



## Commissioning's Role in Building Resiliency

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**CANNONDESIGN**

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# Learning Objectives

1. Identify the threats and vulnerabilities of facilities to biological, weather-related, and other disaster events.
2. Recognize the principles of resiliency and how they compare with sustainability.
3. Design a space with the proper air balance to prohibit potential health, safety, and welfare disasters.
4. Identify what the Commissioning Provider does to support the Responsible Official.



## What does Resiliency mean?

***WITHSTAND***

**MAINTAIN**

***PRESERVE***

**Emergency Preparedness**

***Durability***

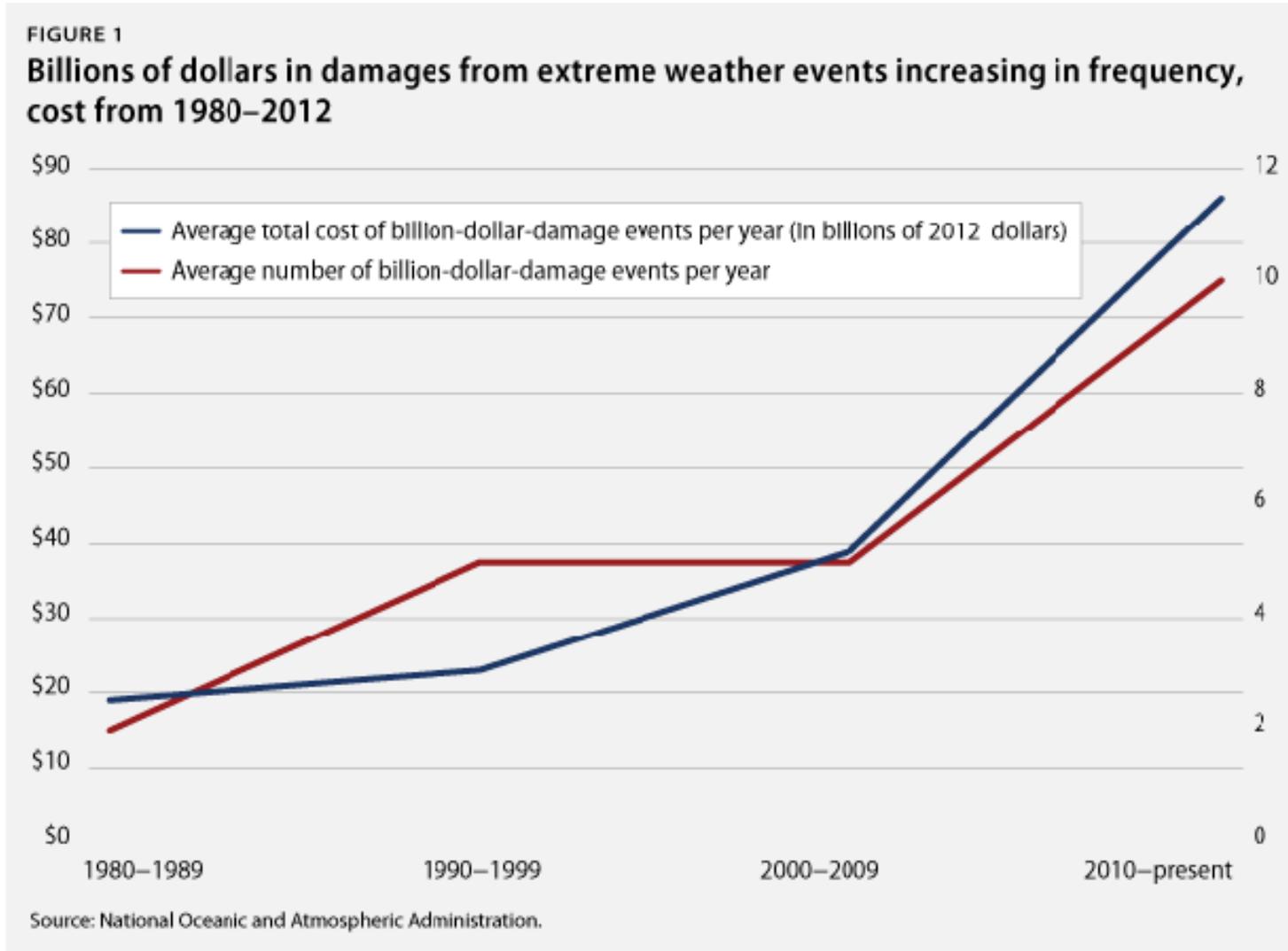
**Redundancy**

# What does Resiliency mean?



***“The ability to prepare and plan for, absorb, recover from, and more successfully adapt to adverse events.”***

# Why are we concerned about Resiliency?



