BLUEGREEN ALLIANCE

Doing It Right

Coastal Virginia Offshore Wind

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www.bluegreenallaiance.org

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The BlueGreen Alliance **united labor unions and environmental organizations** to solve today's environmental challenges in ways that create and maintain quality jobs and build a clean, thriving, and equitable economy.

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UNITED STEELWORKERS
USW
UNITY AND STRENGTH FOR WORKERS

SIERRA CLUB
FOUNDED 1892

SEIU
Stronger Together

Union of Concerned Scientists

aft

PAINTERS AND ALLIED TRADES INTERNATIONAL UNION
ONE UNION

NRDC

International Union of Bricklayers and Allied Craftworkers

EDF ACTION
Political action partner of Environmental Defense Fund

NATIONAL WILDLIFE FEDERATION

LCV
Our Earth Is Worth Fighting For

National Offshore Wind Target
30 gigawatts by 2030

77,000 workers employed in <u>offshore wind</u> by 2030

$12 billion per year in capital investment

Power 10 million American homes

Up to $500 million in port upgrades

Coastal Virginia Offshore Wind (CVOW)

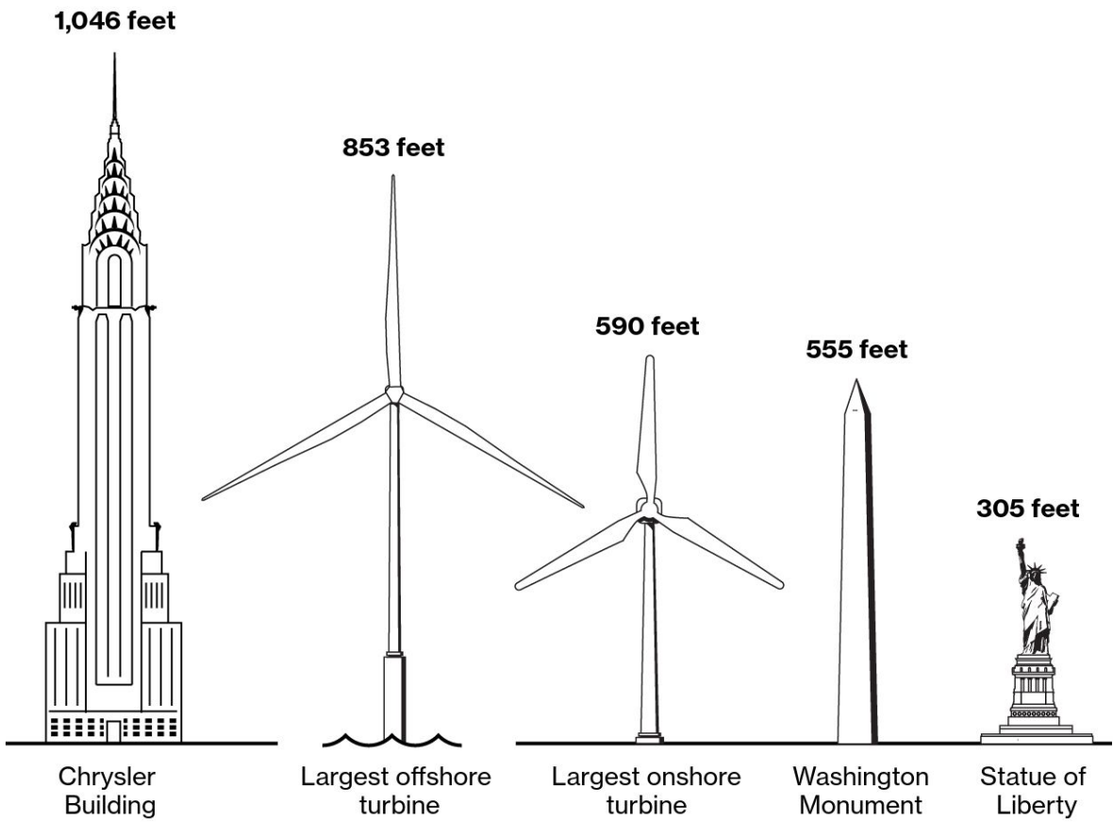
CVOW 12 MW Demo

First turbines in federal waters

Avoid 25,000 tons of CO2 annually

Monumental Turbines

The biggest offshore wind turbines are as tall as skyscrapers



Note: These are the largest planned turbines in development.

