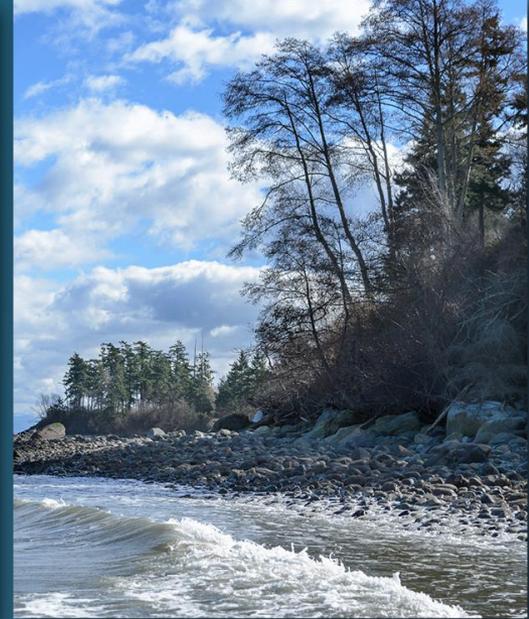


MARINE SPATIAL PLANNING Economic Analysis Study Workshop



*Prepared for:
Washington Coastal
Marine Advisory Council*

*Presented by:
Cascade Economics LLC*

The Economic Analysis Team

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Recreation, Tourism, Recreational Fishing

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Aquaculture, Social and Cultural Impacts

Purpose

- The economic analysis should develop the tools and data to evaluate the economic consequences of proposals and planning options for “new uses.”
 - The analysis is intended to “foster and encourage sustainable uses that provide economic opportunity without significant adverse environmental impacts.” (RCW 43.372.040)

Overview of the Workshop

Status of Econ Analysis

Part I:

- Economic Profile of the Coastal Economy
- Economic Profile of Coast Tribes
- Recreation and Tourism
- Commercial Fishing on the Washington Coast
- Q&A, Discussion, and Comments

BREAK

Part II:

- Recreational Fishing
- Social Impact Assessment
- Ecosystem Services
- Aquaculture on the Washington Coast
- Q&A, Discussion, and Comments

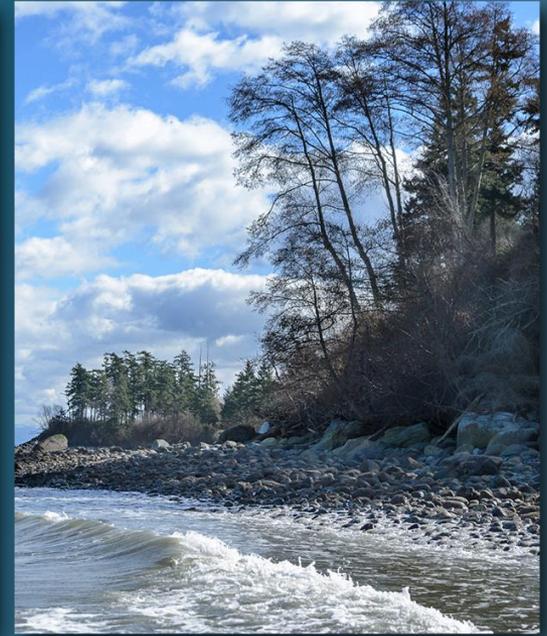
Summary of Input /
Next Steps

Overview of Study Schedule

- Public Scoping Workshop – Oct. 7, 2014
- Comments / Revised Scope of Work
- Study Initiated – Nov. 1, 2014
- Data Collection / Focus Group Meetings / Modeling / Analysis / Report Writing
- Draft Report – distributed May 27, 2015
- Review by WCMAC and Interested Public
- Presentation – June 1 Workshop Meeting
- Final Report – due by June 30, 2015

Status of the Economic Analysis

- Draft Report – *A Work in Progress*
 - Research and analysis will continue for another two weeks; interviews and survey responses
 - Input and comments are welcome
- What Remains
 - Completing Missing Subsections
 - Risk and Vulnerability Assessment of Key Industries
 - Qualitative Assessment of New Uses



Part I

- Economic Profile of Coastal Economy
- Economic Profile of Washington Coast Tribes
- Recreation and Tourism
- Commercial Fishing on the Washington Coast

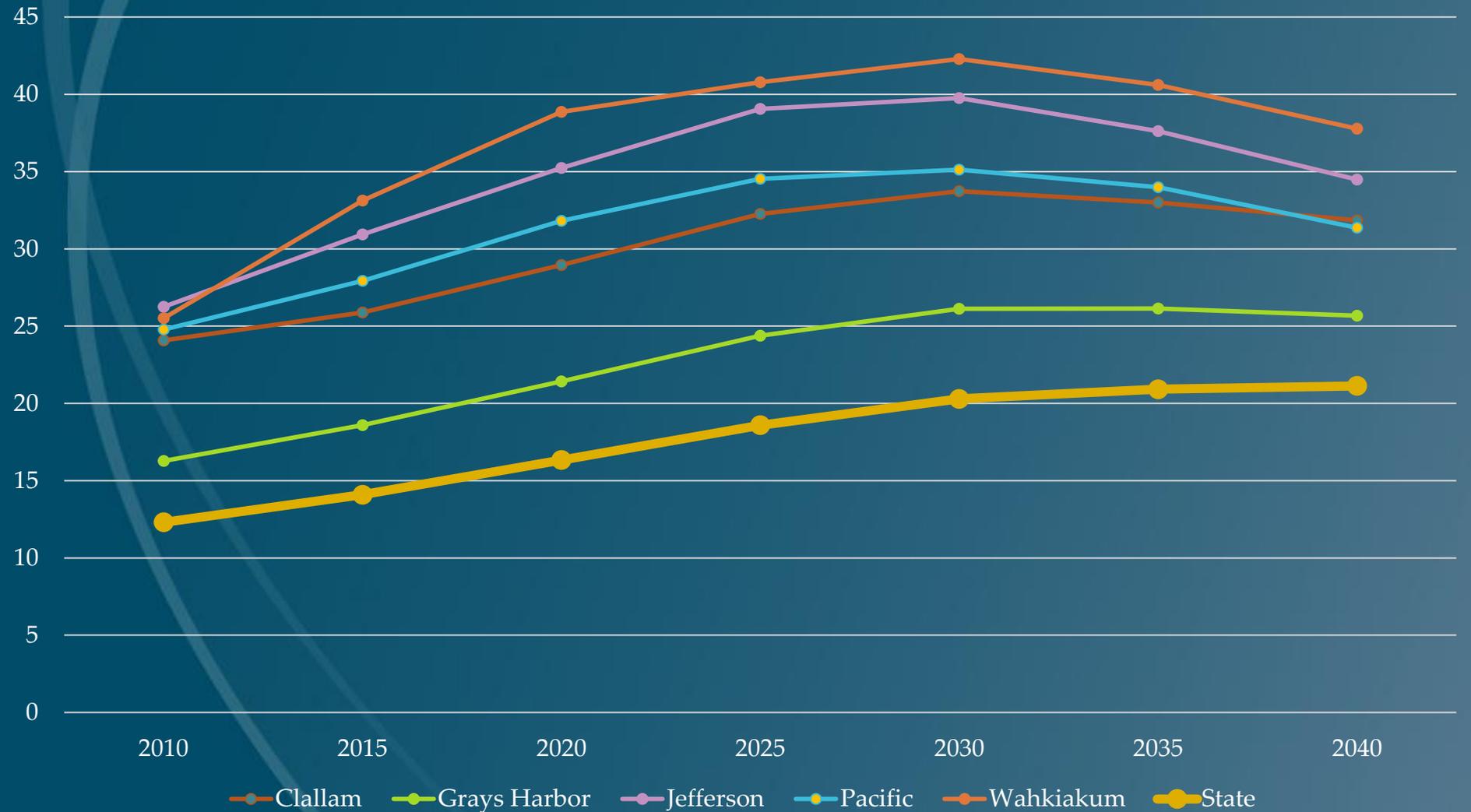
County Profiles

- Population characteristics
 - MSP counties growing more slowly than other parts of Washington
 - 65 and older population percent greater in the coastal counties

Population: Projected Growth from 2010 to 2040

	2010	2040	% Growth Between 2010 to 2040
Washington	6,724,540	8,790,981	31%
Clallam	71,404	77,224	8%
Grays Harbor	72,797	77,070	6%
Jefferson	29,872	40,093	34%
Pacific	20,920	22,042	5%
Wahkiakum	3,978	3,669	-8%

Percent of Population 65 or Older



County Profiles

- Economic development
 - Industry cluster strategies
 - Workforce training
 - Importance of tourism
 - Shipping

