

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

IN THE MATTER OF THE GENERIC)
HEARINGS CONCERNING THE RATE)
STRUCTURE OF ALL ELECTRIC UTILITIES))
OPERATING UNDER THE JURISDICTION)
OF THE PUBLIC UTILITIES COMMISSION)
OF THE STATE OF COLORADO.)

CASE NO. 5693
ORDER OF THE COMMISSION
ON REHEARING

- - - - -
July 7, 1981
- - - - -

Appearances: Kelly, Stansfield & O'Donnell by
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STATEMENT

BY THE COMMISSION:

On July 27, 1979, the Commission entered Decision No. C79-1111 on the merits of the issues raised in the within proceeding. In response to Decision No. C79-1111, various parties filed applications for rehearing, reargument, or reconsideration.

On March 6, 1980, the Commission entered Decision No. C80-413 in which it amended Decision No. C79-1111. In Decision No. C80-413 the Commission also granted rehearing with respect to three separate issues. The Commission described the three issues upon which rehearing would be held as follows:

1. Rehearing of Decision No. C79-1111 be, and hereby is, granted with respect to the following:

(a) All issues relating to power pooling among electric utilities subject to the jurisdiction of the Commission and by said electric utilities with electric utilities both within and without the State of Colorado not subject to the jurisdiction of the Commission.

(b) All issues relating to specific preferential rights and specific provisions of loans under the Rural Electrification Act of 1936, as amended, 7 U.S.C. 901, et seq., that would be affected by the promotion of interconnection and coordination of operations by rural electric cooperatives and non-Act electric utilities within and without the State of Colorado, and to sanctions under said Act in the event that rural electric cooperatives are directed to interconnect and coordinate operations with non-Act electric utilities within and without the State of Colorado.

(c) All issues relating to whether Appendix B to Decision No. C79-1111 should be amended to require Public Service Company to file interruptible rate schedules applicable to its irrigation customers.

As indicated in ordering Paragraph No. 1 of Decision No. C80-413, the Commission indicated that it would set dates for the filing of written testimony and rehearing in a subsequent decision.

On March 18, 1980, the Commission entered Decision No. C80-512 in which it set rehearing for July 29, 30, 31 and August 1, 1980, and prescribed certain dates for the filing of written direct testimony

~~and written testimony and testimony~~

Applications for rehearing, reargument or reconsideration of Decision No. C80-413 were filed by Poudre Valley Rural Electric Association on March 25, 1980, by Colorado Rural Electric Association (hereinafter "CREA") on March 26, 1980, by The Colorado Association of Municipal Utilities on March 27, 1980 and by CF&I Steel Corporation on March 28, 1980.

On April 1, 1980, by Decision No. C80-623, the Commission denied all applications for rehearing, reargument or reconsideration of Decision No. C80-413.

On April 22, 1980, the Arkansas River Power Authority (hereinafter "ARPA") filed a petition for leave to intervene for the limited purpose of participating in this Case No. 5693 only with respect to the rehearing of issues addressing joint coordination, cooperation and interconnection of operations by Rural Electric Cooperatives and non-Act electric utilities systems. ARPA stated, amongst other things, that the Board of Directors of the Authority had attempted to initiate discussions with certain Colorado rural electric cooperatives for the purpose of considering the possibility of jointly constructing and operating transmission facilities that would be necessary to supply the load requirements of the Authority's initial member municipalities. However, one electric cooperative had not responded to certain letters forwarded to said cooperative.

On May 1, 1980, San Isabel Electric Association, Inc., (hereinafter "San Isabel") filed a response to the petition of ARPA for leave to intervene. San Isabel argued that the petition of ARPA was inappropriate in a proceeding such as Case No. 5693. San Isabel stated, however, that it had no objection to the intervention of ARPA so long as ARPA's intervention did not broaden the issues on rehearing in Case No. 5693 and did not detour the Commission from the main objective of the generic proceeding. On May 6, 1980, the Colorado Rural Electric Association also filed a response to the petition to intervene of ARPA.

In its response, CREA indicated that it was filing simultaneously with its response, a motion to terminate that portion of the rehearing involving issues encompassing joint coordination, cooperation and interconnection of operations by rural electric cooperatives and non-Act electric utilities. CREA also agreed with San Isabel that the issues raised in the petition to intervene by ARPA were inappropriate and should not be addressed in the generic proceeding. Prior to the filing of both responses, the Commission, on April 29, 1980, in Decision No. C80-821 had granted ARPA leave to intervene.

Also on May 6, 1980, CREA filed a motion to withdraw from rehearing those issues relating to joint coordination, cooperation and interconnection of operations by rural electric cooperatives and non-Act electric utilities.

On May 12, 1980, the Staff of the Commission filed a motion requesting that the June 2, 1980 date for the filing of direct testimony and supporting exhibits; the July 3, 1980 date for the filing of written answering testimony and exhibits be extended, and the hearing dates of July 29, 30, 31 and August 1, 1980, be continued.

On May 13, 1980, by Decision No. C80-947, the Commission stated that it would not broaden the issues beyond the scope specified by the Commission in its decision granting rehearing. Also in Decision No. C80-947 the Commission struck the response file by CREA as being out of time.

On May 16, 1980, ARPA filed a response in opposition to the motion of CREA for an order terminating a portion of the rehearing.

On May 28, 1980, by Decision No. C80-1060, the Commission denied the motion of CREA for an order terminating a portion of the rehearing.

On June 3, 1980, by Decision No. C80-1169, the Commission granted the Staff's motion for an extension of the dates for the filing of testimony and for continuance of the rehearing. In said Decision No. C80-1169, the Commission ordered that all written direct testimony and supporting exhibits be filed on or before August 1, 1980.

and supporting exhibits be filed on or before September 1, 1980, and that the dates for rehearing previously set be vacated and reset for October 21, 22, 23 and 24, November 18, 19, 20 and 21, 1980.

On July 31, 1980, the Staff of the Commission filed a motion requesting that the August 1, 1980 date for the filing of written direct testimony and supporting exhibits with respect to power pooling be extended to August 25, 1980 and that the September 1, 1980 date for the filing for written answering testimony and supporting exhibits be extended to September 26, 1980.

On July 31, 1980 Colorado-Ute filed written direct testimony of Frederick A. Kuhlemeier and CREA filed written direct testimony of Richard L. Arnold on the issues relating to preferential rights and provisions of loans under the Rural Electrification Act of 1936.

On August 1, 1980 the Department of Public Utilities of the City of Colorado Springs (hereinafter "Colorado Springs") filed written direct testimony of Donald M. Schoen and Jaromir J. (Mirek) Horenovsky on issues relating to power pooling.

On August 6, 1980, by Decision No. C80-1552, the Commission granted Staff's motion to extend the dates for the filing of written direct testimony and written answering testimony on issues relating to power pooling.

