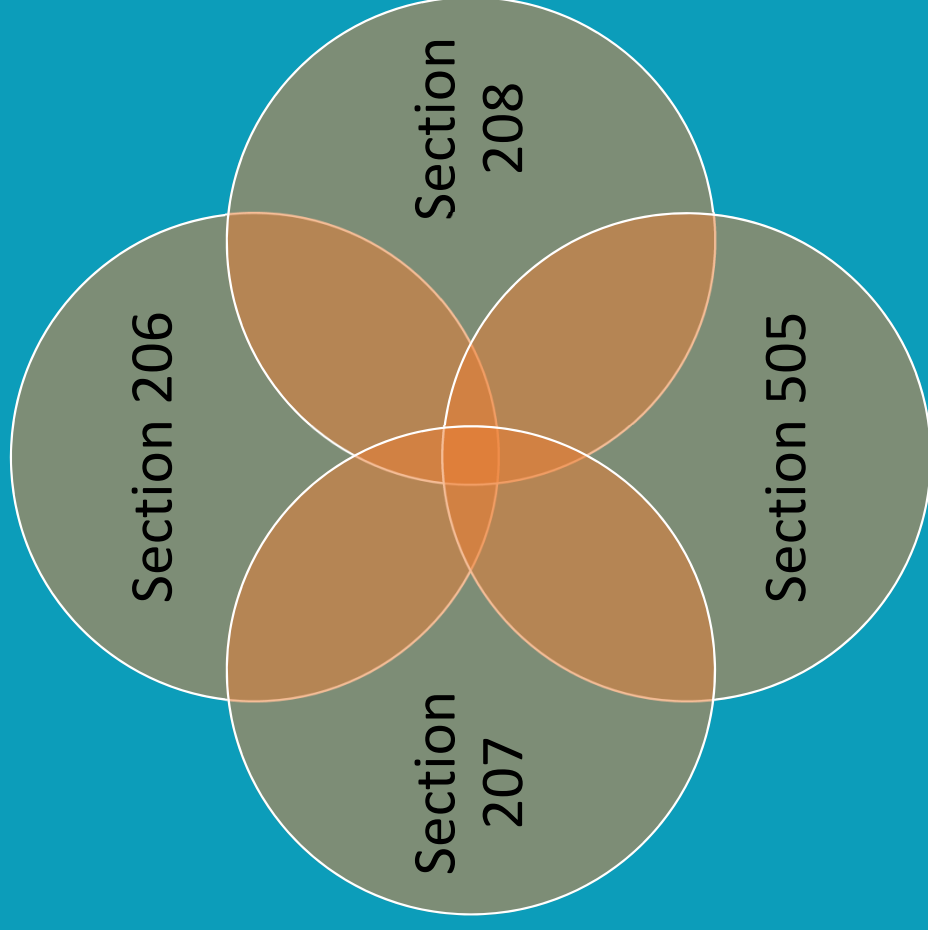


Initial Technical Issues for Proposed Use of Offsite Meteorological Data in Lieu of or in Addition to Onsite Meteorological Measurements

