# ALARA AND FUKUSHIMA DESIGN CONSIDERATIONS AT VOGTLE 3/4

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# Fukushima Daiichi Nuclear Power Plant Pre-Earthquake

# Slide of Tsunami effect on Fukushima Daiichi

# Tsunami inundates Fukushima Daiichi

# Damage to units after explosions

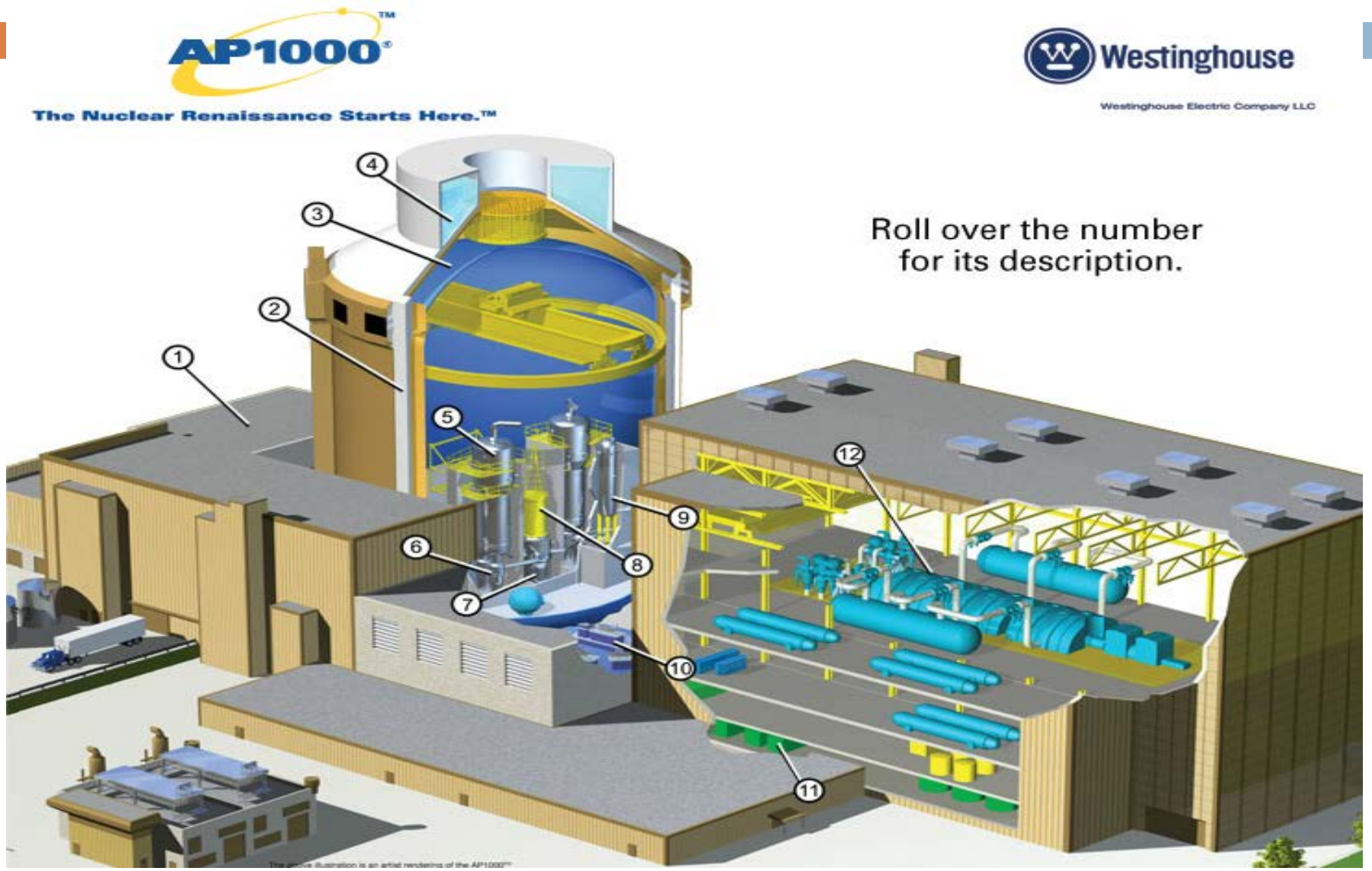
# NRC/Industry response to Fukushima

- NRC took immediate actions creating a Near Term Task Force (NTTF)
- The NTTF recommended a series of actions to be taken by each licensee.
- 3 ties created to address immediate response and limited resources.
- Tier 2/3 actions would be evaluated as Tier 1 actions are fully developed and understood.
- Tier 1 actions account for a large percentage of the safety benefit from the NRC's recommendations.

