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ARIZONA CORPORATION COMMISSION  
DOCKET CONTROL

January 28, 2015

Docket Control  
Arizona Corporation Commission  
1200 W. Washington  
Phoenix, AZ 85007

ORIGINAL

RE: Palo Verde Nuclear Generating Station Nuclear Performance Reporting Standard  
Docket No. E-01345A-09-0506

Pursuant to Decision No. 71310 dated October 30, 2009:

Arizona Public Service Company shall docket all reports filed with the Commission associated with the Nuclear Performance Reporting Standard in a separate docket.

Attached please find the plant performance report, based on annual capacity factor of each operating unit at Palo Verde as well as overall station capacity factor, as required by the approved Nuclear Performance Reporting Standard. This report covers the 2014 calendar year and APS is reporting in Tier 1.

If you have any questions regarding this information, please contact Kelly Hauert at (602)250-2902.

Sincerely,

Lisa Malagon

LM/sb  
Attachments

cc: Brian Bozzo  
Terri Ford  
Jodi Jerich  
Steve Olea

Arizona Corporation Commission  
DOCKETED

JAN 28 2015

DOCKETED BY

**ARIZONA PUBLIC SERVICE COMPANY**

**PALO VERDE NUCLEAR GENERATING STATION  
ANNUAL REPORT ON  
2014 PLANT PERFORMANCE**

**DOCKET NO. E-01345A-09-0506**

**JANUARY 28, 2015**



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ATTACHMENT A – APS Nuclear Performance Reporting Standard

## **EXECUTIVE SUMMARY**

In 2014, the Palo Verde Nuclear Generating Station (“Palo Verde” or “Station”) performed exceptionally well, achieving its highest-ever generation year. Palo Verde generated a total of 32,323,543 net megawatt-hours (“MWh”), which yielded an overall station capacity factor of 93.7%. In 2014, all three units achieved capacity factors greater than 85%, and the total Station capacity factor was greater than 88%. This performance puts Palo Verde in the first tier classification used in the APS Nuclear Performance Reporting Standard (“NPRS”).

Each unit at Palo Verde has a scheduled refueling and maintenance outage every 18-months, resulting in two refuelings at the station each year. The time off-line to complete these scheduled outages lowers those units’ capacity factors. In 2014, Palo Verde conducted refueling outages in Units 1 and 2. Palo Verde Unit 1 achieved a capacity factor of 90.1%, generating a total of 10,350,311 net MWh. Palo Verde Unit 2 achieved a capacity factor of 90.3%, generating 10,394,102 net MWh. Palo Verde Unit 3 achieved a capacity factor of 100.7%, generating 11,579,130 net MWh, its best generation year ever.<sup>1</sup>

Continued strong Station performance is expected in 2015. Unit 1 is projected to finish 2015 with a 99.0% capacity factor. Units 2 and 3 will be refueled in 2015 and are both expected to have 90.4% capacity factors. The overall Palo Verde station capacity factor for 2015 is projected to be 93.3%.

### **I. APS NUCLEAR PERFORMANCE REPORTING STANDARD**

The NPRS, developed jointly by Arizona Public Service Company (“APS” or “Company”) and the Arizona Corporation Commission (“ACC” or “Commission”) Staff, was presented to the ACC to comply with the Commission’s decision in the Company’s 2005 rate case.<sup>2</sup> That standard, approved in an October 2009 open meeting, requires APS to:

1. Provide specified reports relating to generating and regulatory performance at Palo Verde in accordance with the approved reporting standard;
2. File all required reports with Docket Control in a separate docket; and
3. Present key findings of these reports to the Commission as part of the Commission’s annual Summer Preparedness meetings.<sup>3</sup>

A copy of the approved NPRS is included as Attachment A.

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<sup>1</sup>The capacity factor calculation is dependent on the Net Maximum Dependable Capacity (“MDC”) rating of the generating unit. Net MDC is the net maximum capacity that we can depend upon under ideal operating conditions, as determined during the summer months when environmental conditions are most limiting for unit Megawatt output. Because a generating unit running at full capacity may achieve output higher than its Net MDC rating, the capacity factor may exceed 100%.

