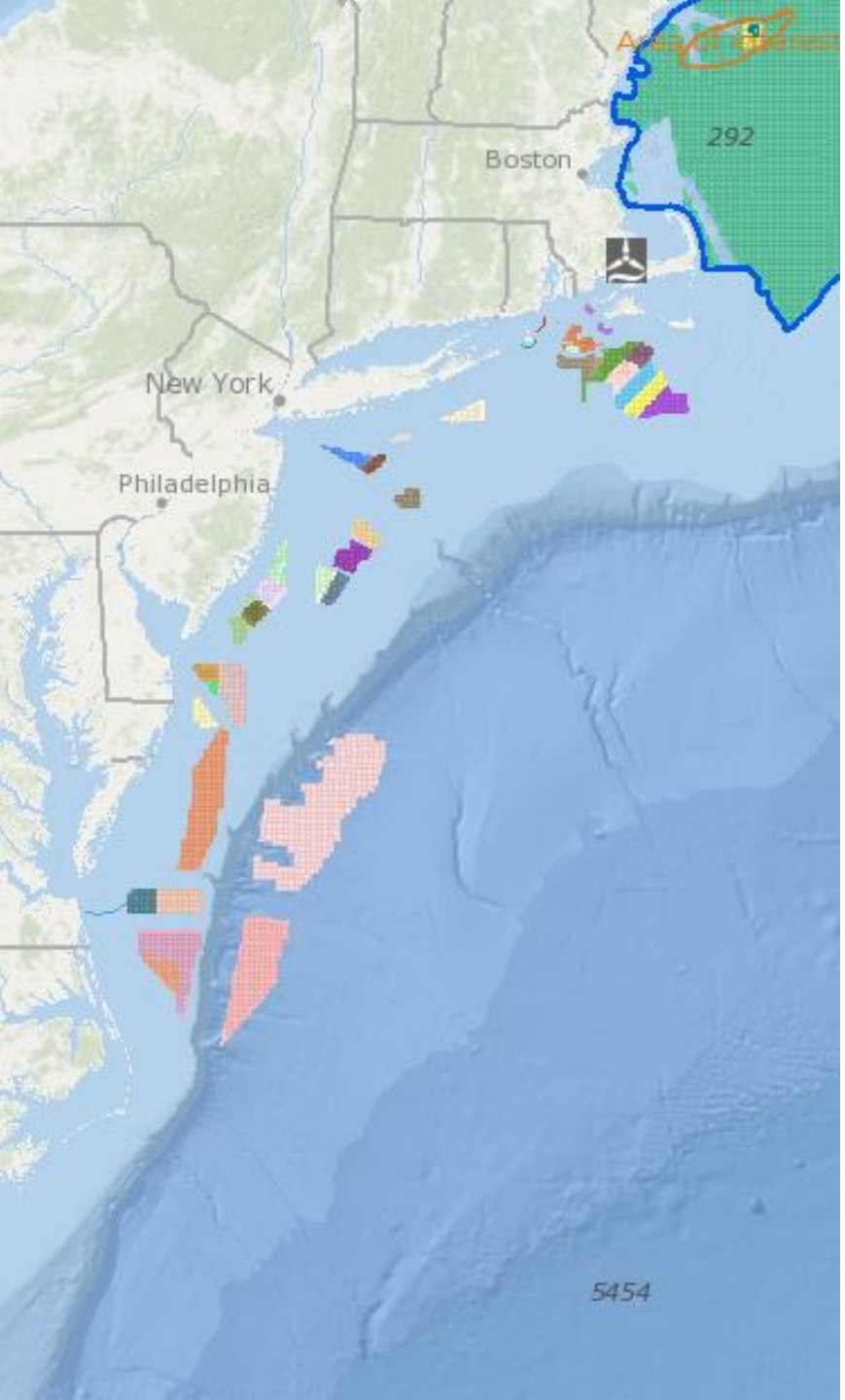

Learning from the Experts Webinar Series

Outer Continental Shelf Air Permitting

for Offshore Wind Projects

Stacey Snow
Offshore Wind Project Manager
Jacobs

Melanie Holtz
Senior Technologist
Jacobs

October 26, 2022

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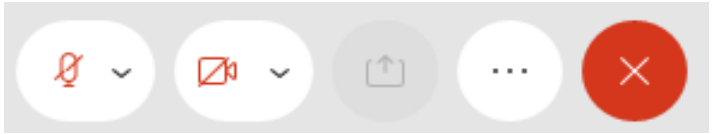

