

Equipment and Technology Component Narrative

1. Program Description and Scope of Work

a. Executive Summary

A key objective of this component is to resolve imbalances between supply and demand of both shellfish and seaweed seed. Southeast Conference as lead will work with regional partners on the proposed projects that will identify and project demand over the grant period, integrate and maximize existing supply, and support additional hatchery and nursery production capacity to fill demand gaps over the next ten years. Funds will also support development of community processing capacity through feasibility studies and purchase of specialized mariculture processing equipment. Lastly, funds will support improved toxin testing methods at the Alaska Department of Environmental Conservation so that PSP toxin testing issues and costs will not be a barrier to industry growth. Collectively these efforts will address several potential barriers to industry growth through greater coordination and risk reduction. This will have a transformative, positive impact on the industry's growth trajectory, as well as support an equitable distribution of participants as not just large vertically integrated companies are able to access steady quality seed supply, processing equipment, and other resources.

b. Scope of Work

Expand Processing Capacity

Feasibility studies for community processing: SEC and regional partners will assess whether existing facilities can be used for mariculture processing and conduct feasibility studies for the construction and expansion of processing, handling, and storage facilities in coordination with underserved communities, economic opportunity zones, and other EDA-eligible partners. These assessments will be used to prepare projects for pursuing other funding sources.

Expand capacity and improve technology in regional hubs: SEC will form partnerships with EDA-eligible regional entities to equip existing facilities (seafood processing plants, commercial kitchens, cold storage facilities, etc.) with the equipment to safely and co-partnerships st-effectively handle and process seaweed and shellfish. Investments and partnerships will be guided by the governance body and an RFP process that includes submission of feasibility studies (such as those funded above) to gauge project viability.

Expand Hatchery/Nursery Capacity

Preserve seed supply for underserved community farmers: SEC and regional partners will work with the Alaska Mariculture Alliance (AMA) and the Alaska Shellfish Growers Association (ASGA) to assess seaweed and shellfish demand, production, and distribution. An online data dashboard and accompanying report will be developed to communicate the results of this assessment, with quarterly updates as conditions change.

SEC and regional partners will assess whether existing facilities can expand or new facilities are needed to meet demand for seaweed and shellfish seed. Feasibility studies and operations

plans will be completed for the hatchery/nursery facilities in coordination with underserved communities, economic opportunity zones, and other EDA-eligible partners.

Coordinated through the governance body and an RFP process, nursery and hatchery seed services will be retained to coordinate supply and demand, ensure necessary quality and quantity of seed is available, reduce operational risks for nurseries and farmers, and improve seed performance and quality over time. EDA-eligible nurseries/hatcheries will be hired to provide oyster and seaweed seed services to underserved community farmers and EDA-eligible aquatic farms.

Increase efficiency and production capacity at existing hatcheries and nurseries: SEC will assist existing hatcheries and nurseries with equipment modernization and associated technology innovations to reduce operating costs, increase production capacity, and improve seed quality. Investments and partnerships will be guided by the governance body and an RFP process that includes submission of feasibility studies and operations plans (such as those funded above).

Creation of new oyster nursery equipment: SEC will purchase new oyster floating upweller systems (FLUPSYs) to close regional supply gaps. ASGA and other partners may replicate existing designs that have already been deployed in Alaska. Investments and partnerships will be guided by the governance body and an RFP process that includes submission of feasibility studies and operations plans (such as those funded above).

Creation of new seaweed nursery equipment:

SEC

will purchase new containerized seaweed nurseries to close regional supply gaps. Partners and suppliers may replicate existing designs that have already been deployed and tested in Alaska. Investments and partnerships will be guided by the governance body and an RFP process that includes submission of feasibility studies and operations plans (such as those funded above).

Diversification of species: SEC and regional partners will develop methods for developing and farming new species, including multiple shellfish species in varying levels of commercial viability currently. The governance body will identify demand for new species through its annual coordination activities.

Expand Regulatory Capacity

Purchase lab equipment for PSP testing in State lab: SEC will purchase laboratory equipment for the Alaska Department of Environmental Conservation to increase its existing capacity to test for paralytic shellfish poisoning (PSP), which poses a significant risk to shellfish farmers.