Shipping

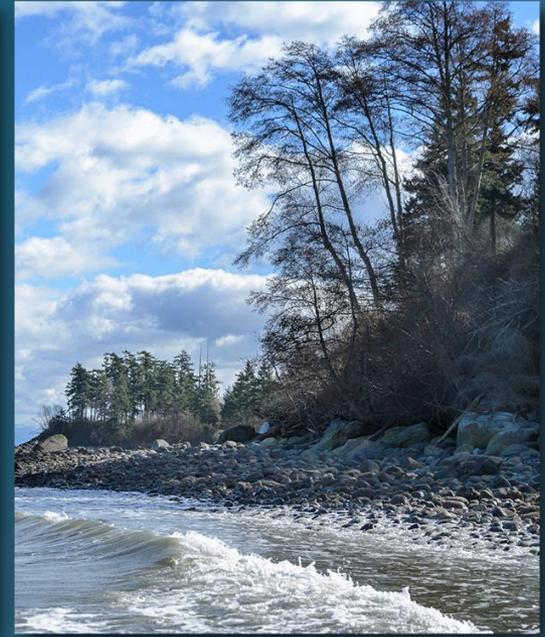
- Port of Grays Harbor, Martin Associates
 - 2013 base year, uses RIMS model
 - Direct jobs excluding commercial fishing
 - Marine cargo: 574 jobs
 - Recreational boating: 137 jobs
 - Real estate: 950 jobs
- Port of Port Angeles, BST Associates
 - 2012 base year, uses IMPLAN model
 - Direct jobs
 - Airports: 86 jobs
 - Marinas: 421 jobs
 - Marine Terminals: 924 jobs
 - Log yard: 88 jobs
 - Rental properties: 524 jobs
 - Other: 26 jobs

Tribal Profiles

- Population characteristics
- Tourism focus
- Education focus
- Moving housing and facilities to safer ground

Additional Studies

- Evaluate in more depth the two port impact models to determine, if and how, they could be used for analyzing shipping and port impacts associated with offshore energy and other potential new uses.
- Economic contribution to coastal economy of tribal recreation and tourism enterprises

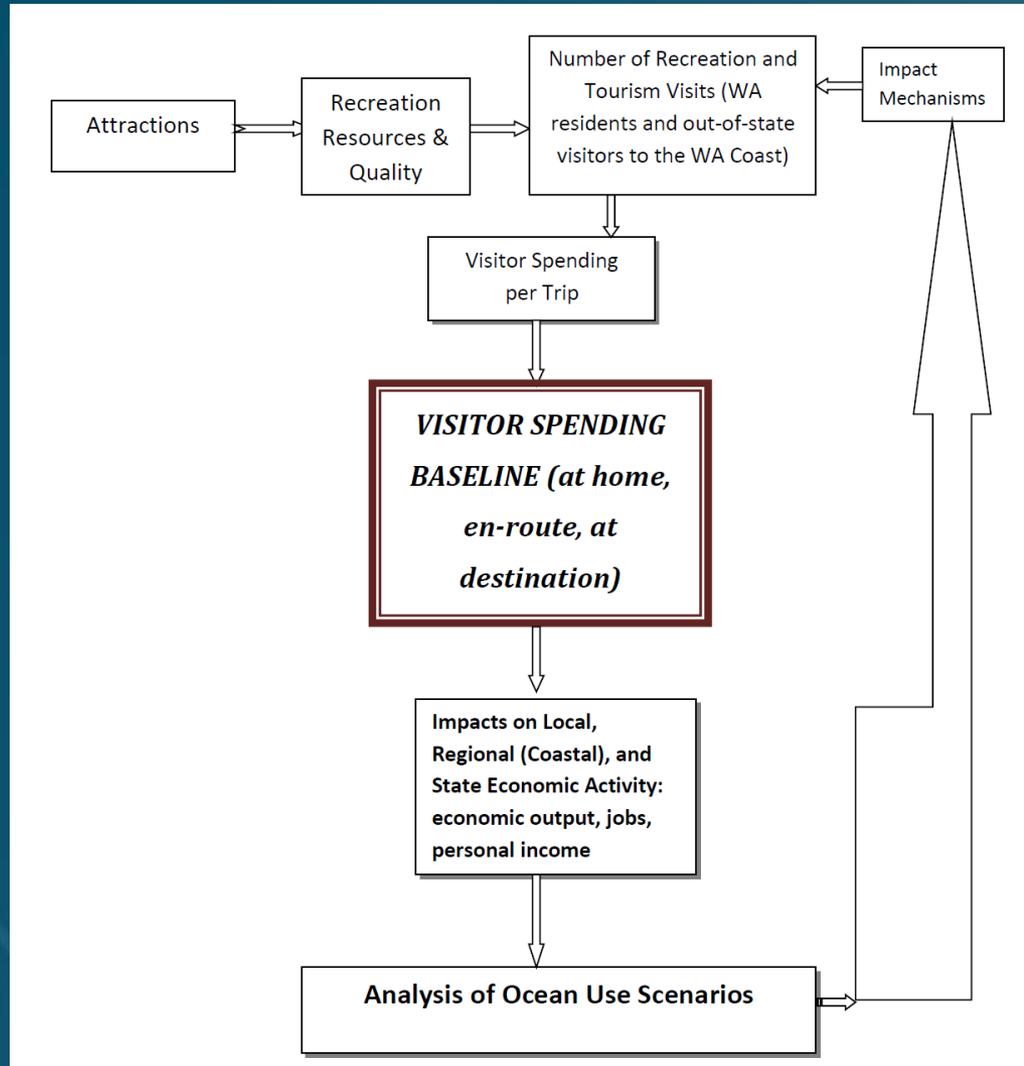


Recreation and Tourism

Analytical Objectives

- Develop economic baseline that characterizes recreation and tourism in the WA coastal area
- Assess the relative importance of recreation and tourism to coastal communities
- Identify impact mechanisms for assessing changes in recreation and tourism conditions along the WA coast

Methodology for Estimating Economic Baseline for Coastal Recreation and Tourism



Key Data Sources

- Surfrider Foundation Report: An Economic and Spatial Baseline of Coastal Recreation in Washington (2015)
- Earth Economics Report: Economic Analysis of Outdoor Recreation in Washington (2015)
- The Research Group Report: Oregon Angler Survey (1991)

Analytical Results – TRIP-RELATED SPENDING (2014)

- Coastal spending by WA residents: \$330.9 Million (Table 7-6)
- Coastal spending by out-of-state visitors: \$160.0 Million (Table 7-7)
- Spending elsewhere in WA by WA residents associated with coastal recreation trips: \$150.3 Million (Table 7-6)
- Spending elsewhere in WA spending by out-of-state visitors associated with coastal recreation trips: \$189.8 Million (Table 7-7)

Analytical Results – EMPLOYMENT AND LABOR INCOME

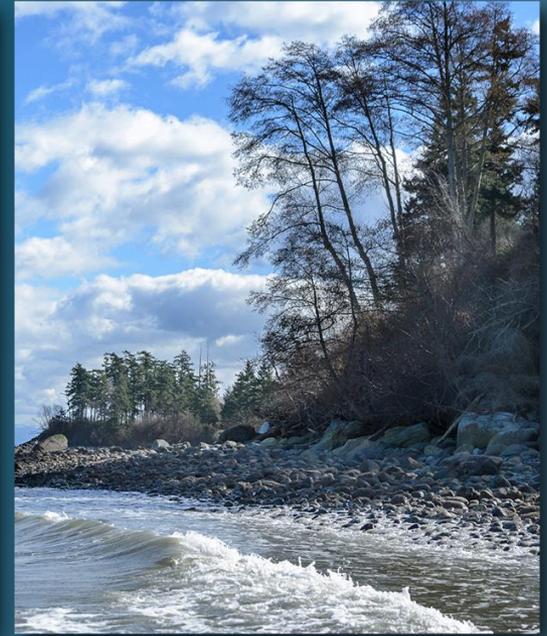
- Number of total jobs in the 5-county coastal region: 4,725 jobs (Table 7-8)
- Total labor income in the 5-county coastal region: \$196.8 Million (Table 7-8)
- Number of total state-wide jobs supported by coastal recreation and tourism activity: 9,309 jobs (Table 7-9)
- State-wide total labor income supported by coastal recreation and tourism activity: \$413.0 Million (Table 7-9)

Next Steps Remaining

- Conduct key informant interview to fill data gaps
- Incorporate recreation and tourism trend information into report
- Identify impact mechanisms for assessing changes in coastal uses on recreation and tourism activities

