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**ORIGINAL**

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October 4, 2002

Docket Control  
Arizona Corporation Commission  
1200 West Washington  
Phoenix, Arizona 85007

AZ CORP COMMISSION  
DOCUMENT CONTROL

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**RE: CITIZENS COMMUNICATIONS' COMMENTS ON THE 2<sup>ND</sup> BIENNIAL TRANSMISSION STUDY DRAFT REPORT - DOCKET NO. E-00000D-02-0065**

Attached are Citizens' comments on the captioned draft report. The comments are incorporated in the attached fax cover sheet and specific corrections and additions on the attached pages 6, 37, 44, 81, 82, 84, 85, 86, 87, 94, 96, 103, 104, 105, 113, 114, and 115 of the draft.

The comments address factual corrections concerning Citizens' transmission service contracts with the Western Area Power Administration and general comments on the Recommendations in Section 10.3 of the draft.

Copies of these comments have been provided directly to the ACC staff and its consultant P Plus Corporation.

Sincerely,

Resal A. Craven  
Director of Engineering

RAC:mi  
Attachment

Arizona Corporation Commission

**DOCKETED**

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# Fax

**To:** Neal Balu P-Plus **From:** Resal Craven   
**Fax:** 408-366-8739 **Pages:** 18  
**Phone:** **Date:** October 1, 2002  
**Re:** Second Annual Biennial Transmission **CC:** Jerry D. Smith ACC Staff 602-542-2129  
Assessment – Citizens comments on draft  
report.

**Urgent**     **For Review**     **Please Comment**     **Please Reply**     **Please Recycle**

**Message:** I have reviewed the draft report that was posted on the ACC web site and have included my corrections and comments on the attached pages from the draft report. Because of the size of the report I can not provide the comments in electronic format. I will be filing copies with Docket Control as requested in the letter attached to Neal's e-mail.

My comments generally address the following :

The present limitations on Citizens import capacity to Santa Cruz are contractual. As Citizen's load in Santa Cruz grows the available capacity on the Western line will become a limit but at present growth rates it will take several years to reach the present contract limits. Citizens has requested information from Western concerning the physical limit on their 115 kV line from Saguaro to Nogales Switchyard but has not received a formal reply. Indications are that physical limits could be increased with relatively minor replacements of facilities.

There is a similar situation for limits into Citizens service area in Mohave County. Physical limits will become a problem as the load grows however, the draft report does not include Citizens' 110 MW path contracted over the Intertie. With that contract plus planned additions inside the Mohave County "bubble" Citizen's has sufficient import capability to meet the load and load growth in it's service area for several years. The draft report also incorrectly describes the location and transmission lines associated with Griffith Switchyard / Peacock Sub, South Point /Topock and North Havasu Sub.

I have attempted to correct the information concerning Citizens with my comments. If you have questions please give me a call.

### **Merchant Plant Developers:**

- Updates on Ten Year generation expansion Plans filed with the ACC, giving details on plant/unit additions, capacity revisions, and plant/unit refurbishment since the first biennial transmission assessment.
- Updates on the operational experience of the plants in operation
- Updates on the status of their ongoing projects, including status of construction and commencement of operation
- Updates on the technical study results related to Siting/Compliance filing requirements related to ACC's Certificate of Environmental Compatibility (CEC) which, among others, include updates on self-certification and WECC RMS requirements.

With regard to the above requests, Staff's assessment is that the Transmission Providers met Staff's needs, whereas the responses from Merchant Plant Developers were not as thorough.

The workshop provided an informal setting to promote effective discussions on the presentations from transmission providers and merchant plant developers.

The first draft of the report on the Second Biennial Transmission Assessment (BTA) is based on the analysis of the reports and documents filed with the Commission by the Transmission Providers and Merchant Plant Developers<sup>23-47</sup>, the July 30 and 31 Workshop material<sup>48-49</sup> and participants responses to questions raised at the workshop.