<sup>2</sup> ACC Decision No. 69663, dated June 28, 2007, pp. 119-120, 157

<sup>3</sup> ACC Decision No. 71310, dated October 30, 2009

The NPRS requires specific reporting in two major categories: plant performance and regulatory performance. Regulatory performance reporting is required under certain specific instances, such as Nuclear Regulatory Commission (“NRC”) inspection “Greater than Green” findings, NRC identification of cross-cutting issues, and the placement of Palo Verde at a lower level than Column I of the NRC Reactor Oversight Program Action Matrix. Reports discussing any of these issues are generally due within 60 days of the NRC inspection or report identifying violations, and are not the focus of this report.

The plant performance reporting requirements of the NPRS are separated into three reporting tiers based on the achieved annual capacity factor of each operating unit, the average station capacity factor in the reporting period, as well as how the station and each unit compared to the estimated capacity factors provided in the previous year’s report.

The NRC defines CF as the ratio of available capacity (the amount of electrical power actually produced by a generating unit) to theoretical capacity (the amount of electrical power that could theoretically have been produced if the generating unit had operated continuously at full power) during a given time period. CF is a percentage calculation in which the maximum dependable generation (based on summer conditions) of the unit is divided into the actual generation of the unit, and then multiplied by 100. The CF calculation is:

$$\frac{\text{Actual Unit Generation}}{\text{Unit Capacity Rating} \times \text{Hours In Period}} \times 100$$

In 2014, Palo Verde achieved performance levels that satisfied the first reporting tier, which requires capacity factors greater than or equal to 88% for the Station and 85% for each unit. In 2014, the overall capacity factor for the Station was 93.7%, and Units 1, 2 and 3 achieved 90.1%, 90.3% and 100.7%, respectively.

The Tier 1 NPRS report requires the following sections.

1. Capacity Factor (“CF”) for each unit for the preceding calendar year (2014)
2. Forecast CF for each unit for the present calendar year (2015)
3. Discussion of any known and/or anticipated extraordinary events, equipment problems or issues that could reduce station CF to less than 88% or reduce any unit CF to less than 85% for present calendar year
4. Discussion of any regulatory issues that could reduce station CF to less than 88% or reduce any unit CF to less than 85% for present calendar year

## II. PALO VERDE 2014 PERFORMANCE

In 2014, Palo Verde achieved an overall annual capacity factor of 93.7% while performing at one of the highest levels in the history of the Station. Palo Verde produced more than 30.0 million net MWh in a calendar year for the tenth time since the Station entered commercial operation in 1986, generating a total of 32,323,543 net MWh, the best annual production level over its lifetime.

The following table provides an overview of Station and unit overall performance in 2014:

	Capacity Factor	Total Generation in MWh	APS Share Generation in MWh
Unit 1	90.1%	10,350,311	3,011,940
Unit 2	90.3%	10,394,102	3,024,684
Unit 3	100.7%	11,579,130	3,369,527
Total Station	93.7%	32,323,543	9,406,151

## A. CALCULATION OF CAPACITY FACTORS

Capacity factors for 2014 at Palo Verde were calculated using the formula described in Section I as follows:

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### 2014 Capacity Factor Calculation for Palo Verde Unit 1

Actual Unit Generation = 10,350,311 MWh  
 Unit Capacity Rating (summer) = 1,311 MW  
 Hours in Period = 8,760

$$\frac{10,350,311}{1,311 \times 8,760} \times 100 = 90.1\%$$

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### 2014 Capacity Factor Calculation for Palo Verde Unit 2

Actual Unit Generation = 10,394,102 MWh  
 Unit Capacity Rating (summer) = 1,314 MW  
 Hours in Period = 8,760

$$\frac{10,394,102}{1,314 \times 8,760} \times 100 = 90.3\%$$

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### 2014 Capacity Factor Calculation for Palo Verde Unit 3

Actual Unit Generation = 11,579,130 MWh  
 Unit Capacity Rating (summer) = 1,312 MW  
 Hours in Period = 8,760

$$\frac{11,579,130}{1,312 \times 8,760} \times 100 = 100.7\%$$

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### 2014 Capacity Factor for the Palo Verde Station

