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BEFORE THE ARIZONA CORPORATION COMMISSION

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IN THE MATTER OF THE
APPLICATION OF TUCSON ELECTRIC
POWER COMPANY FOR APPROVAL
OF ITS STRANDED COST RECOVERY

DOCKET NO. E-01933A-98-0471

IN THE MATTER OF THE FILING OF
TUCSON ELECTRIC POWER
COMPANY OF UNBUNDLED TARIFFS
PURSUANT TO A.A.C. R14-2-1601 et seq.

DOCKET NO. E-01933A-97-0772

IN THE MATTER OF THE
APPLICATION OF ARIZONA PUBLIC
SERVICE COMPANY FOR APPROVAL
OF ITS STRANDED COST RECOVERY

DOCKET NO. E-01345A-97-0473

IN THE MATTER OF THE FILING OF
ARIZONA PUBLIC SERVICE
COMPANY OF UNBUNDLED TARIFFS
PURSUANT TO A.A.C. R14-2-1601 et seq.

DOCKET NO. E-1345A-97-0773

IN THE MATTER OF COMPETITION IN
THE PROVISION OF ELECTRIC
SERVICES THROUGHOUT THE STATE
OF ARIZONA.

DOCKET NO. RE-00000C-94-165

PREPARED DIRECT TESTIMONY OF DENNIS L. DELANEY, P.E.
ON BEHALF OF THE
ARIZONA CONSUMER-OWNED ELECTRIC SYSTEMS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Dennis L. Delaney. I am a Partner in the Consulting Engineering firm of K.R. Saline & Associates, PLC. Our offices are located at 160 North Pasadena, Suite 101, Mesa, Arizona 85201-6764.

Q. PLEASE DESCRIBE K.R. SALINE & ASSOCIATES, PLC.

A. K. R. Saline & Associates, PLC is a consulting engineering firm which advises members of the Arizona Consumer-Owned Electric Systems ("ACES")¹ and the Arizona Transmission

¹Electrical District No. 3, Electrical District No. 7, Maricopa County Municipal Water District No. 1.

1 Dependent Utility Group (“TDU Group”)² on electrical power supply and delivery
2 matters.

3 Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS PROCEEDING?

4 A. I am testifying on behalf of Electrical District No. 3 of Pinal County, Electrical District
5 No. 7 of Maricopa County and Maricopa County Municipal Water Conservation District
6 No. 1. Collectively, these entities are referred to in this proceeding as the Arizona
7 Consumer-Owned Electric Systems or “ACES.”

8
9 I. PROFESSIONAL QUALIFICATIONS

10 Q. PLEASE DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL
11 BACKGROUND AND QUALIFICATIONS.

12 A. My education, professional qualifications and experience are set forth in Exhibit DLD-1,
13 which is attached to my testimony. With regard to issues directly impacted by the
14 proposed settlement agreements, I am actively participating in the following forums in the
15 Western Interconnection:

- 16
17 ● I participated in the formation of the Southwest Regional Transmission
18 Association (SWRTA) and currently serve as the vice-chair of the SWRTA
19 Planning Committee. I served as the SWRTA Planning Committee Chair from
20 May 21, 1997 through May 21, 1998.
21
22 ● I participated in the formation of the Arizona Independent System Administrator
23 (AISA), and currently serve as an AISA Board Member representing Load Serving
24 Entities. I currently represent approximately one-third of the AISA Members.

25
26 ²Aguila Irrigation District, Ak-Chin Indian Community, Buckeye Water Conservation and Drainage
27 District, Central Arizona Water Conservation District, Electrical District No. 3, Electrical District No. 4, Electrical
28 District No. 5, Electrical District No. 7, Electrical District No. 8, Harquahala Valley Power District, Maricopa
County Municipal Water District No. 1, McMullen Valley Water Conservation and Drainage District, Roosevelt
Irrigation District, City of Safford, Tonopah Irrigation District, and Wellton-Mohawk Irrigation and Drainage
District

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- I participate in the on-going discussions regarding the development of an Independent System Operator (ISO) in the Southwest (i.e., Desert STAR). Currently, I serve as the Desert STAR Planning Workgroup Chair and represent approximately one-third of the Desert STAR participants.
- I provided detailed comments on the FERC inquiry on Independent System Operators (PL98-5-0000), and was a panelist at the FERC's Regional Conference on Independent System Operators in Phoenix, Arizona on May 28, 1998.
- I chaired the Firm Tradable Rights (FTR) Work Group within the Western Interconnection. The workgroup developed standards and procedures to be adopted by the ISOs and Control Areas within the Western Interconnection associated with Firm Transmission Rights.
- I was recently selected to be a voting industry representative on the "Interim" Market Interface Committee (iMIC) formed by the National Electric Reliability Council (NERC) Board of Trustees at its July 1998 meeting.

II. SUMMARY OF TESTIMONY

Q. WHAT IS THE SUBJECT OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The ACES have asked me to review the proposed settlement agreements between Arizona Public Service Company ("APS") and Tucson Electric Power Company ("TEP"), respectively, and the Staff of the Arizona Corporation Commission in these dockets, as well as the memorandum of understanding between APS and TEP relating to a proposed exchange of (1) TEP's interests in the Navajo and Four Corners generating stations (a total of approximately 272 MW of generating capacity), for (2) APS's transmission

1 facilities rated 345 kV and above. In particular, the ACES have requested that I analyze
2 the likely practical effects — if the Commission were to approve the proposed settlements
3 and the exchange transaction contemplated by the APS/TEP memorandum of
4 understanding without modification — on their ability and the ability of similarly-situated
5 entities to access, acquire and obtain delivery of competitive power supply options.

6 Q. ARE YOU TESTIFYING AS AN ECONOMIC EXPERT IN THIS PROCEEDING?

7 A. No. I am not qualified by either training or experience to offer formal testimony as an
8 economist with respect to, for example, any possible antitrust implications of the proposed
9 settlements or the exchange transaction. I am, however, amply qualified by training and
10 experience to examine how the proposed settlements and the exchange transaction can
11 affect the ability of consumers and consumer-owned utilities such as the ACES to locate
12 and acquire competitive sources of power supply. It is to this latter subject — the
13 practical considerations that affect where those who participate in power supply markets
14 can practicably turn for supplies — that my testimony is directed.

15
16 Q. ARE THERE ANY DOCUMENTS THAT YOU FOUND TO BE PARTICULARLY
17 USEFUL OR INFORMATIVE IN CONDUCTING YOUR REVIEW OF THE
18 SETTLEMENTS AND THE PROPOSED EXCHANGE TRANSACTION FOR THE
19 ACES?

20 A. Yes. I primarily reviewed: (1) publicly available information concerning generation and
21 transmission ownership or control, generation and transmission operations within the State
22 of Arizona, and (2) projections by various regional organizations (notably the
23 Southwestern Regional Transmission Association, or “SWRTA,” the Western Systems
24 Coordinating Council (“WSCC”), and information from the Desert STAR working
25 groups) as to transmission planning and transmission usage issues that are expected to
26 affect transmission pricing or availability in the near future in Arizona. I found the
27 resources listed below to be particularly informative as to issues that are involved in the
28 proposed settlements and exchange transaction. I would note that I had neither the time

1 nor the resources to reproduce all of these materials as exhibits, although they are the
2 source material for information presented in the exhibits to this testimony. However, all of
3 the materials listed below are readily available from the files of APS and TEP, and I would
4 encourage anyone interested in reviewing these materials in depth to obtain copies from
5 those sources.

- 6
- 7 1. Western Interconnection Biennial Transmission Plan dated May 1998. Table IV
8 indicates the actual and scheduled loading on the major Western Interconnection
9 paths for 1995 and 1996 (through June). Table V indicates the percentage of time
10 the actual and scheduled loadings exceed 75% and 90% of path rating providing an
11 indication of how frequently the major paths are operated near their full capacity
12 (i.e., congested paths). Table XIII indicates OASIS posted refusals of requests
13 for transmission capacity across major paths. Table IX indicates paths that
14 reported zero Available Transfer Capability ("ATC") in January or August of
15 1997. Table X indicates major paths where users have reported congestion
16 involving the path.
- 17 2. Western System Coordinating Council 1998 Path Rating Catalog. WSCC Transfer
18 Paths: (Path 21) Arizona to California; (Path 22) Southwest of Four Corners;
19 (Path 23) Four Corners 345/500 Qualified Path; (Path 31) TOT 2A; (Path 34)
20 TOT 2B; (Path 35) TOT 2C; (Path 47) Southern New Mexico (NM1); (Path 48)
21 Northern New Mexico (NM2); (Path 49) East of the Colorado River (ERO); (Path
22 50) Cholla - Pinnacle Peak; (Path 51) Southern Navajo; and (Path 63) Perkins -
23 Mead - Marketplace 500 kV Line.
- 24 3. Federal Energy Regulatory Commission Docket No. OA96-153-000 — Arizona
25 Public Service Company. APS Response to Data Request OEPR-14 and
26 attachments to response (ANPP Valley Transmission System Participation
27 Agreement; Navajo Project Co-Tenancy Agreement; Mead-Phoenix Project Joint
28 Ownership Agreement; and Amendment No. 1 to Service Schedule N of the

- 1 Northwest Phoenix Area 230 kV Transmission between Arizona Public Service
2 Company and Salt River Project Agricultural Improvement and Power District).
- 3 4. Federal Energy Regulatory Commission Docket No. OA96-153-000 — Arizona
4 Public Service Company. APS Response to Data Request OEPR-24 (Power flow
5 cases used by APS for operating studies for the summers of 1995 and 1996 and the
6 winter of 1995-96).
- 7 5. Federal Energy Regulatory Commission Docket No. OA96-153-000 — Arizona
8 Public Service Company. APS Response to Data Request OEPR-45 (APS and
9 PacifiCorp exchange).
- 10 6. Salt River Project 1996-97 Annual Report, pages 26 through 27, Interest in Jointly
11 Owned Electric Utility Plants.
- 12 7. Pinnacle West Capital Corporation 1996 Annual Report, pages 39 through 41,
13 Jointly-Owned Facilities
- 14 8. Tucson Electric Power Company 1994 Annual Report & Form 10K, pages K-48
15 through K-49, Jointly Owned Facilities
- 16 9. Tucson Electric Power Company 1997 FERC Form 1 pages 422 and 423
17 regarding TEP Company Transmission Facilities.

18 In addition, I have included as Exhibit DLD-2 to this testimony a draft report developed
19 by the Desert STAR Operations/Implementation Workgroup in May of this year,
20 concerning constrained transmission paths and “must run” generating units, along with a
21 map developed by the Desert STAR workgroup showing transmission-constrained areas
22 and load pockets.

23 Q. WOULD YOU BRIEFLY SUMMARIZE THE CONCLUSIONS OF YOUR ANALYSIS
24 AS TO THE EFFECT OF THE PROPOSED SETTLEMENTS AND THE EXCHANGE
25 TRANSACTION ON THE SUPPLY OPTIONS AVAILABLE TO CONSUMERS AND
26 CONSUMER-OWNED UTILITIES IN ARIZONA?