2. Regional Industry Assets and Needs

a. Regional Description

The cluster is focused on southern coastal Alaska (Southeast (SE), Prince William Sound (PWS), Kenai Peninsula (KP), Southwest (SW)) where there are waters appropriate for mariculture development as well as the existing seafood industry participants and interested workforce, infrastructure, and vessels which already operate and move across communities to access fishery resources. See attached separate FIPS code spreadsheet as directed by EDA staff.

Alaska comprises more than half of the US coastline, continental shelf, and exclusive

economic zone (EEZ) and is a world leader in seafood production; over 60% of the seafood harvested in the US comes from Alaska waters. Therefore, Alaska has the coastline and infrastructure to support growth of its mariculture industry. At the same time, Alaska has over 250 rural coastal communities that are largely inaccessible by road and have limited employment opportunities. Many of these communities have high numbers of Alaska Native residents, who make up 22% of the AMC project area. The communities in these coastal regions have the need and desire to build ocean-related businesses, diversifying opportunities for residents to live and work in their communities in an industry that is beneficial to the environment and complementary to commercial and subsistence fishing.

b. Industry, Employer, and CEDS alignment

Mariculture development is a priority in state and regional development efforts and as well as aligning with the [Alaska Mariculture Development Plan](#), this cluster also aligns with the CEDS for each of the EDDs ([SEC](#) - pgs. 2, 11, 24, 41-43, [PWSEDD](#) – pgs. 8, 32, 41, 44, 58, [KPEDD](#) – pgs. 39-50, [SWAMC](#) – pgs. 1, 4, 5, 7), and the State of Alaska (pgs. 2, 11, 24, 41-43). References to supporting the mariculture industry in AMC coalition members' CEDS include:

- KPEDD CEDS: “Objective 4.4, Support emerging sectors with high growth potential: assist mariculture operations in meeting capital and expansion needs” (2021).
- PWSEDD CEDS: supporting the Sound’s Blue Economy is central to its vision statement, and Priority Objective (C.)(1.)(a.) states “attract investment in PWS mariculture by facilitating relationships with prospective kelp and shellfish farmers, buyers and processors” (2021).
- Southeast Conference’s 2025 CEDS identifies Mariculture Development as its top priority in its Seafood and Maritime sector (2020).
- SWAMC 2019 CEDS: “educate, advocate and assist in the development of the mariculture industry to diversify rural economies”.

A major regional asset for attaining this project’s vision and goal is the significant scale of Alaska’s existing seafood industry, the State’s largest employer. Alaska produces more seafood than the rest of the US, and if Alaska were a country it would be in the top 10 for seafood production. The existing infrastructure, workforce, markets, and the Alaska Seafood brand can be utilized in the development of the mariculture industry and provide more job opportunities to a large existing workforce. Alaska also enjoys a global reputation for sustainably managed fisheries resources that the state’s mariculture products would share and enhance.

3. Proposed Solution

The Alaska mariculture sector is poised for growth, however, a key factor limiting growth is an underdeveloped support sector. While seaweed and shellfish farms attract much of the attention, they are only a component of a chain of interconnected services. From nurseries supplying seed to plants processing crops into primary or secondary products to rigorous testing around food safety, opportunity exists to expand and improve these services.

Alaska imports nearly all of its 6mm size oyster seed needs from out of state and this is Alaska Mariculture Cluster, Award number: ARPA-BBRC-P2-687

expected to continue for the foreseeable future. Oysters at the 6mm size are ready for use in a Floating upweller systems (FLUPSY), where seed is grown to 12mm or larger and then transferred to farm grow out equipment. This component project includes significant resources to expand the FLUPSY capacity in Alaska, to ensure high quality seed is consistently available at a reasonable price. Maximum FLUPSY production capacity in Alaska is expected to increase to about 19 to 20 million in 2022. However, demand for FLUPSY seed production could increase to as much as 80 to 100 million seed including demand from current oyster producers, those permitted but not yet operating, and demand from new entrants. Using the higher end of this range, Alaska could see the addition in FLUPSY capacity of about 80 million juvenile oysters. At current FLUPSY costs, it is estimated that this level of additional capacity would require investment in the order of \$3.5 million. Funding in this component will ensure that non-profit and tribal oyster nurseries are able to access new FLUPSYs to help meet this increased demand and supply seed to farmers not large enough or otherwise not able to maintain their own FLUPSY equipment.

