

# Sector Analysis Reports: Goals & Objectives

- To provide contextual information on major sectors
  - Existing laws and policies
  - Range of activities
  - Current status, trends and opportunities
  - Potential conflicts between ocean uses
  - Issues affecting sector (current and future)
  - Inventory of available economic data
- Provide a basis for scoping the subsequent coast-wide economic analysis

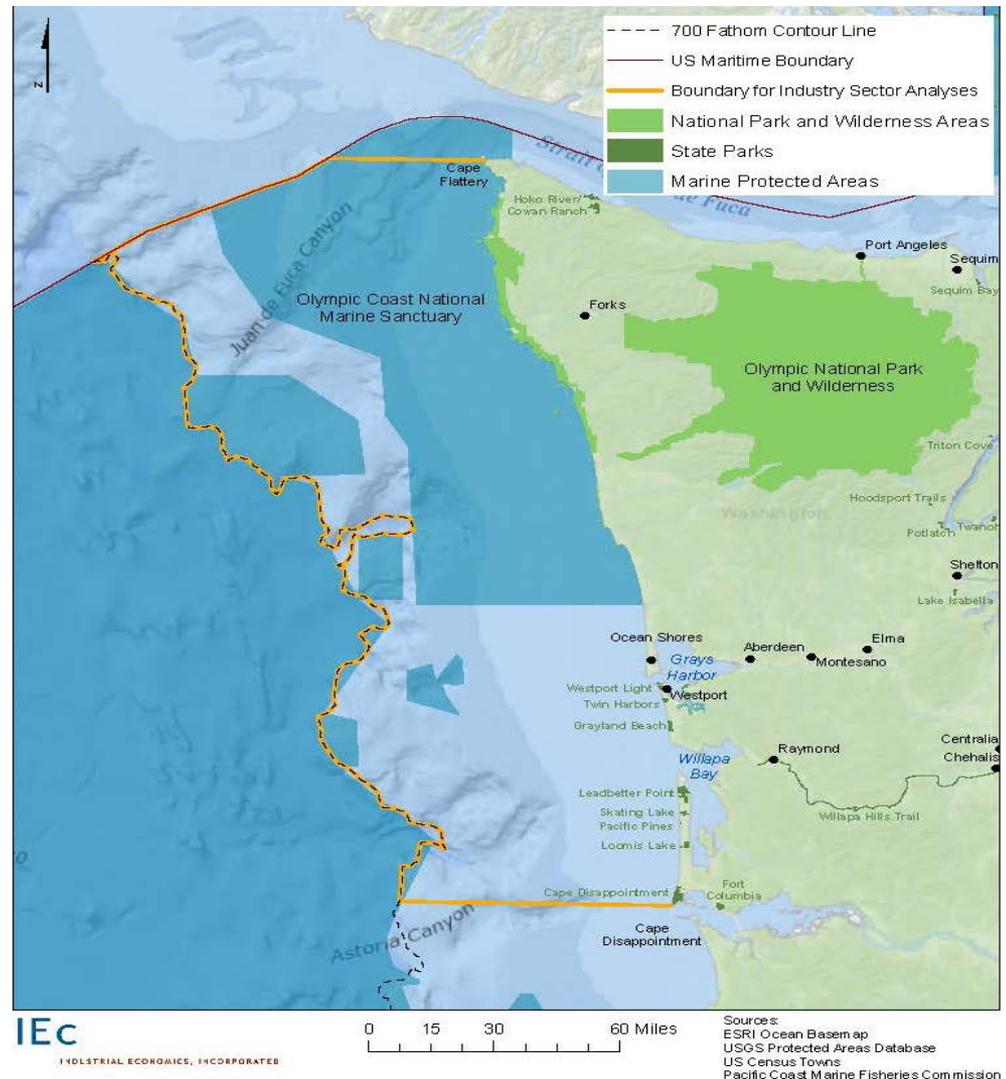
# Sector Analysis Reports: Areas of Focus

## Focal Industries

- Fisheries
- Aquaculture
- Marine Renewable Energy
- Recreation & Tourism
- Shipping

## Geographic Focus

- Cape Flattery to Cape Disappointment
- Out to 700 fathom contour
- Excludes Columbia River, Strait of Juan de Fuca, Puget Sound



