



*Floating Offshore Wind Staging and Assembly  
at the Port of Long Beach:*

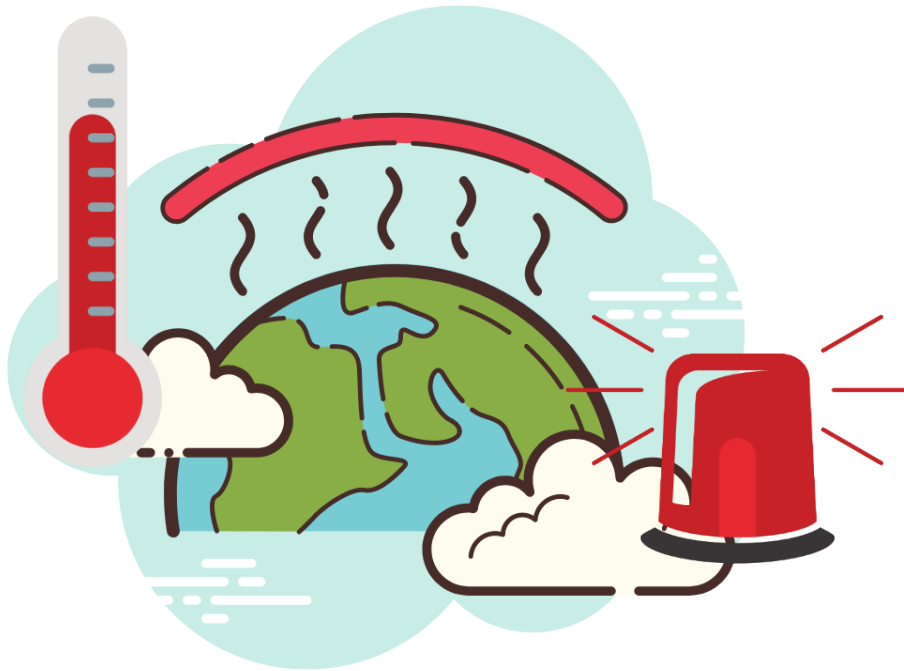
# PIER WIND

*Suzanne Plezia, P.E, Senior Director / Chief Harbor Engineer*

Storms, Flooding and Sea Level Defense Conference 2024  
November 12, 2024

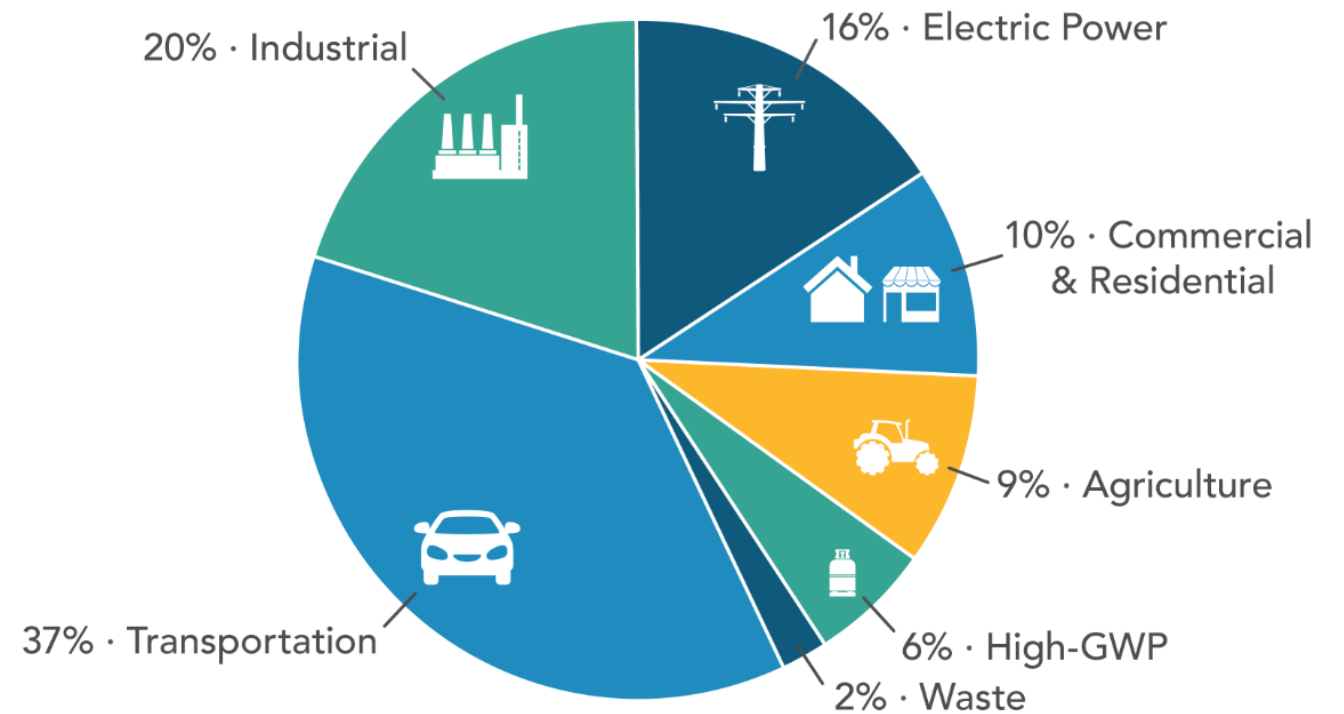
# TACKLING THE CLIMATE CRISIS

## SENSE OF *URGENCY*



## CALIFORNIA'S 2020 GHG EMISSIONS

Source: CARB, [California Greenhouse Gas Emission Inventory Program](#)



# PLAN FOR ACHIEVING CARBON NEUTRALITY



**GHG**  
↓

Greenhouse gases  
**↓85%**



Air pollution  
**↓71%**



Petroleum demand  
**↓94%**



Grows CA's economy  
to \$5.1 trillion by 2045

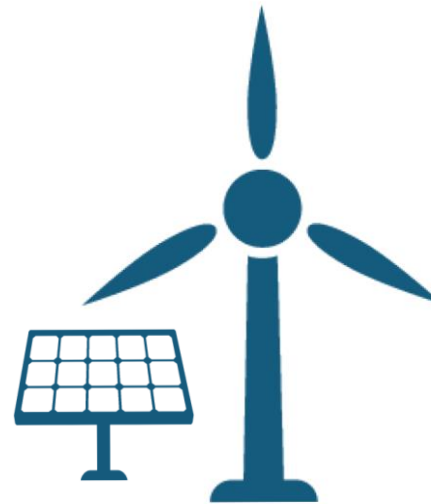


New jobs  
**↑4 million**



Health costs  
**↓\$200 billion**

## Energy and Technology Transitions



**4X**

Generation

“The scale of transition includes adding four times the solar and wind capacity by 2045...”<sup>(1)</sup>

