Building the Future

Screening Coal-Fired Power Plants for New Generation Technologies

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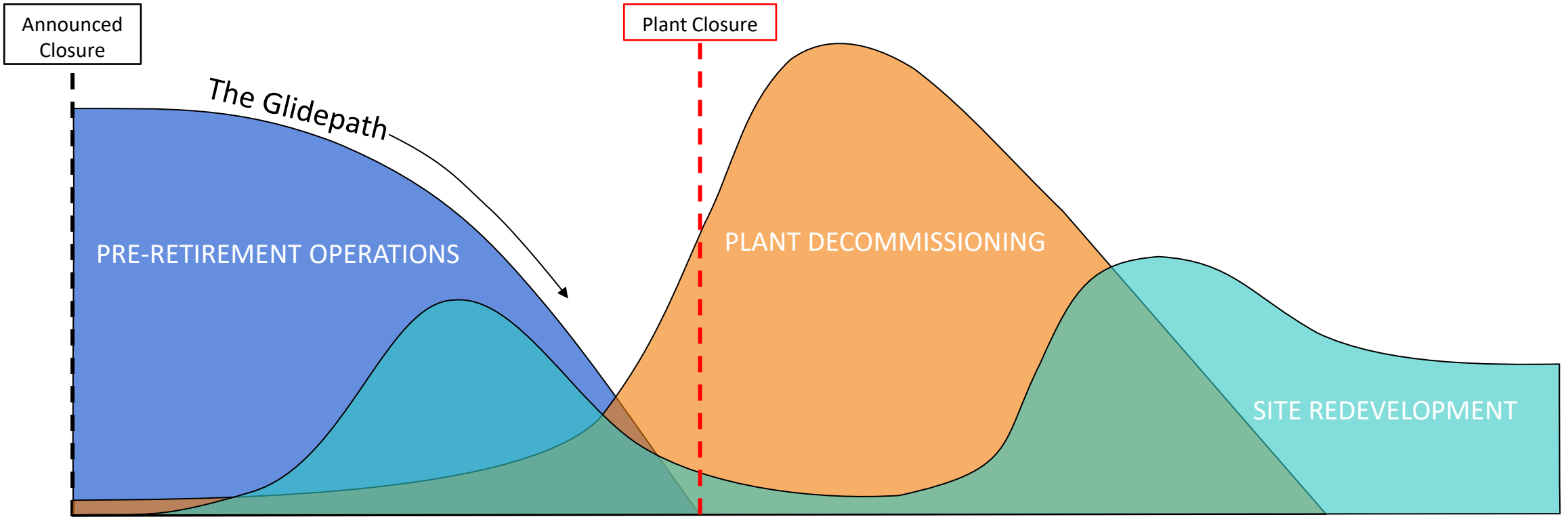
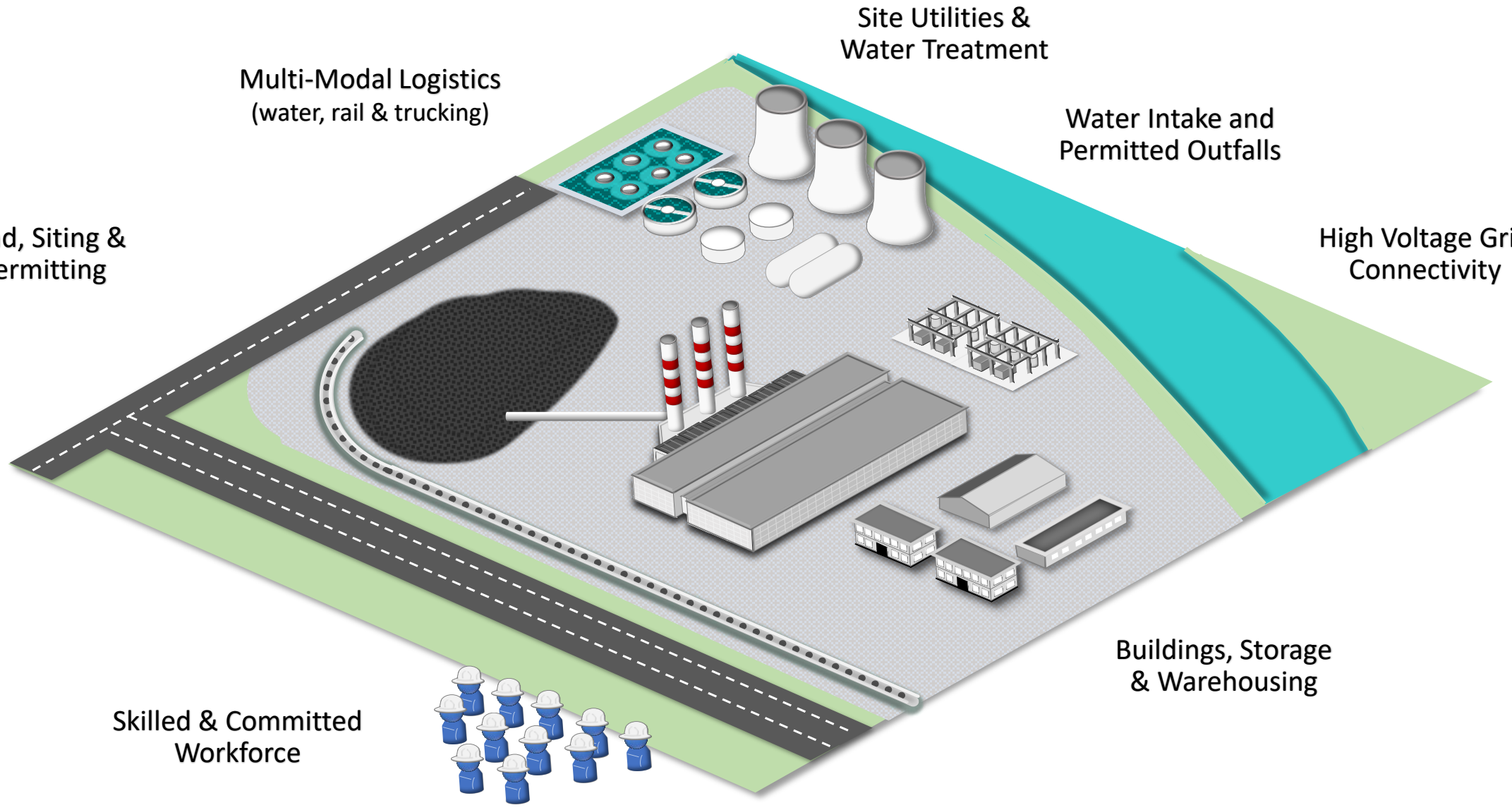
Plant Decommissioning & Site Redevelopment Process



