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Learning from the Experts Webinar Series

Port Infrastructure Financing for Offshore Wind

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May 13, 2026

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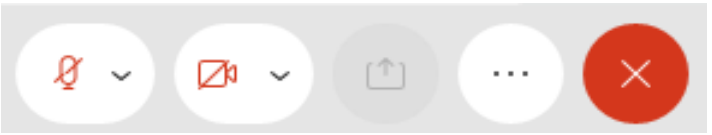

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Port Infrastructure Financing for Offshore Wind

NYSERDA: Learning from the Experts Webinar Series

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Port Infrastructure Financing for Offshore Wind

Webinar Agenda

- ❑ Opening — Introduction & What's at Stake
- ❑ Module 1 — Port Types, Functions & Upgrades
- ❑ Module 2 — The Capital Stack
- ❑ Module 3 — What Makes a Port Bankable?
- ❑ Module 4 — Revenue Diversification & Multi-Use
- ❑ Module 5 — Global Case Studies
- ❑ Module 6 — Most Common Mistakes / Risks and Mitigation Strategies
- ❑ Q&A

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12.8 GW
Offshore Wind Capacity Involved[1]

7
Jurisdictions

~896
Million Ton
CO_2 displacement

1 Team members while at NORTHGREEN CAPITAL and other firms

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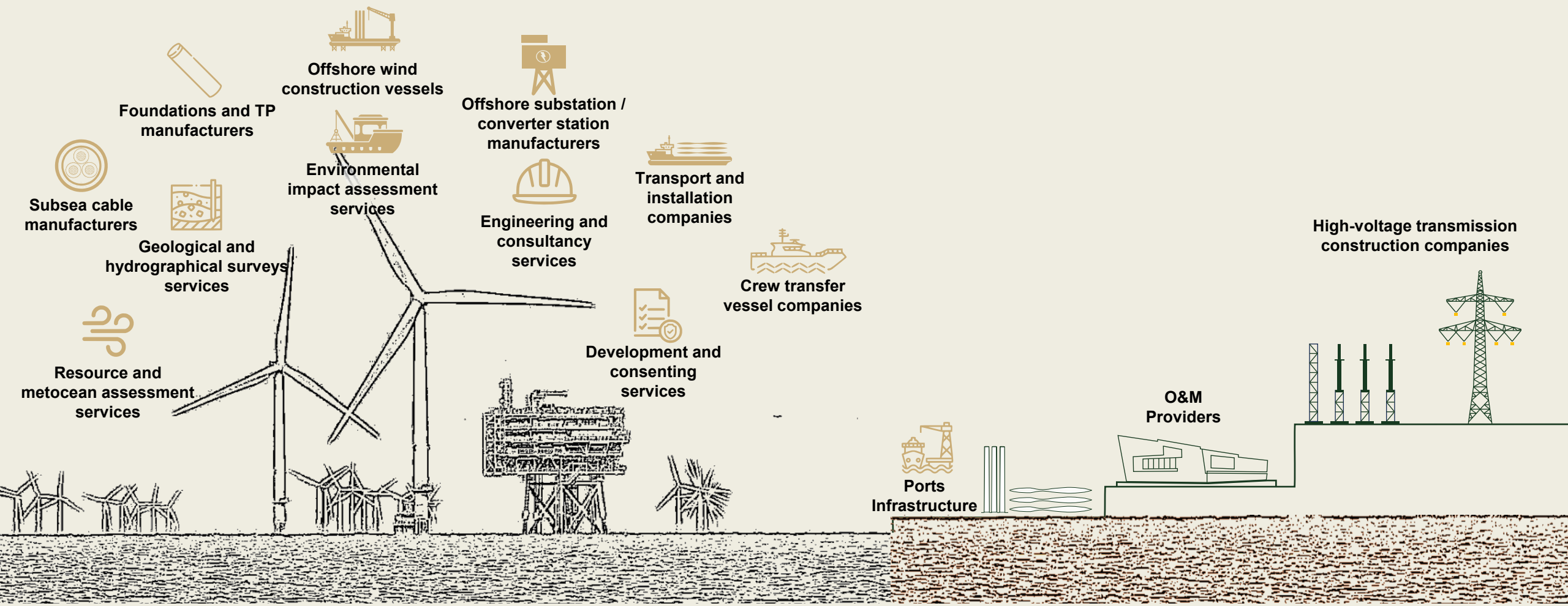

