



SNOVALLEY TILTH

PRODUCE PROCESSING FACILITY
FEASIBILITY STUDY

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I. Executive Summary:

With more than 5 million consumers in the Puget Sound region, there is increasing public demand for locally produced food. Despite this demand, many King County farms are limited in their ability to provide year-round access to local products because of the lack of food processing and related infrastructure available in close proximity to their farming operations.

Increasing the availability of processing infrastructure would allow local farms to create value-added products that would extend their season, provide additional revenue, and gain access into regional wholesale and foodservice markets.

In 2016, SnoValley Tilth received a grant from the United States Department of Agriculture Rural Business Development Grant Program to assess the feasibility of running a produce processing facility to serve the farmers and growers in the Snoqualmie Valley. Leber Consulting was retained to perform the feasibility study. The principal objectives of the feasibility study were:

- Assess the market feasibility of four value-added produce product lines (beets, cabbage, carrot and broccoli) by gathering data on the costs of processing, marketing and distribution of each of the model product lines;
- Identify existing processing facilities in the region and the scope of services offered by these processors to assess their accessibility to Snoqualmie Valley Farmers, and;
- Collect preliminary data on the cost of constructing a produce processing facility in the Snoqualmie Valley, including equipment and build out.

To perform this study, input was sought from multiple stakeholders representing buyers from across food industry segments, Snoqualmie Valley farmers, existing processors, government agencies and other experts in the Puget Sound region. Additionally, literature on agriculture processing infrastructure in Washington State was reviewed, focusing on Western Washington.

Key findings from this work include:

- *There is a viable market for two of the four value-added lines researched (shredded cabbage and shredded & sticked carrots). The other two products (frozen broccoli and pickled beets) are not currently feasible due to a lack of processing infrastructure for freezing and acidified foods. There are acidified food processors in Oregon but the high costs of processing, minimum lots size and transportation would not be economical for the level of buyer demand*
- *There is limited existing secondary produce processing (acidified foods, hot fill lines, freezing) infrastructure in the region. There are adequate minimal post-harvest processing/custom cut and cold-pack processors in the region to meet demand.*
- *There is a strong case to be made for investment in a GAP certified Aggregation Point for Snoqualmie Valley farmers, possibly with additional, select minimal post-harvesting machinery offering services on a fee-for-service basis.*
- *There are opportunities to explore partnerships with public and or private businesses to develop regional processing facilities that would offer co-packing for acidified foods, hot fill lines and frozen produce processing.*

II. Introduction and Background:

Over the past decade, demand for local foods has increased while produce processing infrastructure has been disappearing in Western Washington. The resurgent interest in local foods is creating new demand for value-added processing by farmers, and for products by consumers and buyers.

A processing facility would increase the ability for farmers to add value to their produce via methods such as freezing, canning, and dehydrating. This type of value-adding addresses three consistent struggles for farms: expanding market access, extending the sales season, and increasing the return on investment for farmers.

There are, however, a number of challenges that prevent Snoqualmie Valley farmers from engaging in value added processing, including the need for adequate quantity of product, food safety requirements, year-round production to support a facility, and adaptability of plant to accommodate changing needs and trends.

This study sought to better understand some of the key challenges and barriers to value added processing for Snoqualmie Valley producers, including – the viability of different product lines, the availability of existing facilities within region that could serve the needs of local farmers, and a preliminary assessment of the feasibility of a processing facility in the Valley.

III. Methodology:

The following assessments and reviews were used to inform this report:

Cost Assessment of Four Product Lines from Snoqualmie Valley.

Data for the cost assessment was collected by Leber Consulting during the period of September, 2016 to May, 2017.

The four product lines studied were selected by the project steering committee based on the overlap of products for which buyers and processors expressed a demand, and farmers expressed a willingness to grow in large quantities.

Stakeholder interviews included farmers, farm organizations, buyers, and processors.