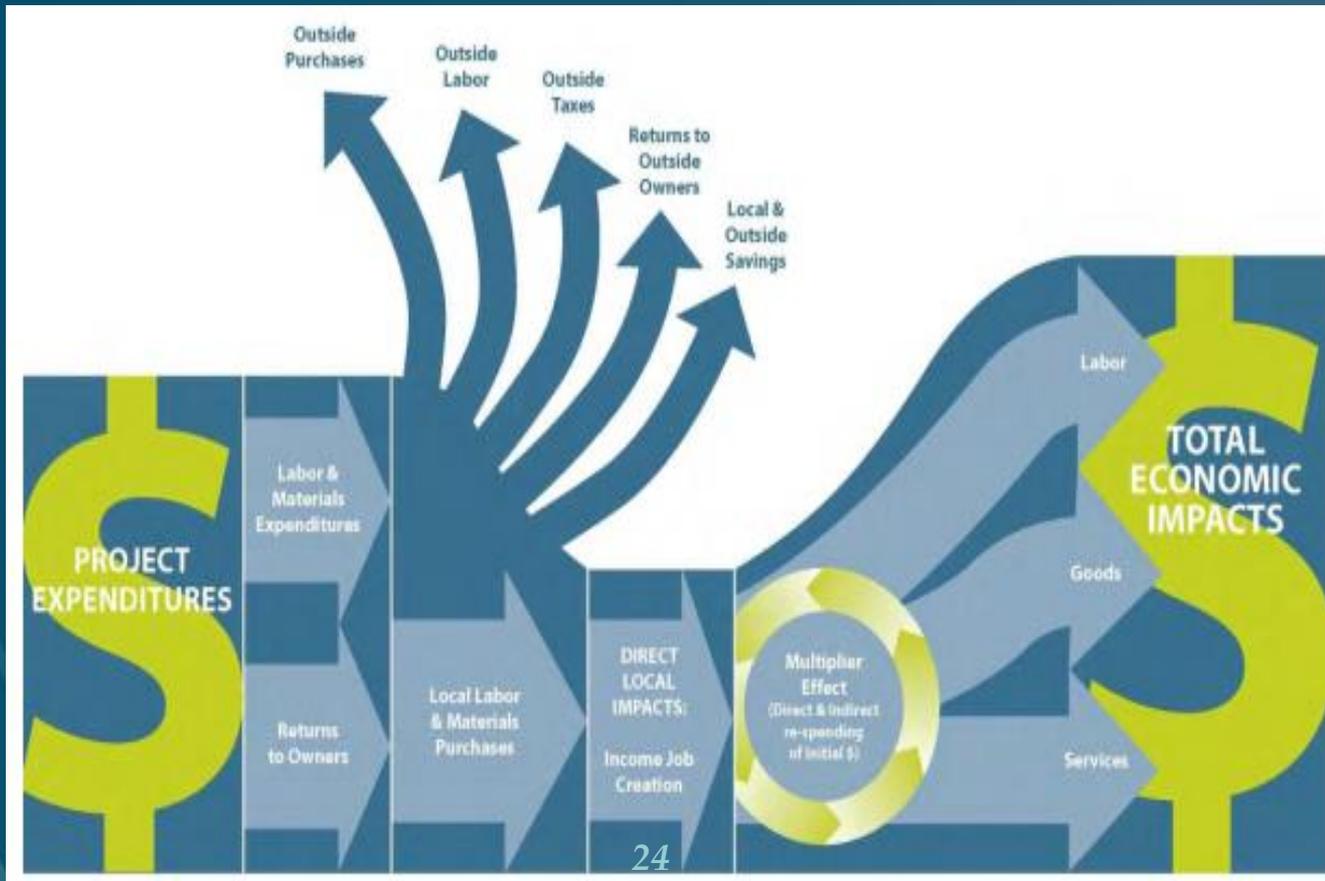
Additional Studies

- Investigate motivations of coastal visitors
- Delve deeper into Surfrider Foundation 2015 Report
- Assess net willingness-to-pay values for coastal recreation resources

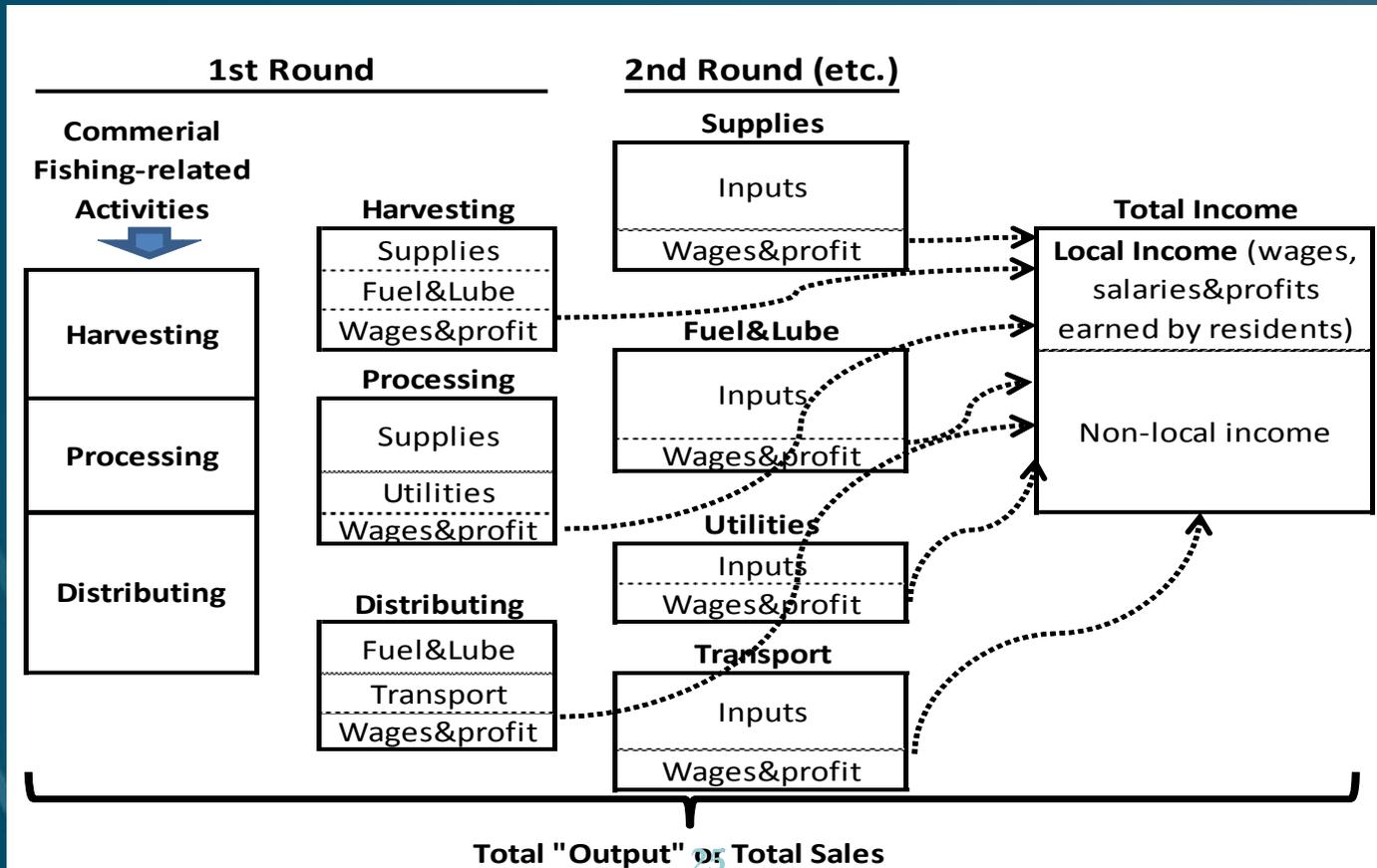


Economic Contribution of Commercial Fishing and Seafood Processing on the Washington Coast