Sources: U.S. Department of Energy, Vestas, GE, Bloomberg research

Bloomberg

CVOW Project:

- 2,640 MW in planned capacity
- 176 turbines - 14.7 MW each, largest commercially available
- Largest project in the U.S.
- Among the largest in the world

Local Benefits:

- The Portsmouth Marine Terminal will receive $20 million to construct staging and storage areas for wind turbine components—supporting union jobs for dockworkers, crane operators, and building trades members.

- Siemens Gamesa Renewable Energy will build the first offshore wind turbine blade facility in the United States on an 80-acre section of the Portsmouth Marine Terminal. The new facility and its operations and maintenance will create 310 new jobs, including about 50 service jobs for the Coastal Virginia Offshore Wind Project.

- Atlantic Wind Transfers will provide crew transport services for CVOW from Newport News.

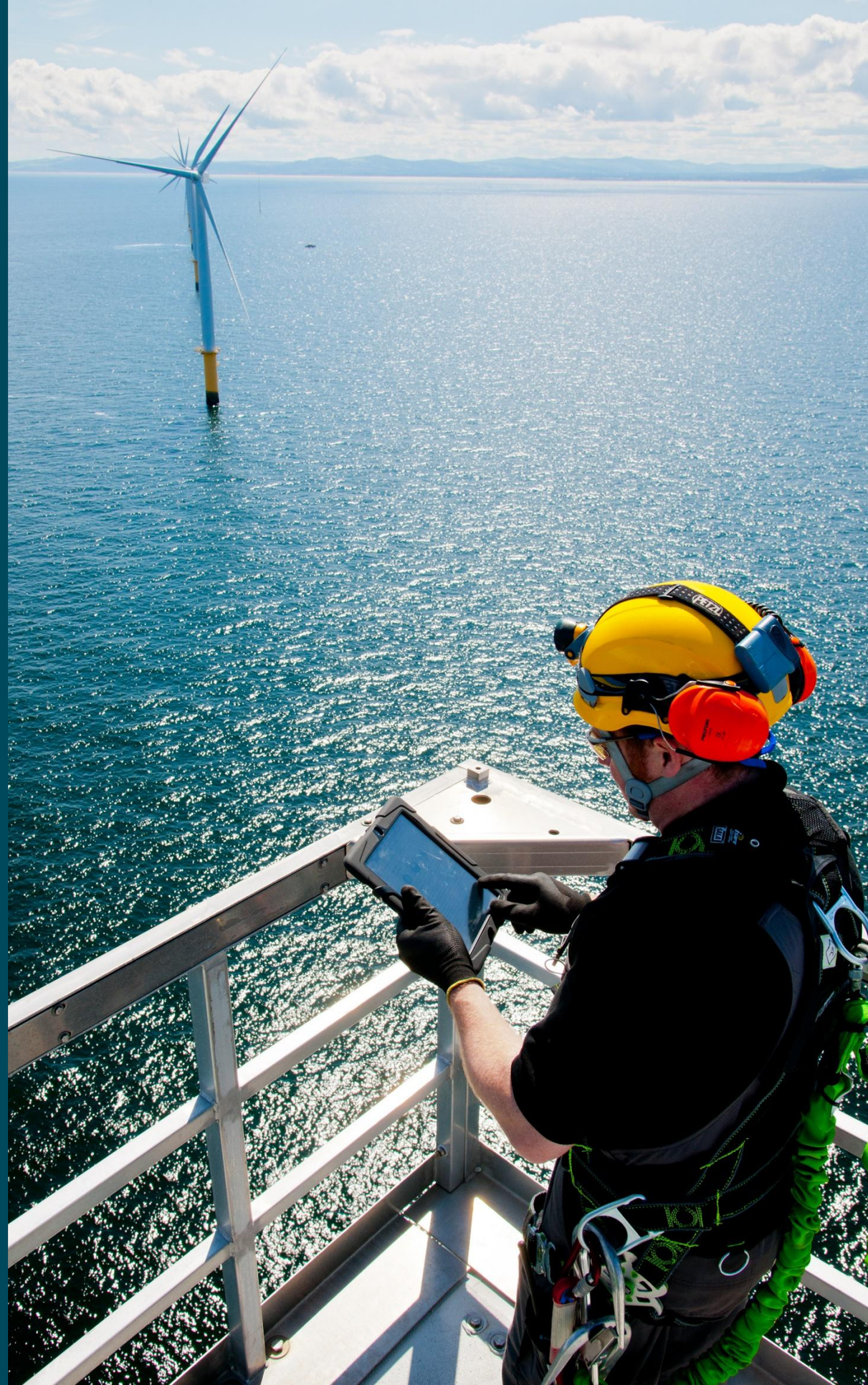
  SCC should support this project and assist Dominion in ensuring the VA workforce is ready by setting benchmarks in the workforce development plan