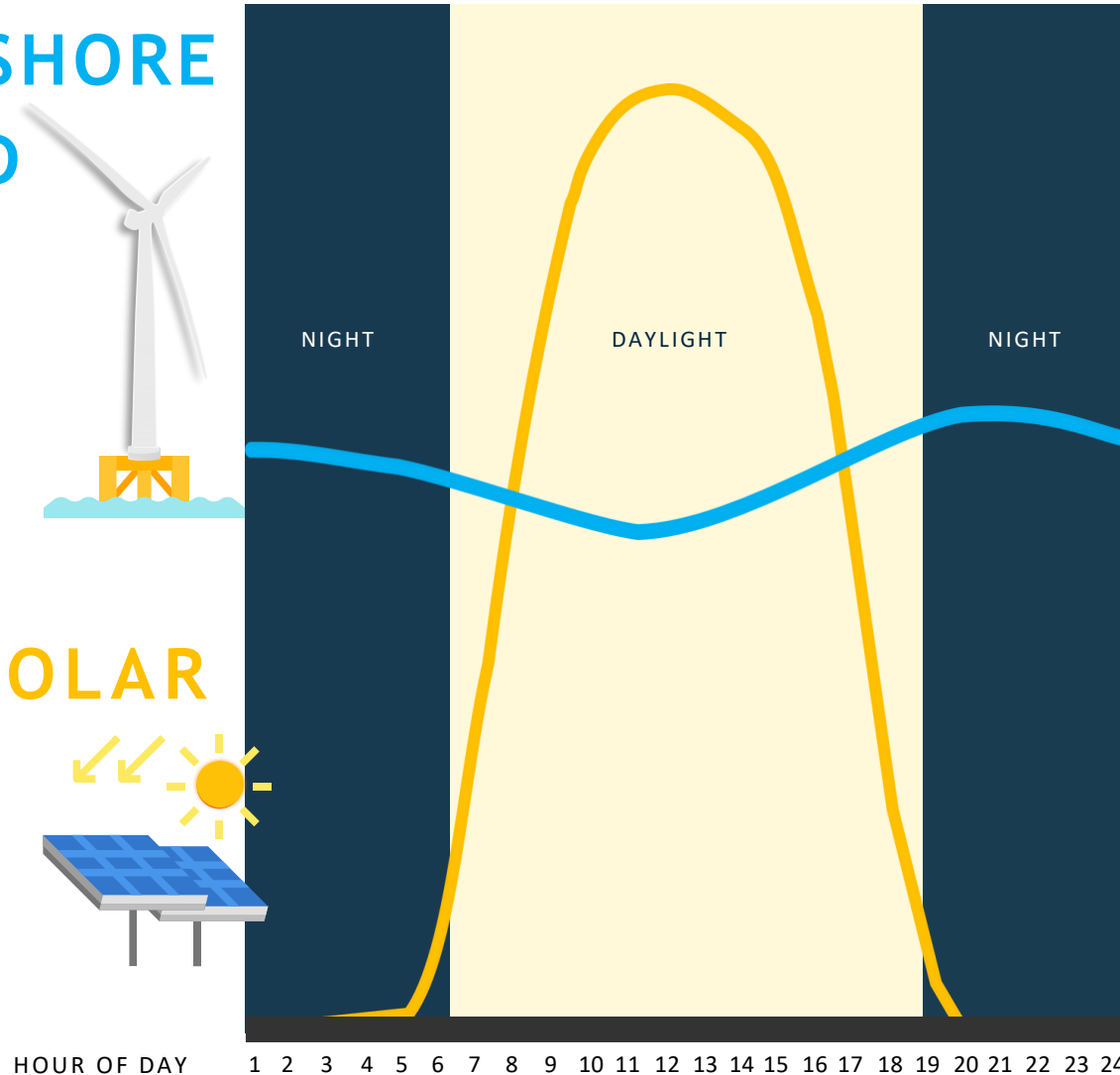
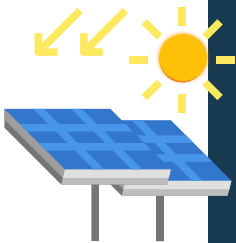
(1) CARB, [2022 Scoping Plan for Achieving Carbon Neutrality](#)