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Why Port Infrastructure Financing for Offshore Wind Matters — Now

$100B+

Estimated US OSW port investment need through 2035

30+ GW

US offshore wind inevitably part of the energy mix, national and energy security to meet the significant growth in demand

70%

Of OSW project LCOE influenced by port logistics decisions

18–36 mo

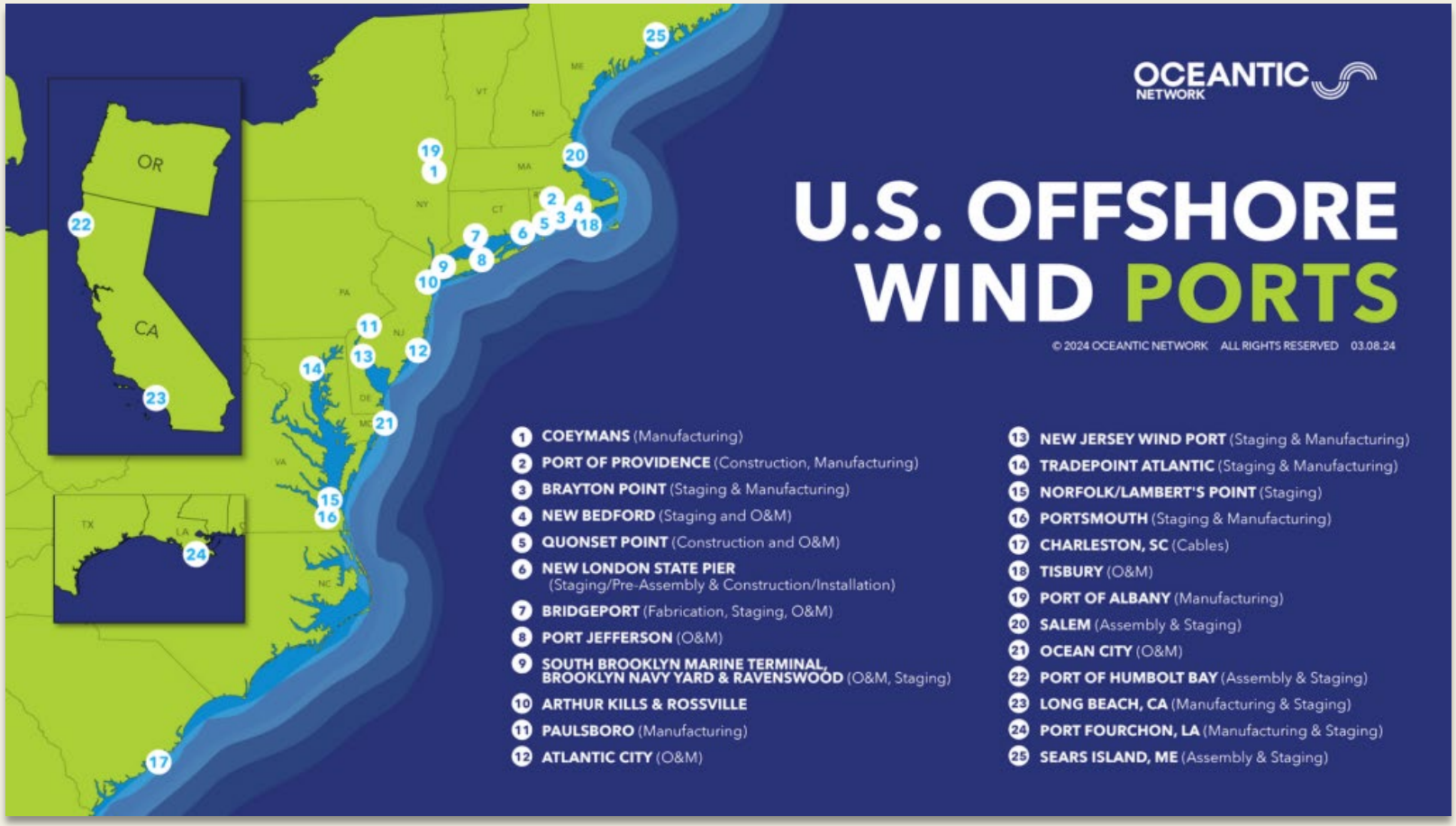
Window for critical port financing decisions that shape the decade

