



United States Nuclear Regulatory Commission

Protecting People and the Environment

Small Modular Reactors Emergency Preparedness

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Small Modular Reactors

- Less than 300 megawatts
 - typical nuclear power plant ~ 1,000 megawatts
- Built in factories and delivered to site
- Add modules as power needs increase
- Passive/inherent safety features, smaller size, longer time to release

Small Modular Reactors

- How does emergency planning fit in with small modular reactors?
 - SECY 15-0077 “Options for Emergency Preparedness for Small Modular Reactors and other New Technologies”
 - Staff recommended Commission approve rulemaking for new EP requirements for SMRs
 - Variable size EPZ including site boundary EPZ
 - Limited to no REP program offsite
 - If accident* doses at site boundary do not exceed 1 rem no offsite EP will be required.

*Accidents to be determined

Small Modular Reactors

- STAFF REQUIREMENTS – SECY-15-0077 –
OPTIONS FOR EMERGENCY PREPAREDNESS FOR
SMALL MODULAR REACTORS AND OTHER NEW
TECHNOLOGIES
- Approved the staff’s recommendation for rulemaking to
revise regulations and guidance for EP for SMRs et al.
- Commission noted the potential benefit of a
performance-based emergency preparedness regimen
for small modular reactors and directed staff not to rule
it out.
- Rulemaking plan to Commission within 9 months.

Basis for Current LWR EPZ Size

- EPZ is of “sufficient size to provide for dose savings to the population in areas where the projected dose from design basis accidents could be expected to **exceed** the **applicable PAGES** under unfavorable atmospheric conditions” NUREG 0396

Emergency Planning Zones

- Two emergency planning zones (EPZs) around each nuclear power plant help plan a strategy for protective actions during an emergency.
 - Plume exposure pathway EPZ radius ~10 miles from the reactor.
 - Ingestion exposure pathway EPZ has a radius ~ 50 miles from the reactor.
- These distances represent the distances where the PAGs won't be exceeded for most events

Site boundary EPZ

- “since it will usually not be necessary to have offsite planning if PAGs cannot be exceeded offsite, EPZs need not be established for such cases.” EPA 400
 - Decommissioned power reactors granted exemption requests to adjust offsite EP commensurate with the risk.
 - RTRs, planned production facilities, i.e. “SHINE” isotope production reactor

SMR EP

- May have site boundary EPZ only
 - What would offsite look like?
 - What would onsite EP look like?
- What is “performance based?”
 - Does it fit with SMR EP?
- Thoughts? Comments? Questions?