# ROLE OF OFFSHORE WIND

OFFSHORE  
WIND



SOLAR



## 25GW by 2045

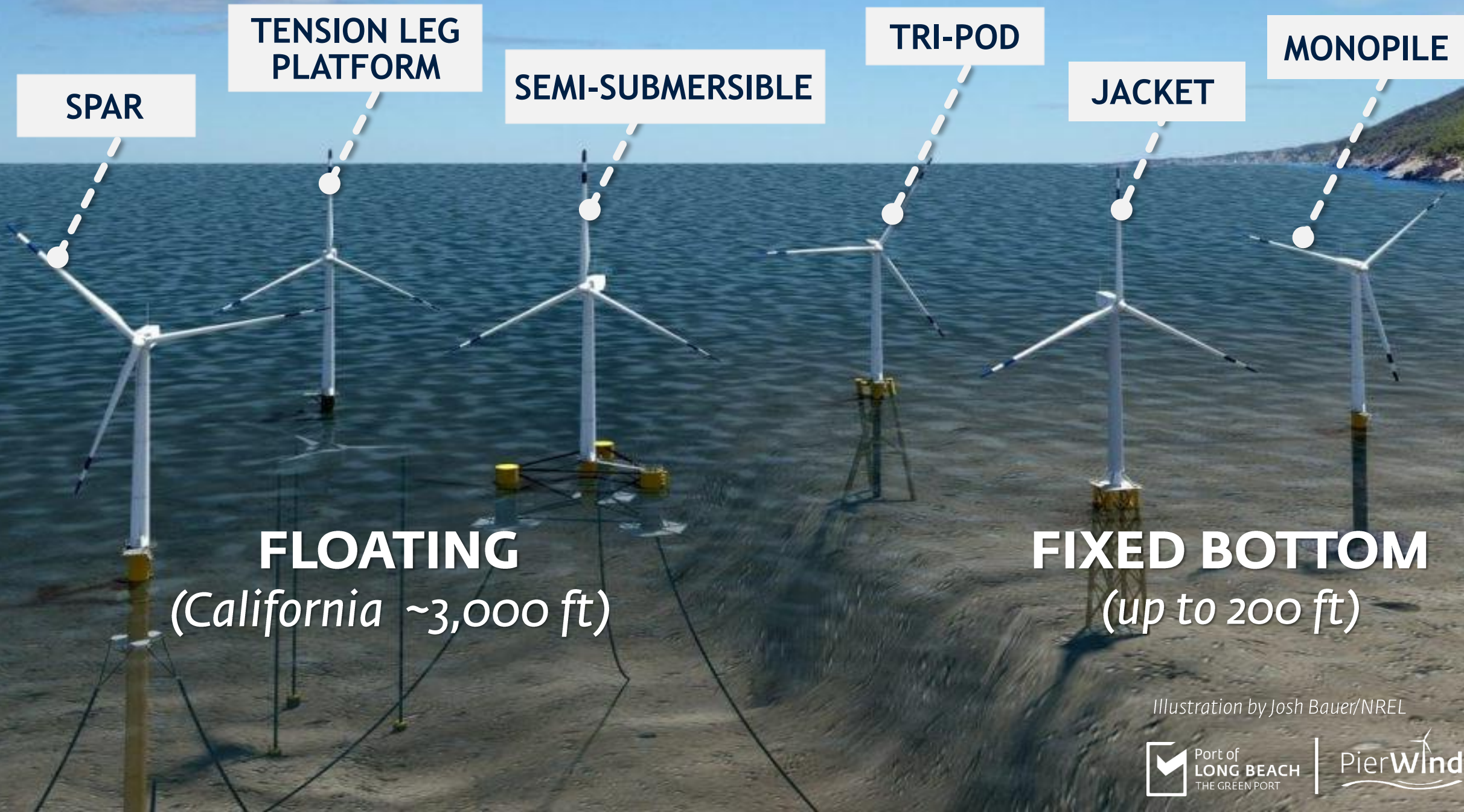
- Abundant source of domestic renewable energy – California has the highest offshore wind energy in the nation
- Balances out solar generation, producing more energy at night and during cloudy winter months when solar generation falls off





Port of  
**LONG BEACH**  
THE GREEN PORT

**ZEERO**  
Zero Emissions, Energy Resilient Operations



**SPAR**

**TENSION LEG  
PLATFORM**

**SEMI-SUBMERSIBLE**

**TRI-POD**

**JACKET**

**MONOPILE**

**FLOATING**  
*(California ~3,000 ft)*

**FIXED BOTTOM**  
*(up to 200 ft)*

Illustration by Josh Bauer/NREL



# NACELLE



Source: Vestas (15 MW Prototype)