**The second stage of the process** in the second BTA is to provide the first draft of the report for industry review and comment.

**The third stage of the process** is to hold a second workshop on ~~September 25, 2002~~October 18, 2001, to facilitate Staff to respond to industry comments on the first draft of the report.

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<sup>23-47</sup> Ten-Year Plans filed with ACC

<sup>48-49</sup> Transcription of Workshop proceedings

## **5. Ten-Year Plans**

### **5.1 2002-2011 Updates Filed January 2002**

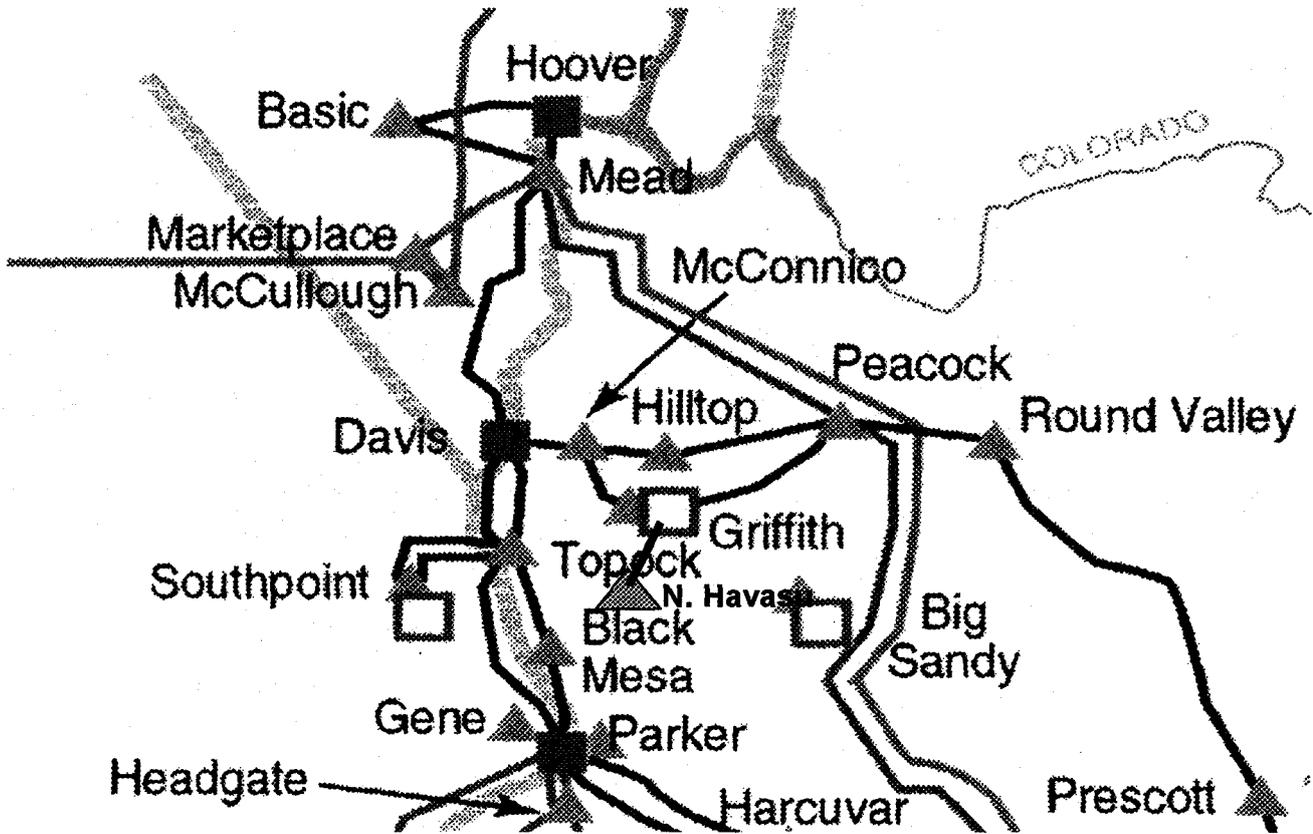
A.R.S. §40-360.02 states that every organization contemplating construction of any transmission line within the state during any ten-year period shall file a ten-year plan with the commission on or before January 31 of each year. Each plan shall provide:

1. The size and proposed route of any transmission lines proposed to be constructed.
2. The purpose to be served by each proposed transmission line.
3. The estimated date by which each transmission line will be in operation.