Electronic surveys were emailed to stakeholders but response was so low that all survey results were from in-person or phone interviews. (Appendix D)

Review of Existing Processing Capacity with the region

For this study, we researched businesses with existing Washington State Department of Agriculture (WSDA) food processing licenses and complied with the WSDA definition. “Food processing” is *defined* as “handling or processing of any *food* in any manner of preparation for sale for human consumption” (RCW 69.07)

We identified processors to interview by requesting a custom list from WSDA of all licensed food processors within our study area. The scope of the study was limited to within 300 miles of the proposed aggregation point in Carnation WA - South to Eugene OR, north to Ferndale, WA and east to Pasco, WA.

Data was gathered via in-person and telephone interviews, email correspondence, electronic survey and literature review.

While this survey was focused on the needs and opportunities in the Snoqualmie Valley, it could have been stronger if there was an additional focus on how to connect with other current efforts in developing value-added processing. There are ongoing efforts and some just beginning in other counties to leverage knowledge, cooperation and business opportunities to create a viable, regional food processing facility with the capacity and interest in working with small-scale farms.

IV. Overview of Opportunities and Challenges for Increased Local Produce Processing

This section summarizes some of the opportunities to be seized and challenges to overcome for farmers, buyers and processors to provide more locally processed produce to consumers in the Puget Sound Region.

Farmers

Opportunities

Of the 15# of farmers interviewed, 87% expressed an interest in in value added processing to access additional sales channels (see Appendix A).

Challenges

Despite expressing an interest in value adding processing, a number of challenges were identified in the study that make pursuit of this opportunity a challenge for Snoqualmie Valley farmers.

- **Harvest Schedules:** farmers prioritize growing products that have a forgiving harvest schedule. Products that need to be harvest in a short time window can strain available labor and lead to crop loss. Some of the more “in-demand” products for processing (e.g. broccoli) has a very short window for harvest.
- **Pest pressure:** similar to harvest schedules, local farmers have learned which crops grow best in the Snoqualmie Valley. Though demand is high for local onions, soil pests in the valley make it difficult to grow onions in large quantities.
- **Quantities grown:** the majority of Snoqualmie Valley farms focus on direct-to-consumer sales where variety is an important part of their offerings. Farms are just beginning to explore wholesale markets where they would commit an acre or more to a single product.
- **Prices:** farmers are used to getting higher, direct market prices and are not yet geared up for the efficiencies of growing for the wholesale market which receives a lower per-pound price.

Direct market prices are not competitive with the larger farms or product bought through traditional distribution channels that the buyers currently use.

- Food safety certifications: all processors require farms be up-to-date with all food safety certifications and to comply with the third-party food safety audits. The majority of farmers in the Snoqualmie Valley are not yet Good Agricultural Practices (GAP) certified. Becoming certified will allow access to the post-harvest processors interviewed.

Buyers

Opportunities

All the buyers interviewed are interested in sourcing produce locally. Restaurant buyers are actively seeking out local sources for specialty crops and can receive product direct from producers that are not GAP certified. Larger retail and foodservice buyers have more restrictive policies but are creating avenues for more local sourcing. Some larger companies that use group purchasing organizations (GPO) to obtain the lowest price for products have created policies to make allowances for local product purchasing. One example is the “Farm-to-Fork” policy from Bon Appetit Management Company (BAMCO), a large corporate campus foodservice vendor. This allows accounts to purchase up to \$100,000 annually from outside vendors that comply with the policy and encourages buyers to buy from sustainable, local producers (See Appendix B).

Challenges

It is important to note that all buyers, other than individual restaurants, require the growers to be GAP certified and compliant with third-party food safety audits. The challenges buyers identified in working with local farms include: competitive pricing, seasonal impact on consistency of supply and quality, company policies and compliance with government regulations. Many buyers have strict policies and buying guidelines regulating approved vendors and delivery and payment methods that are difficult for small, individual farmers to comply with. For example, the nine BAMCO accounts on the Amazon campus require all delivery trucks and drivers to have background security checks.