## What are the adverse events or threats?



# Chronic Disturbances



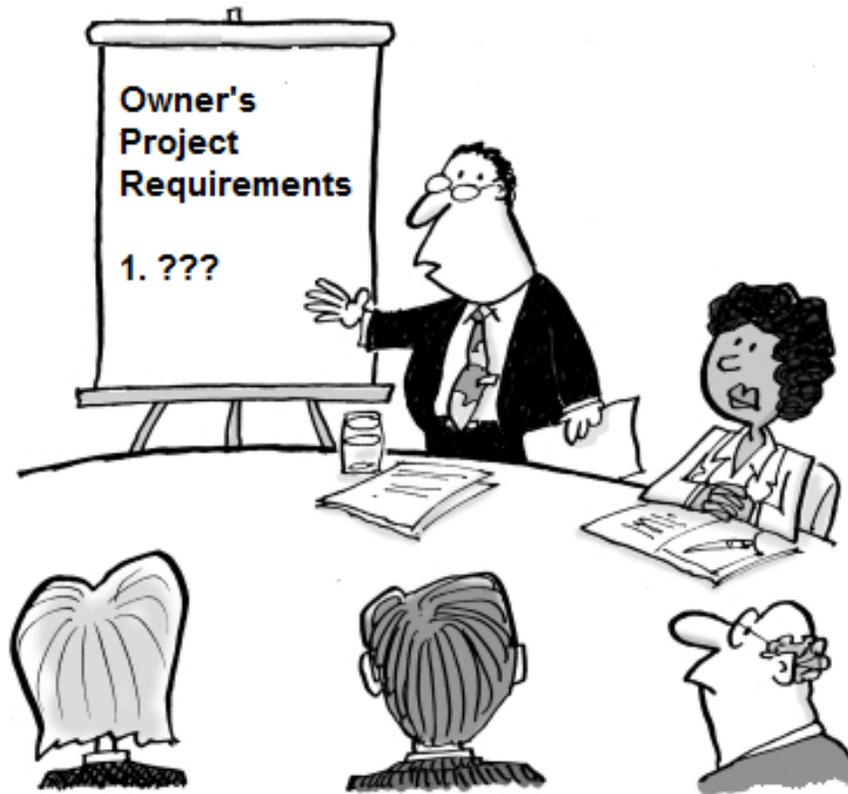
# Acute Disturbances



## Commissioning Authority's Role



# Owner's Project Requirements



*What's an OPR?*



## Owner's Responsibilities

*1) Protect the occupants*

*2) Protect the real estate  
investment/building*

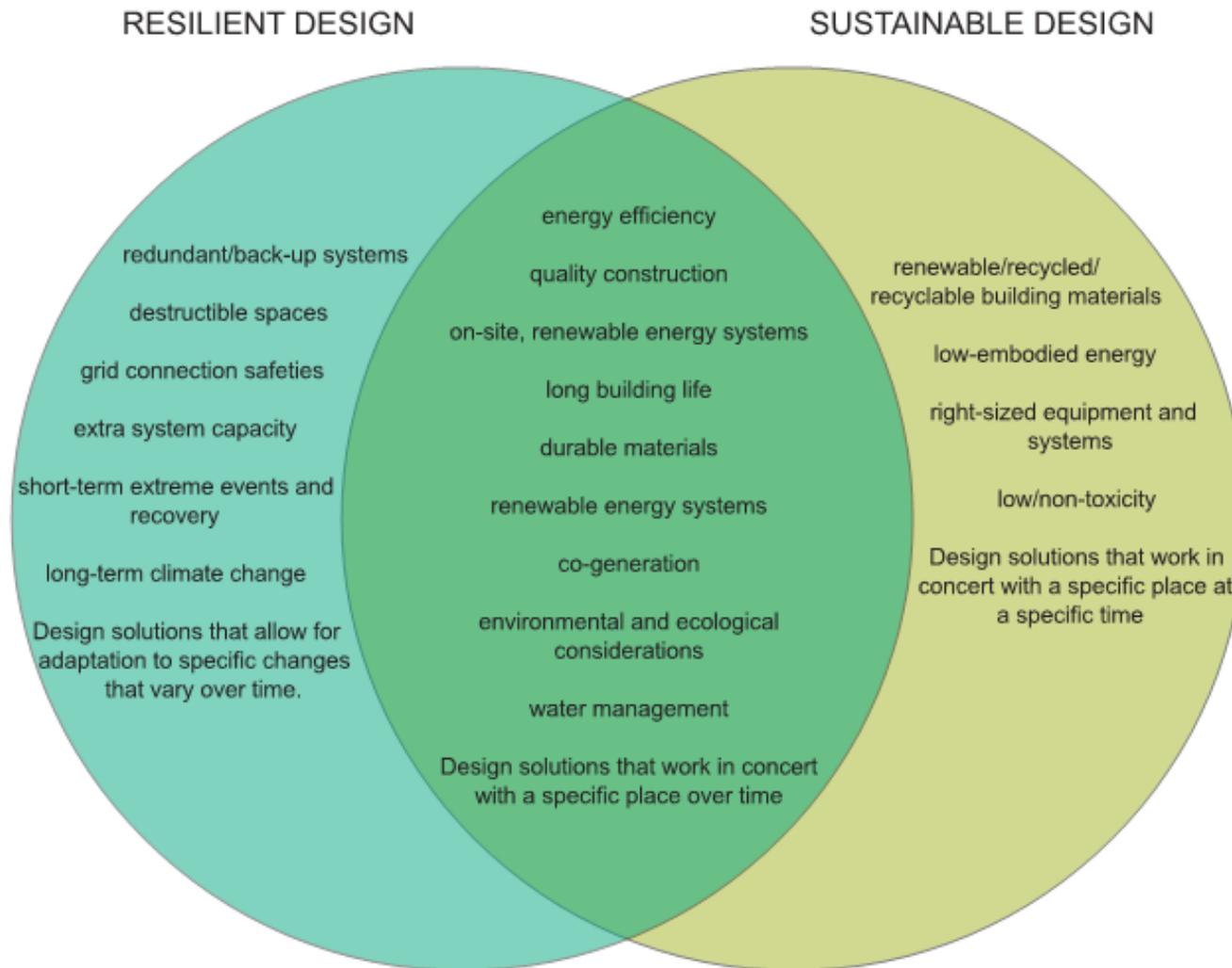
*3) Ensure the buildings are  
operational during and after the  
event.*



