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Guide to NRC Application Data Requirements for State Implementers

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States often hold key datasets needed for Nuclear Regulatory Commission (NRC) reviews, but the scope and depth of those datasets vary widely. This guide summarizes the information typically required and clarifies "how much is enough" for each topic across the NRC licensing pathways:

- Early Site Permit (ESP)
- Construction Permit/Operating License (CP/OL)
- Combined Operating License (COL)

This guide is designed for state offices to (1) quickly check whether datasets meet NRC expectations, and (2) minimize duplicative data-gathering by aligning state-level work with federal needs from the start.

State permitting programs differ; some state-level agencies will already have much of this on hand, while others will not. The matrix helps identify gaps early and prioritize efficient field campaigns or record pulls. Where a state program's methods and quality assurance are equivalent in rigor to the NRC's expectations, the state may consider pursuing an NRC license directly. Alternatively, states can choose to pursue pre-permitting or pre-allocating site data prior to NRC licensing. The latter would still be relevant for future NRC applications; states will already have data on hand and will be able to submit letters from the appropriate offices to support licensing.[1]

[1] States typically submit letters to the NRC in support of licensing. For example, see state letters accepted for the Diablo Canyon Environmental Impact Statement, *Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 62, Regarding License Renewal of Diablo Canyon Nuclear Power Plant, Units 1 and 2*, NUREG-1437, ML24299A167; References include letters from the California Energy Commission, California Regional Water Quality Control Board, California State Water Resources Control Board, and Pacific Gas and Electric Company, among others.

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Acronyms

316(a)/(b) Specific sections of the Clean Water Act (CWA) dealing with thermal discharge and cooling water intake structure impacts

ACS American Community Survey

ADCP Acoustic Doppler Current Profiler

ANSS Advanced National Seismic System

ASOS Automated Surface Observing System

BA Biological Assessment

BGEPA Bald and Golden Eagle Protection Act

BLS Bureau of Labor Statistics

CFATS Chemical Facility Anti-Terrorism Standards

CH Critical Habitat (Under the Endangered Species Act)

COL Combined Operating License

CP Construction Permit

CPT Cone Penetration Test

CRM Cultural Resource Management

CWA Clean Water Act

DCE Decommissioning Cost Estimate

DEQ Department of Environmental Quality

DHS Department of Homeland Security

DO Dissolved Oxygen (Key water quality metric)

DoD Department of Defense

DOI Department of the Interior

DOT Department of Transportation

EA Environmental Assessment

EAB Exclusion Area Boundary

ECHO Enforcement and Compliance History Online

EJ Environmental Justice

EIS Environmental Impact Statement

EP Emergency Planning

EPA Environmental Protection Agency

EPA ATTAINS Assessment, TMDL Tracking, & Implementation System

EPC Engineering, Procurement, and Construction

EPRI Electric Power Research Institute

ER Environmental Report

ESA Endangered Species Act

ETE Estimated Time of Egress

EPZ Emergency Planning Zone

FAA Federal Aviation Administration

FEMA Federal Emergency Management Agency

FHWA TNM Federal Highway Administration Traffic Noise Model

FIRM Flood Insurance Rate Map

FIS Flood Insurance Study

FSAR Final Safety Analysis Report

GIS Geographic Information System

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GMRS Ground Motion Response Spectrum (Seismic design basis)

IMPLAN or RIMS II Economic Input/Output Models

ISD Integrated Surface Dataset

ISG Interim Staff Guidance

ISO/RTO Independent System Operator / Regional Transmission Organization

ITAAC Inspections, Tests, Analyses, and Acceptance Criteria

LAA Likely to Adversely Affect

LiDAR Light Detection and Ranging

LPZ Low Population Zone

MASW Multi-channel Analysis of Surface Waves

MBTA Migratory Bird Treaty Act

MDCs Major Design Changes

MOUs Memoranda of Understanding

MPO Metropolitan Planning Organization

MPO/RTP MPO and Regional Transportation Plan

NASW Nodal Array Surface Wave (Geophysical survey method)