Existing Processors

Opportunities

Among the processors and co-packers surveyed, there was a general interest in increasing the quantity of local produce.

Processors expressed interest in sourcing local products with an emphasis on IQF (Individually Quick Frozen) produce and pre-cut produce (especially onions and carrots).

Existing produce distributors are actively looking to partner with FSMA compliant local farms to fulfill customer demand. Co-packers are actively interested in buying minimally processed and IQF produce for use in value-added products for clients and their proprietary products.

- There are several hurdles to making the connection between local farms and local processors to fill demand for locally grown, processed products.
 - Lack of FSMA compliant farms, aggregation points and distribution.
 - Supply is seasonal (many processors require extended seasonal supply)

- High cost (many local farms do not have wholesale prices that can compete with processors current sourcing)
- Volume (more post-harvest processors require consistent tonnage of raw product per week to guarantee they will process product and lock in pricing. Co-packers and product producers require constant volumes year-round)
- Most processors are not set up for (or have interest in) sourcing from multiple farms. It takes time for the documentation, the logistics and dealing with ordering from multiple vendors.

55% of the processors and co-packers interviewed that have capacity to work with smaller suppliers are interested in using local produce in their products or adding into their catalogue to meet customer demand. Four of the companies interviewed are seeking to source more local produce for use as ingredients in proprietary products or to add to their product lines (See Appendix C).

Challenges

a) Sale of Local Products for use in Existing Value Added Products

Though processors expressed an interest in utilizing more local product to meet a growing demand, many are still reluctant to work with small farmers and growers. The primary concerns are high product pricing, unpredictable supply, and lack of food safety certification on the part of small growers.

b) Availability of existing processing for small batch production by farmers and food entrepreneurs

This project identified 12 existing facilities where farmers could get product processed. The types of final products ranged from wash and cut to pickled and packed in jars.

- For farmers looking to process their own produce, quantity is again an issue. Minimum quantities required for a dedicated run for minimal processing typically ranges from 300 to 500 pounds. There is some inconsistency in rates for co-packers. Some charge by the day, some by the packaged unit produced plus overhead while others charge by the pound.
- In Western Washington, the research did not identify any processors that offer custom, single origin frozen produce services for less than a full truck load (LTL) or under 44,000 lbs. nor did the research identify any co-packers offering hot-fill packing for acidified foods such as pickles or packing in glass jars. One co-packer in the region closed during the course of this study.
- An additional challenge, this research identified only 3 of processing plants that are certified organic which limits organic farmers' ability to utilize their produce to create a certified organic finished product.
- Finally, travel distances between processors can really add up depending on the final value-added product desired. A beet headed for the pickled beet jar, goes from farm to aggregation point (average 7 miles) to post-harvest processor (average 30 miles) to co-packer (average 216) then back to Seattle (220 miles) for distribution adding up to a total of 473 miles before getting to the retail shelf.

Conclusions:

Based upon the survey results, there appears to be a generalized desire among all parties – producers, processors, and buyers to (a) increase the amount of local produce utilized in value added processing, and (b) create a value chain that would facilitate greater value added production from local producers and food entrepreneurs. To realize this opportunity however, there remain a number of significant hurdles that must be addressed, including:

- Compliance with food safety certification, as this is a requirement of nearly all wholesale buyers or value-added producers.
- Adequate quantity and consistency of product from Valley farmers poses a challenge to the development of viable value added products. A deeper assessment of the growing capacity of the Snoqualmie Valley needs to be done to determine if there is adequate capacity for the wholesale market.
- Access to information about existing processors needs to be easily accessible to interested parties – farmers and businesses interested in local products.
- Continuing to build relationships and exploring partnership potentials with existing processors will strengthen value chain and support farmers.

V. Cost Assessment of Four Product Lines from Snoqualmie Valley

In order to explore the feasibility of utilizing existing processing facilities and to evaluate the assumption that a new facility was needed a cost assessment of four product lines from the Snoqualmie Valley was conducted. The assessment aimed to determine the cost of developing and bringing to market four different value added product from the Snoqualmie Valley.