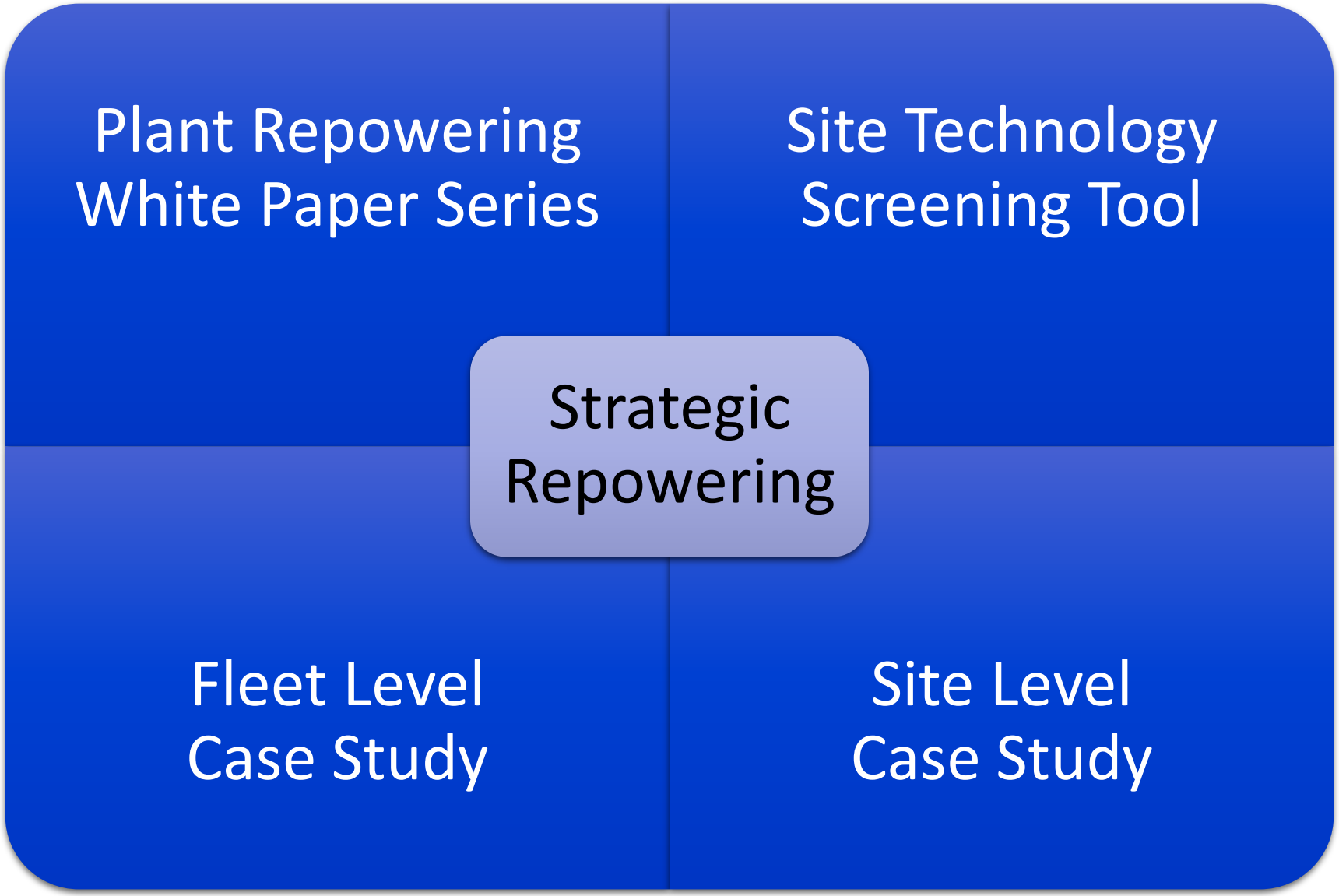
Closure Requires Collaboration

Coal-Fired Power Plant Site Assets



Retiring Sites Retain Significant Value

EPRI Approach To Driving Strategic Repowering



EPRI Repowering Technology Screening Tool

Does Provide High-Level Screening

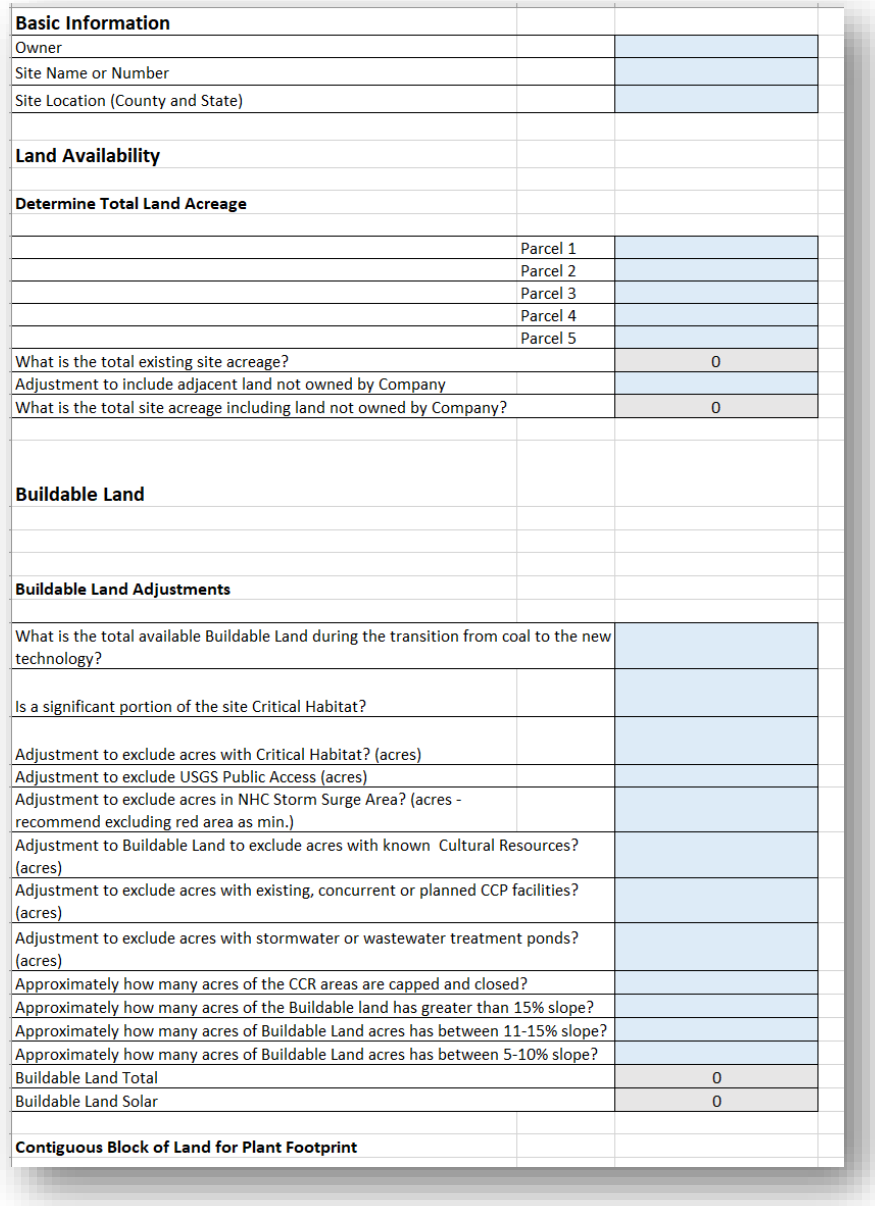
- Multiple generation technologies are often feasible at the same site
- Multiple sites are often feasible for a given generation technology
- Provides an unbiased evaluation for internal and external stakeholder conversations
- Equity and Justice aspects of repowering are not included