# Deliverables

DELIVERABLE	DUE DATE
Summary of expert consultation efforts	May 30, 2014
Draft literature review	
Draft sector analysis reports	June 30, 2014
Presentation to WCMAC at July 2014 Meeting	July 9, 2014
Final sector analysis reports	August 31, 2014

# IEC

## Summary of Sector Analysis Reports to Support Marine Spatial Planning in Washington

### Presentation for the Washington Coastal Marine Advisory Council

### July 9, 2014

By:

Jen Kassakian and Jane Israel

For:

Washington Department of Natural  
Resources Contract No. SC 14-327

# Sector Presentation Outline

For each sector, we will review:

- Definition of the sector
- Location of activities
- Key descriptive statistics
- Issues facing the sector
- Key data gaps and economic questions

# Commercial and Recreational Fishing

## Sector Definition

- Focus on commercial and recreational fishing activities off Washington's Pacific coast
  - 10 key commercial fisheries (Groundfish and Dungeness crab most valuable)
  - 6 key recreational fisheries (Salmon most popular, groundfish highest catch), including private vessel fleet and charterboat fleet
- Primary ports include Westport and Ilwaco/Chinook, secondary ports include La Push and Neah Bay



- Does not include:
  - Fishing occurring in Puget Sound, Strait of Juan de Fuca, Columbia River, or in freshwater rivers, streams and lakes;
  - Tribal fisheries; or
  - Distant-waters fisheries (e.g., Alaska).

# Commercial and Recreational Fishing

## Descriptive Statistics

- Commercial Sub-Sector
  - Excluding aquaculture, distant waters and tribal fisheries, ex-vessel value in 2006 was \$65.5 million (WDFW 2008)
  - Landings at ports in our study area account for 85% of landings by weight and 63% by value statewide (2006) (WDFW 2008)
  - County by county, value landed in Grays Harbor County is highest in state (\$19.2 million) (2006) (WDFW 2008)
  - The Dungeness crab fishery is the most valuable fishery in our study area, with an ex-vessel value of \$48.2 million in 2014 (WDFW Data)



# Commercial and Recreational Fishing

## Descriptive Statistics

- Recreational Sub-Sector
  - 355,597 saltwater licenses, 72,327 razor clam licenses sold in 2013 (WDFW data)
  - Recreational catch was 843,636 fish, 46 percent of which was from the coast (WDFW 2008)
  - Coastal catch (numbers of fish) dominated by bottomfish (WDFW 2008)
  - 72% of bottomfish, 67% of halibut, and 100% of razor clams and albacore were caught on the coast (WDFW 2008)



Credit: Charter Westport

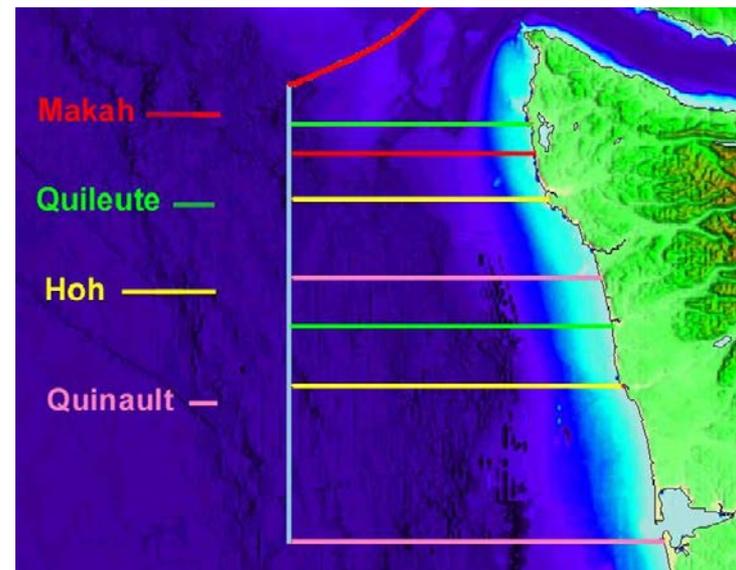
# Commercial and Recreational Fishing

## Key MSP-Related Issues

- Existing limitations in use of space
- Concern about future closures for other uses (e.g., marine renewable energy)
- Conflict with oil transport