A compilation of planned transmission line additions filed in January 2002 that comprise the Ten-Year Plans for 2002-2011 is provided in Appendix C. The transmission lines are listed both chronologically by projected in-service dates and by the entity that filed the planned addition, and also by transmission voltage level. State statutes require that Staff determine the adequacy of these planned facilities to meet the energy delivery needs of Arizona in a reliable manner. This section of the report documents a review of the ten-year plans filed by the Arizona utilities, and Staff's assessment of how those plans differ from plans addressed in the first BTA.

Figures 5.1 through 5.7 illustrate the planned transmission facilities for the state of Arizona, Phoenix, Tucson, southeastern Arizona, Northern Arizona, Southern Arizona and Mohave County.

**Figure 5.7**  
**Mojave County Area**



North Havasu Sub will be on the Parker-Davis #1 230 kV line half way between Black Mesa and Topock. /rac

## 7.5 Santa Cruz County Import Assessment

All the power purchases are coming from Pinnacle West and delivered through ~~two one~~ points of receipt on the Western system. ~~The largest majority of load is delivered at Pinnacle Peak. Saguaro 115 kV bus of the U.S. From there Citizens purchase power is delivered over a Parker-Davis System, 115 kV line to Nogales Switch Yard located on the southwest side of Tucson.~~

At the present time the load in ~~the Citizens' Santa Cruz County area, Nogales in particular,~~ is served by a single 115 kV line between Nogales Switchyard and Nogales that is owned and operated by Western Citizens. Citizens has generation located in the Nogales area ( Valencia Power Plant) that it runs on an emergency basis. When the single 115 kV line is out of service, the local generation is used to pick up the Nogales load. During storm seasons, the local generation is started, but not brought on line until after a power outage occurs.

In order to improve the reliability of service in the Santa Cruz County area, Citizens has developed an agreement with Tucson to connect to Tucson's ~~Saguaro-Saguaro 345 kV~~ substation by way of a 345 kV line that will terminate at a new substation, Gateway, located about 3 miles from the Valencia substation near Nogales, as shown in Figure 7.8.

A short 115 kV line will be built to connect to ~~Saguaro-Gateway from~~ the Valencia substation near Nogales. 115 kV capacitors will be installed at Valencia to improve voltage during transmission outages.

The 345 kV line will add 100 MW of firm import capacity to the Citizens service area, which Service to Citizens over Western's Parker-Davis transmission system is currently presently limited by contract to 69 MW. Citizens will be working with Western and with Southwest Transmission Coop that also has customers in this area to see if some or all of the difference could be made up by improvement on the Western transmission lines.-

### 7.5.1 Issues and Concerns

Under present operating conditions, with one radial 115 kV line serving all the load, and with a 50 MW peaking generation at Valencia, if the transmission line goes out of service, then load can must be picked up by starting this generation. During monsoons When thunderstorms are in the area, Citizens separate Nogales City from the rest of the system in Santa Cruz County and runs the Nogales Valencia turbines, at full speed with no load to minimize the time required to pick up load in the event of a transmission outage. since Because the small units are not capable of remaining maintaining in synchronism with the rest of the system during line outages, if the turbines are actually used to carry load Citizens separates the load carried on the Valencia generation from the remainder of the system until the problem on the transmission line is repaired. In this case. So, a small that part of the load is isolated on local generation.