27 A. Yes. As I will explain in more detail throughout this testimony, I believe that there are
28 three major problems that would likely arise as a result of implementation of the proposed

1 settlements and the exchange transaction. These are:
2

- 3 1. Consolidation of control over key transmission interfaces,
4 which effectively establish the boundaries of the area in
5 which Arizona consumers and consumer-owned utilities
6 such as the ACES can practically turn for power supply
7 options, in the hands of TEP or its affiliated "Transco"
8 appear to limit the power supply options available to
9 Arizona consumers and consumer-owned systems.
10
- 11 2. The transfer of EHV transmission facilities (i.e., facilities
12 rated 345 kV and above) to TEP and its affiliated Transco
13 will significantly reduce the geographic reach of the
14 transmission system available to APS network transmission
15 service customers. At the same time, the electric merchant
16 affiliates of the two companies will retain existing
17 contractual rights on the EHV facilities. The concurrent
18 reduction in the geographic range of power supply options
19 available to network service customers, and preservation of
20 contractual rights for APS and TEP merchant affiliates, will
21 combine to limit power supply options and give TEP, APS,
22 and their respective retail power marketing affiliates unfair
23 advantages in acquiring and supplying customers, as well as
24 the ability to control prices or exclude competition.
25
- 26 3. Certain localized generation areas (Phoenix, Tucson, Yuma
27 and Douglas) may be particularly disadvantaged in terms of
28 the ability of customers located in those areas to pursue

1 competitive power supply options. These localized
2 generation areas, or "load pockets" represent significant
3 internal Arizona interfaces where transmission constraints
4 limit Arizona consumers and consumer-owned systems
5 ability to access generation markets. The proposed
6 settlement and exchange results in TEP or its affiliate
7 "Transco" ownership and majority control over the internal
8 Arizona interfaces and may have a particularly limiting
9 effect on the power supply options available to consumers
10 located in load pockets.

11
12 Q. IS YOUR ANALYSIS OF THE IMPACTS AND EFFECTS OF THE PROPOSED
13 SETTLEMENTS AND THE EXCHANGE TRANSACTION COMPLETE AS OF
14 YOUR SUBMISSION OF THIS TESTIMONY?

15 A. No, I did not have sufficient time under the procedural schedule in this proceeding to
16 complete my analysis. The kind of analysis that I have undertaken here is very fact-
17 intensive and research-intensive. Although I am confident in the opinions and conclusions
18 that I have reached as a result of my analysis to date, it is clear to me that inadequate time
19 was allowed in this proceeding for intervenors' witnesses (and particularly this intervenor
20 witness) to analyze the proposed settlements and the exchange transaction, and that
21 additional flaws and adverse effects on customers' power supply options and opportunities
22 will likely continue to surface as the analysis proceeds further. In particular, there is
23 neither sufficient information presently available from APS or TEP nor sufficient time to
24 develop independently the level of information required to analyze in a useful manner: (1)
25 the effect of the proposed settlements and the exchange transaction on Available
26 Transmission Capacity ("ATC") and Total Transmission Capacity ("TTC") on the Arizona
27 transmission system, (2) the effect of the proposed settlements and the exchange
28 transaction on assignment of transmission rights associated with pre-existing bundled

1 generation contracts (e.g., the APS-PacifiCorp exchange) on the ownership and effective
2 control of transmission capability in Arizona, and (3) the future determination of
3 “Committed Uses” outlined in the proposed settlements. Given the kinds of burdens that
4 the settlements and the proposed exchange transaction appear likely — even in the limited
5 time allowed for analysis to date — to impose on competition in Arizona retail electricity
6 markets, I would strongly recommend that settlement proponents be required to provide
7 all relevant information on these issues (as well as others that may come to light through
8 further analysis), and that all relevant information on these issues be thoroughly vetted by
9 the Commission, and by intervenors provided an adequate opportunity to prepare for
10 hearing, before the Commission considers accepting the settlements or allowing the
11 exchange transaction to proceed.

12
13 III. TRANSMISSION INTERFACES AND IMPACTS ON POWER SUPPLY OPTIONS

14 Q. IN ANALYZING FUTURE POWER SUPPLY OPTIONS FOR THE ACES, AND
15 SIMILARLY-SITUATED CONSUMER-OWNED UTILITIES FOR WHICH YOU
16 WORK IN ARIZONA, WHAT GEOGRAPHIC AREA OR AREAS DO YOU
17 CONSIDER AS POTENTIAL SOURCES OF SUPPLY?

18 A. Generally, we look at potential sources of power supply located within Arizona and more
19 specifically within one transmission system, or “wheel,” of the load sought to be served.

20 Q. WHY WOULD YOU NOT CONSIDER A BROADER RANGE OF OPTIONS? THE
21 ENTIRE WESTERN SYSTEMS COORDINATING COUNCIL, FOR EXAMPLE?

22 A. Cost-effective, competitive power supply for any load-serving entity (and particularly for
23 small consumer-owned systems) is generally limited by three considerations: (1)
24 generation cost differentials, (2) the cost of transmission required to import power, and
25 (3) the availability of transmission required to import power. In looking at generation
26 located outside the State of Arizona, the availability and cost of transmission service
27 frequently overcome any favorable differential in local generation pricing.

28

1 Q. HAVE THE ACES BEEN ACTIVE IN ATTEMPTING TO ENSURE THAT THEY
2 HAVE BROAD AND COMPARABLE TRANSMISSION ACCESS TO ENABLE
3 THEM TO SERVE THEIR LOADS?

4 A. Yes. In particular, I would note that the ACES were very active in their intervention at
5 the Federal Energy Regulatory Commission with respect to APS's Open Access
6 Transmission Tariff ("OATT") in FERC Docket No. OA96-153-000 and related
7 proceedings. Although the ACES presently obtain most of their transmission service
8 through non-tariff arrangements, they expect to have to use tariff transmission service to
9 serve their loads in the future, and the APS Merchant Group currently takes OATT
10 service for bundled service to certain ACES members.

11 Q. HAVE YOU INCLUDED A MAP OF THE ARIZONA TRANSMISSION SYSTEM AS
12 AN EXHIBIT TO YOUR TESTIMONY?

13 A. Yes. Exhibit DLD-3 is that portion of the current Western System Coordinating Council
14 map that represents the transmission facilities located in Arizona and immediately
15 surrounding areas of Nevada, Utah and New Mexico.

16 Q. PLEASE DESCRIBE THE EFFECT ON EHV TRANSMISSION FACILITIES WHICH
17 WOULD RESULT FROM THE PROPOSED TRANSFER OF FACILITIES FROM APS
18 TO TEP.

19 A. Both APS and TEP own significant EHV transmission lines which affect transmission of
20 electricity in Arizona. They are listed on Exhibit DLD-4. Page one of three summarizes
21 the "before" and "after" effect of TEP's transmission facility ownership resulting from the
22 proposed exchange of facilities. Pages two and three provide the detailed ownership of all
23 transmission lines in Arizona from which the summary "before" and "after" comparison is
24 derived. As one can readily see, the proposed transfer of facilities will result in a dramatic
25 increase in ownership of transmission facilities by TEP.

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1 Q. PLEASE DESCRIBE THE FEATURES OF THE ARIZONA TRANSMISSION
2 SYSTEM THAT YOU FOUND MOST RELEVANT IN YOUR ANALYSIS OF THE
3 PROPOSED SETTLEMENTS AND THE EXCHANGE TRANSACTION, AND
4 EXPLAIN WHY THOSE FEATURES ARE RELEVANT.

5 A. There are four transmission “interfaces” — groups of transmission lines that have an
6 aggregate limitation on their transfer capability — that effectively establish the boundaries
7 of the areas to which consumer-owned systems and consumers in Arizona can practicably
8 turn for power supply options outside local utilities. These four interfaces are identified as
9 paths in the WSCC Path Rating Catalog and can be described as follows (proceeding
10 counterclockwise on Exhibit DLD-3 from the southeastern portion of Arizona):

- 11
- 12 1. Arizona-Southern New Mexico Interface (WSCC Path 47), the significant
13 transmission facilities on the Arizona side of this interface are the TEP-
14 owned Springerville and Greenlee 345 kV substations. TEP presently
15 owns and controls the majority of the transmission lines and the substations
16 on the Arizona side of this interface;
 - 17
 - 18 2. Four Corners Area Interface (WSCC Path 22), consisting of various 345
19 kV and 500 kV lines carrying power west out of the Four Corners area of
20 northwestern New Mexico (the Four Corners to Cholla 345 kV lines and
21 the Four Corners to Moenkopi 500 kV line);
 - 22
 - 23
 - 24 3. TOT 2B (WSCC Path 34), consisting of the 345 kV Pinto to Four Corners
25 line and the 230 kV Sigurd to Glen Canyon line. TOT 2B interacts with
26 other interfaces (TOT 2A, TOT 2C, IPPDC, PDCI, COI). Resources that
27 successfully make it through TOT 2B may still be subject to the Four
28 Corner Area Interface addressed above; and

1
2 4. East of Colorado River (or "EOR") Interface (WSCC Path 49), consisting
3 of various 500 kV and 345 kV lines emanating from a number of Arizona
4 high voltage substations (e.g., Palo Verde, Navajo, Moenkopi,
5 Perkins/Westwing, and Liberty) west to California and Nevada.
6

7 Presently, significant control of those interfaces is split among three utilities. TEP
8 presently exercises significant control over only one — the Arizona-Southern New
9 Mexico interface. APS exercises significant control over two — the Four Corners Area
10 interface and the Arizona side of the EOR interface. PacifiCorp exercises significant
11 control over the TOT 2B interface. The exchange transaction proposed to be approved as
12 part of the settlements would consolidate significant control of two additional interfaces
13 (the Four Corners and EOR interfaces) in TEP's hands (or ultimately in the hands of its
14 affiliated Transco). This consolidation of control over three out of four key transmission
15 interfaces that effectively function as gateways through which Arizona's consumers must
16 pass in order to pursue competitive power supply options is a significant cause for
17 concern, in my opinion.

18 Q. HAVE YOU ATTEMPTED TO QUANTIFY THE CHANGES IN OWNERSHIP AND
19 CONTROL OVER THE TRANSMISSION INTERFACES THAT YOU HAVE
20 IDENTIFIED THAT WOULD RESULT FROM THE PROPOSED SETTLEMENTS
21 AND THE EXCHANGE TRANSACTION?

22 A. I have quantified the changes in ownership in Exhibit DLD-5. As the exhibit
23 demonstrates, TEP (or its affiliated Transco) will acquire a dominant position on two of
24 the four interfaces I have identified. Changes in operation and control (apart from the
25 fiscal control that accompanies ownership) are more difficult to analyze and quantify.
26 That kind of analysis depends, for example, on contractual arrangements and changes in
27 operation about which I have not been able to acquire sufficient information to conduct a
28 complete analysis at this point.