## Other Key Issues

- Rafeedie decision/resource sharing
- Salmon production and survivability
- Ocean acidification
- Potential for concentration of ownership



Credit: US ACOE

# Commercial and Recreational Fishing

## Key Data Gaps

- Economic impacts of ocean-based commercial and recreational fishing specifically
- Economic data for processors and distributors

## Key Economic Questions

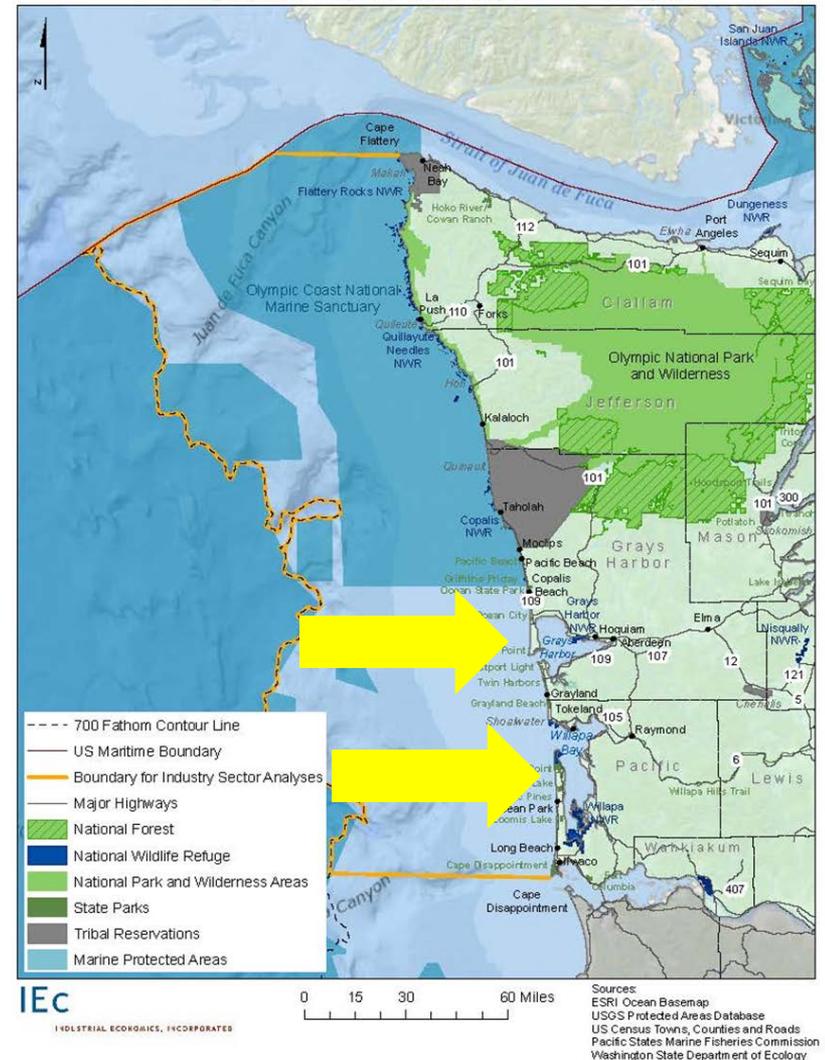
- Definition of the potentially affected industry
- Economic contribution of outer coastal fisheries
- Community fabric/social value of fisheries
- Indirect services

# Aquaculture

## Sector Definition and Location

- In study area, occurs exclusively in Willapa Bay (Pacific County) and Grays Harbor (Grays Harbor County)
- Principal cultured species: oysters (primarily Pacific) and Manila clams
- Definition for sector analysis does not include:
  - Aquaculture occurring in freshwater rivers and streams, Puget Sound, Strait of Juan de Fuca, Columbia River; or
  - Tribal aquaculture operations (to the extent they exist on the coast).