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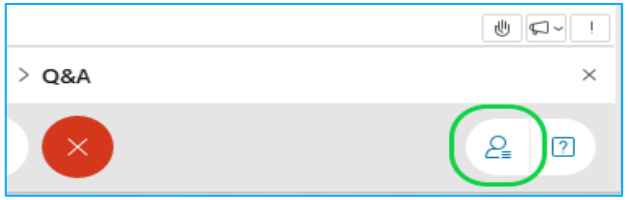

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Learning from the Experts

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Outer Continental Shelf (OCS) Air Permitting for Offshore Wind Projects

NYSERDA Webinar
October 26, 2022

Jacobs
Challenging today.
Reinventing tomorrow.

Our Presenters

Stacey Snow, PE, ENV SP

Offshore Wind Project Manager

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Stacey Snow is a professional engineer with more than 35 years of environmental, safety and health consulting, engineering and management experience. She specializes in managing and delivering clean energy projects and has a depth of expertise in offshore wind permitting and planning projects. Stacey was instrumental in developing a SAP, COP, and survey plans for an offshore wind energy project off the coast of Maryland and managing the successful submittal and approval by applicable regulatory agencies. She also has an Envision Sustainability Professional credential from the Institute for Sustainable Infrastructure.

Our Presenters

Melanie Holtz

Senior Technologist

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Melanie Holtz is a chemical engineer and senior air practitioner with more than 30 years of experience in the regulatory compliance field including air quality, EPCRA, storm water and wastewater, waste oil and hazardous waste compliance assessments/audits, permitting and general regulatory compliance for industrial and manufacturing clients, power plants, waste-to-energy facilities and municipal solid waste landfills. Melanie recently finalized the OCS major source air permitting for the proposed installation and operation and maintenance of one of the first commercial scale offshore wind energy projects in the US. The OCS air permit application consists of both a Non-Attainment New Source Review (NNSR) and Prevention of Significant Deterioration (PSD) air permit, including air dispersion modeling.

Topics

- Why Are Air Permits Required For Offshore Wind (OSW) Projects?
  - OSW Air Emission Sources
  - Applicable Regulations
- What Is The OCS Air Permitting Process?
  - OCS Definitions
  - Air Permitting Process
  - Typical OSW Air Permit Conditions
- What Is the Future of OCS Air Permitting?
  - Opportunities for Emissions Reductions
  - EPA Emerging Issues
- Resources