NEI Nuclear Energy Institute

NEPA National Environmental Policy Act

NGOs Non-Governmental Organizations

NHPA National Historic Preservation Act

NLAA Not Likely to Adversely Affect (ESA species conclusion)

NMFS National Marine Fisheries Service

NOAA National Oceanic and Atmospheric Administration

NPO Nuclear Power Organization

NQA-1 Nuclear Quality Assurance (ASME/ANSI Standard)

NRC Nuclear Regulatory Commission

NWS National Weather Service

OL Operating License

PHMSA Pipeline and Hazardous Materials Safety Administration

PMF/PMSS Probable Maximum Flood / Probable Maximum Storm Surge

PPE Plant Parameter Envelope

PRA Probabilistic Risk Assessment

PSAR Preliminary Safety Analysis Report

PSHA Probabilistic Seismic Hazard Analysis

PSPS Public Safety Power Shutoff

QA Quality Assurance

QA/QC Quality Assurance/Quality Control

QCEW Quarterly Census of Employment and Wages

RG Regulatory Guide

RMP Risk Management Plan

ROW Right-of-Way

SHPO State Historic Preservation Officer

SODAR Sound Detection and Ranging (

SRP Standard Review Plan (NUREG-0800 / NUREG-1555)

SSE Safe Shutdown Earthquake

SSAR Safety Analysis Report

TEK Traditional Ecological Knowledge

temp lapse/ΔT Temperature Lapse Rate / Temperature Difference (Used for atmospheric stability)

THPOs Tribal Historic Preservation Officers

TMDL Total Maximum Daily Load (Water Quality regulation)

TRI Toxics Release Inventory

USACE U.S. Army Corps of Engineers

USFS U.S. Forest Service

USFWS/NMFS IPaC U.S. Fish & Wildlife Service / National Marine Fisheries Service Information for Planning and Consultation

USGS U.S. Geological Survey

χ/Q Chi-over-Q (Radiological atmospheric dispersion factor used in safety analysis)

Safety and Environmental Data Requirements

The process of identifying a viable site for a nuclear facility typically follows an approach moving from essential/critical safety barriers to environmental preferences.[2] This guide is organized according to these categories to provide a clear data collection hierarchy for state agencies:

1. **Exclusionary Criteria:** These are the fundamental safety and site-viability requirements. If the data shows failure here, the site is likely unsuitable regardless of other factors. These are the highest priority for initial screening. *See 16 Data Topics.*
2. **Avoidance Factors:** Data topics that are not strictly exclusionary but introduce significant safety, environmental, or economic complications that applicants typically try to avoid. *See 12 Data Topics.*
3. **Suitability Factors:** Data topics that demonstrate the site's overall quality and are used to optimize design and assess final impacts. They primarily inform the final cost, schedule, and public acceptance. *See 19 Data Topics.*

[2] Another resource is EPRI's *Advanced Nuclear Technology: Site Selection and Evaluation Criteria for New Nuclear Energy Generation Facilities (Siting Guide)*, See Table 2-4 "Siting Criteria and Typical Screening Activity," Pages 2-20—2-21, https://www.epri.com/research/products/000000003002023910