The hours that the Santa Cruz County load would exceed the 69kV line capacity-- The number of hours that the load would exceed 70 MW (peak load) is not greater than 9.

Citizens Transmission contract with Western on the Parker-Davis System is on a three-year rolling basis. Transmission capacity presently under contract from Western for delivery to Santa Cruz is 67.9 MW for the summer of 2003. Three-year The present capacity reservation requested for the third year out ( 2004) is 69.9 MW. contract with Western maxes out at 69 MW.

~~If there is a Western preference customer, it will be shipped from Saguaro toward East, and western customers would get the preference.~~

## **7.6 Mojave County Import Assessment**

The Mojave load area includes the Peacock, Parker, and the Davis areas, encompassing the cities of Kingman, Havasu, and Bullhead, and is in part served by Citizens Communications Company, Arizona Division, and by Mojave Electric Coop, as shown in Figure 7.9. Southwestern Transmission Cooperative, Inc. and Western provide transmission service.

Western's path D, Phoenix to the river, is made up of three lines. These lines run from Liberty to Parker, and a 230 kV line from Pinnacle Peak to Peacock to Davis. Citizens' Hilltop, Davis Dam and Black Mesa Points of delivery are served through these transmission lines all of which are part of Western's Parker-Davis System and then to Kingman and Lake Havasu. This path is contracted for completely.

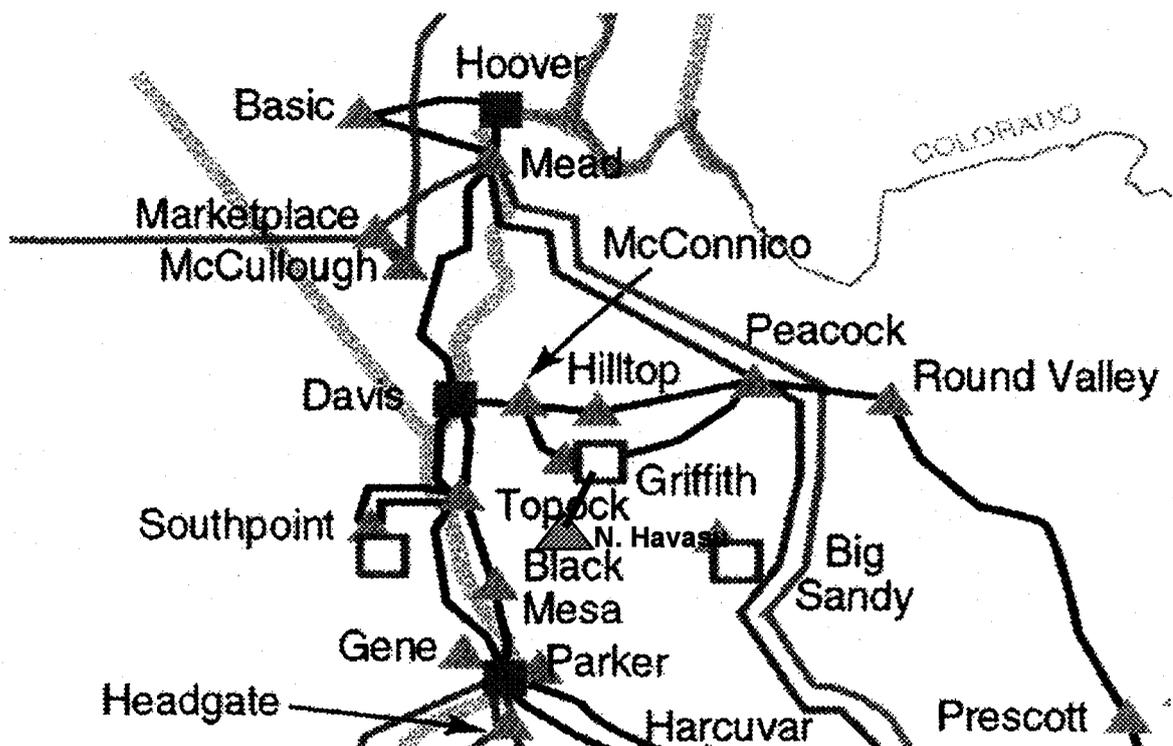
Western also operates another transmission project in the area, the Pacific Northwest - Southwest Intertie Project. With the addition of the Peacock 345/230 kV substation Citizens was able to contract for 110 MW of firm transmission from Pinnacle Peak to an new Point of Delivery near Kingman called Griffith Substation. This contract terminates in June, 2011 and allows additional imports into Citizens Mohave service area for load and load growth. Because of The load growth in the Lake Havasu City area had necessitated Citizens will to build another

