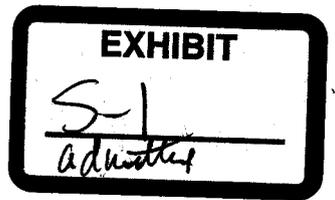




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BEFORE THE ARIZONA POWER PLANT AND TRANSMISSION LINE SITING COMMITTEE

IN THE MATTER OF THE APPLICATION OF) CASE NO. 101
 MESQUITE POWER LLC, OR THEIR ASSIGNEE(S),) DOCKET NO. L-00000S-00-0101
 IN CONFORMANCE WITH THE REQUIREMENTS)
 OF ARIZONA REVISED STATUES 40-360.01 ET SEQ.,)
 FOR A CERTIFICATE OF ENVIRONMENTAL)
 COMPATIBILITY AUTHORIZING CONSTRUCTION)
 OF A NATURAL GAS-FIRED, COMBINED CYCLE)
 GENERATING FACILITY LOCATED SOUTH OF)
 ELLIOT ROAD, APPROXIMATELY ONE MILE EAST)
 OF WINTERSBURG ROAD AND APPROXIMATELY)
 37 MILES WEST OF THE PHOENIX METROPOLITAN)
 AREA, NEAR ARLINGTON IN MARICOPA COUNTY,)
 ARIZONA.)

COMMENTS

OF

JERRY D. SMITH

ELECTRIC UTILITIES ENGINEER

ARIZONA CORPORATION COMMISSION STAFF

SEPTEMBER 6, 2000

1 **PURPOSE OF COMMENTS**

2 Jerry D. Smith, representing Arizona Corporation Commission Staff ("ACC Staff" or
3 "Staff"), offers the following comments regarding the Mesquite Power, LLC ("Applicant")
4 application for a Certificate of Environmental Capability ("CEC") authorizing construction of a
5 1250 MW, natural gas-fired, combined cycle power plant. The fundamental issue raised by this
6 document is the reliable production and delivery of energy from this plant. Mr. Smith offers new
7 support data relative to Staff's position that multiple lines are required out of power plant
8 switchyards.

9 It is both proper and prudent for ACC Staff to ascertain the reliability implications of the
10 Applicant's project as a matter of record in a Siting Committee hearing of Applicant's case.
11 Paragraph B of A.R.S §40-360.07 requires the ACC to balance in the broad public interest the
12 need for an adequate, economical and reliable supply of electric power with the desire to
13 minimize the effect on the environment and ecology of this state. The Siting Committee hearing
14 is the only legal forum by which Staff can establish its record for ACC consideration.

15 Mr. Smith's comments reflect his due consideration of the Mesquite Power Plant project
16 from two perspectives. He has considered how the proposed power plant will deliver its energy
17 over existing and planned transmission facilities to consumer markets. Mr. Smith's extensive
18 knowledge of the Arizona electric system stems from twenty-seven years of employment by
19 SRP. That career afforded him the opportunity to study, plan, and site generation and
20 transmission projects in the state of Arizona. Mr. Smith has also considered the project from the
21 context of his present ACC Staff responsibilities. He is currently charged with enabling and
22 facilitating Arizona's transition to a competitive, reliable and adequately robust electric energy
23 market.

24
25 **ARIZONA BEST ENGINEERING PRACTICES**

26 Staff has researched and documented the best utility practices of electric utilities that
27 have constructed, owned, and operated power plants within the state of Arizona. On July 19,
28 2000, Staff formally made a data request of AEPCO, APS, SRP, TEP and WAPA to supply one-

1 line diagrams for each power plant transmission switchyard for which their company was an
2 owner, project participant, or transmission service provider. They were asked to include existing
3 facilities as well as any having an approved CEC. Their responses are summarized in Tables 1
4 and 2. Copies of one-line diagrams provided by utilities in response to this data request are
5 available from Staff upon request.

6 The 21 power plants presently located in Arizona consist of 80 generating units of
7 various sizes totally 15,935 MW in capacity. Arizona utilities own 73% of this capacity (11,708
8 MW). The remaining capacity is owned by utilities located in other states. I have taken the
9 liberty to include the Four Corners and San Juan power plants in this data even though they are
10 physically located just east of the Arizona / New Mexico state line and because they play a
11 prominent role in the energy supply and delivery requirements of this state.

12 Of the 80 generating units located in Arizona only 5 units have fewer than 3 transmission
13 lines or transformer ties emanating from their switchyard. The 13 MW Stewart Mountain hydro
14 unit and the 36 MW Roosevelt hydro unit are shown as having only one line in Table 1.
15 However, the Roosevelt unit is actually connected to Frasier Substation via a single generator tie
16 approximately 2 miles in length while the Stewart Mountain unit is connected to Goldfield
17 Substation via a generator tie approximately 8 miles in length. Multiple lines and transformer ties
18 are terminated at both Frasier and Goldfield. From this data it is evident that utility practices in
19 Arizona have resulted in "two or more transmission lines or transformer ties emanating from all
20 power plant transmission switchyards."