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Licensing Data Collection

Data topic	Key data/metric	Highest requirement to plan for	Data sources (where to get/collect)	Where the data is needed
Exclusionary Criteria				
E.1 Seismic hazard, geology & geoscience	Regional & site geology; PSHA inputs/outputs; GMRS; site response analyses; active faults & recurrence; Vs profiles; borings/test pits	Site-specific PSHA & GMRS per RG 1.208; subsurface program sufficient for site response and foundation design; demonstrate PPE/design envelope bounding as needed	USGS hazard maps & ANSS catalogs; USGS Earthquake Hazard Toolbox; state geologic survey maps; trenching; geotech borings/ CPT; MASW/Refraction/ Microtremor; downhole/ suspension logging	SSAR §2.5; Design-basis SSE/GMRS; ER Geology/Soils
E.2 Hydrology & flooding	Riverine/coastal flood mechanisms; PMF/PMSS; precipitation frequency; bathy/topo; groundwater levels; dam/levee failure; local drainage/stormwater	Design-basis flood hazard characterization using best available methods/data; consider combinations of mechanisms; multi-decadal records where available	USGS stream gages; NOAA Atlas (precip); NOAA Global Historical Tsunami Database; FEMA FIS/FIRM; USACE studies; state hydrology agencies; NOAA tide gauges; site LiDAR/topo; piezometers	SSAR §2.4; ER Water Resources; EP (ingress/egress under flood); 10 CFR 100.20(c)(3); 10 CFR 100.23(d)(3); NRC RG 4.7
E.3 Karst, subsidence & legacy mining	Karst features; subsidence risk; abandoned mines; cavities; historical extraction maps	Demonstrate foundation suitability and long-term stability; mitigation concepts if present	State geologic surveys; USGS; mining agency maps; geophysics (ERT/GPR)	SSAR §2.5; ER Geology/Soils
E.4 Geotechnical engineering properties	Soil/rock classification; shear strength; compressibility; liquefaction & settlement potential; dynamic properties (Vs, damping)	Field/lab program sufficient to support foundations & SSI; cyclic & dynamic lab testing as needed	Borings/CPT/test pits; downhole/PS suspension; resonant column/triaxial labs; geotech data reports	SSAR §2.5; Design/SSI inputs; ER Soils

Data topic	Key data/metric	Highest requirement to plan for	Data sources (where to get/collect)	Where the data is needed
E.5 Volcanism & tectonic deformation (as applicable)	Quaternary volcanism; intrusive activity; tectonic deformation rates; ash fall hazard	Demonstrate negligible hazard or bound via design basis; integrate with PSHA/GMRS where relevant	USGS volcanology datasets (USGS Quaternary Fault and Fold Database); state geological surveys; tephra isopach maps; paleoseismic/tephrochronology studies	SSAR §2.5 (Regional Geology); External Hazards context (NRC RG 4.26 Rev 0)
E.6 Sea-level rise & coastal change (if coastal)	Relative sea-level trends; storm surge change; shoreline erosion; subsidence	Contextual analysis for long-term site resilience and ER disclosure	NOAA sea-level tools; USACE guidance; tide gauges; state coastal management	ER Water/Coastal; SSAR Hydrology context; NRC RG 4.7
E.7 Regional climate & extreme meteorology	Tropical cyclones, tornado climatology, straight-line winds, lightning density, extreme temps, icing/snow loads, drought/heat waves	Characterize statistically robust extremes (winds/icing/ temperature/precipitation, tornado/hurricane climatology, lightning) for design-basis external hazards, construction safety, and comparison to onsite representativeness; Fastest mile speed (often recorded as peak gusts); number of tornadoes and violent tornadoes per 10,000 square miles; number of hurricanes; maximum 24-hour precipitation values	NOAA/NCEI storm events; SPC/NHC archives; NOAA Climate Data (NCDC); NASA LIS lightning; state climatologist; ASCE load maps; NOAA National Hurricane Center; NOAA Severe Weather Data Inventory	SSAR External Hazards; SSAR §2.3; ER Air/Climate
E.8 Nearby hazards & industrial facilities	Airports/flight paths; pipelines; chemical facilities; rail/highway hazmat; blast/explosion/toxic gas analyses	Identification of potentially hazardous facilities and activities within 5 miles (8 km) of a proposed site and major airports within 10 miles (16 km); data on planned	FAA airport/flight data; PHMSA pipeline maps; EPA RMP & TRI; DHS CFATS public data; state industrial databases; site reconnaissance; DoD military installations	SSAR §2.2; ER Human Environment; 10 CFR 100.21(e); RG 4.7

