301: Risk Management

Energy and Utilities
APPA Institute for Facilities Management

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Overview

- Provide an overview of basic risk management concepts

- Review how risk management applies to various components of Utilities and Energy Management

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General Concepts

Risk
- The hazard or chance of loss - Impact and Probability

Risk Management
- Identify risks
- Categorize and rank risks
- Mitigate risks

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Risk Assessment

Types of Risk - PEAR

- People
- Environment
- Assets
- Reputation

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Risk Assessment

Impact Factors:

- Permanence or Restorability
- Financial
- Reputation
- Cascading

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Risk Assessment

Probability Factors:

- Geographic/Location
- Experience
- Knowledge/Skill Level
- Condition of Equipment

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Risk Assessment – Your Role

- Understand how your institution perceives and manages risk
- Integrate your approach to align with institution
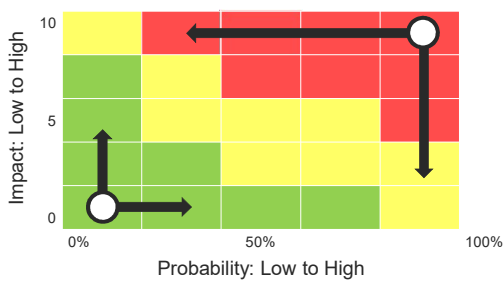- Collaborate

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Risk Assessment

Two Common Approaches:
- Risk Matrix
    - intuitive and quick
    - can be "internally" developed

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Risk Matrix

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Impact: Low to High / Probability: Low to High

- Financial Shortfalls / Facilities Failures
- Lack of Capital Renewal
- Natural Disasters
- Technology Failures
- Lack of Qualified Workforce
- Compliance
- Utility Failures
- Commodity Volatility
- First Impression
- Employee Safety
- Pace of Change
- Staff Turnover
- Changing Pedagogy
- Environmental Hazards
- Failure to Conduct Preventive Maintenance
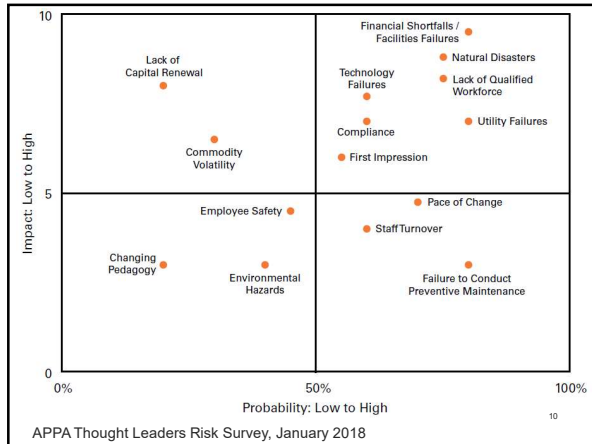
APPA Thought Leaders Risk Survey, January 2018

Risk Mitigation

- **Reduction** – reduce impact or probability
  - Replace susceptible equipment
- **Control** – minimize damage
  - Plan for backup housing
- **Transfer** – assign responsibility to others
  - Get insurance
- **Acceptance** – live with the risk
  - For "low impact/low probability"
- **Avoidance** – stop doing the risky activity

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Understanding Your Context

- National
- Regional
- State
- Local
- Campus

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American Society of Civil Engineers (ASCE)

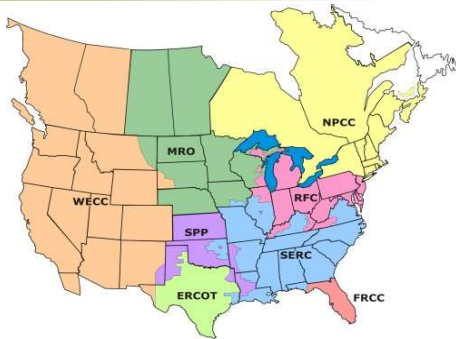National Report Card in 17 categories = C-

Drinking Water	D	Schools	D+
Storm Water	D	Transit	D-
Waste Water	D+	Dams	D
Solid Waste	B-	Energy	C-
Roads	D	Bridges	C

https://infrastructurereportcard.org/

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NERC Regions

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Risk Management – Desired Outcomes

- **Reliable** – rarely fails
- **Redundant** – backup options
- **Resilient** – recover quickly/seamlessly
- **Efficient** – minimize waste

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Roles and Responsibilities

The Institution

- What comprises risk
- Acceptable levels of risk
- Resources provided for mitigation

Facilities Management

- Identify and communicate facility risks
- Outline solutions and costs
- Insure effective implementation

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Discussion

- Have you experienced a catastrophic failure in your career?