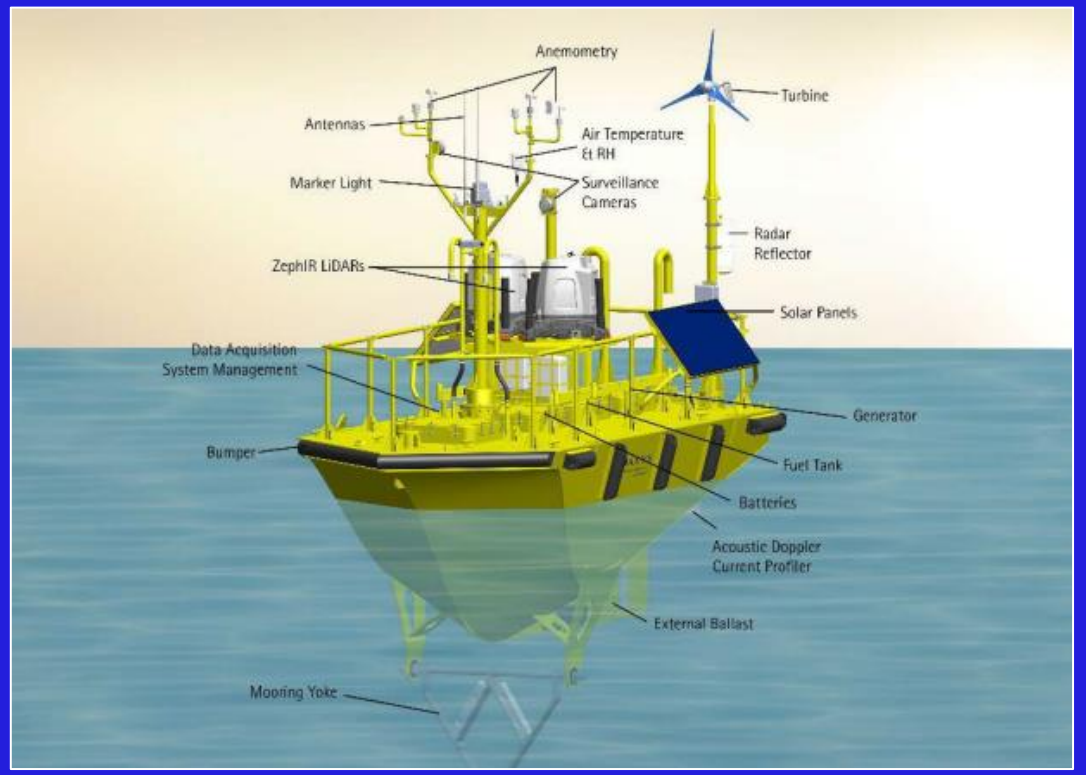
Why Are Air Permits Required For OSW Projects?

- Examples of OSW Air Emission Sources
  - Vessels
    - Installation Vessels
      - *Ex. Jack-up Vessels, Scour Protection Installation Vessels, Support Vessels, Cable Installation Vessels*
    - Operation and Maintenance Vessels
      - *Ex. Crew Transfer Vessels (CTV), Service Operation Vessels (SOV)*
    - Includes domestic and foreign flagged vessels
  - Engine Generators
    - Meteorological Equipment Buoys (Metbuoys)
    - Wind Turbine Generators (WTG)
    - Offshore Substations (OSS)

Note: Not all OSW air emissions sources are OCS emissions sources.

Air Emission Sources

Source: Getty Images



Source: Permit Documents for Deepwater Wind New England, LLC's Meteorological Buoy | US EPA

Why Are Air Permits Required For OSW Projects?

- Applicable Regulations
  - Section 328(a) of the Clean Air Act
    - Requires EPA to establish air pollution control requirements that are the same as onshore requirements for equipment, activities or facilities located on the OCS that meet the definition of an OCS source and are located within 25 nautical miles of a state's seaward boundaries.
  - 40 CFR Part 55 – Outer Continental Shelf Air Regulations
    - Promulgated by EPA on September 4, 1992
    - Requirements to control air pollution from OCS sources

Why Are Air Permits Required For OSW Projects?

- Applicable Regulations
  - Energy Policy Act of 2005
    - Amended section 8 of the Outer Continental Shelf Lands Act (OCSLA) to allow the EPA and the Department of the Interior to authorize activities on the OCS that "produce or support production, transportation, or transmission of energy from sources other than oil and gas."
  - Section 4(a)(1) of OCSLA
    - Recently amended to expand the scope of "exploring, developing or producing resources" to include "non-mineral energy resources" such as offshore wind.

What Is The OCS Air Permitting Process?