1 Q. WHY DO YOU SAY THAT THIS INCREASE IN TEP'S OWNERSHIP OF
2 TRANSMISSION INTERFACES IS A CAUSE FOR CONCERN?

3 A. Where control of the interfaces leading into or out of Arizona is split among several
4 utilities owning the transmission system, each of the utilities involved may have at least
5 some limited incentive (absent collusion) to offer cost-effective access, and exclusionary
6 conduct is more difficult to coordinate. With consolidation of three of the four interfaces
7 in TEP's hands, there would appear to be increased opportunities for exclusionary
8 conduct (gaming TTC and ATC determinations, for example) to favor the controlling
9 utility's merchant affiliates — for example, TEP's Unisource affiliate or New Energy
10 Ventures' power marketing arm (in which TEP has a significant investment) — in terms of
11 availability of transmission.

12 Q. ARE THESE TRANSMISSION INTERFACES PRESENTLY CONSTRAINED AS TO
13 POWER FLOWS ENTERING THE STATE OF ARIZONA?

14 A. The interfaces are currently reported to be constrained, although it has not been possible
15 to determine at this point whether the "constraints" are physical, contractual or some
16 combination of the two. According to Exhibit DLD-2 (the Desert STAR draft report and
17 map), these interfaces are "constrained" with little or no ATC during a significant number
18 of hours of the year.

19 Q. WHAT IS THE PRESENT EFFECT, IF ANY, OF THESE CONSTRAINTS ON THE
20 POWER SUPPLY OPTIONS AVAILABLE TO ARIZONA'S CONSUMERS AND
21 CONSUMER-OWNED UTILITIES?

22 A. The present constraints illustrate my point earlier in this testimony that the geographic
23 range of power supply options available to load or to load-serving entities in Arizona is
24 generally limited to the area bounded by those four interfaces.

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1 Q. HOW, IF AT ALL, ARE THE CONSTRAINTS ON THESE TRANSMISSION
2 INTERFACES LIKELY TO CHANGE AS A RESULT OF THE SETTLEMENTS OR
3 THE EXCHANGE TRANSACTION?

4 A. Presently, there is insufficient information available regarding ATC, TTC and "Committed
5 Uses" to permit a fully informed answer to that question. However, my primary concern
6 is that consolidation of a major ownership position on three of the four interfaces will
7 make it a great deal easier for the entity that holds that ownership position to limit the
8 ability of load-serving entities within Arizona to import power from outside the state. In
9 addition, where the entity that holds that dominant ownership position also retains
10 affiliates engaged in an electric merchant function, it is readily apparent that there is a
11 significant incentive for the transmission owner to limit the power supply options of other
12 load-serving entities. This will enhance the competitive position of the interface owner's
13 merchant affiliates, at the expense of competitive options that would otherwise be
14 available to those other load-serving entities. The combination of this ability to limit
15 competitive power supply options coming into Arizona with the incentive to do so is one
16 of the more striking features of the proposed settlements and the exchange transaction.

17
18 IV. LIMITING NETWORK TRANSMISSION SCOPE WHILE
19 CREATING ADVANTAGES FOR MERCHANT AFFILIATES

20 Q. PLEASE EXPLAIN YOUR SECOND CONCERN ABOUT THE PROPOSED
21 SETTLEMENTS AND EXCHANGE TRANSACTION AND THEIR IMPACT ON
22 POWER SUPPLY OPTIONS.

23 A. As I stated in my summary, the second concern with the proposed settlements and the
24 exchange transaction is that they simultaneously do two things. First, by transferring its
25 EHV transmission facilities to TEP, APS effectively limits the geographic scope of the
26 transmission system it is required by FERC's Final Open Access Rule to make available
27 for network transmission service — i.e., the scope of a transmission system that used to
28 include 345 kV and 500 kV facilities that extended to major generation trading points

1 (such as Four Corners) would now be limited to facilities rated below 345 kV and
2 effectively limited in its geographic reach to generation within certain areas of Arizona.

3
4 Second, and emphasizing again that there is unfortunately insufficient information to
5 permit a full informed conclusion, I believe that while shrinking the geographic reach
6 available to network customers of APS, the proposed settlements and the exchange
7 transaction leave in place the existing contractual rights of the merchant affiliates of both
8 companies to significant capacity on the EHV system. In effect, this aspect of the
9 exchange transaction removes control of at least a significant part of the Arizona EHV
10 transmission system from the hands of its current owners — who are subject to the
11 obligation to provide comparable, open access service at FERC-regulated just and
12 reasonable rates under FERC's Final Open Access Rule — and places that control
13 effectively in the hands of merchant affiliates of the transmission owners, which are not
14 subject to the obligations of the Final Open Access Rule. The effects of this second aspect
15 of the exchange transaction may be expected to worsen, from the perspective of customer
16 power supply options and opportunities, as "congestion" of the transmission system
17 (whether real or apparent) gives rise to proposals for a congestion management system
18 featuring Firm Tradable Rights ("FTRs") as a device for hedging against transmission
19 congestion charges.

20 Q. WHAT ARE FIRM TRADABLE RIGHTS IN THIS CONTEXT?

21 A. Under constrained conditions (for example, peak load periods), it is envisioned that FTRs
22 will be traded between suppliers to balance price differentials between areas across the
23 congested path. Transmission rights today will become Firm Tradable Rights of the
24 future. For pricing purposes, the FTRs may be remarketed at costs which will encourage
25 the least cost resources to purchase the FTRs and gain access to the higher cost markets,
26 for example Four Corners generation being sold to Los Angeles. The ownership of
27 transmission rights therefore become a valuable commodity in the deregulated generation
28 market.

1 Q. BUT, ACCORDING TO THE PARTIES TO THE SETTLEMENTS, THE
2 SETTLEMENTS CONTEMPLATE A TRANSMISSION REGIME IN WHICH:

- 3 (1) "ALL NETWORK CUSTOMERS IN AN ACCESS AREA
4 (OR ZONE) SHOULD PAY THE SAME RATE FOR
5 TRANSMISSION SERVICE,"
6 (2) "ALL CUSTOMERS SHOULD HAVE ACCESS TO ANY
7 GENERATION WITHIN THE REGION AT NO ADDITIONAL
8 COST," AND
9 (3) "TRANSMISSION CONSTRAINTS AND/OR THE
10 ALLOCATION OF AVAILABLE TRANSMISSION CAPACITY
11 ('ATC') SHOULD NOT BE ALLOWED TO UNDULY
12 FRUSTRATE COMPETITION" (APS Settlement, Article V; TEP
13 Settlement, Article VIII).

14 DON'T THOSE UNDERTAKINGS BY APS AND TEP ELIMINATE THE KINDS OF
15 CONCERNS YOU ARE DISCUSSING HERE?

16 A. Not really, and not by a long shot, for at least four reasons. First, as I have explained, as a
17 result of the exchange transaction and the proposed settlements, the transmission
18 "network" serving "network customers" will get smaller as a result of the extraction of the
19 EHV transmission facilities from APS ownership.

20
21 Second, I am unable to find any information that would help me square the stated promise
22 of "access to any generation within the region at no additional cost" with the emphasis
23 elsewhere in the same articles of the settlement agreements that "[u]nder any pricing
24 approach, congestion management and ATC determination will be crucial to a successful
25 implementation." Congestion management typically contemplates additional charges for
26 crossing congested interfaces, and that appears to be precisely what the settlements
27 contemplate — additional charges to access certain generation.

28

1 Third, I am hard pressed to find any explanation in the settlements how the existing
2 contractual rights in the EHV system that will have found their way into the hands of
3 APS's and TEP's merchant affiliates if the settlements and the exchange transaction are
4 approved will be made subject to the transmission tariff filing obligations of APS, TEP and
5 TEP's affiliated Transco. After all, the merchant affiliates holding what are virtually
6 certain to become FTRs are not transmission owning utilities.

7
8 Fourth, I am both puzzled and troubled by the phrase "transmission constraints and/or the
9 definition and allocation of ATC should not *unduly frustrate competition.*" I cannot
10 discern any basis for determining what constitutes "undue" frustration of competition, or
11 any basis for accepting any frustration of competition in these circumstances.

12 V. LOAD POCKETS

13 Q. WHAT IS A "LOAD POCKET"?

14 A. A load pocket is a localized generation area in which, because of local transmission
15 constraints, generation within the area is required to run for a significant portion of the
16 year and therefore — absent any mitigating considerations — the generation within the
17 area has the opportunity to exercise localized market power. The existence of "must run"
18 generation is, to a large extent, synonymous with the existence of a load pocket.

19 Q. WHERE ARE THERE LOAD POCKETS IN ARIZONA?

20 A. The Desert STAR Working Group has identified Phoenix, Tucson, Yuma and Douglas
21 areas as load pockets within the State of Arizona.

22 Q. ARE ANY OF THE ACES UTILITIES LOCATED WITHIN A LOAD POCKET?

23 A. Yes, all of them are.

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2 VI. RECOMMENDATIONS

3 Q. BASED ON YOUR ANALYSIS TO DATE, DO YOU HAVE ANY
4 RECOMMENDATIONS TO OFFER THE COMMISSION CONCERNING THE
5 PROPOSED SETTLEMENTS AND THE EXCHANGE TRANSACTION?

6 A. Yes. The increase in control over transmission and diminution of consumer choices to
7 access power supplies which would result from the settlements and the proposed exchange
8 transaction would not be in the public interest. The Commission could, however,
9 condition its approval of the settlements to dampen their anticompetitive effects
10 sufficiently to avoid the worst of the harm that they would inflict on consumers. Those
11 conditions include the following:

12
13 1. The Commission should reject the Transco element of the proposed
14 settlements outright, as fundamentally inconsistent with the Commission's
15 expressed policy support for the development of an ISO with full authority
16 over the Arizona transmission system. Any interim possession of partial
17 transmission assets should not reside, even temporarily, in a single
18 company which, with various marketing affiliates, would have everything
19 to gain and little, if nothing to lose by restricting transmission access to
20 Arizona consumers and delaying eventual transition to an independent
21 system operator.

22
23 2. The Commission should, as a condition of approving any transfer of
24 facilities from APS to TEP, require that APS and TEP file with FERC and
25 receive approval of a fully independent ISO with complete operating
26 authority over the Arizona transmission system, including the authority to
27 construct and own new transmission facilities with the State. Until such an
28 ISO is fully implemented, no change in ownership or control of

1 transmission facilities should be allowed to take place because of the
2 potentially serious consequences of increased concentration of ownership
3 and control over key transmission facilities affecting the availability of
4 competitive power supply facilities to Arizona consumers.

