



# **Evacuation Timing and Nuclear Plant Accident Response**

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# Introduction

- Nuclear Power Plant (NPP) Emergency Preparedness programs are designed to reduce public dose during an unlikely severe accident
  - Mitigative measures onsite
  - Public protective actions

# Introduction

- Nuclear Regulatory Commission (NRC) protective action recommendation (PAR) guidance is in NUREG-0654 Supplement 3
  - Guidance based on 1990 era NPP accident analyses

# Introduction

- NRC staff recommended a review of PAR guidance
- The Commission directed that the study proceed
- Staff began study in late 2004
  - Sandia National Laboratory as consultant

# PAR Study Objective

- Investigate if the use of alternative protective actions can reduce public dose during severe accidents

## **Alternatives Tested**

- Shelter in place (SIP) for various times – (within current regimen, but limited use)
- Preferred sheltering for various times (in large public buildings, etc.)
- Lateral evacuation (crosswind)
- Staged evacuation (evacuation nearby, initially shelter others)

# Supp. 3 Revision Technical Basis

- PAR Study NUREG/CR-6953, Vol. 1  
Technical Analysis
  - Evacuation remains major element
  - Staged evacuation is more protective
  - Shelter in place followed by evacuation is more protective for some scenarios
  - **Evacuation Time Estimate quality must be improved to support evacuation planning**

## **Supp. 3 Revision Technical Basis**

- PAR Study NUREG/CR-6953, Vol. 2  
Focus Groups and Telephone Survey
  - People will implement protective actions when asked
  - Message affects rate of compliance
  - Emergency responders will report for duty

## **Supp. 3 Revision Technical Basis**

- PAR Study NUREG/CR-6953 Vol. 3  
Large Early Release Technical Analysis
  - SIP for sites with 2 mile (90%) ETE > 2 hours
  - SIP for sites with 2-5 mile (90%) ETE > 3 hours
  - SIP 5-10 mile

# Elements of Revised PAR Logic

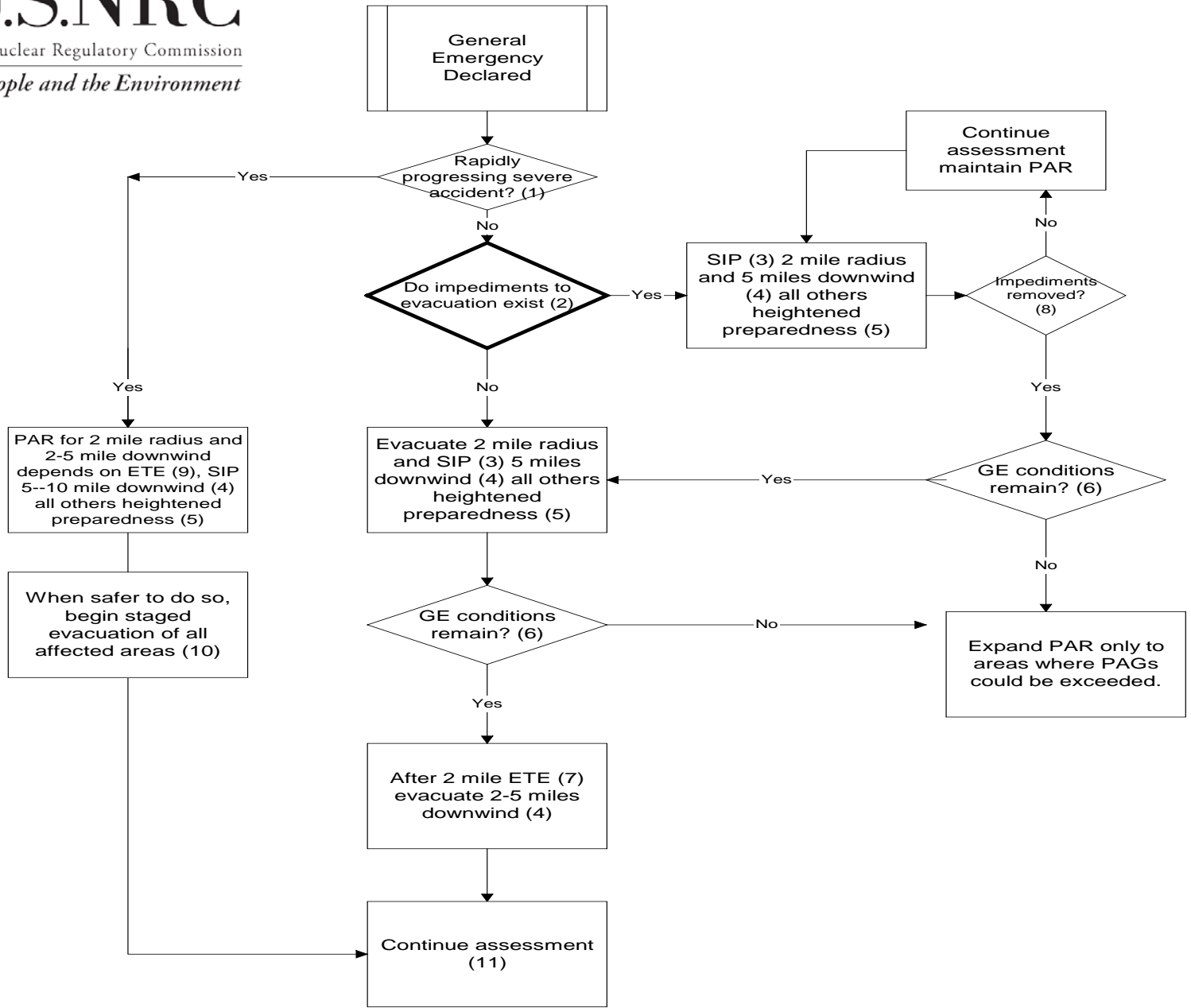
- Increased offsite response organization involvement in development
- Staged evacuation should be initial protective action
- The public will implement staged evacuation and SIP if the proper messaging is used

# Elements of Revised PAR Logic

- Guidance provided for emergency messaging
- SIP when impediments to evacuation exist, including hostile action
- Pause before expansion of protective actions to account for mitigative actions

## **Supp. 3 Revision Status**

- PAR Logic Diagram developed
- Coordinated with FEMA
- Issue in Federal Register for comment
- Expect to issue guidance in late 2010



# Questions?

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