Seaweed seed needs are also expected to increase dramatically in the near future in Alaska. Current seaweed nurseries in the state only have the capacity to produce roughly 760,000 feet of seeded string annually, while demand is expected to grow to roughly 2 million feet by the final year of the grant period and about 9 million feet by year 10. Funding for expansion of seaweed seed production through use of containerized growing equipment is provided in this grant to ensure that future seed needs can be met and that all farmers can access seed without having to develop their own seed nurseries. Each containerized nursery will be able to produce about 176,000 feet of seeded string and these can be located in a variety of regions of the state, increase seed supply as well as security.

We have heard throughout this planning process that small-scale kelp farmers do not have their own space for processing kelp, nor do they have access to commercial space with the needed equipment (washing stations, blanchers, dehydrators, freezing capacity). Our understanding of seaweed processing equipment needs and options builds on the detailed documentation in an Alaska Sea Grant booklet published in December 2021 titled *Seaweed Handling and Processing: Guidelines for Alaska*.

The uncertainties that this component addresses (seed supply and quality, operational risks associated with fluctuating seed demand, PSP testing limitations at the State of Alaska, and limited processing capacity) severely hamper the Alaska mariculture industry's current size and growth potential. Reducing these uncertainties for the 4-year grant period will drive growth that allow for economies of scale, investment readiness, and industry revenues that enable continuation of these efforts past the grant period.

4. Partners and Program Outreach

a. Partnerships

- **Alaska Sea Grant (ASG), Kodiak Seafood & Marine Science Center:** critical partner with research and education resources. Will coordinate with Marine Advisory Program agents in several remote communities, and with development of Mariculture Research and Training Center.
- **Alaska Mariculture Alliance:** mariculture association that will help coordinate Alaska Mariculture Cluster component projects and provide long term continuity and leadership for AMC project efforts and goals.
- **Alutiiq Pride Marine Institute** located in Seward, serving Cook Inlet and PWS, is a

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leading statewide shellfish laboratory and also operates kelp seed nursery to provide seed twine to commercial kelp growers. The institute is part of the **Chugach Regional Resources Commission**, a regional coalition of tribes collectively working on various natural resource and economic development issues.

- **Alaska Department of Environmental Conservation**
- **Regional economic development districts:** regional EDDs are facilitating partnerships and investment in kelp and shellfish farming assets and supporting governance and outreach components of the AMC program.

b. Promoting Diversity, Equity, and Inclusion

Addressing chicken and egg issues in mariculture seed production and farming is necessary for industry growth, and also provides a unique opportunity to ensure previously underserved communities and populations are not left behind. Historically underserved stakeholders such as remote Native villages and Native populations – as well as small-scale farmers – stand to benefit the most from this component, as large vertically-integrated companies are more likely to have the capacity to meet seed and equipment needs with internal resources. Key partners for reaching target audiences with trainings (mariculture farm operation, seed collection, marketing, etc.) and providing technical assistance include Alaska Sea Grant, University of Alaska campuses in Anchorage and Fairbanks, the Prince William Sound College, and University of Alaska Southeast’s Fisheries Technology program. Creating regional seed-supply hubs and coordinating on seed needs will help small farm operations have greater seed access, making them less vulnerable to delays from bad weather conditions when timing seed arrival and outplanting.

5. Measurable Goals and Impacts

The measurable goals and objectives of this component include the number of feasibility studies completed; the total square footage added for seaweed and shellfish processing, handling, and storage; the lifetime dollar amount saved due to equipment and technology upgrades; the amount of seed supplied to farmers; the number of farmers supplied with seed; the number of farmers reporting quality improvements due to improved seed quality; the increase in pounds of seaweed and shellfish harvested annually; the increase in the dollar amount of seaweed and shellfish harvested annually; and the number of new jobs created.