substation, North Havasu, and an associated 230 kV transmission line, Griffith/North Havasu to meet its near term transmission needs for imports into the service area.

Near term with maximum generation at Griffith (merchant plant), Davis, Parker and Southpoint backed down and the Havasu pump at full operation, there are problems relating to (N-1) conditions. Parker generation being brought up could alleviate the problem, but there is a quandary—are limitations on hydro because of with lack of water to run the plant during drought conditions.

The merchant plants that operate within the area are in the Western control area, and could be expected to operate to reduce the constraints, but there presently is no process in place under by which payment—settlement for revenue impacts to the merchant plants could be made after the fact. It is possible in the future that the merchant plants will not be included within the Western's control area which further complicates the relationships operating relationships and the security of the transmission system.

**Figure 7.9**  
**Mojave County Area**



North Havasu Sub is on the Parker-Davis # 1 transmission line halfway between Topock and Black Mesa  
/rac

There are some options being discussed by the transmission providers, and service utilities, but no concrete study has been undertaken to determine what should or can be done. ~~Further, there does not seem to be an entity such as CATS, that could perform such a study.~~ Citizens and Southwest transmission cooperative have jointly requested Western to initiate a study of transmission improvements along border between Arizona and California/Nevada. Western is taking steps to do so. ~~Meanwhile, the Western Area Power Administration continues to be the only practical alternative for transmission imports into the area and .~~ Citizens continues to rely on with their 3-year rolling term contracts for transmission service with from Western, and ~~a~~At the same time merchant plants, such as Griffith South Point, Blythe and others, continue to press Western for long-term transmission service for deliveries out of the region.

One of the alternatives to import power into the Mojave County area is to come from Mead ~~to or~~ McCullough area. Such a new line was studied in the "Northwest Arizona Transmission Study" in the mid 90s by Western and a number of study participants, including Citizens, but the cost of development was prohibitive.

Another alternative is how the local generation is factored into the deliverability of transmission. It is being completely separated partly because of FERC rules with respect to interconnection. There is generation sitting in the middle of a load area but it is not functioning to support the system to meet the load. So, this is another transmission import constrained area.

Also, based on system situations, these merchant plants ~~can be treated~~ could function ; as reliability must run generation, ~~however because they have no Obligation to Serve, the requirement to remain available for this purpose would be based entirely on negotiated contracts the cost of which would need to be recovered from the utility's customers.~~

#### Reliability Must-Run Generation (RMR) Requirements

(This section is yet to be developed with input from transmission providers.)

Joint projects with APS in the area are contemplated. Sulphur Springs Valley Electric Cooperative is planning a substation in the Palominas area that could help to serve the APS load in the area.

#### **8.4.2 Citizens Utility**

At the present time the load in the Santa Cruz County area, Nogales in particular, is served by a single 115 kV line operated by ~~Western~~Citizens. Citizens has generation located in the Nogales area that it runs on an emergency basis. When the single 115kV is out of service the local generation is used to pickup the load. During storm seasons, the local generation is started, but not brought on line until after a power outage occurs.

