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January 29, 2013

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

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

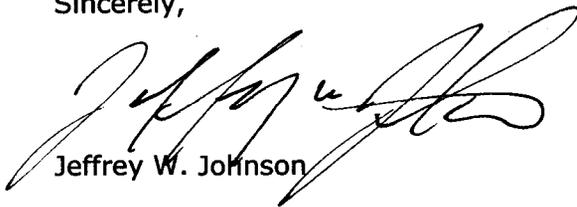
Pursuant to Decision No. 71310 dated October 30, 2009:

IT IS FURTHER ORDERED that 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 2012 calendar year.

If you have any questions regarding this information, please contact Zachary Fryer at (602)250-4167.

Sincerely,

  
Jeffrey W. Johnson

JJ/cd  
Attachments

Cc: Brian Bozzo  
Terri Ford  
Jodi Jerich  
Steve Olea

Arizona Corporation Commission  
DOCKETED  
JAN 29 2013

DOCKETED BY 

**ARIZONA PUBLIC SERVICE COMPANY**

**PALO VERDE NUCLEAR GENERATING STATION  
ANNUAL REPORT ON  
2012 PLANT PERFORMANCE**

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

**JANUARY 29, 2013**



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Attachment A – APS Nuclear Performance Reporting Standard

## EXECUTIVE SUMMARY

In 2012, the Palo Verde Nuclear Generating Station (“Palo Verde” or “Station”) performed well, achieving its highest generation year for the third year in a row. A total of 31,933,916 net megawatt-hours (“MWh”) were generated, yielding an overall station net capacity factor of 92.3%. Unit 1 generated 11,482,175 MWh, with an associated capacity factor of 99.7%. Unit 2 generated 10,358,075 MWh, with an 89.7% capacity factor and Unit 3 generated 10,093,667 MWh with an 87.6% capacity factor. The unit capacity factors reflect refueling outages conducted in Units 2 and 3. With all three units having capacity factors greater than 85%, the total Station capacity factor being greater than 88%, APS is in the first tier classification of the Nuclear Performance Reporting Standard (NPRS).

In 2013, Palo Verde expects sustained performance in generation. Capacity factor projections for each unit and the site are:

- Unit 1 – 89.8% (refueling outage)
- Unit 2 – 98.3%
- Unit 3 – 88.5% (refueling outage)
- Site – 92.2%

Station capacity factors are based on two 30-day refueling outages, a 2% forced loss rate and a 4.8-day down power in Unit 3 conducted in January 2013 to improve condenser integrity.

## 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>1</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>2</sup>

A copy of the approved NPRS is included as Attachment A. This report is the third annual performance report required by the NPRS.

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 capacity factor 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. Capacity factor is a percentage calculation in which the maximum attainable generation (based on summer conditions) of the unit is divided into the actual generation of the unit, and then multiplied by 100.<sup>3</sup> Maximum attainable generation is

<sup>1</sup> ACC Decision No. 69663, dated June 28, 2007, pp. 119-120, 157

<sup>2</sup> ACC Decision No. 71310, dated October 30, 2009

<sup>3</sup>The capacity factor calculation is dependent on the electrical rating of a generating unit, which is the guaranteed output of a generator under specified conditions as designated by its manufacturer. In general, electrical ratings are lower for summertime months because higher ambient temperatures increase condenser pressure and reduce thermal cycle efficiency. Therefore, in winter months, a generating unit that is running at full capacity may achieve output higher than its electrical rating, resulting in a capacity factor of over 100%.

determined by multiplying the capacity rating of the unit by the hours during the calculation period. The capacity factor calculation is:

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

Under the reporting requirements of the NPRS, the first tier applies when Palo Verde as a whole averages 88% or higher for the reporting period and every individual unit attains an annual average capacity factor of 85% or greater for the reporting period or the station and each unit meets or exceeds the prior year's NPRS's estimate of projected capacity factors. In this category, annual reports are to include actual capacity factors for the reporting year, forecasted capacity factors for the upcoming year, and any issues or events that are anticipated to reduce capacity factor levels in the upcoming year below these percentages.