Data topic	Key data/metric	Highest requirement to plan for	Data sources (where to get/collect)	Where the data is needed
		hazardous facilities that are already known to an owner-operator, become known, or are identified in news during the site selection process; complete inventory and bounding analyses for credible external events (explosion, toxic gas, missiles); include transportation corridors and stationary sources		
E.9 Groundwater (radionuclide pathway) & water quality (subsurface)	Aquifer geometry; hydraulic conductivity; potentiometric surfaces; baseline chemistry; receptor wells/springs	Install appropriate monitoring well network; conduct slug/pump tests; collect seasonal baseline chemistry to bound variability and establish gradients; designation of Class I, Class II, and Class III groundwater (Class I: special groundwater; Class II: groundwater currently and potentially a source of drinking water; Class III: groundwater not a source of drinking water); depth of the water table; net recharge	Site well network; USGS NWIS; state well logs; lab analyses; DRASTIC (system for groundwater pollution); EPA drinking water information; EPA healthy watersheds protection program; Guidelines Groundwater Classification EPA Groundwater Protection Strategy	SSAR §2.4; ER Water Resources
E.10 Site control, exclusion area boundary (EAB) & LPZ (PPE)	Site boundary & owner-controlled area; EAB/LPZ assumptions using Plant Parameter Envelope (PPE)	Bounding EAB/LPZ consistent with PPE and potential future COL; document land control strategy	Property records; plats/surveys; easements/ROW; PPE definition documents	SSAR Site Description; EP interfaces

Data topic	Key data/metric	Highest requirement to plan for	Data sources (where to get/collect)	Where the data is needed
E.11 Emergency planning inputs (Inability to meet LPZ/EPZ criteria is exclusionary)	Ingress/egress, special facilities, siren coverage, demographics for ETE; physical impediments	Identify physical impediments and compile information sufficient to support Major Features of EP at the ESP stage (10 CFR 50.47 & App. E; 10 CFR 52.17(b))	Local EMAs; school & healthcare registries; GIS road networks; cellular/siren coverage studies; regional evacuation studies	SSAR (EP impediments); ER Human Environment; EP Major Features
E.12 Previously disturbed areas: extent, depth & location	Footprint of prior disturbance (acreage and % of site), disturbance type (grading, fill, borrow pits, foundations), depth of fill, compaction, spoil/CCR units, underground utilities; spatial delineation (maps)	Quantify and map where the site is previously disturbed and to what extent (depth/materials). Use to scope geotechnical subsurface investigations, subsidence risk, seismic site response, wetlands/jurisdictional status, and remediation needs	As-builts; geotechnical logs; ground-penetrating radar; historical aerials/Sanborn maps; CCR/landfill closure docs; utility locates; borehole/ test pit logs; LiDAR/topo change detection	SSAR §2.5 (Geotech/Seismology) & §2.4 (Hydrology) interfaces; ER Land/Soils & Wetlands; Part 50/52 site characterization basis
E.13 Wildfire & extreme heat/cold exposure	Wildfire hazard potential; historical fire perimeters; extreme heat/cold days; utility PSPS risk (where applicable)	Bounding external hazard characterization and construction worker safety planning	USFS fire hazard maps; state forestry; NOAA climate normals; utility PSPS maps	SSAR External Hazards; ER Human Environment
E.14 Cooling Water Supply	Quantitative availability and quality of cooling water and the effects of withdrawal on source water quantity and quality.	Identify and map water sources; average and minimum acceptable average flow identified for surface water sources; pumping distance criterion, acceptable maximum pumping distance, and buffer area; water supply plans for candidate site	USGS National Water Information System (streamflow and quality); drought history; state water rights databases; EPA drinking water information; state drinking water information;	ER; SSAR; RG 1.82; RG 1.56