Actual Overall Generation = 32,323,543 MWh  
 Plant Capacity Rating (summer) = 1311 + 1314 + 1312 = 3,937 MW  
 Hours in Period = 8,760

$$\frac{32,323,543}{3,937 \times 8,760} \times 100 = 93.7\%$$


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### **III. PALO VERDE 2015 PROJECTED PERFORMANCE**

Palo Verde is expected to maintain strong capacity factors in 2015, keeping Palo Verde within the first tier of the NPRS for a second year in a row. This is due to the fact that no major modifications which require longer outage durations are currently scheduled for 2015. The station overall capacity factor is projected to be 93.3% in 2015. Capacity factors at the individual units are as follows:

2015 Projected Unit 1 Capacity Factor:	99.0%
2015 Projected Unit 2 Capacity Factor:	90.4%
2015 Projected Unit 3 Capacity Factor:	90.4%

As noted earlier, the 18-month refueling schedule at Palo Verde results in refueling outages of two of the station's three individual generating units during each calendar year. In 2015, these refueling outages will occur in Unit 2 and Unit 3.<sup>4</sup>

#### **A. ANTICIPATED EXTRAORDINARY EVENTS**

There are no anticipated extraordinary events in 2015.

#### **B. ANTICIPATED REGULATORY ISSUES**

There are no anticipated regulatory issues in 2015.

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<sup>4</sup> For planning purposes, APS is utilizing a 1% forced outage rate in 2015 and Palo Verde Unit 2 and 3 refueling outage durations of 30 days for both 2015 outages. In comparison with the projected capacity factors shown above, if no forced outages were assumed for Palo Verde, the 2015 station capacity factor would be projected at 94.2%. Likewise, Unit 1's 2015 capacity factor would be 100.0%, Unit 2 would reach a 2015 capacity factor of 91.3%, and the 2015 capacity factor for Unit 3 would be 91.3%.

**PALO VERDE  
NUCLEAR PERFORMANCE REPORTING STANDARD**

<b>Topic</b>	<b>Description</b>
Capacity Factor ("CF") Per Station and Per Unit	<p>Station at 88% or Greater and Every Unit at 85% or Greater</p> <p>APS shall submit annual reports each January to ACC presenting:</p> <ul style="list-style-type: none"> <li>▪ CF for each unit for preceding calendar year</li> <li>▪ Forecast CF for each unit for present calendar year<sup>1</sup></li> <li>▪ Discussion of any known and/or anticipated extraordinary events, equipment problems or issues that could reduce station CF to less than 88% or reduce any unit CF to less than 85% for present calendar year</li> <li>▪ Discussion of any regulatory issues that could reduce station CF to less than 88% or reduce any unit CF to less than 85% for present calendar year</li> </ul>
Station at Least 80% but Less Than 88% or Any Unit at Least 75% but Less Than 85%	<p>Included in the above annual reports, APS to submit detailed discussion of specific outages and/or down-powers and meet with ACC Staff to explain the reasons for station CF less than 88% and/or reasons for any unit CF less than 85%. Annual reports shall also identify all replacement power costs as well as the amount of reduced off-system sales and lost opportunity sales margins associated with these down-powers and outages.</p>
Station Less Than 80% or Any Unit Less Than 75%	<p>APS shall submit semi-annual reports (until calendar-year station CF is 88% or greater and every unit CF is 85% or greater) each January and July to ACC presenting:</p> <ul style="list-style-type: none"> <li>▪ CF for each unit for preceding 6 months</li> <li>▪ Forecast CF for each unit for next* 6 months</li> <li>▪ Discussion of any known and/or anticipated equipment problems or issues that could prevent a station CF of less than 88% or any unit CF of less than 85% for next* 6 months</li> <li>▪ Discussion of any regulatory issues that could prevent a station CF of less than 88% or any unit CF of less than 85% for next* 6 months</li> <li>▪ Detailed discussion of specific outages and/or down-powers</li> <li>▪ A detailed report explaining unit performance, corrective actions to address outages and/or down-powers leading to station CF less than 80% or any unit CF less than 75% and meet with ACC Staff to explain the reasons for station CF less than 80% or any unit CF less than 75%</li> <li>▪ Identification of all replacement power costs as well as the amount of reduced off-system sales and lost opportunity sales margins associated with these down-powers and outages.</li> </ul>
Regulatory Performance	<p>For any Greater than Green NRC violations, APS will submit a report to the ACC, within 60 days of the NRC violation<sup>2</sup>, describing the violation, planned corrective action and the regulatory impact.</p>

