

FINAL REGULATORY FLEXIBILITY ANALYSIS

Prepared for

NOAA Fisheries Northwest Region

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Prepared by

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I. Introduction and Summary

For each rule an agency promulgates and does not certify as having no significant impact on a substantial number of small entities, the Regulatory Flexibility Act (RFA) (5 U.S.C. § 601-612) requires the agency to prepare and make available for public comment a final regulatory flexibility analysis (FRFA) that describes the impact of the rule on small businesses, nonprofit enterprises, local governments, and other small entities.

The Endangered Species Act requires NOAA Fisheries to designate critical habitat for threatened and endangered species to the maximum extent prudent and determinable. Section 4(b)(2) of the ESA requires that critical habitat be designated “on the basis of the best scientific data available and after taking into consideration the economic impact, the impact on national security, and any other relevant impact, of specifying any particular area as critical habitat.” This section grants the Secretary [of Commerce] discretion to exclude any area from critical habitat if he determines “the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat.” The Secretary's discretion is limited, as he may not exclude areas if it “will result in the extinction of the species.”

Once critical habitat is designated, section 7 of the ESA requires Federal agencies to ensure they do not fund, authorize or carry out any actions that will destroy or adversely modify that habitat. This requirement is in addition to the section 7 requirement that Federal agencies ensure their actions do not jeopardize the continued existence of listed species.

This FRFA addresses regulations that designate critical habitat for the Oregon Coast coho evolutionarily significant unit (ESU) listed as “threatened” under the provisions of the Endangered Species Act of 1973, as amended (ESA). Table 1 describes the ESU in terms of ESA status, listing date and geographical scope.

Table 1. Description of the Oregon Coast coho ESU

ESA Status/ Listing Date	Geographic Scope (State and County)
Threatened 02/08	OREGON— Benton, Clatsop, Columbia, Coos, Curry, Douglas, Lane, Lincoln, Polk, Tillamook, Washington, Yamhill

Summary of Impacts on Small Entities

An estimate of the number of firms that are subject to the rule and meet the SBA small business classification standard is provided in Table 2. The number of regulated small entities under the proposed designation of critical habitat is 618. The estimated costs of ESA section 7 implementation incurred by small entities under the proposed designation of critical habitat are \$5,656,486.

Table 2. A Comparison of the Proposed Critical Habitat Designation and Critical Habitat Designation with No Areas Excluded

Alternative 1: Critical Habitat Designation with No Areas Excluded		Proposed Critical Habitat Designation		Difference Between Critical Habitat Designations	
No. of Regulated Small Entities	Economic Impacts on Small Entities (\$)	No. of Regulated Small Entities	Economic Impacts on Small Entities (\$)	Reduction in No. of Regulated Small Entities	Reduction in Economic Impacts on Small Entities (\$)
623	5,871,413	618	5,656,486	5	214,927

Source: Northern Economics, Inc. analysis based on data from NOAA Fisheries Northwest Region. The data and method of analysis are described in Appendix A: Estimate of the Number of Small Entities to Which the Rule will Apply and Appendix B: Estimate of the Economic Impacts on Small Entities .

NOAA Fisheries did not consider the alternative of not designating critical habitat for the Oregon Coast coho ESU because that alternative does not meet the legal requirements of the Endangered Species Act.

NOAA Fisheries did consider the following two significant alternatives to the proposed designation of critical habitat:

Alternative 1: Designate all particular areas that meet the definition of critical habitat as given in section 3(5)(A) of the ESA;

Alternative 2: Designate only particular areas that meet the definition of critical habitat with a high conservation value.

Under the first alternative, no areas are excluded for economic or other reasons. Through the section 4(b)(2) process of weighing benefits of exclusion against benefits of designation, NOAA Fisheries determined that the proposed designation of critical habitat provided an appropriate balance of conservation and economic mitigation, and that excluding the areas proposed for exclusion would not result in extinction of the species. The proposed designation would reduce the adverse economic impacts on entities, including small entities. It is estimated that excluding areas from the rule designating critical habitat could save small entities \$214,927 in compliance costs (Table 2).

NOAA Fisheries examined and rejected the second alternative of excluding all habitat areas with a low or medium conservation value (Table 3). The agency determined that this alternative reduces economic impacts relative to the proposed designation of critical habitat; however, this alternative is not sensitive to the fact that eliminating all low and medium value habitat areas is likely to significantly impede conservation. Because the agency concluded that the benefits of exclusion would not outweigh the benefits of specifying these areas as part of the critical habitat, NOAA Fisheries rejected the second alternative.

Table 3. A Comparison of the Proposed Critical Habitat Designation and Critical Habitat Designation with Areas of Low and Medium Conservation Value Excluded

Alternative 2: Critical Habitat Designation with Areas of Low and Medium Conservation Value Excluded		Proposed Critical Habitat Designation		Difference Between Critical Habitat Designations	
No. of Regulated Small Entities	Economic Impacts on Small Entities (\$)	No. of Regulated Small Entities	Economic Impacts on Small Entities (\$)	No. of Regulated Small Entities	Economic Impacts on Small Entities (\$)
383	3,609,180	618	5,656,486	235	2,047,306

Source: Northern Economics, Inc. analysis based on data from NOAA Fisheries Northwest Region. The data and method of analysis are described in Appendix A: Estimate of the Number of Small Entities to Which the Rule will Apply and Appendix B: Estimate of the Economic Impacts on Small Entities .

In describing the economic effects of including or excluding a particular area from critical habitat, it is not accurate to include all of the co-extensive impacts because it is unlikely that the impacts attributable to critical habitat designation would ever account for the total impacts. However, in examining its extensive consultation record, NOAA Fisheries could not discern a difference in the impact of applying section 7's jeopardy requirement versus applying the adverse modification requirement. For that reason, NOAA Fisheries decided to analyze the full impact of the adverse modification requirement, regardless of whether it is coextensive with other requirements, such as jeopardy.

NOAA Fisheries has made a substantial effort to gather information regarding the economic impact of the regulatory action on all entities, including small entities. However, unavailable or

inadequate data leaves some uncertainty surrounding both the numbers of entities that will be subject to the rule and the characteristics of any impacts on particular entities.

II. Specific Requirement to Prepare an FRFA

Section 604 of the Regulatory Flexibility Act of 1980 (Public Law 96-354) requires agencies to prepare and make available for public comment a final regulatory flexibility analysis (FRFA) describing the impact of final rules on small entities.

Section 604(a)(1)–(5) of the Act specifies the content of a FRFA. Each FRFA must contain:

1. A succinct statement of the need for, and objectives of, the rule;
2. A summary of the significant issues raised by the public comments in response to the initial regulatory flexibility analysis (IRFA), a summary of the assessment of the agency of such issues, and a statement of any changes made in the proposed rule as a result of such comments;
3. A description of and an estimate of the number of small entities to which the rule will apply or an explanation of why no such estimate is available;
4. A description of the projected reporting, recordkeeping and other compliance requirements of the rule, including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for preparation of the report or record; and
5. A description of the steps the agency has taken to minimize the significant economic impact on small entities consistent with the stated objectives of applicable statutes, including a statement of the factual, policy, and legal reasons for selecting the alternative adopted in the final rule and why each one of the other significant alternatives to the rule considered by the agency which affect the impact on small entities was rejected.

III. Need for and Objectives of the Rule

Section 4(a)(3) of the ESA and implementing regulations (50 CFR 424.12) require the Secretary to designate critical habitat concurrently with the listing of a species to the maximum extent prudent and determinable. Given that the Oregon Coast coho evolutionarily significant unit is Federally-listed as threatened under the ESA, NOAA Fisheries finds that the designation of critical habitat is required.

The benefits of critical habitat designation derive from section 7 of the ESA, which requires Federal agencies, in consultation with NOAA Fisheries, to ensure that actions they carry out, permit, or fund are not likely to destroy or adversely modify critical habitat of such species. Moreover, a designation of critical habitat benefits a species by highlighting areas where the species occurs and by describing the features within those areas that are essential to the conservation of the species and that may require special management considerations or protection.

The purpose of the rule is to designate the critical habitat for the Oregon Coast coho evolutionarily significant unit pursuant to the ESA. NOAA Fisheries is responsible for determining whether species, subspecies, or distinct population segments of Pacific salmon and steelhead are threatened or endangered and which areas constitute critical habitat for them under the ESA (16 U.S.C. 1531 et seq.). To be considered for listing under the ESA, a group of organisms must constitute a “species,” which is defined in section 3 of the Act to include “any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature.” The agency has determined that a group of Pacific salmon or steelhead populations qualifies as a distinct population segment if it is

substantially reproductively isolated and represents an important component in the evolutionary legacy of the biological species. A group of populations meeting these criteria is considered an “evolutionarily significant unit” (ESU) (56 FR 58612, November 20, 1991). In its ESA listing determinations for Pacific salmon and steelhead, NOAA Fisheries has treated an ESU as a “distinct population segment.”

As noted above, the ESA requires NOAA Fisheries to designate critical habitat for threatened and endangered species to the maximum extent prudent and determinable. Section 4(b)(2) of the ESA requires that critical habitat be designated “on the basis of the best scientific data available and after taking into consideration the economic impact, the impact on national security, and any other relevant impact, of specifying any particular area as critical habitat.” This section grants the Secretary [of Commerce] discretion to exclude any area from critical habitat if he determines “the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat.” The Secretary's discretion is limited, as he may not exclude areas if it “will result in the extinction of the species.”