5
6 3. The Commission should both (a) condition any acceptance of the
7 settlement and (b) defer any authorization for the transfer of facilities until
8 after APS and TEP (along with other transmission-owning entities in the
9 state if those entities are willing) first file with FERC and second receive
10 approval of a single-system , non-pancaked, open access transmission tariff
11 that:

- 12 • Is fully compliant with the non-rate terms and conditions set forth
13 in FERC's *pro forma* open access tariff, without any modification
14 that is neither consistent with nor superior to the terms and
15 conditions of the *pro forma* tariff;
- 16 • Provides for just, reasonable and non-discriminatory single
17 system charges for network and point-to-point transmission
18 service across the transmission systems of APS and TEP,
19 along with any other transmission-owning participants, as
20 well as appropriate provisions for self-supply of ancillary
21 services and all other transmission customer cost
22 protections provided by FERC's Final Open Access Rule;
- 23 • Incorporates a demonstratedly broad consensus among
24 entrants and potential entrants into the Arizona electricity
25 markets as to transmission provisions that will facilitate
26 entry and full, free and fair competition in those markets;
27 and
- 28 • Explicitly sets forth all assumptions, criteria and

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methodologies used in developing “Committed Uses” and other claims of priority access to Available Transmission Capacity, and explicitly makes those claims subject on at least a pro rata basis to the transmission requirements of other load-serving entities within the State of Arizona.

Q. DOES THIS CONCLUDE YOUR TESTIMONY AT THIS TIME?

A. Yes, it does.

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DECLARATION

COUNTY OF MARICOPA

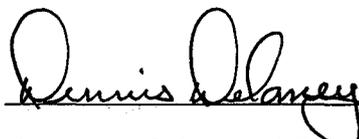
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STATE OF ARIZONA

DENNIS L. DELANEY, P.E., being subject to the penalties of perjury under the laws of the State of Arizona, hereby states:

1. I am the same Dennis L. Delaney who prepared the foregoing direct testimony and the exhibits thereto. I am thoroughly familiar with that prepared direct testimony and those exhibits.

2. The statements of fact set forth in that testimony are true and correct to the best of my knowledge, information and belief. If asked the same questions as set forth in the foregoing testimony during live examination under oath, I would give the same answers as set forth in the testimony.


Dennis L. Delaney, P.E.

Dated at Mesa, Arizona
this 30th day of November, 1998.

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STATEMENT OF QUALIFICATIONS

Dennis L. Delaney, P.E.

160 N. Pasadena, Suite 101
Mesa, Arizona 85201-6764
(602) 610-8741

Dennis L. Delaney is a partner in K.R. Saline & Associates, PLC, a consulting engineering firm located Arizona. Mr. Delaney provides electrical power consulting services to numerous irrigation districts, electrical districts, federal, state and municipal utilities located in Arizona and New Mexico. Mr. Delaney is a registered professional engineer in the State of Arizona.

Mr. Delaney graduated from Arizona State University in 1986 with a Bachelor of Science degree in Electrical Engineering with a power system emphasis. Mr. Delaney worked for five years at R.W. Beck and Associates as an engineering consultant. At R.W. Beck, Mr. Delaney assisted public utility clients prepared numerous transmission and distribution planning studies, Consulting Engineer's reports used in Official Statements, wholesale power supply and wheeling contracts, and utility rate analyzes.

Currently Mr. Delaney provides ongoing consulting engineering services and management consulting to various public utility clients within Arizona and New Mexico. Mr. Delaney is currently responsible for the power supply scheduling and resource acquisition for approximately twenty transmission dependent utilities in Arizona. The power supply arrangements for these Wholesale utilities frequently require wheeling service over both the transmission systems and the local distribution facilities of most Arizona utilities. In recommending power supplies to the clients, Mr. Delaney frequently evaluates various resource and wheeling combinations to acquire the least cost resources for each client. Mr. Delaney's current efforts are focused on power supply planning and acquisition with particular emphasis on transmission deregulation activities on behalf of several Arizona clients. Mr. Delaney has represented their interest in numerous forums within the State and Western Interconnection.

OPERATIONS/IMPLEMENTATION

WORKGROUP

STATUS REPORT

DSTAR

MAY 1998

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| VI. | DSTAR CONTROL AREA OPERATIONS DISCUSSIONS _____ | 12 |

I. EXECUTIVE SUMMARY

A. CONSTRAINED PATHS/CONGESTED MAP ZONES

Eight zones have been identified for the DSTAR region. The zones are:

- 1) Northern New Mexico
- 2) Southern New Mexico/El Paso
- 3) San Juan/Four Corners/Shiprock
- 4) Phoenix, AZ
- 5) Tucson, AZ
- 6) Las Vegas, NV
- 7) Yuma, AZ
- 8) Remaining Arizona

Zones #3 is an "export" congestion zone. Zone #8 is not congested and the remaining zones (to load centers) have "import" constraints.

B. CONSTRAINED PATHS DATA

The constrained path list was developed from a combination of:

- 1) Known Thermal Line Constraints
- 2) ATC = 0
- 3) Must-run Unit Operation

Phoenix, Las Vegas, Tucson and El Paso require local generation due to import limitations into the load centers on transmission circuits internal to their load centers. Albuquerque has voltage limitations for N-1 conditions on the San Juan/Four Corners path.

The San Juan/Four Corners/Shiprock center has export constraints to Albuquerque, Cholla, Moenkopi and Glen Canyon.

C. MUST-RUN GENERATION

Phoenix, Las Vegas, Tucson and El Paso each have units that must be operated to serve load in the high load seasons. Following is the must-run relative magnitude:

Phoenix: 450 Hour/Year
Las Vegas: Not Verified
Tucson: 81% of the Days
El Paso: Minimum of 3 Units Must Run All Year

D. IMPLEMENTATION MODELS

Four models are recommended to be analyzed for DSTAR as:

- 1) a Scheduling Administrator
- 2) a Security Coordinator
- 3) a Hybrid-Control Area Operator
- 4) a Single Control Area Operator.

E. DSTAR CONTROL AREA OPERATIONS

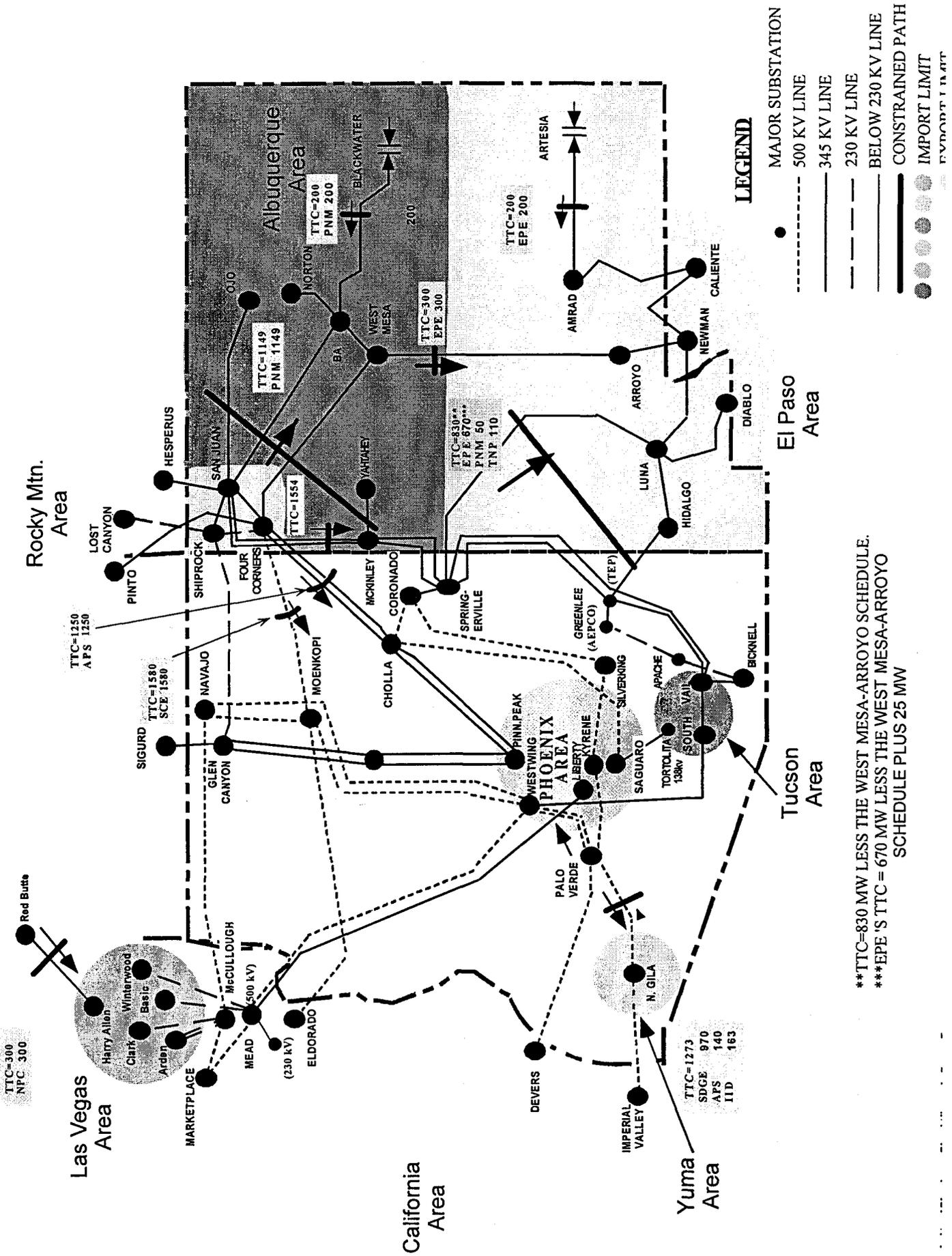
Discussion early in this Stage of Phase II, a poll was taken to obtain a sense as to where the member DSTAR Control Area Operators stood on relinquishing their Control Area Operation to DSTAR.