Citizens has developed an agreement with Tucson to connect to Tucson's ~~Saguaro~~-Saguaro substation by way of a 345 kV line that will terminate at a new substation, Gateway, located about 3 miles from the Valencia substation near Nogales, as shown in Figure 8.4.

The 345 kV line will add 100 MW of firm capacity to the area, which is currently ~~limited~~-limited by contract to approximately 69 MW. Citizens will be working with Western and with Southwest Transmission Coop that also has customers in this area to see if some or all of the shortfall could be made up.

Citizens has filed a report with the ACC relative to the improvements of the existing line from Nogales down to the Citizens service area, by adding capacitors to withstand the outage of the new line to Nogales.

The Western line that is delivering power into Citizens system becomes a constraint as the Citizen load grows. When a second line into Nogales is completed, Citizens will have 100 MW of transmission capacity from Saguaro to Nogales. To improve the load carrying capability, Citizens is adding Var capacity of 50 Mvars on the system.

~~Eventually, there is a need to develop at least 100 Mvar carrying capacity, in the 2004-2005 time frame. (There is no need to develop 100 Mvar carrying capacity. /rac)~~

#### **8.4.3 Tucson Electric Power**

TEP's 138 kV system is totally contained within the TEP service area. TEP set up a separate tariff rate for 138kV system. There are no constraints in the 138 kV system, since the system was designed and built to eliminate all local internal constraints. TEP continues to upgrade the 138 kV system by using SSAC conductor for added current carrying capability. A 138kV line at the southern edge of TEP service area connects down to Green Valley, south of Tucson, which is a retirement community. That line is going to be continued to make a loop, with an in-service date of 2005. Hence the action items needed are reconductoring and upgrading existing 138 kV lines, and thus there are no internal constraints at the present time.

#### **9.1.4 Ambos Nogales Generation Project**

The plant capacity is estimated to be 500 MW, combined cycle natural gas fired facility, with a 230 kV double circuit line connected to CFE in Mexico ( and not connected to the US grid), and a 115 kV intertie with Citizens. The project is expected to start construction by 2003, and be in operation by 2006, assuming CFE approval.

No power flow and stability analysis has been performed since it is not connected to the U.S. grid, and since no capacity is proposed to be exported out of Citizen's service area. (This plant appears to be being planned with no coordination with the local utility and no request for interconnection or proposal for power sales has been received by Citizens. Its status with respect to a CEC is unknown by Citizens./rac)

#### **9.1.5 Reliant Energy Signal Peak Project**

The Signal Peak Power Project is planned to interconnect power plant in Casa Grande, AZ with the Phoenix Metro transmission system. One 230 kV circuit is planned to terminate at Knox substation, and the other 230 kV circuit would terminate at the Schrader substation.

CEC application has yet to be filed and the system impact studies have yet to be completed.

#### **9.1.6 Allegheny Power Project**

Allegheny Power project plans to interconnect a new generation plant with a capacity of 1,290 MW to SCE's Devers-Palo Verde 500 kV line. The proposed in-service date is 2004.

The system impact studies revealed that the existing facilities are inadequate to accommodate the Allegheny power project. The Allegheny -Devers and Palo Verde-North Gila 500 kV lines are loaded in excess of the ratings as limited by capacitors. The Allegheny power project will be required to schedule according to SCIT nomogram and will have an adverse impact on the amount of EOR and WOR generation that can be scheduled for import.

## 9.2 Operational Experience of Plants On-Line

During the presentations several questions were asked of the panel members, which lead to discussions. The discussion points, and responses are captured here even if there was not a full conclusion arrived at:

- Did the plant owners believe they had performed adequate interconnection studies, either themselves, or in collaboration with the transmission providers, to determine the impact of their power plants on the integrated grid system, either current operation or future operation? The respondents believed that considerable study had been performed. In the cases of the operating plants there have not been any difficulties in operations due to transmission constraints except as noted by specific plants.
- What and who determines the commercial operation date? The date that the plant is operational has mainly to do with warranties, and provisional performance acceptance as described in the construction contracts.
- A further discussion developed about whether or not the merchant plants were to participate in supplying area reserves. It was not clear that the respondents fully understood the premise of the question, but most agreed that their plant was to help out the system in some way.