As a whole, the component projects and complimentary work planned by the Alaska Mariculture Cluster (AMC) coalition is estimated to result in the creation of 318 jobs and \$42 million in private investment leveraged by the final year of the grant period. The AMC programs are collectively estimated to move Alaska’s mariculture industry from a status quo growth trajectory (annual economic output of \$4.7 million at year 4 and \$10.8 million in Year 10) to a mid-case growth trajectory (economic output of \$22.6 million at year 4 and \$98.3 million in Year 10).

6. Sustainability Plan

Beyond EDA support, building up industry coordination and capacity for support of mariculture farmers, infrastructure for removing the seed availability bottleneck, and capacity at the Alaska Mariculture Alliance (AMA) to coordinate future seed supply is critical to the Alaska Mariculture Cluster, Award number: ARPA-BBRC-P2-687

industry's long-term success. Alaska has very successful models of seafood associations in the Alaska Seafood Marketing Institute and regional seafood associations (Copper River/PWS Marketing Association and the Bristol Bay Regional Seafood Development Association) to which we can look for experience and lessons learned. Growing the mariculture industry will help with creating a revenue source to support future AMA work. The listed organizations are funded in part through a self-assessment tax by industry participants, typically between 0.5% and 1%. With EDA investment, Alaska's mariculture industry is projected to achieve revenues of around \$14.1 million by year 4, providing \$140,000 annually at the 1% tax rate for project continuation (growing to \$600,000 by year 10).

The challenges we see ahead include exploring adoption of new seed cultivation practices (to increase cost efficiency) and a need for strong coordination among AMC project components. This AMC Equipment and Technology project will benefit underserved communities by reaching out specifically to Alaska Native villages to help with supplying seed for seaweed and oyster farm sites, workforce development, kelp farm operation training, and assistance with collecting seed for seed twine cultivation. Remote coastal communities from Metlakatla at Alaska's southern border to Akutan in the Aleutian Islands, Alaska's farthest west points of land, will benefit from mariculture development.

Optional Template for BBRC Phase 2 Primary Service Area County List

BBBRC Phase 2 applicants may use this template to list the counties in their primary service areas, which is required as part of both the Overarching Narrative (see p. 21 of the NOFO) and the project narratives of all Component Applications (see p. 23 of the NOFO).

<https://www.census.gov/geographies/reference-files.2019.html>

Overarching Narrative	"A description (~1 page) of the project's location and region, including a definition of its primary service area by counties. Counties should be identified by both name and 5-digit FIPS codes. See https://www.census.gov/geographies/reference-files.2019.html . The description of the region should include identify the communities served and a description of the target participants served and stakeholders engaged. The description also include the identification of assets in the region critical to the success of the regional growth cluster. The local regions should directly correspond to Questions 14 and 16 of Form SF-424 as submitted in each constituent component project. If applicable, also provide information demonstrating that the project is in or directly benefits a coal community. NOFO p. 21.
Component Application Project Narratives	"Section 2a: A description of the component project's location and region. The locations and regions should directly correspond to Questions 14 and 16 of Form SF-424 and align with the information provided in the Overarching Narrative. If the applicant expects impacts beyond the noted region, the applicant should note the region of expected impact. Additionally, applicants must identify their proposed primary service area(s) by county or counties. Counties should be identified by both name and 5-digit FIPS codes. See https://www.census.gov/geographies/reference-files.2019.html p. 23.

FIPS Code	County / County Equivalent Name
02013	Aleutians East Borough
02016	Aleutians West Census Area
02060	Bristol Bay Borough
02070	Dillingham Census Area
02100	Haines Borough
02105	Hoonah-Angoon Census Area
02110	Juneau City and Borough
02122	Kenai Peninsula Borough
02130	Ketchikan Gateway Borough
02150	Kodiak Island Borough
02164	Lake and Peninsula Borough
02195	Petersburg Borough
02198	Prince of Wales-Hyder Census Area
02220	Sitka City and Borough
02230	Skagway Municipality
02275	Wrangell City and Borough
02282	Yakutat City and Borough
02261	Valdez-Cordova Census Area