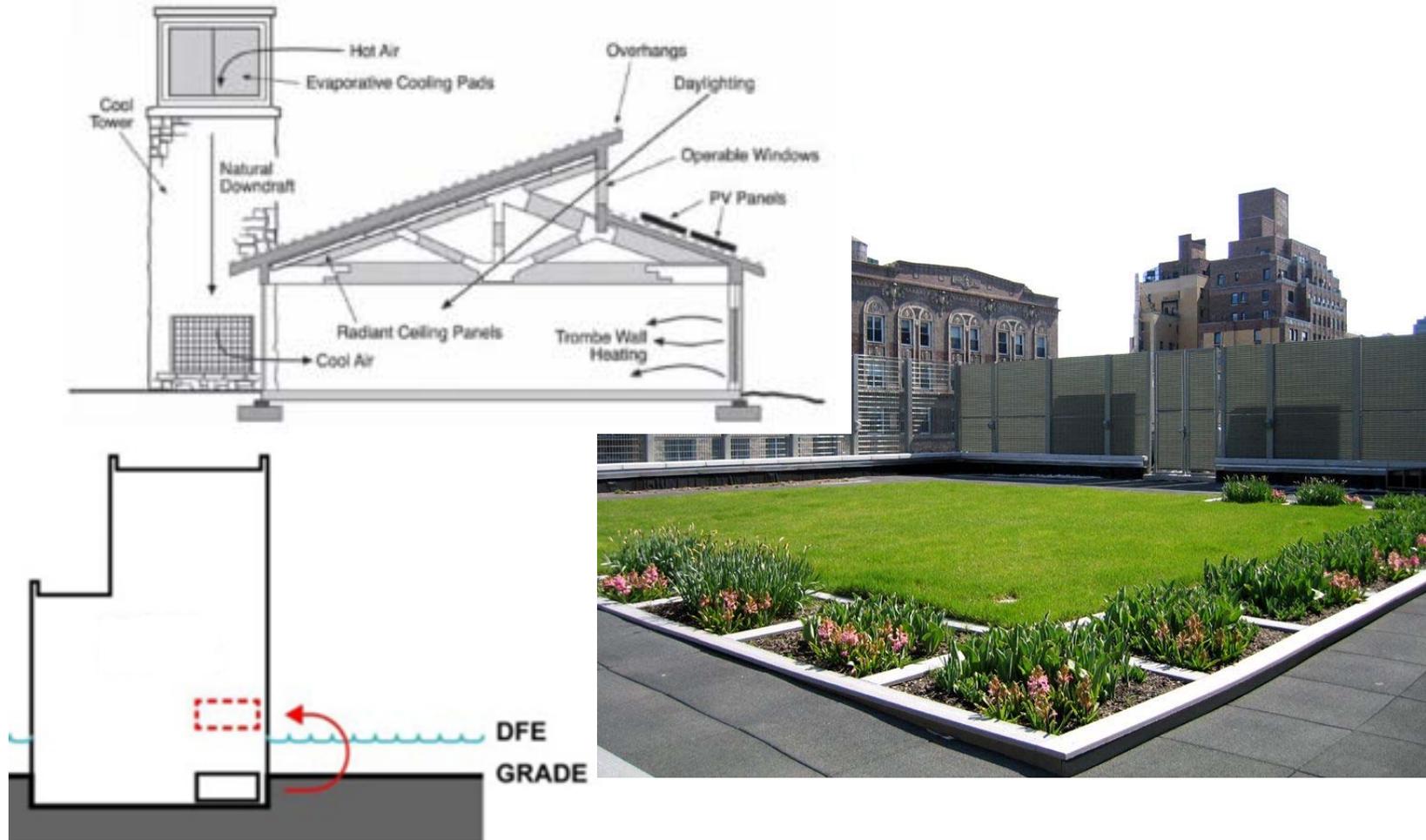
## Owner's Project Requirements

- *How long is the intended life of the building?*
- *In case of an emergency, will you evacuate or shelter in place?*
- *Will the building need to remain operable without utility power for an extended period?*
- *Should the design team consider extreme weather events such as rainfall, floods, winds, drought, and temperatures?*
- *Is the building a target for terrorism?*

