

UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Joseph T. Kelliher, Chairman;  
Sudeen G. Kelly, Marc Spitzer,  
Philip D. Moeller, and Jon Wellinghoff.

Pinnacle West Capital Corporation	Docket Nos. ER00-2268-017 EL05-10-008
Arizona Public Service Company	ER99-4124-014 EL05-11-007
Pinnacle West Energy Corporation	ER00-3312-015 EL05-12-007
APS Energy Services Company, Inc.	ER99-4122-017 EL05-13-007

ORDER PROVIDING GUIDANCE AND CLARIFICATION

(Issued December 21, 2006)

1. The Commission herein provides greater specificity of the errors contained in Pinnacle West Companies' (Pinnacle)<sup>1</sup> Simultaneous Import Limit (SIL) study,<sup>2</sup> and provides guidance and clarification on how Pinnacle must revise its SIL study if it wishes to satisfy the Commission's requirements.<sup>3</sup> While not addressing the merits of Pinnacle's

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<sup>1</sup> The Pinnacle West Companies are Pinnacle West Capital Corporation (PWCC), Arizona Public Service Company (APS), the Pinnacle West Energy Corporation (PWEC) and APS Energy Services Company, Inc. (APS Energy).

<sup>2</sup> A SIL study analyzes the total transfer capability of a transmission system in order to estimate the amount of remote generating resources that could be simultaneously imported into the transmission system being studied.

<sup>3</sup> *Pinnacle West Capital Corp.*, 115 FERC ¶ 61,055 (2006).

arguments on rehearing,<sup>4</sup> the order does provide Pinnacle with an opportunity to re-file a revised SIL study in accordance with the Commission's direction herein and to revise its Delivered Price Test (DPT) filed on January 20, 2006.

2. In concert with our improved and more robust generation market power studies, the Commission adopted SIL studies as a means to provide a realistic evaluation of transmission import capability. When evaluating market power, the use of a well-constructed SIL study provides the basis to estimate the amount of competing supply that can reach the market during peak periods. This in turn provides the basis to evaluate whether the applicant has market power in the relevant market. In particular, to ensure that applicants provide a well-constructed SIL to be used in our market power analysis, the Commission requires applicants to adhere to the method described in Appendix E of the April 14 Order.<sup>5</sup>

## **I. Use of Actual, Historical Data**

### **A. Use of higher than actual loads in Northern Arizona<sup>6</sup>**

3. Our April 14 Order sets forth the Commission's interim policy for measuring generation market power in the market-based rate context, and Appendix E of that order describes how applicants must perform their SIL studies, which are an important component of their overall generation market power study. Appendix E requires that transmission-owning applicants must use actual, historical data in modeling the capability of their transmission grids to accommodate simultaneous imports of power from generating resources that are remote from the applicant's control area. Specifically, Appendix E requires applicants in conducting their power flow studies to "reasonably

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<sup>4</sup> On May 17, 2006, the Pinnacle filed in this proceeding a request for rehearing of the Commission's April 17, 2006 Order on Updated Market Power Analysis and Revoking Market-Based Rate Authority. In its rehearing request Pinnacle claims, among other things, that its alleged failure to properly conduct a Simultaneous Import Limit (SIL) study was not intentional, but rather was due to the fact, in Pinnacle's view, that the Commission has not been sufficiently clear regarding how it wants SIL studies to be performed.

<sup>5</sup> *AEP Power Marketing, Inc.*, 107 FERC ¶ 61,018 (2004) (April 14 Order), *order on reh'g*, 108 FERC ¶ 61,026 (2004).

