DIII-D New Wall Community Workshop Breakout Group Guidance

Roles and Responsibilities
Leader: Facilitate discussion and ensure everyone is heard.
Scribe: Take notes during breakout session, compile key points, and report out to full group.
Participants: Provide input on key questions and treat everyone respectfully.

Breakout Group Talks (5+2 mins each, 30 minutes total)

Capability Gaps (30 minutes)
Develop technical consensus regarding the capability gaps. Clearly describe the research gap(s) or shortcoming(s) within your topical area that the DIII-D Wall Change Out should address. This can include gaps in physics understanding, operational performance, and technological capability.

- *In the context of the DIII-D Wall Change Out Project, what should be the highest priority research goals and activities within the DIII-D program?*
- *What are the key physical parameters of interest and their relevance to the present project? If possible, provide a table that compares the current state to the desired state.*
- *What is the impact of not resolving the physics gaps implied by the research goals above?*
    - *How detrimental would lack of resolution be in terms of overall DOE-FES strategy?*
- *What are the targeted outcomes and quantitative metric that would confirm the activity was successful?*

Alignment (30 minutes)
Evaluate the level of alignment between the DIII-D/DOE-FES missions and the research gap closures that could be achieved by different wall/divertor material change-out options.

- *How well do different material options align with the overall DIII-D research mission? (DIII-D Mission: "Identify and develop solutions to key remaining fusion science and technology challenges.")*
- *How well do different material options enable the DIII-D program to address science and technology gaps in the FES Long Range Plan and other recent community reports?*
    - *How can the wall change out best align with the overall DOE-FES strategy ("The Bold Decadal Vision") of building bridges between the public program and FPP developers?*
- *What is the priority of addressing these research gaps relative to other facility activities within DIII-D? Within the fusion ecosystem more broadly?*

- *Discuss the ability of the DIII-D wall material change-outs to research gaps in the context of the capabilities of other domestic and international facilities.*

Approaches and Resources (30 minutes)

Identify and describe the various alternatives/approaches to resolving capability gaps and the risk/reward spectrum. Include a "Do Nothing" alternative that would retain the existing C wall. Feel free to make assumptions regarding cost and scope using information available to you.

- *How do the material options compare in terms of functional, technical, operational, staffing, and financial constraints on the DIII-D facility?*
  - *Organize by first wall and divertor material options (tungsten, SiC, liquid metal, etc.)*
  - *Include a "Do Nothing" alternative that would retain the existing graphite wall.*
- *For each option, identify any notable limitations incurred on facility capabilities.*
- *What are the key technical risks incurred by each alternative?*
- *Consider trade-offs: How do additional costs and technical risks lead to the closure of research gaps, higher performance parameters, and/or access to additional parameter space?*