed we are in a period of permissive and almost self-regulation so far as this agency is concerned.

Senator CANNON. We are ready for the film, gentlemen. That concludes all of the witnesses unless I have overlooked someone.

STATEMENT OF ROBERT P. O'BRIEN, VICE PRESIDENT OF SOUTHERN CALIFORNIA EDISON CO.

Mr. O'BRIEN. My name is Robert P. O'Brien. I am a vice president of Southern California Edison Co.

In considering the contribution which Southern California Edison could make to these hearings, it occurred to us that a number of abstract concepts inherent in the proposals before this committee could be defined in some depth. This could be helpful to those who are making recommendations, as well as to the committee in its final deliberations.

One fundamental question is, "Just what is reliability of electric service?" We decided that a comprehensive analysis of this concept might be helpful. We assembled those people in our company whose responsibility it is to provide the ingredients which establish and maintain reliability.

After a thorough discussion of the numerous factors involved, we reduced the information to a question and answer format with illustrated examples of the subject matter being discussed. This detailed definition of electric service reliability and its fundamental component parts is now recorded on film.

The people who have supplied the answers, and who have an aggregate experience in the electric business of over 200 years, are in the order of their appearance in the film, Mr. W. E. Montgomery, vice president; Mr. Oliver P. Roemer, manager of distribution; Mr. Robert N. Coe, vice president; Mr. James H. Drake, executive engineer; Mr. Jack B. Moore, vice president; Mr. Robert P. O'Brien, vice president, and Mr. Jack K. Horton, chairman of the board and chief executive officer.

Upon the advice of your staff, we have taken excerpts from the full film which will give those present today an indication of the film's content. We will supply a copy of the full film for the committee's records. In this way, the full committee at a future executive session may have the opportunity to review in depth this most critical factor in its final deliberations on the proposed legislation.

(Motion picture presentation.)

Senator CANNON. Thank you, Mr. O'Brien.

That concludes the hearing. The committee now stands in recess, subject to the call of the Chair.

(Whereupon, at 1:35 p.m., the committee was recessed, subject to the call of the Chair.)

COMMENTS BY IDAHO POWER CO. TO STATEMENTS OF E. C. SCHLENDER

At the committee hearing in Salt Lake City on April 26, 1968, Mr. E. C. Schlender, Executive Secretary of the Snake River Power Association, Inc., presented a statement purporting to relate to the proposed Electrical Power Reliability Act, Senate Bill 1934. This statement in large part concerned itself, not with proposed S. 1934, but instead contained erroneous statements with respect to both Idaho Power Company and conditions existing on the power systems in the West. For this reason Idaho Power Company believes it is necessary to put in the record these comments clarifying some of the statements and assumptions presented by Mr. Schlender.

Mr. Schlender, in referring to the loop of transmission lines extending from the Northwest to California and around into Arizona and then back into the Northwest, stated: "So here we have a giant system which no one planned, no one designed, and no one operates." This statement is incorrect. The construction and design of the component parts of this system were carefully planned by the various companies that constructed their respective portions hereof in order to tie in with the other sections of the loop. The operation of this loop in the Northwest is coordinated and planned by the operating committee of the Northwest Power Pool. Other areas in the West have their respective operating committees and all of these operating committees coordinate their operation under and sub-

ject to the Western Operations Committee, which is a part of the Western Systems Coordinating Council.

Mr. Schlender then stated that: "Just what the power flow characteristics of this system will be when the two 750 KV lines are energized, no one knows." This again is not correct. The 750 KV ties will occur several years in the future. The operation and effect of these ties are now being actively studied by the planning and coordinating committee of the Western Systems Coordinating Council.

In his statement Mr. Schlender indicated that the ties of this loop in southeastern Idaho between the Utah Power & Light Company's system and Idaho Power Company's system were small and weak. This again is not factual. The existing ties are adequate to carry on the bulk power transactions between the respective systems. The present ties consist of 1-230 KV line, 1-161 KV line, 1-138 KV line and 2-46 KV lines. With these ties there has been no problem in transmitting power back and forth as required for the Idaho and Utah sections of the loop.