Data topic	Key data/metric	Highest requirement to plan for	Data sources (where to get/collect)	Where the data is needed
E.15 Population and Population Density	Current baseline plus defensible forecasts through the license period	Population within 10-mi plume & 50-mi ingestion; distance to the nearest densely populated center (over 25,000 residents) and demonstrate that it is at least one and one-third times the distance from the reactor to the outer boundary of the LPZ.	U.S. Census/ACS; state demographer; Google Earth USGS Topographic Maps; state specific maps; U.S. Bureau of Labor Statistics.	ER; SSAR (10 CFR Part 100); NRC RG 4.7
E.16 Land Use	Industrial and agricultural uses; Residential areas, population centers and population density; Public recreational areas; Historical land; Wildlife and ecological preserves; Land disposal of radioactive waste	Current and projected land use in and around the site.	MPO/RTP plans; county GIS parcels/land-use; federal land ownership maps; federal, state, and local land use maps	ER Land Use (10 CFR Part 51); EP major features; SSAR (EP impediments); RG 4.7; RG 4.7 Appendix B
Avoidance Factors				
A.1 Endangered & Threatened Species (ESA) and Disruption of Important Species/Habitats	Federal & state-listed species; critical habitat; occurrence records; habitat suitability; seasonal survey windows; avoidance/mitigation needs	Complete species list & effects determinations (*evaluation is based on the relative effects on important species using the total number of rare, threatened, and endangered species that may occur in the county where each site is located as a proxy*); protocol-level surveys where indicated; evaluate critical habitat; document early coordination and anticipated Section 7 path (NLAA/LAA; BA if required)	USFWS IPaC species list & critical habitat mapper; NMFS species/CH data; State Natural Heritage Program; NatureServe; eBird/state wildlife DBs; targeted field surveys (botanical, bat acoustic/mist-netting, herp, breeding bird, camera traps, eDNA); USFWS Endangered Species, Listing, and Critical Habitat; U.S. Forest Service; state wildlife agencies	ER Terrestrial & Aquatic Ecology; ESA Section 7 consultation record; CWA permits (context); RG 4.7

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Data topic	Key data/metric	Highest requirement to plan for	Data sources (where to get/collect)	Where the data is needed
A.2 Aquatic ecology	Aquatic habitat mapping; ichthyoplankton and fish community; entrainment/impingement; listed species; baseline water quality/biology	Year-round baseline covering seasonal variability (≥1 full year), including spawning/migration periods; methods sufficient to support 316(a)/(b) determinations where applicable	State wildlife/fisheries agencies; USFWS/NMFS IPaC; state heritage databases; NOAA Fisheries (critical habitat, essential fish habitat, protected resources); field sampling (nets, trawls, eDNA); continuous sondes	ER Aquatic Ecology; CWA 316(a)/(b)
A.3 Terrestrial ecology & wetlands	Vegetation communities; wildlife surveys; wetlands delineation; T&E species; migratory birds/bats	Seasonal surveys over ≥1 year; formal wetlands delineation per USACE; functional assessments as needed; methods sufficient to inform ESA/MBTA/BGEPA compliance	USACE NWI layers; state heritage programs; USFWS IPaC; field transects/plots; acoustic/bat detectors; delineation fieldwork with GPS; USFWS National Wetlands Inventory	ER Terrestrial Ecology; Wetlands/Section 404
A.4 Water quality (surface) & 303(d)/TMDL status	Temperature, DO, turbidity, nutrients, metals; impaired waters listing; TMDL targets	Baseline multi-season sampling; evaluate compliance margin vs. standards, impaired listings, TMDLs, and thermal limits	State DEQ water assessments; EPA ATTAINS; field sondes & grab samples; state lists of impaired waters; EPA water quality data; U.S. National Aquatic Resource Surveys	ER Water Resources & Aquatic; CWA permits
A.5 Water supply & thermal discharges	Makeup/consumptive demand; intake/outfall siting; thermal plume modeling; water rights/permits	Bound worst-case flow/temperature conditions; collect multi-season field data to calibrate thermal and hydrodynamic models; confirm legal sufficiency of water rights/permits	State water rights registries; USGS flow records; in-situ temperature loggers; USGS National Water Dashboard; dye/tracer & ADCP surveys; utility intake/outfall records	ER Water Resources & Aquatic; State water permits
A.6 Cultural & historic resources	Archaeological inventory in APE; architectural surveys; tribal/SHPO consultation records	Complete inventory & eligibility determinations prior to EIS; documented consultation	State SHPO site files; Tribal Historic Preservation Offices; field surveys; National Register; local historical societies	ER Cultural Resources