The ESA defines critical habitat under section 3(5)(A) as:

“(i) the specific areas within the geographical area occupied by the species, at the time it is listed . . . on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and
(ii) specific areas outside the geographical area occupied by the species at the time it is listed . . . upon a determination by the Secretary that such areas are essential for the conservation of the species.”

Once critical habitat is designated, section 7 of the ESA requires Federal agencies to ensure they do not fund, authorize or carry out any actions that will destroy or adversely modify that habitat. This requirement is in addition to the section 7 requirement that Federal agencies ensure their actions do not jeopardize the continued existence of listed species.

IV. Issues Raised by Public Comments on the Initial Regulatory Flexibility Analysis

Significant issues relevant to the Oregon Coast coho ESU that were raised by interested stakeholders and the response of NOAA Fisheries to each of those issues are presented below.

Issue #1: Another comment stated that the IRFA needs more citations regarding the applied sources of information.

Agency Response: Source notes have been added to all tables presenting analytical results. In most cases these notes refer the reader to detailed descriptions of data and methods provided in appendices in the FRFA.

V. Description and Number of Small Entities to which the Rule will Apply

Definition of a Small Entity

Three types of small entities are defined in the RFA:

Small Business. Section 601(3) of the RFA defines a small business as having the same meaning as small business concern under section 3 of the Small Business Act. This includes any firm that is independently owned and operated and is not dominant in its field of operation. The U.S. Small Business Administration (SBA) has developed size standards to carry out the purposes of the

Small Business Act, and those size standards can be found in 13 CFR 121.201. The size standards are matched to North American Industry Classification System (NAICS) industries. The SBA definition of a small business applies to a firm's parent company and all affiliates as a single entity.

Small Governmental Jurisdiction. Section 601(5) defines small governmental jurisdictions as governments of cities, counties, towns, townships, villages, school districts, or special districts with a population of less than 50,000. Special districts may include those servicing irrigation, ports, parks and recreation, sanitation, drainage, soil and water conservation, road assessment, etc. Most tribal governments will also meet this standard. When counties have populations greater than 50,000, those municipalities of fewer than 50,000 can be identified using population reports. Other types of small government entities are not as easily identified under this standard, as they are not typically classified by population.

Small Organization. Section 601(4) defines a small organization as any not-for-profit enterprise that is independently owned and operated and not dominant in its field. Small organizations may include private hospitals, educational institutions, irrigation districts, public utilities, agricultural co-ops, etc. Depending upon state laws, it may be difficult to distinguish whether a small entity is a government or non-profit entity. For example, a water supply entity may be a cooperative owned by its members in one case and in another a publicly chartered small government with the assets owned publicly and officers elected at the same elections as other public officials.

Description of Small Entities to Which the Rule will Apply

Federal courts and Congress have indicated that a RFA analysis should be limited to small entities subject to the regulation.¹ As such, small entities to which the rule will not apply are not considered in this analysis.²

As noted previously, section 7 of the ESA requires each Federal agency to insure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat. To prevent this result, Federal agencies must “consult” with NOAA Fisheries.

The consultation process is not restricted to direct agency action, but is required whenever a Federal nexus is present, such as when a Federal agency must authorize, approve, or fund a state or private action. Activities on land owned by individuals, organizations, states, local and Tribal governments only require consultation with NOAA Fisheries if their actions involve Federal funding, licensing, permitting, or authorization. Federal actions not affecting the species or its critical habitat, as well as activities on non-Federal lands that are not Federally funded, authorized, licensed, or permitted, do not require section 7 consultation. For consultations concerning activities on Federal lands, the relevant Federal agency consults with NOAA Fisheries. For consultations where the consultation involves an activity proposed by a state or local government or a private entity (the “applicant”), the Federal agency with the nexus to the activity (the “action agency”) serves as the liaison with NOAA Fisheries.³

Examples of actions that may be subject to a Federal nexus and a section 7 consultation include, but are not limited to:

¹ *Mid-Tec Elec. Coop v. FERC*, 773 F.2d 327 (D.C. Cir. 1985).

² *Cement Kiln Recycling Coalition et. al. v. EPA*, 255 F.3d 855 (2001).

³ Applicant refers to any person who requires formal approval or authorization from a Federal agency as a prerequisite to conducting the action (50 CFR 402.02).

- (a) actions intended to conserve listed species or their habitat;
- (b) the promulgation of regulations;
- (c) the granting of licenses, contracts, leases, easements, rights-of-way, permits, or grants-in-aid; or
- (d) actions directly or indirectly causing modifications to the land, water, or air.

Based on an examination of an array of activities with a Federal nexus sufficient to trigger section 7 consultation requirements regarding critical habitat, this economic analysis identified the nature of the small businesses that will be subject to the rule. Special attention was paid to identifying small businesses expected to face more significant impacts than other industry sectors as a result of the rule. Table 4 presents a list of the major relevant activities with a Federal nexus and descriptions of the industry sectors involved in those activities, including NAICS codes and the SBA thresholds for determining whether a firm is small.

Table 4. Major Relevant Activities with a Federal Nexus and a Description of the Industry Sectors Engaged in Those Activities

Major Relevant Activity and Federal Nexus	Description of Industry Sector	NAICS Code	SBA Size Standard
§4 and 23(b) of the Federal Power Act give the Federal Energy Regulatory Commission (FERC) the authority to license projects located on Federal lands or navigable or commerce clause waters and which use water to generate power.	Hydroelectric Power Generation This industry comprises establishments primarily engaged in operating hydroelectric power generation facilities. These facilities use water power to drive a turbine and produce electric energy. The electric energy produced in these establishments is provided to electric power transmission systems or to electric power distribution systems.	221111	4 million megawatt hours for the preceding fiscal year ¹
Under §10 of the Rivers and Harbors Act, the U.S. Army Corps of Engineers (ACOE) permits in-water structures, including irrigation pipes and other water withdrawal structures.	Water Supply and Irrigation Systems This industry comprises establishments primarily engaged in operating water treatment plants and/or operating water supply systems. The water supply system may include pumping stations, aqueducts, and/or distribution mains. The water may be used for drinking, irrigation, or other uses.	221310	\$6.5 million average annual receipts
Federal nexus activities for timber and livestock operators include timber sales and grazing allotments permitted by the Forest Service or Bureau of Land Management.	Forestry and Logging Industries in the Forestry and Logging sector grow and harvest timber on a long production cycle (i.e., of 10 years or more).	113	\$6.5 million average annual receipts
	Beef Cattle Ranching and Farming This industry comprises establishments primarily engaged in raising cattle (including cattle for dairy herd replacements).	112111	\$750,000 average annual receipts

Major Relevant Activity and Federal Nexus	Description of Industry Sector	NAICS Code	SBA Size Standard
The typical Federal nexuses for road/bridge construction and maintenance activities are either funding from the Federal Highway Administration for transportation projects and/or Clean Water Act §404 permitting from the ACOE for projects with the potential to discharge dredged or fill material into navigable waters. Roads, highways, and bridges may also be considered point sources of pollution and require a National Pollutant Discharge Elimination System (NPDES) storm water permit under §402 of the Clean Water Act.	Highway, Street, and Bridge Construction This industry comprises establishments primarily engaged in the construction of highways (including elevated), streets, roads, airport runways, public sidewalks, or bridges. The work performed may include new work, reconstruction, rehabilitation, and repairs.	237310	\$31.0 million average annual receipts
The primary Federal nexus for utility related activities is the ACOE, which authorizes Clean Water Act §404 permits for projects with the potential to discharge dredged or fill material into navigable waters. Another possible nexus for utility related activities is FERC licensing of the interstate transmission of electricity, oil, and natural gas by pipeline.	Electric Power Generation, Transmission and Distribution This industry group comprises establishments primarily engaged in generating, transmitting, and/or distributing electric power. Establishments in this industry group may perform one or more of the following activities: (1) operate generation facilities that produce electric energy; (2) operate transmission systems that convey the electricity from the generation facility to the distribution system; and (3) operate distribution systems that convey electric power received from the generation facility or the transmission system to the final consumer.	221112, 221113, 221119, 221121, 221122	4 million megawatt hours for the preceding fiscal year ¹
	Natural Gas Distribution This industry comprises: (1) establishments primarily engaged in operating gas distribution systems (e.g., mains, meters); (2) establishments known as gas marketers that buy gas from the well and sell it to a distribution system; (3) establishments known as gas brokers or agents that arrange the sale of gas over gas distribution systems operated by others; and (4) establishments primarily engaged in transmitting and distributing gas to final consumers.	221210	500 employees

