

Generation Transitions Supplemental Program (P248)

Overview and Program Activities



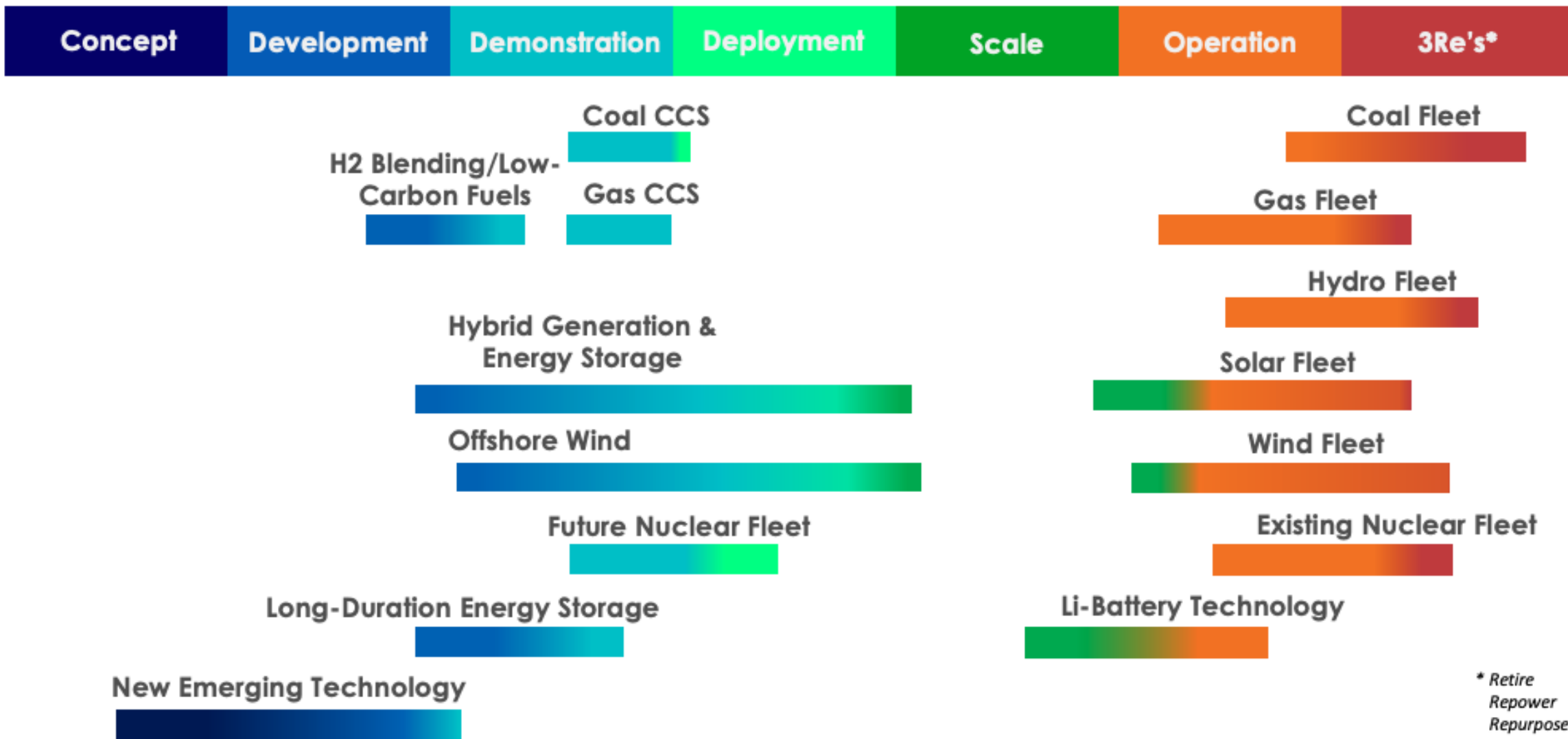
Ron Schoff, Director R&D, EPRI

Annual Seminar on Resource Planning for Electric Power Systems

Washington, DC

October 29, 2024

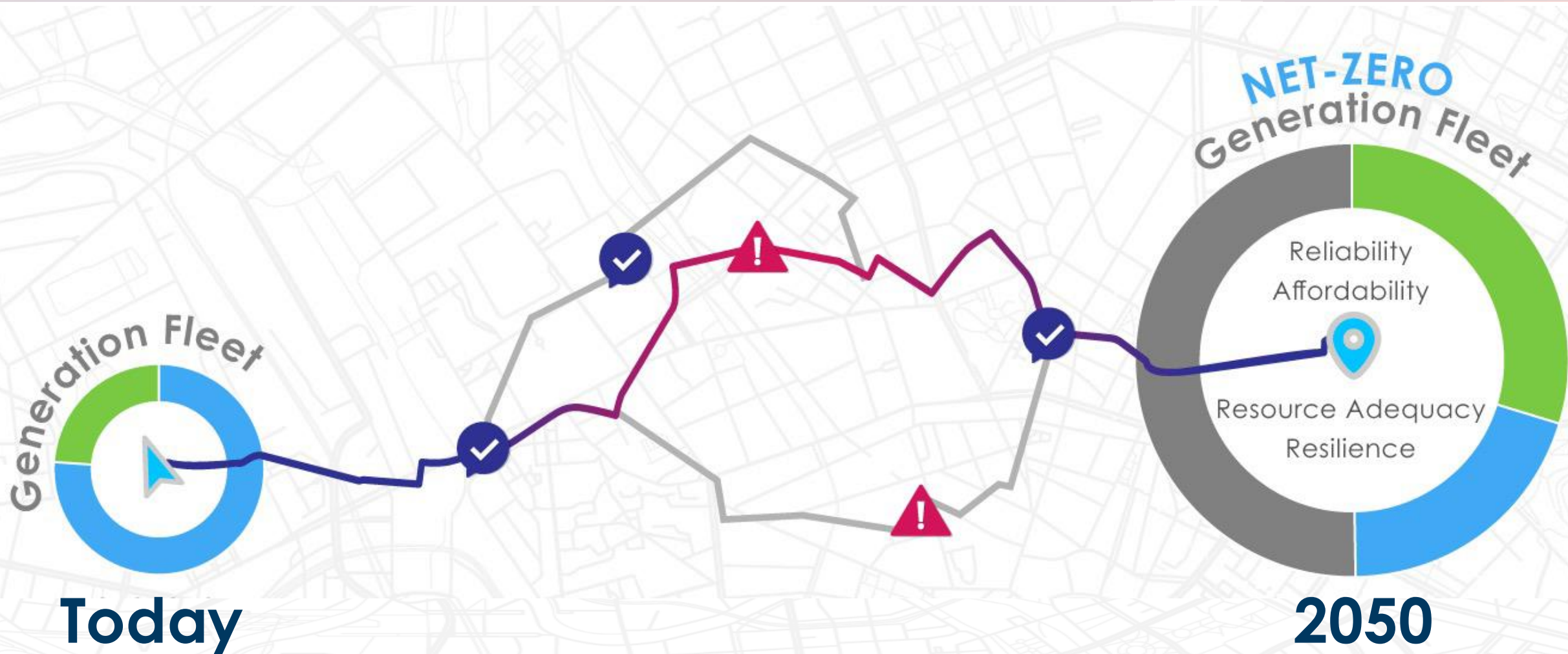
Technology Readiness Shrinking the white space



UNCERTAIN PATHWAYS

Optionality leads to risk reduction

P248 focused on reducing risk no matter the pathway



Generation Transitions Pillars

Execution Frameworks

Digging Deeper

Plan will Most Likely Change

- Asset Overviews
 - Brief technology summaries
 - Reference information for stakeholders
 - Inform/Prioritize Risk Registers
- Project Execution Planning Framework

Risk Mitigation

We don't even know what we don't know.

Proactively planning for change

- Risk Registers
 - Identify risks/consequences across multiple technologies
 - Develop mitigation strategies
- Stimulate/support/grow cross-sector R&D to shrink 'white space'



Stakeholder Engagement

Uncertainty is Increasingly Uncertain
Separating Fact from Fiction

- 'Practical Realities' briefs
- Concise 'reality view' on key technologies and issues
- Collaboration across EPRI
- Stakeholder input/engagement
 - Advisory meetings
 - Off-quarter webcasts
 - Collaboration Web Forum

Risk Mitigation - Risk Registers

- **Identify risks for existing & future generation technologies**
 - What could go wrong? What might change?
 - Can we build it in time? Can we permit it?
 - What happens if it doesn't work?
 - What if the cost doubles?
- **Qualify risks**
 - Likelihood of the event
 - Severity of the outcome
 - High, Medium, Low Ranking
- **Identify and develop mitigation alternatives**
 - Options to minimize and/or eliminate the risk
 - Development of approaches thru collaboration across EPRI