Geographic Scope of Industry Sector Analyses



# Aquaculture

## Descriptive Statistics

- Nationwide, in 2004, WA ranked first in value of farmed mollusks (\$63.6 million) (U.S. Census of Aquaculture 2004)
- 25 farms in Pacific County and 8 farms in Grays Harbor County in 2011(U.S. Census of Agriculture 2012)
- Total aquaculture harvest in Pacific and Grays Harbor counties in 2013 was 7.2 million round pounds and had a total value of \$19.7 million (WDFW data)
- Pacific oysters accounted for 82 percent of harvest in 2013 (WDFW data)
- Majority of harvest is shucked (Personal comm. B. Sheldon)

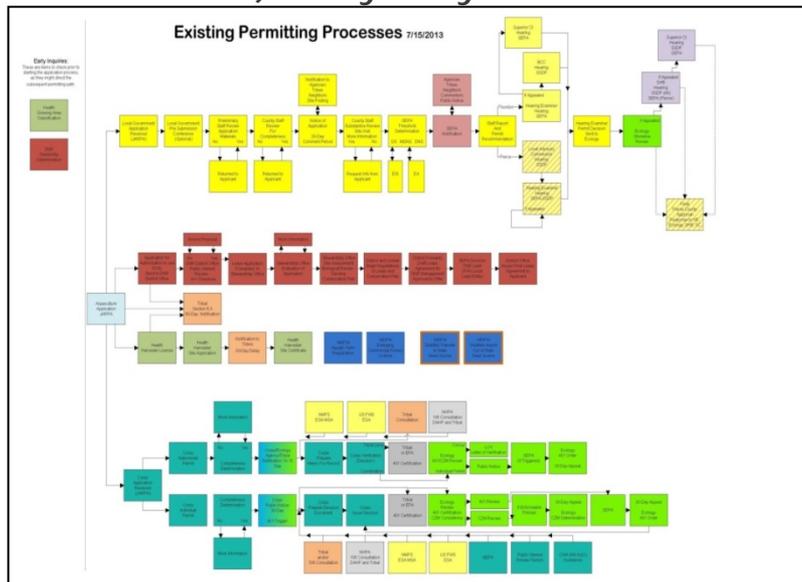


Photo credit: PCSGA

# Aquaculture

## Key MSP-Related Issues

- Limited direct conflict with other uses due to location
- Concerns related to how new ocean uses may affect characteristics (e.g., currents) they rely on



Existing permitting process, Shellfish Interagency Permitting Team



Japanese eelgrass, Dr. Kim Patten WSU Extension

## Other Issues

- Invasive and nuisance species
- Regulatory burden
- Climate change (including failure of natural set)
- Water quality

# Aquaculture

## Key Data Gaps

- Participation, harvest volumes, farm gate value
- Employment
- Processing

## Key Economic Questions

- **Added value:** What is the fate/distribution pathway for shellfish harvested in this region, and what price is being paid for various products along each step of the supply chain?
- **Failure of natural set:** How has the failure of the natural set affected businesses financially? How have they changed their operations to adapt to the new regime?
- **Regulatory burden:** How much are businesses spending annually in labor costs and fees associated with the permitting process?
- **Ecological costs and services:** Is it possible to quantify the ecological costs and benefits associated with shellfish aquaculture in the region?



# Marine Renewable Energy

## Sector Definition

- Technologies include: offshore wind, wave and tidal energy
- Projects currently under development in the U.S. are all pre-commercial, pilot or demonstration projects
- No activity currently occurring, planned, or likely to occur in 20-year timeframe in study area

Wave Energy - Ocean Technology's Powerbuoy



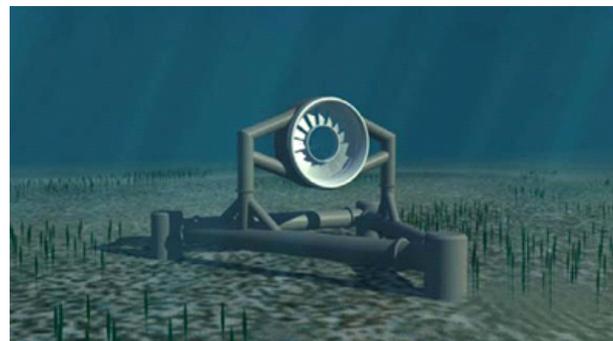
Source: BOEM Ocean Wave Energy website

Monopile Wind Turbines



Source: [www.capewind.org](http://www.capewind.org)