In 2012, Palo Verde performance met requirements for the first tier reporting category of the NPRS; therefore, this report provides information required under the first tier as follows:

1. Capacity factor for each unit for preceding calendar year [2012]
2. Forecast capacity factor for each unit for present calendar year [2013]
3. Discussion of any known and/or anticipated extraordinary events, equipment problems or issues that could reduce station capacity factor to less than 88% or reduce any unit capacity factor to less than 85% for present calendar year
4. Discussion of any regulatory issues that could reduce station capacity factor to less than 88% or reduce capacity factor of any unit to less than 85% for present calendar year.

## II. PALO VERDE 2012 PERFORMANCE

In 2012, Palo Verde achieved an overall annual capacity factor of 92.3%, having produced more than 31.9 million net MWh. This is Palo Verde's best generating year and is the eighth year the station has produced more than 30 million MWh since beginning commercial operation in 1986.

### A. Calculation of Capacity Factors

Capacity factors for 2012 at Palo Verde were calculated using the formula described in Section I as follows:

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#### 2012 Capacity Factor Calculation for Palo Verde Unit 1

Actual Unit Generation = 11,482,175 MWh  
 Unit Capacity Rating (summer) = 1,311 MW  
 Hours in Period = 8,784

$$\frac{11,482,175}{1,311 \cdot 8,784} \cdot 100 = 99.7\%$$

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#### 2012 Capacity Factor Calculation for Palo Verde Unit 2

Actual Unit Generation = 10,358,075 MWh  
 Unit Capacity Rating (summer) = 1,314 MW  
 Hours in Period = 8,784

$$\frac{10,358,075}{1,314 \cdot 8,784} \cdot 100 = 89.7\%$$

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#### 2012 Capacity Factor Calculation for Palo Verde Unit 3

Actual Unit Generation = 10,093,667 MWh  
 Unit Capacity Rating (summer) = 1,312 MW  
 Hours in Period = 8,784

$$\frac{10,093,667}{1,312 \cdot 8,784} \cdot 100 = 87.6\%$$


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2012 Capacity Factor for the Palo Verde Station

Actual Overall Generation = 31,933,916 MWh  
Plant Capacity Rating (summer) = 1,311 + 1,314 + 1,312 = 3,937 MW  
Hours in Period = 8,784

$$\frac{31,933,916}{3,937 \cdot 8,784} \cdot 100 = 92.3\%$$

The forecasts for 2012 capacity factor that APS provided in last year's NPRS were:

|         |     |
|---------|-----|
| Unit 1: | 98% |
| Unit 2: | 89% |
| Unit 3: | 89% |
| Site:   | 92% |

### III. PALO VERDE 2013 PERFORMANCE FORECAST

Palo Verde is expected to maintain high capacity factors in 2013 as follows:

|  |       |
|--|-------|
| 2013 Projected Unit 1 Capacity Factor: | 89.8% |
| 2013 Projected Unit 2 Capacity Factor: | 98.3% |
| 2013 Projected Unit 3 Capacity Factor: | 88.5% |
| 2013 Projected Site Capacity Factor:   | 92.2% |

As noted earlier, the 18-month refueling schedule at Palo Verde results in two refueling outages each year. In 2013, these refueling outages will occur in Units 1 and 3 and are planned for 30 days each.<sup>4</sup>

#### A. ANTICIPATED EXTRAORDINARY EVENTS

There are no anticipated extraordinary events in 2013.

#### B. ANTICIPATED REGULATORY ISSUES

On September 30, 2012, the Nuclear Regulatory Commission returned Palo Verde to the Licensee Response Column of the NRC's Reactor Oversight Program Action Matrix Summary. This return to Column I satisfies current and future reporting requirements to the Commission.

Palo Verde anticipates no regulatory issues that will require more-frequent reporting under the NPRS in 2013.

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<sup>4</sup> For generation assumptions, APS is utilizing a 2% forced loss rate and 30-day outage durations for the Unit 1 and 3 planned refueling outages. It also includes a 4.8-day down power conducted in Unit 3 in January 2013 to improve condenser integrity. Any variations in actual performance will positively or negatively affect actual generation. In 2012, Palo Verde exceeded forecasted generation.