<sup>6</sup> While we acknowledge that Pinnacle argues on rehearing that its circumstances are similar to those of Puget Sound Energy, Inc. (Pinnacle Rehearing at 29-30), we do not address the merits of those rehearing issues in this order.

simulate *the historical conditions that were present* including . . . the actual peak demand . . .” (emphasis added).<sup>7</sup> However, contrary to this directive to model based on historical conditions, Pinnacle’s SIL study improperly modeled higher loads than historically achieved in the Northern Arizona desert region of the APS control area.<sup>8</sup> This use of artificially high loads in the Northern Arizona portion of its control area is not only inconsistent with the requirements of Appendix E, it is also unrealistic, because as Pinnacle recognizes, the Phoenix Valley is constrained during peak periods. Since the Northern Arizona loads are already being fully met without the additional imports, the only additional loads to be met on APS’ system are located in Phoenix Valley. However, because of the existence of internal transmission constraints additional off-system imports cannot reach the loads in Phoenix Valley. Therefore, if one were to continue to import power in excess of the loads that can be met, this would overload the system and compromise reliability. For this reason, Pinnacle’s study that models the additional imports into the Phoenix Valley is unrealistic and inconsistent with its obligation to operate its system reliably. Thus, modeling and including such artificially high imports into Northern Arizona could not possibly be physically accommodated by the transmission lines in the Phoenix Valley portion of the APS control area. Pinnacle’s study shows these lines as already constrained much of the time,<sup>9</sup> even without these

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<sup>7</sup> Appendix E also requires applicants to “apply an aggregation of all internal/external contingency facilities and all monitored/limiting facilities *that were used historically* to approximate area-area transmission availability (total transmission capability/available transmission capability (TTC/ATC) limits available to non-affiliated resources).” (emphasis added).

<sup>8</sup> On April 22, 2005, Pinnacle stated that: “A value greater than the historical seasonal peak was used because an import limit into the control areas (as opposed to the Phoenix Valley load pocket) is not reached in normal system operations; accordingly, in order to reach a limit, it is necessary to increase loads in the control areas to levels in excess of actual peak levels. In scaling up the loads, [1] APS increased the load until a limit was reached in the Phoenix Valley, and [2] then load was increased in the northern Arizona area until a limit was reached for that area. The resulting increase in load was approximately 15 percent in each area, essentially reflecting a proportional scaling of load in those areas.” Pinnacle’s April 22, 2005 Filing, Docket No. ER00-2268-013, at 10.

<sup>9</sup> The Reliability Must Run (RMR) Report that Pinnacle has filed in this proceeding documents that Pinnacle itself recognizes that the Phoenix Valley is constrained during peak periods. See Pinnacle’s February 18, 2005 filing in Docket No. ER00-2268-010, *et al.*, Attachment C, “APS Reliability Must-Run Analysis 2003-2005,” January 31, 2003, APS Transmission Planning, APS Resource Planning.

artificially high imports.<sup>10</sup> Therefore, if Pinnacle wishes to re-submit an SIL study, that study must model all power flows and loads based on the actual, historical conditions that were present, and it cannot scale up loads to artificially high levels.

4. If Pinnacle wishes to claim that its previously-filed SIL study models its system based on how it was operated historically, then Pinnacle must demonstrate that it routinely increases demand in order to increase ATC postings into the Phoenix Valley portion of the control area, and it must file additional and separate import limit sensitivity studies demonstrating the result of such practices (import limit sensitivity studies).<sup>11</sup> In other words, any import limit sensitivity studies must be filed in addition to, and not in lieu of, the study identified above that is a requirement of Appendix E. Supporting documentation demonstrating and outlining the modeling technique must be filed as well as proof of continued and historic use of such practices in posting ATC on Open Access Same-time Information System (OASIS).<sup>12</sup> In order for import limit sensitivity studies to be considered, it must be shown that the studies represent actual historical practices that were used for OASIS postings during the relevant period.

**B. Wheeling through capability in one portion of control area does not equate to ability to meet loads in another portion**

5. We also note that Pinnacle's SIL study appears to be premised on the view that because power can be wheeled through the Northern Arizona portion of its control area (*i.e.*, from off-system, to off-system, across Northern Arizona), this equates to the existence of higher import capability to meet loads in the APS control area.<sup>13</sup> However,

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<sup>10</sup> This improper "scaling up" of load in the Northern Arizona portion of its control area has the effect of allowing more competing generation into the APS control area than could actually be accommodated, which in turn has the effect of reducing Pinnacle's generation market share and perhaps causing it to mistakenly pass the market share screen.

