

# efficiency bulletin

Jan. 26, 2017

Efficiency Bulletin: 17-03b

## Embracing Cultural Shifts for Value-Based Maintenance

This efficiency bulletin is a companion and enabler to a series of bulletins developing a value-based maintenance strategy associated with preventive maintenance and cumulative impact reduction. Changing the industry's culture of "reliability at any cost" and "more is better" to one of value-based maintenance is key to advancing safety and reliability in a cost-effective manner.

**Addressees: Chief nuclear officers, NEI APCs and INPO APCs**

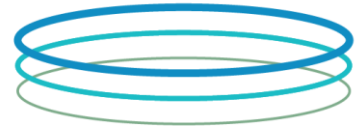
**Issue: PMP-001, Embracing Cultural Shifts for Value-Based Maintenance**

### Summary of Efficiency Opportunity

- Desired end-state—A nuclear industry culture that uses cost-effective maintenance strategies to advance safety and reliability. Senior utility leaders drive the necessary behavioral changes to support the paradigm shift from a culture of zero-tolerance for equipment failures to a value-based maintenance culture that is appropriately tolerant for low-consequence failures.
- Value proposition (vision of excellence)—Overall costs are reduced through establishing an appropriate balance between the maintenance performed on station equipment and its impact to station safety and reliability.

Color Code: Blue  
Due: December 2018

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The Nuclear Energy Institute is the nuclear energy industry's policy organization.

This bulletin and additional information about nuclear energy are available at [nei.org](http://nei.org).

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- Why is it important?—Without senior leadership facilitation of the necessary behavioral and cultural changes, station personnel’s acceptance of value-based maintenance will likely be met with skepticism and possibly rejection. Industry leadership communication and support of value-based maintenance is imperative to bring about the cultural change necessary to simultaneously reduce operating costs and improve equipment reliability for the most important equipment.
- Industry benchmarking value(s)—The equipment reliability index (ERI) continues to meet industry standards and improve.
- Measure of effectiveness—Maintain or improve industry performance for safety and reliability.

## **Background**

- The nuclear industry has been very successful in achieving high levels of reliability and performance. This success is a direct result of creating a culture of zero-tolerance for equipment failures. However, an unintended consequence of this culture has been an over-conservative approach to preventive maintenance on noncritical components that have minimal bearing on plant safety and reliability, contributing to high labor and material costs associated with conducting the preventive maintenance. In some cases, this culture was extended to encompass run-to-maintenance components. In an effort to address these unintended consequences, a value-based maintenance strategy is being implemented that maintains a zero failure tolerance policy for components whose failures result in unacceptable consequences and differentiates them from components whose failures can be appropriately managed to reduce total costs.
- Because value-based maintenance requires a significant change in the long-standing station culture for maintaining equipment reliability, it is important that senior station and corporate leadership communicate that safety, system availability and plant reliability will not only be maintained but also improved. Leaders also need to assure employees that nonconsequential failures are acceptable and to be appropriately tolerant of noncritical and run-to-maintenance component failures.

## **Relevant Standards**

- Performance Objectives and Criteria (INPO):
  - LF.1, Leaders are agents of change, and they influence, inspire, motivate and energize the workforce to achieve excellence and organizational goals.
  - ER.1, High levels of reliability is achieved for equipment that supports nuclear safety, plant reliability and emergency response capability.
  - ER.2, Engineering and maintenance strategies focus on components and systems that are critical to safe, reliable plant operation. Components are classified as critical based on the relative importance for maintaining system function. A thorough process is used to review and document the technical bases of deferrals, changes, additions and deletions of preventive maintenance tasks.
  - OF.1, Operational problems are evaluated individually and in the aggregate to determine the priority for resolution. Priorities are based on the impact 1) to the operator’s ability to monitor and control the plant, 2) impact to operating margin, or 3) impact to high-risk-worth systems and components based on station probabilistic safety analysis.
  - EN.1, Engineers identify equipment management strategies, including preventive and predictive maintenance, to improve equipment performance and ensure long-term reliability.