Major Relevant Activity and Federal Nexus	Description of Industry Sector	NAICS Code	SBA Size Standard
Sand and gravel mining operations may request Clean Water Act §404 permits from the ACOE for projects with the potential to discharge dredged or fill material into navigable waters.	Construction Sand and Gravel Mining This industry comprises establishments primarily engaged in one or more of the following: (1) operating commercial grade (i.e., construction) sand and gravel pits; (2) dredging for commercial grade sand and gravel; and (3) washing, screening, or otherwise preparing commercial grade sand and gravel.	212321	500 employees
Private parties may request permits from the ACOE for a variety of activities that occur in waterways or involve modifying navigable waterways, such as construction in waterways (e.g., breakwaters, docks, piers), dredging projects, shoreline stabilization, construction and maintenance of oil and gas pipelines, irrigation withdrawal structures, and state or local water supply projects.	Water and Sewer Line and Related Structures Construction This industry comprises establishments primarily engaged in the construction of water and sewer lines, mains, pumping stations, treatment plants and storage tanks.	237110	\$31.0 million average annual receipts
	Oil and Gas Pipeline and Related Structures Construction This industry comprises establishments primarily engaged in the construction of oil and gas lines, mains, refineries, and storage tanks.	237120	
	Power and Communication Line and Related Structures Construction This industry comprises establishments primarily engaged in the construction of power lines and towers, power plants, and radio, television, and telecommunications transmitting/receiving towers.	237130	
	Marinas This industry comprises establishments engaged in operating docking and/or storage facilities for pleasure craft owners, with or without one or more related activities, such as retailing fuel and marine supplies; and repairing, maintaining, or renting pleasure boats.	713930	\$6.5 million average annual receipts
	Other Heavy and Civil Engineering Construction This industry comprises establishments primarily engaged in heavy and engineering construction projects (excluding highway, street, bridge, and distribution line construction).	237990	\$31.0 million average annual receipts

Major Relevant Activity and Federal Nexus	Description of Industry Sector	NAICS Code	SBA Size Standard
The most common nexus for residential and related development is a Federal permit for stormwater outfall construction/expansion issued by the ACOE.	Land Subdivision This industry comprises establishments primarily engaged in servicing land and subdividing real property into lots, for subsequent sale to builders. Servicing of land may include excavation work for the installation of roads and utility lines. Land subdivision precedes building activity and the subsequent building is often residential, but may also be commercial tracts and industrial parks	237210	\$6.5 million average annual receipts
As authorized by the Clean Water Act, NPDES permit program administered by the Environmental Protection Agency (EPA) controls water pollution by regulating point sources that discharge pollutants (including thermal pollutants) into U.S. waters. Point sources are discrete conveyances such as pipes or man-made ditches. Industrial and municipal facilities must obtain NPDES permits if their discharges go directly to surface waters. Separate storm sewer systems and combined sewer and overflow systems may also be subject to NPDES permitting requirements.	Fishing, Hunting, Trapping Industries in this sector harvest fish and other wild animals from their natural habitats and are dependent upon a continued supply of the natural resource. The harvesting of fish is the predominant economic activity of this sector and it usually requires specialized vessels that, by the nature of their size, configuration and equipment, are not suitable for any other type of production, such as transportation.	114	\$4.0 million average annual receipts
	Food Manufacturing Industries in this sector transform livestock and agricultural products into products for intermediate or final consumption. The industry groups are distinguished by the raw materials (generally of animal or vegetable origin) processed into food products.	311	500 employees
	Sewage Treatment Facilities This industry comprises establishments primarily engaged in operating sewer systems or sewage treatment facilities that collect, treat, and dispose of waste	221320	\$6.5 million average annual receipts
	Paper and Pulp Mills This industry comprises establishments primarily engaged in manufacturing paper and/or pulp.	322121, 322122, 322110	750 employees
	Wood Product Manufacturing Industries in this sector manufacture wood products, such as lumber, plywood, veneers, wood containers, wood flooring, wood trusses, manufactured homes (i.e., mobile home), and prefabricated wood buildings.	321	500 employees

Major Relevant Activity and Federal Nexus	Description of Industry Sector	NAICS Code	SBA Size Standard
Under the ESA, the EPA must consult with the Fish and Wildlife Service and NOAA Fisheries to ensure that the registration of products under the Federal Insecticide, Fungicide and Rodenticide Act complies with section 7 of the ESA.	Crop Production (Oilseed and Grain Farming, Vegetable and Melon Farming, Fruit and Tree Nut Farming) This industry group comprises establishments primarily engaged in 1) growing oilseed and/or grain crops and/or producing oilseed and grain seeds; 2) growing root and tuber crops (except sugar beets and peanuts) or edible plants and/or producing root and tuber or edible plant seeds; or 3) growing fruit and/or tree nut crops.	1111, 1112, 1113	\$750,000 average annual receipts

¹ NAICS codes 221111, 221112, 221113, 221119, 221121, 221122 – A firm is small if, including its affiliates, it is primarily engaged in the generation, transmission, and/or distribution of electric energy for sale and its total electric output for the preceding fiscal year did not exceed 4 million megawatt hours.

Source: U.S. Small Business Administration, http://www.sba.gov/idc/groups/public/documents/sba_homepage/serv_sstd_tablepdf.pdf, viewed November 30, 2007.

Small governments as well as small businesses own and operate various hydroelectric power facilities, water supply and irrigation systems, and sewage treatment facilities. Moreover, small governments may also undertake utility line projects and carry out land subdivision for residential, commercial, and industrial development. Consequently, both small governments and small businesses will be directly regulated by the rule. The number of small governmental entities that will be directly affected by the rule is unknown. However, a review of the historical consultation record suggests that the number of consultations involving small governments is likely to be small.

Estimate of the Number of Small Entities to Which the Rule will Apply

NOAA Fisheries has determined that the most practical unit of analysis for designating critical habitat of the Oregon Coast coho ESU is a watershed unit defined by the U.S. Geological Service as a hydrologic unit. Each hydrologic unit is identified by a unique hydrologic unit code (HUC) consisting of two to twelve digits based on the six levels of classification in the hydrologic unit system. NOAA Fisheries determined the smallest practical hydrologic unit to analyze is that designated by a fifth field code (referred to as a fifth field HUC or HUC5).

However, it is not possible to directly determine the number of firms in each industry sector in each of the hydrologic units designated as critical habitat because of the geo-political coverage of business activity data sets. The closest approximations to the units of interest for which data are available are counties. Counties included in this analysis area were identified using data provided by NOAA Fisheries on watershed land area included in the ESU and maps provided by NOAA Fisheries identifying the boundary of the ESU. Where the intersection of a county and the ESU is unpopulated, that county has been excluded from the list.

For each county included in the analysis, an estimate of the total number of entities within each industry sector subject to the regulation was derived by searching the D&B Duns Market Identifiers (File 516) by NAICS code. This directory file is produced by Dun & Bradstreet, Inc. and contains basic company data on U.S. business establishment locations, including public, private, and government organizations. Census tract data from the 2000 Census of Population and Housing were used to indirectly estimate the number of businesses in each ESU by assuming that the number of businesses is directly proportional to population density.

The SBA definition of a small business applies to a firm’s parent company and all affiliates as a single entity⁴ However, because complete ownership and affiliation information was unavailable for the firms in each ESU, some firms may have been incorrectly identified as small businesses. Consequently, it is possible that this analysis overestimates the number of small entities that will be regulated under the action.

An estimate of the number of firms that are subject to the rule and meet the SBA small business classification standard is provided in Appendix A: Table 12. An estimate of the number of regulated firms is summarized in Table 5.

Table 5. Estimated Number of Regulated Small Entities by Industry Sector

Hydro-electric Power Generation¹	8
Water Supply and Irrigation Systems	35
Forestry and Logging	164
Beef Cattle Ranching and Farming	45
Highway, Street, and Bridge Construction	68
Electric Services/Natural Gas Distribution¹	14
Construction Sand and Gravel Mining	1
In-stream Activities	50
NPDES-Permitted Activities	146
Crop Production	43
Land Subdivision	44
Total	618

¹ All entities in the Hydroelectric Power Generation and Electric Services Sectors are assumed to be small entities. Consequently, the compliance costs for small entities in these sectors represent an upper bound estimate. The number of small entities in the hydroelectric power generation and electrical services industries is unknown because of the unavailability of data related to small business thresholds. For both of these industry sectors the SBA defines a firm as “small” if, including its affiliates, it is primarily engaged in the generation, transmission, and/or distribution of electric energy for sale, and its total electric output for the preceding fiscal year did not exceed 4 million megawatt hours. It was not possible to locate a source that provides this information for all regulated entities within these sectors.

Source: Northern Economics, Inc. analysis based on data from NOAA Fisheries Northwest Region. The data and method of analysis are described in Appendix A: Estimate of the Number of Small Entities to Which the Rule will Apply.

⁴ The SBA’s “general principles of affiliation” are set forth in regulations at 13 CFR 121.103.

VI. Description of the Projected Reporting, Record Keeping and Other Compliance Requirements of the Rule

Description of Compliance Requirements of the Rule

As discussed above, section 7 of the ESA requires Federal agencies to ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat. The ESA does not place requirements on any other parties to consider the effect of their actions on critical habitat. As a result, non-Federal entities can only be affected by critical habitat designation when the activities they carry out have a Federal nexus.

The rule does not directly mandate “reporting” or “record keeping” within the meaning of the Paperwork Reduction Act. However, modifications to projects and activities taking place on designated land may include increased reporting or record keeping requirements. Review/reporting is already part of standard practices for managing activities (e.g., timber harvesting, grazing, and mining) in riparian areas, and the increased reporting costs associated with the designation of critical habitat are expected to be minimal. Thus, the marginal reporting or record keeping costs, if any, that would be imposed by the rule on regulated entities, including small entities, would not be substantial. Since the rule does not directly mandate “reporting” or “record keeping” within the meaning of the Paperwork Reduction Act, the rule does not require professional skills for the preparation of “reports” or “records” under that Act.