Tidal Energy - OpenHydro Marine Turbine



Source: Snohomish PUD website

# Marine Renewable Energy

## Location of Activities

- Suitability analyses identify suitable areas based on resources and infrastructure availability
  - Washington has broad areas suitable for offshore wind and wave energy, and limited potential for tidal energy
  - Suitability analyses do not incorporate factors such as economic conditions and regulatory environment
- Potential for development is limited
  - No good sites for tidal energy
  - Wave energy technology is in early stages
  - Offshore wind is best possibility but still unlikely
    - National Marine Sanctuary restrictions
    - Southern half of coast - heavy shipping traffic from Columbia River
    - Washington market issues

# Marine Renewable Energy

## Descriptive Statistics

### Offshore wind benefits

- *Windfloat Portugal (2 MW)*: \$27.2 million cost (60% spent locally), 200 jobs
- *WindFloat Pacific (30 MW)*: \$200+ million investment expected

**Industry Fun Fact:**  
Given same equipment, a site with average wind speed of 16 mph produces 50% more electricity than a site with average wind speed of 14 mph.



Source: Principle Power Inc. ([www.windfloatpacific.com](http://www.windfloatpacific.com))

# Marine Renewable Energy

## Key MSP-Related Issues

- Uncertainty about whether activities can coexist
- Regulatory issues

## Other Issues

- Market factors
  - Electricity prices low in Washington
  - Development costs high
  - Infrastructure availability limited
- Environmental concerns
  - Noise, electromagnetic fields, and lighting effects on species
  - Aggregation around devices causing increased predation
  - Avoidance of area because of devices

# Marine Renewable Energy

## Key Data Gaps

- Potential economic impacts (e.g., jobs, output) will become better understood as industry develops

## Key Economic Questions

- What is the timing and cost associated with the regulatory process?
- When might marine renewable energy projects be competitive given market factors?
- What potential restrictions might be required to mitigate for environmental concerns?

# Recreation & Tourism

## Sector Definition

- Wide-ranging activities
  - Primarily shore-based activity, except for recreational fishing and surfing
  - Beachgoing likely most popular activity
  - Other popular activities include razor clamming, driving on beach, horseback riding
- Recreation/Tourism is largest contributor to ocean economy jobs in the four coastal counties
- Location of activities
  - Northern half largely National Park and Tribal lands, more remote
  - Southern half developed coastal towns, drivable beach access



Photos: [www.toursimoceanshores.com](http://www.toursimoceanshores.com)

# Recreation and Tourism

## Descriptive Statistics

- Limited data specific to the study area indicate important contribution to local economies and high visitation

## Study-area visitation

- State Parks in study area: 9.2 million visitors per year on average
- Olympic National Park:
  - Approximately 0.8 million visitors to coastal locations in 2013
  - 3 million visitors per year park-wide

## Visitor expenditures

- Olympic National Park: \$394 per group (in and out of park, 2001\$)
- Anecdotal evidence for Ocean Shores and Long Beach: \$300 per day per visitor

# Recreation and Tourism

## Descriptive Statistics

- Ocean-economy data for recreation and tourism sector (four-county total, 2014\$):

ECONOMIC STATISTIC	2010
Establishments	637
Employment	5,670
Wages	\$98,242,603
GDP	\$230,543,307

Source: National Ocean Economics Program (NOEP) 2014.

- Olympic National Park economic impacts (entire park, 2001):
  - Direct sales \$98.5 million
  - 2,290 jobs
  - \$38.6 million personal income
  - \$61.7 value added

# Recreation and Tourism

## Key MSP-Related Issues

- Concerns about marine renewable energy development

## Other Issues

- Potential access issues
  - Overcrowding
  - Availability of facilities to meet demand
  - Limitations on access
  - Access fees
- Environmental issues
  - Water quality
  - Erosion
  - Tsunami
  - Oil spill risks
- Endangered species issues



Photo: <http://www.southwestwashingtonzest.com/>

# Recreation and Tourism

## Key Data Gaps

- Visitation and expenditures specific to study area and by activity
  - Surfrider study of recreational use will provide information for most activities
  - Expenditure data for recreational fishing will not be collected in recreation survey
- Economic impacts of activities on tribal lands

## Key Economic Questions

- How dependent is coastal economy on recreation and tourism?
- What is the economic contribution of activities on tribal lands?