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Data topic	Key data/metric	Highest requirement to plan for	Data sources (where to get/collect)	Where the data is needed
A.7 Tribal Nations coordination & TEK	Federally recognized and state-recognized tribes with interests in the area; consultation records; TEK regarding species, cultural sites, and resources; access/use considerations	Initiate early, meaningful consultation; document concerns and data contributions; integrate TEK into ER/ecology/cultural resource analyses; maintain record of government-to-government communications	Tribal government contacts; THPOs; US DOI tribal lists; Bureau of Indian Affairs Records; Tribal Historic Preservation Program; consultation meeting notes; TEK workshops; MOUs	ER Cultural Resources & Ecology; ESA/Section 7 inputs; Community engagement record
A.8 Airspace & military/aviation constraints	FAA Part 77 surfaces; DoD MTRs/Special Use Airspace; crane heights; heli/flight paths	Demonstrate no hazards to air navigation; coordinate early with FAA/DoD *(Can impose severe design restrictions)*	FAA OE/AAA data; FAA special use airspace and air traffic control assigned airspace; DoD airspace maps; airport master plans	SSAR §2.2; ER Human Environment
A.9 Transmission & grid interconnection	Existing/proposed lines; ROWs; substation capacity; interconnection feasibility/studies	Demonstrate feasible interconnection assumptions for ER alternatives; identify known ROW/control and foreseeable build-outs for cumulative impacts	Utility interconnection queues; ISO/RTO maps/studies; utility planning docs; county ROW & parcel GIS; USGS/ESRI base layers	ER Alternatives/Transmission; Cumulative Impacts
A.10 Transportation of oversize loads & component routing	Roadway geometry; bridge ratings; rail clearances; port access; last-mile constraints	Feasible routing for major components during construction and refueling/maintenance	State DOT freight/permits; Class I/shortline rail; port authorities; route surveys	ER Transportation/Construction Impacts
A.11 Hazardous materials & brownfield conditions	Phase I/II ESA findings; USTs; PCB/lead/asbestos; coal ash basins; spill history	Identify remediation requirements and construction worker safety constraints	State DEQ databases; EPA ECHO; site sampling; historical aerials/Sanborns; state hazardous waste site databases; EPA superfund sites list	ER Land/Geology/ Soils; Construction Impacts
A.12 Radwaste strategy & fuel/storage interfaces (bounding)	Low-level waste classes/volumes; spent fuel storage assumptions; transportability; disposal pathways	Bounding description sufficient for ER and siting considerations at the ESP stage	Applicant design inputs; regional disposal site availability; DOT routing (contextual to site)	ER Waste Management; SSAR high-level interfaces

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Data topic	Key data/metric	Highest requirement to plan for	Data sources (where to get/collect)	Where the data is needed
Suitability Factors				
S.1 Meteorology (onsite & regional)	Hourly wind speed/direction, temp lapse/ΔT (atmospheric stability), vertical temp difference, precipitation; mixing height as available	At least 12 consecutive months onsite met for initial submittal; plan for ≥24 months (within 10 yrs of submittal) to support ESP/COL reviews (see RG 1.23); ≥90% valid data recovery; hourly averages; ≥36 months preferred where practical	Onsite met tower (30–60 m), SODAR/LIDAR; NOAA/NWS ASOS & ISD; nearby airport stations; reanalysis (scoping); third-party met services	SSAR §2.3 (Meteorology); Radiological dispersion (χ/Q, X/Q); ER Air Quality; EP (ETE inputs); RG 1.23
S.2 Air quality & noise	Ambient criteria pollutants; attainment status; construction emissions; noise levels at receptors	Recent ambient data; project-specific worst-case construction emissions modeling; representative day/night noise measurements at sensitive receptors	EPA AQS & state monitors; temporary site monitors; emissions calculators/models (e.g., AP-42 inputs); sound level meter surveys; FHWA TNM (traffic noise)	ER Air Quality/Noise
S.3 Socioeconomics	Siting, construction, and operation impacts; labor supply; transportation facilities; community services and secondary services (transportation, fire protection, policy, education, recreation, and transportation); local infrastructure	Identify special facilities, transportation networks, and potential EP impediments. Sensitive receptors; growth projections; housing/economy projections; construction labor projections	State and local planning agencies; U.S. Bureau of Economic Analysis; state and local economic development agencies; school/hospital registries; DOT roadway layers	ER Socioeconomics; EP major features; SSAR (EP impediments); EJ
S.4 Transportation & traffic	Baseline counts/LOS; construction logistics routes; crash/safety history; seasonal peaks; work-hour scheduling constraints	Peak-season counts and construction peak case LOS/safety analysis; identify roadway access constraints and potential mitigations	State DOT traffic counts & safety datasets; MPO travel demand models; project-specific tube counts; freight/OD data	ER Socioeconomics/Transportation; EP ETE inputs