On August 25, 1980, Colorado-Ute Electric Association, Inc. (hereinafter "Colorado-Ute") filed written direct testimony and supporting exhibits of Larry R. Day, and Raymond E. Keith on issues relating to power pooling.

On August 25, 1980, Staff of the Commission filed written direct testimony and supporting exhibits of Whitfield A. Russell on the issue of power pooling.

On August 27, 1980 Public Service Company of Colorado (hereinafter "PSCo") filed written direct testimony and supporting exhibits of W. J. Martin on issues relating to power pooling. PSCo

also filed written direct testimony and a supporting exhibit of J. D. Heckendorn on issues relating to PSCo's filing interruptible rates for irrigation customers.

On September 2, 1980, ARPA filed written direct testimony and supporting exhibits of James M. Henderson on the issue of power pooling.

On September 10, 1980, the Staff of the Commission filed a motion for an order permitting the Staff to serve the testimony of Whitfield A. Russell late; for an extension of time for all parties to file answering testimony on issues relating to power pooling; and for an order vacating the rehearing dates of October 21, 22, 23 and 24. On September 23, 1980, by Decision No. C80-1823, the Commission granted Staff's motion and retained the dates of November 18, 19, 20 and 21, 1980 for rehearing.

On October 29, 1980, Colorado Springs filed written answering testimony and supporting exhibits of Donald M. Schoen. Also on October 29, 1980, Colorado-Ute filed written answering testimony of Girts Krumins.

On November 18 and 20, 1980 the Commission conducted rehearing in Case No. 5693. On November 18, the following witnesses were sworn and cross-examined by those parties present and desiring to cross-examine: J. D. Heckendorn of PSCo; Frederick A. Kuhlemeier, Girts Krumins, Larry R. Day and Raymond E. Keith of Colorado-Ute; Richard L. Arnold of CREA; James M. Henderson of ARPA; and Donald M. Schoen and Jaromir J. (Mirek) Horenovsky of Colorado Springs. On November 20, 1980 the following witnesses were cross-examined by those parties present desiring to cross-examine: W. J. Martin of PSCo and Whitfield A. Russell for the Staff of the Commission. The following exhibits were marked and introduced into evidence:

Exhibit DDDD	Rehearing Direct Testimony J. D. Heckendorn
Exhibit EEEE	Rehearing Direct Testimony of Frederick A. Kuhlemeier
Exhibit FFFF	Rehearing Direct Testimony of Richard L. Arnold
Exhibit GGGG	Rehearing Direct Testimony of James M. Henderson

Exhibit HHHH	Rehearing Answering Testimony of Girts Krumins
Exhibit IIII	Rehearing Direct Testimony of Larry R. Day
Exhibit JJJJ	Rehearing Direct Testimony of Raymond E. Keith
Exhibit KKKK	Rehearing Direct Testimony of Donald M. Shoen
Exhibit LLLL	Rehearing Answering Testimony of Donald M. Shoen
Exhibit MMMM	Rehearing Direct Testimony of Jaromir J. (Mirek) Horenovsky
Exhibit NNNN	Rehearing Direct Testimony of W. J. Martin
Exhibit 0000	Rehearing Direct Testimony of Whitfield A. Russell
Exhibit No. 197	Irrigation power, 1977 through 1979, Public Service Company of Colorado
Exhibit No. 198	Letter dated January 29, 1980, from James M. Henderson to William W. Wood
Exhibit No. 199	Map showing certificated service areas for member systems of Colorado-Ute Electric Association
Exhibit No. 200	System map showing transmission facilities and lines in Colorado
Exhibit No. 201	Exhibit LRD-3, Inland Power Pool
Exhibit No. 202	Principles for Formation of a Planning Committee within the Inland Power Pool
Exhibit No. 203	Total Requirements and Power Reserves (MW) Colorado-Ute Electric Association
Exhibit No. 204	Map of United States showing coal movements by railroad: 1974
Exhibit No. 205	Incremental Cost of August 6, 1979 Loads Served by August 1980 Reserves, Colorado Springs
Exhibit No. 206	Incremental Cost for January 7, 1980 loads Served by December 1980 Reserves, Colorado Springs
Exhibit No. 207	Principles for Organization for the Inland Power Pool
Exhibit No. 208	Principles for Additional Operating Committee Functions within the Inland Power Pool
Exhibit No. 209	Principles for Formation of a Planning Committee Within the Inland Power Pool
Exhibit No. 210	Electric Planning and Analysis, "Contract List", agreement under negotiation, Public Service Company

- Exhibit No. 211 List showing federal or state proceedings in which Whitfield A. Russell has testified
- Exhibit No. 212 1979 Kwh sales of members of the Inland Power Pool
- Exhibit No. 213 List showing abbreviations for system names for Inland Power Pool members
- Exhibit No. 214 Letter dated September 25, 1979 from W. J. Martin to Robert L. McPhail
- Exhibit No. 215 Letter Dated April 3, 1980 and attachments from A. M. Gabiola to James L. Grah1
- Exhibit No. 216 Graph showing total cost curve
- Exhibit No. 217 Native load and national transaction capacity, August 1980 for Public Service Company
- Exhibit No. 218 Detailed step by step dispatch diagnostic for December 1980, Colorado Springs

DISCUSSION, FINDINGS OF FACT,
AND CONCLUSIONS THEREON

I

INTERRUPTIBLE RATES - PUBLIC SERVICE COMPANY IRRIGATION CUSTOMERS

CREA in its application for rehearing, reargument or reconsideration stated that certain distribution cooperatives, such as San Luis Valley Rural Electric Cooperative and Highline Electric Association would be required to file interruptible rates for their irrigation customers, whereas PSCo would not, according to Appendix B to Decision No. C79-1111. CREA stated that this could be discriminatory insofar as similarly situated utilities were concerned and could result in inequities and confusion in the same geographical area. In response to CREA's concerns, the Commission, in Decision No. C80-413, pointed out that the anti-prejudice and discrimination provisions of C.R.S. 1973, 40-3-106(1) were not applicable as between rate classes of different utilities; however, the Commission did not intend in Decision No. C79-1111 to treat similarly situated utilities differently insofar as filing requirements were concerned. Accordingly, in Decision No. C80-413, the Commission granted rehearing with respect to this issue and directed PSCo to supplement the record herein by filing testimony and supporting exhibits as to the numbers, concentration or dispersion of its irrigation customers and usage data as was then available from the Company's records, and any reasons for or against inclusion of its irrigation customers in any interruptible rate filing.

In response, PSCo filed testimony complying with the Commission's directives. In its written direct testimony and at the rehearing, PSCo took the position that it was not opposed to filing interruptible rates, to be available on a voluntary basis to its irrigation pumping customers. PSCo pointed out that it probably would have considered

the feasibility of such an interruptible service for its irrigation pumping customers independently of Case No. 5693. At the time of the rehearing herein, PSCo was currently setting a 190-customer load research sample of its irrigation power rate group. The sample was substantially in place and usable data was expected for the period July, 1980 through the Fall of 1981. As soon as data became available for the first few months of the survey, PSCo hoped that some useful load information could be extracted for rate analysis purposes.