# 4th Quarter Update for Vogtle 3 & 4

http://www.youtube.com/watch?v=FsbAyo_Qsys&feature=share&list=PLHS8z9CYkZolO4g2tiB

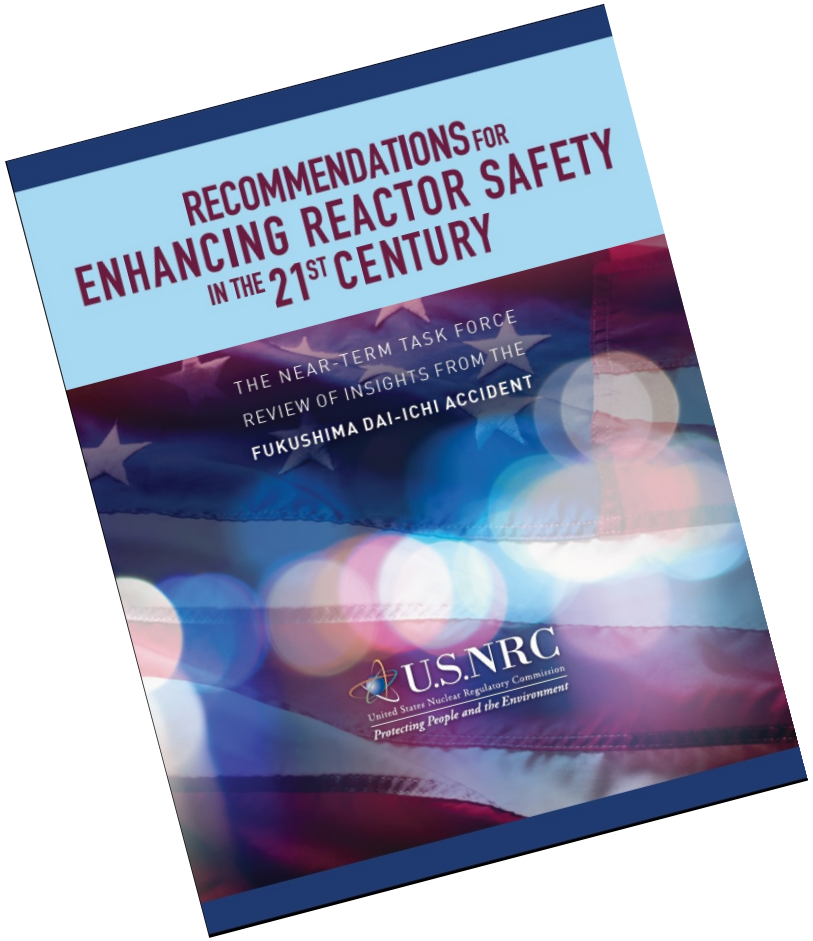
# AP-1000 standard plant



# AP-1000 Advanced Safety Features – ALARA/Design

- Simplicity in design through Modular Construction.
- Simplicity of safety through use of passive safety systems.
- Simplicity in procurement and ALARA with standardized and reduced numbers of pumps, valves, and motors.
- Support and oversight from Fleet counterparts.
- Digital displays and ease for control room operations.