# TOWER



Source: Journal of Commerce



Port of  
**LONG BEACH**  
THE GREEN PORT

PierWind



# BLADE



Source: LM Wind Power



Port of  
**LONG BEACH**  
THE GREEN PORT

PierWind



# FOUNDATION



Source: Principle Power



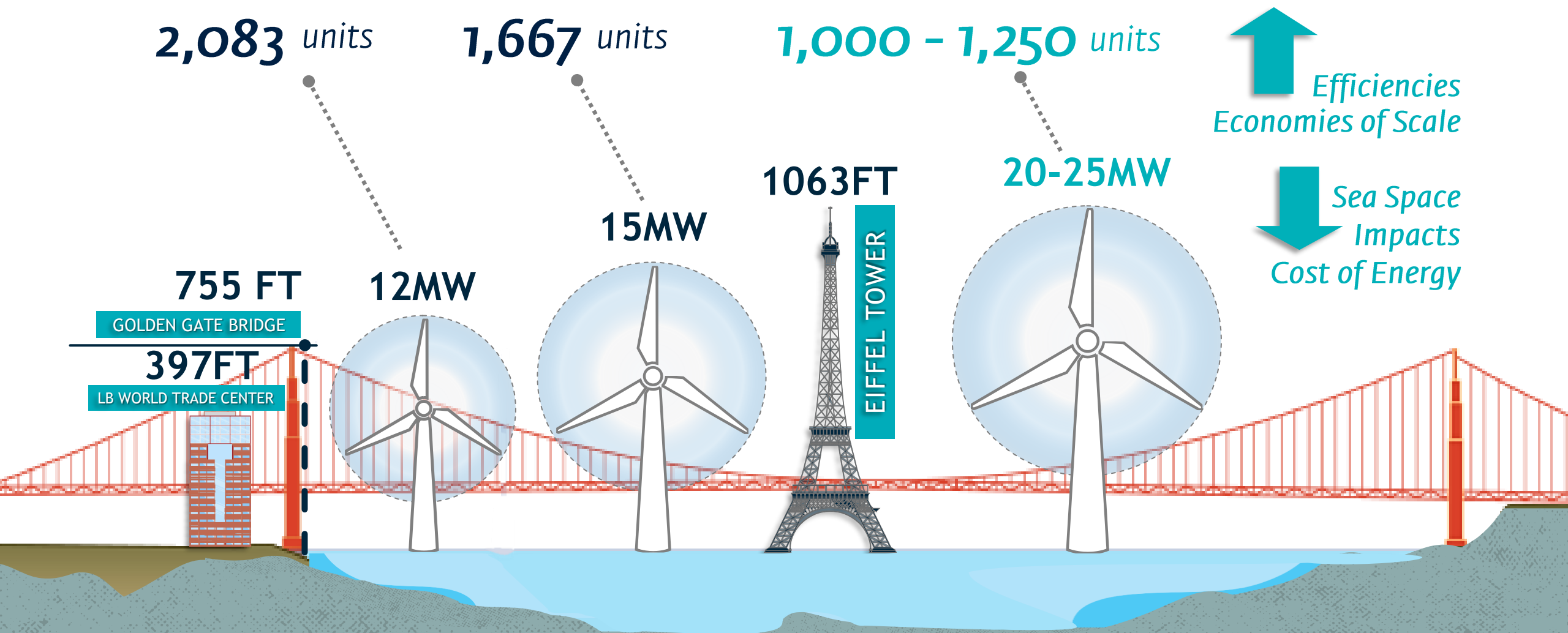
Port of  
**LONG BEACH**  
THE GREEN PORT

PierWind



# SCALE COMPARISON

Number of turbines to reach 25GW by 2045



# FLOATING OFFSHORE WIND TURBINE ASSEMBLY



**TOW OUT TO  
INSTALLATION SITE**

Credit photos: LM Wind Power,  
Vestas, Journal of Commerce,  
Principle Power, Maritime Cyprus,  
fotocommunity.de, Port of Monroe,  
Dockgo, Euractiv, Wind Plus



## WIND LEASE HOLDERS

-  RWE Offshore Wind Holdings, LLC
-  California North Floating LLC
-  Equinor Wind US LLC
-  Golden State Wind, LLC
-  Invenergy California Offshore LLC



Source: BOEM [California Activities](#)

Wind  
Lease Areas



(Wind Lease Areas are not part of POLB Pier Wind Project )

Source photo: NOV



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Source: BOEM [California Activities](#)