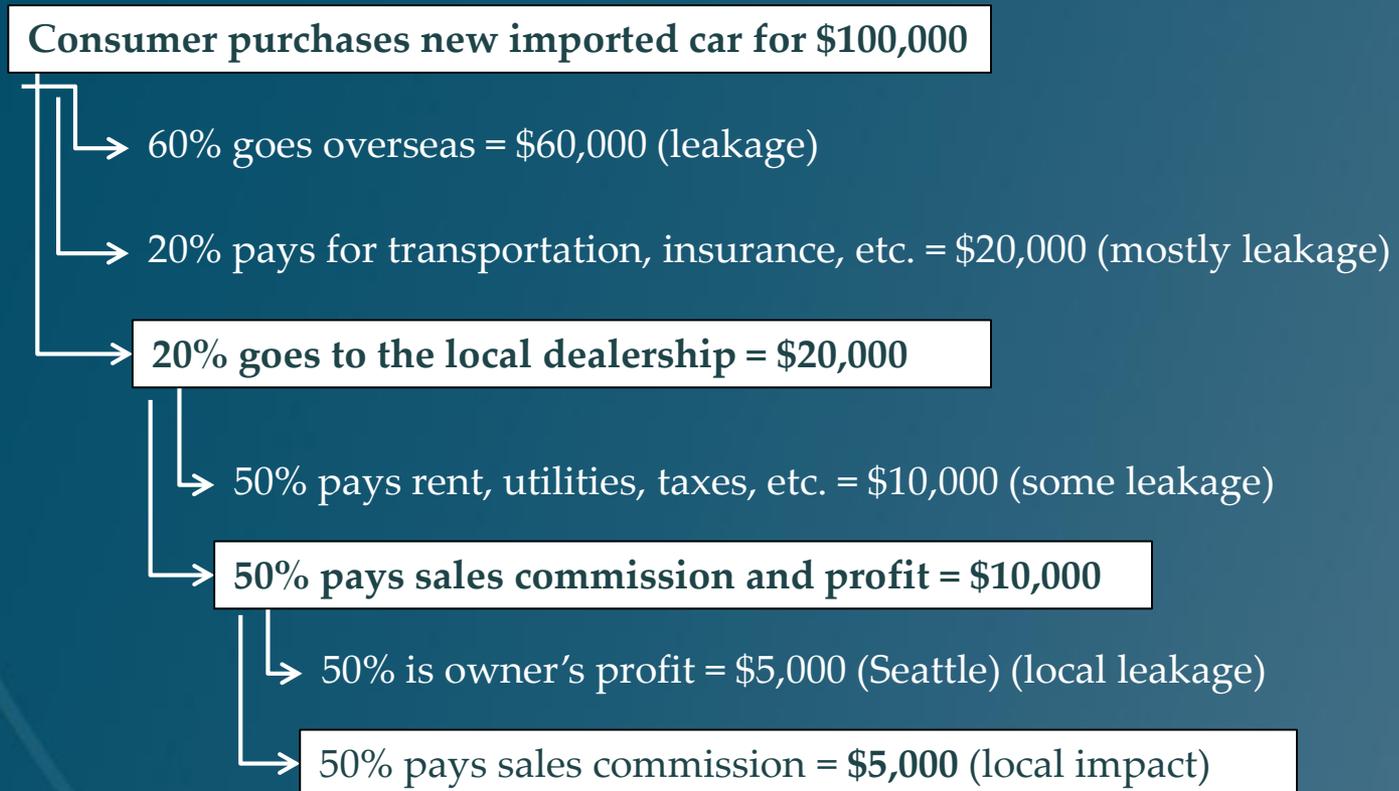
Economic Multiplier Effect



Commercial Fisheries Example



Economic Leakage



“Total” Economic Effects or Contributions

- Direct Effects
 - Original round of expenditures
- Indirect Effects
 - Spending by businesses that sell to the directly-affected businesses (subsequent rounds)
- Induced Effects
 - Additional economic activity generated by local households’ spending of earned wages and profits

Economic Contributions of Commercial Fisheries

- Commercial Harvesting and Processing on Washington Coast
- Commercial Harvesting and Processing Elsewhere
 - Puget Sound
 - Other States and Canada (?)
- Interactions with At-Sea Whiting Fisheries (?)
- Income from Distant Water Fisheries
 - Alaska Salmon
 - Other (?)

Washington Coast Landings – by Species

Table 4-5 Annual exvessel revenue by species group 2004-2014 (in thousands of 2014 inflation-adjusted dollars)

Management Group	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Groundfish	5,819	8,823	8,310	7,972	7,723	5,866	9,525	13,703	11,508	9,669	9,324
Salmon	3,009	3,116	2,965	2,022	2,188	3,154	5,071	4,605	3,997	4,656	5,152
Crab	12,503	33,075	26,154	29,664	29,923	21,072	26,483	43,511	23,778	42,554	36,567
Shrimp	2,625	3,032	2,371	1,868	3,740	2,776	4,145	5,220	4,764	5,928	16,398
Coastal Pelagic	1,525	844	521	566	1,489	1,926	2,934	2,299	8,212	6,771	3,208
Highly Migratory	16,349	11,625	16,045	11,333	18,403	17,320	15,570	22,091	28,216	24,086	20,216
Shellfish	349	252	238	170	326	1,204	2,145	570	513	388	332
Other	527	512	626	711	1,053	1,229	1,603	1,748	2,832	2,470	1,769
Grand Total	42,706	61,278	57,231	54,305	64,845	54,547	67,475	93,746	83,821	96,521	92,967

Washington Coast Landings – by Port

Table 4-15 Total fish purchases in Washington Coast ports each year 2004-2014 (thousands of current dollars) *(Excerpt showing non-confidential data in main ports)*

County	Port Code	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Clallam	Neah Bay	928	1,486	1,677	1,170	891	860	1,054	1,237	1,499	1,514	1,094
	La Push	c/	1,058	c/	737	c/	c/	1,021	1,814	1,243	1,447	924
Grays Harbor	Westport	18,132	32,526	22,335	28,219	37,857	27,484	36,552	53,567	53,335	58,351	59,674
Pacific	Willapa Bay	1,851	3,863	4,096	3,283	3,427	3,308	4,408	4,340	2,841	3,624	4,828
	Ilwaco	11,521	11,423	18,894	13,661	14,796	15,881	17,489	26,572	21,788	28,955	24,331
Wahkiakum	Wahkiakum Co. Ports	748	532	584	301	270	233	416	947	306	563	966

c/ confidential

Economic Contribution: Washington Coast Landings

Table 4-18 Contributions to the Five-County Coastal Region from Washington Coast non-tribal commercial fishing and seafood processing by county

Direct Effects	Coast-wide	Clallam Co.	Grays Harbor Co.	Pacific Co.	Wahkiakum Co.	Total Effects	Coast-wide	Clallam Co.	Grays Harbor Co.	Pacific Co.	Wahkiakum Co.
Harvesting						Harvesting					
Income (\$000)	30,817	1,017	18,639	10,686	476	Income (\$000)	35,574	1,200	21,497	12,339	537
Jobs	1,123	51	609	413	49	Jobs	1,222	55	669	448	50
Processing						Processing					
Income (\$000)	36,474	963	25,193	9,968	350	Income (\$000)	41,615	1,095	28,759	11,365	396
Jobs	482	13	333	132	5	Jobs	594	16	411	162	6
Combined						Combined					
Income (\$000)	67,291	1,980	43,832	20,654	825	Income (\$000)	77,189	2,295	50,256	23,705	933
Jobs	1,605	64	942	545	53	Jobs	1,817	71	1,080	611	56

Economic Contribution: Washington Coast Landings

Table 4-19 Contributions to the State of Washington from Washington Coast non-tribal commercial fishing and seafood processing by county

Direct Effects	Coast-wide	Clallam Co.	Grays Harbor Co.	Pacific Co.	Wahkiakum Co.	Total Effects	Coast-wide	Clallam Co.	Grays Harbor Co.	Pacific Co.	Wahkiakum Co.
Harvesting						Harvesting					
Income (\$000)	50,410	1,627	30,770	17,452	561	Income (\$000)	65,623	2,112	40,223	22,573	715
Jobs	1,770	92	989	640	49	Jobs	2,063	101	1,171	739	52
Processing						Processing					
Income (\$000)	38,372	1,013	26,506	10,486	368	Income (\$000)	51,415	1,333	35,588	14,018	477
Jobs	512	14	354	140	5	Jobs	764	20	530	208	7
Combined						Combined					
Income (\$000)	88,782	2,640	57,276	27,938	929	Income (\$000)	117,038	3,445	75,810	36,591	1,193
Jobs	2,283	105	1,343	780	54	Jobs	2,828	121	1,701	947	59

Economic Contribution: Puget Sound Landings

Exvessel revenue from landings in Puget Sound ports of Washington Coast catch 2004-2014 (thousands of 2014 inflation-adjusted dollars)

Management Group	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Groundfish	4,224	4,678	4,531	3,039	2,549	2,620	1,969	2,085	1,623	1,556	1,183
Salmon	50	28	44	46	106	10	13	18	80	3	54
Crab	1,538	2,710	4,128	3,255	3,736	2,816	4,677	3,156	1,872	5,875	5,188
Coastal Pelagic	0	149	0	0	0	0	0	0	1	0	0
Highly Migratory	177	471	401	79	198	15	134	424	123	220	163
Other	252	274	385	307	127	57	142	81	37	213	213
Grand Total	6,241	8,310	9,489	6,727	6,716	5,518	6,935	5,764	3,735	7,867	6,802

Economic Contribution: Puget Sound Landings

Economic Contributions of Washington Coast Catch Landed in Puget Sound

Coastal Region Contributions	Direct Effects	Total Contribs.
Harvesting		
Income (\$000)	2,074	2,316
Jobs	58	59
Processing		
Income (\$000)	-	-
Jobs	-	-
Combined		
Income (\$000)	2,074	2,316
Jobs	58	59

State of Washington Contributions	Direct Effects	Total Contribs.
Harvesting		
Income (\$000)	4,811	6,311
Jobs	130	159
Processing		
Income (\$000)	1,442	1,882
Jobs	19	28
Combined		
Income (\$000)	6,253	8,193
Jobs	149	187