In light of the position taken by PSCo at the rehearing, the Commission will hereinafter order that Appendix B to Decision No. C79-1111 be amended so as to include PSCo with those utilities that should file interruptible rates for irrigation customers.

II

RURAL ELECTRIFICATION ACT OF 1936, 7 U.S.C. §901, et. seq. - PREFERENTIAL RIGHTS AND LOAN PROVISIONS

On Page 56 of Decision No. C79-1111, the Commission wrote:

Also, transmission facilities should be sized and built, not only to serve a particular utility, but also to promote interconnection and coordinated operations among all utilities of the region.

CREA in its application for rehearing, reargument or reconsideration of Decision No. C79-1111 questioned this policy statement of the Commission. In its application, CREA argued that the Commission's stated policy could cause serious problems for rural electric associations. CREA argued that it may be difficult, if not impossible, for such associations to comply with the Commission's policy if such associations were to continue utilizing financing from the Rural Electrification Administration, since the Rural Electrification Act of 1936, as amended, (7 U.S.C. §901 et. seq.) generally prohibits the use

of funds lent under the Act for the benefit of non-Act beneficiaries. CREA also pointed out that under federal law governing the marketing of federally generated power and energy by WAPA, particularly Section 9(c) of the Reclamation Act of August 4, 1939 [(43 U.S.C. §485(a)(c))], rural electric cooperatives have preferential rights to such power and energy. In its application, CREA argued that the Commission's decision, if implemented in a way to achieve maximum coordination of operations among utilities, could result in such preferential rights being lost.

In response to CREA's concerns, as expressed in its application for rehearing, reargument or reconsideration of Decision No. C79-1111, the Commission, in Decision No. C80-413, granted rehearing with respect to:

All issues relating to specific preferential rights and specific provisions of loans under the Rural Electrification Act of 1936, as amended, 7 U.S.C. §901, et. seq., that would be affected by the promotion of interconnection and coordination of operations by rural electric cooperatives and non-Act electric utilities within and without Colorado, and to sanctions under said Act in the event that rural electric cooperatives are directed to interconnect and coordinate operations with non-Act electric utilities within and without the State of Colorado.

On rehearing, both Colorado-Ute and CREA submitted testimony on this issue.

Colorado-Ute stated in its written testimony and also at the rehearing that it was in agreement with and supported the policy statement of the Commission in Decision No. C79-1111 that "transmission facilities should be sized and built, not only to serve a particular utility, but also to promote interconnection and coordinated operations among all utilities of the region". Colorado-Ute's position of support for the Commission's policy statement is consistent with the position of the National Rural Electric Cooperative Association (hereinafter "NRECA"), as expressed in a resolution adopted by NRECA at its 38th Annual Meeting

We urge all rural electric systems to cooperate with other REA-financed, publicly owned, federal and investor-owned electric suppliers in research and technological development, in the planning, construction and operation of generating units and transmission facilities, and in the purchase, sale, exchange and delivery of power and energy for the purpose of providing all such systems with bulk power supply at minimum cost and without restrictions on its use. We commend the concept of REA financing for Rural Electrification Act beneficiaries for participation in joint or cooperative undertakings, including the financing of the pro rata share of jointly owned generating plants and transmission lines.

As pointed out by Colorado-Ute, every major transmission line that has been built in the State of Colorado in recent years has been built with the Commission's stated objectives in mind, and certainly all major transmission lines to be built in the future will be the result of joint planning and coordination by all interested utilities. Colorado-Ute itself has followed this policy for years prior to the rendering of Decision No. C79-1111.

CREA also filed testimony on rehearing in which it supported the general policy statement of the Commission in Decision No. C79-1111. This support, however, was tempered by a caveat that under the Rural Electrification Act of 1936, loan documents, and REA Bulletins certain beneficiaries are preferred and that in order to retain the preferences, rural electric cooperatives must adhere to the provisions of the Act, the loan documents, and policies adopted by the REA, as expressed in its Bulletins. Any joint use or coordination with other utilities not serving Act beneficiaries, or any "sizing" of facilities must keep in mind the limitations under which rural electric cooperatives operate. However, as indicated by CREA, joint use and coordination are recognized as general principles by the REA. Specifically, REA Bulletin 5-1 provides in part as follows:

REA Bulletin 5-1, subject of joint use of
facilities for telephone and electric service:

furnishing and improving telephone and electric service for the widest practicable number of rural users." (II.A.). Still, the Act policies and REA loan requirements must be met. Generally, any loan involving joint use facilities must be justified by showing "that the benefits obtained by the REA borrower are substantial and reasonable." In particular, two criteria are established:

1. No greater expense is required of the borrower because of the joint use arrangement than would have been required of the borrower to provide facilities capable of rendering the borrower's service alone, and
2. Additional benefits accrue to the borrower from the joint use arrangement. (II.B.)"

In addition, most rural electric cooperatives have preferential status under the Reclamation Act of 1939 whereby cooperatives were given an allocation of what used to be called Bureau of Reclamation power and what is now called WAPA power. Under the General Power Contract provisions of the WAPA contract, cooperatives are prohibited from reselling any of the electric energy purchased from WAPA. Also under the contract, contract rights cannot be transferred without the written approval of the Secretary of the Interior. The purpose of the provisions of the contract are to prohibit the passing of rights to non-preference customers.

As requested by CREA, the Commission in any future orders it may enter in the area of interconnections and power pooling will take into consideration the restrictions under which rural electric cooperatives operate vis-a-vis Rural Electrification Act of 1936, loan documents, and REA Bulletins, and Section 9(c) of the Reclamation Act of 1939 and the contract provisions of the WAPA contracts so as not to jeopardize preferential status of rural electric cooperatives under said acts.

POWER POOLING

On pages 54 through 71 of Decision No. C79-1111, the Commission discussed at length the subject of power pooling. The Commission generally concluded on the basis of the record made at that point in the proceeding that Colorado utilities were not taking full advantage of the potential benefits to be derived from power pooling and thus were not realizing the substantial benefits that could be achieved through a more unified and coordinated utility approach to resource management.

PSCo, in its application for rehearing, reargument or reconsideration, raised the issue of lack of notice, arguing that Decision No. 89068, which instituted the within Case No. 5693, gave no indication that power pooling was a matter to be heard by the Commission. PSCo argued that since it was not aware power pooling was a subject to be considered in Case No. 5693, it did not address power pooling in either its direct or rebuttal testimony. In addition, PSCo argued that the same was true of testimony submitted by other parties, with the exception of the "additional and rebuttal testimony" submitted by Whitfield A. Russell. PSCo requested, as one of its alternative remedies, that rehearing be granted as to the issue of power pooling.