# NRC response




## Section 7

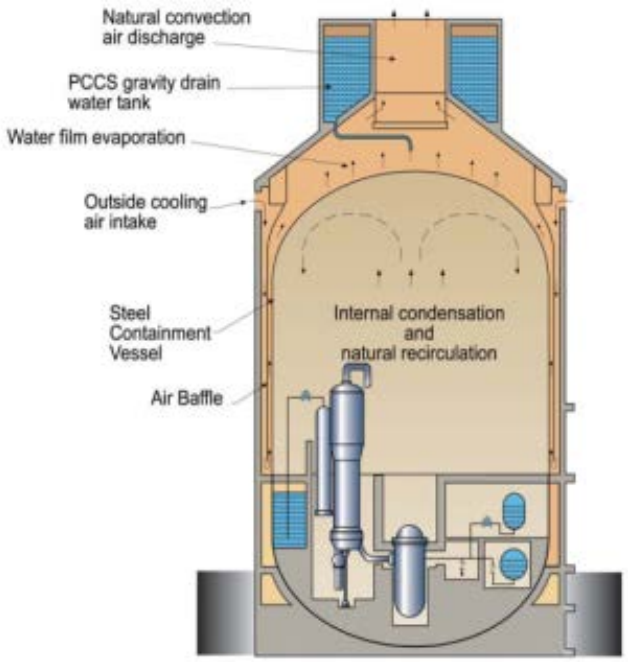
Acknowledged the AP1000 passive safety systems and that their passive designs and inherent 72-hour coping capability for core, containment, and spent fuel pool cooling with no operator action required, have many of the design features and attributes necessary to address the Task Force recommendations.

# NTTF recommendations

- These include but are not limited to items such as;
- Seismic flooding, walkdowns and communications.
- Emergency procedures, Spent Fuel Pool Instrumentation, Safety related AC power, EP regulatory actions, hydrogen control, reactor oversight process, staff training, filtration and containment vents, and spent fuel transfer to dry cask storage.

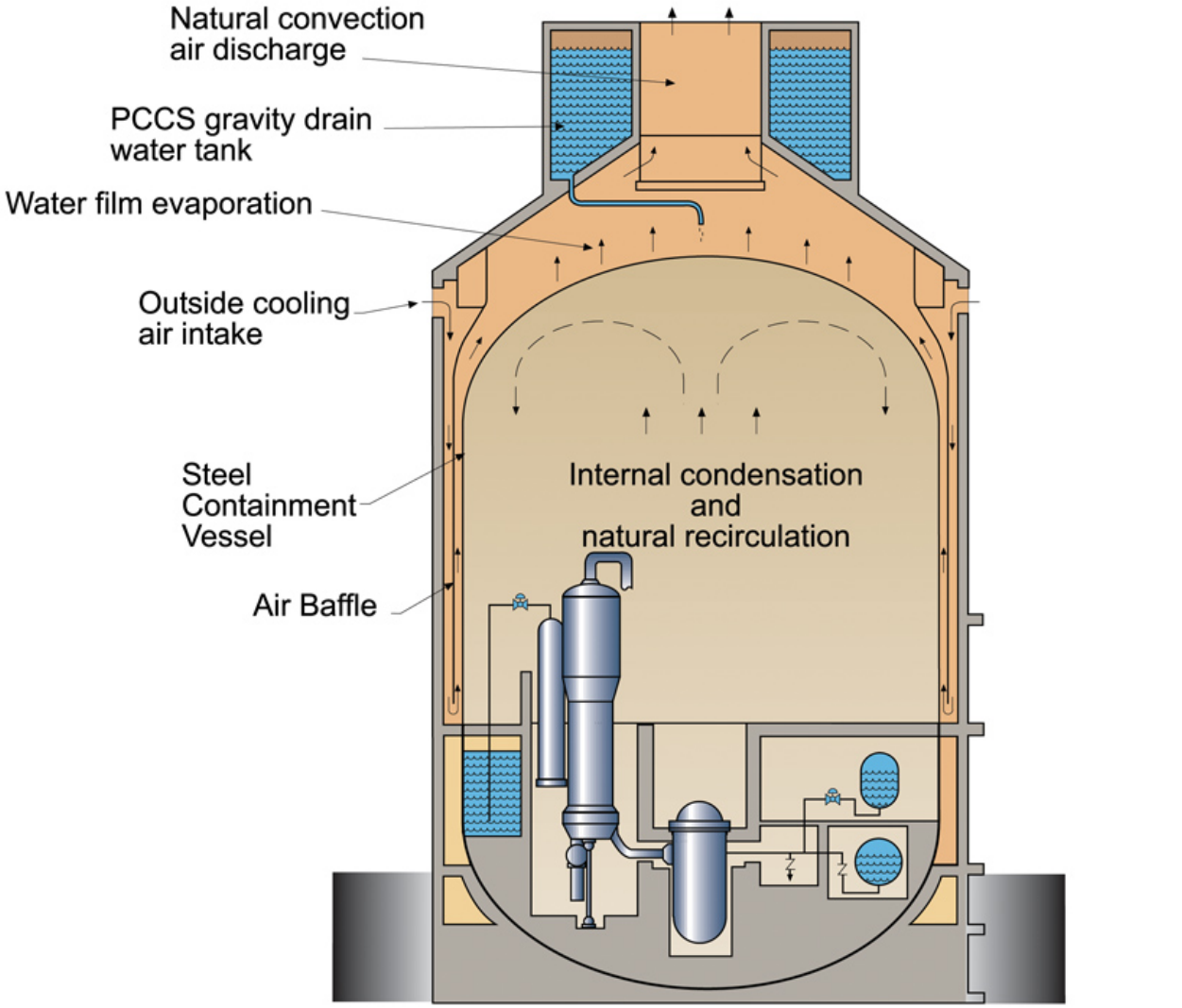
# AP-1000 Advanced Safety Features/ ALARA