Reference was made to 50 voltage disturbances in southeastern Idaho in the irrigation season in July and August, with the implication that these outages were the fault of Idaho Power Company. In actuality, most of these 50 voltage disturbances were disturbances occurring on other systems or acts of God. This was clearly stated in a letter from Mr. Joseph C. Swidler, Chairman, of the Federal Power Commission, directed to the Honorable Ralph Harding, House of Representatives, dated October 6, 1964, which letter stated as follows:

"An examination of the records for July and August, 1964 shows that fifty voltage disturbances occurred which were of sufficient magnitude to be logged. Some information is available for 48 of these disturbances. It appears from these data that 22 disturbances were attributable to problems which arose on Idaho Power Company's system and on systems to which it is connected, 5 to local troubles at or near the Bureau of Reclamation Minidoka Power plant, 17 on the Raft River system, and 4 to low voltage supply at the U.S.B.R. Minidoka bus which may have resulted from a combination of conditions not now identifiable as to cause.

"Of the 22 disturbances on the Idaho Power Company's system and connected systems, three were due to troubles originating on the Utah Power & Light system, one on the Colorado Public Service Company in Colorado, one on the Pacific Power & Light Company in Wyoming, and two from lightning strikes on the Bureau of Reclamation facilities in southern Idaho. The 15 disturbances attributable directly to difficulties on the Idaho Power Company system include eight caused by lightning and brush fire, two by substation faults, four by abnormal voltage conditions, and one by some unidentified cause. The fact that only a small minority of these 22 disturbances are directly identified with system deficiencies of the Idaho Power Company is not to suggest that the condition of the system might not have compounded the difficulties in some of the other cases."

As can be seen from the foregoing quotes from the letter of the Federal Power Commission, the difficulties that occurred to the irrigators in southwestern Idaho were not the result of any act by or deficiency existing on Idaho Power Company's system, but due to causes beyond its control, including in some 17 instances problems that occurred directly on the Raft River electric system.

Mr. Schlender also suggests that Mr. Roach of Idaho Power Company refused to make a joint study of the electrical facilities of Idaho Power Company, which transmit the power both for the Company and Bonneville Power Administration. A copy of Mr. Roach's letter of November 10, 1964 was attached to Mr. Schlender's statement, and from a study of this letter it can be noted that Mr. Roach refers to numerous board studies that answer the questions with respect to transmission capacity. Following Mr. Roach's letter of November 10, 1964, numerous meetings were held between Idaho Power Company and Bonneville Power Administration with respect to wheeling capacity, all of which meetings culminated in the recent agreement between Idaho Power Company and Bonneville Power Administration providing for the wheeling of federal power over Idaho Power Company lines to serve preference customers in southwestern Idaho.

Reference was made to a meeting in Burley, Idaho in 1967 and to an alleged statement by the Company that it did not have enough transmission capacity to bring the 400 WM they needed from the Northwest to carry the load. The Company had planned for additional transmission capacity in 1967, which transmission capacity would have been provided by the Pallete Junction-Enterprise-Walla Walla 230 KV transmission line jointly constructed by Idaho Power Com-

pany and Pacific Power & Light Company. Obtainment of permission to construct this line was delayed for almost two years and for this reason it was impossible to have the line in service during the summer of 1967. However, at the meeting in Burley, Idaho the Company representatives pointed out that irrigators' troubles arose primarily from the fact that they do not have the protective equipment recommended by both the electric suppliers and the manufacturers, which equipment will protect pumps from outages due to lightning, voltage swings, etc.

Mr. Schlender further stated that the 22 BPA customers in southern Idaho do not know and have no way of finding out just what the power flows are in the companies' systems or what their system capacities are. This information is readily available to these customers by merely requesting this information from Idaho Power Company or by requesting Bonneville Power Administration to furnish this information to them. The Company, in Form 12, Schedule 18B filed with the Federal Power Commission, shows the annual peak and the peak for four other months as specified by the Federal Power Commission—April, August, October and December—the line loading that exists at the time of the system peak on all transmission lines of 69 KV and above. We are certain that there is no problem for any of these customers to obtain any information that they need to know with respect to power flows.