Goals for Today

- ❏ Share landscape of the **Coastal Virginia Offshore Wind project**
- ❏ Identify **opportunities** in Portsmouth and the great Hampton Roads area
- ❏ Review the need to **strengthen** CVOW **workforce development strategies**
- ❏ How to use the upcoming SCC **comment** period to **push for good jobs** for the community

What We Want

- High Percentage of Domestic Content
- Organizing Rights, Neutrality for Ports
- Project Labor Agreements
- Community Workforce Agreements
- Prevailing Wage
- Local Hire
- Apprenticeship Utilization



VA Clean Energy Economy Act requires the SCC to approve a minimum of **5,200 megawatts** of **offshore wind** by the end of 2034.

The law requires Dominion to develop and submit a plan to the SCC for review that includes:

- Options for utilizing local workers
- Economic development benefits of the project for VA, capital investments, job creation
- Consultation with the Chief Workforce Development Officer, the Chief Diversity, Equity, and Inclusion Officer, and the Virginia Economic Development Partnership on opportunities to advance VA's workforce and economic development goals, including furtherance of apprenticeship and other workforce training programs
- Priority hiring, apprenticeship, and training of veterans, local workers, and workers from historically economically disadvantaged communities
- Procurement of equipment from Virginia-based or United States-based manufacturers using materials or product components made in Virginia or the United States, if reasonably available and competitively priced.

Get Involved:

Virginia law requires that offshore wind projects maximize local economic benefits and prioritize jobs for historically disadvantaged workers and Virginia residents.

Dominion has the expertise to deliver on this promise.

The Virginia State Corporation Commission (SCC) must certify that Dominion's Coastal Virginia Offshore Wind (CVOW) project will deliver such benefits.

The SCC is now accepting written comments, and will hear verbal testimony on May 16, beginning at 10 am.

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Get Involved:

Written Comments: Written comments may be submitted through the SCC's website **by May 16, 2022**, at scc.virginia.gov/casecomments/Submit-Public-Comments.

Go to the SCC website

- ❏ select **"Cases"** and then
- ❏ **"Submit Public Comments,"**
- ❏ scroll down to case number **PUR-2021-00142**
- ❏ click **SUBMIT COMMENTS**

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Get Involved:

Verbal Comments will be received *by **phone*** beginning at **10 a.m. on May 16** for folks who have **pre-registered** with the SCC by **5 p.m. on May 12, 2022**

Three Ways to Register:

1. Complete the public witness form online, inputting case number PUR-2021-00142: https://www.scc.virginia.gov/pages/Public-Witness
2. Fill out the public witness form and submit it to SCCInfo@scc.virginia.gov https://www.scc.virginia.gov/getattachment/ff60b9cd-c45c-400f-b619-351ad764cb16/PW-2021-00142.pdf
3. Call the SCC at 804-371-9141 during normal business hours (8:15 a.m. - 5 p.m.) and provide their name and the phone number you wish the Commission to call to reach you during the hearing