Economic Contribution: At-Sea Pacific Whiting

Table 4-7 At-sea P. whiting catch

Year	Catcher-Processors		Motherships	
	Sector total (mt)	WA Share	Sector total (mt)	WA Share
2005	78,890	18%	48,571	18%
2006	78,864	5%	55,355	41%
2007	73,263	38%	47,809	25%
2008	108,121	45%	57,432	33%
2009	34,620	27%	24,091	91%
2010	54,285	24%	35,714	55%
2011	71,679	52%	50,051	45%
2012	55,263	42%	38,434	21%
2013	77,950	11%	52,450	13%
2014	103,486	0%	62,109	14%

Table 4-8 Owner's state of residence for vessels in the at-sea P. whiting sectors

Year	Catcher Processor and Mothership Vessels				Mothership Sector Catcher Vessels			
	AK	OR	WA	Total	AK	OR	WA	Total
2005	-	-	11	11	1	7	10	18
2006	-	-	15	15	-	10	10	20
2007	-	-	15	15	-	10	10	20
2008	-	-	13	13	-	8	11	19
2009	-	1	11	12	1	9	9	19
2010	-	1	12	13	2	10	10	22
2011	-	-	14	14	-	9	9	18
2012	-	-	14	14	-	8	8	16
2013	-	-	14	14	-	10	8	18
2014	-	-	14	14	-	11	8	19

Economic Contribution: Distant Water Fisheries

Table 4-20 All Alaska Fisheries Permits

	Clams	Crab	Halibut	Herring	Sablefish	Salmon	Shrimp	Misc.	Total
Total Current Permits	112	878	1,705	1,882	696	10,924	415	1,837	18,449
Number Owned by WA State Residents	36	114	199	196	134	1,478	18	304	2,479
Number Owned by WA Coast Residents	11	12	17	18	11	152	4	14	239
% Owned by WA Coast Residents	9.8%	1.4%	1.0%	1.0%	1.6%	1.4%	1.0 %	0.8%	1.3%

Table 4-21 Selected Alaska Salmon

	Drift Gillnet, Bristol Bay	Set Gillnet, Bristol Bay	Total Alaska Salmon Permits
Total Current Permits	1,867	975	10,924
Number Owned by WA State Residents	644	125	1,478
Number Owned by WA Coast Residents	60	21	152
% Owned by WA Coast Residents	3.2%	2.2%	1.4%

Economic Contribution: Distant Water Fisheries

- 2.9% of Bristol Bay permits owned by Washington Coast Residents (CFEC)
- \$110 million net income + payments to crew in 2010*
-  \$3.2 million income to Washington Coast Residents
 - Generates additional spending:
 - \$1.4 million Statewide, of which
 - \$0.5 million on Washington Coast

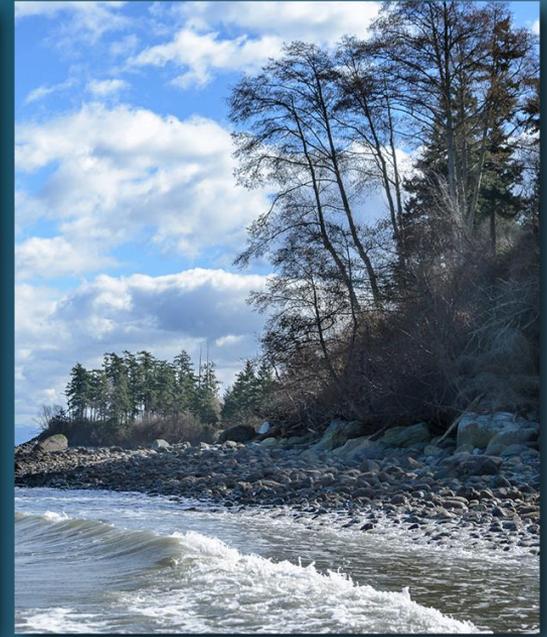
**Knapp, et al. 2013, Economic Importance of Bristol Bay Salmon Industry*

Economic Contribution: Additional Work

- Market Analysis:
 - Other processing in the region
 - Fishmeal and fish oil production,
 - Secondary processing (filleting, smoking)
 - Where do Manufactured Seafood products go?
 - Exported outside the State,
 - Elsewhere in Washington?
 - Local consumption of Washington Coast seafood
 - Restaurants (tourism connection)
 - Elsewhere in Washington

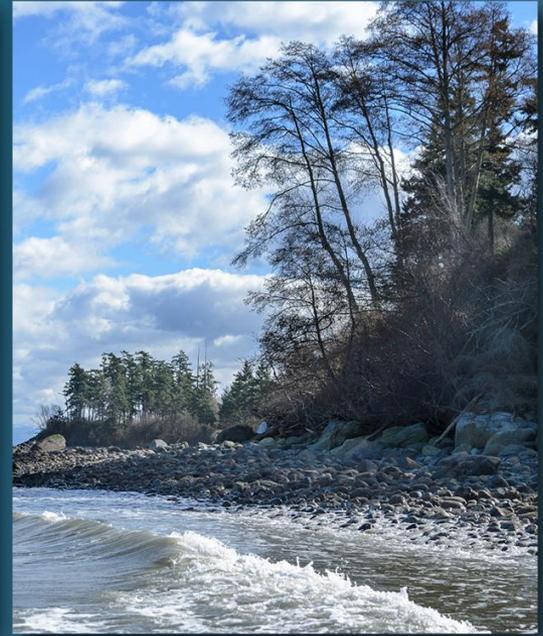
Economic Contribution: Additional Work

- Ownership by Washington Coast residents of other fisheries permits
 - Federal permits for West Coast and North Pacific fisheries
 - Permits for other states' fisheries
- Economic Dependence:
 - Compare Washington Coast dependence on commercial fisheries income and employment with other regions.
- Study safety issues and other concerns resulting from compression of Washington Coast commercial fisheries in time and space.



Part II:

- Recreational Fishing
- Social and Cultural Values
- Ecosystem Services
- Aquaculture on the Washington Coast

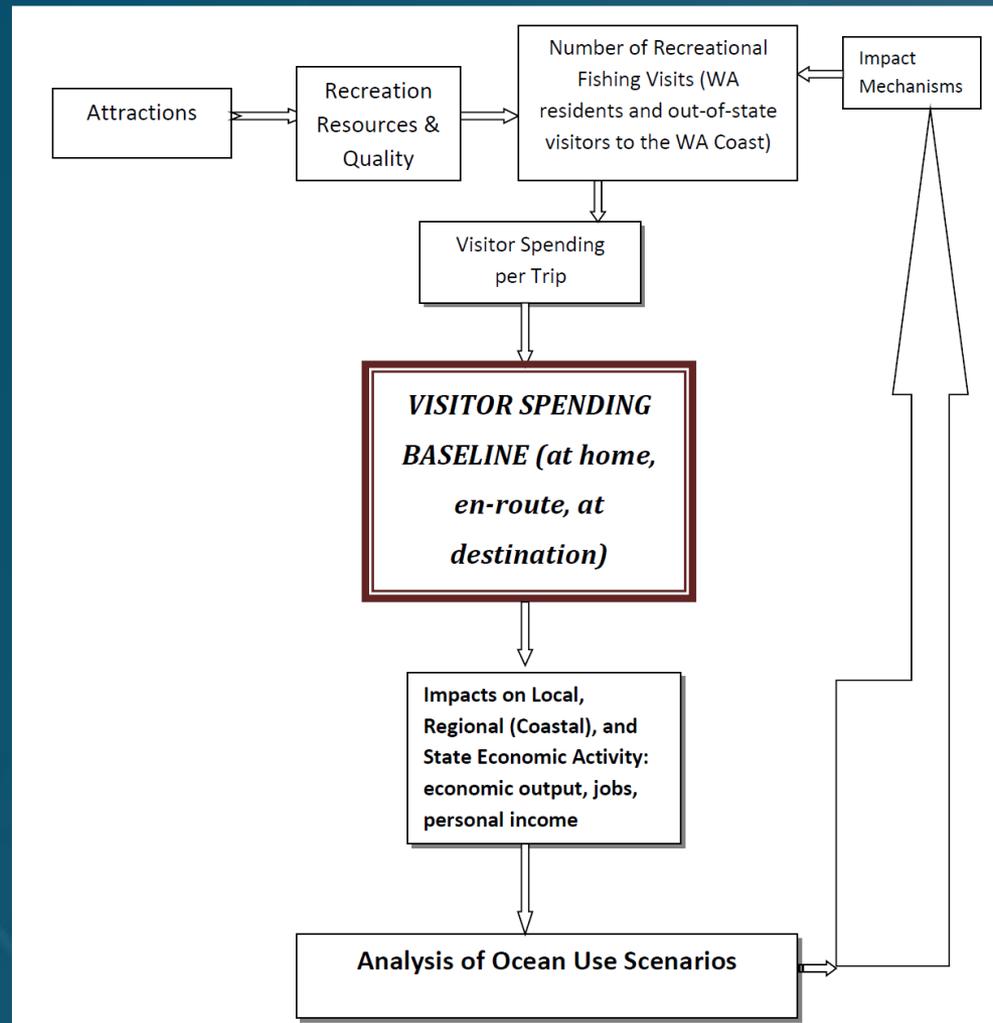


Recreational Fishing

Analytical Objectives

- Develop baseline that characterizes the economics of recreational fishing in the WA coastal area
- Identify impact mechanisms for assessing changes in recreational fishing along the WA coast associated with potential ocean uses