Data topic	Key data/metric	Highest requirement to plan for	Data sources (where to get/collect)	Where the data is needed
S.5 Visual resources & viewpoints	Key observation points; viewshed analysis; photo simulations (day/night); lighting plan	Assess contrast/visual change under multiple seasons and lighting conditions (NUREG-1555 3.1)	USGS DEM/DSM; photography; GIS viewshed tools; local scenic byways inventories	ER Aesthetics/Visual
S.6 Environmental justice & community profile	Demographics by block group; linguistic isolation; income/health indicators; community facilities	Identify potentially affected EJ communities using current tools/ datasets; evaluate disproportionate & cumulative effects; document outreach/ engagement inputs	EPA EJScreen; ACS; state EJ tools; local health departments	ER Human Environment/EJ
S.7 Community engagement & stakeholder mapping	Stakeholder inventory (local gov, NGOs, tribes, businesses, etc); social baseline; EJ-specific outreach	Establish early engagement plan; track issues/resolutions; integrate feedback into alternatives/mitigations; document outreach per NEPA best practices	Public meeting minutes; CRM or stakeholder tracker; local media; social media listening; EJScreen/community org lists	ER Public Involvement; EJ; Agency coordination (state/federal)
S.8 Radiological environmental baseline	Background radiation; radionuclides and assessing for radioiodine concerns; tie-in with meteorology	Pre-construction multi-media baseline with QA/QC and MDCs appropriate to potential pathways	Contract labs & field programs; EPA RadNet (context specific to site/design); state radiation control programs; local dairies/farms; environmental media sampling	ER Radiological Impacts; Effluent Monitoring Program design
S.9 Topography, mapping & GIS base layers	Digital elevation models; site grading; floodplain/ shorelines; land cover; parcel boundaries; aerial imagery	High-resolution LiDAR/photogrammetry to support layout, hydrology, and visual analyses	USGS 3DEP LiDAR; state GIS clearinghouses; county parcels; NAIP imagery; project surveys	ER mapping throughout; SSAR site description
S.10 Cumulative actions & reasonably foreseeable projects	Regional projects (energy, industrial, transmission); permitting status; construction schedules	Identify and bound cumulative impacts across resource areas using reasonably foreseeable projects and schedules (ISG-026)	State siting boards; ISO/RTO queues; EISs/EAs; local planning commissions	ER Cumulative Impacts & Alternatives; RG 4.2 Rev 3; *e.x., see Section 9.3.4.2 of the Clinch River ESP Application*