Following are the results of the poll:

| <u>STATUS</u> | <u>MEMBER</u> |
|-------------------------------|----------------|
| Continued CAO's | SRP, WAPA, EPE |
| Considered Turn-Over of CAO's | APS |
| Undecided | PNM, NPC, TEP |
| Evaluating CAO's | PEGT |

II. CONSTRAINED PATHS/CONGESTED ZONE MAP

CONGESTION ZONES FOR DESERT STAR



LEGEND

- MAJOR SUBSTATION
- 500 KV LINE
- 345 KV LINE
- 230 KV LINE
- BELOW 230 KV LINE
- CONSTRAINED PATH
- IMPORT LIMIT

**TTC=830 MW LESS THE WEST MESA-ARROYO SCHEDULE.
 ***EPE 'S TTC = 670 MW LESS THE WEST MESA-ARROYO SCHEDULE PLUS 25 MW

III. CONSTRAINED PATHS DATA

**DSTAR O/I WORKING GROUP
 Congested/Constrained Interface:**

| Company: | Path: | Nature of Congestion: |
|----------|--|--|
| AEPCO | Westwing/Vail 345Kv TTC=161MW | 0 ATC all year, committed use. |
| APS | 4-Cnrs/Cholla 345kV TTC=1250MW | 0 ATC for 742 hrs/yr, 62 ATC for 1550 hrs/yr |
| | Palo Verde-Westwing TTC=1318 | 0 ATC for 318 hrs/yr 66MW ATC for 2294 hrs/yr |
| | Palo Verde-N. Gila TTC=140MW | 0 ATC for 2968 hrs/yr 7MW ATC for 4294 hrs/yr |
| El Paso | West Mesa-Arroyo 345kV TTC=300MW | 0 ATC for 7000 hrs/yr |
| | Sprvi-Luna 345 kV Greenlee-Hidalgo 345kV TTC=519MW | 0 ATC for 5500 hrs/yr |
| NPC | Red Butte-Harry Allen TTC=300MW | 0 ATC for 3384 hrs/yr |
| | Harry Allen-Mead TTC=300MW | 0 ATC for 3384 hrs/yr |
| | Harry Allen-McCullough TTC=300MW | 0 ATC for 3384 hrs/yr |
| | Namajor-McCullough TTC=360MW | 0 ATC for 1248 hrs/yr |
| PNM | San Juan-Albuquerque | 0 ATC all year, committed use. |
| SRP | 4 Cnrs-Coronado TTC=50MW | 0 ATC all year, committed use. |
| | 4 Cnrs-4Cnrs TCC=50MW | 2MW ATC all year |
| | NV-Moenkopi- McCullough TTC=344MW | 0 ATC all year, committed use. |
| | Palo Verde-Hayden TTC=95MW | 13MW ATC Jul-Sep |

DSTAR O/I WORKING GROUP
Congested/Constrained Interface Con't:

| | | |
|------|--|--------------------------------|
| | Palo Verde-Pinnacle Peak | 13MW ATC Jul-Aug |
| | SilverKing-Hayden TTC=95MW | 21MW ATC May-Aug |
| TEP | (2) San Juan to McKinley 345kV TTC=1554MW | 0 ATC all year, committed use. |
| | Sprvl-Coronado 345kV TTC=672MW | 0 ATC all year, committed use. |
| | Sprvl-Vail 345kV TTC=666MW | 0 ATC all year, committed use. |
| | Sprvl-Greenlee 345kV TTC=745MW | 0 ATC all year, committed use. |
| | Greenlee-Vail 345kV TTC=896 | 0 ATC all year, committed use. |
| | Westwing Bidirectional South 345kV TTC=511MW | 0 ATC all year, committed use. |
| | Vail into Tucson Network TTC=1338MW | 0 ATC all year, committed use. |
| | South into Tucson Network TTC=672MW | 0 ATC all year, committed use. |
| | North Loop into Tucson Network TTC=672MW | 0 ATC all year, committed use. |
| WAPA | Data Not Confirmed | |

IV. SUMMARY OF MUST-RUN UNITS

Phoenix, Las Vegas, Tucson and El Paso each have units that must operate to serve load.

The following summarizes the Must-Run relative magnitude:

| Company | Description |
|----------------|---|
| AEPC | One of the units at Apache must run all year |
| APS | Metro-Phoenix units must run approximately 447 hrs/yr when valley load exceeds 5800MW Yuma - Douglas - N-1 contingency Douglas - N-1 contingency |
| El Paso | Minimum of 3 units must run all year Rio Grand Plant must run to maintain import capability which is 100% of the time in the summer months |
| NPC | Data not confirmed |
| PNM | No must-run units |
| SRP | Metro-Phoenix units must run approximately 200-400 hrs/yr when valley load exceeds 5800MW |
| WAPA | Data not confirmed |

V. IMPLEMENTATION MODELS

Four models are recommended to be analyzed for DSTAR implementation consideration: The models were suggested as a result of the Pricing WG's "Economic Analysis" Subgroup efforts.

DSTAR Implementation Options Briefs:

Option 1: ISO as Independent Scheduling Administrator

Market Structure:

- WSCC Security Coordinator hosted by WAPA
- Regional OASIS hosted by ISO
- Congestion Management protocols implemented by ISO
- Scheduling Coordinator infrastructure implemented
- Control Area Operators continue to operate the grid.

Characteristics:

The ISO will rely heavily on well defined and well developed Protocols/agreements which would integrate all of the market structure functions listed.

Critical Path Implementation Issue:

- Operation in 12 months
- Regional Transmission Tariff
- Congestion Management Protocols/Agreements.

Option 2: ISO as WSCC Security Coordinator

Market Structure:

- WSCC Security Coordinator hosted by ISO
- Regional OASIS hosted by ISO
- Congestion Management hosted by ISO
- Scheduling Coordinator infrastructure implemented
- Control Area Operators continue to operate the grid

Characteristics:

- The ISO would consolidate the OASIS and the Security Coordination functions but would have to develop protocols and agreements such that the ISO, Scheduling Coordinators and Control Area Operators would be integrated.

Critical Path Implementation Issue:

- Operational in 18 months
- Liability Insurance

Option 3: ISO as a Partial-regional Control Area Operator

Market Structure:

- WSCC Security Coordinator hosted by ISO
- Regional OASIS hosted by ISO
- Congestion Management hosted by ISO
- Scheduling Coordination infrastructure implemented
- Partial Regional Control Area Services hosted by ISO

Critical Path Implementation Issue:

- Operational in 48 months
- Liability Insurance
- EMS Implementation

Option 4: Independent System Operator

Market Structure

- WSCC Security Coordinator hosted by ISO
- Regional OASIS hosted by ISO
- Congestion Management hosted by ISO
- Scheduling Coordination infrastructure implemented
- Control Area Services hosted by ISO for entire DSTAR Region

Characteristics:

The ISO would meet all of the FERC independence principles with the addition of operating as a single control area. The ISO would require the development of protocols and agreements for the Scheduling Coordinators. The ISO would also facilitate the Ancillary Services Requirements.

Critical Path Implementation Issues:

- Operations in 48 to 60 months
- Liability Insurance
- EMS Implementation

VI. DSTAR CONTROL AREA OPERATIONS

One conclusion that can be inferred from a March 2, 1998 poll, DSTAR will not be a single Control Area Operation in the inception stages.

However, it may be possible the DSTAR would offer Control Area Services for part of the region. This would be described as a Hybrid - Control Area Operation (Option #3, Section V.)

Following is a result of the poll taken on March 2, 1998:

| <u>STATUS</u> | <u>MEMBER</u> |
|-------------------------------|----------------|
| Continued CAO's | SRP, WAPA, EPE |
| Considered Turn-Over of CAO's | APS |
| Undecided | PNM, NPC, TEP |
| Evaluating CAO's | PEGT |

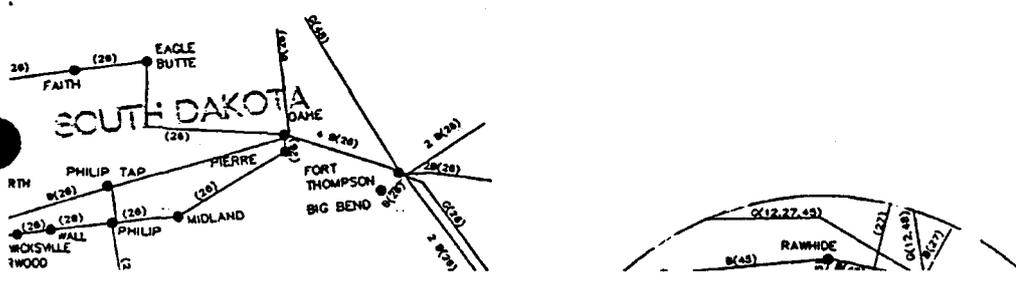
WESTERN SYSTEMS COORDINATING COUNCIL MAP OF PRINCIPAL TRANSMISSION LINES JANUARY 1, 1997