- Ports no longer isolated pieces of infrastructure
- Ports have become mix-use platforms for everything from national security and innovation to global value chains - and not least the green transition
- Port financing decisions made today will lock in the economics of US offshore wind for the next generation of projects

US Federal Support & Funding Shifting Away From Offshore Wind

Current Market Dynamics: In 2026, the *US federal government* has begun terminating approximately **$679 million** in infrastructure funding previously earmarked for **offshore wind ports in six states**, including **California** and **New York**, due to *shifting administration priorities*.

This makes **private sector equity** and **state-led financing** even more critical for port and project survival.



MODULE 1

Port Types, Functions & Infrastructure Requirements

The foundation every stakeholder needs before the financing discussion begins

Four Offshore Wind Port Archetypes

Marshaling & Staging

Pre-assembly, component storage, load-out to installation vessels. High laydown acreage, quayside load capacity.

Manufacturing & Fabrication

Monopile, jacket, blade, and cable production at scale. Requires heavy industrial infrastructure and deep berths.

O&M Service Base

Long-term crew transfer and maintenance hub. Operational for 25–35 yrs post-commissioning. Steady, durable revenue.

Multi-Use Commercial

Offshore wind layered onto existing cargo, ferry, or industrial port. Diversified revenue supports debt service.

Infrastructure Upgrades — What Drives the Capital Need

Heavy lift capacity

Wharf Loading: 4,000 – 6,000 psf (20 – 30 t/m²)
Yard Storage/Pre-assembly: 4,000 – 6,000 psf (20 – 30 t/m²)
Heavy Component/Crane Zones: 8,000 – 20,000+ psf (40 – 100 t/m²)
Bearing Capacity: General port ground should support 2,000 – 3,000 psf, but the immediate quay must exceed this.

Laydown area

50–200+ acres of hardstand for component storage and pre-assembly operations per active project campaign.

Buildings & logistics

Controlled assembly buildings, worker facilities, customs handling, and equipment maintenance workshops.

Deep-draft berths

Installation vessels require 10m+ drafts. Most existing US East Coast ports require significant dredging investment.

Grid & shore power

Offshore wind O&M bases require robust shore power infrastructure and often grid connection for export cable staging.

Environmental permitting

Army Corps, coastal zone management, NEPA — permitting timeline 3–7 years for major in-water work. Start early.

MODULE 2

The Capital Stack

Public grants · private equity · project finance · green bonds · and how rates changed everything

The Execution Blueprint for Bankable Port Infrastructure

Stop Financing "*Wind Ports*" and Start Financing "*Strategic Enabling Platforms*"

I. De-Risk the "Hole in the Water" with Public Anchor Capital

. Fund "**wet" infrastructure** (dredging, breakwaters, and quay walls) foundation

. Reduces annual debt service by **$15M–$20M per $500M invested**, making the remaining project "topside" more attractive to private capital

II. Leverage Commercial Agreements as Synthetic Equity

. Certainty of **revenue** is the key to unlocking Private Capital and Institutional Investment in this new environment