Methodology for Estimating Economic Baseline for Recreational Fishing (Similar to Rec & Tourism)



Key Data Sources

- WDFW data base of number of charter, private, and shore fishing trips
- WDFW data base of sport catch from charter, private, and shore fishing trips
- WDFW Catch Record Card database and reports

Analytical Results – TRIP-RELATED SPENDING (2014)

- Coastal sportfishing-related spending by WA residents: **\$24.7M** (Tables 6-14, 6-15, and 6-16)
- Coastal sportfishing-related spending by out-of-state visitors: **\$5.7M** (Tables 6-14, 6-15, and 6-16)
- Total spending elsewhere in WA by WA residents associated with coastal recreational fishing: **\$7.4M** (Tables 6-14, 6-15, and 6-16)
- Total spending elsewhere in WA by out-of-state visitors associated with coastal recreational fishing: **\$3.2M** (Tables 6-14, 6-15, and 6-16)

Analytical Results – EMPLOYMENT AND LABOR INCOME

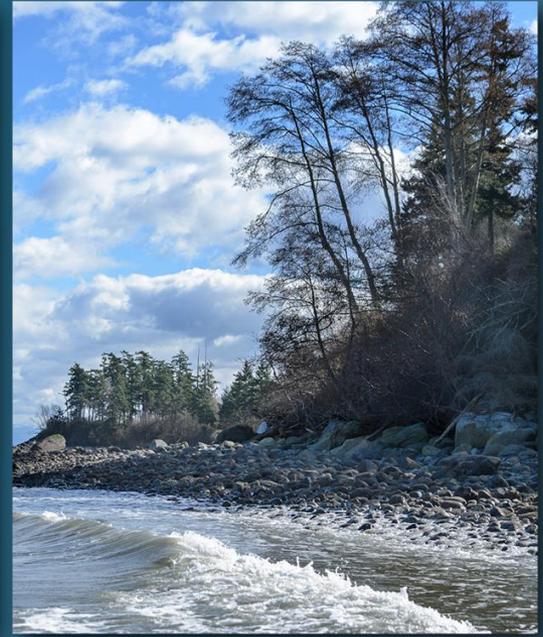
- Number of jobs in the 5-county coastal region: **325 jobs** (Table 6-17)
- Labor income in the 5-county coastal region: **\$17.3M** (Table 6-17)
- Number of state-wide jobs supported by coastal recreation and tourism activity: **596 jobs** (Table 6-18)
- State-wide labor income supported by coastal recreation and tourism activity: **\$32.3 M** (Table 6-18)

Next Steps Remaining

- Incorporate recreational fishing trend information into report
- Identify impact mechanisms for assessing changes in coastal uses on recreational fishing activities

Additional Studies

- Assess net willingness to pay values for coastal ocean sport fishery resources



Social Impact Assessment

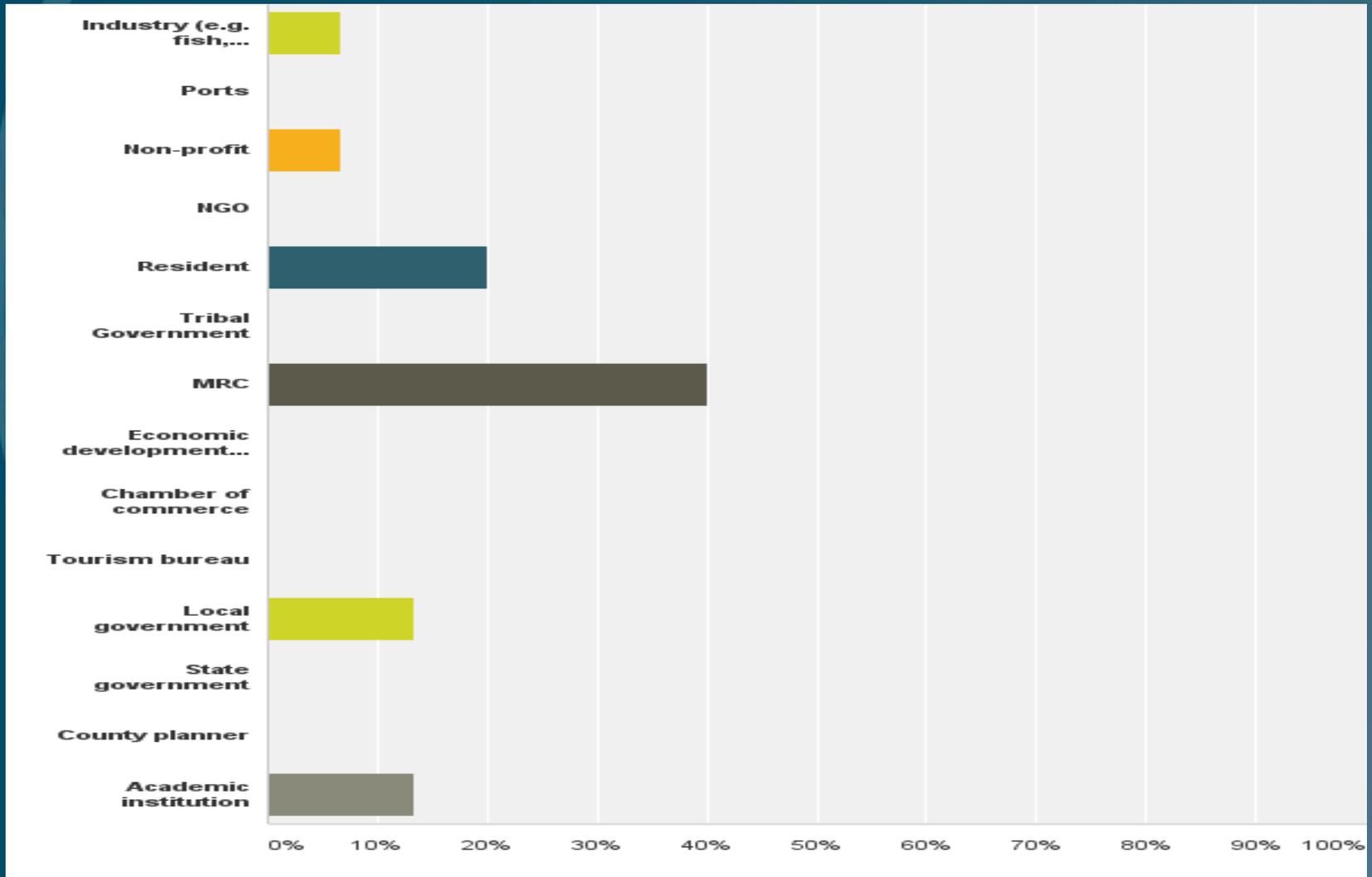
Qualitative Social Impacts Analysis

- Review of literature on indicators of social and cultural impacts relevant to coastal Washington
- Development of survey on perspectives of social impacts from potential new uses of the coastal waters
- Implementing on-line key informant survey

Indicators of Human Wellbeing

- Nature-based recreation
- Safe locally harvestable foods
- Shellfish bed closures
- Natural resource industry output
- Participation in cultural practices
- Opportunity to influence decisions
- Trust in government
- Sense of Place
- Inspiration
- Safety from navigational hazards
- Access to coastal environment
- Tribal economic development goals
- Marine water quality
- Beach closures