The rule contains compliance requirements not subject to the Paperwork Reduction Act. Specifically, a mandatory legal consequence of a critical habitat designation is the section 7 requirement of Federal agencies described above. The section 7 consultation process may involve both informal and formal consultation with NOAA Fisheries. Informal section 7 consultation is designed to assist the Federal agency and any applicant in identifying and resolving potential conflicts at an early stage in the planning process (50 CFR 402.13). Informal consultation consists of informal discussions between NOAA Fisheries and the agency concerning an action that may affect a listed species or its designated critical habitat. In preparation for an informal consultation, the Federal action agency or applicant must compile all biological, technical, and legal information necessary to analyze the scope of the activity and discuss strategies to avoid, minimize, or otherwise reduce impacts to listed species or critical habitat. During the informal consultation, NOAA Fisheries makes advisory recommendations, if appropriate, on ways to minimize or avoid adverse effects. If agreement can be reached, NOAA Fisheries will concur in writing that the action, as revised, is not likely to adversely affect listed species or critical habitat. Informal consultation may be initiated via a phone call or letter from the action agency, or a meeting between the action agency and NOAA Fisheries.

A formal consultation is required if the proposed action is likely to adversely affect listed species or designated critical habitat (50 CFR 402.14). An analysis conducted during formal consultations determines whether a proposed agency action is likely to jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat. Some of the activities NOAA Fisheries believes could result in the destruction or adverse modification of critical habitat of listed Pacific salmon and steelhead ESUs include, but are not limited to:

1. Land-use activities that adversely affect a listed Pacific salmon/steelhead ESU’s habitat (e.g., logging, grazing, or road construction, particularly when conducted in riparian areas or in areas susceptible to mass wasting and surface erosion);
2. Destruction or alteration of a listed Pacific salmon/steelhead ESU’s habitat (aside from habitat restoration activities), such as removal of large woody debris and “sinker logs” or

riparian shade canopy, dredging, discharge of fill material, draining, ditching, diverting, blocking, or altering stream channels or surface or ground water flow;

3. Discharges or dumping of toxic chemicals or other pollutants (e.g., sewage, oil, gasoline) into waters or riparian areas supporting the listed Pacific salmon/steelhead ESUs;
4. Violation of discharge permits;
5. Pesticide applications in violation of Federal restrictions;
6. Introduction of non-native species likely to prey on a listed Pacific salmon/steelhead ESU or displace it from its habitat;
7. Water withdrawals in areas where important spawning or rearing habitats may be adversely affected, or otherwise altering streamflow when it is likely to impair spawning, migration, or other essential functions;
8. Constructing or maintaining barriers that eliminate or impede a listed Pacific salmon/steelhead ESU's access to habitat essential for its survival or recovery;
9. Removing, poisoning, or contaminating plants, fish, wildlife, or other biota required by a listed Pacific salmon/steelhead ESU for feeding, sheltering, or other essential functions;
10. Releasing non-indigenous or artificially propagated individuals into a listed Pacific salmon/steelhead ESU's habitat;
11. Constructing or operating inadequate fish screens or fish passage facilities at dams or water diversion structures in a listed Pacific salmon/steelhead ESU's habitat;
12. Constructing or using inadequate bridges, roads, or trails on stream banks or unstable hill slopes adjacent or above a listed Pacific salmon/steelhead ESU's habitat; or
13. Constructing or using inadequate pipes, tanks, or storage devices containing toxic substances, where the release of such a substance is likely to significantly modify or degrade a listed Pacific salmon/steelhead ESU's habitat.

Regulations at 50 CFR 402.16 require Federal agencies to reinitiate consultation on previously reviewed actions in instances where critical habitat is subsequently designated and the Federal agency has retained discretionary involvement or control over the action or such discretionary involvement or control is authorized by law. Consequently, some Federal agencies may request reinitiation of consultation or conference on actions for which formal consultation has been completed, if those actions may affect designated critical habitat or adversely modify or destroy critical habitat.

The biological opinion is the document that states the opinion of NOAA Fisheries as to whether or not the Federal action is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat. Regulations at 50 CFR 402.1 guide the section 7 consultation process. If jeopardy or adverse modification is found, NOAA Fisheries will suggest those reasonable and prudent alternatives that can be taken by the Federal agency or applicant in implementing the agency action. Reasonable and prudent alternatives refer to alternative actions identified during formal consultation that can be implemented in a manner consistent with the intended purpose of the action, that can be implemented consistent with the scope of the Federal agency's legal authority and jurisdiction, that are economically and technologically feasible, and that NOAA Fisheries believes would avoid the likelihood of jeopardizing the continued existence of listed species or resulting in the destruction or adverse modification of critical habitat. Reasonable and prudent alternatives can vary from slight project modifications to extensive redesign or relocation of the project. Costs associated with implementing a reasonable and prudent alternative are similarly variable.

In formulating its biological opinion and any reasonable and prudent alternatives, NOAA Fisheries must use the best scientific and commercial data available and must give appropriate consideration to any beneficial actions taken by the Federal agency or applicant, including any actions taken prior to the initiation of consultation. In addition, NOAA Fisheries must utilize the expertise of the Federal agency and any applicant in identifying reasonable and prudent alternatives.

A Federal agency and an applicant may elect to implement a reasonable and prudent alternative associated with a biological opinion that has found jeopardy or adverse modification of critical habitat. An agency or applicant could alternatively choose to seek an exemption from the requirements of the ESA or proceed without implementing the reasonable and prudent alternative. However, unless an exemption was obtained, the Federal agency or applicant would be at risk of violating section 7(a)(2) of the ESA if it chose to proceed without implementing the reasonable and prudent alternatives.

Description of Compliance Costs Associated with the Rule

There are two primary types of compliance costs that regulated small entities may incur upon designation of critical habitat: 1) administrative costs incurred from section 7 consultation (formal or informal); and 2) costs incurred from section 7 consultation associated with project design or operation modification and project delays.⁵ A summary of the costs associated with the critical habitat designation is provided in Table 6 to indicate how the rule may affect some sectors.

Table 6. Categories of Potential Compliance Costs Associated with the Rule

Categories of Potential Costs	Examples
Administrative costs associated with section 7 consultations: <ul style="list-style-type: none"> ▪ new consultations ▪ reinitiated consultations ▪ extended consultations 	The value of time spent in conducting section 7 consultations (e.g., costs of phone calls, letter writing, meetings, travel time) and, in some cases, the costs of compiling biological, technical, and legal information and/or preparing a biological assessment.
Costs of modifications to projects, activities, and land uses.	Opportunity costs associated with seasonal project changes, relocation or redesign of project activities, project delays and/or cessation of certain activities.

The administrative costs of participating in consultation include the cost of applicants’ time spent attending meetings, making phone calls, and preparing letters. In addition, applicants may spend time reviewing and commenting on the biological opinion before its promulgation (if a “jeopardy biological opinion” is to be issued). The duration and complexity of these interactions depends on a number of variables, including the type of consultation, the species, the activity of concern, the region where critical habitat has been proposed, and the involved parties. In some cases, applicants may also incur the costs of developing, under the direction of NOAA Fisheries, a biological assessment. Biological assessments are prepared to evaluate the potential effects of a proposed project on listed species or designated critical habitat.

The section 7 consultation process may also involve some modifications to a proposed or existing project. Projects may be modified in response to voluntary conservation measures suggested by NOAA Fisheries and agreed to by the applicant during the informal consultation process in order to avoid or minimize impact to a species and/or its habitat, thereby removing the need for formal consultation. Alternatively, formal consultations may involve modifications that are included in

⁵ Compliance costs are those expenses borne by entities as they change their behavior to come into compliance with regulations.

the project description as avoidance and minimization measures or included in the biological opinion on the project as reasonable and prudent measures. Of the activities and projects that are potentially affected by section 7 consultations, many are expected to involve no project modifications or very minor ones.

Applicants may also incur project delay costs associated with the consultation process. Regardless of funding (i.e., private or public), projects and activities are generally undertaken only when the benefits exceed the costs, given an expected project schedule. If costs increase, benefits decrease, or the schedule is delayed, a project or activity may no longer have positive benefits, or it may be less attractive to the party funding the project. However, the magnitude of such delays is unclear; the formal consultation process may add significantly to time lags before project implementation, or the action agency and the individual entity initiating the activity may be able to conduct a section 7 consultation simultaneously with other necessary permitting processes, thus leading to no additional delays.

To further assist small entities in understanding the nature of the impact of the rule on their activities, the following discussion identifies typical project modifications that may be requested in consultations involving listed Pacific salmon and steelhead ESUs:

Hydroelectric Power Generation. Small hydroelectric producers could be affected by project modification costs at the time of facility re-licensing. Alterations of operations affecting timing, amount and duration of water released could be costly in terms of lost generation capacity and foregone revenue over the life of a 30 to 50 year license. In addition, facilities may incur fish passage, habitat protection or restoration, and biological study costs.

Water Supply and Irrigation Systems. Section 7 consultation can add a cost burden to water supply activities by modifying infrastructure development projects and governing the operation of water projects (e.g., amount of water diverted).