The product lines included in the assessment were initially identified through conversations with the Snoqualmie Valley Farmers Cooperative (a local aggregator who provided insights into the wholesale opportunities with local farmers) and information from local buyer about product demand. Diversity of processing requirement was also a factor considered in the product selection as there was a desire to analyze and understand the processing challenges and opportunities across a suite of potential processing pathways.

These selected crops were ones that farmers would be willing to grow at a wholesale scale and price. Farmers could realize a higher return by growing specific varieties on contract for the wholesale market. These crops can be more densely planted than if planted for the retail market because they would not have to be as cosmetically perfect, and would allow a sales channel for seconds that might otherwise be tilled under.

The four products used in this analysis are: pickled beets, frozen broccoli, shredded cabbage, and stick and shredded carrots. With these products, we are exploring the pathways for three processes: hot pack pickled/acidified food for shelf-stable retail, wholesale bulk shred, and retail frozen.

Specific buyers interviewed stated that they are actively interested in buying significant volumes of cabbage (10,000+/month), carrots (2,000+/month) and frozen broccoli (20,000+ /yr). Pickled beets were

selected as a strong candidate for shelf-stable retail product and illustrate the hot pack process, packed in glass.

Each process flow used to test the product feasibility from aggregation point to finished package including transportation through to final product and processing step detail (Appendix E). Costing for each process included transportation costs from aggregation point to processors, truck rental and labor (Appendix J).

Individual Product Process Steps:

1. *Beets, pickled, glass jar, retail*

a. Assumptions

Pickled beets are colorful condiment that has retail appeal with the right packaging and beets grow well in the Snoqualmie Valley. If more densely planted for wholesale production and harvested with a potato harvester to save the labor cost of hand-harvesting, farmers can reduce their production costs.

This product demonstrates hot-pack, pasteurized bottling processing for a shelf-stable retail product sold through a broker and delivered by a distributor. Final pricing is based on average industry standard grocery margins and includes 25% for unknowns and overhead (Appendix G).

Washed beets, leaves removed, would be picked up from aggregation point in reusable plastic totes, transported by refrigerated truck to post-harvest processor (PHP). PHP will trim, peel, slice beets and packed into 2 – 5 lb. polybags, packed back into reusable totes.

Beets will be transported to secondary processor for hand-packing into 12-oz jars, brined, and heat processed to pasteurize and seal. Twelve-ounce mayo jar and lid are standard and do not require special packaging equipment. Recipe used is standard vinegar brine with coriander seeds. Product is now shelf stable and ready for sale.

Transportation costs from secondary processor to storage are not factored in. Warehousing options need to be reviewed.

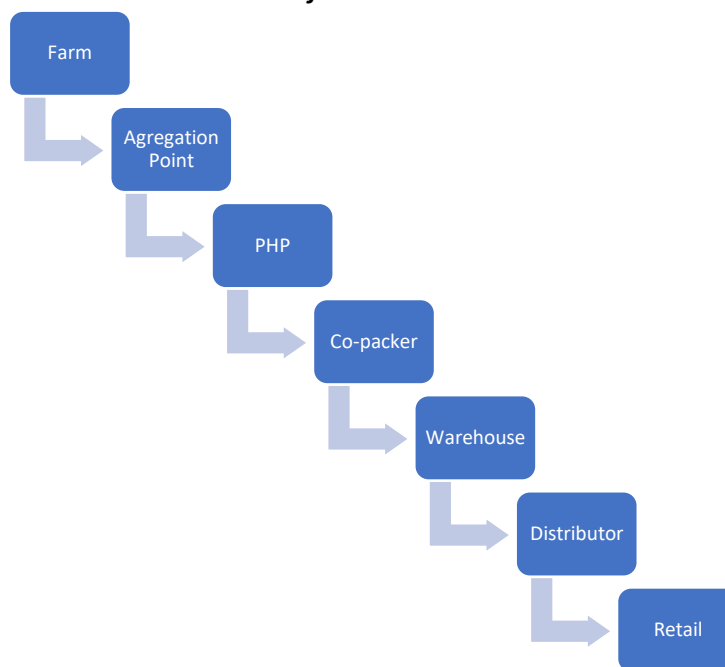
Broker, distributor and grocery percentages are based on average current industry standards.

