

**FINDING OF NO SIGNIFICANT IMPACT**  
**TENNESSEE VALLEY AUTHORITY**  
**POTENTIAL PARADISE FOSSIL PLANT RETIREMENT**  
**MUHLENBERG COUNTY, KENTUCKY**

The Tennessee Valley Authority (TVA) is proposing to retire its Paradise Fossil Plant (PAF) in Muhlenberg County, Kentucky. PAF was originally constructed with two coal-fired cyclone generating units, known as Units 1 and 2, and went on-line in 1963. A third unit, Unit 3, became operational in 1970. Units 1 and 2 were replaced with natural gas generation in April 2017. Because Unit 3 is the only operating unit at PAF, its retirement would result in the retirement of PAF.

In August 2015, TVA published the 2015 Integrated Resource Plan (IRP), which was developed with input from stakeholder groups and the general public. The 2015 IRP evaluated five scenarios (plausible futures) and five strategies (potential TVA responses to those futures) and identified a range of potential resource additions and retirements throughout the TVA power service area, which encompasses approximately 80,000 square miles for the majority of Tennessee and parts of Alabama, Georgia, Kentucky, Mississippi, North Carolina and Virginia. The target supply mix adopted by the TVA Board through the 2015 IRP recommended the potential retirement of up to 2,600 megawatts of coal-fired generation by 2033.

TVA has experienced flat to declining load, most similar to the Distributed Marketplace scenario in the 2015 IRP, and natural gas prices have remained relatively low. These conditions have prompted TVA to conduct thorough analyses of all its generating assets considering load outlook, economic benefits and costs, performance, and environmental and social impacts. Assets that have relatively high projected future maintenance costs and environmental compliance expenditures, a high forced outage rate and poor generation portfolio fit, have been the focus of more detailed study for potential retirement. PAF falls into this category of assets.

As a large coal unit with medium operating costs and a high forced outage rate, as well as the need for significant repairs, PAF Unit 3 does not fit current and likely future portfolio needs. PAF Unit 3 was designed to produce 1,000 megawatts of steady power generation. However, with increased volatility in energy consumption and increased nuclear generation that provides lower cost, steady generation, PAF Unit 3 is challenged to adjust in order to respond to these changes in consumption. The potential retirement of a unit with high maintenance costs in 2020 would facilitate TVA's statutory mission to provide reliable power at the lowest system cost.

TVA system planners performed an economic evaluation of the PAF retirement which takes into account fuel price volatility. Impacts of fuel price volatility were evaluated against high and low gas price sensitivities. The evaluation indicated that other TVA coal units can partly replace the generation currently provided by PAF, muting impacts during periods of higher natural gas prices. Additionally, TVA commissioned a fuel resiliency study conducted by a third party that evaluated TVA's fuel resiliency with and without the PAF retirement. The study criteria included fuel supply, fuel delivery, inventory, and backup contingencies for all of TVA's generating assets. It indicated that TVA's overall fuel supply position is among the most resilient in the U.S. due to a well-diversified generation portfolio, advantageous location with respect to major gas pipelines, access

to multiple coal supply and transport options, and a strong and resilient program to secure nuclear fuel. An analysis of study findings indicates that reducing the coal fleet would not materially impact TVA's fuel resiliency.

TVA prepared an environmental assessment (EA) to analyze the potential natural and socioeconomic impacts associated with the potential retirement of PAF. The EA is incorporated herein by reference.

## **ALTERNATIVES**

TVA evaluated two alternatives in the EA. Under either alternative, TVA would implement several projects related to Coal Combustion Residuals (CCR) management, including:

- Gypsum Dewatering Facility
- Dry Fly Ash Conversion for Unit 3
- Gypsum Pond Instrumentation Installation
- Process Water Basins
- Peabody Ash Impoundment Closure
- 2A/2B Ash Impoundment Closure
- Peabody Dike
- Gypsum Stack Closure
- Daniels Run Coal Fines Impoundment Closure
- Landfill Infrastructure and Cell 1A
- Chemical Impoundment Closure

### **Alternative A – The No Action Alternative**

Under the No Action Alternative, PAF Unit 3 would not be retired and it would continue to operate as part of the TVA generation portfolio. Under the No Action Alternative, the CCR-related actions listed above would start within the next 5 years. TVA would also construct and operate a new Subtitle D landfill to accommodate long-term storage of dry CCRs. This 80-acre CCR landfill on the PAF reservation would provide approximately 32 years of CCR disposal capacity. In order for the plant to remain operational, TVA would also replace the damaged steam turbine rotor with a similar product. Replacement of the rotor would be evaluated under a future NEPA document and it would likely be eligible for a categorical exclusion with minimal effects on the surrounding environment.

