TransitION: Offshore Wind Integration Simulator

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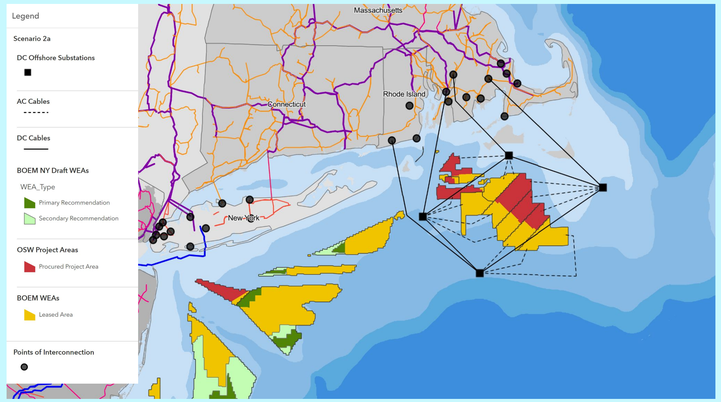
Background

- Offshore wind energy has the potential to be one of the biggest clean energy sources for the U.S. in the future
- In the United States, there are currently no large-scale offshore wind farms operating
- Planning and constructing offshore wind farms is a long process that requires clear communication across technical fields
- Connecting such large amounts of power to the onshore grid could potentially cause large and harmful overloads



An example integration scenario that the user would examine. Displayed are wind energy areas, points of interconnection, AC and DC cables, and offshore DC substations.

Our Design

- We created an interactive, visual tool to show how different types of connections and different amount of wind power generation can affect the power grid
- The various scenarios are pre-generated
- A text-based guide teaches the user about the differences between scenarios and what they mean for the grid
- The user can click on objects to learn more about them and their characteristics

The Problem

- Engineers, policy makers, environmentalists, and others must all be able to communicate about offshore wind
- We wanted to create a tool that would help explain the technical issues and possible solutions
- Our goal was to provide a common basis of knowledge to promote clear communication about the current and future state of offshore wind energy

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Going Forward

- Research and development of this tool and offshore wind integration will continue for years to come. As a result, there's lots of future work, including:
  - Transitioning to using more advanced simulation software
  - Switching to a more accurate model of power grid once it has been completed
  - Allowing the user to choose what connections are made and run the simulation live