Forestry and Logging. Project modifications may include yarding system changes to protect soils and reduce sediment loads in streams; repairing and replacing culverts that block upstream passage to fish; and road maintenance and repair to reduce soil erosion and sediment runoff. However, most costs related to roadwork, culvert upgrades and changes in logging and yarding methods will be passed on to the USFS through lower stumpage prices. Expanding the buffers along streamside corridors would remove land from timber production, thereby reducing the flow of raw material into the forest products industry.

Beef Cattle Ranching and Farming. The major cost components come from the areas of monitoring and elimination of conflicts (e.g., fencing and providing off-stream water). Date restrictions or the enforcement of stubble height restrictions can lead to an animal unit month (AUM) reduction on a particular allotment.⁶ As a result of such reductions, ranchers will generally move the cattle to a different allotment or private lands. If they move the cattle to private lands they may have to pay a higher grazing fee, reflecting the different responsibilities the rancher has on public land for monitoring livestock, fence repairs and moving livestock versus private rented land, for which these responsibilities are often taken over by the land owner. Thus, while costs may be shifted, this analysis does not predict significant additional costs to grazing permittees. In addition, when date restrictions are imposed, the USFS often can expand other allotments or increase AUMs on the restricted parcel to lessen any impact on the permittee. In cases where modifications in on-off dates and stocking levels result in reductions in total leased AUMs by a rancher, the total asset value of a permittee's privately held land may be impacted. Agricultural lending institutions often consider the number of historically leased Federal and state AUMs associated with a private ranching operation in determining the ranch's

⁶ Date restrictions refer to conditions specifying when activities should or should not be undertaken.

market value. Significant reductions in Federally-permitted AUMs could impact this market value. Reductions in total AUMs tend to be small and marginal in nature, and are often offset with available Federal, state, or private grazing elsewhere. The potential for this type of impact exists, but is not estimated due to the likely small magnitude and uncertain nature of the possible impact.

Highway, Street, and Bridge Construction. The typical project modification for bridge construction, maintenance, and removal projects in rivers proposed as critical habitat is date restrictions on in-stream work to protect spawning or migrating fish. Date restrictions have the potential to increase costs, but will not do so in every case. Larger projects are more likely to have date restriction costs. The imposition of date restrictions forces contractors to plan carefully and schedule the construction sequence with diligence. A large project coupled with a small window or unforeseen difficulties can lead to contractors being unable to finish their in-stream work during the allowed period. This is more likely with large projects than small projects. Most of the costs associated with project modification compliance will be borne by the Federal government either directly or through its funding of State Department of Transportation projects.

Electric Services/Natural Gas Distribution. Common project modifications include restrictions on the duration and extent of in-stream work, replacement/restoration of habitat, on-site monitoring, and efforts to minimize take.

Construction Sand and Gravel Mining. Consultations on mining activities conducted within the riparian areas of this designation could lead to watershed assessment requirements, a reduction in the length of the mining season, buffer strips, restrictions as to type of equipment allowed, timing of equipment use and additional requirements for stream crossings.

In-stream Activities. Section 7 implementation on in-stream activities may impact the entities conducting the activities. Economic impacts result from direct project costs associated with restrictions on the duration and extent of in-water work, erosion and sediment control measures, heavy equipment restrictions, and efforts to minimize take.

Land Subdivision. The designation of critical habitat is anticipated to have a negligible impact on regional market supply for residential, commercial, or industrial land; therefore, the primary impacts will be felt by individual property owners. Typical project modifications associated with stormwater outfall projects include implementing state recommended stormwater plans, activities to reduce stormwater volume and/or pollutants, minimizing hardscape of the outfall structure, and vegetation replacement.

NPDES-Permitted Activities (Fishing, Hunting, Trapping; Food Manufacturing; Sewage Treatment Facilities; Paper and Pulp Mills; Wood Product Manufacturing). Costs related to NPDES-permitted activities include impacts resulting from newly developed water quality standards criteria related to temperature. EPA and NOAA Fisheries recently authored guidance to states and Tribes on the development of temperature criteria deemed protective of salmonids. Impacts of section 7 implementation resulting from NOAA's consultation on the temperature criteria will vary depending on a facility's compliance with existing temperature standards.

Crop Production (Oilseed and Grain Farming, Vegetable and Melon Farming, Fruit and Tree Nut Farming). The principal economic effects are associated with restrictions on the aerial and ground application of a set of agricultural pesticides within a certain distance of the stream reaches considered in this analysis. These restrictions can be taken as an additional constraint on the agricultural production process that may result in lower net cash farm income (net revenue) per acre.

Estimate of the Economic Impacts on Small Entities

For the purpose of this analysis, costs to small entities include those costs borne directly by small entities and not those costs borne directly by Federal agencies and passed on to small entities (e.g., higher electricity prices charged by Federal power marketing agencies). Costs borne directly by small entities include the administrative costs of participating in section 7 consultation and the costs resulting from modifying project activities to comply with section 7.

To be conservative (i.e., more likely to overstate impacts than understate them), this analysis assumes that for most activities, private third parties will bear all of the total section 7 costs. However, for some activities third party involvement is known to be minimal (i.e., only the action agency and/or NOAA Fisheries are expected to incur costs). In particular, this analysis anticipates that Federal agencies will bear 90 percent of the total section 7 costs associated with beef cattle ranching and forestry and logging activities on Federal lands and with road and bridge construction and maintenance. The remaining ten percent of costs are expected to be borne by private entities. Most of the project modification costs for beef cattle ranching and forestry and logging activities on Federal lands will likely either be borne directly by or passed onto the Federal government. For example, the cost of fencing for beef cattle ranching will almost always be borne by the Federal land agency. In the case of forestry and logging, additional monitoring costs and the cost of some of the additional road work will be borne directly by the USFS, while costs related to remaining road work and changes in logging and yarding methods will be passed on to the USFS through lower stumpage prices. With respect to FHWA-related consultations for road and bridge construction/maintenance, this analysis anticipates that the majority of costs associated with project modification compliance will be borne by the Federal government either directly or through their funding of State Department of Transportation projects. Impacts on indirectly regulated entities (e.g., road construction companies contracted by State DOTs) are not considered in this analysis.

This analysis does not distinguish between economic impacts caused by the listing of the Oregon Coast coho ESU and those additional costs and benefits created solely by the proposed critical habitat designation. Section 7 consultations are required upon the listing of a species to ensure federal actions will not jeopardize the continued existence of the species or destroy or adversely modify its critical habitat. Section 7 consultations on habitat-modifying actions may lead to project modifications because they will result in jeopardy, or adverse modification of critical habitat, or both. Although NOAA Fisheries reviewed its extensive consultation record, it was unable to distinguish incremental project modifications that were required because of the critical habitat designation, over and above the application of the jeopardy standard. In 2001, the U.S. Court of Appeals for the Tenth Circuit instructed the U.S. Fish and Wildlife Service to conduct a full analysis of all of the economic impacts of critical habitat designation, regardless of whether those impacts are attributable co-extensively to other causes.⁷ Mindful of the Tenth Circuit's instruction regarding the statutory requirement to consider the economic impact of designation, NOAA Fisheries examined its extensive consultation record. The agency could not discern a distinction in the impacts of applying the jeopardy provision versus the adverse modification provision in occupied habitat. Given the inability to detect a measurable difference between the impacts of applying these two provisions, the only reasonable alternative seemed to be to follow the recommendation of the Tenth Circuit to measure the full impact of the adverse modification requirement, regardless of whether it is coextensive with the jeopardy requirement. Thus, the economic impacts described in this FRFA should be interpreted as the sum of two types of impacts:

⁷ *New Mexico Cattlegrowers' Association v. U.S. Fish and Wildlife Service*, 248 F.3d 1277 (10th Cir. 2001)

- Coextensive impacts, or those that are associated with actions covered by both the jeopardy and adverse modification requirements of section 7 of the ESA; and
- Incremental impacts, or those that are solely attributable to critical habitat designation and would not occur without the designation.

The greatest share of the costs associated with the consultation process stem from project modifications and mitigation (as opposed to the consultation itself). Indeed, the administrative costs associated with the consultation itself are relatively minor, with third party costs estimated to range from \$1,200 to \$4,100 per consultation. The cost of developing a biological assessment is estimated to be between \$3,700 and \$67,500. Therefore, small entities are unlikely to be significantly affected by consultations that do not involve costly project modifications.

Unavailable or inadequate data leaves some uncertainty surrounding the nature and cost of project modifications that may be requested by NOAA Fisheries in consultations on Federally authorized, permitted, or funded activities. The problem is complicated by differences among entities even in the same sector as to the nature and size of their current operations, contiguity to waterways, etc. Moreover, the ability of different entities to adapt to the incremental regulatory burden by changing the manner in which they operate, modifying their mix of products, or passing on the additional costs in the form of price increases or user fees is unknown.

Using spatial data, the analysis identified projects and activities that either had or could have a Federal nexus on lands being considered for critical habitat. The analysis used these data to project the volume of projects and activities that could reasonably be foreseen to be covered by a section 7 consultation once critical habitat was designated. Estimates of the costs per project for each industry sector were based on a review of the historical consultation record (Appendix B: Table 14). The costs were annualized based on the forecast period and the likelihood of consultation and modifications.