Product specific assumptions:

- Red beets - average 4-inch size and seconds
- Primary processing
 - Tops and roots cut
 - Peeled
 - ¼ inch machine slice
 - 90% average yield
 - Cut beets packaged in 2 – 5 lb. poly bags

- Secondary Processing
 - Jars hand-filled
 - Mechanical labeling
 - Cases hand-packed
 - Finished cases palletized

Process flow: Pickled Beets



b. **Challenges:**

When this project was started, there was a co-packer 28 miles from the aggregation site. However, the local co-packer has recently ceased business. For this model, mileage to Dundee Fruits, in McMinnville, OR, was used, being the closest acidified foods processor.

It is standard industry practice for grocery stores to charge “slotting fees” or require free product for sampling. The costs associated for these practices are not factored in to this model.

Current demand is somewhat limited for shelf stable products, even with local branding.

c. **Gaps in processing:**

Current processing infrastructure within Western Washington does not exist for this product. There are no acidified foods co-packers that pack in glass within Western Washington that have capacity to produce this product.

d. **Conclusion:**

This model returns \$.68 per lb. of beets sold to the farmer. A jar of pickled beets will have a retail cost of between \$7.30 and \$8.75 which is within the range of \$6.95 to \$12.00 per jar that we found for current products. While this product returns a good price to the farmer, it is not currently feasible product due to lack of processing infrastructure.

2. Broccoli, frozen, retail pack

a. **Assumptions**

Frozen broccoli florets in the top five highest volume frozen vegetables sold in a local natural grocery stores chain at over 20,000 lbs. sold annually. This retailer is actively seeking to source local product for the freezer section. Currently, no locally grown and processed frozen vegetables are available for the retail grocery market.

This product demonstrates the Individually Quick Frozen (IQF) or blast freezing processes for a retail pack product sold through a broker and delivered by a distributor. NOTE - There are currently, no processors offering frozen vegetable freezing so we were unable to obtain production cost estimates.

Washed broccoli crowns, would be picked up from aggregation point in reusable plastic totes, transported by refrigerated truck to PHP. PHP would remove stalks, floret the crowns and loose pack florets into food-grade plastic lined reusable totes.

Broccoli would be transported to a secondary processor for blanching and re-packing into in to food-grade plastic lined reusable totes for transportation to freezing plant.

Broccoli would be transported to tertiary processor and processed in IQF tunnel or blast freezer, packed into 12 oz. poly-bags, mechanically case packed then palletized for storage and distribution.