Pier Wind

← Wind Lease Areas →



FEDERAL WATERS

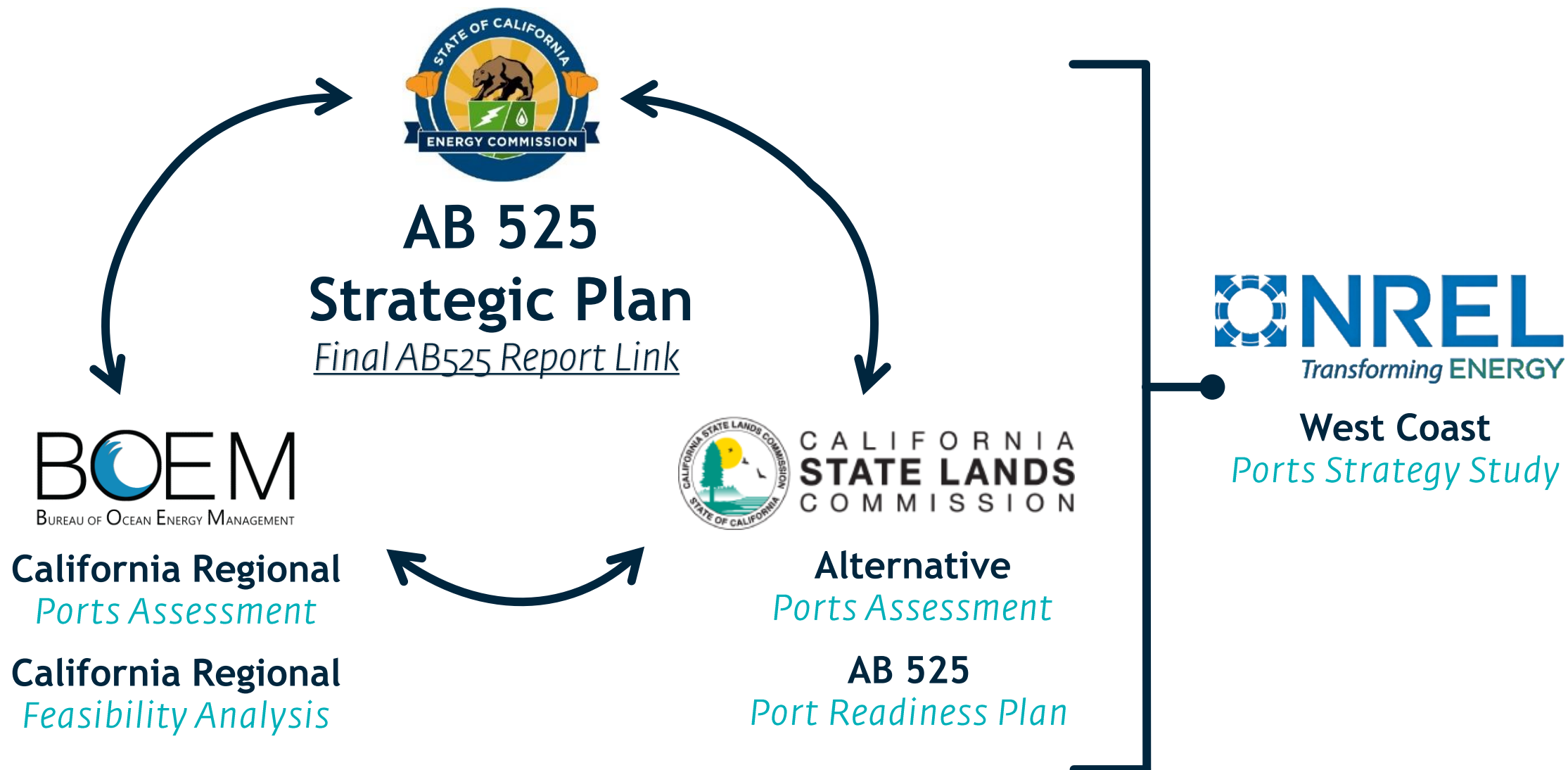


STATE LANDS

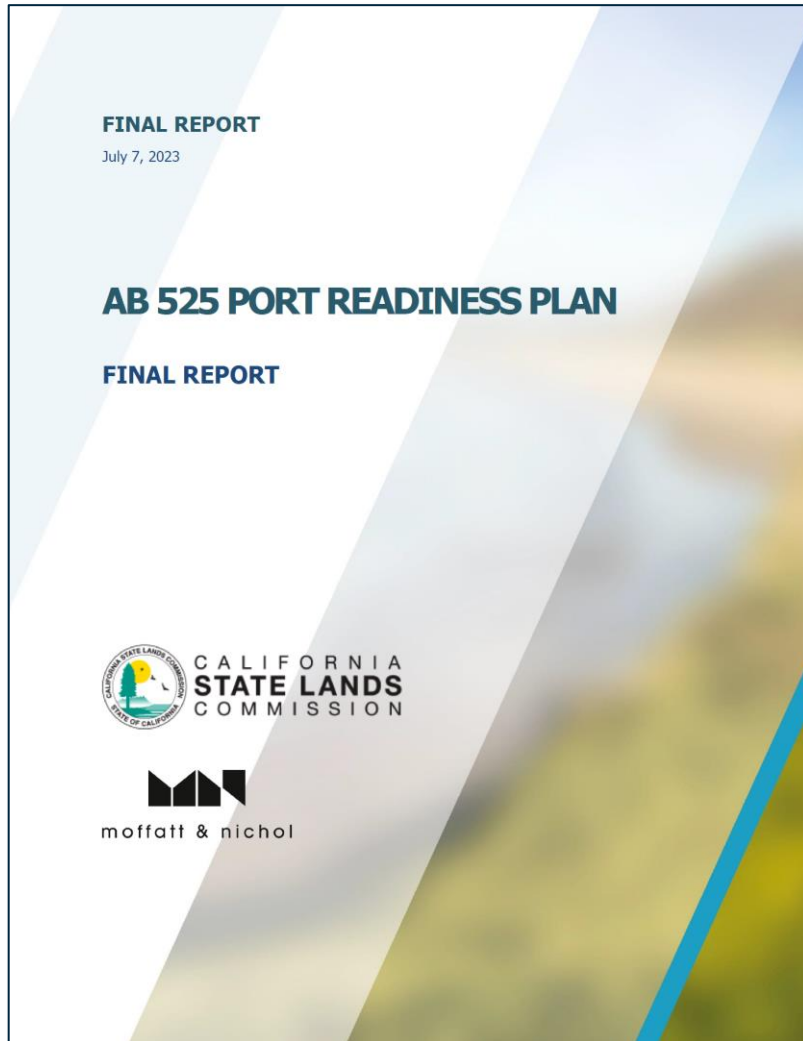


Background Image from U.S. Department of Energy,  
with labels added by Port of Long Beach

# WHOLE OF GOVERNMENT APPROACH



# AB 525 PORT READINESS PLAN



- Need **multi-port strategy**
- Staging and integration sites are the **most critical**
- **Only a few ports** are suitable for staging and integration
- **Port of Long Beach** is one of them

Source: [CSLC AB 525 Port Readiness Plan July 7, 2023](#)



# UNIQUE QUALITIES OF PORT OF LONG BEACH

STATE'S LARGEST SKILLED  
MARINE, MANUFACTURING,  
AND CONSTRUCTION  
WORKFORCE

HARBOR DISTRICT

CENTER OF US SUPPLY CHAIN  
WITH EXTENSIVE ROAD, RAIL,  
AND MARINE TRANSPORTATION  
NETWORKS AND SUPPLY  
CHAIN LOGISTICS

PART OF LARGEST  
INDUSTRIAL PORT  
COMPLEX IN THE NATION

NO AIR HEIGHT  
RESTRICTIONS

INDUSTRY LEADER IN  
DEVELOPING LARGE MARINE  
INFRASTRUCTURE

FEDERAL  
BREAKWATER

DEEP  
CALM  
WATERS

-76' MAIN CHANNEL



**WET STORAGE**

**SINKING BASIN**  
(Depth -100')

**DOCK**

**400 ACRES**

(Depth -60')

**BUILDINGS**

**7,500 FT HEAVY LIFT  
CAPACITY WHARF**

**DOCKS**

**WET STORAGE**  
(Depth -60')

**PRELIM DESIGN**

[polb.com/pierwind](http://polb.com/pierwind)