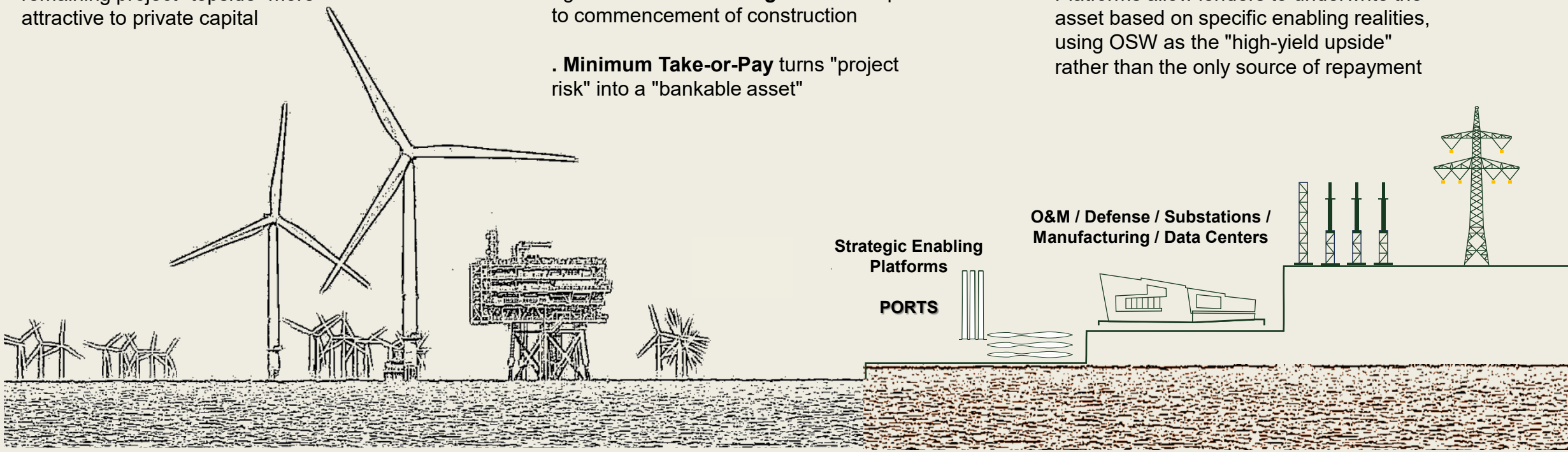
. Structuring bankable commercial agreements with **Strategic Partners** prior to commencement of construction

. **Minimum Take-or-Pay** turns "project risk" into a "bankable asset"

III. Mandate "Strategic Enabling Platforms" to Mitigate Risk

. Design quays for **"Dual-Purpose Loading / Multi-Use"** (3,000–6,000 psf) e.g. Esbjerg (OSW/NATO Model)

. **The Financial Edge:** Strategic Enabling Platforms allow lenders to underwrite the asset based on specific enabling realities, using OSW as the "high-yield upside" rather than the only source of repayment



How the Financing Environment Shifted (2022–2025)

Three forces that repriced risk across the entire sector

+500 bps

Interest Rates

Fed funds rate rose from ~0% to 5%+. Port projects penciling at 4% debt cost do not pencil at 7%. Every deal had to be restructured or shelved.

20–40%

Construction Inflation

Steel, concrete, and marine civil works cost inflation eroded equity returns on projects with fixed-price developer leases.

6+ GW

Pipeline Uncertainty

Over 6 GW of contracted US OSW cancelled or delayed 2022–2024. Lenders now require deeper pipeline underwriting before committing to port debt.

MODULE 3

What Makes a Port Project Bankable?

Lenders underwrite a revenue stream, not a facility. Here's what they need to see.

Four Bankability Drivers

Anchor tenancy

Long-term leases (20–30 yr) with creditworthy developers. Throughput guarantees convert variable revenue into utility-like payments. Tenant credit quality is priced into the debt.

Pipeline certainty

Lenders model addressable project volume for the loan period. Technology risk (turbine scaling) requires modular/adaptable infrastructure design to be documented in the IM.

In-water work first

Completing dredging and marine civil works before vertical construction removes the largest source of cost uncertainty — unknown subsurface conditions — and materially reduces the interest rate premium.

Permitting milestones

Army Corps, CZMA, and state approvals are binary credit events. A fully permitted port is a fundamentally different underwriting from one in process. Price the difference explicitly.