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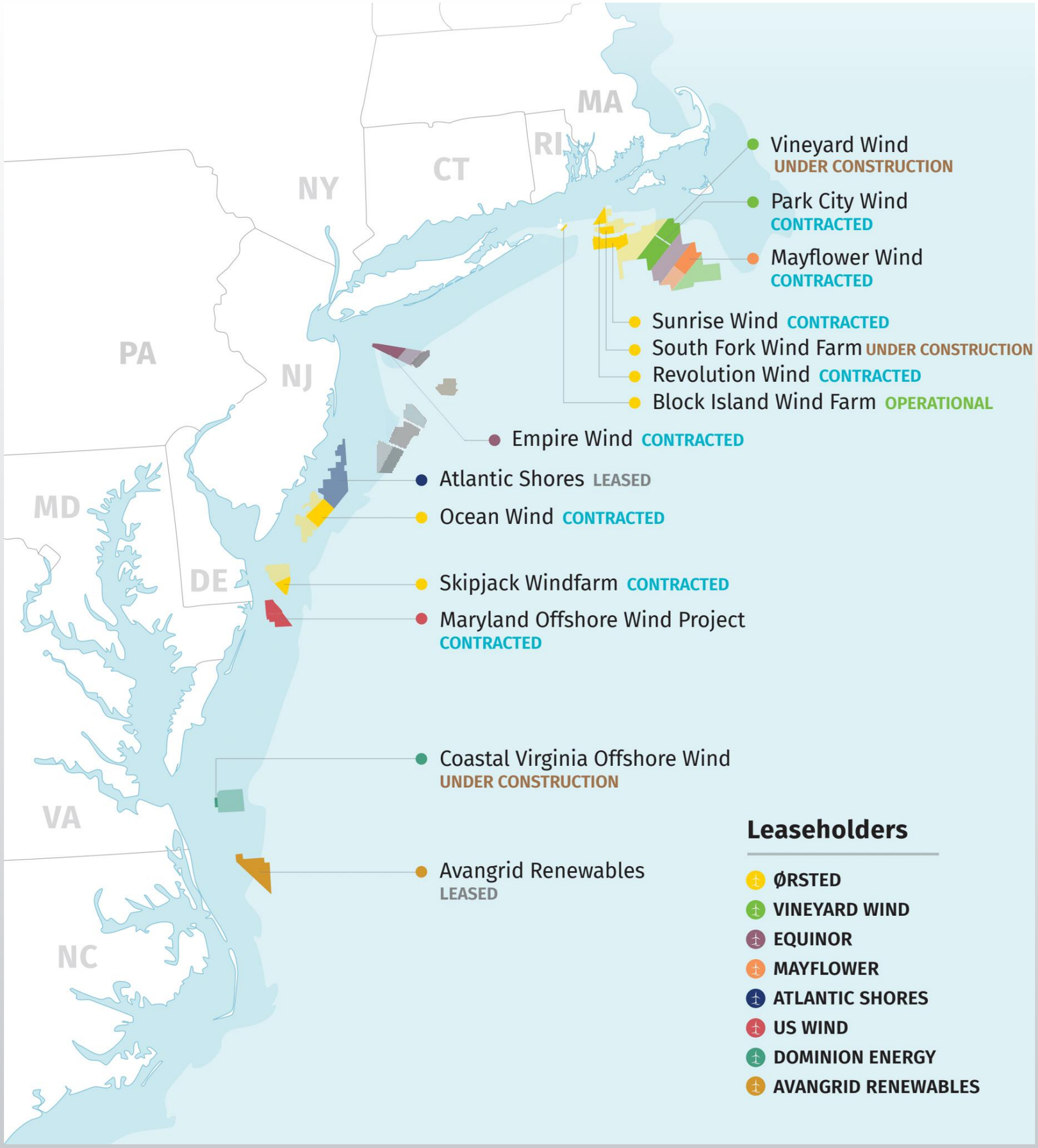


Offshore wind energy technology has largely been developed by the offshore oil & gas industry

Atlantic OCS Renewable Energy: Onshore Support

PORT FACILITIES

New Bedford Marine Commerce Terminal

Connecticut State Pier

Port of Bridgeport

Quonset Point & ProvPort

Port of Virginia

Sparrows Point

Massachusetts VINEYARD WIND · BAY STATE WIND · equinor · ørsted renewables · Shell

Rhode Island/Massachusetts DEEPWATERWIND

New York Wind Energy Areas equinor

New Jersey OCEAN WIND · ATLANTIC SHORES offshore wind · Shell

Delaware DEEPWATERWIND

Maryland US Wind

Virginia Dominion · DMME · Ørsted

Kitty Hawk AVANGRID RENEWABLES

Wilmington Wind Energy Areas

South Carolina Call Areas

US OFFSHORE WIND PROJECT PIPELINE KEY STATS AND FACTS

Here **Reuters Events** provides a step-by-step guide to early US offshore wind development, layering federal and state permitting requirements against project progress trajectories to enable you to assess the US offshore wind project pipeline.

19 commercial offshore wind projects pushing towards grid-connection in the US, plus 2 demonstration-scale projects.

16 projects currently sit within the pre-construction planning stage with the potential to collectively generate >11.9GW of electricity.

10 out of 16 pre-construction projects have secured an off-taker agreement (Power Purchase Agreement or Offshore Wind Renewable Energy Certificate - OREC). NB Procurement obligations cannot be met without the necessary federal and state approvals.

7 out of 15 pre-construction projects have submitted their Construction & Operations Plans (COP) for approval by the Bureau of Ocean Energy Management. COP approval is the permitting mechanism required before construction can commence.

How a wind turbine comes together

A typical wind turbine will contain up to 8,000 different components. This guide shows the main parts and their contribution in percentage terms to the overall cost. Figures are based on a REpower MM92 turbine with 45.3 metre length blades and a 100 metre tower.