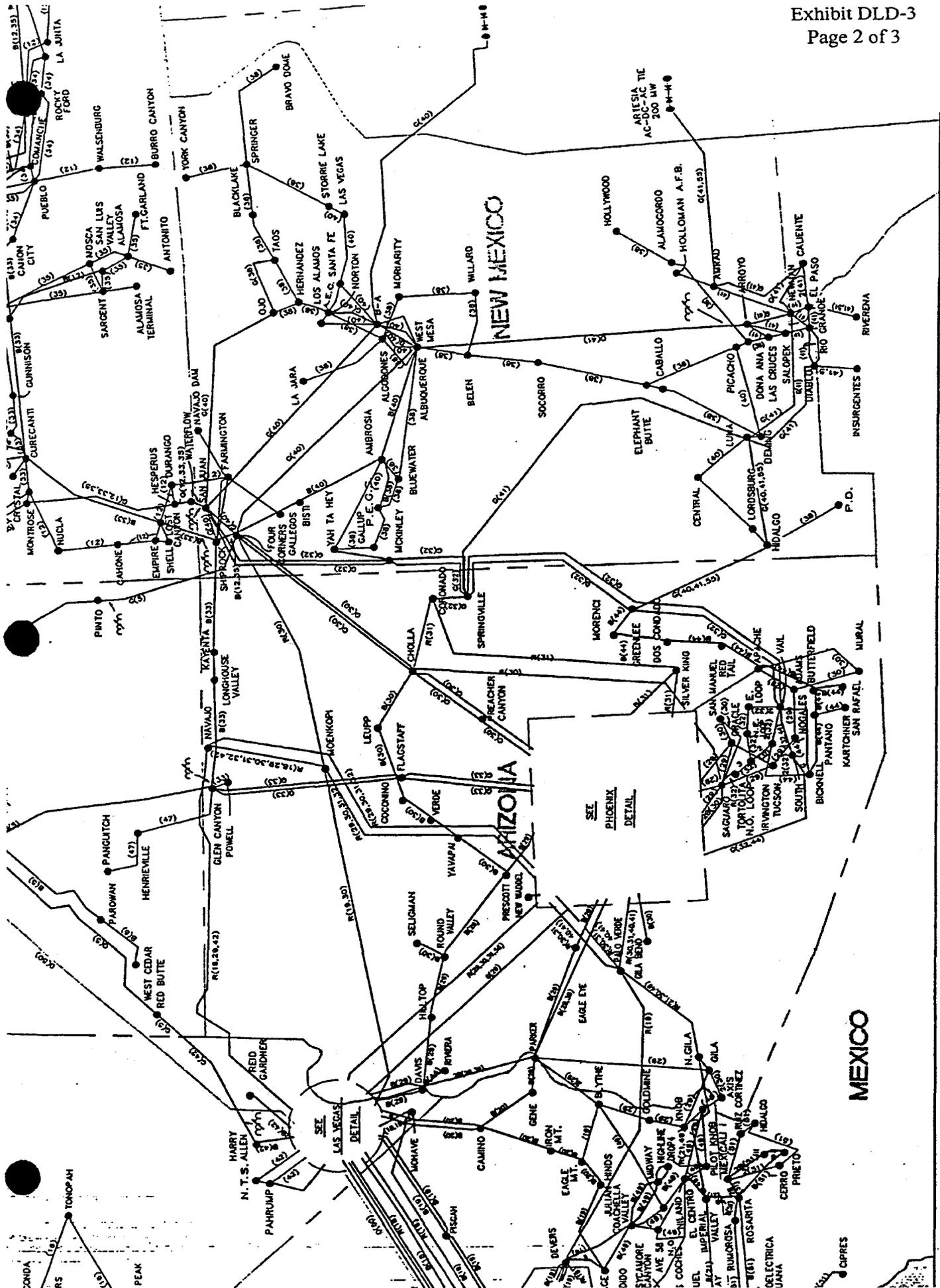
1. BONNEVILLE POWER ADMINISTRATION
2. WASHINGTON WATER POWER COMPANY
3. SEATTLE CITY LIGHT
4. TACOMA CITY LIGHT
5. PACIFICORP
6. PORTLAND GENERAL ELECTRIC COMPANY
7. PUGET SOUND POWER & LIGHT COMPANY
8. CHELAN COUNTY PUBLIC UTILITY DISTRICT
9. DOUGLAS COUNTY PUBLIC UTILITY DISTRICT
10. GRANT COUNTY PUBLIC UTILITY DISTRICT
11. NEBRASKA PUBLIC POWER DISTRICT
12. TRI-STATE GENERATION & TRANSMISSION ASSOCIATION
13. WESTERN AREA POWER ADMINISTRATION - MID-PACIFIC AREA
14. PACIFIC GAS & ELECTRIC COMPANY
15. STATE OF CALIFORNIA - DEPT OF WATER RESOURCES
16. SIERRA PACIFIC POWER COMPANY
17. SACRAMENTO MUNICIPAL UTILITY DISTRICT
18. DEPT OF WATER & POWER - CITY OF LOS ANGELES
19. SOUTHERN CALIFORNIA EDISON COMPANY
20. METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
21. SAN DIEGO GAS & ELECTRIC COMPANY
22. BRITISH COLUMBIA HYDRO & POWER AUTHORITY
23. WEST KOOTENAY POWER LTD
24. THE MONTANA POWER COMPANY
25. IDAHO POWER COMPANY
26. WESTERN AREA POWER ADMINISTRATION - UPPER MISSOURI AREA
27. WESTERN AREA POWER ADMINISTRATION - LOWER MISSOURI AREA
28. NORTHERN CALIFORNIA POWER AGENCY
29. WESTERN AREA POWER ADMINISTRATION - LOWER COLORADO AREA
30. ARIZONA PUBLIC SERVICE COMPANY
31. SALT RIVER PROJECT
32. TUCSON ELECTRIC POWER COMPANY
33. WESTERN AREA POWER ADMINISTRATION - UPPER COLORADO AREA
34. WESTPLAINS ENERGY
35. PUBLIC SERVICE COMPANY OF COLORADO
36. COLORADO SPRINGS UTILITIES
37. TRANSMISSION AGENCY OF NORTHERN CALIFORNIA
38. PLAINS ELECTRIC GENERATION & TRANSMISSION COOPERATIVE
39. BUREAU OF RECLAMATION, U.S. DEPT. OF INTERIOR
40. PUBLIC SERVICE COMPANY OF NEW MEXICO
41. EL PASO ELECTRIC COMPANY
42. NEVADA POWER COMPANY
43. BLACK HILLS POWER & LIGHT COMPANY
44. ARIZONA ELECTRIC POWER COOPERATIVE
45. PLATTE RIVER POWER AUTHORITY
46. TRANSALTA UTILITIES CORPORATION
47. DESERET GENERATION AND TRANSMISSION COOPERATIVE
48. BASIN ELECTRIC POWER COOPERATIVE
49. IMPERIAL IRRIGATION DISTRICT
50. INTERMOUNTAIN POWER AGENCY
51. COMISION FEDERAL DE ELECTRICIDAD
52. TURLOCK IRRIGATION DISTRICT
53. MODESTO IRRIGATION DISTRICT
54. CITY OF FARMINGTON
55. TEXAS - NEW MEXICO POWER COMPANY
56. CITY OF VERNON

KENMARE

HETTINGER

BISON





Ownership of 345 kV and 500 kV Transmission Facilities
Owned by APS and TEP

| | Summary of TEP 345 kV and 500 kV Transmission Facilities Before and After The Exchange of Facilities | |
|---|---|--|
| | Tucson Electric Power Before Exchange | Tucson Electric Power After Exchange |
| APS Swapped Facilities (1-7) | | |
| 1 Cholla - Saguaro 500 kV Line | | 100.00% |
| 2 Cholla 500kV/345kV Switchyard | | 100.00% |
| 3 Saguaro 500 kV Substation | | 100.00% |
| 4 Four Corners - Pinnacle Peak 345 kV lines | | 100.00% |
| 5 Four Corners 345 kV Switchyard | | 27.50% |
| 6 Pinnacle Peak 345 kV Substation | NA | NA |
| 7 Four Corners 500 kV Switchyard | | 27.50% |
| 8 Preacher Canyon 345 kV Substation | | 100.00% |
| 9 Navajo - Westwing 500 kV Lines | 13.30% | 38.00% |
| 10 Navajo 500 kV Switchyard | 7.50% | 21.50% |
| 11 Westwing 500 kV Switchyard | 13.30% | 38.00% |
| 12 Yavapai 500 kV Substation | | 100.00% |
| 13 Moenkopi Switchyard (Navajo Breakers) | | 100.00% |
| 14 Navajo Project Breakers | | 100.00% |
| 15 Palo Verde - Westwing 500 kV Lines | | 34.60% |
| 16 Palo Verde 500 kV Switchyard | | 29.10% |
| 17 Westwing 500 kV Interconnection Agmnt. | | 41.31% |
| 18 Palo Verde - Kyrene 500 kV Line | | 34.60% |
| 19 Palo Verde - N. Gila 500 kV Line | | 11.00% |
| 20 Palo Verde 500 kV Switchyard Inter. Agmnt. | | 29.10% |
| 21 North Gila 500 kV Substation | | 11.00% |
| 22 Mead - Phoenix 500 kV Line | | 18.15% |
| 23 Perkins 500 kV Substation | 13.30% | 38.00% |
| 24 Mead 500 kV Substation | | 19.05% |
| 25 Marketplace 500 kV Substation | | 12.74% |
| 26 Marketplace-Mead-McCullough 500 kV Line | NA | NA |
| 27 McCullough 500 KV Switchyard | NA | NA |
| 28 Four Corners-Moenkopi-El Dorado Agmnt | | 100.00% |
| 29 Ownership on high side except Pinn Pk & FC | NA | NA |
| Tucson Electric Power Major Lines (8) | | |
| 14 Vail South 345 kV Lines | 76.00% | 76.00% |
| 15 San Juan - Four Corners 345 kV | 50.00% | 50.00% |
| 16 San Juan - McKinley 345 kV #1 | 94.64% | 94.64% |
| 17 San Juan - McKinley 345 kV #2 | 75.00% | 75.00% |
| 18 McKinley - Springerville #2 345 kV Lines | 83.33% | 83.33% |
| 19 Springerville - Coronado 345 kV Line | 83.33% | 83.33% |
| 20 Greenlee - Vail 345 kV Line | 94.64% | 94.64% |
| 21 South - El Sol 345 kV Line | 76.00% | 76.00% |
| 22 El Sol - West Wing 345 kV Line | 76.00% | 76.00% |
| 23 Springerville - Greenlee Lead #1 345 kV Line | 94.64% | 94.64% |
| 24 Springerville - Greenlee Express 345 kV Line | 100.00% | 100.00% |
| 25 McKinley-Springerville #1 345 kV Line | 94.64% | 94.64% |
| 26 Springerville - Greenlee #1 345 kV Line | 100.00% | 100.00% |
| 27 Greenlee - Vail Express 345 kV Line | 100.00% | 100.00% |
| 28 Greenlee - Vail Express 345 kV Line | 100.00% | 100.00% |
| 29 Springerville - Greenlee Lead #2 345 kV Line | 100.00% | 100.00% |
| 32 Navajo - Moenkopi 500 kV Line | 7.50% | 21.50% |
| 33 Moenkopi - Westwing 500 kV Line | 13.30% | 38.00% |
| 34 Navajo - Westwing 500 kV | 13.30% | 38.00% |
| 35 Saguaro - Tortolita | 100.00% | 100.00% |