Contractual Structures That Reduce Financing Risk

The contract IS the collateral. These structures transform uncertain cash flows into bankable revenue certainty:

Contract type	Duration	Bankability	Why lenders value it
Long-term developer lease	15–25 years	**High**	Matches loan tenor; developer creditworthiness is the underwriting anchor
Throughput guarantee	Per project	**High**	Minimum annual volumes (component calls, vessel days) floor revenue even if project delays
Anchor tenancy agreement	10–20 years	**High**	Named developer commits to exclusive berth/laydown use; triggers bank willingness to lend
O&M service agreement	20–30 years	**Very High**	Begins post-commissioning; most durable and longest-duration revenue stream in the stack
Revenue share / profit participation	Variable	**Medium**	Developer shares upside beyond base lease; aligns incentives but harder to underwrite for lenders
Government off-take / OREC linkage	Project life	**High**	State OSW procurement linked to port performance milestones; seen in NY/NJ programs

MODULE 4

Revenue Diversification & Multi-Use Models

The ports that attract the best-priced capital are not pure-play — they are resilient by design.

The Port Revenue Stack — Building Financial Resilience

1

Tier 1: OSW Construction Phase

Developer lease payments · throughput fees · crane & heavy lift charges · laydown rental
Typically, highest revenue but limited to 3–5 yr active construction windows per project

2

Tier 2: O&M Service Base Revenue

Long-term crew transfer vessel (CTV) berthing · blade inspection · spare part logistics · technician facilities
Most durable tier: 25–35 years per wind farm; begins post-commissioning

3

Tier 3: Adjacent Maritime Commerce

Existing cargo handling · ferry operations · aquaculture support · research vessel berthing
Provides baseline utilization and debt service coverage between OSW project campaigns

4

Tier 4: Clean Energy Hub Co-location & Military / Defense Uses

Green molecule production · port-scale battery storage for grid services · electrification of port equipment
Emerging revenue stream; increasingly attractive opportunities across multi-use, including military / defense uses

Multi-Use Port Design — Financing and Resilience Strategy

Why multi-use ports attract lower-cost capital:

Baseline utilization

Existing maritime commerce provides cash flow before OSW volumes materialize — critical for debt service during ramp-up

Pipeline hedge

Diversified revenue survives a 2-year delay in any single OSW project without triggering debt service coverage breach

Lower equity premium

Lenders price concentration risk; multi-use ports can achieve 50–100 bps lower senior debt spreads vs. pure-play