Tower 26.3%

Range in height from 40 metres up to more than 100 m. Usually manufactured in sections from rolled steel; a lattice structure or concrete are cheaper options.

Rotor blades 22.2%

Varying in length up to more than 60 metres, blades are manufactured in specially designed moulds from composite materials, usually a combination of glass fibre and epoxy resin. Options include polyester instead of epoxy and the addition of carbon fibre to add strength and stiffness.

Rotor hub 1.37%

Made from cast iron, the hub holds the blades in position as they turn.

Rotor bearings 1.22%

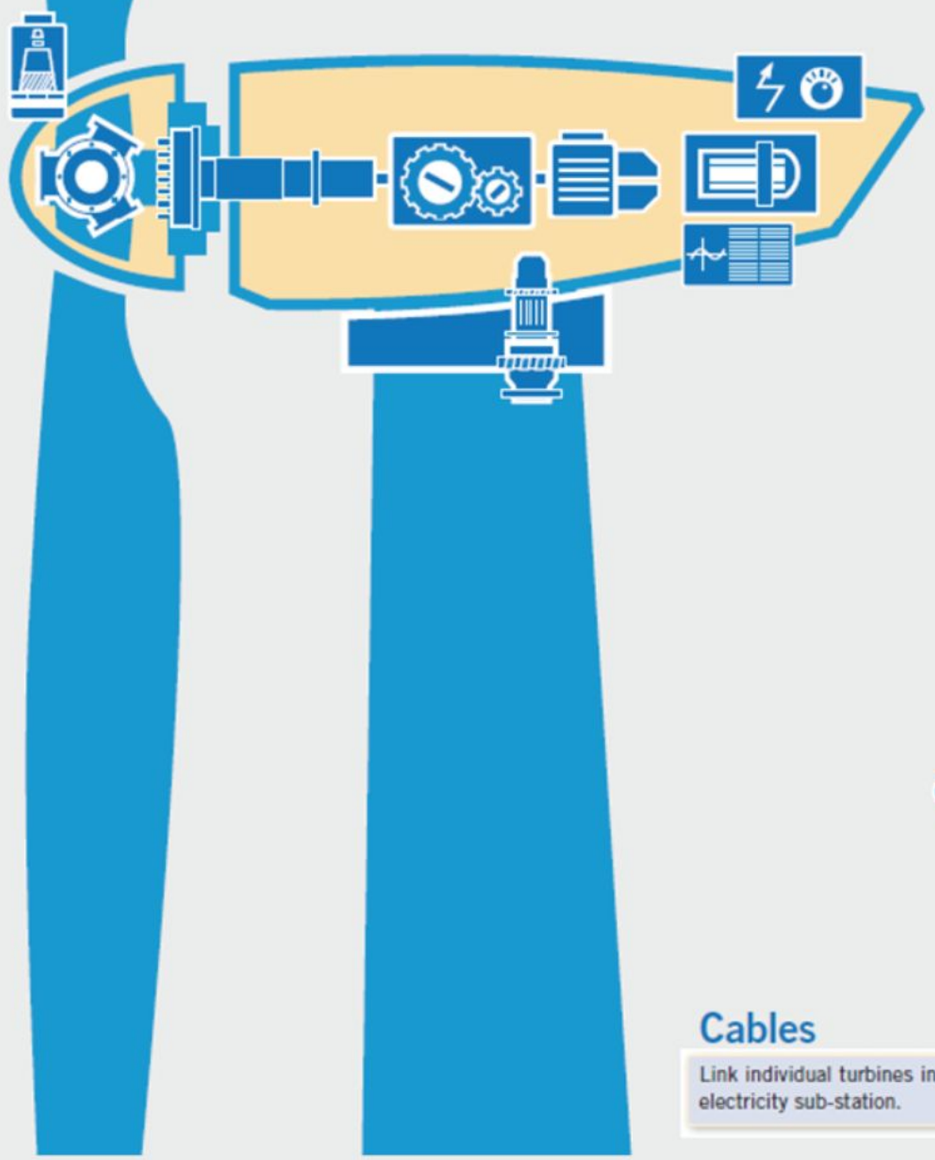
Some of the many different bearings in a turbine, these have to withstand the varying forces and loads generated by the wind.

Main shaft 1.91%

Transfers the rotational force of the rotor to the gearbox.

Main frame 2.80%

Made from steel, must be strong enough to support the entire turbine drive train, but not too heavy.



Gearbox 12.91%

Gears increase the low rotational speed of the rotor shaft in several stages to the high speed needed to drive the generator

Generator 3.44%

Converts mechanical energy into electrical energy. Both synchronous and asynchronous generators are used.

