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Analysis of Pathways to Reach Net-Zero Naval Operations by 2050

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Analysis of Pathways to Net Zero Naval Operations by 2050

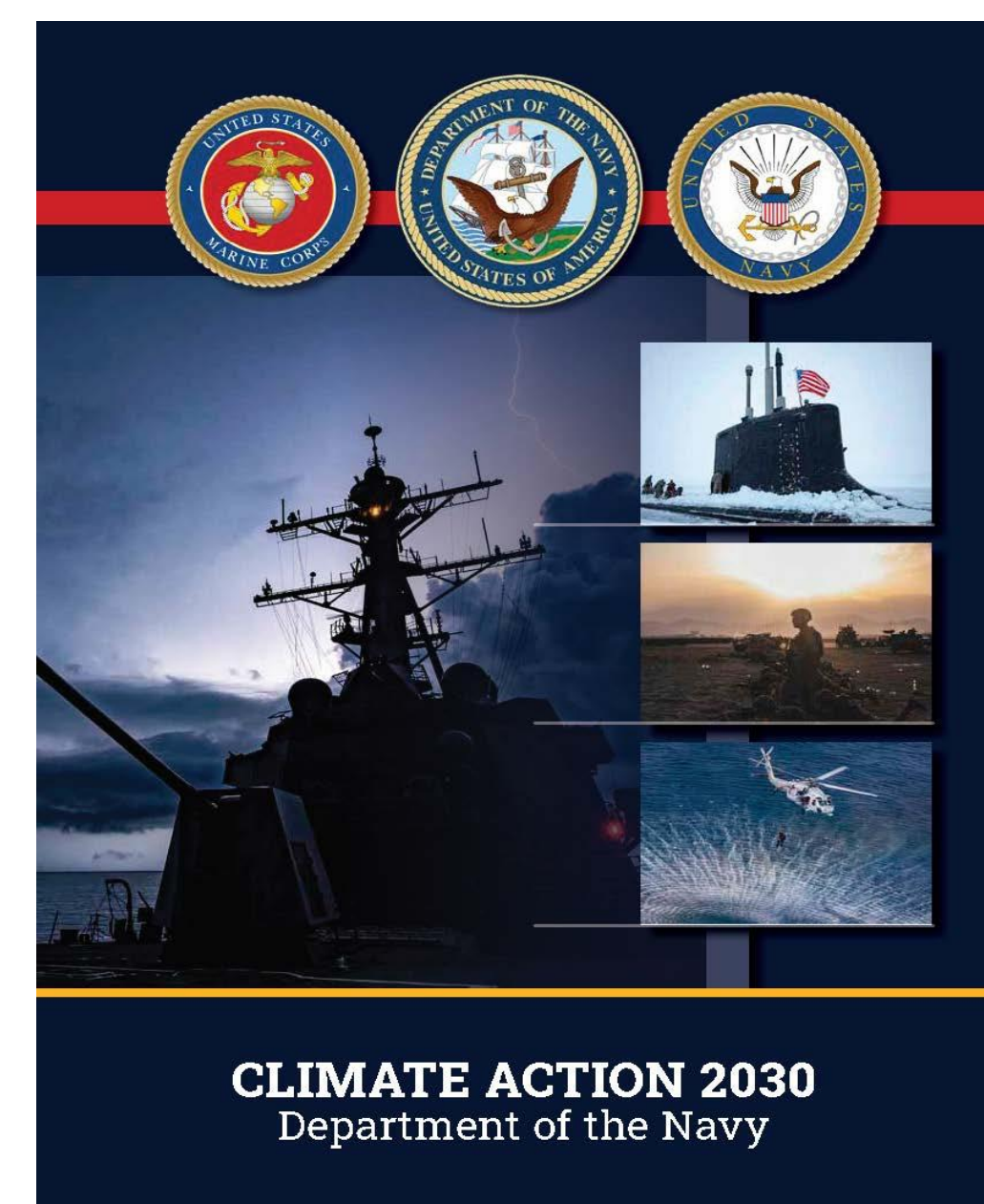


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Moving Toward Net Zero

Executive orders and the 2022 Navy Climate Strategy call for reduced operational emissions and net zero emissions by 2050.

In this report, researchers present current and proposed low-carbon energy sources as possible pathways for shifting DON to net zero by 2050 with models showing four pathway options.