21 In Staff's data request, utilities were also asked to identify what criteria was used to
22 establish the bus configuration and the number of transmission lines required out of each power
23 plant. The utilities' responses indicate that the units outlined in Table 1 have been installed over
24 a large range of years. As one would expect, the switchyard designs have changed over the years.
25 Therefore, the bus configuration and number of transmission lines have been established for each
26 unique power plant situation.

27 As a general practice, the utilities have designed all facilities in Table 1 in accordance
28 with the applicable WSCC / NERC criteria in existence at the time of construction. Generally,

1 the transmission system must perform in such a manner that loss of one component will not
2 overload any other component and voltages will remain at acceptable levels. However, no
3 specific criterion has dictated the choice of bus configuration. Nor has the industry had specific
4 criteria addressing the minimum number of lines required out of a power plant. Beyond the
5 applicable WSCC / NERC criteria, the bus configuration and number of lines out of a plant's
6 switchyard have been a discretionary decision driven by a utility's consideration of prevailing
7 planning, engineering, design, operation and business practices.

8 In addition, utilities were asked to identify any criteria they use to establish the bus
9 configuration and number of lines required out of a switchyard when a party seeks an
10 interconnection. The utilities' responses indicate that no criteria exists that specifies the bus
11 configuration or number of lines required out of a power plant switchyard for requested
12 interconnections. They do however, rely on WSCC and NERC policies and criteria when
13 responding to new interconnection requests.

14 The above facts substantiate the appropriateness of the "Guiding Principles for ACC
15 Staff Determination of Electric System Adequacy and Reliability" used as the foundation for
16 Staff's testimony and recommended Siting Committee conditions in prior power plant hearings.
17 Staff's position on bus configuration and number of lines required out of a power plant
18 switchyard is truly based on undisputed "best engineering practices" established by utilities in
19 Arizona over the course of many years of accountability for the reliable supply and delivery of
20 energy to Arizona's consumers.

21 Restructuring the Arizona electric industry for retail competition via a deregulated energy
22 market is no justification for relaxing the best engineering practices established by utilities in
23 Arizona. To do so, would jeopardize the present electric service reliability cherished by
24 Arizona's consumers. It would simply allow a greater financial gain for merchant power plants.
25 Neither WSCC nor NERC are contemplating relaxing their reliability criteria. In fact, there is
26 considerable political pressure to strengthen national reliability requirements in response to the
27 wide spread concern about blackouts that are becoming more prevalent throughout the nation.

1 Currently, no merchant power plant exists in Arizona. But Table 2 reveals that Arizona is
2 under going a major shift in its ownership and operation of power plants. All but two of the 14
3 proposed plants will be merchant plants or owned and operated by an affiliate of an ACC
4 regulated utility. These 14 plants consist of 36 new combined cycle units or combustion turbines
5 with an aggregate capacity of 12,520 MW. This is equivalent to the existing load in the state of
6 Arizona and roughly one third greater then the load growth projected for the Desert Southwest
7 region over the next decade as reflected in Figure 1.

8 Half of the proposed plants have an ACC decision approving their CEC with conditions.
9 An eighth plant has Siting Committee approval and is awaiting ACC action. Staff's intervention
10 in siting cases commenced with the PWEC Redhawk hearing.¹ While the PWEC Redhawk
11 project has yet to file a CEC application for its transmission lines, it has committed to two or
12 more lines emanating from the plant. All but one approved plant has two or more transmission
13 lines. In fact, half of the proposed plants, 3 approved plants and 4 plants yet to appear before the
14 Siting Committee, have committed to multiple switchyard lines without Staff intervening.
15 Applicant's Mesquite project and the Gila Bend power plant project are the only proposed
16 projects that continue to challenge Arizona's established best engineering practice of multiple
17 lines out of a power plant switchyard.

18 Staff has consistently taken the position that two or more transmission lines are required
19 out of each plant's switchyard to meet a single contingency "N-1" criteria without relying on
20 remedial action such as generator tripping or load shedding. The evidence in Table 2 is an
21 indicator that there is support of this practice even when Staff is not involved. Now is not the
22 time to relax our reliability standards. It is interesting that all of the projects that have proposed
23 a single transmission line have also sought an interconnection at the Palo Verde satellite
24 switchyard named "Hassayampa." It is at this same location that existing transmission capacity
25 to accommodate those same plants is in question. An update of Palo Verde interconnection study
26 results has been reflected in Figure 2.

27 ...

28 _____
¹ Docket No. L-00000J-99-0095, ACC Decision No. 62324.