CREA, in its application for rehearing, reargument or reconsideration, also raised the issue of lack of notice in Decision No. 89068.

As a result of the applications for rehearing, reargument or reconsideration filed by PSCo and CREA, the Commission, in Decision No. C80-413 granted rehearing on "all issues relating to power pooling

among electric utilities subject to the jurisdiction of the Commission and by said electric utilities with electric utilities both within and without the State of Colorado, not subject to the jurisdiction of the Commission."

A. Power Pooling - Concepts

A power pool may be described as a combination of individually-owned electric utility systems organized for the purpose of coordinating planning and/or operations of the individually-owned electric systems. In a power pool the members attempt to operate the individually-owned electric facilities of the members as closely as possible to the manner in which a single utility, owning all of the electric facilities, would operate such facilities. The primary objective of a power pool is to render reliable service at less cost than if the individual members operated independently of the pool. Once reliability has been assured in a power pool, the primary motive becomes the reduction of costs in the construction and operation of the members' power systems. Two substantial benefits accrue to the individual members through power pooling, namely reduction of production costs through the conservation of fuel and capacity, and the increase in reliability of the bulk power system.

Coordination among utility systems usually begins with voluntary cooperation between two or more utilities which cooperation evolves into a formal contractual power pool arrangement. Each step in this process from a simple bilateral agreement between two utilities to a formal power pool involving many utilities is dictated to some extent by the system characteristics of the utilities involved, the technology available within the electric industry at the time, and by economic developments within the service territory of the particular utilities involved. Power pooling is an integral part of the natural growth and development of power systems in a particular region.

B. Power Pools - Operation

The operating services rendered by power pool members for one another generally fall into seven major categories:

1. Economic Dispatch

By economic dispatch, pool members systematically arrange energy transactions so that the pool as a whole produces energy most efficiently and at the least cost to the members. The benefits of economic dispatch may be achieved in a number of ways ranging in complexity from simple bilateral economic transactions to a multi-party brokering system to a fully computerized real-time dispatching system. In general, pool members realize more benefits as they implement successively more complex arrangements.

2. Unit Commitment

By a unit commitment process, an electric utility determines the number, type and timing of generator start-ups and shut-downs. One benefit of power pooling is that fewer generating resources need be started to serve a pool's composite load than would be started if individual pool members made their own unit commitment decisions independently. As a consequence of reducing the number of units started, the pool enables each unit to operate at more efficient loading levels.

3. Maintenance Coordination

By timing the maintenance outages of base loaded generating resources, a pool can minimize overall pool production costs and maximize pool reliability. The cost of replacing low cost production from base loaded generating resources varies from hour to hour and from month to month throughout the year, but low costs are typically associated with off-peak months. At any given time, this cost will increase if outages of base loaded units overlap. By maintenance

coordination, pool members seek to avoid overlapping outages of large generating units which could unduly reduce operating reserve margins. This principle is also applicable to scheduled outages of essential transmission lines.

4. Operating Reserves

Operating reserves are comprised of spinning reserves (synchronized and unloaded capacity) and capacity which can be started on short notice (ready reserve). The level of operating reserve required on any given day is a function of many factors, of which the primary determinants are the estimated daily peak load, the operating generating unit or loaded transmission interconnection with the greatest capacity and the anticipated rate of increase in daily loads. A desire to provide spinning and ready reserves in an optimum manner figures prominently in unit commitment decisions, whether made by a pool or an individual utility. One major benefit of pooling is the reduction in spinning reserve requirements of individual members. The largest contingency confronted by any individual member of a pool represents a lesser percentage of pool daily peak demand than such a contingency represents of any individual member's peak demand.

5. Scheduling of Transactions with Other Pools

By becoming a member of a power pool, utilities increase their ability to engage in transactions with non-pool members and this ability is usually greater than would be the combined abilities of individual utilities operating independently. It is not necessary for utilities located at great distances to form pools in order to engage in transactions with one another. However, pools, as opposed to individual pool members, are regarded as large identifiable markets. Their formation leads to sharing in pool-to-pool transactions on a routine formula basis. This reduces the transactional cost to pool members in dealing with utilities that are not pool members.

6. Transmission

Power pools can arrange transmission services for one another on a formula basis. This reduces transactional costs on intra-pool and pool-to-pool transactions.

7. Emergency Power

Construction of interconnections is necessary if emergency power is to be available to pool members in order to realize savings in operating and installed reserves. These savings are realized because each member may rely upon other member's available but unloaded capacity as back-up. Emergency power normally is sold without demand charges or delivered with the understanding that equivalent amounts of energy will be returned at times when incremental costs are equivalent to those prevailing during the emergency.

C. Power Pools - Planning

Pool planning attempts to identify and carry out objectives which will serve members' projected needs. The least cost is measured by the present value of each objective's long term future revenue requirement. As in the case of operations, reliability and cost are two major constraints in pool planning. Planning for reliability increases the amount of redundancy or back-up provided at each step of the utility function from generation through distribution. Developing a plan which minimizes total cost while simultaneously providing the requisite degree of redundancy is the pool planner's objective.

The achievement of economies of scale in generation and transmission and reduction of installed reserve requirements are enhanced by power pooling. In both generation and transmission systems, the greater the capacity of a single piece of equipment, the lower is its cost per unit of capacity. In addition, the efficiency of generating units tends to increase with the capacity of the units, at least until generating units obtain capacities of between 400 and

600 MW. Financially, only the largest utility systems are able to install the largest available generating units and the highest capacity transmission facilities on an individual basis. Sharing of costs can be accomplished through a series of bilateral agreements, but the sharing of costs and benefits can be attained through power pools more simply and equitably.

The trend towards construction of larger generating and transmission facilities has affected the need for pooling. In the past, when transmission lines were constructed at relatively low voltages and were characterized by high impedances, local outages generally did not affect distant utilities. When the effects of these outages did spread, they could be eliminated simply by opening interconnections to the troubled utility. However, the low impedances of extra high voltage transmission networks facilitate power surges and other ill effects of large generating and transmission facility outages. Mutual dependency of systems today no longer permits utilities simply to disconnect from one another at the first signs of impending trouble. First of all, the effects of major outages occur too quickly and secondly, the redundancy of electrical utility systems has been reduced in reliance upon agreements among utilities not to disconnect from one another. Pooling provides not only a forum for reconciling differences, but also for establishing uniform standards of analysis and design for transmission facilities, protective devices and control schemes. From a systems planning and engineering point of view, the construction of transmission networks should not be done independently of other utilities.