### 9.2.1 South Point

South Point is a generating station owned by Calpine Western Region. It consists of a combined cycle 2X1 gas fired plant producing 550 MW. The project came on line in May 2001, and up until December 31, 2001 had achieved 5580 hours of operation. This year through June, the plant has experienced 380 hours of planned outage.

The plant is connected to ~~South Point~~ Topock 230 kV substation, near Topock on the Parker-Davis System and ties directly to the Number 1 and Number 2 lines— Between Davis Dam and Parker Dam Firm transmission exists for delivery to five points; Mead, Pinnacle Peak, McCullough, Marketplace and Liberty, with terms of 40 years. Transwestern supplies gas.

The plant has not experienced any delivery constraints.

### **9.2.2 Griffith Energy**

Griffith Energy is a generating project owned equally by Duke Energy and PPL. It consists of a combined cycle 2X1 gas fired plant producing 600 MW. The project was declared commercial on January 17, 2002, and has run at an average of 40 percent capacity factor since going commercial, limited by market conditions.

The power project has firm transmission to Mead provided by Western, and is sited in Westerns control area. In constructing the plant, ~~a two new substations, Topock~~Griffith 230 kV Switchyard and Peacock 345/230 kV Substation, was built along with 28 miles of new and 60 miles of reconducted 230 kV line ( check. ~~Topock-Griffith Switchyard~~ substation connects the plant to Western's Parker-Davis Transmission System and to the Pacific Northwest- Southwes Intertie System via Peacock 230/345 kV Substation. ~~Davis to Prescott line.~~

Although the plant is located in Mojave County, a transmission constrained area, the plant output flows out, not in, and does not contribute to the constrained problem. However, under certain transmission line outage conditions the operational status of Griffith and South Point plants can limit the capability of the local transmission system to serve local load. /rac)

### **9.2.3 West Phoenix 4**

West Phoenix 4 is owned and operated by Pinnacle Peak West Energy Corporation. The plant is a 1X1 utilizing a stress demand steam turbine with supplemental duct firing. It went into service in June 2001, and has to date experienced an annual capacity factor of 60 percent, and an availability factor of 90 percent. The plant is fueled with gas from the El Paso pipeline.

The plant is constructed on the site of an existing power station that contains three other plants. The site has infrastructure built in anticipation of West Phoenix 5. An initial interconnection study was performed and as a result some reconductoring of 69 kV lines was done to accommodate the plant. In the future some reconductoring and building of 230 kV lines is anticipated, including a line to White Tanks, as well as installing refrigeration on a 230 kV Cable, Lincoln -Country Club.

considered to assure system adequacy. From the analysis of the measures proposed by the Valley utilities, several issues remain unanswered with regard to the proposed solution. The issues related to Megavar margin improvement, effect of local generation outages, dispatch levels of local generation to provide the needed load serving capability, and installing reactive power devices locally to improve the voltage support need to be addressed in greater detail.

In the Santa Cruz County area, there is limited local generation, and until the proposed transmission projects near the Gateway substation are completed the import constraint problem will persist. The existing transmission capability is inadequate to serve the load in this area under contingency conditions.

In Mojave County, the transmission path into the County is owned by WAPA and its capacity is fully subscribed. There is inadequate local generation, and the Merchant plants in the area have no contractual agreements in place to run the generation to alleviate the local import constraints. Hence, the transmission system in the area is inadequate to relieve the import constraints.