Decarbonization Strategies

Research included the current state of energy demand, sources of energy, and technology for reducing emissions especially within the context of the following strategies:

- Alternative fuels
- Hydrogen
- Unmanned Systems
- Batteries and Electrification
- Improved Efficiencies
- Renewable Energy
- Carbon Sequestration, capture and offsets

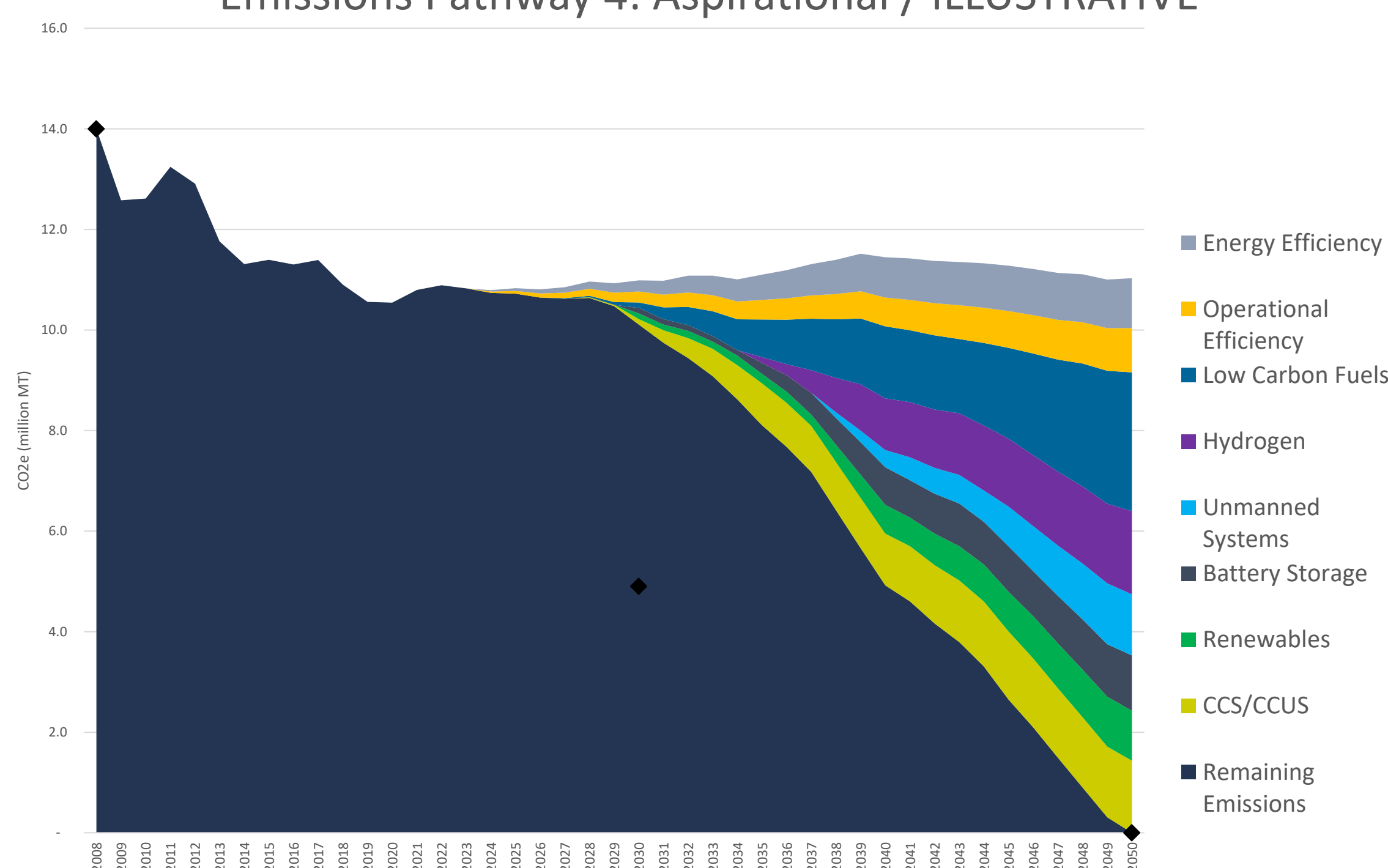
Research indicates that alternative fuels, batteries and electrification, and new technology including hydrogen & unmanned systems are the most promising strategies for the Department to consider moving forward.

Pathways to Net Zero Emissions

The pathways present the diversified portfolio of strategies based on the following 4 scenarios.

- Pathway 1: Baseline
 - *a continuation of current trends*
- Pathway 2: Advancing
 - *pushing of technology and operations*
- Pathway 3: Aggressive
 - *aggressive approaches to certain strategies*
- Pathway 4: Aspirational
 - *breakthroughs to reach net zero emissions*

Emissions Pathway 4: Aspirational / ILLUSTRATIVE



Priorities for Future Research

Research indicates the following priorities for future research :

- Creation of fuel/energy in-theatre;
- Demand reduction including operational efficiencies, technology changes and culture and behavior shifts;
- Plane and ship decarbonization including developing roadmaps to operationalize decarbonization technology; and
- Unmanned systems studies to show the impact of transitioning certain platforms and missions to unmanned and what level of emission reductions can be achieved.

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