As in the case with generating resources, transmission resources provide reliability through the installation of redundant or excess capacity. Prudent design practices require that the outage of any single transmission element should not interrupt the flow of power between a power source and a load. Traditional and prudent

system planning design practices have called for at least two transmission links between a generating source and a load in order to provide firm service. At least 100% redundancy is provided if only two transmission lines serve a load. If a third circuit is added, the redundant capacity needs be only 50% of the required firm load carrying capability sought. Similarly, with four circuits, redundant capacity needs be only 33.3% of the firm load to be served. A utility developing a new resource can often add the required degree of firm transmission capability to a pre-existing network at a fraction of the cost of building such capability independently. Where there are only two transmission links between a generating source and a load, the firm capability of two radial lines equals the capability of one line because firm capability is that capability remaining after the outage of one line. If a third line is added in parallel, the firm capability is doubled over the firm capability that existed prior to the addition of the third line. If a second utility sought to develop this firm capability without access to the two pre-existing lines, its investment would necessarily have to be double that required if it had access to the two existing lines. Pooling tends to avoid the difficulties inherent in assigning costs where one utility seeks to utilize pre-existing lines because transmission is considered a pool resource rather than a resource of an individual utility.

Availability of transmission service at an ascertainable price is an important feature in planning bulk power supplies. As a utility evaluates the relative economics of alternative power supplies, it is essential to have some assurance of deliverability at an ascertainable cost. Otherwise, more economical alternatives may be discarded or not pursued simply because the attendant transmission right cannot be assured. If transmission availability is assured and the price of such services can be estimated, then the planning proceeds in a logical manner and more nearly approaches the optimal.

D. Power Pools - Reserve Sharing

It has been recognized for some time that there is a direct correlation between inadequate levels of installed and spinning reserves and the frequency of blackouts, brownouts, load shedding and emergency power purchases. With the development of interconnections, it has been recognized that insufficient installed reserves by any member of an interconnected system requires that the member with insufficient installed reserves must rely upon the installed and spinning reserves of other members until its deficiency is eliminated. As mutual dependency increases, it becomes nearly impossible to avoid adverse consequences when a utility experiences insufficient reserve margins. The pooling of installed reserve margins, or reserve sharing, coupled with the obligation of capacity deficient pool members to buy capacity from members with excess capacity, has become a fundamental element in pool planning. Where an individual pool member has an installed reserve margin which is less than the pool requirement, that member should be required to pay pool members with excess reserves for the amount of its deficiency. Such reimbursements should be tied to the annual cost of carrying investments in generating capacity. This requirement reimburses members with adequate or excess capacity for the support which they cannot avoid providing to a deficient member and provides an incentive to the deficient member to build or buy adequate levels of capacity. If this reimbursement is properly reflected in rates, customers of members with adequate or excess reserves will not be required to subsidize customers of members who have deficient capacity.

It is not necessarily true, however, that all pool members should be required to provide or pay for the same percentage of installed reserves, although equalized percentage reserves are called for by many pool agreements. The reliability of individual generating resources can have a profound effect upon the required level of

forced outage rate (FOR) of individual generating units may require an increase in the reserves in order to maintain the same level of reliability. Hydroelectric generating units, for example, have negligible FORs. The Edison Electric Institute statistics for the years 1967 through 1976 indicate that the average FOR for hydro units was 1.54%, as compared to 13.17% for non-nuclear steam units in the 400 to 599 megawatt class. In order to prevent inequities in reserve sharing, some recognition should be given to differences in FORs of each pool member's generating resources. There are, however, certain offsetting factors to hydro capacity. The ability of hydro capacity to produce energy is limited by the water available for producing energy. As a consequence, hydro capacity is normally coordinated with thermo base load capacity in order to achieve its full capacity value, especially if the load factor of the loads to be served exceed the capacity factor of the hydro resource under adverse water conditions. In the absence of such coordination, the dependable capacity of a hydro resource must be regarded as less than its installed capability.

E. Power Pools - Transmission Rights

One of the most difficult issues that arises when utilities seek to form a pool is the establishment of individual member's obligations and rights to transmission services. When systems develop on their own, the addition of transmission capacity usually occurs in response to local load growth or of the addition of new generating resources.

Only reluctantly do utilities make capacity available in their transmission networks to other utilities. The prevailing practice is to require joint ownership of an undivided interest in the entirety of the transmission project rather than to make transmission services available. This has caused a strict delineation of the regions within which utilities can market or acquire power.

Pooling requires a departure from these basic notions of a utility's rights and obligations. Arrangements should be developed to reimburse the owners of existing and planned transmission for the benefits they will forego by making their transmission available to other pool members.

F. Power Pools - Transmission System Studies - Interconnection Agreements - Interchange or Power Purchase Agreements - Colorado Utilities.

1. Inland Power Pool

The Inland Power Pool was formed in May of 1974 with the execution of an agreement forming the pool. The initial members of the Inland Power Pool were Public Service Company of Colorado, Colorado-Ute Electric Association, Tri-State Generation and Transmission Association, Platte River Power Authority, Salt River Project Agricultural Improvement and Power District, and the United States Bureau of Reclamation (now Western Area Power Administration). The Inland Power Pool was formed for the purpose of (1) supplying power loads on the electric systems of the participants with less aggregate operating reserve than would have been possible individually, (2) meeting emergency conditions on individual systems, and (3) making more efficient and economical use of generating facilities and interconnections with other power systems. Since the formation of the Inland Power Pool in 1974, five additional electric systems have become members of the pool: The City of Colorado Springs, Department of Public Utilities; Basin Electric Power Cooperative; Wyoming Municipal Power Agency; Tucson Electric and Power Company; and Public Service Company of New Mexico. Other electric systems have applied for membership in the Inland Power Pool.

Not only has the Inland Power Pool been expanded in the area of membership, it also has been expanded in the scope of the functions it performs. These expanded functions have been set forth as Principles which have been agreed to for purposes of negotiation by all of the

present members of the Pool. In the area of the expansion of functions of the Pool, a Planning Committee has been formed. The Principles for the formation of the Planning Committee also have been approved by all the Pool members.

In implementing the Principles, the Operations Committee of the Pool has substantially redrafted the original agreement as it relates to system operating functions. The Operations Committee, also, is well along in the redrafting of certain Service Schedules. The Service Schedules include such topics as (1) operating reserve quotas, (2) provisions for emergency assistance, (3) conditions of scheduled outage assistance, (4) coordination of the interconnected transmission system, and (5) economy energy exchange.

A third important area in which the functions of the Inland Power Pool has been expanded is the area of planning. Agreement now has been reached on the Principles for the formation of a Planning Committee within the Inland Power Pool. The Planning Committee will serve as a forum for promoting coordinated planning by the members. Initially, the functions of the Planning Committee will be in the areas of (1) data coordination, (2) planning studies, (3) information dissemination, and (4) studies for the Operations Committee.

Although changes in the Inland Power Pool Agreement are under negotiation, power systems in the region are continuing to achieve the benefits of pool planning and operation. For example, since the in-service date of the Pawnee Electric Generating Station has been delayed, agreements between PSCo and six other members of the Inland Power Pool are making it possible for PSCo to supply its customers' loads until the Pawnee Station comes on line. Agreements for the purchase of power and/or the use of transmission systems have been arranged by PSCo with the Basin Electric, Colorado Springs, Colorado-Ute, Tri-State, Tucson Electric Power, and WAPA.

