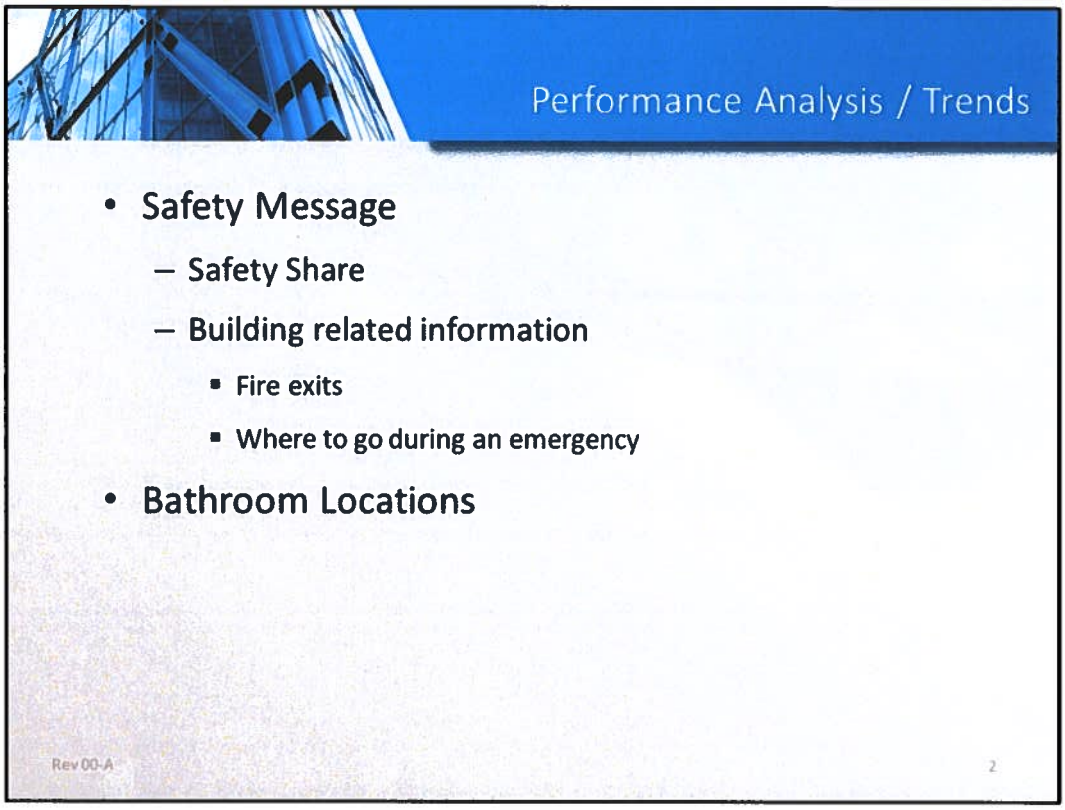
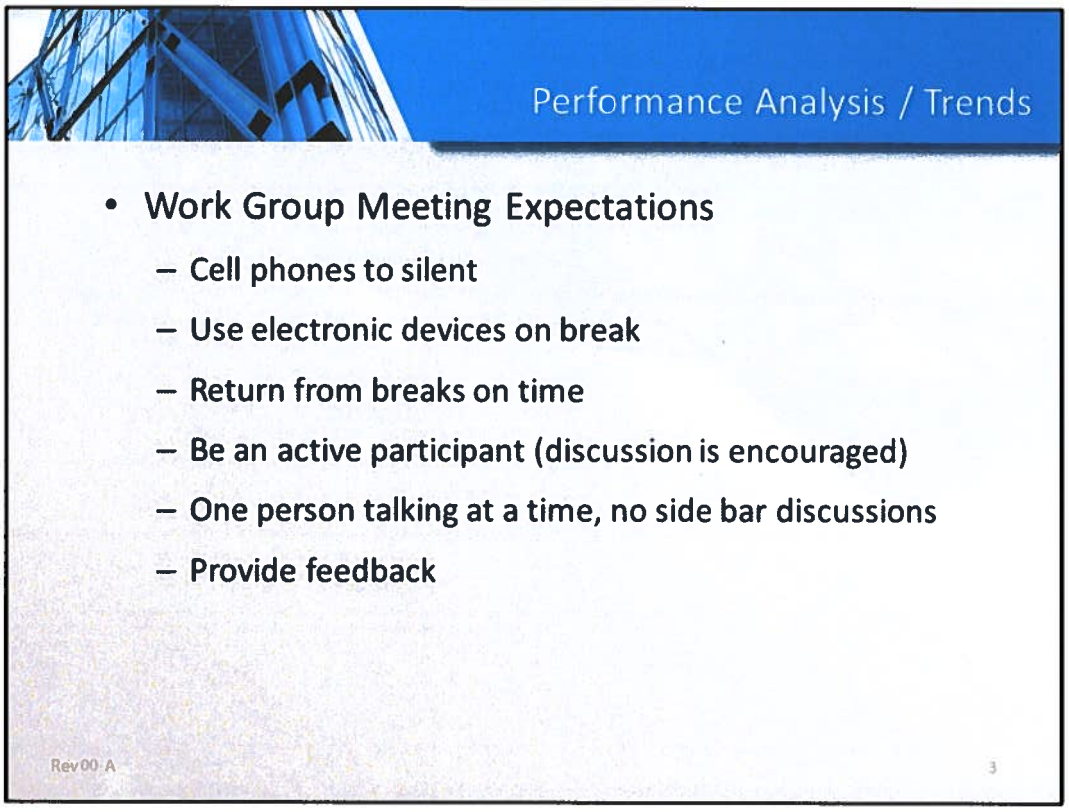