<sup>11</sup> Appendix E requires that the "power flow cases should represent the [transmission provider's] tariff provisions, the operational practices historically used . . . ."

<sup>12</sup> Such documentation should include, but is not limited to, information on load data, generation dispatch and transmission topology.

<sup>13</sup> Pinnacle used this capability of its system to accommodate the wheeling through of imports to show that these imports could meet the artificially high loads that Pinnacle modeled as existing in the Northern Arizona desert when it scaled up loads in the desert above historical levels.

this assumption is not realistic because wheeling through capability in the Northern Arizona desert is irrelevant in assessing the ability of imports to meet most loads in the APS control area, which are concentrated in the internally-constrained Phoenix Valley area. Therefore, if it chooses to file a revised SIL study, Pinnacle is hereby informed that the Commission will not accept this assumption.

**C. Treatment of remote resources not consistent with historical practices**

6. Pinnacle has ownership rights in a number of major nuclear and coal baseload generating plants that are located outside of the APS control area, but which it relies on to meet load in its control area – particularly during the peak summer months. These plants include the Palo Verde, Cholla, Navajo, and Four Corners generating stations. Because Pinnacle relies on these plants as baseload units, it has firm transmission rights to ensure that it is able to import power from these plants. However, in its SIL study, Pinnacle scaled these units down to zero, *i.e.*, Pinnacle assumed that it would not import any power from these units, and it then allocated the firm transmission rights it had for power from these units to competing generators. This assumption is not only unrealistic, but it is also inconsistent with historical practices in terms of how Pinnacle actually operates its system.<sup>14</sup> Appendix E requires that the “power flow cases should represent the [transmission provider’s] tariff provisions, the operational practices historically used, all reliability margins [including Transmission Reliability Margin (TRM) and Capacity Benefit Margin (CBM)] existing during each peak, and all firm/network reservations held by applicant/affiliate resources during the most recent seasonal peaks.” Appendix E also requires applicants to “reasonably simulate the historical conditions that were present including . . . actual unit dispatch used to fulfill network and firm reservation obligation” and to scale generation in first-tier markets “according to the same methods used historically.”<sup>15</sup> Thus, Pinnacle’s study models its system in a manner that is directly contrary to these requirements set forth in Appendix E. If Pinnacle re-files an SIL study, it must correct this error. Specifically, these remote generators should be modeled at their historical power output levels and not reduced to zero output nor be scaled down

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<sup>14</sup> Pinnacle’s modeling technique has the effect of reducing the amount of Pinnacle generation, and increasing the amount of competing generation, that can be imported into the APS control area. This, in turn, skews the results of Pinnacle’s market power study by artificially reducing Pinnacle’s market share as well as the likelihood that it will be found to be a pivotal supplier.

<sup>15</sup> Since SIL studies are intended to reflect same-day operations and to “simulate the historical conditions,” Pinnacle’s SIL study should be based on its actual ATC posting practices and not on system impact studies which take a long time to conduct and which are not based on same-day operations.

from the unit dispatch assigned in the WECC seasonal base cases. Units having firm/network/grandfathered transmission rights may not be displaced by hypothetically competing first-tier resources for calculating import limits.

7. Furthermore, we note that Appendix E states that “the applicant shall scale up available generation in the exporting (aggregated first tier areas) and scale down the study area resources according to the same methods used historically in assessing available transmission for non-affiliate resources.” Thus, applicants must model their systems for the SIL study such that available generation in the first-tier area is increased while generation in the study area is decreased in order to simulate an increase in power flows into the study area. The choice of which generator to decrease can have a significant impact on the amount of power that can be imported and on the reliability of the Bulk-Power System. The reductions in output from the generating units in the study area must be consistent with actual operating practices such that these generators are not to be reduced below their historical operating levels and that units required for reliable operation of the Bulk-Power System, such as reliability-must-run units, are not reduced or withdrawn from service. A re-filed Pinnacle SIL study should reflect these requirements.