Yaw system 1.25%

Mechanism that rotates the nacelle to face the changing wind direction.

Pitch system 2.66%

Adjusts the angle of the blades to make best use of the prevailing wind.

Power converter 5.01%

Converts direct current from the generator into alternating current to be exported to the grid network.

Transformer 3.59%

Converts the electricity from the turbine to higher voltage required by the grid.

Brake system 1.32%

Disc brakes bring the turbine to a halt when required.

Nacelle housing 1.35%

Lightweight glass fibre box covers the turbine's drive train.

Cables 0.96%

Link individual turbines in a wind farm to an electricity sub-station.

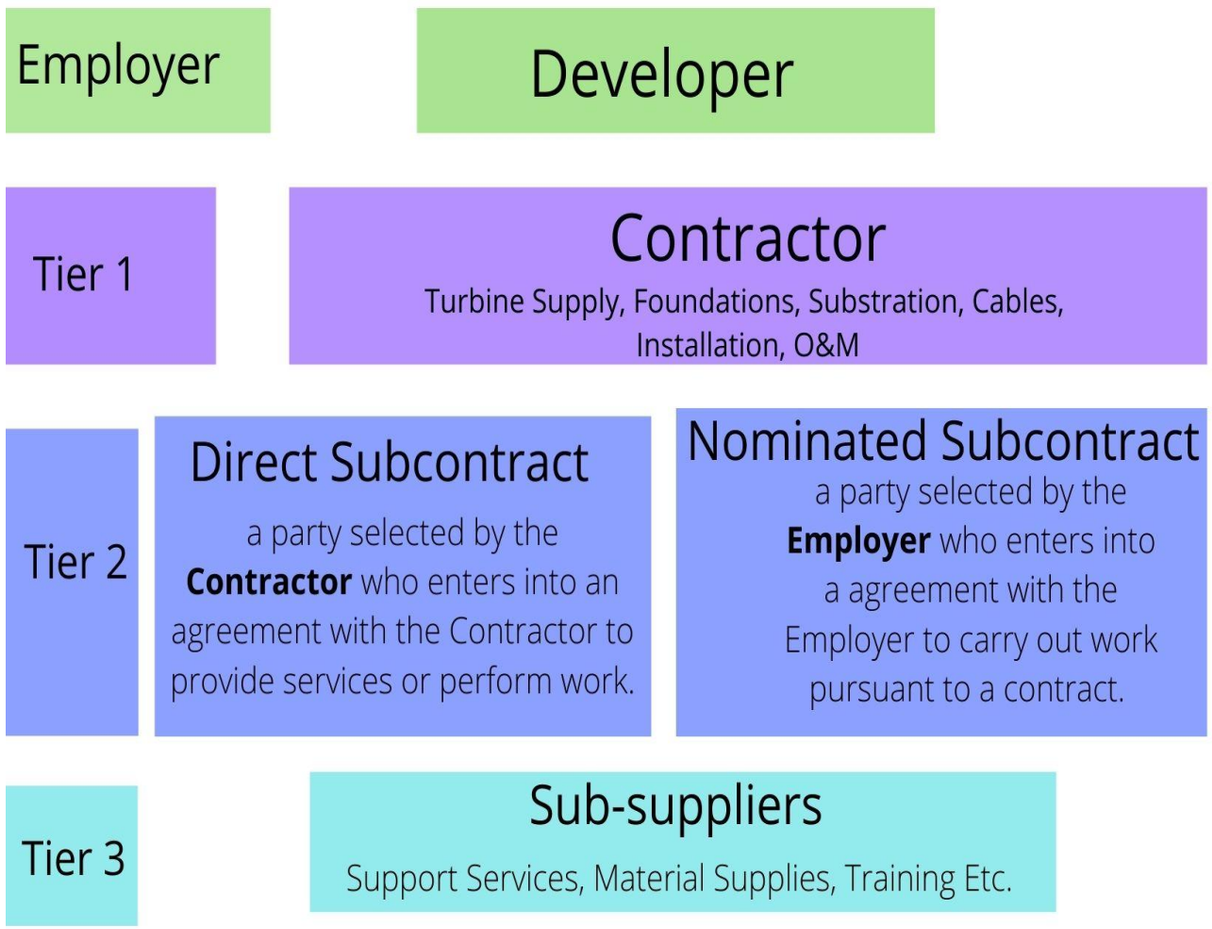
Screws 1.04%

Hold the main components in place, must be designed for extreme loads.