Performance Analysis / Trends
2018 EFCOG
CAS Working Group Session 1
Adam Mathews / Alex Torres



STUDENT NOTES:



STUDENT NOTES:

Performance Analysis / Trends

- Purpose
  - Review the requirements/guidance for trending of issues management data and how it differs from other types of trending activities
  - Discuss the objective of a performance monitoring and trend analysis program
  - Discuss challenges experienced in meeting the requirements for trending of issues
  - Discuss best practices implemented by the working group participants in overcoming these challenges

Requirements / Guidance

- DOE O 226.1B, Implementation of Department of Energy Oversight Policy
  - Communicates issues and **performance trends** or analysis results up the contractor management chain to senior management using a graded approach that considers hazards and risks, and provides sufficient technical basis to allow managers to make informed decisions and correct negative performance / compliance **trends** before they become significant issues.

Requirements / Guidance (cont.)

- NQA-1, Nonmandatory Appendix 16A-1, Guidance on Corrective Action
  - Conditions adverse to quality should be reviewed to determine the existence of **trends**. The significance of identified trends should be classified in accordance with para. 302 (Classification).
  - In classifying conditions adverse to quality, the review should **consider repetition of specific conditions adverse** to quality, as well as the relationship or similarity between different conditions.

Requirements / Guidance (cont.)

- DOE O 422.1, Conduct of Operations
  - The operator must establish and implement operations practices for investigating events to determine their impact and prevent recurrence, addressing: event investigation reporting, training, and **trending**.
  - 2.f.(5)h. Procedure problems, operator errors, and other appropriate events are part of the facility **trend analysis program**. Periodic summaries of event analysis and trends are provided to managers. Training programs include appropriate material from event reports and trend analysis.

Requirements / Guidance (cont.)

- DOE O 414.1D, Quality Assurance: Conduct **trend analyses** for use in improving the S/CI prevention process.
- DOE G 414.1-5, Corrective Action Program Guide: Lessons learned from the Columbia Space Shuttle disaster and Davis-Besse vessel head corrosion was the need to maintain a robust corrective action program that: Identifies, documents, evaluates, and **trends problems** to ensure the causal factors and significance of each problem are understood.

Requirements / Guidance (cont.)