Ownership of 345 kV and 500 kV Transmission Facilities
Owned by APS and TEP

| Comparison of 345 kV and 500 kV Transmission Facilities Before The Exchange of Facilities | | | | | | | | | | | | | | | |
|---|------------------------|--|------------------|--------------------|-----------------------|--------------------|------------------------------|----------------------------|--------------------|------------------|----------------------|---------------------|---------------------------|-----------------|--|
| | Arizona Electric Power | Arizona Public Service | Citizens Nogales | Salt River Project | Tucson Electric Power | Western Area Power | Imperial Irrigation District | Other California Utilities | Colorado Utilities | Nevada Utilities | New Mexico Utilities | Texas Utilities EPE | Utah Utilities PacifiCorp | Total Ownership | |
| APS Swapped Facilities (1-7) | | | | | | | | | | | | | | | |
| 1 Cholla - Saguaro 500 kV Line | | 100.00% | | | | | | | | | | | | 100.00% | |
| 2 Cholla 500kV/345kV Switchyard | | 100.00% | | | | | | | | | | | | 100.00% | |
| 3 Saguaro 500 kV Substation | | 100.00% | | | | | | | | | | | | 100.00% | |
| 4 Four Corners - Pinnacle Peak 345 kV lines | | 100.00% | | | | | | | | | | | | 100.00% | |
| 5 Four Corners 345 kV Switchyard | | 27.50% | | | | | | | | | | | | 27.50% | |
| 6 Pinnacle Peak 345 kV Substation | | NA | | | | | | | | | | | | NA | |
| 7 Four Corners 500 kV Switchyard | | 27.50% | | | | | | | | | | | | 27.50% | |
| 8 Preacher Canyon 345 kV Substation | | 100.00% | | | | | | | | | | | | 100.00% | |
| 9 Navajo - Westwing 500 kV Lines | | 24.70% | | 62.00% | 13.30% | | | | | | | | | 100.00% | |
| 10 Navajo 500 kV Switchyard | | 14.00% | | 21.70% | 7.50% | 24.30% | | 21.20% | | 11.30% | | | | 100.00% | |
| 11 Westwing 500 kV Switchyard | | 24.70% | | 62.00% | 13.30% | | | | | | | | | 100.00% | |
| 12 Yavapai 500 kV Substation | | 100.00% | | | | | | | | | | | | 100.00% | |
| 13 Moenkopi Switchyard (Navajo Breakers) | | 100.00% | | | | | | | | | | | | 100.00% | |
| 14 Navajo Project Breakers | | 100.00% | | | | | | | | | | | | 100.00% | |
| 15 Palo Verde - Westwing 500 kV Lines | | 34.60% | | 34.60% | | | | | | 12.10% | 18.70% | | | 100.00% | |
| 16 Palo Verde 500 kV Switchyard | | 29.10% | | 17.49% | | | 0.38% | 27.03% | | 10.20% | 15.80% | | | 100.00% | |
| 17 Westwing 500 kV Interconnection Agmnt. | | 41.31% | | 41.31% | | | | | | 12.10% | 5.28% | | | 100.00% | |
| 18 Palo Verde - Kyrene 500 kV Line | | 34.60% | | 34.60% | | | | | | 12.10% | 18.70% | | | 100.00% | |
| 19 Palo Verde - N. Gila 500 kV Line | | 11.00% | | 0.00% | | | 12.80% | 76.20% | | | | | | 100.00% | |
| 20 Palo Verde 500 kV Switchyard Inter. Agmnt. | | 29.10% | | 17.49% | | | 0.38% | 27.03% | | 10.20% | 15.80% | | | 100.00% | |
| 21 North Gila 500 kV Substation | | 11.00% | | 0.00% | | | 12.80% | 76.20% | | | | | | 100.00% | |
| 22 Mead - Phoenix 500 kV Line | | 18.15% | | 18.15% | | 31.69% | | 32.00% | | | | | | 100.00% | |
| 23 Perkins 500 kV Substation | | 24.70% | | 62.00% | 13.30% | | | | | | | | | 100.00% | |
| 24 Mead 500 kV Substation | | 19.05% | | 19.05% | | 40.36% | | 21.55% | | | | | | 100.00% | |
| 25 Marketplace 500 kV Substation | | 12.74% | | 21.38% | | 31.32% | | 34.55% | | | | | | 100.00% | |
| 26 Marketplace-Mead-McCullough 500 kV Line | | NA | | | | | | | | | | | | NA | |
| 27 McCullough 500 kV Switchyard | | NA | | | | | | | | | | | | NA | |
| 28 Four Corners-Moenkopi-El Dorado Agmnt | | 100.00% | | | | | | | | | | | | 100.00% | |
| 29 Ownership on high side except Pinn Pk & FC | | NA | | | | | | | | | | | | NA | |
| Tucson Electric Power Major Lines (8) | | | | | | | | | | | | | | | |
| 14 Vail South 345 kV Lines | | | | | 76.00% | | | | | | | | | 76.00% | |
| 15 San Juan - Four Corners 345 kV | | | | | 50.00% | | | | | 50.00% | | | | 100.00% | |
| 16 San Juan - McKinley 345 kV #1 | | | | | 94.64% | | | | | 5.36% | | | | 100.00% | |
| 17 San Juan - McKinley 345 kV #2 | | | | | 75.00% | | | | | 25.00% | | | | 100.00% | |
| 18 McKinley - Springerville #2 345 kV Lines | | | | | 83.33% | | | | | 16.67% | | | | 100.00% | |
| 19 Springerville - Coronado 345 kV Line | | | | | 83.33% | | | | | 16.67% | | | | 100.00% | |
| 20 Greenlee - Vail 345 kV Line | | | | | 94.64% | | | | | 5.36% | | | | 100.00% | |
| 21 South - El Sol 345 kV Line | 24.00% | | | | 76.00% | | | | | | | | | 100.00% | |
| 22 El Sol - West Wing 345 kV Line | 24.00% | | | | 76.00% | | | | | | | | | 100.00% | |
| 23 Springerville - Greenlee Lead #1 345 kV Line | | | | | 94.64% | | | | | 5.36% | | | | 100.00% | |
| 24 Springerville - Greenlee Express 345 kV Line | | | | | 100.00% | | | | | | | | | 100.00% | |
| 25 McKinley-Springerville #1 345 kV Line | | | | | 94.64% | | | | | 5.36% | | | | 100.00% | |
| 26 Springerville - Greenlee #1 345 kV Line | | | | | 100.00% | | | | | | | | | 100.00% | |
| 27 Greenlee - Vail Express 345 kV Line | | | | | 100.00% | | | | | | | | | 100.00% | |
| 28 Greenlee - Vail Express 345 kV Line | | | | | 100.00% | | | | | | | | | 100.00% | |
| 29 Springerville - Greenlee Lead #2 345 kV Line | | | | | 100.00% | | | | | | | | | 100.00% | |
| 32 Navajo - Moenkopi 500 kV Line | | 14.00% | | 46.00% | 7.50% | | | 21.20% | | 11.30% | | | | 100.00% | |
| 33 Moenkopi - Westwing 500 kV Line | | 24.70% | | 62.00% | 13.30% | | | | | | | | | 100.00% | |
| 34 Navajo - Westwing 500 kV | | 24.70% | | 62.00% | 13.30% | | | | | | | | | 100.00% | |
| 35 Saguaro - Tortolita | | | | | 100.00% | | | | | | | | | 100.00% | |
| | Sources | | | | | | | | | | | | | | |
| | (1) | FERC Docket No. OA96-153-000 Data Requests OEPR-14 ANPP Valley Transmission System Participation Agreement | | | | | | | | | | | | | |
| | (2) | FERC Docket No. OA96-153-000 Data Requests OEPR-14 Navajo Project Co-Tenancy Agreement | | | | | | | | | | | | | |
| | (3) | FERC Docket No. OA96-153-000 Data Requests OEPR-14 Mead-Phoenix Project Joint Ownership Agreement | | | | | | | | | | | | | |
| | (4) | FERC Docket No. OA96-153-000 Data Requests OEPR-14 Amend. No. 1 to Service Schedule N Northwest Phoenix Area 230 kV Transmission | | | | | | | | | | | | | |
| | (5) | FERC Docket No. OA96-153-000 Data Requests OEPR-14 Arizona Transmission System Participation Agreement APS-SDG&E | | | | | | | | | | | | | |
| | (6) | Memorandum of Understanding between APS & TEP Arizona Corporation Commission Arizona Corporation Commission | | | | | | | | | | | | | |
| | (7) | Pinnacle West Capital Corporation 1996 Annual Report Footnote 10, page 40: "Jointly Owned Facilities" | | | | | | | | | | | | | |
| | (8) | TEP 1997 FERC Form 1 Transmission Line Statistics Page 422.1 | | | | | | | | | | | | | |

Ownership of 345 kV and 500 kV Transmission Interface Facilities
Owned by APS and TEP affecting Arizona

Summary of TEP
Transmission Interfaces
Before and After The
Exchange of Facilities

| Major Interfaces that Define the Arizona Market | Tucson Electric Power Before Exchange | Tucson Electric Power After Exchange |
|---|---------------------------------------|--------------------------------------|
| <p>The Arizona Side of the Arizona-New Mexico interface to the southeast - WSCC path # 47 (Transfers from Arizona to New Mexico). Significant Arizona buses include TEP's Springerville 345 kV and TEP's Greenlee 345 kV</p> <p>San Juan - McKinley 345 kV #1 94.64% 94.64%</p> <p>San Juan - McKinley 345 kV #2 75.00% 75.00%</p> <p>McKinley - Springerville #2 345 kV Lines 83.33% 83.33%</p> <p>McKinley-Springerville #1 345 kV Line 94.64% 94.64%</p> <p>Springerville - Coronado 345 kV Line 83.33% 83.33%</p> <p>Springerville - Greenlee #1 345 kV Line 100.00% 100.00%</p> <p>Springerville - Greenlee Express 345 kV Line 100.00% 100.00%</p> <p>Greenlee - Vail 345 kV Line 94.64% 94.64%</p> <p>Greenlee - Vail Express 345 kV Line 100.00% 100.00%</p> | | |
| <p>The Arizona Side of the Four Corners Area Interface to the northeast - WSCC Path # 22 (Transfers from the Four Corners Generation Zone to West to Arizona/California). Significant Arizona buses include APS' Moenkopi 500 kV and APS' Cholla/Pinnacle Peak 345 kV.</p> <p>Four Corners-Moenkopi-El Dorado Agmnt 100.00%</p> <p>Four Corners - Pinnacle Peak 345 kV lines 100.00%</p> <p>Cholla 500kV/345kV Switchyard 100.00%</p> <p>Pinnacle Peak 345 kV Substation NA NA</p> <p>Moenkopi Switchyard (Navajo Breakers) 100.00%</p> | | |
| <p>The Arizona Side of the TOT 2B Interface to the North - WSCC Path # 34 (Transfers from the Utah/Idaho south to the Arizona/New Mexico region). Significant Arizona buses include the Four Corners 345 kV and the Western's Glen Canyon 230 kV.</p> <p>Pinto - Four Corners 345 kV Line 0.00% 0.00%</p> <p>Sigard - Glen Canyon 230 kV Line 0.00% 0.00%</p> <p>(Note: TOT 2B North to South transfers to Arizona can be further limited by Four Corners Area Interface. The proposed settlement does not address APS' rights on the PacifiCorp system tied to the Cholla 4 exchange.)</p> | | |
| <p>The Arizona Side of the East of the Colorado River (EOR) Interface to the West - WSCC Path #49 (Transfers from Arizona to Southern California) Significant Arizona buses include Navajo 500 kV, Moenkopi 500 kV, Liberty 345 kV, Palo Verde 500 kV, and Perkins 500 kV</p> <p>Navajo 500 kV Switchyard 7.50% 21.50%</p> <p>Navajo Project Breakers 100.00%</p> <p>North Gila 500 kV Substation 11.00%</p> <p>Marketplace 500 kV Substation 12.74%</p> <p>Mead 500 kV Substation 19.05%</p> <p>Moenkopi Switchyard (Navajo Breakers) 100.00%</p> <p>McCullough 500 kV Switchyard NA NA</p> <p>Palo Verde 500 kV Switchyard 29.10%</p> <p>Palo Verde 500 kV Switchyard Inter. Agmnt. 29.10%</p> <p>Perkins 500 kV Substation 13.30% 38.00%</p> <p>Westwing 500 kV Switchyard 13.30% 38.00%</p> <p>Westwing 500 kV Interconnection Agmnt. 41.31%</p> <p>Yavapai 500 kV Substation 100.00%</p> <p>Four Corners-Moenkopi-El Dorado Agmnt 100.00%</p> <p>Mead - Phoenix 500 kV Line 18.15%</p> <p>Marketplace-Mead-McCullough 500 kV Line NA NA</p> <p>Palo Verde - Westwing 500 kV Lines 34.60%</p> <p>Palo Verde - Kyrene 500 kV Line 34.60%</p> <p>Palo Verde - N. Gila 500 kV Line 11.00%</p> | | |

NA = Information not available.