## **II. Study Areas for Import Limits**

8. Appendix E requires that the transmission provider must model its system with all of its load and at least some of its generation in the transmission provider’s study area, which would be surrounded by a “first-tier” market forming a single area. Generation from that single “first-tier” area that could be imported into the transmission provider’s study area will form the basis for determining the import limits. This import limit represents the transfer capability over and above all firm, network and grandfathered transmission rights associated with the applicant’s generating units. Additionally, the import limit represents deliverability of first-tier generation over and above all reliability margins applied to either the study area or the first-tier areas.

9. The Pinnacle study area is composed of regions of dense loads with significant constraints (the Phoenix Valley) and less dense loads with fewer constraints (the Northern Arizona area). This indicates the need for two import limit study areas. The first area that must be modeled is the service territory of Pinnacle’s subsidiary, APS. Appendix E requires transmission provider applicants to treat their “control area as a single area” and the April 14 Order requires that all applicants must provide market power studies based on their home control area as a relevant geographic market. The second area that must be modeled is the Phoenix Valley load pocket, which includes both Pinnacle’s and Salt River Project’s systems and generating resources in that area. Though studies of load pockets are not required in Appendix E, the requirement to provide such a study is justified here because Pinnacle’s own filing acknowledges the

existence of a Phoenix Valley load pocket, which we would be remiss to ignore.<sup>16</sup> Specifically, by freezing load in the Phoenix Valley when imports into the Phoenix Valley load pocket become constrained and then increasing the load in the rest of the APS control area, Pinnacle has already recognized that this load pocket exists. Moreover, Pinnacle's one study uses two different techniques: one for Phoenix Valley and a separate one (without justification) for the rest of its system. The provision of a separate study for the Phoenix Valley load pocket will enable the Commission to clearly evaluate the potential for market power in this area.

### **III. Documentation for Tariff and Reliability Allocations of Import Capabilities**

10. Appendix E requires that “[t]he power flow cases should represent the [transmission provider’s] tariff provisions, the operational practices historically used, all reliability margins (TRM, CBM, counter flow, generating operating limits, operating reserves) existing during each peak, and all firm/network reservations held by applicant/affiliate resources during the most recent seasonal peaks.” Appendix E further requires transmission provider applicants “to provide documentation listing all historical assumptions used to develop each historical seasonal benchmark case.” Pinnacle failed to provide this documentation with its SIL study. Thus, if Pinnacle chooses to re-file a SIL study, it must provide documentation showing that it has modeled its system in accordance with the Appendix E requirements set forth above. As additional support in providing this documentation, Pinnacle may include the ATC values posted on its OASIS coincident with the load and generation data used in the import limit studies in its working papers.

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<sup>16</sup> Moreover, earlier in this proceeding intervenors alleged the existence of a Phoenix Valley load pocket and asked the Commission to investigate the existence of market power there. *See* Arizona Districts March 7, 2005 request for technical conference (“The Arizona Districts’ preliminary analyses also suggest that the Pinnacle West Companies’ use of the APS Control Area as the relevant geographic market is inappropriate because it fails to properly account for the Phoenix Load Pocket, which has long been recognized as a significant transmission bottleneck within the APS Control Area. Historical data demonstrates, and APS agrees, that the transmission constraints associated with the Phoenix Load Pocket dramatically limit the amount of uncommitted generation that can actually be physically delivered into the Phoenix Load pocket. However, the February 18 Filing fails to adequately account for the Phoenix Load Pocket in its delineation of the relevant geographic market.” (citations omitted)). We note that those intervenors have since settled their issues of concern in this proceeding.