- Safety and Security Enforcement Coordinator Handbook: Contractors are also expected to use their internal tracking processes to capture, track, and **trend** nuclear safety, worker safety and health, and classified information security noncompliance conditions.
- Nuclear Energy Institute 09-07, Fostering a Healthy Safety Culture: Examples of data sources that may indicate a potential nuclear safety culture issue include the corrective action program

Requirements / Guidance (cont.)

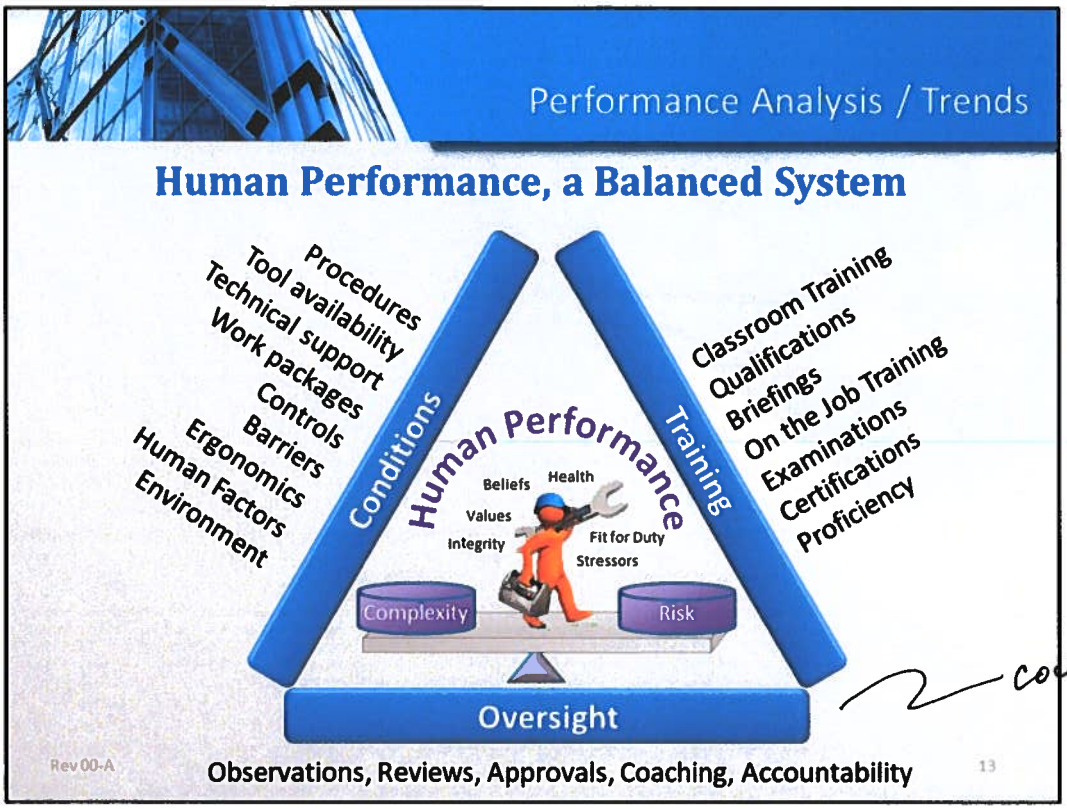
- Environmental Management Contractor Requirements Document (Supplemented DOE O 232.2A)
  - For EM Facilities, perform ongoing **trend analyses** per DOE O 226.1B considering all reportable and non-reportable occurrences and events, to look for performance/compliance trends and determine if occurrences are recurring.
  - At a minimum, the analyses must be performed every three months (quarterly) and must consider at least the previous 12-months.

Requirements / Guidance (cont.)

- Environmental Management Contractor Requirements Document, Supplemented DOE O 232.2A (cont.)
  - The analysis results must be reported to line management if the analysis indicates a negative trend or the occurrences are recurring as defined in the DOE approved Contractor Assurance System.
  - A Significant negative trend will be reported as a High (H) Level Report per Group 10 (1) Management Concerns and Issues, and in accordance with the requirements of Attachment 4 "Occurrence Reporting Model".

Requirements / Guidance (cont.)