Does Not Provide A Final Answer

- Determine feasibility of generation technologies that may potentially be implemented at the site
- Top level of siting funnel to identify potential sites to support resource needs
- Establishes baseline for comparison to internal or external evaluations
- Can be customized for each company or site

EPRI Repowering Technology Screening Input Categories

- Land Availability
- Buildable Land
- Surrounding Parcels
- CCP Areas
- Unit Generation/Transmission
- Water Availability/Permits
- Air Quality/Permits
- Other Existing Infrastructure
- Operations
- Fuel/Energy Source
- Population and Land Use



Basic Information		
Owner		
Site Name or Number		
Site Location (County and State)		
Land Availability		
Determine Total Land Acreage		
	Parcel 1	
	Parcel 2	
	Parcel 3	
	Parcel 4	
	Parcel 5	
What is the total existing site acreage?		0
Adjustment to include adjacent land not owned by Company		
What is the total site acreage including land not owned by Company?		0
Buildable Land		
Buildable Land Adjustments		
What is the total available Buildable Land during the transition from coal to the new technology?		
Is a significant portion of the site Critical Habitat?		
Adjustment to exclude acres with Critical Habitat? (acres)		
Adjustment to exclude USGS Public Access (acres)		
Adjustment to exclude acres in NHC Storm Surge Area? (acres - recommend excluding red area as min.)		
Adjustment to Buildable Land to exclude acres with known Cultural Resources? (acres)		
Adjustment to exclude acres with existing, concurrent or planned CCP facilities? (acres)		
Adjustment to exclude acres with stormwater or wastewater treatment ponds? (acres)		
Approximately how many acres of the CCR areas are capped and closed?		
Approximately how many acres of the Buildable land has greater than 15% slope?		
Approximately how many acres of Buildable Land acres has between 11-15% slope?		
Approximately how many acres of Buildable Land acres has between 5-10% slope?		
Buildable Land Total		0
Buildable Land Solar		0
Contiguous Block of Land for Plant Footprint		

EPRI Screening Tool Methodology: Non-Nuclear Generation

- Weighted attribute-specific grading on scale of 1-10
- Weight and score are multiple to determine attribute score
- Sum of attributes/maximum possible score x 100
- Percentage and color coding to indicate good, fair, poor technical feasibility

Attribute	Available Land	Population and Land Use	Transmission	Water Availability /Permits	Air Quality/ Permits	Other Existing Infrastructure	Existing Labor Force	Fuel/ Energy Source	Total Evaluated Score	
Attribute Calculated Score	2	10	8	9	10	10	5	0		
Attribute Weight	7	6	5	8	3	4	3	0		
Attribute Weighted Score	14	60	40	72	30	40	15	0	Total Weighted Score	271
Attribute Maximum Possible Weighted Score	70	60	50	80	30	40	30	40	Maximum Possible Technology Score	400
Total Evaluated Score									Total Evaluated Score	67%