- OCS Definitions (40 CFR 55)
  - OCS source includes any equipment, activity, or facility which:
    - Emits or has the potential to emit any air pollutant
    - Is regulated or authorized under the OCSLA
    - Is located on the OCS or in or on waters above the OCS
  - This definition shall include vessels only when they are:
    - Permanently or temporarily attached to the seabed and erected thereon and used for the purpose of exploring, developing or producing resources therefrom, or
    - Physically attached to an OCS facility, in which case only the stationary sources aspects of the vessels will be regulated.
    - OCS sources shall be considered direct emissions from such a source while at the source, and while enroute to or from the source when within 25 nautical miles of the source and shall be included in the "potential to emit" for an OCS source

OCS Sources

Permanently attached to the seabed

Temporarily attached to the seabed

Within 25 nautical miles of the source

Source: Getty Images

Physically attached to an OCS facility

Courtesy of Atlantic Wind Transfers

What Is The OCS Air Permitting Process?

Source: Getty Images

- Jack-up Vessel or Barge
  - OCS Source when attached to the seafloor
    - All emission units (including construction equipment) are subject to the OCS permit
  - No longer an OCS Source when fewer than three legs are attached to the seafloor
    - Subject to potential emissions calculations when within 25 nautical miles of the source including OCS permit recordkeeping and offset requirements

Source: Fact Sheet for South Fork Windfarm OCS Air Permit – June 24, 2021

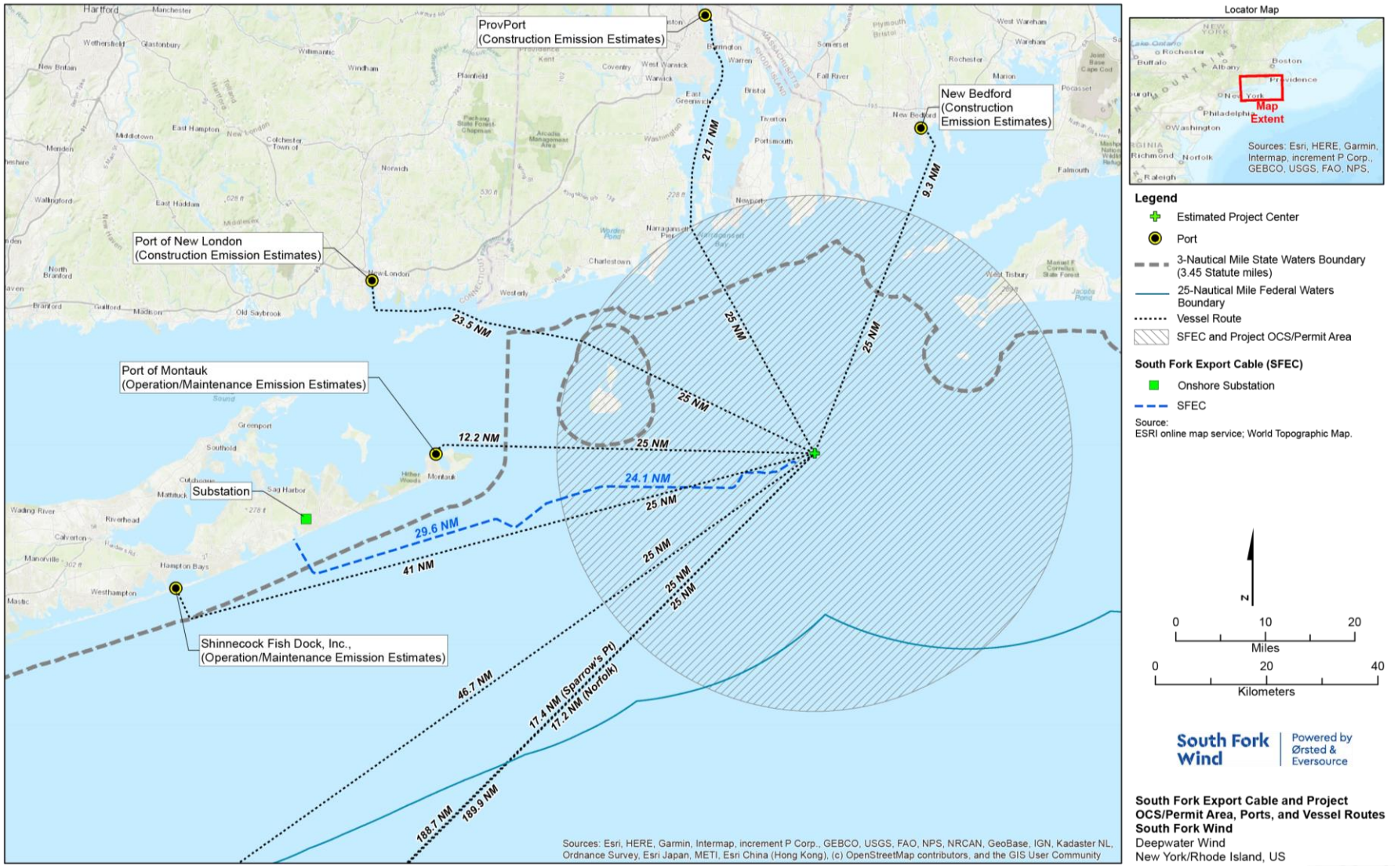
What Is The OCS Air Permitting Process?