It is likely that businesses that do not meet SBA's small business size standards will have larger projects and, therefore, greater costs per project. However, in order to present a conservative (i.e., high end) estimate of per-project costs, this analysis assumes that these costs are as high for small businesses as they are for larger ones.

An estimate of the number of projects that would be affected by section 7 consultation was only available for all businesses, both large and small. It is likely that businesses that do not meet SBA's small business size standards will have a greater number of affected projects per entity. However, due to a lack of information regarding the number of affected projects involving small entities, this analysis conservatively assumes that the ratio of small entity projects to all projects is equal to the ratio of small entities to all entities.⁸

An estimate of the annual economic impacts on small entities by industry sector is provided in Appendix B: Table 15. The table presents the expected total economic cost of actions taken under section 7 of the ESA associated with protection of the Oregon Coast coho ESU and its proposed critical habitat, including those costs attributable co-extensively to the listing of the Oregon Coast coho ESU as threatened. Both overall compliance costs of section 7 consultation and per-entity compliance costs are presented. These tables establish an upper-bound to the compliance costs due to the fact that some of the costs associated with section 7 consultation are expected to be borne directly by or passed onto the Federal government. Only the estimated annualized section 7 costs incurred by regulated small entities in the Forestry and Logging and Highway, Street, and

⁸ This analysis estimated the proportion of regulated entities that are small entities to be greater than 70 percent in all of the industry sectors considered, with the exception of the Natural Gas Distribution Sector (in which small entities represent 31 percent of the total). The proportion of regulated entities that are small entities in the Hydroelectric Power Generation and Electric Services Sectors is unknown.

Bridge Construction Sectors were adjusted downward to reflect this likelihood. The analysis assumes that 90 percent of the estimated annualized section 7 costs for these two sectors will be borne by the Federal action agencies; with private entities incurring the remaining ten percent.

Estimates of the co-extensive costs of section 7 consultation to small entities are summarized in Table 7.

Table 7. Estimated Annual Economic Impacts on Small Entities by Industry Sector. Impacts are Expressed in Terms of Dollars of Compliance Costs.

Hydro-electric Power Generation¹	\$71,359
Water Supply and Irrigation Systems	\$1,439,067
Forestry and Logging	\$1,393,612
Beef Cattle Ranching and Farming	\$0
Highway, Street, and Bridge Construction	\$37,843
Electric Services/Natural Gas Distribution¹	\$231,599
Construction Sand and Gravel Mining	\$669,873
In-stream Activities	\$854,449
NPDES-Permitted Activities	\$324,895
Crop Production	\$187,494
Land Subdivision	\$446,296
Total	\$5,656,486

Note: Cost estimates include all section 7 costs, including those co-extensive with the listing and designation of critical habitat for the Oregon Coast coho ESU. Costs are presented on an annualized basis. These estimates provide an upper limit to the compliance costs due to the fact that some of the costs associated with section 7 consultation are expected to be borne directly by or passed onto the Federal government (only the estimated annualized section 7 costs incurred by regulated small entities in the Beef Cattle Ranching and Farming, Forestry and Logging and Highway, and Street, and Bridge Construction Sectors were adjusted downward to reflect this likelihood).

¹ All entities in the Hydroelectric Power Generation and Electric Services Sectors are assumed to be small entities. Consequently, the compliance costs for small entities in these sectors represent an upper bound estimate. The number of small entities in the hydroelectric power generation and electrical services industries is unknown because of the unavailability of data related to small business thresholds. For both of these industry sectors the SBA defines a firm as “small” if, including its affiliates, it is primarily engaged in the generation, transmission, and/or distribution of electric energy for sale, and its total electric output for the preceding fiscal year did not exceed 4 million megawatt hours. It was not possible to locate a source that provides this information for all regulated entities within these sectors.

Source: Northern Economics, Inc. analysis based on data from NOAA Fisheries Northwest Region. The data and method of analysis are described in Appendix B: Estimate of the Economic Impacts on Small Entities .

Estimate of the Regulatory Burden and Distributional Effects

Compliance costs may affect the economic viability of small entities or their ability to provide services. The severity of the economic impact depends on the magnitude of the compliance costs associated with the rule and the economic and financial characteristics of the affected firms and industries. Industries and firms that are relatively profitable will be better able to absorb new compliance costs without experiencing financial distress.

This analysis assessed whether compliance costs of section 7 consultation might unduly burden the small entities within a particular group or industry sector. To determine if the compliance costs would impose a substantial cost burden the analysis examined these costs as a percentage of profits.

Information on revenue, profit or other measures of economic sustainability is unavailable for the small entities to which the rule will apply. However, the profitability of businesses in each industry sector was approximated using data from Risk Management Association's Annual Statement Studies and IMPLAN, an economic input-output database and software package developed by Minnesota IMPLAN Group, Inc. The profits of small entities in each sector were identified in these data sources using SBA size standards. A more detailed description of the methodology used to determine the profitability of small entities is provided in Appendix C.

Estimates of the profits of a typical (i.e., representative or average) small entity in each industry sector are provided in Table 8. Per-entity compliance costs were then expressed as a percentage of the profitability of a typical business to assess the relative impact of regulatory costs on business and industry viability (Table 9). Compliance costs as a proportion of profits exceeded ten percent for the average directly regulated small entity in the Construction Sand and Gravel Mining Sector. The use of average compliance costs and profitability may underestimate or overestimate the impact of the rule on some small businesses.

Table 8. Estimated Profitability of a Typical Small Entity by Industry Sector

	Typical Profitability		Average Profits Per Small Entity
	Profit Margin	Small Entity Sales	
Hydro-electric Power Generation¹	7.7%	\$40,000,000	\$3,080,000
Water Supply and Irrigation Systems	12.0%	\$6,500,000	\$780,588
Forestry and Logging	3.6%	\$6,000,000	\$214,712
Beef Cattle Ranching and Farming	7.9%	\$750,000	\$59,250
Highway, Street, and Bridge Construction	5.7%	\$31,000,000	\$1,767,000
Electric Services/Natural Gas Distribution¹	5.1%	\$200,000,000	\$10,281,777
Construction Sand and Gravel Mining	9.5%	\$59,089,480	\$5,613,501
In-stream Activities	4.8%	\$31,000,000	\$1,498,333
NPDES-Permitted Activities	5.7%	\$23,819,091	\$1,359,629
Crop Production	7.5%	\$750,000	\$55,973
Land Subdivision	14.0%	\$6,500,000	\$911,401

¹ All entities in the Hydroelectric Power Generation and Electric Services Sectors are assumed to be small entities. Consequently, the profits of an average small entity in these sectors represent an upper bound estimate. The number of small entities in the hydroelectric power generation and electrical services industries is unknown because of the unavailability of data related to small business thresholds. For both of these industry sectors the SBA defines a firm as “small” if, including its affiliates, it is primarily engaged in the generation, transmission, and/or distribution of electric energy for sale, and its total electric output for the preceding fiscal year did not exceed 4 million megawatt hours. It was not possible to locate a source that provides this information for all regulated entities within these sectors.

Source: Northern Economics, Inc. analysis based on data from Risk Management Association’s Annual Statement Studies and IMPLAN. The data and method of analysis are described in Appendix C: Estimates of the Profits of Small Entities by Industry Sector.

Table 9. Economic Impacts as a Percentage of the Profitability of a Typical Small Entity by Industry Sector

	Percent of Profits
Hydro-electric Power Generation¹	0.3%
Water Supply and Irrigation Systems	5.3%
Forestry and Logging	4.0%
Beef Cattle Ranching and Farming	0.0%
Highway, Street, and Bridge Construction	0.0%
Electric Services/Natural Gas Distribution¹	0.2%
Construction Sand and Gravel Mining	11.9%
In-stream Activities	1.1%
NPDES-Permitted Activities	0.2%
Crop Production	7.8%
Land Subdivision	1.1%

Note: Cost estimates include all section 7 costs, including those co-extensive with the listing and designation of critical habitat for the Oregon Coast coho ESU. Costs are presented on an annualized basis. These estimates provide an upper limit to the compliance costs due to the fact that some of the costs associated with section 7 consultation are expected to be borne directly by or passed onto the Federal government (only the estimated annualized section 7 costs incurred by regulated small entities in the Beef Cattle Ranching and Farming, Forestry and Logging and Highway, and Street, and Bridge Construction Sectors were adjusted downward to reflect this likelihood).

¹ All entities in the Hydroelectric Power Generation and Electric Services Sectors are assumed to be small entities. Consequently, the compliance costs as a percentage of the profitability of a typical small entity in these sectors represent an upper bound estimate. The number of small entities in the hydroelectric power generation and electrical services industries is unknown because of the unavailability of data related to small business thresholds. For both of these industry sectors the SBA defines a firm as “small” if, including its affiliates, it is primarily engaged in the generation, transmission, and/or distribution of electric energy for sale, and its total electric output for the preceding fiscal year did not exceed 4 million megawatt hours. It was not possible to locate a source that provides this information for all regulated entities within these sectors.

Source: Northern Economics, Inc. analysis based on data from Risk Management Association’s Annual Statement Studies and IMPLAN. The data and method of analysis are described in Appendix C: Estimates of the Profits of Small Entities by Industry Sector.