In addition, the Western Systems Coordinating Council receives all data with respect to power system flows, performs all necessary studies and thus will be able to correlate all of the systems in the Western Systems Coordinating Council in order to obtain the maximum reliability for each and every system.

Dated at Boise, Idaho, this 10th day of May, 1968.

JAMES E. BRUCE, *Secretary.*

ALLEGHENY POWER SYSTEM, INC.,
New York, N.Y., May 23, 1968.

HON. WARREN G. MAGNUSON,
*Chairman, Committee on Commerce,
New Senate Office Building, Washington, D.C.*

DEAR SENATOR MAGNUSON: I have just read the transcript of the proceedings of your Committee's regional hearing on S. 1934, the Electric Power Reliability Bill and related Bills—S. 683, S. 1834 and S. 2227, which was held in Salt Lake City on April 26, 1968 and chaired by Senator Frank E. Moss.

In the course of the hearing Mr. Fred G. Simonton, Executive Director, Mid-West Electric Consumers Association, submitted for the record a copy of a telegram to me from Robert O. Marritz dated April 23, 1968, and his attorney, Mr. William C. Wise, submitted a copy of a telegram to me dated April 24, 1968 from Mr. Robert D. Partridge, General Manager, NRECA.

The telegram submitted by Mr. Simonton was never received by me.

The telegram submitted by Mr. Wise was received by me on April 25 and was answered by my letter to Mr. Partridge of April 30, 1968.

In order that the record may be complete I respectfully request that a copy of my letter in reply to Mr. Partridge's telegram and a copy of this letter be printed in the record of the April 26 hearing.

Very truly yours,

J. LEE RICE, Jr., *Chairman.*

ALLEGHENY POWER SYSTEM, INC.,
New York, N.Y., April 30, 1968.

MR. ROBERT D. PARTRIDGE,
*General Manager, National Rural Electric Cooperative Association,
Washington, D.C.*

DEAR MR. PARTRIDGE: This will acknowledge receipt of your telegram of April 24.

Apparently you were misinformed as to the nature of the meeting of April 25th. It was not a meeting of representatives of a National Electric Reliability Council, but of a group under the leadership of Mr. Floyd L. Goss of the Los Angeles Department of Water and Power which is attempting to draft an agreement under which such a Council can be formed.

Mr. Goss was contacted directly by the Missouri Basin Systems Group, both by phone and letter, and is undertaking a review of the responsibility of that Group for reliability of bulk power supply. When he has completed his review, he proposes to reply to the letter from the Missouri Basin Systems Group and to your telegram.

The present draft of the proposed agreement provides for representation on the Executive Board of the Council of all segments of the electric utility industry, including the rural electric cooperatives. I should also emphasize that the Council will not be one concerned with planning in any way, rather its functions will be for the review and encouragement of reliability of bulk power supply arrangements and for the exchange of information relating thereto.

Very truly yours,

J. LEE RICE, Jr., *Chairman.*

WASHINGTON, D.C., April 24, 1968.

J. LEE RICE, Jr.,
Allegheny Power System, Inc., New York, N.Y.

DEAR MR. RICE: NRECA has been informed of a meeting of representatives of the National Electric Reliability Council on April 25. We are disturbed, however, over the reported failure to invite the Missouri Basin Systems Group, and other consumer-owned planning organizations. If any council is to meaningfully attack the problem of reliability, it must do so on the basis of bulk power supply, not the nature of ownership of the system. If the purview of this proposed council is to be truly national in scope, then rural electric cooperatives involved in bulk power supply must be included. For this reason, I am asking you to forward to NRECA, copies of the proceedings of this above-mentioned meeting. In this manner, NRECA can be kept abreast of the accomplishments of this national committee.

ROBERT D. PARTIDGE,
General Manager, NRECA.