TVA would also implement projects associated with the waste water treatment facility, bottom ash dewatering facility, sulfite analyzers, outage wash collection system, and chemical impoundment closure. Details regarding these projects, including analyses of their potential environmental impacts, have not been finalized. Once a decision is made regarding the retirement of PAF Unit 3 and additional details are available, the analyses of these projects will be completed.

### **Alternative B – Potential Retirement of Paradise Fossil Plant**

Under Alternative B, TVA would retire PAF Unit 3 in 2020. At that time, TVA would cease most plant operations and reduce plant staff. In order to minimize environmental and safety risks and comply with applicable laws and regulations, TVA would implement the actions described below.

## **Decommissioning, Deactivation, and Decontamination Activities**

Decommissioning is the performance of activities required to ready a facility for deactivation. Work performed includes removal of equipment, components, and parts that can be used at other sites, draining of oil/fluids from equipment, removal of coal and ash from boilers and other equipment, removal of hazardous materials and potential waste like materials, removal of polychlorinated biphenyls (PCBs) equipment, removal of furniture/furnishings, removal of information technology assets, and removal of plant records. Key activities include:

- Tagging out all unit or plant equipment except service water, lighting, etc.
- Emptying and cleaning hoppers, bins, bunkers, etc.
- Opening all equipment electrical breakers not in use
- Draining oil and fluids
- Salvaging and storing all useable equipment, components, materials, spare parts, office products etc. and relocating them, as practical
- Salvaging and storing all key plant records.

Deactivation is shutting down of power and energized systems as appropriate as well as isolating and/or severing power, water and piping to the plant to provide a cold, dark and dry structure. Work includes removing power and services, installing bulkheads, and sealing tunnels. Activities may also include rerouting of power and services as required for any facilities that would remain operational. Key activities include:

- Performing electrical and mechanical isolation of systems, components and areas
- Installing bulkheads and/or fill tunnels
- Providing alternate power and services (sump pumps, Federal Aviation Administration (FAA) stack lighting, etc.)

Limited decontamination involves removing select regulated materials in a safe and practical manner in such a way that the plant is left in a status that does not present a hazard or risk to the environment or personnel. Limited decontamination activities at PAF includes abatement and disposal of regulated materials, which include but are not limited to PCB equipment, asbestos, hazardous waste, solid waste, products, etc. Key activities include:

- Removal and proper disposal of regulated materials as practical
- Periodic materials condition monitoring.
- Periodic waste removal as materials deteriorate over time.

## **CCR Activities**

Under Alternative B, in addition to the implementation of the CCR-related actions listed above, the Coal Yard Closure would be started by 2025.

## **Preferred Alternative**

PAF Unit 3 does not provide the level of flexibility needed to balance hourly, daily and seasonal changes in energy consumption. In addition, cycling the unit off and on results in more wear and tear and higher operation and maintenance costs. TVA has considered load outlook, economic

benefits and costs, performance, and environmental and social impacts and determined that there is no immediate need to replace the generating capacity currently provided by PAF Unit 3. TVA's action is consistent with TVA's 2015 IRP and supports a low cost, reliable, risk-informed, diverse, environmentally responsible, and flexible power system. Therefore, TVA's preferred alternative is Alternative B – Potential Retirement of Paradise Fossil Plant.

## **IMPACTS ASSESSMENT**

The potential impacts of the Proposed Action Alternative are described in detail in the EA, and are summarized in Table 2-2 of that EA.

Short-term adverse impacts are anticipated for surface water (negligible), transportation (minor), and noise (minor). Long-term adverse impacts are anticipated for aquatic ecology (negligible on communities downstream of PAF) and socioeconomics (moderate). Minor cumulative impacts are also anticipated. Additionally, no adverse impacts are anticipated for environmental justice or threatened and endangered species.

Long-term beneficial impacts are anticipated for air quality (minor), surface water (direct/indirect/cumulative), groundwater (minor), aquatic ecology (minor on the Green River), solid and hazardous waste (minor), visual resources (minor), transportation (minor), and noise (minor).

## **PUBLIC AND INTERGOVERNMENTAL REVIEW**

TVA's public and agency involvement included publication of a notice of availability and a 30-day public review of the draft EA. The availability of the draft EA was announced in two newspapers that serve the Muhlenberg County area, the *Central City Leader News* and the *Central City Times Argus*. The draft EA and a request for comments were also posted on the TVA website. Notice of the availability of the draft EA and requests for comments were sent to local, state, and federal agencies. Comments were accepted from November 19, 2018 through December 19, 2018 via the TVA website, mail, and e-mail. Appendix A of the EA contains the compiled comments on the draft EA and TVA's responses to those comments. Appendix B of the EA contains the text of the comments received.

## **CONCLUSIONS AND FINDINGS**

Based on the findings in the EA, TVA concludes that implementing the Proposed Action Alternative of potential retirement of the PAF Unit 3 would not be a major federal action significantly affecting the environment. Accordingly, an EIS is not required.



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