# IEC

INDUSTRIAL ECONOMICS, INCORPORATED

617.354.0074

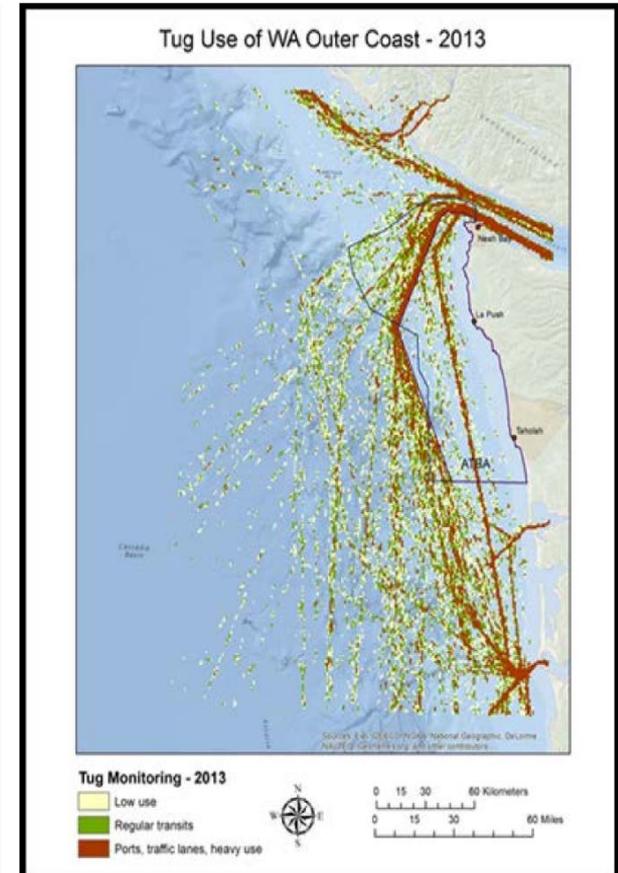
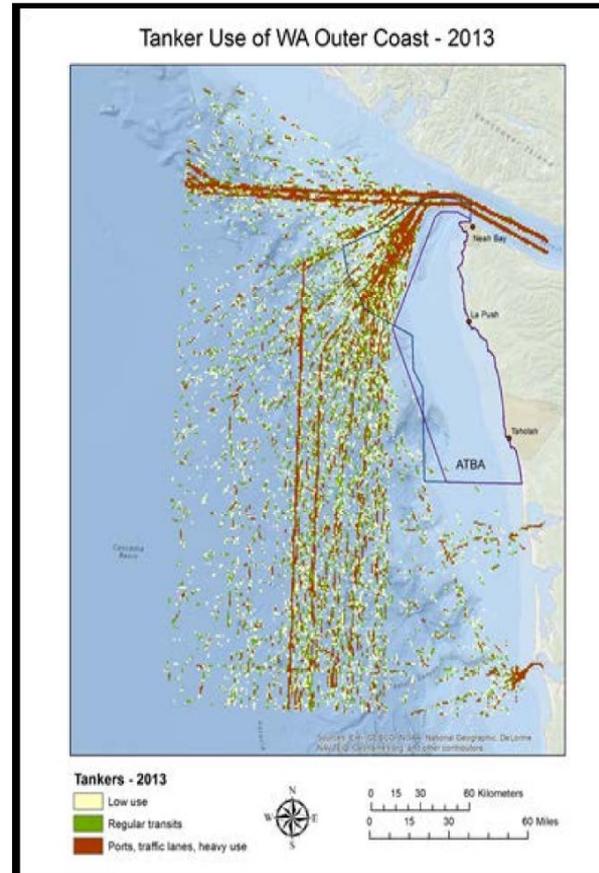
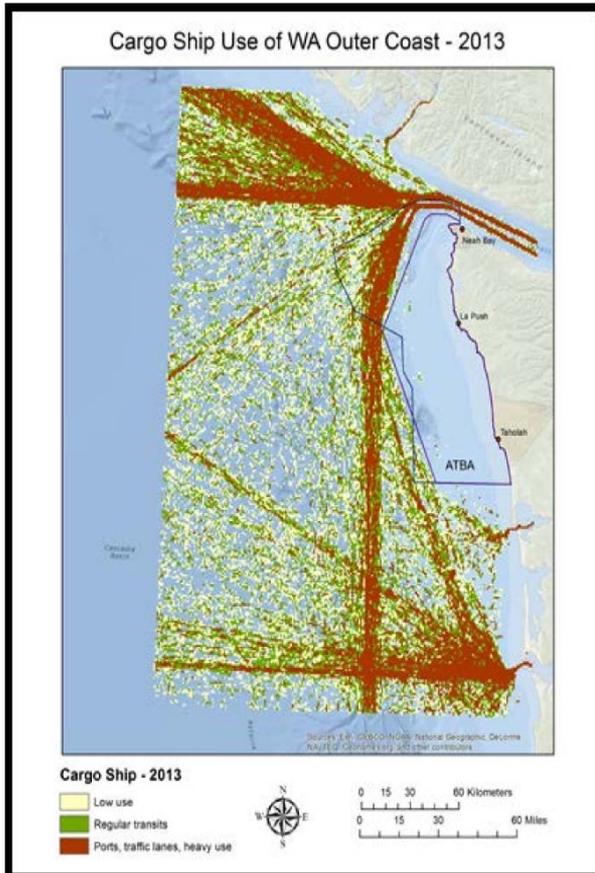
# Marine Spatial Planning Draft Shipping Sector Report