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Data topic	Key data/metric	Highest requirement to plan for	Data sources (where to get/collect)	Where the data is needed
S.11 Socioeconomics: workforce, housing & public services	Construction/ops workforce; local labor availability; temporary housing; schools/ healthcare capacity; fiscal impacts	Peak construction and steady-state operating scenarios; mitigation concepts	BLS/QCEW; IMPLAN or RIMS II; local housing inventories; county finance data	ER Socioeconomics
S.12 Operator staffing & training pipeline (Part 55 context)	Projected licensed/operator staffing; training partnerships; simulator plan; attrition pipeline	Early plan for staffing/training aligned with schedule; identify regional training resources and hiring constraints	HR staffing plans; local training institutions; INPO/EPRI resources; simulator vendor inputs	Part 50/52 operational preparedness sections; ER socioeconomic workforce
S.13 Alternative sites & technology options (ER)	Screening criteria; candidate site data; technology/ cooling alternatives; comparative impacts	Reasonable range of alternatives with consistent, comparable datasets for ER evaluation	State siting studies; utility IRPs; ISO/RTO data; environmental constraints mapping; water availability; transmission proximity	ER Alternatives (sites/technologies)
S.14 Financial qualifications & decommissioning funding assurance	Project cost estimates; financing plan; credit support; DCE methodology; trust structures	Show financial qualifications consistent with the application type; provide a decommissioning funding assurance approach	Financial models; utility rate filings; corporate financials; decommissioning cost studies	Part 50 CP/OL or Part 52 COL application business sections; ER socioeconomic (indirect)
S.15 QA Program (Part 50, App. B) readiness & NQA-1 supply chain	Applicant QA program description status; NQA-1 implementation; supplier qualification/audits; doc control; corrective action; procurement requirements	Demonstrate QA program readiness appropriate to application type (CP/COL); supply chain controls for safety-related items/services; plan for program audits/approvals	QA manuals; procedures; supplier audit reports; procurement specs; training/qualification records	Part 50 CP PSAR / Part 52 COL FSAR programmatic sections; ITAAC/inspection planning interfaces
S.16 ITAAC development planning & construction program interfaces	Candidate ITAAC list; acceptance criteria; construction/inspection program mapping; records management	Establish traceable mapping from design bases to ITAAC; plan records/inspection evidence collection during construction	Design control documents; prior COL examples; owner's construction program; EPC QA/inspection plans	Part 52 COL; ITAAC closure planning; FSAR references

Data topic	Key data/metric	Highest requirement to plan for	Data sources (where to get/collect)	Where the data is needed
S.17 PRA & risk insights (TI-RIPB, RG 1.233)	Level of PRA available; hazard models included; use of risk insights for siting/design/EP; uncertainties	Document how risk insights inform site/design decisions and programmatic assumptions, appropriate to application content	PRA models/reports; site hazard data; design documentation; sensitivity studies	Part 50/52 safety analysis narrative; EP/security/ITAAC interfaces (as applicable)
S.18 Fire protection & hazards (preliminary)	Preliminary Fire Hazards Analysis; NFPA standards applicability; combustible/ignition sources; transient fire loads; wildland-urban interface (if applicable)	Provide preliminary program/analysis at CP/FSAR stage; identify codes/standards and interfaces with construction logistics	Prelim. design docs; site layout; code analysis; local fire authority coordination	Part 50 CP PSAR / Part 52 FSAR program sections; External hazards context
S.19 Physical security (high-level) & cyber security boundaries	Owner-controlled area / protected area concepts; target sets (high-level, if appropriate); cyber critical digital assets boundary; interface with transmission/IT	High-level description appropriate to application type; early coordination on law enforcement support; identify data needs for later detailed plans	Security program outlines; utility security policies; interconnection/cyber architecture diagrams; law enforcement MOUs	Part 50/52 programmatic sections; EP/Security interfaces

This guide pulls from existing guidance, reports, and research on navigating NRC licensing requirements.

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Additional Resources

1. U.S. NRC Advanced Reactor Application Guidance table: https://www.nrc.gov/reactors/new-reactors/advanced/modernizing/guidance/adv-reactor-app-guidance
2. U.S. NRC "Regulations, Guidance, and Communications for New Reactors" landing page: https://www.nrc.gov/reactors/new-reactors/how-we-regulate/regs-guides-comm
3. EPRI, (2022), *Advanced Nuclear Technology: Site Selection and Evaluation Criteria for New Nuclear Energy Generation Facilities (Siting Guide)-2022 Revision*, https://www.epri.com/research/products/000000003002023910
4. EPRI, (2023), *From Coal to Nuclear: A Practical Guide for Developing Nuclear Energy Facilities in Coal Plant Communities*, 3002026517, https://gain.inl.gov/content/uploads/4/2024/11/From-Coal-to-Nuclear_-A-Practical-Guide-for-Developing-Nuclear-Energy-Facilities-in-Coal.pdf
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