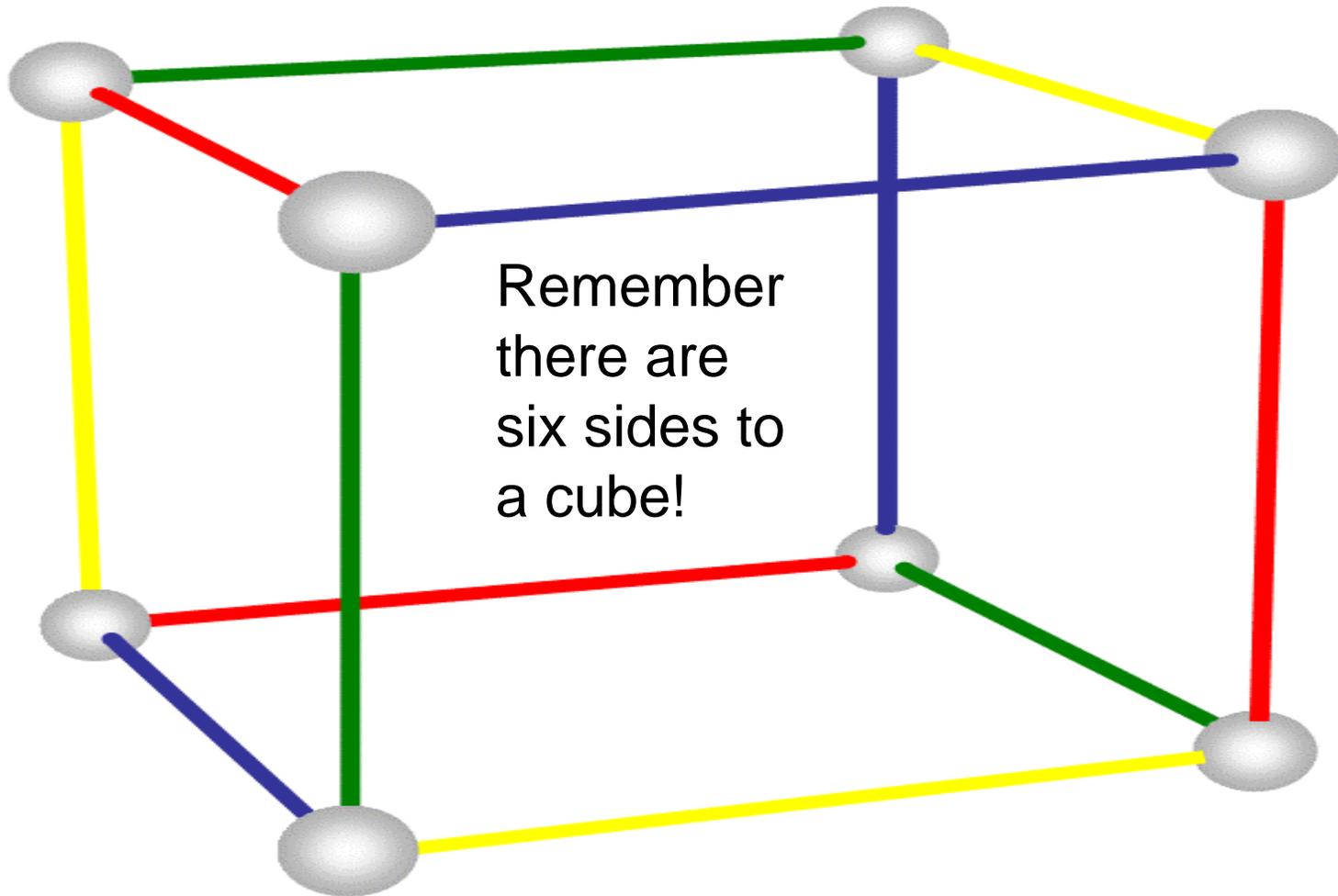
# Sustainability and Resiliency



# Mitigation Strategies



## Building Enclosure



# MEP Systems



# Back-up Power Systems





## Personnel

### *Develop an Operational Plan*

- Before an event - Building owners' advance operational plans should address issues including the evacuation and relocation of occupants, building shutdowns, and the possible extended relocation of occupants afterwards. For critical facilities, emergency equipment and supplies should be accommodated and temporary relocations should be envisioned.
- During an event – Plans should include measures for security; providing food, water, and resting areas for personnel; and use of natural ventilation and generator during power failure.

## Personnel

- After an event – Plans should have assumptions that utilities service and transportation access will be disrupted. Clean-up and disposal, especially contaminated, hazardous materials. Equipment assessment and restart.
- Practice the plan. Update periodically.
- Ongoing commissioning
- Regular (annual min.) façade inspections and equipment tests

## Existing Building Assessments

- Can the equipment be relocated above the FEMA flood elevation?
- If below flood elevation, can the mechanical and electrical room doors be retrofitted to be watertight?
- Is the exterior equipment secured / strapped down to meet FEMA wind maps?
- Is the exterior equipment protected from wind blown projectiles?
- Can the HVAC equipment maintain code requirements during extreme heat or cold events?
- Can the generator maintain life safety loads?
- Are systems beyond code required life safety, but necessary for occupants / operations during an event on the generator?



## Conclusion

*There are many Resilient Design strategies to respond to a wide variety of complex challenges based on location and facility type.*

*The Cx Authority can assist the Owner to develop his priorities and verify the design and construction meet the project goals.*

**Thank you!**





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