3002008523 Operational Risk Management

Risk Register Overview – Format, Definitions, and Meaning

#	Scenario	Short Description	Long Description	Primary Type (1 ONLY)	Secondary Types (Multiple)	Consequence(s)	Risk Level	Mitigation Options
W01	Wind	Developers/owners are competing for the same wind resources	Developing wind assets in geographic areas with the best wind resources has increased in competition increasing development costs. Additionally, wind farms with closer proximity impact the wind resource of neighboring wind energy facilities decreasing power production.	Technology	Cost Execution	Lost energy production	High	

Risk ID Number points to the # column.
Short Description Of Identified Risk points to the Short Description column.
Primary Risk Type points to the Primary Type (1 ONLY) column.
Consequence of the Risk Occurring points to the Consequence(s) column.
Options for Risk Mitigation (in progress) points to the Mitigation Options column.
Asset Type points to the Scenario column.
Detailed Description of Identified Risk points to the Long Description column.
Secondary Risk Type(s) points to the Secondary Types (Multiple) column.
Likelihood of Risk Occurring points to the Risk Level column.

Developed during February 2024 Generation Council Meeting:

- Advanced Nuclear
- Coal
- Gas + Carbon Capture & Storage
- Hydrogen Combustion
- Solar Photovoltaics + Storage
- Wind

Developed during September 2024 Advisory Meeting:

- Electrochemical Energy Storage (Batteries)
- Hydrogen Production
- Simple Cycle Natural Gas

Additional risk registers to be developed in-house

Generation Transitions Pillars

Execution Frameworks

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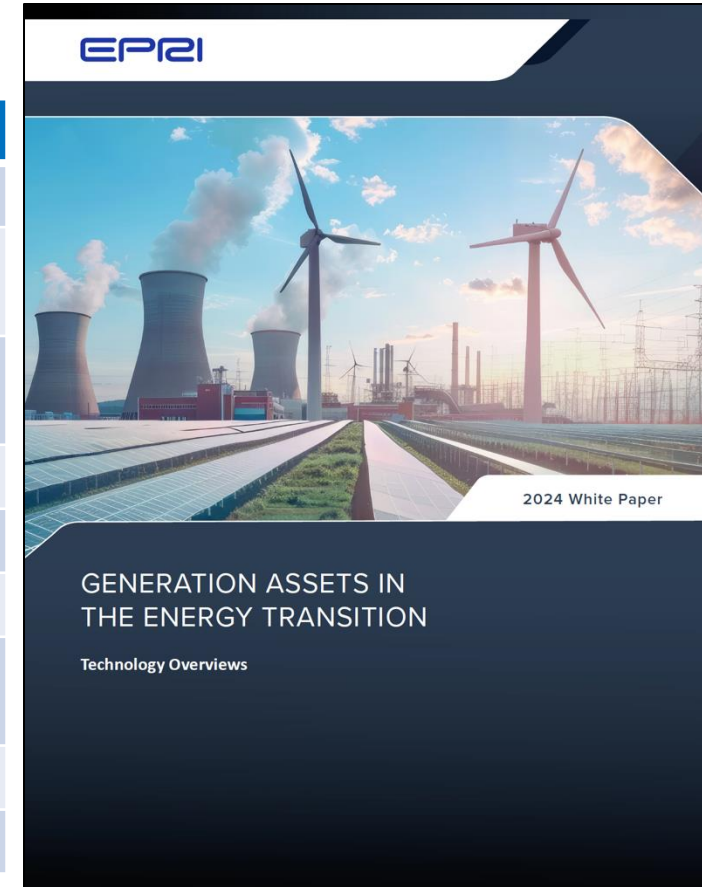
Plan will Most Likely Change