Prepared by BST Associates  
For: Washington State Dept of Natural Resources  
July 9, 2014

# Sector Definition

- ▶ Shipping sector includes:
  - Cargo vessels
    - Container
    - Breakbulk/Neobulk
    - Grain and dry bulks
  - Tankers
    - Petroleum
    - Chemicals and other products
  - Passenger vessels
  - Tug & barges
    - Dry cargo (containers, breakbulk, dry bulks)
    - Petroleum and chemical products
- ▶ Focus on PNW ports (Washington/Oregon)
  - Columbia River
  - Washington Coast
  - Puget Sound

# Location of Activity



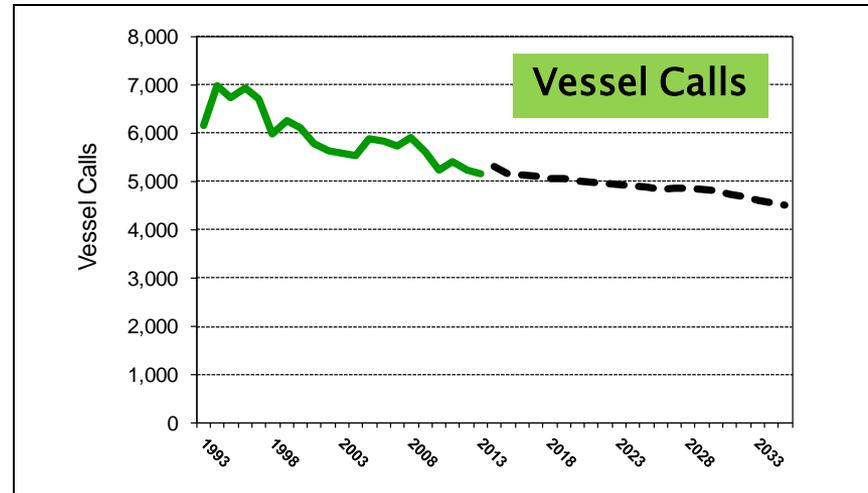
Source: NOAA, Olympic Coast National Marine Sanctuary

# Key Issues Affecting Sector

- ▶ Offshore energy systems viable within 20 miles of the coast but future technology could increase the distance from the coast. Crown Estate (England) evaluating 100 miles.
- ▶ Most deep draft vessels and barges carrying liquid bulks (petroleum, petroleum products and chemicals) transit well offshore unless entering/departing a port. ATBA is 24 miles off the coast.
- ▶ The closer off-shore power projects are to the coast, the less likely there will be conflicts with deep draft vessel traffic and barges carrying petroleum and chemicals.
- ▶ Two key exceptions are:
  - Barges carrying dry cargoes, and
  - Barges/vessels accessing the Port of Grays Harbor and the coastal area just below the ATBA.
- ▶ As a result, the shipping sector could be impacted by development of offshore energy systems, depending upon where they are placed.