## Guidance

- Efficiency Bulletin 17-03a, "Value-Based Maintenance"
- Efficiency Bulletin 16-25, "Critical Component Reduction"
- Efficiency Bulletin 16-10, "Reduce Cumulative Impact from the Corrective Action Program"

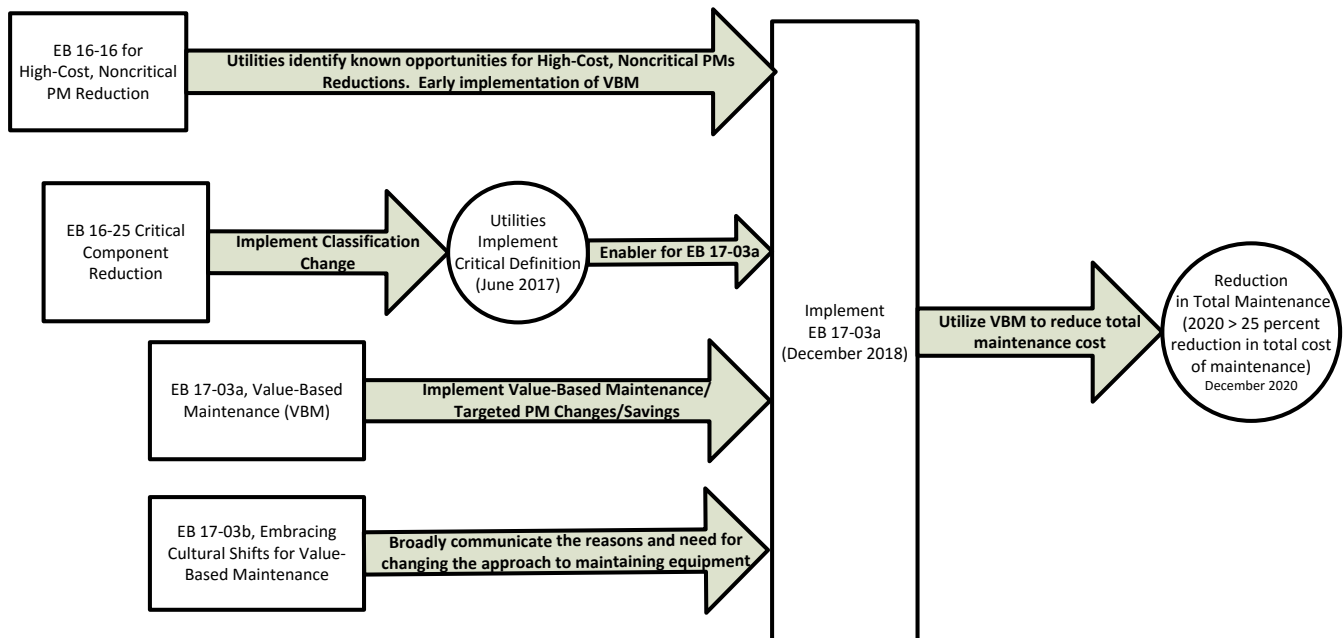
## Recommended Industry Actions

- Senior leaders will communicate the importance of embracing value-based maintenance to their staffs in a highly visible manner using presentations, videos and articles made available as part of this communications package.
- Station and corporate leaders will communicate the importance of complete implementation of EB 17-03a, "Value Based Maintenance," and EB 16-25, "Critical Component Reduction."
- Establish and support sustainable behaviors at sites to ensure maintenance strategies remain optimized, including application of metrics to evaluate efficacy. Key metrics include reduction in annualized labor and materials costs.
- Management fosters a culture that supports challenge of current requirements as necessary to achieve value-based maintenance.

## Change Management Considerations

### Industry Activities

- Industry webinar to provide background for initiative and provide an open forum to ask questions. Webinar information can be found at <https://web.inpo.org/Pages/Nuclear-Promise-Issues.aspx>.
- Senior management to support continuous implementation of all aspects of value-based maintenance to ensure that the change in mindset is embraced.
- Develop communication tools that help coordinate implementation of other value-based maintenance efficiency bulletins (example shown below):



- Share best practices for communications methods to facilitate the culture change to value-based maintenance throughout the utility organization.

### *Company Actions*

- Senior managers will clearly communicate to all employees the importance of value-based maintenance.
- Managers will support all aspects of value-based maintenance.
- Managers reinforce expectations for a healthy technical conscience, specifically that individuals thoroughly challenge analyses and recommendations to ensure the full range of potential consequences is clearly defined, understood and communicated as part of the final decision-making.

### *Guidrails*

- Maintenance Rule monitoring programs continue to ensure adequate SSC reliability.
- Fully implement the guiderails identified in EB 16-25, "Critical Component Reduction," and EB 17-03a, "Value Based Maintenance."
- Management reinforces that nuclear safety and reliability will not be compromised.

### **Report Your Site's Results**

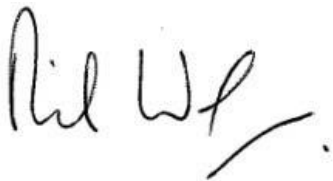
Please report your company's implementation of this improvement opportunity, including the date of completion. Send this information along with your company point of contact to [EfficiencyBulletin@NEI.org](mailto:EfficiencyBulletin@NEI.org).

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