2. Colorado Power Pool

In October of 1956, the first contractual reserve sharing power pool was formed in the state of Colorado. This agreement included Public Service Company of Colorado; the City of Colorado Springs, Department of Public Utilities; Southern Colorado Power Company (now a division of Central Telephone and Utilities Corporation), and later the City of Lamar Utilities Board. The three major benefits of the Colorado Power Pool are: (1) sharing of reserves for emergency and scheduled outages, (2) providing for the transfer of power and energy between member systems to make more efficient use of generating facilities, and (3) utilization of the transmission system of each of the parties by the others on a scheduled basis without charge except compensation for transmission losses. The Colorado Power Pool has aided especially the smaller member systems, in reducing the amount of generating capacity that ordinarily would have been planned in order to provide an adequate level of reliability for customers.

3. Rocky Mountain Power Pool

The Rocky Mountain Power Pool dates from the 1950's, and is a non-contractual organization for coordinating the operations of the several power systems in the Rocky Mountain region on a voluntary basis. It also serves as a coordinator in the Rocky Mountain region with other power pools. The central focus of the Rocky Mountain Power Pool has been in the area of solving problems associated with interconnections in Colorado, Wyoming, western Nebraska, the Dakotas, Utah and Montana. It also functions in the areas of resolving operational problems, coordinating maintenance schedules among member systems and supplying data to member systems for planning interconnections. The Rocky Mountain Power Pool also functions as a coordinator between the Northwest Power Pool and the Inland Power Pool in areas of planning and operation.

4. Western Systems Coordinating Council

The Western Systems Coordinating Council (hereinafter "WSCC") was formed in 1967 for the purpose of promoting bulk power system reliability through coordinated planning and operation. WSCC is a voluntary organization open to all bulk power suppliers and, through affiliate membership, to all operating power systems in the WSCC service area. The WSCC service area includes the states of Colorado, Wyoming, Montana, Idaho, Utah, Nevada, New Mexico, Arizona, California, Oregon and Washington. It includes, as well, portions of the states of Nebraska, South Dakota, and Texas, and the Provinces of Alberta and British Columbia, Canada. Member systems include nineteen investor-owned utilities, nine municipal utilities, twelve public power systems, four federal agencies, and three Canadian systems. In addition, there are fourteen Affiliate Members.

WSCC is not a power pool; however, some of the functions it performs are similar to those performed by power pools. For example, it performs such functions as the acquisition, analysis and publication of information on (1) historical loads, (2) projected peak demand growth, (3) projected energy requirements, (4) planned generation and transmission projects, (5) estimated energy production by resource type, (6) projected fuel requirements, and (7) the appraisal of existing and planned interconnected systems, especially with respect to adequacy of meeting expected customer loads.

All major power systems within the State of Colorado are members of WSCC. WSCC makes data available to member systems so that they may coordinate their planning for the construction and operation of future generation, transmission and substation facilities. Information concerning the construction of future generation, transmission and substation facilities is reported annually by the WSCC in its report entitled "Ten Year Coordinated Plan Summary" and a companion report entitled "Existing Generation and Significant Additions and

Changes to System Facilities". WSCC also functions as a coordinator between power pool systems. WSCC also assists member systems in resolving operating problems that can be resolved only through cooperation of member systems. Although many problems can be solved by regional power pools, such as the Inland Power Pool and Rocky Mountain Power Pool, certain problems can be resolved only by cooperation among member systems covering extensive geographical areas. The Operations Committee of the WSCC is primarily responsible for this type of coordination.

In addition to the Operations Committee, WSCC has a Planning Coordination Committee. Its primary responsibilities are: (1) to review system load growth and construction of projects as an aid in long range planning and (2) to determine proper design criteria so that, in the event of a system disturbance, all other systems will continue to function so as to avoid cascading outages in the interconnected system of the western United States or, in the event of outages, the ability to restore service quickly. Resolution of such problems cannot be solved by any single system or pool acting alone.

Recently, the WSCC has begun implementation of a WSCC "broker system" to further optimize the dispatch of generation in the western United States. The goal of the WSCC broker system is to reduce costs through such mechanisms as banking and split-savings transactions presently being accomplished through one to one communication contacts between system operators. Many WSCC member systems have agreed to participate in the trial operation of WSCC's broker system, and are formalizing bilateral agreements to permit transactions under the broker system. The brokering system adopted by WSCC is very similar to a brokering arrangement implemented by the Florida Coordinating Group in 1978. This system uses a time-shared computer service with terminals at participating utility dispatch offices to match energy

sellers and energy buyers on an hourly basis using simple split-the-savings economy energy contracts. The matching process takes into account all applicable contractual and wheeling arrangements.

The initial test period was established to test the computer program, various computer interfaces and to familiarize dispatching personnel with the system. WSCC's broker system became operational on July 14, 1980. Implementation of the broker system, i.e., scheduling of transactions and interchange of energy began in August of 1980. Colorado utilities, such as PSCo, Colorado Springs and Colorado-Ute are participating in WSCC's brokering system.

5. Other

Colorado utilities have participated in joint planning and construction of electric generating and transmission facilities.

For example, in 1959, Colorado-Ute and Western Colorado Power Company constructed the Nucla station. In 1965, Colorado-Ute and Salt River Project joined in the construction of Hayden Unit One and in 1976 in the construction of the Hayden Unit Two. Colorado-Ute, Platte River Power Authority, Tri-State Generation and Transmission Association and the Salt River Project joined in the construction of the Craig Units One and Two.

Colorado-Ute and PSCo have joined in planning to extend Colorado-Ute's 230 KV transmission line from Wolcott to Basalt and on to Malta to interconnect with the system of PSCo in the Basalt area and with PSCo and WAPA at Malta. The Basalt-Malta portion of the line will be owned by PSCo, but the capacity in the line will be shared with Colorado-Ute.

The Colorado-New Mexico Intertie Study group is studying a 345 KV interconnection between the states of Colorado and New Mexico. A 230 KV transmission line from Poncha Junction (near Salida) south to the San Luis Valley (near Center) to serve the increased capacity

requirement of both PSCo and Colorado-Ute is being planned. The Poncha Junction to San Luis Valley substation line, which terminates about fifteen miles northwest of Alamosa, will be constructed by Colorado-Ute. PSCo will extend this line from its San Luis Valley substation to the New Mexico state line. The extension of this line will provide both PSCo and Colorado-Ute with a point of interconnection with the Public Service Company of New Mexico and Plains Electric Generation and Transmission Cooperative at the state line. This interconnection will provide reliability for service to the San Luis Valley in Colorado and to Taos, New Mexico, while at the same time making an interconnection between the four participants which may use the capacity in making sales, purchases, banking, and exchange arrangements. The interconnection will greatly improve power transfer ability between the two states and among members of the Inland Power Pool.