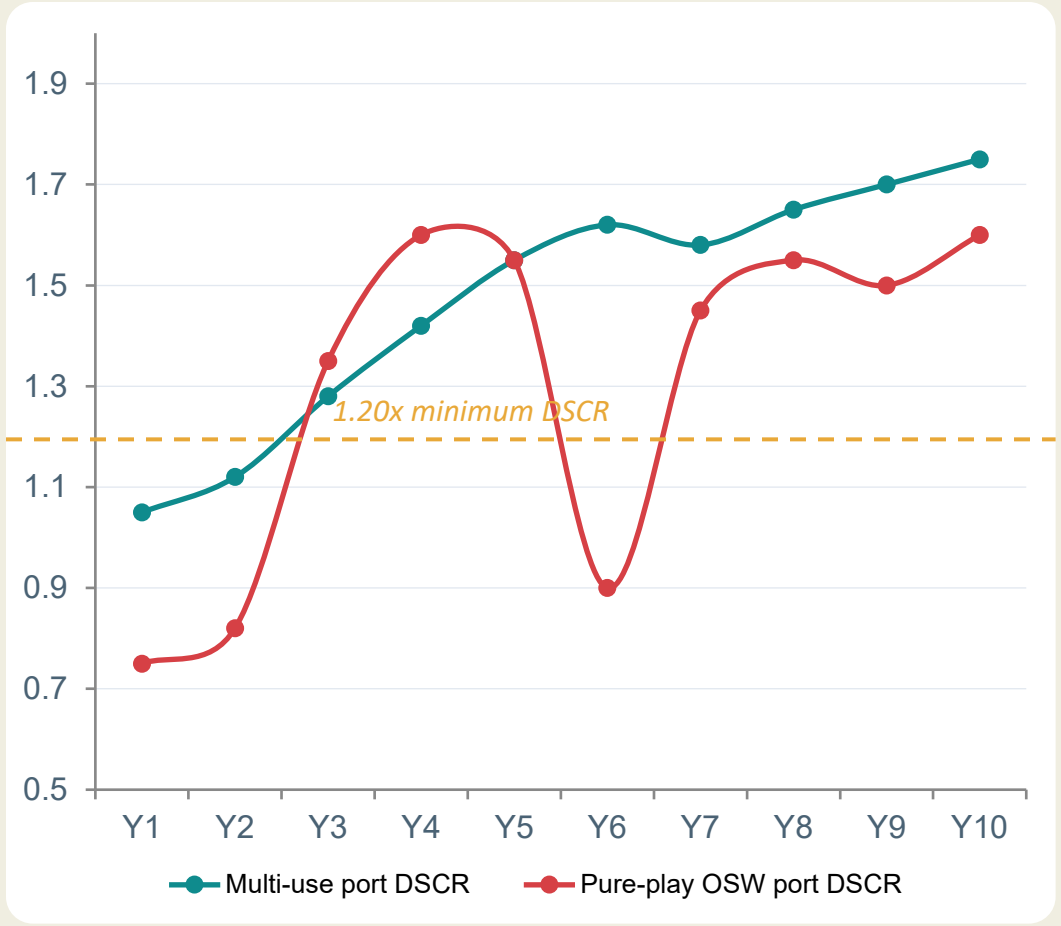
Longer debt tenors

Lenders willing to extend to 20–25 year maturities when non-OSW revenue backstops later years of the loan

Workforce & community

Existing workforce and community support reduces political risk — a real underwriting consideration for government-backed lenders

Illustrative debt service coverage ratio — multi-use vs. pure-play:



MODULE 5

Global Case Studies

Case Study: Port of Esbjerg, Denmark

Established model — 30+ years

#1 globally
OSW port by component volume

30+ GW
components shipped since 1990s

4,500+
direct OSW jobs supported

Multi-use model

Financing model

Public port authority owns heavy quay infrastructure (Danish state-backed). Private developers and manufacturers lease laydown and fabrication space long-term. Revenue diversified across cargo, fishing, military support (NATO) and offshore energy.

Key lesson for US ports:

Sequencing matters: early public investment in heavy quay capacity created the platform that attracted private anchor tenancy. The lesson for US ports — public infrastructure investment first, private build-out second.

Case Study: Able Seaton Port, Teesside, UK

Greenfield project finance

£400M+	UK Freeport	3,500+
total project investment	tax incentive designation	construction jobs created

Financing model

Greenfield development on Teesside. Anchor leases from multiple OSW developers. UK Government Freeport designation provided critical tax structuring tool. Blended private equity and institutional project finance debt.

Key lesson for US ports:

Freeport designations and their US analogs (Opportunity Zones, federal enterprise zones) can improve project returns by 150–300 bps — often the margin between fundable and not fundable at a marginal project.

Case Study: Port of Ulsan, South Korea

State-backed multi-use

$2.5B
Korean state investment in OSW ports

12 GW
S. Korea offshore wind target by 2030

KDB
Korea Development Bank as lead lender

Multi-use model

Financing model

State-owned enterprise financing through Korea Development Bank blended with private developer co-investment. Multi-use heavy industrial port serving both OSW and petrochemical logistics — shared infrastructure reduces unit cost.

Key lesson for US ports:

When the OSW pipeline is not yet deep enough for pure-play financing, state-backed blended structures with explicit policy mandates can bridge the gap. The government commitment is itself a form of credit enhancement.

Case Study: New Bedford Marine Commerce Terminal, MA

Public anchor, private build-out

$113M
state investment
in marine terminal

Vineyard Wind
first US anchor
tenant

Public ownership
port authority
retains asset

Financing model

Commonwealth of Massachusetts invested public capital in marine commerce terminal as a public infrastructure asset. Long-term leases to Vineyard Wind and other developers. Port authority retained ownership — limiting private equity returns but lowering lease costs for developers.

Key lesson for US ports:

The public port authority model can achieve lower cost of capital than private equity (public debt is cheaper) but requires patient public capital and strong political will. The trade-off: less return for private capital, lower lease cost for developers, better public access.

MODULE 6

Practical Guidance & Greatest Risk

What to do first — and what to worry about most

If You're Just Beginning to Position for OSW Investment

The single most valuable early investment is not infrastructure — it is de-risking.