Source: EWEA

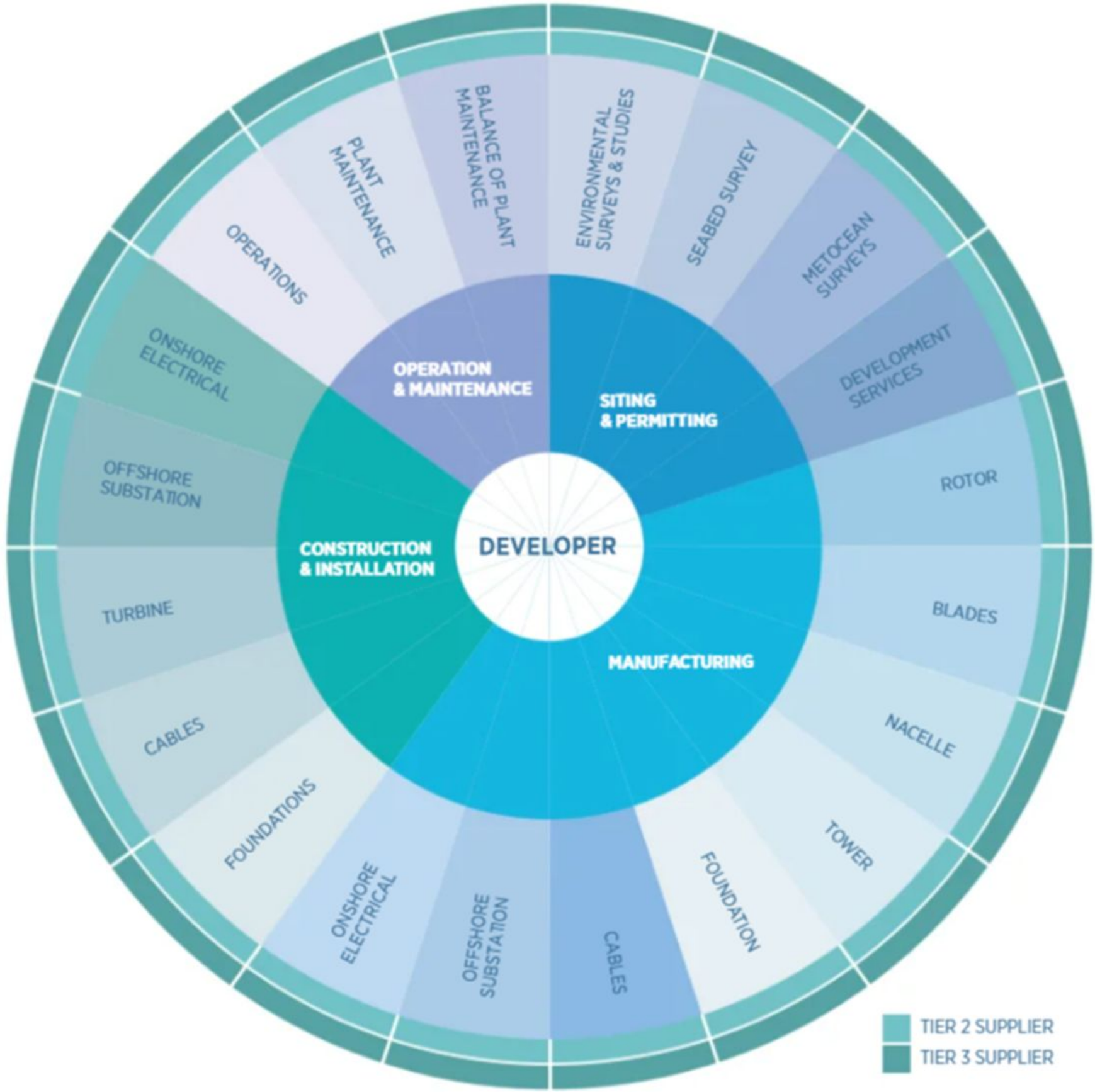
Opportunities for Supply Chain Development