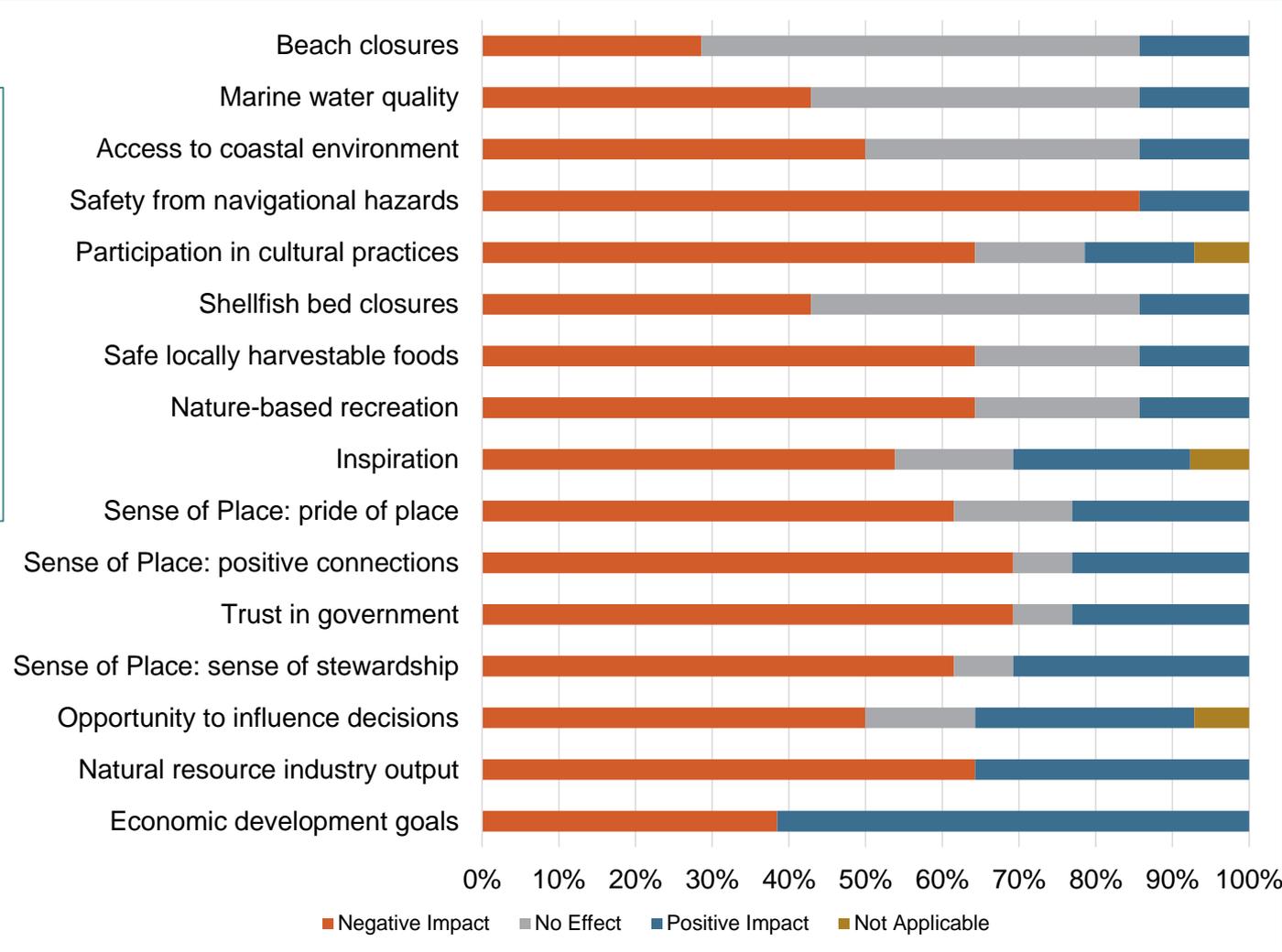
Affiliation



Question #13: Offshore Wind Energy

Question:

Do you think that Offshore Wind Energy will have a Positive Impact, Negative Impact, or No Effect on the following indicators:



	Positive Impact	Negative Impact	No Effect	Not Applicable	Total
Nature-based recreation	14.29% 2	64.29% 9	21.43% 3	0.00% 0	14
Safe locally harvestable foods	14.29% 2	64.29% 9	21.43% 3	0.00% 0	14
Shellfish bed closures	14.29% 2	42.86% 6	42.86% 6	0.00% 0	14
Natural resource industry output	35.71% 5	64.29% 9	0.00% 0	0.00% 0	14
Participation in cultural practices	14.29% 2	64.29% 9	14.29% 2	7.14% 1	14
Opportunity to influence decisions	28.57% 4	50.00% 7	14.29% 2	7.14% 1	14
Trust in government	23.08% 3	69.23% 9	7.69% 1	0.00% 0	13
Sense of Place: positive connections	23.08% 3	69.23% 9	7.69% 1	0.00% 0	13
Sense of Place: sense of stewardship	30.77% 4	61.54% 8	7.69% 1	0.00% 0	13
Sense of Place: pride of place	23.08% 3	61.54% 8	15.38% 2	0.00% 0	13
Inspiration	23.08% 3	53.85% 7	15.38% 2	7.69% 1	13
Safety from navigational hazards	14.29% 2	85.71% 12	0.00% 0	0.00% 0	14
Access to coastal environment	14.29% 2	50.00% 7	35.71% 5	0.00% 0	14
Economic development goals	61.54% 8	38.46% 5	0.00% 0	0.00% 0	13
Marine water quality	14.29% 2	42.86% 6	42.86% 6	0.00% 0	14
Beach closures	14.29% 2	28.57% 4	57.14% 8	0.00% 0	14

Comments About Wind Energy

- “Offshore wind energy will not benefit our coastal community. It will negatively impact existing sustainable uses and severely undermine our fragile coastal economy.”
- “The infrastructure required for these facilities is significant and the power generated will be transmitted to other areas outside our area”.
- “We do not have room for the large footprint such a production field would need based on just the geography”.
- “The heavy equipment used in installation process will destroy the local fish habitat for large areas around each of the tower locations”.
- “The tower assembly poses an obstruction at sea and also has a negative effect on radar operations in and around the wind farm”.
- “Better than the above two, but not without costs to the sense of an essentially wild coastal ambience and ecology”.

Question #20: Additional Comments

Question:

Please use the space provided to share any additional comments.

“It is critical to listen to citizens who reside along the WA coast and rely on the coast for their livelihood. As a percentage, the coast has a relatively low population in comparison with urbanized areas of the State. The long term and short term negative impacts of future uses of the marine environment are most felt by those who live by it, use it, enjoy it and are sustained by it. Rural areas in general are not always well understood by the majority of the population. Misinformation and political bias can work against our coastal, natural resource based economy. There are already significant challenges the coast faces to maintain its economic base and provide sustainable family wage jobs. Our local governments struggle to provide basic facilities and services, mental health and social services. Jobs are not always replaceable here - there are limited opportunities and it takes a critical mass to sustain existing businesses. I cannot emphasize the importance of taking into consideration of new uses on the quality of life of citizens currently living on the coast. Tourism is also a huge contributor to our economy and threatening existing sustainable uses of our marine environment can have detrimental effects on that industry and those who visit our area.”

“I have no idea what was to be gained by the question ‘Ability to Influence Decision-making’ (or whatever it was). What decisions? Whose decisions? Who would be doing the influencing.”

Question #20: Additional Comments, contd.

Question

Please use the space provided to share any additional comments.

“As populations grow and move toward the ocean edges, and sea water levels continue to rise we are going to have to depend on technologies of various kinds to keep our lifestyles intact. On the Washington coast we are already moving communities because of some of these natural impacts. We might be better served to do some real study on what the effects of sea level rise on our coastal communities will actually bring over the next three or four decades and decide how to mitigate those.”

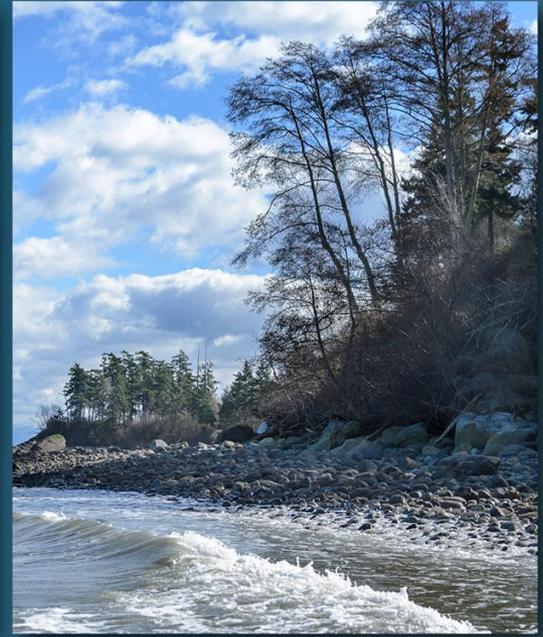
“The North Pacific Coast MRC needs references to facts, actual experience and realistic figures regarding systems' successes and failures in environments similar to those conditions to these coastal waters.”

“Existing uses such as natural resource extraction that provide over 60,000 jobs along the Washington coast should be given priority over new uses that do not create jobs or support the communities along the coast.”

“In general, I believe the public (including myself, a scientist) are too ignorant of the actual likely impacts of these uses for their (our) opinions to have much validity or value. But I also think that the precautionary principle is definitely the right way to go with each of them.”

General Finding To Date

- Negative impacts to human wellbeing greater than positive impacts but not necessarily the case for some individual indicators.
- Perceived highest negative impacts from gas hydrates
- Perceived lowest negative impacts from marine sand and gravel production



Ecosystem Services

What Are Ecosystem Services?