# DEVELOPMENT SCHEDULE



A diagram showing the layout of the port development. A large rectangular area is divided into three horizontal sections. The top section is blue and labeled 'WET STORAGE'. The middle section is teal and labeled 'SINKING BASIN'. The bottom section is blue and labeled 'WET STORAGE'. The middle section is further divided into two smaller teal rectangles, each labeled '200 ACRES'. The entire development area is outlined in orange. To the right of the development area, the text 'MAIN CHANNEL' is written diagonally.

WET STORAGE

SINKING BASIN

200 ACRES

200 ACRES

WET STORAGE

MAIN CHANNEL





PierWind Concept Design Rendering





PierWind Concept Design Rendering



# BENEFITS SUMMARY

*Positions California and the United States  
to be at the forefront of floating offshore  
wind innovation and development*

*US Goal of 15 GW BY 2035*

*CA Goal of 25 GW BY 2045*

# SCALE



*Greenhouse Gases  
Cost of Energy*



## LARGEST PURPOSE-BUILT OFFSHORE WIND FACILITY



Port of  
**LONG BEACH**  
THE GREEN PORT

Pier**Wind**

The PierWind logo features the word "Pier" in a dark blue serif font and "Wind" in a teal sans-serif font. A teal wind turbine icon is positioned above the "d" in "Wind". Below the text are two wavy lines, one teal and one dark blue, representing water or a horizon.