Source: Getty Images

- Cable Laying Vessels (CLV)
  - Pull-ahead Anchor CLV
    - Not an OCS source as not "erected" and not used "for the purpose of exploring, developing, or producing resources"
    - Included in potential emissions calculations when within 25 nautical miles of the work area
  - Dynamic Positioning System (DPS) CLV
    - Not an OCS Source as not permanently or temporarily attached to the seabed

Source: Fact Sheet for South Fork Windfarm OCS Air Permit – June 24, 2021

What Is The OCS Air Permitting Process?



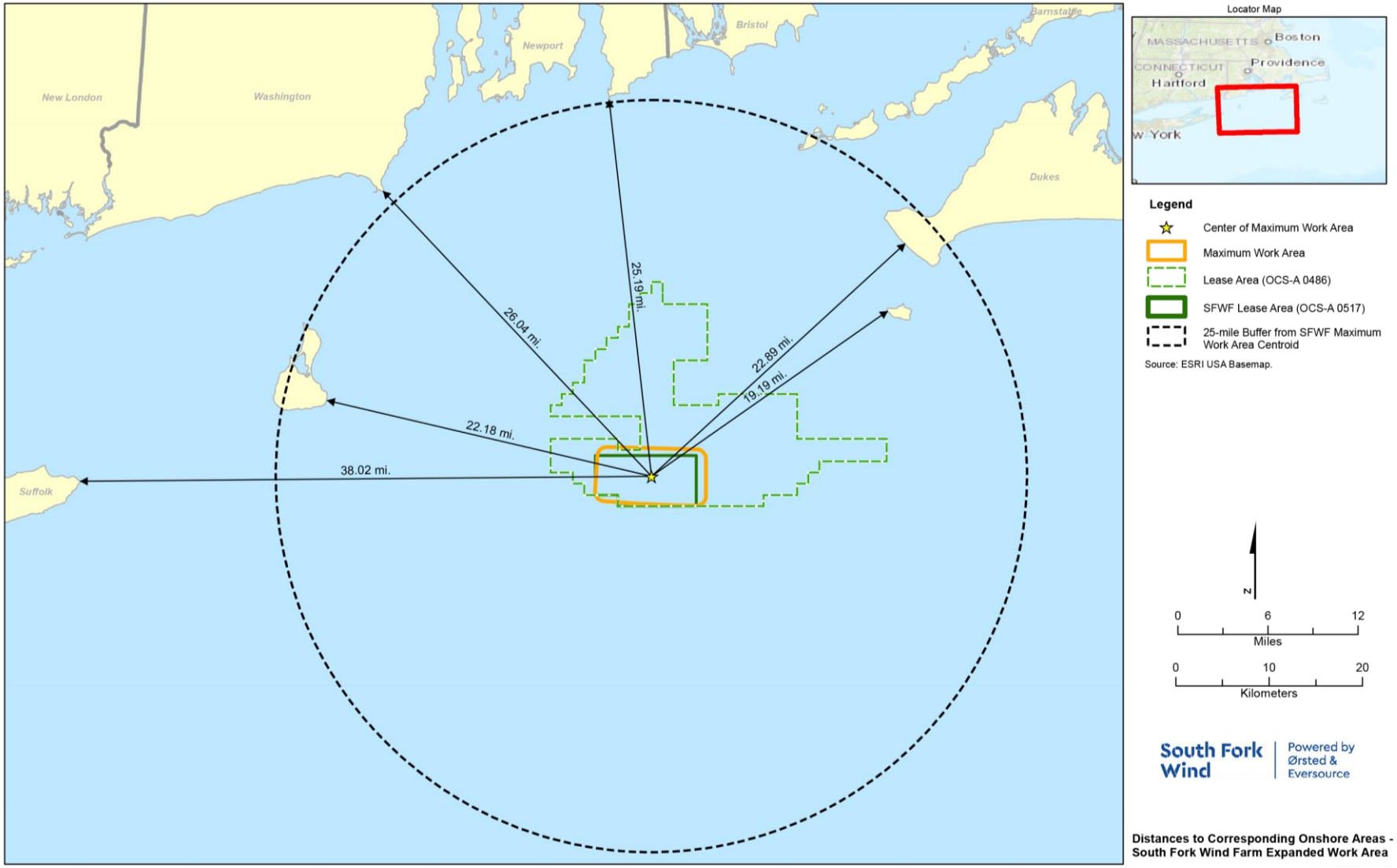
Source:
South Fork Wind Outer Continental Shelf Source Air Permit Application Supplement 2 - December 2020