1

Site control

Secure long-term land and waterfront leases or ownership. Without site control, there is no asset to finance. This is the first legal prerequisite for any lender.

2

Geotechnical studies

Bathymetric surveys, geotechnical borehole investigations, and environmental baseline surveys remove the largest source of lender uncertainty and reduce your interest rate.

3

Market assessment

Commission an independent analysis of addressable OSW project pipeline within economic transport distance. This document becomes the demand forecast in your lender's information memorandum.

4

Permitting initiation

File for Army Corps, CZMA, and state coastal zone permits now. The 3–7 year timeline means projects starting today won't be permitted for OSW construction volumes until the late 2020s.

5

Developer engagement

Begin non-binding conversations with OSW developers about potential anchor tenancy. A letter of intent — even non-binding — fundamentally changes lender perception of project bankability.

The Single Greatest Risk — And How to Address It

PIPELINE CONCENTRATION RISK

A port whose entire debt service model depends on one or two large OSW projects being permitted, financed, and built on schedule has taken on concentration risk that most institutional lenders will not accept without prohibitive pricing.

Examples of Key Mitigation Strategies:

Multi-tenant, Multi-use strategy
Structure leases with multiple users across offshore wind ecosystem and other sectors suitable for the specific location, opportunities and challenges of the port. No single tenant > 50% of revenue.

Geographic diversification

Addressable project pool should span multiple development zones — not one wind farm.

O&M revenue first

Lock in O&M service agreements that begin flowing before construction revenue. These have 20–35 yr durations.

Stress-test underwriting

Model explicitly: what if the anchor project delays 24 months? Is DSCR > 1.0x? If not, the capital structure needs further work.

Calls to Action — Differentiated by Stakeholder

Port Operators

Begin site control, geotech studies, and permitting NOW. Even without developer commitments — the clock is already running.

Developers

Structure anchor tenancy agreements to be bankable for port owners. Your LOI or lease is their primary lending collateral.

Investors & Lenders

Evaluate the multi-use port as an underappreciated infrastructure credit. Blended finance structures can create attractive risk-adjusted returns.

Policymakers

Examine whether state & federal incentive programs are being stacked optimally. Early public capital in heavy quay infrastructure unlocks private investment at scale.

Select Key Financing Programs — Federal & State

Level	Program	Administering agency	Relevant for	Timing
Federal	IRA Section 45X	DOE Loan Programs Office / IRS	Manufacturing production tax credits for domestic OSW components	Rolling / permanent
Federal	MARAD Port Infrastructure Dev. Program (PIDP)	US DOT Maritime Administration	Grants for port infrastructure upgrades; OSW-eligible	Annual NOFO
Federal	EDA Public Works & Economic Adj.	US Dept. of Commerce EDA	Economic Development Administration grants for port-linked job creation	Quarterly competitions
Federal	RAISE Grants	US DOT RAISE program office	Reconnecting America — port access, multimodal, OSW supply chain	Annual NOFO
New York	NYSERDA OSW Port Investment Fund	NYSERDA / Empire State Dev.	State-level grants and co-investment for NY-based OSW port upgrades	Ongoing solicitations
New York	NY Offshore Wind Master Plan	NYSERDA / PSC	State policy framework; OSW-linked OREC procurement tied to port milestones	Integrated with OREC rounds
Other States	MA Clean Energy Center Port Fund	MassCEC	Port infrastructure grants for MA OSW supply chain	Competitive
Other States	NJ BEIP / Economic Incentives	NJEDA	Business incentives for OSW manufacturers and port operators locating in NJ	Ongoing

Conclusions and Observations

- ✓ Lenders underwrite a revenue stream — not a facility. Contracts and pipeline certainty are your primary capital-raising tools.
- ✓ The macro environment has fundamentally repriced OSW port risk. The projects that survive are those with multi-source revenue and multi-tenant design.
- ✓ Multi-use ports are more financeable than pure-play — diversification is not a compromise; it is the strategy.
- ✓ The documentation phase (geotech, permitting, market assessment) is important to accelerate the capital-raise itself.
- ✓ Pipeline concentration risk is the single greatest threat. Structure bankable agreements to survive project delays.

Thank you — Q&A

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