- AP1000 design includes advanced passive safety features
- Enhanced features eliminate dependence on all electrical systems to keep fuel cool during an event
- In the event of an emergency:
  - AC power not required for safe shutdown
  - No operator actions are required for at least 72
    Hours to maintain core and containment cooling
  - Designed for core to stay in reactor and remain covered with water



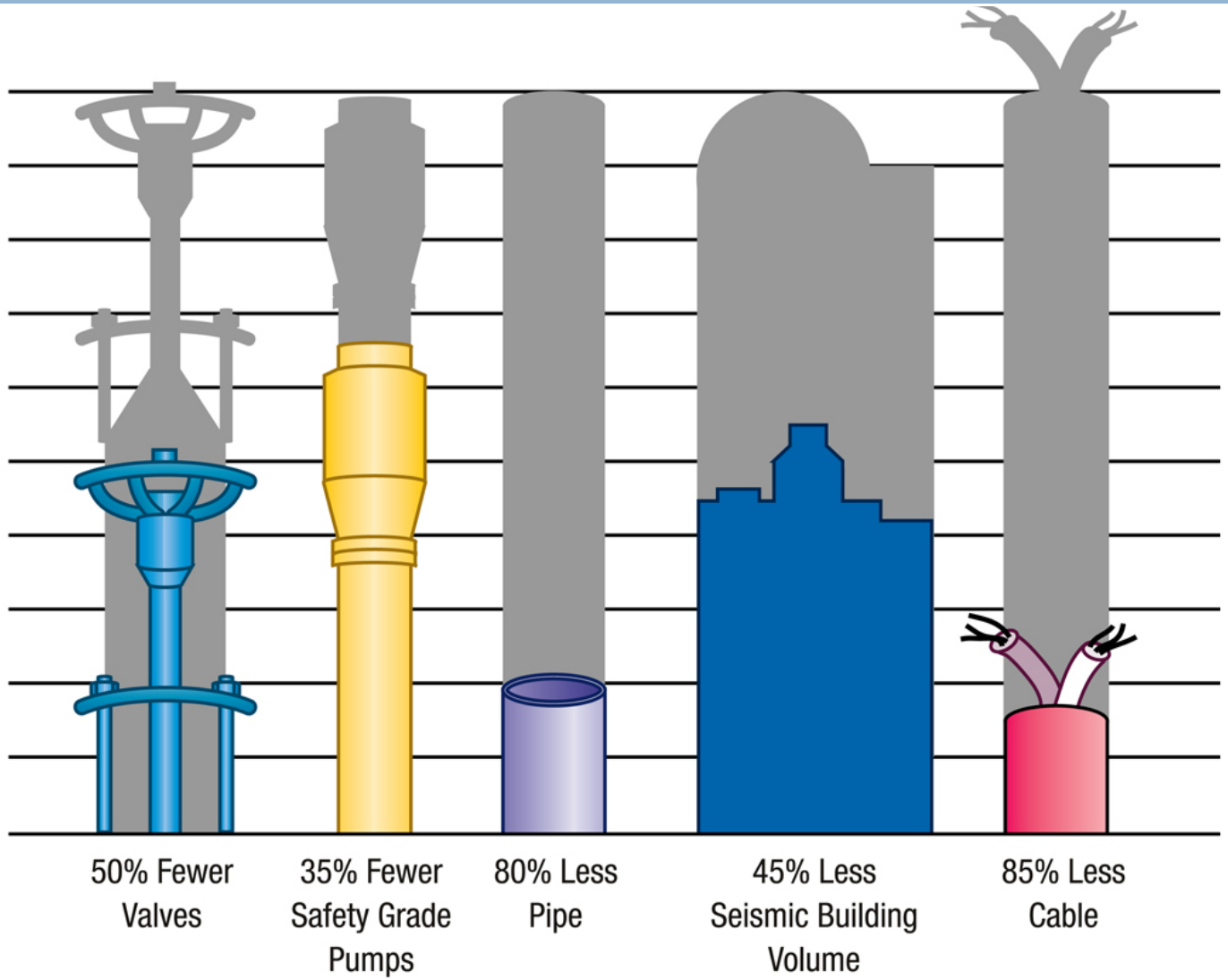
AP1000 Passive Containment Cooling System