**Ownership of 345 kV and 500 kV Transmission Interface Facilities
Owned by APS and TEP affecting Arizona**

Comparison of Transmission Interfaces Before The Exchange of Facilities

| Major Interfaces that Define the Arizona Market | Arizona Electric Power | Arizona Public Service | Citizens Nogales | Salt River Project | Tucson Electric Power | Western Area Power | Imperial Irrigation District | Other California Utilities | Colorado Utilities | Nevada Utilities | New Mexico Utilities | Texas Utilities EPE | Utah Utilities PacifiCorp | Total Ownership |
|---|------------------------|------------------------|------------------|--------------------|-----------------------|--------------------|------------------------------|----------------------------|--------------------|------------------|----------------------|---------------------|---------------------------|-----------------|
| The Arizona Side of the Arizona-New Mexico interface to the southeast - WSCC path # 47 (Transfers from Arizona to New Mexico). Significant Arizona buses include TEP's Springerville 345 kV and TEP's Greenlee 345 kV | | | | | | | | | | | | | | |
| San Juan - McKinley 345 kV #1 | | | | | 94.64% | | | | | | 5.36% | | | 100.00% |
| San Juan - McKinley 345 kV #2 | | | | | 75.00% | | | | | | 25.00% | | | 100.00% |
| McKinley - Springerville #2 345 kV Lines | | | | | 83.33% | | | | | | 16.67% | | | 100.00% |
| McKinley-Springerville #1 345 kV Line | | | | | 94.64% | | | | | | 5.36% | | | 100.00% |
| Springerville - Coronado 345 kV Line | | | | | 83.33% | | | | | | 16.67% | | | 100.00% |
| Springerville - Greenlee #1 345 kV Line | | | | | 100.00% | | | | | | | | | 100.00% |
| Springerville - Greenlee Express 345 kV Line | | | | | 100.00% | | | | | | | | | 100.00% |
| Greenlee - Vail 345 kV Line | | | | | 94.64% | | | | | | 5.36% | | | 100.00% |
| Greenlee - Vail Express 345 kV Line | | | | | 100.00% | | | | | | | | | 100.00% |
| The Arizona Side of the Four Corners Area Interface to the northeast - WSCC Path # 22 (Transfers from the Four Corners Generation Zone to West to Arizona/California). Significant Arizona buses include APS' Moenkopi 500 kV and APS' Cholla/Pinnacle Peak 345 kV. | | | | | | | | | | | | | | |
| Four Corners-Moenkopi-EI Dorado Agmnt | | 100.00% | | | | | | | | | | | | 100.00% |
| Four Corners - Pinnacle Peak 345 kV lines | | 100.00% | | | | | | | | | | | | 100.00% |
| Cholla 500kV/345kV Switchyard | | 100.00% | | | | | | | | | | | | 100.00% |
| Pinnacle Peak 345 kV Substation | | NA | | | | | | | | | | | | NA |
| Moenkopi Switchyard (Navajo Breakers) | | 100.00% | | | | | | | | | | | | 100.00% |
| The Arizona Side of the TOT 2B Interface to the North - WSCC Path # 34 (Transfers from the Utah/ladho south to the Arizona/New Mexico region). Significant Arizona buses include the Four Corners 345 kV and the Western's Glen Canyon 230 kV. | | | | | | | | | | | | | | |
| Pinto - Four Corners 345 kV Line | | | | | | | | | | | | | 100.00% | 100.00% |
| Sigard - Glen Canyon 230 kV Line | | | | | | | | | | | | | 100.00% | 100.00% |
| (Note: TOT 2B North to South transfers to Arizona can be further limited by Four Corners Area Interface. The proposed settlement does not address APS' rights on the PacifiCorp system tied to the Cholla 4 exchange.) | | | | | | | | | | | | | | |
| The Arizona Side of the East of the Colorado River (EOR) Interface to the West - WSCC Path #49 (Transfers from Arizona to Southern California) Significant Arizona buses include Navajo 500 kV, Moenkopi 500 kV, Liberty 345 kV, Palo Verde 500 kV, and Perkins 500 kV | | | | | | | | | | | | | | |
| Navajo 500 kV Switchyard | | 14.00% | | 21.70% | 7.50% | 24.30% | | 21.20% | | 11.30% | | | | 100.00% |
| Navajo Project Breakers | | 100.00% | | | | | | | | | | | | 100.00% |
| North Gila 500 kV Substation | | 11.00% | | | | | 12.80% | 76.20% | | | | | | 100.00% |
| Marketplace 500 kV Substation | | 12.74% | | 21.38% | | 31.32% | | 34.55% | | | | | | 100.00% |
| Mead 500 kV Substation | | 19.05% | | 19.05% | | 40.36% | | 21.55% | | | | | | 100.00% |
| Moenkopi Switchyard (Navajo Breakers) | | 100.00% | | | | | | | | | | | | 100.00% |
| McCullough 500 kV Switchyard | | NA | | | | | | | | | | | | NA |
| Palo Verde 500 kV Switchyard | | 29.10% | | 17.49% | | | 0.38% | 27.03% | | | 10.20% | 15.80% | | 100.00% |
| Palo Verde 500 kV Switchyard Inter. Agmnt. | | 29.10% | | 17.49% | | | 0.38% | 27.03% | | | 10.20% | 15.80% | | 100.00% |
| Perkins 500 kV Substation | | 24.70% | | 62.00% | 13.30% | | | | | | | | | 100.00% |
| Westwing 500 kV Switchyard | | 24.70% | | 62.00% | 13.30% | | | | | | | | | 100.00% |
| Westwing 500 kV Interconnection Agmnt. | | 41.31% | | 41.31% | | | | | | | 12.10% | 5.28% | | 100.00% |
| Yavapai 500 kV Substation | | 100.00% | | | | | | | | | | | | 100.00% |
| Four Corners-Moenkopi-EI Dorado Agmnt | | 100.00% | | | | | | | | | | | | 100.00% |
| Mead - Phoenix 500 kV Line | | 18.15% | | 18.15% | | 31.69% | | 32.00% | | | | | | 100.00% |
| Marketplace-Mead-McCullough 500 kV Line | | NA | | | | | | | | | | | | NA |
| Palo Verde - Westwing 500 kV Lines | | 34.60% | | 34.60% | | | | | | | 12.10% | 18.70% | | 100.00% |
| Palo Verde - Kyrene 500 kV Line | | 34.60% | | 34.60% | | | | | | | 12.10% | 18.70% | | 100.00% |
| Palo Verde - N. Gila 500 kV Line | | 11.00% | | | | | 12.80% | 76.20% | | | | | | 100.00% |

NA = Information not available.

Ownership of 345 kV and 500 kV Transmission Interface Facilities
Owned by APS and TEP affecting Arizona

Comparison of Transmission Interfaces After The Exchange of Facilities

| Major Interfaces that Define the Arizona Market | Arizona Electric Power | Arizona Public Service | Citizens Nogales | Salt River Project | Tucson Electric Power | Western Area Power | Imperial Irrigation District | Other California Utilities | Colorado Utilities | Nevada Utilities | New Mexico Utilities | Texas Utilities EPE | Utah Utilities PacifiCorp | Total Ownership |
|--|------------------------|------------------------|------------------|--|---|--------------------|--|----------------------------|--------------------|------------------|---|---------------------|--|--|
| <p>The Arizona Side of the Arizona-New Mexico interface to the southeast - WSCC path # 47 (Transfers from Arizona to New Mexico). Significant Arizona buses include TEP's Springerville 345 kV and TEP's Greenlee 345 kV</p> <p>San Juan - McKinley 345 kV #1 San Juan - McKinley 345 kV #2 McKinley - Springerville #2 345 kV Lines McKinley-Springerville #1 345 kV Line Springerville - Coronado 345 kV Line Springerville - Greenlee #1 345 kV Line Springerville - Greenlee Express 345 kV Line Greenlee - Vail 345 kV Line Greenlee - Vail Express 345 kV Line</p> | | | | | 94.64% 75.00% 83.33% 94.64% 83.33% 100.00% 100.00% 94.64% 100.00% | | | | | | 5.36% 25.00% 16.67% 5.36% 16.67% 5.36% | | | 100.00% 100.00% 100.00% 100.00% 100.00% 100.00% 100.00% 100.00% |
| <p>The Arizona Side of the Four Corners Area Interface to the northeast - WSCC Path # 22 (Transfers from the Four Corners Generation Zone to West to Arizona/California). Significant Arizona buses include APS' Moenkopi 500 kV and APS' Cholla/Pinnacle Peak 345 kV.</p> <p>Four Corners-Moenkopi-El Dorado Agmnt Four Corners - Pinnacle Peak 345 kV lines Cholla 500kV/345kV Switchyard Pinnacle Peak 345 kV Substation Moenkopi Switchyard (Navajo Breakers)</p> | | | | | 100.00% 100.00% 100.00% NA 100.00% | | | | | | | | | 100.00% 100.00% |
| <p>The Arizona Side of the TOT 2B Interface to the North - WSCC Path # 34 (Transfers from the Utah/Adho south to the Arizona/New Mexico region). Significant Arizona buses include the Four Corners 345 kV and the Western's Glen Canyon 230 kV.</p> <p>Pinto - Four Corners 345 kV Line Sigard - Glen Canyon 230 kV Line (Note: TOT 2B North to South transfers to Arizona can be further limited by Four Corners Area Interface. The proposed settlement does not address APS' rights on the PacifiCorp system tied to the Cholla 4 exchange.)</p> | | | | | | | | | | | | | 100.00% 100.00% | 100.00% 100.00% |
| <p>The Arizona Side of the East of the Colorado River (EOR) Interface to the West - WSCC Path #49 (Transfers from Arizona to Southern California) Significant Arizona buses include Navajo 500 kV, Moenkopi 500 kV, Liberty 345 kV, Palo Verde 500 kV, and Perkins 500 kV</p> <p>Navajo 500 kV Switchyard Navajo Project Breakers North Gila 500 kV Substation Marketplace 500 kV Substation Mead 500 kV Substation Moenkopi Switchyard (Navajo Breakers) McCullough 500 kV Switchyard Palo Verde 500 kV Switchyard Palo Verde 500 kV Switchyard Inter. Agmnt. Perkins 500 kV Substation Westwing 500 kV Switchyard Westwing 500 kV Interconnection Agmnt. Yavapai 500 kV Substation Four Corners-Moenkopi-El Dorado Agmnt Mead - Phoenix 500 kV Line Marketplace-Mead-McCullough 500 kV Line Palo Verde - Westwing 500 kV Lines Palo Verde - Kyrene 500 kV Line Palo Verde - N. Gila 500 kV Line</p> | | | | 21.70% 21.38% 19.05% 17.49% 17.49% 62.00% 62.00% 41.31% 18.15% 34.80% 34.80% | 24.30% 31.32% 40.36% 31.69% | 12.80% 12.80% | 21.20% 34.55% 21.55% 27.03% 27.03% 76.20% | 11.30% | | | 10.20% 10.20% 12.10% 12.10% | 15.80% 15.80% | 100.00% 100.00% 100.00% 100.00% 100.00% 100.00% 100.00% 100.00% 100.00% 100.00% 100.00% 100.00% 100.00% 100.00% 100.00% 100.00% 100.00% 100.00% | |

NA = Information not available.

Represents a material increase in ownership