The Colorado-Utah Study Group, which includes Colorado-Ute, PSCo, Utah Power and Light, Salt River Project, Southern California Edison, WAPA, Intermountain Consumer Power Association, and others; and the Rocky Mountain Study Group, which includes PSCo, Colorado-Ute, WAPA, Tri-State Generation and Transmission Association, Platte River Power Authority, Wyoming Municipal Power Agency, Basin Electric Power Cooperative, Black Hills Power and Light and others are conducting also similar interconnection studies.

Colorado-Ute, as operator of the Craig and Hayden stations, has conducted operating studies of the existing transmission system within western Colorado and the system capability to transfer power across the Continental Divide. These studies have identified some critical deficiencies in the existing transmission systems. One of the deficiencies is in the Wolcott to Malta area where Colorado-Ute and PSCo are presently constructing or attempting to construct the Wolcott-Basalt segment and Basalt-Malta segment of this 230/345 KV line. Craig Unit One and Craig Unit Two are now in commercial operation,

but cannot be continuously operated at full capacity due to the deficiencies in the Wolcott to Malta line. As a result, operating flexibility and the capability for pooling among the utilities receiving power from the Craig and Hayden stations are limited.

Colorado-Ute and WAPA also are planning the extension of the existing 345 KV Craig to Rifle line southward through the Colorado-Ute service territory to a southern termination at the San Juan Generating Station in northwest New Mexico. This extension and connection will provide a substantial increase in transfer capability between Colorado and New Mexico and Colorado and Arizona, thereby increasing the capability for pooling. WAPA has indicated that several hundred megawatts of transmission capacity will be needed between Colorado and New Mexico or Colorado and Arizona to market Colorado River Storage Project peaking capacity, to make power and energy transactions, and to honor present transmission service agreements with area power suppliers. This interconnection will improve the ability of Inland Power Pool members to transmit reserve capacity between Colorado and New Mexico/Arizona areas of the pool.

The Hayden-Blue River Project that is being planned involves Colorado-Ute, PSCo, Tri-State, Platte River Power Authority and WAPA. The Hayden-Blue River Project involves coordinated planning of transmission facility additions in the area of the Hayden-Blue River Project which will connect the Craig-Hayden area to the PSCo bulk transmission system in the Dillon area. The transmission line is planned for initial operation at 230 KV, but will be constructed for eventual operation at 345 KV. This new transmission line will be an additional connection across the Continental Divide and will improve the reliability and efficiency of system operations in the state.

All of Colorado-Ute's generating facilities are within the WAPA control area (upper Colorado control area), thus Colorado-Ute closely coordinates all of its future plans for electrical facilities

with WAPA. From 1976 to 1978, WAPA conducted a regional peaking power study. Based on the results of this study and other studies conducted by WAPA, WAPA has proposed a number of hydroelectric capacity additions. Colorado-Ute has participated in subsequent studies to determine how these projects will integrate into the regional power system and how the new capacity will be marketed. Colorado-Ute will continue to install primarily base-loaded, mine-mouth, coal-fired generating units to be complemented by smaller amounts of hydroelectric units. As new large base-loaded units are installed, Colorado-Ute will have substantial blocks of surplus energy available which should be attractive to neighboring utilities. For example, Colorado-Ute is in the process of constructing Craig Unit Three, a 400 megawatt unit similar to Craig Units One and Two. In the early years of the operation of Craig Unit Three, spare capacity and energy will be available to other utilities. A lay-off of 160 megawatts to PSCo has been planned for 1983 through 1985.

Under arrangements with PSCo, Colorado-Ute purchases capacity and energy during winter months, when Colorado-Ute's loads are highest. No purchases are made from PSCo during the summer months when its loads are highest. The contract specifies a maximum amount of 20 megawatts each month of the year, with a specified amount of capacity to be purchased by 1983. By a recent amendment, higher winter purchases and zero summer purchases were agreed to as more beneficial to both utilities. As much as 40 megawatts now can be scheduled by Colorado-Ute during winter months.

Colorado-Ute will recapture 79 megawatts of capacity in 1982 of the Hayden Unit Two from the Salt River Project. The lay-off of this capacity in 1976 allowed Colorado-Ute to own a share of a unit compatible with its load at that time. Colorado-Ute eventually will recapture at net book value, the 262 megawatt net capacity of the plant.

Beginning in 1984, Tri-State and Colorado-Ute will begin a

summer-winter exchange of capacity. Colorado-Ute is a winter peaking utility, whereas Tri-State is a summer-peaking utility; thus each can have surplus generating capacity in the off-peak season that can be utilized by the other. As both systems grow, the availability of off-peak power should grow accordingly, assuming the same winter-summer diversity persists.

The Electric Division, Department of Public Utilities of Colorado Springs will have excess power for sale from its new Ray D. Nixon Unit One for the next several years. Colorado Springs has entered into a seven year contract with PSCo, whereby PSCo will purchase lay-off power from the Nixon Unit One. PSCo's purchases of lay-off power from the Nixon Unit One will decrease as Colorado Springs' own load grows until such time as the Unit's full output will be taken by Colorado Springs. The Nixon Unit One is a 200 megawatt unit placed on order in 1974. Colorado Springs is in the planning stages for a Nixon Unit Two. As part of its Future Power Supply Study, Colorado Springs has contacted every major electric generating utility in the State of Colorado to ascertain those which might be interested in a joint venture with respect to the City's proposed Nixon Unit Two. No definitive decision has been made to date.

Colorado Springs' electric facilities are interconnected with the transmission systems of other utilities at three locations. There are two ties with PSCo at Cottonwood Substation on 115 KV and 230 KV voltage levels. The third tie is a 115 KV tie from the Nixon Substation to WAPA's Midway Substation. The interconnecting transmission lines have sufficient capacity to provide adequate transfer ability to meet the anticipated future interchanges and emergency import requirements of the City, as well as meeting the entire City's system load requirements in case of a severe outage on the City's system.

There are presently three interconnection contracts between PSCo and Colorado-Ute. The first provides for transmission service from Colorado-Ute's Basalt Substation to the City of Aspen, a customer of PSCo. The second is a Power Purchase and Transmission Service Agreement, which provides for capacity purchases from PSCo; purchases, interchange and banking of energy; and transmission of energy by PSCo to the Holy Cross and San Luis Valley loads of Colorado-Ute. A third agreement provides for transmission services between Midway and Boone in eastern Colorado and for facilities at the Boone Substation to serve Colorado-Ute's Southeast Colorado Power Association loads. This agreement also provides for interchange of power at other interconnection points between Colorado-Ute and PSCo. The Transmission Service Agreement is used for deliveries by Colorado-Ute to PSCo at Rifle and other points, and for deliveries by PSCo to Colorado-Ute at Boone and other locations. This is a basic displacement agreement because Colorado-Ute energy delivered at Rifle is used by PSCo to meet its Western Slope loads while PSCo's energy delivered to Colorado-Ute at Boone is used by it to serve its loads in southeastern Colorado.