EPRI Screening Tool Methodology: Nuclear Generation

- Green, yellow, red based on criteria from the EPRI nuclear siting guide
- Advanced Nuclear Technology: Site Selection and Evaluation Criteria for New Nuclear Energy Generation Facilities (Siting Guide) – 2022 Revision

  3002023910

Site Attribute	Geology/Seismology	Population	Available Land	Composite
Scoring Methodology			Exclude	
	Peak Ground Acceleration	Density>500 in 20-mile radius Red	3 Flooding	
	<0.03g Green	Density>300 in 20-mile radius Yellow	9 Wetlands	
	0.03g - 0.05g Yellow	Pop. Center>25K (4-miles) Yellow	10 Land Use	
	>0.05g Red	Pop. Center>100K (10-miles) Yellow	8 Critical Habitat	
		Pop. Center>500K (20-miles) Yellow		
		Pop. Center>1M (30-miles) Yellow	Power Block	
		None of the Above Green	Green > 200 acres	
			Yellow >24 and <200 acres	
			Red <25 acres	
			Overall Site	
			Green > 500 acres	
			Yellow >49 and <500 acres	
			Red <49 acres	
			Construction	
			Green > 100 acres	
			Yellow >49 and <100 acres	
			Red <50 acres	
From Input tab			Composite	
			Green All Green	
			Yellow Not Green or Red	
			Red All Red	
Scoring	PGA Value 0.049	Density>500 in 20-mile radius No	Power Block (acres) 103	
		Density>300 in 20-mile radius No	Overall Site (acres) 120	
		Pop. Center>25K (4-miles) No		
		Pop. Center>100K (10-miles) No	Max Construction (acres) -91	
		Pop. Center>500K (20-miles) No	Min Construction (acres) 84	
	1 = Red 2 = Yellow 3 = Green	Pop. Center>1M (30-miles) No		
			Power Block 2	
			Overall Site 2	
			Construction 2	
	Geology/Seismology	Population	Available Land	
	2	3	1	2
Basis	Advanced Nuclear Technology: Site Selection and Evaluation Criteria for New Nuclear Energy Generation Facilities (Siting Guide) 2022, Section 3.1.1.1	Advanced Nuclear Technology: Site Selection and Evaluation Criteria for New Nuclear Energy Generation Facilities (Siting Guide) 2022, Section 3.1.2.1.	Advanced Nuclear Technology: Site Selection and Evaluation Criteria for New Nuclear Energy Generation Facilities (Siting Guide) 2022, Table 1, Sections 3.1.1.3, 3.1.1.4, 3.2.2.3, and 3.3.4.	