#### **IV. Contingencies and Monitored Facilities to be used in the Studies**

11. In its SIL study, Pinnacle studied and filed information on operating contingencies<sup>17</sup> on the transmission lines that connect the APS control area with neighboring systems, but it failed to study contingencies or provide information on transmission lines within the APS system that link the Phoenix Valley to the rest of its system. Thus, Pinnacle only selectively studied contingencies. This is contrary to Appendix E, which requires applicants to “apply an aggregation of all *internal/external contingency facilities and all monitored/limiting facilities* that were used historically to approximate area-area transmission availability (TTC/ATC limits available to non-affiliated resources).” (emphasis added). Appendix E also states that applicants must “reasonably simulate the historical conditions that were present including . . . other limits/constraints imposed by the [transmission provider] during the season peaks.” Not only does Appendix E require that information on internal contingencies be provided with the SIL study, but furthermore, since Pinnacle is required to use Good Utility Practices as part of its OATT, all of the contingencies that would be required to assure reliable operation should have been applied to the study cases.<sup>18</sup> This includes internal and lower voltage monitored facilities because they may become limiting when large amounts of power are transferred into, and are sinking within, congested load pockets.<sup>19</sup>

12. Therefore, if Pinnacle chooses to re-file an SIL study, it is directed to study and provide information on all contingencies on all of the facilities within the study area and

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<sup>17</sup> Contingencies are the result of unexpected failures on facilities in the Bulk-Power System that result in immediate removal of facilities from service.

<sup>18</sup> Pinnacle includes constraints on some but not all high voltage transmission lines covering 25-500 kV facilities and one 500/345 kV facility. In actual OASIS practice, Pinnacle monitors “Other APS Transmission Paths,” which include 9-transformers, 18-230 kV paths, and 4-69 kV paths, in addition to monitoring the identified 500 kV and 345 kV facilities, WestConnect Transfer Capability Informational Conference, Robert Smith, Arizona Public Service Co., February 22, 2005, slide 11. <http://www.oatioasis.com/AZPS/AZPSdocs/1>.

<sup>19</sup>The resulting loading and voltages for the limiting cases, if derived from DC (direct current) load flow analysis would have been verified by AC (alternating current) load flow analysis and demonstrated to be within the applicable system operating limits as dictated by thermal, voltage or stability considerations to ensure system reliability. The Commission requires that such comparisons be included in the applicant’s working papers that are submitted to the Commission.



outside<sup>20</sup> of the study area that impact the transmission of power into the study area. This includes transmission facilities included in the applicable transmission tariff and all generating facilities. Pinnacle also must provide a list of all contingencies, as well as the contingency files with monitored facilities and their capabilities that are used in each of the studies. (We note that the West Wing transformer may be modeled as in service, ignoring the outage in 2004, since the transformer is now back in service.)

## V. Summary

13. If Pinnacle wishes the Commission to consider its DPT analysis submitted on January 20, 2006, it is directed to file within forty-five (45) days of this order a revised SIL study that strictly adheres to the requirements set forth above and to revise its DPT analysis accordingly. In addition to, but not in lieu of, these studies, Pinnacle may at its discretion submit other sensitivity studies that in Pinnacle's view provide clarification or support to the merits of its position.

### The Commission orders:

If Pinnacle wishes the Commission to consider its DPT analysis submitted on January 20, 2006, it is directed to file within forty-five (45) days of this order a revised SIL study (including revised import limit studies) that strictly adheres to the requirements set forth herein and to revise its DPT analysis accordingly. Any such studies filed should be filed as text readable (.epc or .raw) power flow cases, and they should include the contingency files for both the initial base case conditions and post transfer/SIC (simultaneous import capability) conditions. Pinnacle must include in its filing text readable files showing contingencies facilities, monitored lines, area to area transactions, all internal/external firm/network/grandfathered transmission commitments, and all relevant thermal, voltage, and stability limits. If Pinnacle chooses to conduct import limit sensitivity studies, it must file all of the supporting data mentioned in addition to applicable text readable power flow files.

By the Commission.

( S E A L )

Magalie R. Salas,  
Secretary.

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<sup>20</sup> These include, but are not limited to, WECC paths in Southern California and the Desert Southwest (*i.e.*, Paths 15, 22, 26, 30, 31, 36, 39, 40, 47, 48, 49, 50).