Recently PSCo interconnected with Colorado-Ute at the Rifle 69 KV bus and Grand Junction 69 KV bus to support PSCo's western Colorado sub-transmission system.

The United States Bureau of Reclamation (USBR) entered into contracts with most utilities in the area when it developed the Colorado River Storage Project and other projects with hydroelectric generating facilities. The initial contract involving the Colorado River Storage Project was signed in 1962. This contract provided for Colorado-Ute to construct the Hayden station and interconnect it with the transmission system of WAPA. Key provisions of this contract are the exchange of 100,000 kilowatts of power and energy at Hayden and Craig for an equivalent amount at Curecanti or Blue Mesa; the right to wheel power to Midway, Poncha, Pueblo and

other points on the WAPA transmission system; and interconnections at the Craig 230 KV bus, Rifle 230 KV bus, Montrose 115 KV bus, Malta 230 KV bus, Poncha 230 KV bus, Hayden 230 KV bus and 138 KV bus, Midway 115 KV bus, Lost Canyon 230 KV bus, and Shiprock 115 KV bus. It also provides for wheeling by Colorado-Ute to the cities of Oak Creek and Delta, the sharing of microwave and other communication facilities, and system control and regulations.

A second contract involving the Colorado River Storage Project was signed in 1965 and provides for the establishment of additional delivery points on a transmission system of WAPA and PSCo to serve Colorado-Ute members.

There presently exists displacement agreements between PSCo and Colorado-Ute and between Colorado-Ute and WAPA. The western Colorado loads of PSCo in the Glenwood Springs to Grand Junction corridor are served in part by the interconnection between the Colorado-Ute Rifle Substation and the WAPA-PSCo Rifle Substation, with energy deliveries to PSCo from Colorado-Ute. A like amount of energy is delivered by PSCo to Colorado-Ute at PSCo's Boone Substation for deliveries by Colorado-Ute to Southeast Colorado Power Association.

A similar agreement between WAPA and Colorado-Ute provides for energy leaving Colorado-Ute's Hayden station east to WAPA's Archer Substation and Green Mountain Substation for WAPA loads in north-central Colorado, with like amounts of energy being delivered by WAPA to Colorado-Ute for delivery to its members at Pueblo, Gunnison and Poncha Junction.

The Yampa Project Agreement provides for interconnections by Colorado-Ute, Tri-State, Platte River Power Authority and the Denver area of WAPA. The Hayden-Ault Transmission Agreement provides for rights of WAPA and the Yampa Project participants in the 345 KV and 230 KV Craig-Hayden-Ault transmission system.

When Colorado-Ute acquired the transmission property of the Western Colorado Power Company in May of 1975, the wheeling and capacity rights on the portion of the Durango-Shiprock 115 KV line owned by Public Service Company of New Mexico were transferred to Colorado-Ute.

An agreement between Southern Colorado Power Company and Colorado-Ute provides for wheeling power through the transmission system owned by Southern Colorado Power Company to loads of three of Colorado-Ute's member systems.

WAPA's interconnection agreements with Colorado-Ute and Moon Lake Electric Association provide for the interconnection of Colorado-Ute and Moon Lake on the 138 KV line between Moon Lake's Rangely Substation and Colorado-Ute's Meeker Substation.

Utilities in Colorado that are interconnected with one another are organized into control areas. There are presently three control areas in the State of Colorado, two operated by WAPA and one by PSCo. Schedules are established and agreed upon between control areas. Using digital or analog computer, the control areas measure the total flow of electricity between their control area and other control areas and compare the measured total flow to the scheduled total flow.

G. Conclusions

Jointly constructed and owned generation and transmission facilities; lay-offs of energy to other utilities; purchases, sales, exchanges and banking of energy among utilities have proven to be effective pooling measures. From the evidence submitted at the rehearing in Case No. 5693, it is clear that the generation and transmission utilities operating within the State of Colorado presently are taking advantage of such pooling measures.

The Commission is greatly encouraged by the activity of Colorado utilities in the area of power pooling, especially in the

creation and expansion of the Inland Power Pool and the formation of the WSCC Broker System. Inasmuch as this Commission has limited, if any, jurisdiction in this area, it is requested that it be kept informed of progress in this area and of the results of the six-month trial period for WSCC's Broker System.

The Commission would make three suggestions with respect to the Inland Power Pool:

The Inland Power Pool provides for reserve sharing with each member responsible for providing its own operating reserve obligation. It would appear that it would be beneficial for members of the pool to be able to buy from members with excess capacity, operating reserve capacity where the purchasing member has deficient capacity or the cost of meeting its operating reserve obligation with its own units is more expensive.

A second suggestion would be that the Inland Power Pool when it assigns the operating reserve obligation of a member of the pool, take into consideration the equivalent availability of such member, vis-a-vis the average equivalent availability of the Pool as a whole, and adjust such member's operating reserve obligation up or down accordingly.

The third suggestion reflects the Commission's opinion that it is of the utmost importance that a member of the Pool have unfettered access to the transmission facilities of other Pool members in order to facilitate economy interchanges. The Commission would suggest that the Inland Power Pool consider a transmission agreement embodying such unfettered access for a reasonable charge when transmission capacity is available.

All in all, the Commission is greatly encouraged by the cooperative efforts of the various utilities in Colorado in the area of power pooling.

O R D E R

THE COMMISSION ORDERS THAT:

1. Appendix B to Decision No. C79-1111 be, and hereby is, amended to include Public Service Company of Colorado as a utility that shall file interruptible rates for irrigation load customers.

2. Part II.C. of Decision No. C79-1111 (pages 54 through 71) be, and hereby is, deleted from said Decision and Part III of the within Decision be, and hereby is, added in its place.

3. Colorado-Ute Electric Association, Inc., Public Service Company of Colorado, and the Department of Public Utilities of the City of Colorado Springs should consult together for the purpose of filing the following for informational purposes:

(a) Copy of the report, if any, or equivalent on the results of the six months' trial period of the Western Systems Coordinating Council's "Broker System."

(b) Statement whether the Western Systems Coordinating Council has determined whether to make permanent its "Broker System."

(c) Changes in membership in the Inland Power Pool; copies of formal agreements affecting all members of the Pool, and changes in such agreements or prior agreements entered into.

This Order shall be effective forthwith.

DONE IN OPEN MEETING the 7th day of July, 1981.

(S E A L)



THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

EDYTHE S. MILLER

DANIEL E. MUSE

Commissioners

COMMISSIONER L. DUANE WOODARD ABSENT
BUT CONCURRING IN DECISION