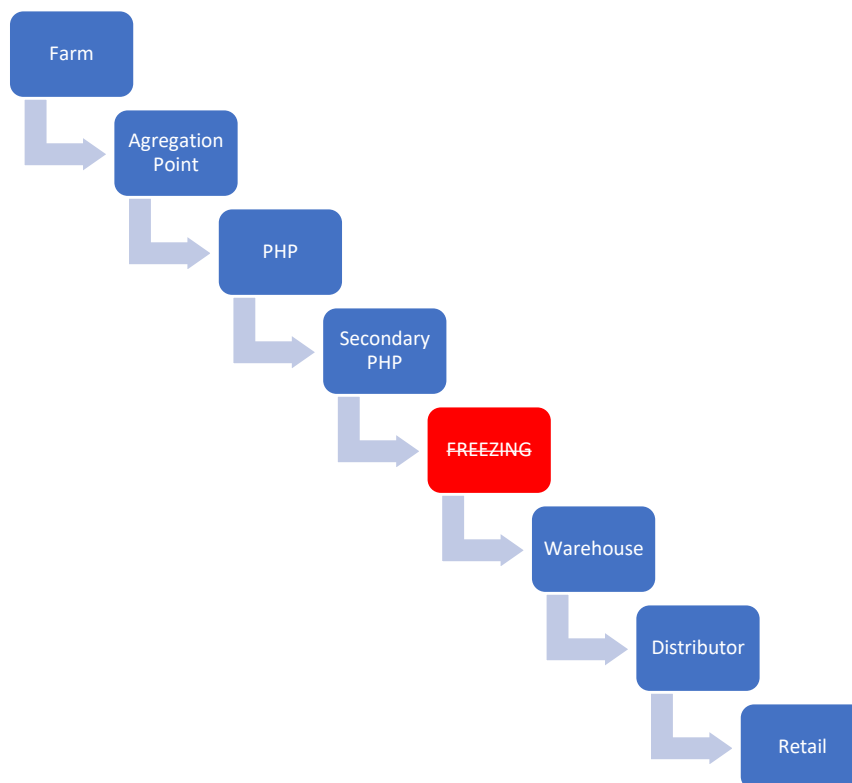
Transportation costs from secondary processor to tertiary is not factored in as there are no frozen vegetable processor yet identified (Appendix H).

Product specific assumptions:

- Select varieties grown on contract
- Size: 3 to 5 lb. heads
- Primary Processing;
 - Crowns stalked and machine floretted
 - Loose packed into food grade plastic lined reusable totes
- Secondary Processing
 - Blanching
 - Repack into food grade plastic lined reusable totes
- Tertiary Processing
 - IQF or blast freezing

- Machine pack, 12 oz. retail poly-bag
- Mechanical label and packing
- Finished cases palletized

Process flow: Frozen Broccoli



b. **Challenges:**

Current processing infrastructure does not exist for this single origin, dedicated runs for small scale production. It is standard industry practice for grocery stores to charge “slotting fees” or require free product for sampling. The costs associated for these practices are not factored in. A higher return would be realized if a secondary product was created from the stalks such as being sold for an ingredient in a slaw.

c. **Gaps in processing:**

There are no frozen vegetable processors in Western Washington that offer services for a minimum production run for Less-than-Truckload (LTL) or 44,000 lbs. There are potential services available in Bellingham, WA, and Sunnyside, WA, for Full Truck Load (FTL) or 44,000 lbs. runs that could be explored if farmers are able to fulfill that minimum but they would not provide price quotes for this project.

d. **Conclusion:**

This is not currently feasible product option due to lack of processing infrastructure for current Valley production capacity. More research needs to be done for a regional small-scale vegetable freezing operation and recommend continued exploration of partnerships with existing businesses interested in adding such processing services.

3. Cabbage, shredded, bulk wholesale

a. Assumptions

Local Sauerkraut producers are actively interested in buying significant volume of locally grown shredded cabbage with one company's estimate being approximately 10,000 lbs. per month. Current local supply is limited to whole head cabbage and there is insufficient volume for an extended season or year-round demand.

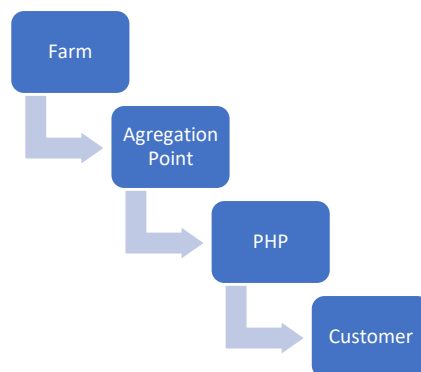
This product demonstrates minimal post-harvest processing for a bulk wholesale product sold through a distributor or direct and delivered by a distributor. Final pricing includes 30% for overhead and unknowns plus 25% for distribution costs. There is little price comparison data available for wholesale processed produce due to the competitiveness of and fluctuation in market. Wholesale distributors do not routinely share their pricing with outside sources.