Section 7 consultation costs may impose a disproportionate economic hardship on small entities in certain industry sectors. These costs are unlikely to be directly proportional to the size of the regulated entity. Consequently, it is probable that regulatory costs will represent a higher percentage of profits of small entities than of larger entities. This disproportional impact could place small entities in certain industry sectors at a significant competitive disadvantage with larger businesses.

Description of Potential Benefits of the Rule to Small Entities

Designation of critical habitat may also provide economic benefits to some regulated small entities. However, quantification of potential beneficial effects is not possible at this time due to a lack of data.

VII. Description of Significant Alternatives to the Rule

A FRFA must include a description of the steps the agency has taken to minimize the significant economic impact on small entities consistent with the stated objectives of applicable statutes, including a statement of the factual, policy, and legal reasons for selecting the alternative adopted in the final rule and why each one of the other significant alternatives to the rule considered by the agency which affect the impact on small entities was rejected.

NOAA Fisheries did not consider the alternative of not designating critical habitat for the Oregon Coast coho ESU because that alternative does not meet the legal requirements of the Endangered Species Act.

NOAA Fisheries did consider the following two significant alternatives to the proposed designation of critical habitat:

Alternative 1: Designate all particular areas that meet the definition of critical habitat as given in section 3(5)(A) of the ESA;

Alternative 2: Designate only particular areas that meet the definition of critical habitat with a high conservation value.

Under the first alternative, no areas are excluded for economic or other reasons. Through the section 4(b)(2) process of weighing benefits of exclusion against benefits of designation, NOAA Fisheries determined that the proposed designation of critical habitat provided an appropriate balance of conservation and economic mitigation, and that excluding the areas proposed for exclusion would not result in extinction of the species. The proposed designation would reduce the adverse economic impacts on entities, including small entities. It is estimated that excluding areas from the rule designating critical habitat could save small entities \$214,927 in compliance costs (Table 10).

Table 10. A Comparison of the Proposed Critical Habitat Designation and Critical Habitat Designation with No Areas Excluded

Alternative 1: Critical Habitat Designation with No Areas Excluded		Proposed Critical Habitat Designation		Difference Between Critical Habitat Designations	
No. of Regulated Small Entities	Economic Impacts on Small Entities (\$)	No. of Regulated Small Entities	Economic Impacts on Small Entities (\$)	Reduction in No. of Regulated Small Entities	Reduction in Economic Impacts on Small Entities (\$)
623	5,871,413	618	5,656,486	5	214,927

Source: Northern Economics, Inc. analysis based on data from NOAA Fisheries Northwest Region. The data and method of analysis are described in Appendix A: Estimate of the Number of Small Entities to Which the Rule will Apply and Appendix B: Estimate of the Economic Impacts on Small Entities .

NOAA Fisheries examined and rejected the second alternative of excluding all habitat areas with a low or medium conservation value (Table 11). The agency determined that this alternative reduces economic impacts relative to the proposed designation of critical habitat; however, this alternative is not sensitive to the fact that eliminating all low and medium value habitat areas is likely to significantly impede conservation. Because the agency concluded that the benefits of exclusion would not outweigh the benefits of specifying these areas as part of the critical habitat, NOAA Fisheries rejected the second alternative.

Table 11. A Comparison of the Proposed Critical Habitat Designation and Critical Habitat Designation with Areas of Low and Medium Conservation Value Excluded

Alternative 2: Critical Habitat Designation with Areas of Low and Medium Conservation Value Excluded		Proposed Critical Habitat Designation		Difference Between Critical Habitat Designations	
No. of Regulated Small Entities	Economic Impacts on Small Entities (\$)	No. of Regulated Small Entities	Economic Impacts on Small Entities (\$)	No. of Regulated Small Entities	Economic Impacts on Small Entities (\$)
383	3,609,180	618	5,656,486	235	2,047,306

Source: Northern Economics, Inc. analysis based on data from NOAA Fisheries Northwest Region. The data and method of analysis are described in Appendix A: Estimate of the Number of Small Entities to Which the Rule will Apply and Appendix B: Estimate of the Economic Impacts on Small Entities and Appendix B: Estimate of the Economic Impacts on Small Entities

In describing the economic effects of including or excluding a particular area from critical habitat, it is not accurate to include all of the co-extensive impacts because it is unlikely that the impacts attributable to critical habitat designation would ever account for the total impacts. However, in examining its extensive consultation record, NOAA Fisheries could not discern a difference in the impact of applying section 7’s jeopardy requirement versus applying the adverse modification requirement. For that reason, NOAA Fisheries decided to analyze the full impact of the adverse modification requirement, regardless of whether it is coextensive with other requirements, such jeopardy.

Under the ESA, NOAA Fisheries has little discretion, if any, to mandate different compliance methods or schedules for small entities that might “take into account the resources available to small entities” but not comply with the statutory requirements. However, in formulating its biological opinion and any reasonable and prudent alternatives, NOAA Fisheries must use the best scientific and commercial data available and must give appropriate consideration to any beneficial actions taken by the Federal agency or applicant, including any actions taken prior to the initiation of consultation. In addition, NOAA Fisheries must utilize the expertise of the Federal agency and any applicant in identifying reasonable and prudent alternatives. Reasonable and prudent alternatives identified during formal consultation must be economically and technologically feasible.

It is the practice of NOAA Fisheries in a rulemaking to designate critical habitat to also include advice on activities that may destroy or adversely modify critical habitat. By issuing this advice, NOAA Fisheries will explain the rule, provide compliance scenarios to illustrate and clarify any complexities, and provide greater certainty for small businesses’ planning purposes.

The ESA requires each Federal agency, in consultation with NOAA Fisheries, to insure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat. Section 7 offers action agencies and applicants, in consultation with NOAA Fisheries, to craft their actions to avoid jeopardizing the continued existence of any listed species or destroy or adversely modify its critical habitat. NOAA Fisheries acknowledges that technical and functional performance criteria are intended to give discretion in achieving the required end result and provide regulated entities the flexibility to achieve the regulatory objective in a more cost-effective way. To that end, NOAA Fisheries has developed the concept of “proper functioning condition” of salmonid habitat and a “matrix of pathways and indicators” consulting agencies and applicants can use to analyze how their actions will affect proper functioning condition.

Although the rule imposes some costs, it is important to recognize that the designation of critical habitat is mandated by the ESA. NOAA Fisheries considered and rejected the alternative of

exempting small entities from coverage of the rule, or any part thereof, because the agency does not have the discretion to provide for exemptions from the requirements of the ESA based on the size of the applicant. However, section 7 of the ESA allows an agency or applicant to apply for an exemption from the requirement to avoid jeopardy or adverse modification of critical habitat.

Appendix A: Estimate of the Number of Small Entities to Which the Rule will Apply

The purpose of this appendix is to describe how an estimate of the number of regulated small entities was derived. For each county included in the analysis, an estimate of the total number of entities within each industry sector subject to the regulation was derived by searching the D&B Duns Market Identifiers (File 516) by NAICS code. Census tract data from the 2000 Census of Population and Housing were used to indirectly estimate the number of businesses in each ESU by assuming that the number of businesses is directly proportional to population density. These percentages were applied to each affected industry to calculate the number of regulated businesses in each sector that are likely to be small.

Table 12. Estimated Number of Regulated Small Entities by County

County	State	County Population	Estimated Population in ESU	% County Population in ESU	Regulated Entities in County	Regulated Small Entities in County	Regulated Entities in ESU	Regulated Small Entities in ESU
Benton	OR	3,776	1,563	41.40%	99	92	2	1
Clatsop	OR	18,627	12,154	65.25%	58	50	19	16
Columbia	OR	8,019	4,568	56.97%	95	88	10	9
Coos	OR	62,779	62,738	99.94%	158	144	157	143
Curry	OR	981	353	36.03%	75	70	0	0
Douglas	OR	100,399	99,438	99.04%	275	256	269	251
Jackson	OR	4,353	22	0.50%	273	244	1	1
Josephine	OR	1,067	36	3.40%	112	108	1	1
Lane	OR	28,707	18,461	64.31%	431	382	26	23
Lincoln	OR	44,479	44,001	98.93%	102	94	102	94
Polk	OR	2,545	202	7.95%	83	75	0	0
Tillamook	OR	24,262	24,168	99.61%	84	79	84	79
Washington	OR	3,957	1,016	25.69%	379	344	0	0
Yamhill	OR	4,815	638	13.25%	173	152	0	0
Total		308,766	269,359		2,397	2,178	671	618

Table 13. Estimated Number of Regulated Small Entities by County and Industry Sector

County	State	Hydroelectric Power Generation ¹		Water Supply and Irrigation Systems		Forestry and Logging		Beef Cattle Ranching and Farming		Highway, Street, and Bridge Construction		Electric Services/ Natural Gas Distribution ¹		Construction Sand and Gravel Mining		In-stream Activities		NPDES-Permitted Activities		Crop Production		Land Subdivision	
		8	0	35	164	45	68	14	1	50	146	43	44										
Benton	OR	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clatsop	OR	0	2	3	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Columbia	OR	0	1	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Coos	OR	0	6	40	13	16	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Curry	OR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Douglas	OR	3	8	76	29	26	4	1	15	52	20	17	0	0	0	0	0	0	0	0	0	0	0
Jackson	OR	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Josephine	OR	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lane	OR	1	1	5	1	2	1	0	1	7	2	2	0	0	0	0	0	0	0	0	0	0	0
Lincoln	OR	1	8	16	0	11	5	0	11	30	2	10	0	0	0	0	0	0	0	0	0	0	0
Polk	OR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tillamook	OR	1	9	20	1	10	1	0	8	21	2	6	0	0	0	0	0	0	0	0	0	0	0
Washington	OR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yamhill	OR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total		8	35	164	45	68	14	1	50	146	43	44											

¹ All entities in the Hydroelectric Power Generation and Electric Services Sectors are assumed to be small entities. Consequently, the compliance costs for small entities in these sectors represent an upper bound estimate. The number of small entities in the hydroelectric power generation and electrical services industries is unknown because of the unavailability of data related to small business thresholds. For both of these industry sectors the SBA defines a firm as “small” if, including its affiliates, it is primarily engaged in the generation, transmission, and/or distribution of electric energy for sale, and its total electric output for the preceding fiscal year did not exceed 4 million megawatt hours. It was not possible to locate a source that provides this information for all regulated entities within these sectors.