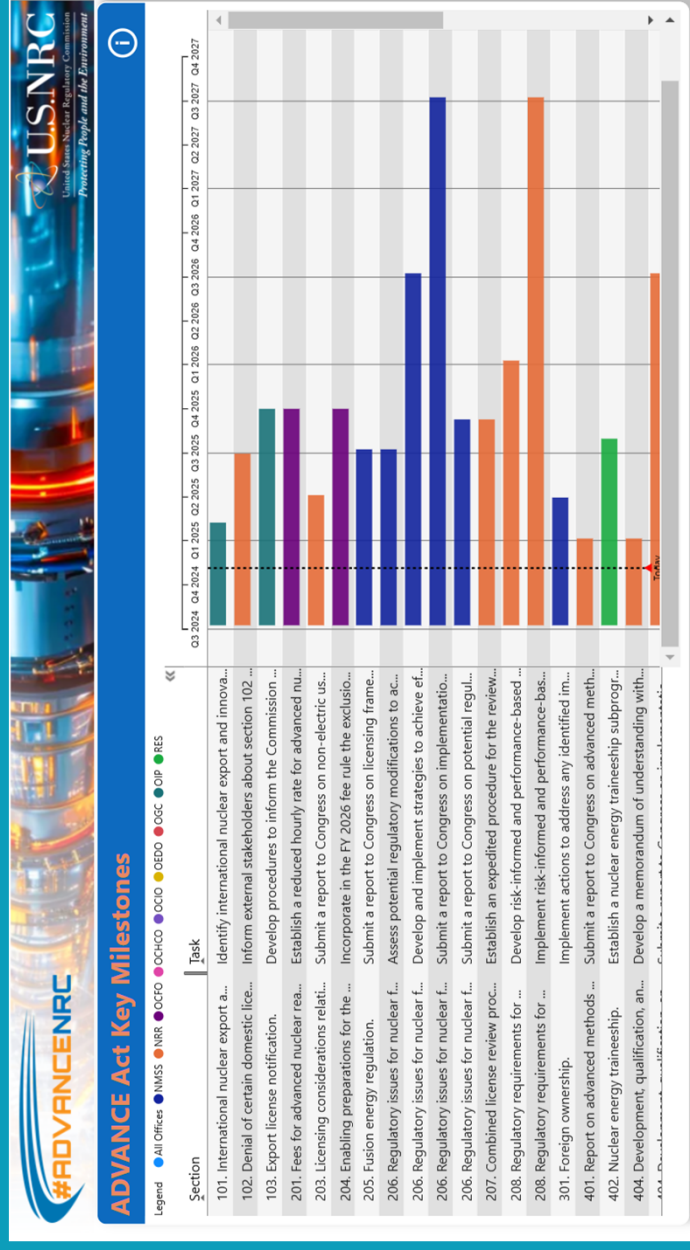
March 6, 2025



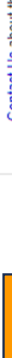
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When Are Atmospheric Dispersion Modeling and Meteorological (Met) Monitoring Needed?

- Applicant determines level of accident and routine airborne radiological releases
- NRC dose assessment and/or engineering staff reviews level to confirm, possible need for applicant revision, or advance to next dispersion modeling and Met monitoring level
- If no airborne releases confirmed, may not need dispersion modeling or Met monitoring
- If minimal airborne releases confirmed, might be able to rely on screening Met data rather than monitoring data for dispersion modeling
- If non-minimal releases, dispersion modeling and Met monitoring would be required
- Some dispersion modeling with screening Met data may be useful for no or minimal airborne releases.

Discussion Question: What other factors need to be considered to determine if atmospheric dispersion modeling and Met monitoring is needed? If so, for what emission release level?

Meteorological Data Guidance

- NRC Regulatory Guide (RG) 1.23, “Meteorological Monitoring Programs for Nuclear Power Plants”
 - Met data collection preferably occurs onsite
 - Guidance allows for technically-justified, alternate Met parameters or data sources, but with the possible need to adjust the dispersion models, their algorithms, and/or outputs
- Any Met data input to a dispersion model should:
 - Consider spatial and temporal representativeness
 - Document how the Met data were acquired
 - Demonstrate its ability to adequately characterize transport and diffusion conditions where and when the Met data are to be applied
 - Be context-specific (i.e., each Met parameter consistent with how each dispersion model and its algorithms were developed and how each model’s results are used)

General Considerations for Using Offsite Met Data

- Identify general characteristics of the offsite Met monitoring station(s) proposed for use, the purpose of those Met measurements where they're made, and the rationale for its selection to be applied elsewhere
- Indicate distance / direction of offsite station(s) to proposed plant site
- Specify measurement and operating details of offsite station(s)
- Identify compliance with / departures from the specifications in RG 1.23
- Provide annual concurrent and individual parameter percent data recoveries for wind speed, wind direction, and atmospheric stability for each year and the entire period of record (POR) to be used
- Demonstrate that offsite Met data reasonably represent long-term conditions at a given site where data are to be applied

Discussion Question: What other general factors should be considered to demonstrate the representativeness of offsite Met data for use in onsite dispersion analyses?

Specific Considerations for Using Offsite Met Data in Accident and Routine Release Dispersion Modeling Analyses

(Page 1 of 2)

- Different statistical tests, acceptance criteria, and/or Met monitoring strategies may be needed if only offsite Met data is used to determine representativeness as opposed to comparisons against concurrent onsite Met data
- Important distinction between Met data used for dispersion modeling and for climate description purposes at a given site
 - Relevant Met parameters for dispersion modeling are only wind speed, wind direction, atmospheric stability (per RG 1.23), and joint frequency distributions of these three
 - Other Met parameters and data summaries (e.g., wind roses, ambient temperature, humidity, precipitation) generally not relevant but may be depending on site location, time of year, and/or purpose of modeling analysis
- Important distinctions between models and results used to estimate dispersion at offsite receptors (accidents), at onsite receptors (accidents), and typically at offsite receptors (routine operational releases)

Specific Considerations for Using Offsite Met Data in Accident and Routine Release Dispersion Modeling Analyses (Page 2 of 2)

- Separate safety- and environmental-related correlations or other statistical comparisons and acceptance criteria may be needed to demonstrate offsite Met data representativeness
- The need to establish an onsite Met monitoring program during the operational phase and for emergency preparedness planning and response should be considered in lieu of continued reliance on offsite Met monitoring data

Discussion Question: What would be considered appropriate safety- and environmental-related correlations or other statistical comparisons and acceptance criteria for each applicable Met parameter and type of dispersion model used?