- DOE G 226.1-2A, Federal Line Management Oversight of Department of Energy Nuclear Facilities: 3.6.1 Issue Identification and Resolution Examples of conditions that may be considered significant under certain conditions include:
  - Repeated failure to implement a specific portion of a procedure;
  - Adverse **trend** of near misses;
  - Adverse **trend** in formality of operations issues or findings;
  - Widespread training weakness or operator knowledge gaps; and
  - External findings from the DOE IG or HSS.



counters ORGANIZATIONAL DRIFT.

This model demonstrates the factors that influence performance. In order to achieve good performance, there must be a balance between working conditions established, worker training/qualifications, and management oversight. A reduction in one area would warrant and increase I the other two areas to achieve a proper balance that will ensure satisfactory performance. For example, if you were to limit the amount of training or knowledge required to perform a task, you would want to ensure you procedures/instructions are of sufficient detail to successfully accomplish the job and/or increase the amount of oversight in field.

During this course, you will learn the fundamental concepts of performance evaluation to recognize when these element are not in balance. If an unbalance exist and is persistent (i.e., recurring), it will be recognized in the trend data. As a trend analyst, you will learn to recognize programmatic and organizational deficiencies that contribute to overall performance and determine if a potential trend exists. Through an understanding of the factors that influence behaviors, you will improve your ability to recognize performance trends that can result in significant consequence if left uncorrected. The overall goal is to identify trends at a low level and correct the behaviors before a consequential event can occur.

Think of a task you perform everyday such as driving to work. Many factors influence your performance in achieving the goal of arriving at work safely and on time. First, you receive training (driver's education) and are qualified to drive a motor vehicle (driver license exam and practical exercise). While on the road, you are faced with many conditions and are provided instructions on how to conduct yourself on the road in the form of speed limits, detours/warnings to avoid hazards, controls (traffic lights/signs) to avoid conflicts, and clearly mark lanes with directional arrows. Oversight is provided in the form of traffic police and Highway Patrol. If you do not adhere to the instructions provided on the road, an observing police officer may pull you over and provide coaching or hold you accountable for your actions and issue you a traffic ticket.

If the road conditions are not optimum (e.g., faulty signal lights, missing stop signs, large unmark potholes), your risk of an accident/injury increases. If you were not properly trained and you have not developed your driving skills, your risk of an accident/injury increases. If the police stopped issuing traffic tickets and cancel sobriety checkpoints, your risk of an accident/injury increases. Trending of recurring traffic issues is performed by the state and city governments to identify gaps for correction to protect the public.

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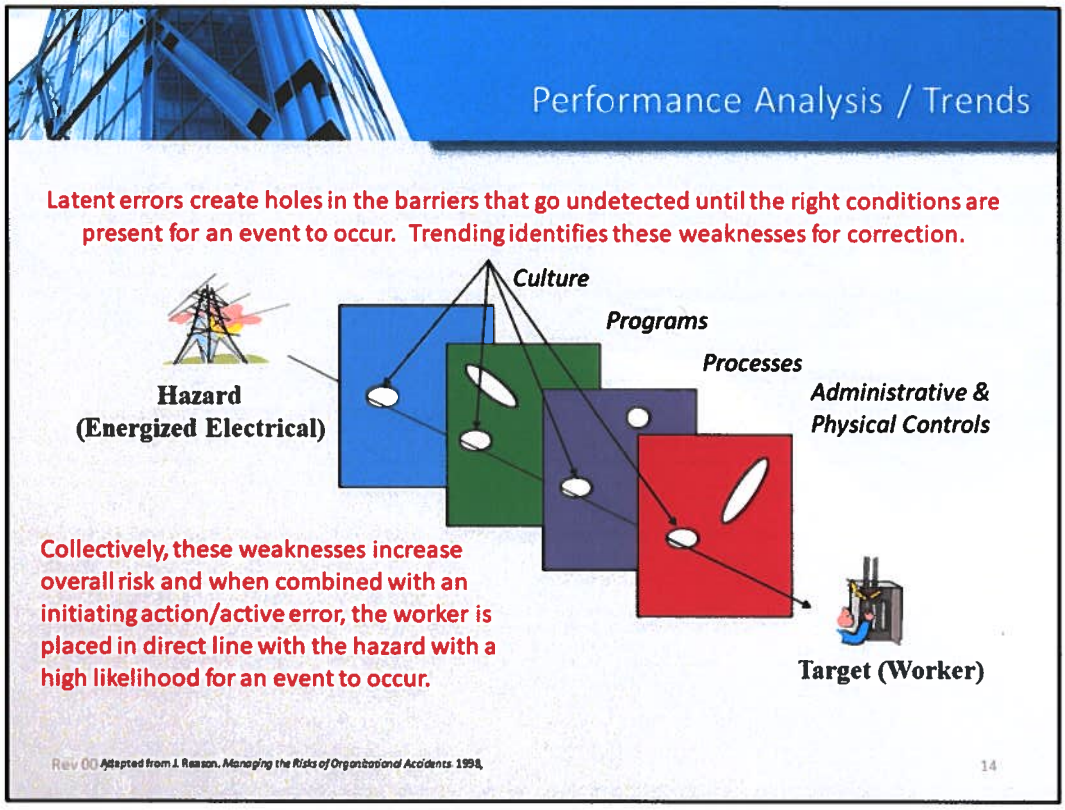