### **10.2.2 Local Transmission System Inadequacies**

The load in local areas is growing and there is not enough local transmission in some local areas to meet the projected load growth. There is inadequate underlying transmission at the 230/138/115 kV levels to meet the growth in Central Arizona. Although there are good EHV transmission overlays at the 345 kV and 500 kV levels through the CATS efforts, there is inadequate transmission capacity to serve the projected needs of customers. Hence, the HV transmission system servicing this area needs to be investigated further, and transmission plans developed.

Transmission systems of Arizona utilities are also intertwined with the WAPA transmission in the Western, Northern and Southern Arizona areas. WAPA transmission is built to meet the needs of its long-term preference customers, and participation with other utilities can materialize only through trust accounts where the upgrades have to be paid by the users. Concerns related to non-availability of Western's transmission capacity for Arizona utilities have been identified in

several areas, namely, Kingman, Flagstaff, Yuma, and Santa Cruz County. This introduces a degree of uncertainty in transmission upgrades, and needs to be resolved to the benefit of Arizona consumers.

In the Northern Arizona area, there is not enough transmission to serve the projected loads after 2006, and no concrete proposals are in place to address this issue.

In the Southeastern Arizona region, transmission reinforcement measures taken by SWT Coop, TEP, and CUC are adequate to serve the customer load, and reduce the need for Remedial Action Scheme (RAS) during multiple contingencies.

### **10.2.3 Palo Verde System Constraints**

Palo Verde system constraints continue to be an area of concern, with inadequate transmission to accommodate the additional generation capacity at the hub. Hence, curtailment procedures are still necessary to limit the output of new power plants. Given the commercial importance of the PV Hub, the transmission adequacy issues have to be addressed, possibly in a framework similar to CATS, in order to take full advantage of the total generation capacity available at the Hub.

## **10.3 Recommendations**

- Continue with the “Guiding Principles for ACC Staff determination of Electric System Adequacy and Reliability “ to aid Staff in the determination of adequacy and reliability of power plant and transmission line projects.
- Continue with the stipulation of the requirement of two or more lines out of each plant’s switchyard to meet (N-1) contingency criteria without relying on remedial actions such as generator tripping or load shedding. (This stipulation provides little benefit to local load serving utilities if there is no requirement for the merchant plant to participate in transmission line loading relief procedures. / rac )
- Develop policies and practices that maximize the opportunities for resource access at feasible costs in order to improve local area transmission development.
- Establish new collaborative study groups similar to CATS for studying significant projects such as Palo Verde Area Transmission and Palo Verde Hub Risk assessment, Phoenix-Tucson Corridor, and inter-state transmission projects. Such collaborative efforts contribute to cost effective and technically feasible plans.

- Transmission providers should investigate and study in a collaborative fashion local area import constraints, similar to the efforts by APS and SRP on the Phoenix area; the ACC should establish guidelines and procedures with regard to local voltage and Var support, extent of dependency on local generation to serve load, and the related Reliability Must Run requirements. (The ACC has neither the staff or the resources to develop such guidelines. The transmission owners, FERC and the WECC have the capability and resources to do so./rac) In addition, guidelines shall be stipulated with regard to considering generation contingencies when evaluating the benefits of local generation to alleviate import constraints ( This will require modifications to the interconnection requirements promulgated by FERC. The ACC and its staff could provide assistance to convince FERC that the present requirements are inadequate/ rac).
- ACC shall continue to require power flow and stability analysis reports to be accompanied with Interconnection requests from Merchant Plant developers. ( Power flow study results are of questionable value if the scheduling assumptions for each planned new plant have little or nothing to do with the location and operation of all generation that is to be connected to the transmission grid./rac)
- ACC shall encourage collaborative activities between the transmission providers and merchant plant developers in order to maximize the benefits of generation resources and cost –effective transmission interconnections.
- ☐ Staff needs the ability to perform independent technical studies in the future in order to make an independent assessment of the plans submitted by the transmission providers and merchant plant developers. ( The costs and benefits of such an expansion of the ACC staff and associated equipment and outside resources needs to be assessed and justified. /rac)