Structure of Relationship of Supply Chain

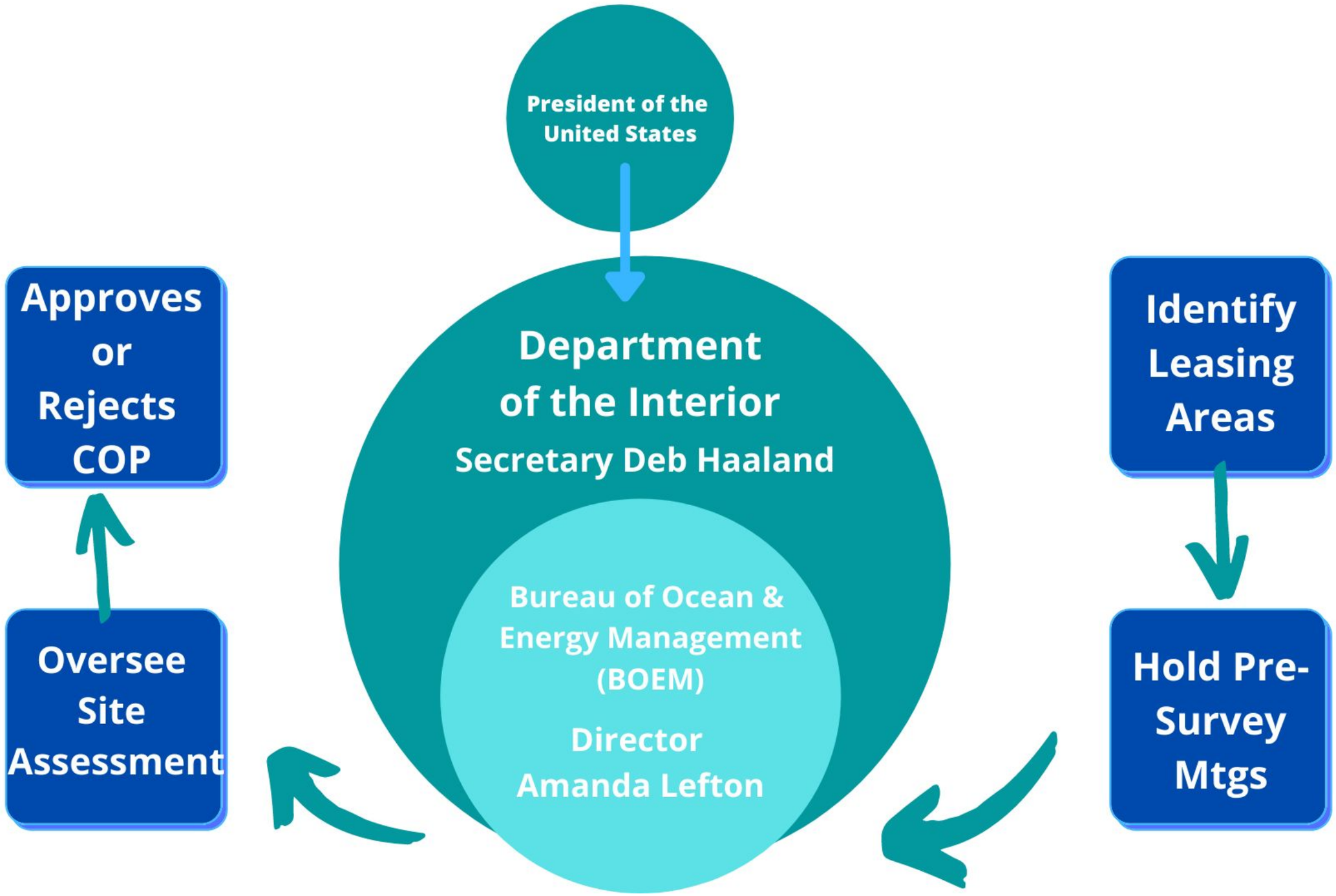


The Special Initiative for Offshore Wind's recent white paper predicted a nearly **$70 billion buildout of the U.S. offshore wind supply chain by calculating growth in a number of sectors.**

Princeton University found that increasing domestic content in renewable energy projects can create **tens of thousands of American jobs without significantly increasing capital costs.**


DEVELOPER
SITING & PERMITTING
ENVIRONMENTAL SURVEYS & STUDIES
SEABED SURVEY
METOCEAN SURVEYS
DEVELOPMENT SERVICES
MANUFACTURING
ROTOR
BLADES
NACELLE
TOWER
FOUNDATION
CABLES
OFFSHORE SUBSTATION
ONSHORE ELECTRICAL
CONSTRUCTION & INSTALLATION
FOUNDATIONS
CABLES
TURBINE
OPERATION & MAINTENANCE
BALANCE OF PLANT MAINTENANCE
PLANT MAINTENANCE
OPERATIONS
OFFSHORE SUBSTATION
ONSHORE ELECTRICAL
TIER 2 SUPPLIER
TIER 3 SUPPLIER

Who makes Decisions?
OffShore Wind



Offshore Wind Permitting Process