- Defined:

The contributions of ecosystems to human well-being, ... the direct and indirect economic, social, and environmental services provided to human populations and reflects the complex interactions between and among living organisms and their natural environment.

*Source: Environmental Protection Agency
(<http://www.epa.gov/sustainability/analytics/eco-service-valuation.htm>)*

- The objective of ecosystem service valuation is to assess the consequences of altering ecosystems or using ecosystem services for human well-being.

Ecosystem Goods and Service Values

Supportive Functions	Regulating Services	Provisioning Services	Cultural Services
Services necessary for production of other ecosystem services	Benefits obtained from ecosystem processes	Goods produced or provided by ecosystems	Non-material benefits from ecosystems
Biodiversity Wildlife Habitat	Flood Protection Sea Level Rise Protection Water Quality	Fish Shellfish	Recreation Ecotourism Aesthetics Cultural Heritage Education Spiritual and Inspirational

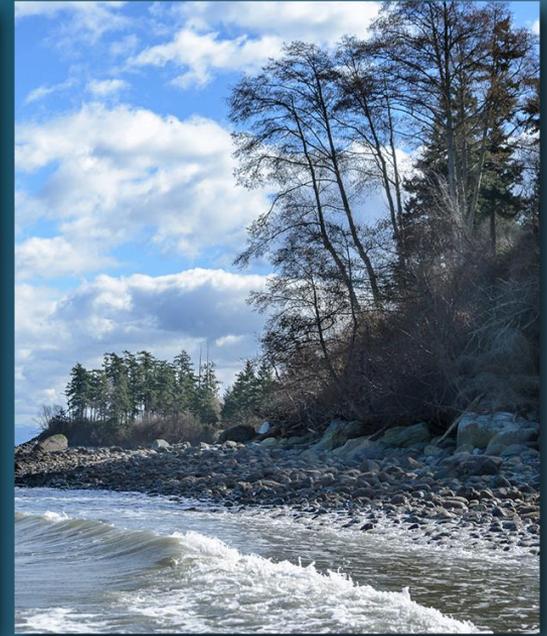
Source: Millennium Ecosystem Assessment 2003.
Ecosystems and Human Well-Being: A Framework for Assessment

Literature Review

- Federal and State agencies are building in methods to incorporate ecosystem services into analysis
- Analytical approaches to valuing components are continually being refined
- At least three studies with direct consideration of Washington Coast sites

Additional Study Needs

- Identification and valuation of ecosystem services for other coast locations
- Quantification of off-shore ecosystem services, including those provided by shellfish aquaculture sites

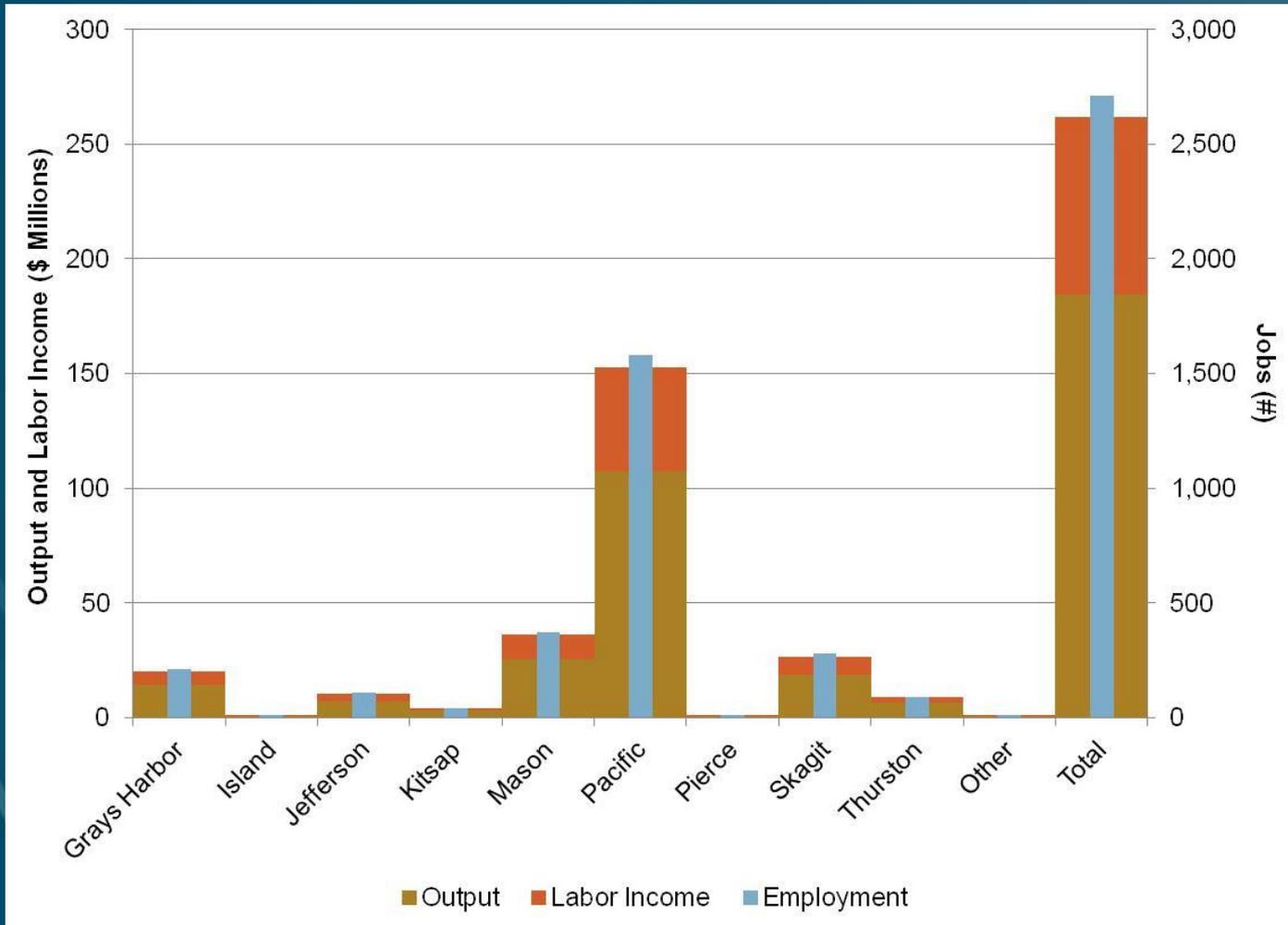


Aquaculture on the Washington Coast

Shellfish Aquaculture on the Coast

- Conducted focus group with sector representatives to review results of PSI/NEI 2013 study
- Conducted interviews with and delivered surveys to 8 out of 12 local growers who also process and distribute product
- Few recommended changes to PSI/NEI economic impact results

Economic Impact by County



Economic Impacts by County

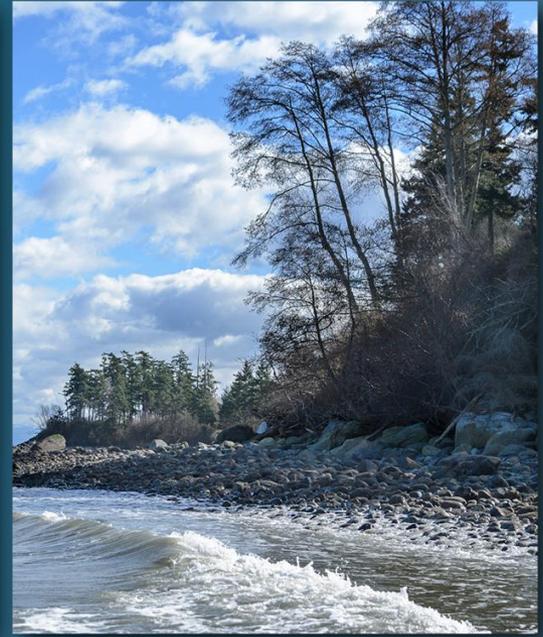
County	Acres	Output \$million	Employment	Labor income \$million
Grays Harbor	3,278	12	210	6
Pacific	17,288	90	1,580	45

Shellfish Aquaculture Processing and Distribution/2013 Study Estimates Update

- Received 8 responses to our survey out of 12 companies reported to process and distribute product
- Data currently being analyzed and economic impacts estimated using IMPLAN
- In the process of updating the PSI/NEI economic impact analysis reflecting industry input and adjusting for inflation between 2010 reported data and 2014

Data Gaps and Research Needs

- Validated number of leased and owned manila clam and Pacific oyster acres in Pacific and Grays Harbor counties
- Updated economic impact analysis of shellfish aquaculture production in Pacific and Grays Harbor Counties using new survey data collected for 2014.
- Focused, robust annual survey of growers to assure adequate and representative data for use in future economic analyses



Summary of Input & Next Steps