TRENDING'S Purpose is finding the holes in the cheese.

Defense in Depth

This illustration demonstrates the Defense in Depth included in policies, programs, and processes. Controls/barriers are established to eliminate/minimize risk or mitigate consequences if an event does occur. For example, locks used for LOTO are physical barriers to prevent operation of a switch or valve, while review of the LOTO boundaries by an independent person is an administrative barrier.

Latent Organizational Weaknesses (or latent errors) are hidden deficiencies in management control processes (for example, strategy, policies, work control, training, and resource allocation) or values (shared beliefs, attitudes, norms, and assumptions) that create work place conditions that can provoke errors (precursors) and degrade the integrity of controls (flawed controls). Latent organizational weaknesses include system-level weaknesses that may exist in procedure development and review, engineering design and approval, procurement and product receipt inspection, training and qualification system(s), and so on.

From a trending perspective, it is important to identify patterns of flawed controls or error precursors to help protect from latent organizational weakness. For example, if it is noted in the observation program, assessments, or as documented in the PER database recurring examples of poorly conducted or non-compliant zero energy checks, then your risk for contact with hazardous energy is due to an incorrect electrical drawing (i.e., the latent error that is undetected) increases. By identifying and correcting the recurring performance issues, you reduce your risk for injuring personnel.

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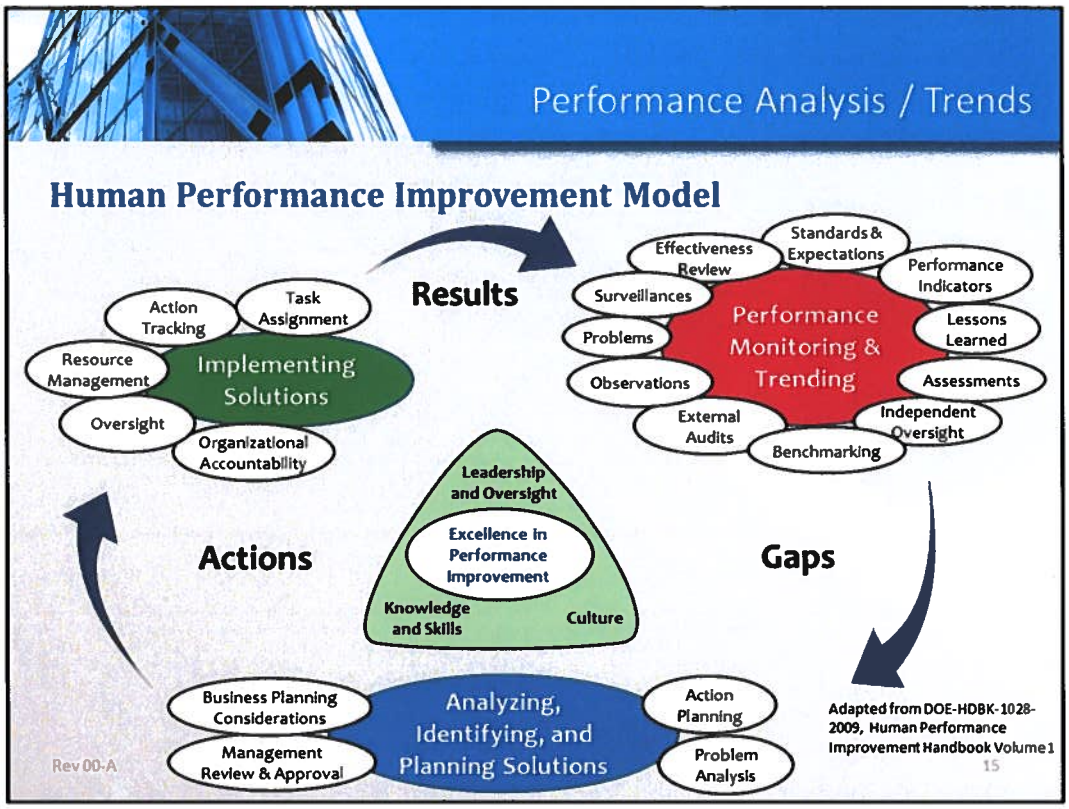