- What happened and what steps did you take to prevent recurrence?

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Managing Risk

1. Identify your most critical processes
2. Determine failure modes
3. Use risk matrix to prioritize
4. Develop solutions for high risks
5. Mitigate high risks - if possible
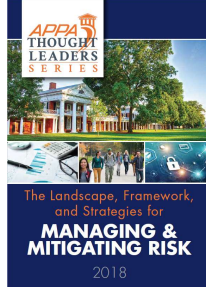6. Communicate high risks that can't be mitigated

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Questions, Comments, Observations?

- Sign-in Sheet & Evaluations
- Related Electives
  - *363 – Disaster Prep and Business Continuity*
  - *373 – Energy Conservation*
  - *325 – Electrical Systems - Planning, Reliability, and Safety*

https://www.appa.org/Research/CFaR/tls.cfm

APPA THOUGHT LEADERS SERIES

The Landscape, Framework, and Strategies for
MANAGING & MITIGATING RISK
2018

Managing Risk – **Activities**

1. Identify risky activities
2. Determine failure modes
3. Use risk matrix to prioritize
4. Develop solutions for high risks
5. Mitigate high risks - if possible
6. Communicate high risks that can't be mitigated

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Activity – Hospital Helipad

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Risk Assessment

Types of Risk - PEAR
- People
- Environment
- Assets
- Reputation

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What are the risks?

- People

- Environment

- Assets

- Reputation

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1 – 2 – 4 – All
a. Individual – 1 minute
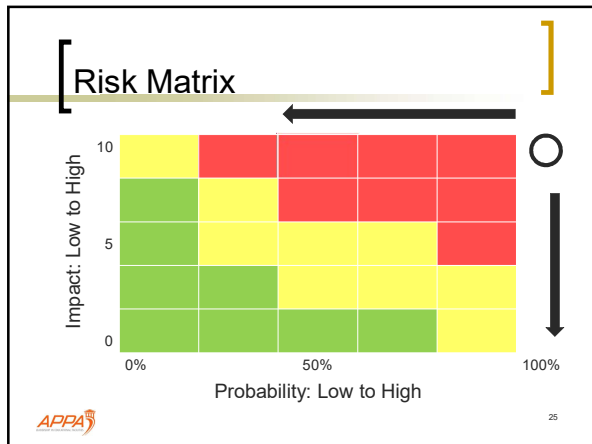b. Pair Up – 2 minutes
c. Table – 4 minutes
d. All – 5 minutes

Risk Assessment

Impact Factors:

- Permanence
- Financial
- Reputation
- Cascading

Rank (0 -10)

Probability Factors:

- Location
- Experience
- Knowledge
- Condition

Rank (0% - 100%)

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Risk Matrix

Impact: Low to High

10

5

0

0%   50%   100%

Probability: Low to High

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What went wrong in 2014

BREAKING NEWS
HELICOPTER CRASH AT HOSPITAL
ALBUQUERQUE

26

Helicopter Crashed on Hospital

The Newsplex   UNM Hospital

Managing Risk – **Processes**

1. Identify your most critical processes
2. Determine failure modes
3. Use risk matrix to prioritize
4. Develop solutions for high risks
5. Mitigate high risks - if possible
6. Communicate high risks that can't be mitigated

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Process – Heating the Campus

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How can the process be interrupted?

- Deliver fuel to the boiler

- Burn fuel to make steam

- Distribute steam to buildings

- Return hot water to boiler

1 – 2 – 4 – All
a. Individual – 1 minute
b. Pair Up – 2 minutes
c. Table – 4 minutes
d. All – 5 minutes

Risk Assessment

Impact Factors:

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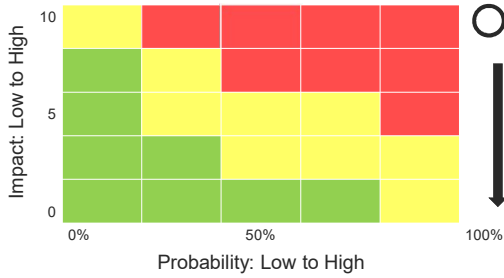- Cascading

Rank (0 -10)

Probability Factors:

- Location
- Experience
- Knowledge
- Condition

Rank (0% - 100%)

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Risk Matrix

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What went wrong in 2011

Questions, Comments, Observations?

- Sign-in Sheet & Evaluations

https://www.appa.org/Research/CFaR/tls.cfm

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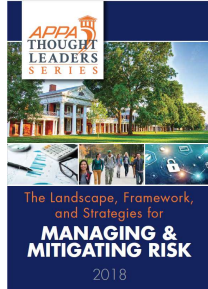
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