# Key Statistics

- ▶ Cargo growth <2% per year under baseline forecasts.
- ▶ Growth opportunities above the baseline consist of energy products (coal, crude oil, methane et al).
- ▶ Vessel calls have declined from 7,000 in mid-1990s to around 5,000 at present due to increased vessel sizes.
- ▶ The number of calls is expected to continue to decline to ~4,500 calls by 2035 (BST baseline).
- ▶ Compliance with ATBA has been very good.

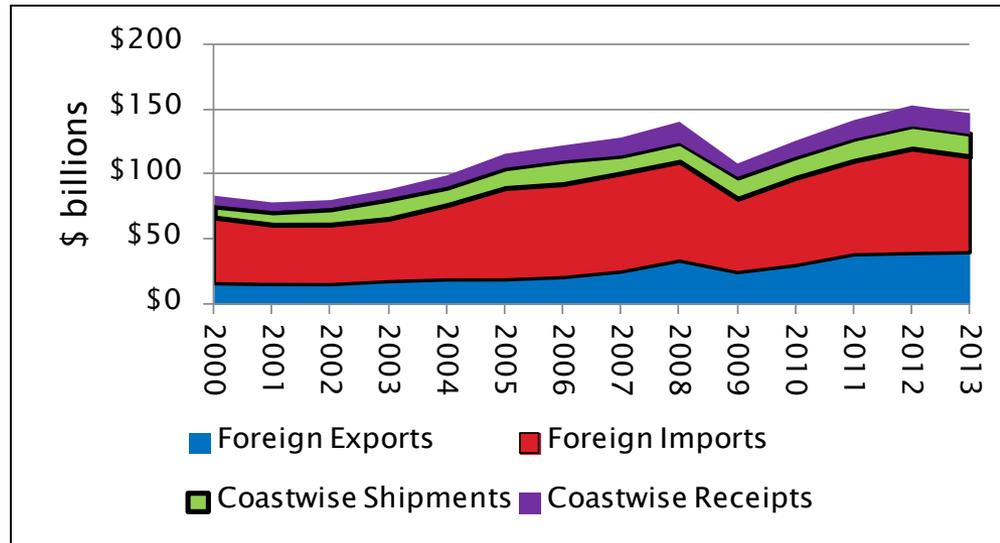


Vessel Type	Compliance		Transits passing through the ATBA within the Sanctuary <sup>5</sup>	Estimated ATBA Compliance Rate <sup>6</sup>
	Outer Washington Coast Transits <sup>3</sup>	Transits passing through the Sanctuary <sup>4</sup>		
Bulk Carrier	4620	1306	11	99.20%
Cargo Ship	418	137	2	98.50%
Chemical Carrier	252	110	1	99.10%
Container Ship	2192	849	3	99.60%
Liquefied Gas Carrier	19	7	0	100.00%
Oil Tanker	973	553	3	99.50%
Passenger Ship	389	180	4	97.80%
Refrigerated Cargo	25	8	0	100.00%
RoRo Cargo Ship	302	102	0	100.00%
Tug	661	375	17	95.50%
Vehicle Carriers	815	360	0	100.00%
<b>TOTAL</b>	<b>10,666</b>	<b>3,987</b>	<b>41</b>	<b>98.97%</b>

Source: NOAA, Olympic Coast National Marine Sanctuary

# Key Economic Questions

- ▶ The value of waterborne trade moving through PNW ports grew from \$81 billion in 2000 to more than \$152 billion in 2012.



- ▶ Jobs associated with international trade are very important to Washington State, the region and the U.S.
- ▶ Every \$1 billion in goods exports created 5,408 jobs in 2013. In addition, imports and domestic receipts create jobs (U.S. ITA).
- ▶ Competition is very fierce for trade. Washington state needs to consider how vessel lane restrictions could impact the economy.