The Human Performance Improvement Model illustrates how performance monitoring and trending is an integral part of this process. As a Trend Analyst, you will monitor performance and identify trends for review by your manager and the Collective Significance Review (CSR) members. Confirmed trends are entered into the issues management systems evaluation/analysis after which corrective actions are developed and implemented. As the corrective actions are implemented, you will continue to monitor performance until the desired results are achieved.

To gain additional knowledge and understanding of Human Performance Improvement concepts, it is recommend that Trend Analyst attend courses:

- 350069, *TOC Operational Expectations*, and course
- 359452, *HPI Dynamic Learning Lab*

Suggested reading to learn more on Human Performance Improvement concepts:

READ

- DOE-HDBK-1028-2009, *Human Performance Improvement Handbook, Volume 1: Concepts and Principles*
- DOE-HDBK-1028-2009, *Human Performance Improvement Handbook, Volume 2: Human Performance Tools for Individuals, Work Teams, and Management*

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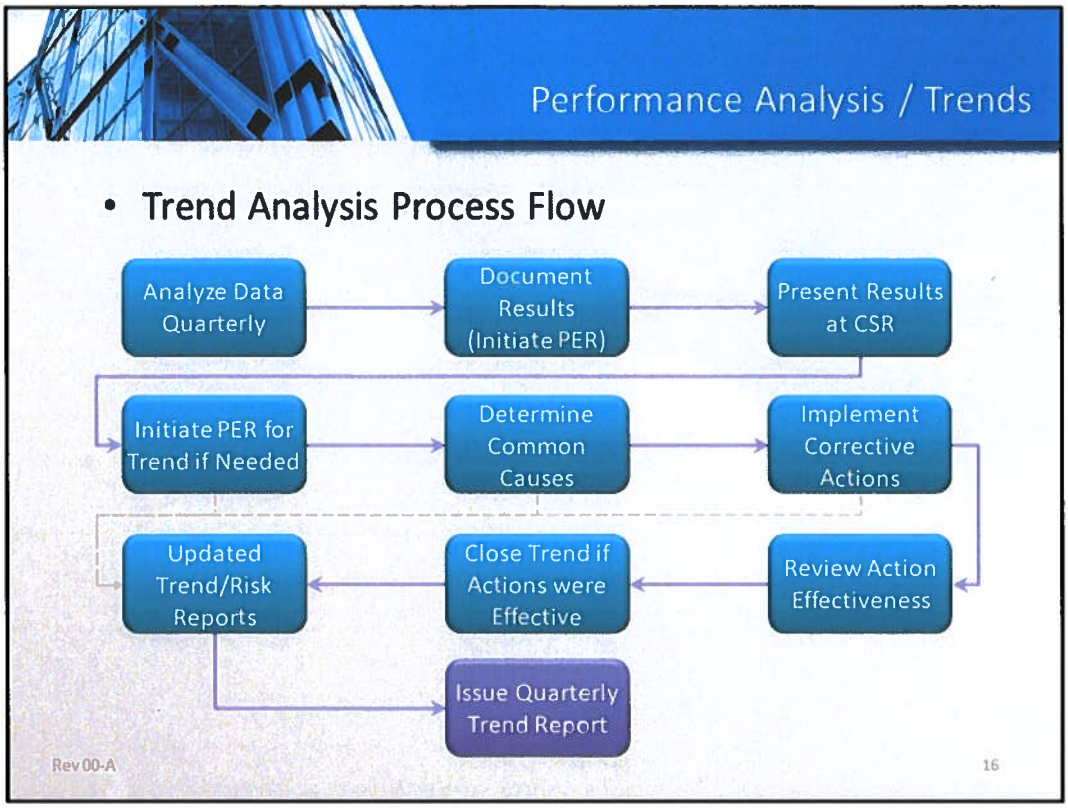