1 **STAFF RECOMMENDATION**

2 This Applicant's project is comparable to other plants seeking to interconnect with the
3 Palo Verde transmission system. Staff supports the Mesquite project on the same basis as
4 projects that have proceeded it. Therefore, Staff believes it is both proper and prudent to
5 recommend Siting Committee and ACC approval of a CEC with the standard array of ACC
6 conditions required of other plants. This includes the requirement that two lines or transformer
7 ties interconnect the Applicant's project to the Hassayampa Switchyard.

8 Having given due consideration to the reliability concerns documented herein, Staff does
9 remain concerned about the existing transmission system's inability to reliably deliver
10 Mesquite's and other plant's energy to market. In addition, Arizona's siting procedures allow
11 plants and associated transmission projects to file CEC applications in a disjointed fashion. This
12 compromises effective public policy decisions. It may be time to address such global concerns in
13 a Siting Committee and ACC Workshop or Study Session setting. Staff suggests such a forum
14 rather than burdening this hearing with issues not solely related to the Mesquite project.

15 The Siting Committee should give due consideration to the above Staff recommendations
16 given the grave consequences at stake in the local electric system. Are rolling blackouts in
17 Arizona a likely consequence of not siting sufficient transmission early enough to get energy
18 from new plants to Arizona consumer markets? If so, how should those consequences be
19 mitigated? Staff concludes it comments with everyone's goal ... Let's find a way to keep the
20 lights on!

Summary of Existing Arizona Power Plants

Table 1

Plant	Switchyard Voltage (kV)	No. Units	Capacity (MW)*	AZ Utility Capacity (MW)*	AZ Utility Capacity (%)	No. Lines / Xfrm Ties
Agua Fria	230	3	142	142	100.00%	7
	69	3	407	407	100.00%	6
Apache	230	2	350	350	100.00%	4
	115	2	140	140	100.00%	5
	69	2	30	30	100.00%	4
Cholla	500	3	995	615	61.81%	4
	230	1	116	116	100.00%	4
Coronado	500	2	730	730	100.00%	4
Four Corners	500	1	740	587	79.32%	2
	345	1	740	587	79.32%	8
	230	3	560	560	100.00%	7
Horse Mesa	115	4	128	128	100.00%	3
Irvington	138	4	310	310	100.00%	10
	46	2	162	162	100.00%	15
Kyrene	230	2	101	101	100.00%	11
	69	3	163	163	100.00%	9
Mormon Flat	115	2	58	58	100.00%	2
Navajo	500	3	2,255	1,522	67.49%	3
North Loop	46	3	73	73	100.00%	6
Ocotillo	230	1	54	54	100.00%	7
	69	3	275	275	100.00%	6
Palo Verde	500	3	3,810	2,377	62.39%	5
Roosevelt**	115	1	36	36	100.00%	1
Saguaro	115	4	313	313	100.00%	12
San Juan	345	4	1,614	314	19.45%	7
Santan	230	2	157	157	100.00%	5
	69	2	156	156	100.00%	9
Springerville	345	2	800	800	100.00%	6
Stewart Mountain***	115	1	13	13	100.00%	1
Yucca	69	5	173	98	56.65%	4
W. Phoenix	230	3	240	240	100.00%	3
	69	3	94	94	100.00%	6

21 Plant Total 80 15,935 11,708 73.47%

* Per WSCC Existing Generation Data Base

** Gen tie connected to Fraiser Sub which has two 115 kV lines

*** Gen tie connected to Goldfield Sub having 2-115 kV lines & 2 115/230 kV transformers

Summary of Proposed Arizona Power Plants

Table 2

Plant	Switchyard Voltage (kV)	No. Units	Capacity (MW)*	Plant/Line CEC Status	ACC Decision No.(s)	No. Lines / Xfrm Ties
Arlington Valley	500	1 CC	580	Approved	62740	5
Big Sandy	500	2 CC	720	Pending		2
Desert Basin	230	1 CC	520	Approved	61852/62426	2
Gila River	500	4 CC	2,080	Appr/Pend	62730/?????	3
Griffith	230	1 CC	520	Approved	61295	3
Harquahala	500	4 CC	1,040	Approved	62655	1
Kyrene	230	1 CC	250	Pending		2
Mesquite	230	4 CC	1,250	Pending		1
Redhawk	500	4 CC	2,120	Appr/Anne	62324/?????	2 or more
Santan	230	2 CC	825	Pending		5
W. Phoenix	230	2 CC	650	Approved	62321	5
Gila Bend	500	1 CC	845	Announced		1
South Point	230	1 CC	540	NA	NA	2
Sun Dance	115	8 CT	580	Announced		2
14 Plant Total		36	12,520			

* Per CEC Application or ACC Decision