Appendix B: Estimate of the Economic Impacts on Small Entities

The purpose of this appendix is to describe how estimates of the compliance costs for small entities were derived. Estimates of the costs per project for each industry sector were based on a review of the historical consultation record (**Table 14**). The costs were annualized based on the forecast period and the likelihood of consultation and modifications.

It is probable that businesses that do not meet SBA's small business size standards will have larger projects and, therefore, greater costs per project. However, in order to present a conservative (i.e., high end) estimate of per-project costs, this analysis assumes that these costs are as high for small businesses as they are for larger ones.

An estimate of the number of projects that would be affected by section 7 consultation was only available for all businesses, both large and small. It is likely that businesses that do not meet SBA's small business size standards will have a greater number of affected projects per entity. However, due to a lack of information regarding the number of affected projects involving small entities, this analysis conservatively assumes that the ratio of small entity projects to all projects is equal to the ratio of small entities to all entities.

Based on the predicted annual project modification costs and number of projects by small entities that would be affected, an estimate of the annual economic impacts on small entities was calculated. Both overall compliance costs and per-entity compliance costs are presented. The cost estimates in the tables represent all costs attributable to Oregon Coast coho section 7 consultations, including both those attributable to the listing of the Oregon Coast coho ESU as well as those attributable to critical habitat designation.

Table 14. Estimates of Expected Costs of Section 7 Impacts to a Project by Activity¹

Activity	Sub-activity	Cost Unit	Mid-range Cost Estimate	Present Value of Cost Stream	Forecast Period	Likelihood of Consultation and Modifications	Annual Expected Cost
Hydropower Dams ²	Small (0-5 MW)		\$2,378,624	\$2,378,624	20 years	10% over 20 years	\$11,893
	Medium (5-20 MW)		\$6,449,935	\$6,449,935	50 years	100% over 50 years	\$128,999
	Large (>20 MW), requires fish passage	per dam	\$82,839,594	\$82,839,594	50 years	100% over 50 years	\$1,656,792
	Large (>20 MW), does not require fish passage		\$50,735,746	\$50,735,746	50 years	100% over 50 years	\$1,014,715
	Dam removal		\$26,921,466	\$26,921,466	Applied to known cases of future removals		
Non-hydropower Dams	Federal and large non-hydropower dams		\$2,378,624	\$2,378,624	20 years	100% over 20 years	\$106,025
	Small non-Federal Non-hydropower dams	per dam				10% over 20 years	\$10,603
Federal Lands	Idaho		\$1.41	\$1.41			\$1.41
	Western Oregon & Western Washington		\$6.61	\$6.61	Annual	100%	\$6.61
	Eastern Oregon & Eastern Washington	per acre	\$3.70	\$3.70			\$3.70
Grazing	Grazing	Stream miles	\$12,900 + 2% annual maintenance for 30 years	\$16,101	Immediate	100%	\$1,298

Activity	Sub-activity	Cost Unit	Mid-range Cost Estimate	Present Value of Cost Stream	Forecast Period	Likelihood of Consultation and Modifications	Annual Expected Cost	
Transportation ³	Bridges & culverts (small)	per project & mile	\$31,184 + variable costs	\$48,165	5 years	100% over 5 years	\$9,633	
	Bridges & culverts (medium)		\$62,255 + variable costs	\$79,237			\$15,847	
	Bridges & culverts (large)		\$94,562 + variable costs	\$111,542			\$22,308	
	Roads (small)	per project & mile	\$25,575 + variable costs	\$42,556	5 years		\$8,511	
	Roads (medium)		\$52,721 + variable costs	\$69,702			\$13,940	
	Roads (large)		\$79,979 + variable costs	\$96,960			\$19,392	
	Utility	Outfall structures and pipelines	per project	\$113,295	\$113,295	Annual	100%	\$113,295
	Instream Activities	Dredging	per project	\$920,938	\$920,938	Annual	100%	\$920,938
		Boat dock, boat ramps, bank stabilization	per project	\$61,134	\$61,134	Annual	100%	\$61,134
Minor facility		per facility	O&M: \$7,628 for 20 years	\$80,808	Immediate	20%	\$1,526	
NPDES	Major facility	per facility	Capital: \$534,484	\$707,212	Immediate	25%	\$16,689	
			O&M: \$22,126 for 20 years					
Mining	Mining on non-Federal lands	per site	\$370,170 for 5 years	\$1,516,694	30 years	50% over 30 years	\$25,278	
Development	New development	per project	\$263,606	\$263,606	Annual	100%	\$15,553	
Pesticides	Agricultural cropping	per acre	\$0 - 7,310, depending on crop type and county		Annual	100%	\$0 - 7,310, depending on crop type and county	

1 Cost estimates in this table are for the case of mid-range costs and a 7% discount rate.

2 Data for hydropower dams do not allow us to allocate all costs over an expenditure period. The cost stream presented is the present value of costs.

3 Transportation costs are presented for a project of average mileage (3.2 miles).

Table 15. Estimated Annual Economic Impacts on Small Entities by Industry Sector

	Hydroelectric Power Generation ¹	Water Supply and Irrigation Systems	Forestry and Logging	Beef Cattle Raising and Farming	Highway, Street, and Bridge Construction	Electric Services/ Natural Gas Distribution ¹	Construction Sand and Gravel Mining	In-stream Activities	NPDES-Permitted Activities	Crop Production	Land Subdivision
Project Costs, All Entities (\$)	71,359	1,439,067	1,461,593	0	37,843	264,684	1,339,747	854,449	409,456	196,215	466,583
No. of Small Entities	8	35	164	45	68	14	1	50	146	43	44
Small Entities as Percent of Total	100%	100%	95%	100%	100%	88%	50%	100%	79%	96%	96%
Project Costs, Small Entities	71,359	1,439,067	1,393,612	0	37,843	231,599	669,873	854,449	324,895	187,494	446,296
Costs per Small Entity (\$)	8,920	41,116	8,498	0	557	16,543	669,873	17,089	2,225	4,360	10,143

Note: Cost estimates include all section 7 costs, including those co-extensive with the listing and designation of critical habitat for the ESU. Costs are presented on an annualized basis.

¹ All entities in the Hydroelectric Power Generation and Electric Services sectors are assumed to be small entities. Consequently, the compliance costs for these sectors represent an upper bound estimate. The number of small entities in the hydroelectric power generation and electrical services industries is unknown because of the unavailability of data related to small business thresholds. For both of these industry sectors the SBA defines a firm as “small” if, including its affiliates, it is primarily engaged in the generation, transmission, and/or distribution of electric energy for sale, and its total electric output for the preceding fiscal year did not exceed 4 million megawatt hours. It was not possible to locate a source that provides this information for all regulated entities within these sectors.

Appendix C: Estimates of the Profits of Small Entities by Industry Sector

The purpose of this appendix is to describe how the analysis estimated the profitability of small businesses to which the rule will apply.

Standardized industry information was used to estimate profit margins for businesses in each sector. The two sources for business profitability information were Risk Management Association's (RMA's) *Annual Statement Studies* and IMPLAN (IMpact analysis for PLANning), an economic input-output database and software package developed by Minnesota IMPLAN Group, Inc.

The *Annual Statement Studies* published by RMA provides an annual set of financial ratio benchmarks for a diverse group of industries. The financial data is standardized across the entire U.S. and is grouped by either sales or asset ranges. This analysis used the sales range figures, as the SBA size standards for most of the industry sectors to which the rule will apply are based on average annual receipts. RMA's profit margins served as an estimate of the average business' annual profitability for each sector.

Technical coefficients provided in IMPLAN were used to estimate the profitability of firms in those sectors for which information was not available from the *Annual Statement Studies*. IMPLAN's technical coefficients are based on national production function data developed by the U.S. Bureau of Economic Analysis in 1997. IMPLAN data provide, among other measures of economic activity, industry output, number of employees, and proprietors' income. In this analysis proprietors' income was divided by the total industry output to estimate profit margins for businesses in each industry sector. The total output and number of employees was also used in developing sales estimates for small businesses in sectors where size was defined based on the number of employees.

Economic information compiled for 18 industry sectors was consolidated to match the 12 industry groupings identified for this analysis. Profit margins were calculated as simple averages. Sales levels were calculated as weighted averages based on sales for each sub-industry and the number of business identified in each sector based on State of Washington data from the 1997 U.S. Census Bureau, Economic Census.