<sup>1</sup> The Forecasted Station CF reported in APS's annual report may be used to determine the level of detail required in the following year's annual report. That is, if the Station performs during any year as APS forecast that it would in its prior year's annual report, even if that performance falls below 88% station and 85% unit thresholds, APS will be required to report what would be required with a station CF at 88% or greater, unless the reasons for the underperformance are different than what had been forecast or unless the ACC or ACC Staff specifically requests otherwise.

\*Example: for a filing in January of 2010, the "next" 6 months would be January through June of 2010.

<sup>2</sup> The start date for this action is based on the date of the documentation (letter) APS receives from the NRC.

**PALO VERDE  
NUCLEAR PERFORMANCE REPORTING STANDARD**

<b>Regulatory Performance (cont)</b>	<b>Topic</b>	<b>Description</b>
	Identification of a Cross-Cutting Issue	If the NRC identifies a cross-cutting issue, APS will submit a report to the ACC, within 60 days of NRC identification <sup>2</sup> , describing the cause of the cross-cutting issue, the findings that gave rise to the cross-cutting issue and the corrective actions planned to close the cross-cutting issue. APS will provide an update within a semi-annual report <sup>3</sup> on the status of the corrective actions until the cross-cutting issue is resolved.
	Palo Verde Unit not in the Licensee Response Column of the NRC Reactor Oversight Program Action Matrix	<p>1. For any Palo Verde units in the Regulatory Response Column ("RRC") of the NRC's Reactor Oversight Program Action Matrix Summary, APS will submit a report within 60 days of being placed in the RRC<sup>2</sup>, to the ACC explaining the cause of the unit being in a lower performance column and the corrective actions planned to return the unit to the Licensee Response Column. APS will provide an update within a semi-annual report<sup>3</sup> on the status of the corrective actions until the unit is returned to the Licensee Response Column.</p> <p>2. Whenever a Palo Verde unit is moved to a lower performance column (lower than RRC) by the NRC<sup>2</sup>, APS will, within 30 days, submit a report to the ACC explaining the reason for the move to a lower performance column, the corrective actions taken to address the cause of the move and the regulatory impact of the move. APS will provide to ACC Staff a copy of all correspondence to the NRC related to the move, and provide a briefing to the ACC Staff.</p> <p>3. For every Palo Verde unit in the Degraded Cornerstone Column or Multiple/Repetitive Degraded Cornerstone Column, APS will provide quarterly reports<sup>4</sup> to the ACC updating the status of the issue and corrective actions to return the unit to the Licensee Response Column. APS will provide an outlined schedule estimating when the corrective actions will be complete. APS will also notify the ACC once it is known that the Unit will be moved to the Licensee Response Column or the Regulatory Response Column. APS will provide to ACC Staff a copy of all correspondence to the NRC related to the Action Matrix status and provide a briefing to the ACC Staff.</p> <p>4. The Commission recognizes that, if the NRC were to alter its policies governing APS' disclosure of NRC correspondence or communications, such alterations may affect APS' ability to comply with the disclosure schedule set forth above. In that event, APS will notify Staff of the alterations, and Staff and APS will propose an alternative disclosure schedule to the Commission.</p>
Prudence Review	Following review of detailed outage specific reports, the ACC may elect to conduct a prudence review of specific outages.	
Standard Re-evaluation Period	Staff and APS will collectively work together to evaluate the Reporting Standard after 3 years of implementation.	

<sup>3</sup> Semi-Annual reports will be submitted in March and September of each year and cover the prior 6 months.

<sup>4</sup> Quarterly reports will be submitted no later than 30 days after the quarter ends (on a calendar year basis) and cover the prior quarter.