# AP-1000 Advanced Safety Features/ ALARA



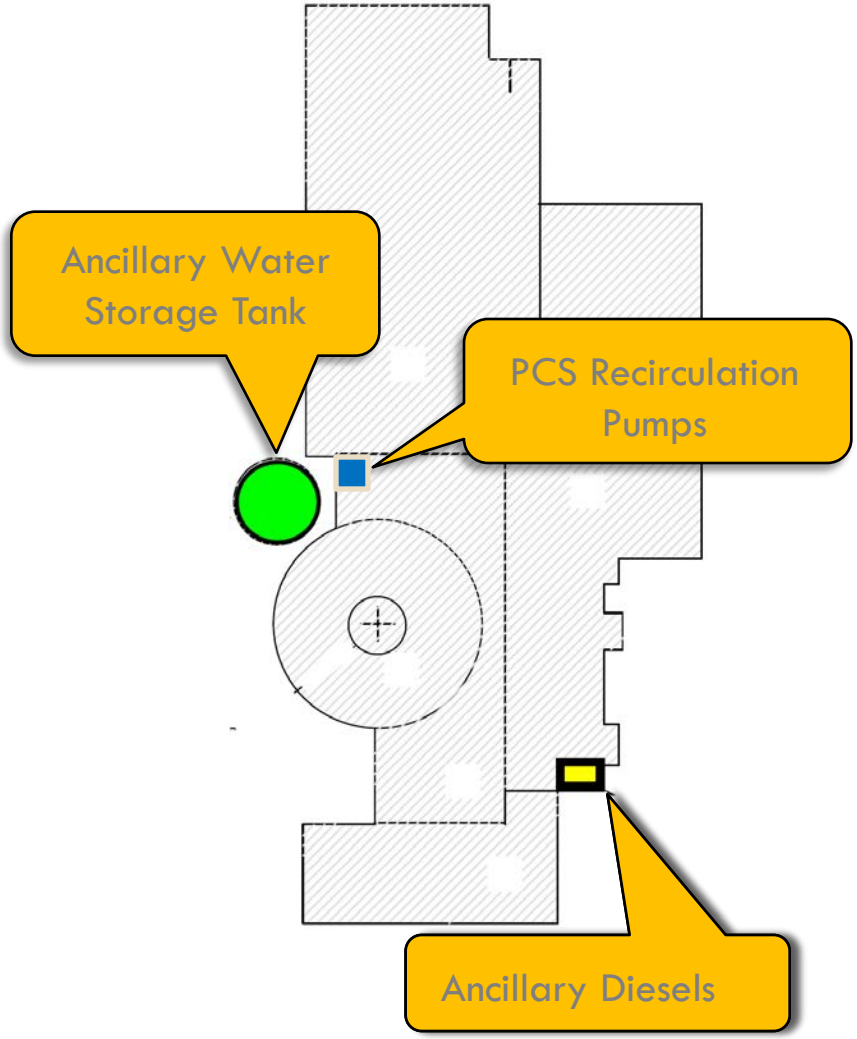

AP1000 Passive Containment Cooling System

# ALARA

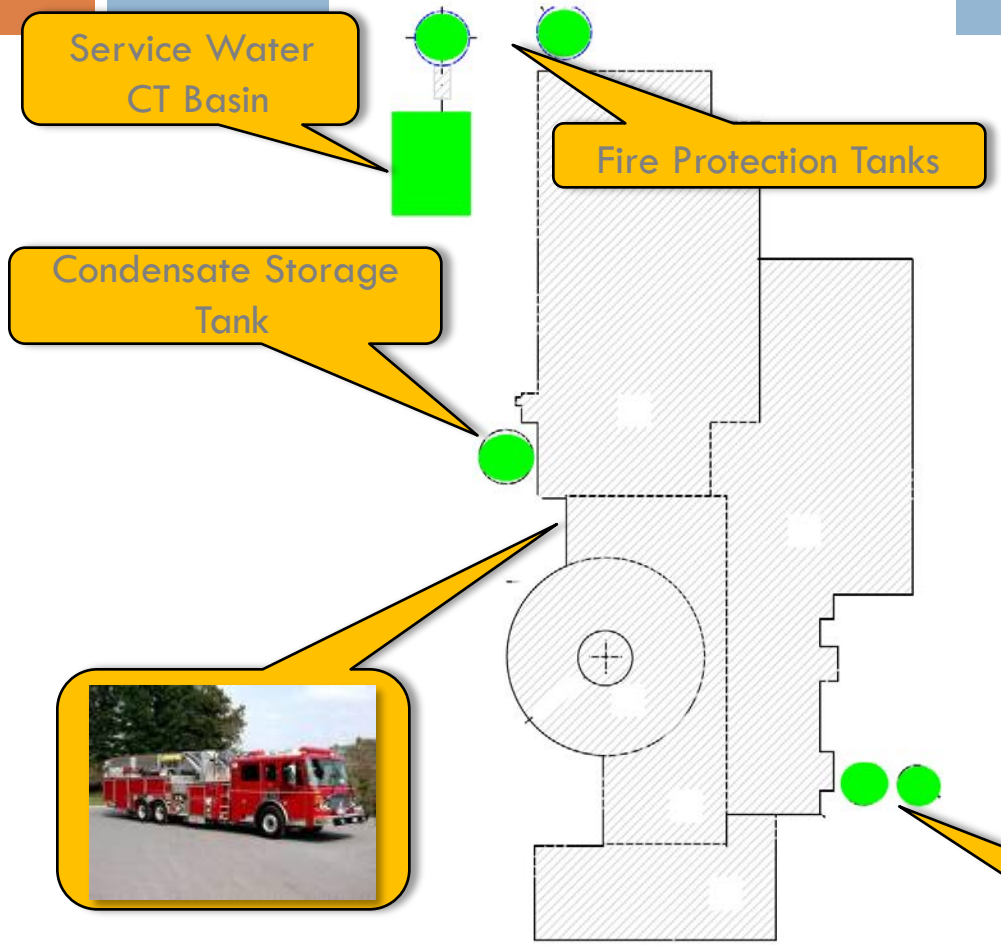

50% Fewer Valves
35% Fewer Safety Grade Pumps
80% Less Pipe
45% Less Seismic Building Volume
85% Less Cable

# Safety features/ALARA

- Built-in Long-term Support is non-safety with some seismic capability
  - 2 small Ancillary Diesels (80 kw) provide AC power for post-72 hour operations.
  - 1 Ancillary Water Storage Tank provides water for containment cooling and the SF pool makeup for 4 additional days.
  - 2 PCS recirculation pumps, powered by ancillary diesels, transfer water to the spent fuel pool and the containment outer surface.



# Safety features/ALARA




- Permanently installed connections for off-site support hook-up of AC power and water supply are provided.
  - Pre-arranged supply covered by written procedures
- With minimal operator actions core cooling, containment cooling, and spent fuel cooling are maintained indefinitely.
- Post 7 day features may be used earlier if needed.

# Safety features/ALARA