What Is The OCS Air Permitting Process?

- OCS Definitions (40 CFR 55)
  - Nearest Onshore Area (NOA) the onshore area that is geographically closest to the OCS source
  - Corresponding Onshore Area (COA) : for OCS sources within 25 miles of a State's seaward boundary, the onshore area that is geographically closest to the source or another onshore area that EPA designates as the COA

- Other Definitions (Fact Sheet South Fork Windfarm OCS Air Permit – June 24, 2021)
  - Work Area (WA): The offshore WTGs and their foundations, OSSs and their foundations, inter-array cables and vessels when they meet the definition of an OCS source
  - Miles: Nautical miles

What Is The OCS Air Permitting Process?



Source:
South Fork Wind Outer Continental Shelf Source Air Permit Application - September 2020
Note: Dimensions are in statute miles per EPA guidance when submitted

What Is The OCS Air Permitting Process?

- OCS Air Permitting Process
  - Process
    - Identify COA
    - Estimate Emissions
      - Construction
      - Operations
      - Decommissioning (typically deferred)
    - Applications made under OCS permitting rules (40 CFR Part 55)
      - "Umbrella" permit that includes
        - New Source Performance Standards (NSPS)
        - National Emissions Standards for Hazardous Air Pollutants (NESHAPS)
        - New Source Review (NSR)/Prevention of Significant Deterioration (PSD)
        - Nonattainment NSR
        - Title V
        - State and Local Requirements Applicable in the COA (except outer OCS projects)

What Is The OCS Air Permitting Process?

- OCS Air Permitting Process
  - Delegation of Authority to the State
    - OCS regulations are generally implemented and enforced by the EPA Regional Office
    - May be delegated to an adjacent state or local air permitting agency
      - Virginia
      - Maryland
      - Delaware
      - Four Permitting Authorities in California
        - Santa Barbara
        - San Luis Obispo
        - South Coast
        - Ventura County

What Is The OCS Air Permitting Process?

- OCS Air Permitting Process
  - Timeline

    - Notice of Intent – not more than 18 months prior to submitting an application for a preconstruction permit
      - Provide copy to the NOA and onshore areas adjacent to the NOA
      - 90 days for air pollution control agencies to request designation as the COA
      - COA designated within 240 days of receipt of the NOI
      - EPA conducts consistency review of regulations in the onshore area

    - Permit Application
      - Draft Permit Public Comment Period – at least 30 days
      - Public Hearing – If significant degree of public interest
      - Typical timeframe – 12 - 24 months to obtain permit after permit application

What Is The OCS Air Permitting Process?