Asset Overviews

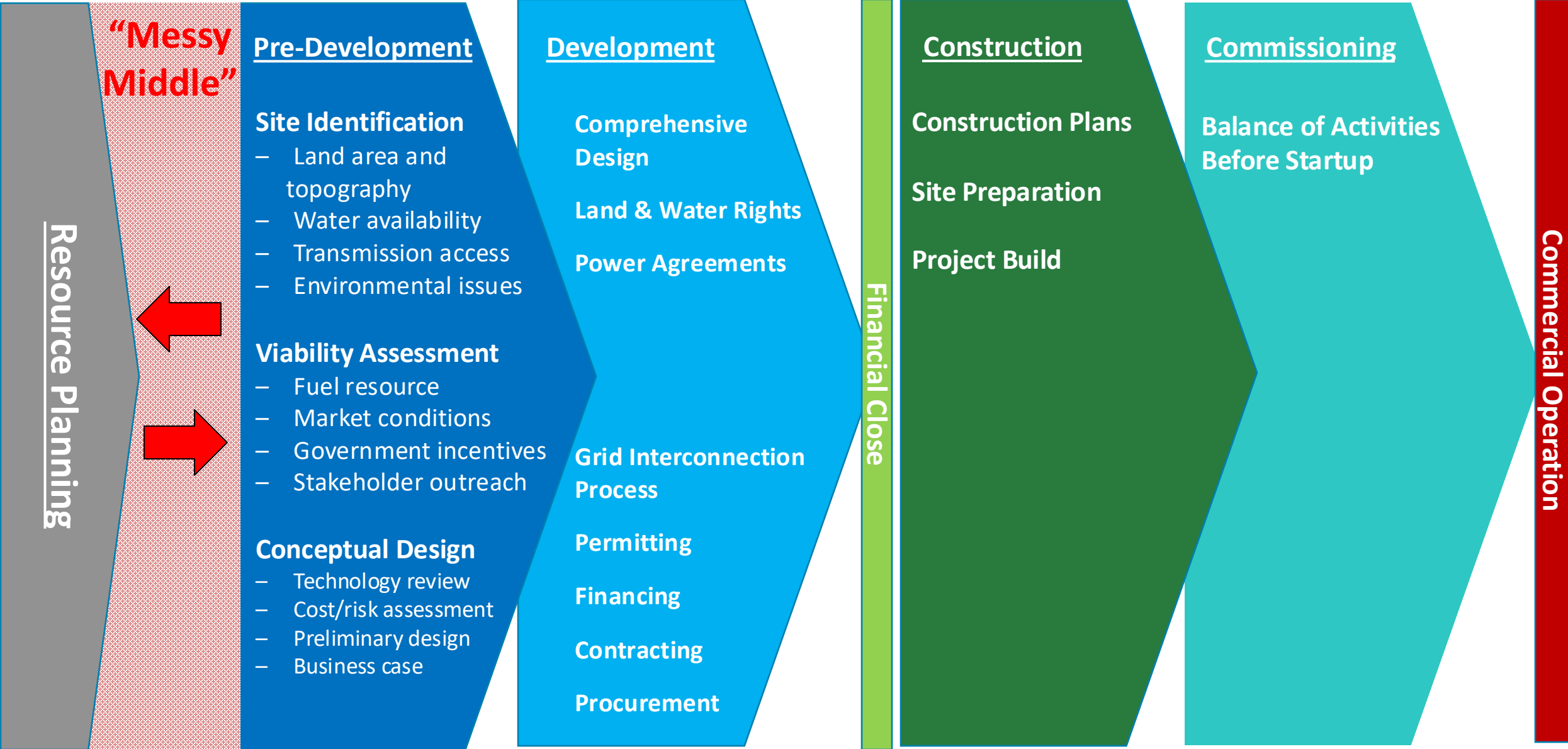
Objective assessments of select generation assets in the energy transition

Asset Overview Topics (17)	
Advanced Nuclear	Low-Carbon Ammonia Fuel
Bulk Energy Storage	Natural Gas Combined Cycle
Coal	Natural Gas Simple (Open) Cycle
Coal with CCS	Natural Gas with CCS
Conventional Hydropower	Offshore Wind
Conventional Nuclear	Onshore Wind
Electrochemical Energy Storage	Pumped Storage Hydropower
Geothermal	Solar PV
Hydrogen Fuel	



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Execution Planning Framework



◆ Project Decision

Site Evaluation, Selection

Technology Selection

Conceptual Design

Preliminary Design

Comprehensive Design

Construction Plans

Viability Assessment

Site Preparation

Full Construction

Contracting

Testing, Verification

Procurement

Financing

Permitting & Licensing

Land & Water Rights

Grid Interconnection

Plant Startup ★

Plant Ready for Commercial Operation ★

Critical Path



TOGETHER...SHAPING THE FUTURE OF ENERGY®

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