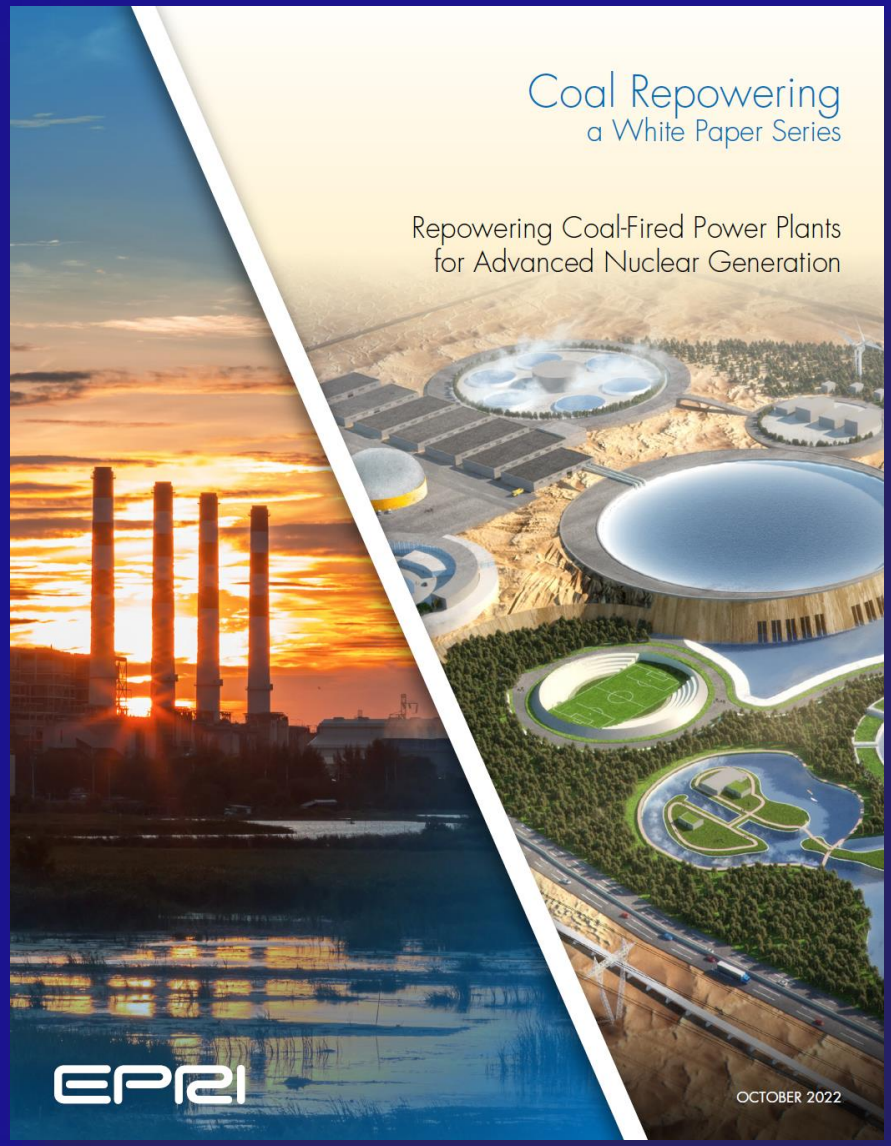
EPRI Screening Tool Methodology: Output

- Output gives a high-level overview of technological feasibility
- Lists most and least favorable attributes by technology
- Percentage and color coding are relative
- More detailed evaluation is required for every technology regardless of score/color

TECHNOLOGY	EVALUATION (GREEN-GOOD, YELLOW - FAIR, RED - POOR)	FAVORABLE ATTRIBUTES	UNFAVORABLE ATTRIBUTES
Solar Photovoltaic	53%	Available Land	Transmission Fuel/Energy Source
Natural Gas & Hydrogen Turbines	69%	Available Land Fuel/Energy Source	Transmission Air Quality/Permits
Advanced Nuclear		Geology/ Seismology Cooling Water Population Atmospheric Dispersion Groundwater Radionuclide Pathway	
Molten Salt Energy Storage	41%	Available Land	Transmission Other Infrastructure
Lithium Ion Battery Energy Storage	59%	Available Land	Transmission 0
Hydrogen Electrolysis	59%	Available Land Water Avail/Permits	Transmission Other Infrastructure
Geothermal	23%		Fuel/Energy Source

EPRI Series for Repowering Coal-Fired Power Plants

- Solar Photovoltaic: 3002022919
- Advanced Nuclear: 3002025482
- Bulk Energy Storage: 3002025590
- Battery Energy Storage Systems: 3002025591
- Natural Gas/Hydrogen: 3002025894
- Hydrogen Electrolysis: 3002025895
- Net Zero Industrial Clusters: 3002026481
- Equity & Justice Considerations for Plant Repowering: 3002026486
- Coal Plant Repowering Technology Screening Tool and User Guide 3002027841



Just Transition Resources for Plant Decommissioning & Redevelopment

- Just Transition: An Overview of the Landscape and Leading Practices 3002021708
- Equity and Environmental Justice Aspects Across the Energy System 3002027134
- Equity and Environmental Justice Considerations for Coal-Fired Plant Repowering 3002026486
- Environmental Justice Program Development: A Program Framework 3002025681
- Environmental Justice and Renewable Energy and Storage 3002024572
- Tracking and Summary of Permitting Cases Related to Environmental Justice 3002027771
- Critical Evaluation of Environmental Justice Screening Tools 3002024330
- Best Practices for Engaging with Environmental Justice Communities 3002028416
- Landscape Review of Community Engagement Leading Practices 3002026748
- Measuring Equity in the Energy Sector: An Overview of the Metrics Landscape 3002026909
- Economic Impacts of Energy Transition: An Economic Framework for Assessing Plant Closures and Community Impacts 3002024779

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