- Typical OSW Air Permit Conditions
  - All Engines and Emission Units
    - Opacity limits for engine emissions
  - Diesel-fired Engines on WTG and OSS
    - Ultra-low sulfur diesel (ULSD) fuel
    - Tier 4 emission standards for new compression-ignition engines
    - Operating hours restriction (200 hours per year considered to be Best Available Control Technology (BACT)
    - Operate and maintain per manufacturer's recommendations

What Is The OCS Air Permitting Process?

- Typical OSW Air Permit Conditions
  - Recordkeeping
    - Date and times that vessel is an OCS source (construction and operations)
    - Hours of operation, engine speed, emission factor, and fuel usage daily for each vessel engine when operating with 25 miles of the OCS source (operations)
    - NOx emissions daily for WTG and OSS engines, vessel engines when operating within 25 miles of OCS source (operations)
    - Make, model, maximum rated power output, cylinder size, manufacturing date of each engine
    - Domestic or foreign flagged for each vessel
    - Manufacturer's engine certifications
    - Fuel supplier certifications

What Is The OCS Air Permitting Process?

- Typical OSW Air Permit Conditions
  - Vessels while Operating as OCS Sources
    - Tier 4 emission standards unless vessel is unavailable or total emissions would be higher
      - Specific permit conditions dependent on vessel flag, usage, size, model year
    - Main WTG installation vessel
      - Visible emission test using EPA test method 22 once per operating day
    - ULSD, marine distillate or marine residual fuels
    - Good combustion practices
    - Operating and working practice standards

What Is The OCS Air Permitting Process?

- Typical OSW Air Permit Conditions
  - Offsets
    - Nitrogen Oxides (NOx) Continuous Emission Reduction Credits (CERCs)
    - Operational Emissions Only
      - Recent EPA policy interpretation that permitting-related emissions offsets are not required for OCS construction emissions

What Is The Future of OCS Air Permitting?

- Opportunities for Emissions Reductions
  - Tier 4 Compliant CTVs
    - Atlantic Wind Transfers
  - Plug-in Hybrid Service Operations Vessel
    - Empire Wind
  - Hydrogen – Diesel Fueled CTV
    - Hydrocat | CMB TECH
  - Hydrogen Fueled Engine Generators
    - Hydrogen Production Technology - RWE
  - Methanol Fueled Installation Vessel
    - Van Oord Installation Vessel

What Is The Future of OCS Air Permitting?

- EPA is currently evaluating emerging OCS permitting issues including:
  - Do the air quality modeling analyses requirements apply to OCS sources' construction emissions during extended construction periods (e.g., > 2 years)?
  - Do the same OCS permitting requirements apply during the construction and operations phases of an OCS project?
  - Should separate wind farms be aggregated if they meet the NSR and Title V source determination requirements (I.e., common control, same Standard Industrial Classification (SIC) code and adjacent)?

What Is The Future of OCS Air Permitting?

- Permits of these type are still relatively new, anticipate discussions with EPA regarding:
  - Defining OCS sources
  - Permit requirements
  - Modeling

- Identifying various construction and operations scenarios requires significant analysis.
  - Procurement of installation, maintenance, and support vessels are highly variable.
  - Establishing recordkeeping and reporting systems will be challenging
  - Plan ahead to minimize impact of air permit requirements

Resources

- South Fork Wind LLC's - South Fork Windfarm Outer Continental Shelf Air Permit | US EPA
- Permit Documents for Vineyard Wind 1, LLC's Wind Energy Development Project (800MW offshore windfarm) | US EPA
- Permit Documents for Deepwater Wind New England, LLC's Meteorological Buoy | US EPA
- BOEM Wind Power User's Guide
- Outer Continental Shelf Air Permits | US EPA
- 40 CFR Part 55

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November 9, 11:00 a.m. ET

Movement Models and Offshore Wind

Henrik Skov, Danish Hydraulic Institute (DHI)

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