This is a simplified Trend Analysis Process flow chart describing the major steps in governing procedures

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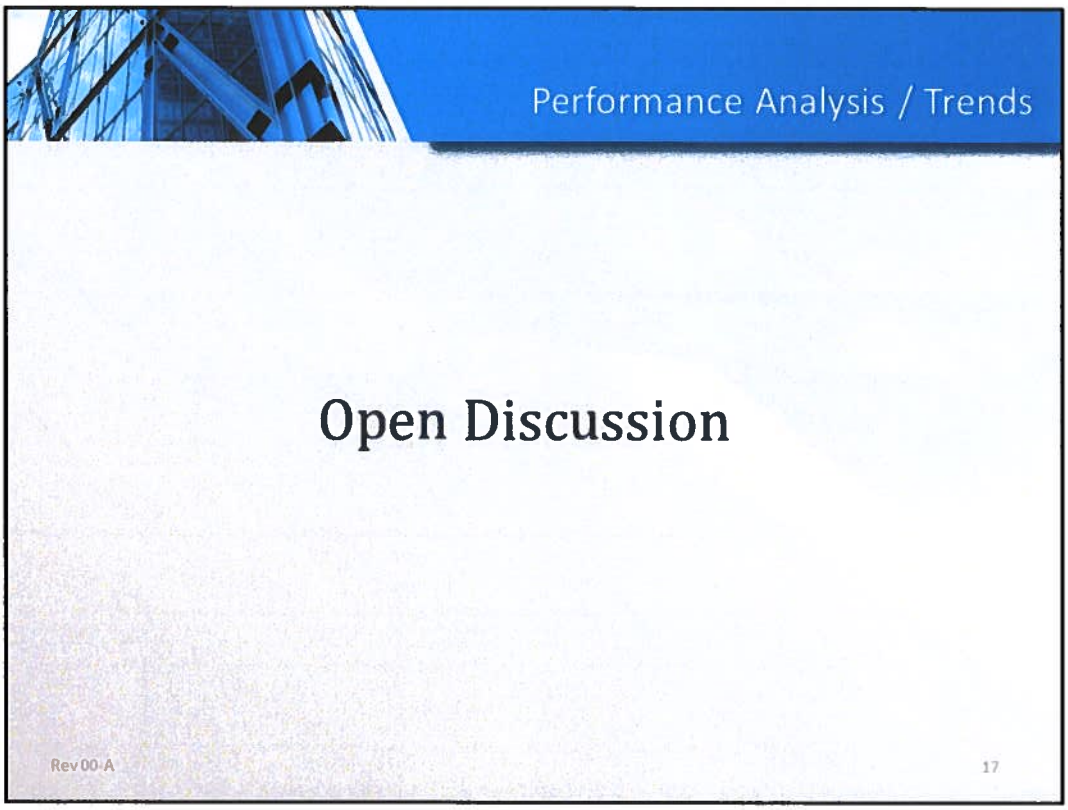
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Open Discussion
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