Washed cabbage, outer leaves removed, would be picked up from aggregation point in reusable plastic totes, transported by refrigerated truck to PHP. PHP would quarter, core, shred and packed into 5 lb. polybags, packed back into reusable totes.

Cabbage is then ready to be transported direct to customer or back to aggregation point for distribution. Transportation costs after processing is not factored in to this model (See Appendix I).

Product specific assumptions:

- Select varieties grown on contract
- Size: 3 to 5 lb. heads
- Primary Processing;
 - Heads quartered and cored
 - Machine shred, standard size
 - Packed in 5# poly-bags

Process flow: Shredded Cabbage**b. Challenges:**

Pricing fluctuations in wholesale market may, at times, drive prices too low for local farmers to be competitive. Buyers may opt to buy from other, lower priced sources.

Shredded cabbage has a short shelf-life requiring processing to order or in close coordination with buyers to meet minimums and maintain appropriate inventory levels. Access to cold storage for whole heads will be necessary to maintain steady supply to process on demand and to secure an extended season.

c. Gaps in processing:

Current processing infrastructure is adequate and has capacity for this product.

d. Conclusion:

This model returns \$.60 per lb. of cabbage sold to the farmer. It would require 2000 lb./week to be economical considering buyer demands and processor minimums. This product is an interesting opportunity because of steady demand and limited local market competition.

4. *Carrot, sticks and shred, bulk foodservice***a. Assumptions**

Institutional buyers are actively interested in buying carrot sticks for schools and local ferment producers are interested in purchasing a steady volume of shredded carrots.

These products demonstrate minimal post-harvest processing for a bulk wholesale product sold direct or through a distributor and delivered by a distributor. This product also demonstrates the best use of the vegetable, minimizing waste and maximizing the return to farmer. Final pricing includes 30% for overhead and unknowns plus 25% for distribution costs. In the wholesale market, there is little price comparison data available due to the competitiveness of and fluctuation in market. Wholesale distributors do not routinely share their pricing with outside sources.

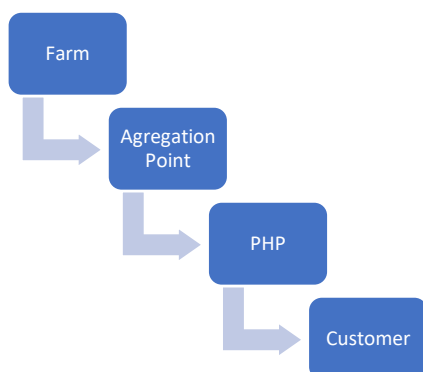
Washed carrots, tops removed, would be picked up from aggregation point in reusable plastic totes, transported by refrigerated truck to PHP. PHP would peel, stick, shred and pack into 2 lb. polybags, packed back into reusable totes.

Carrots are ready to be transported direct to customer or back to aggregation point for distribution. Transportation costs after processing is not factored in to costs (Appendix J).

Product specific assumptions:

- Select varieties grown on contract
- Size: average 7-inch-long, 1 – 1 ½ inch thick
- Average yield;
 - 35% sticks
 - 50% shred
 - 15% waste
- Primary Processing;
 - Tops and tails trimmed
 - Machine peeled
 - Machine stick cut
 - Machine shred, standard size
 - Packed in 2# poly-bags

Process flow: Shredded Carrots



b. Challenges:

Pricing fluctuations in wholesale market may, at times, drive prices too low for local farmers to be competitive. Buyers may opt to buy from other, lower priced sources.

Cut carrots have a short shelf-life requiring processing to order or in close coordination with buyers to meet minimums and maintain appropriate inventory

levels. Access to cold storage will be necessary to maintain steady supply to process on demand and to secure an extended season.

c. **Gaps in processing:**

Current processing infrastructure is adequate and has capacity for this product.

d. **Conclusion:**

This model returns \$.83 per lb. of carrots sold to the farmer. It would require 2000 lb./week to be economical considering buyer demands and processor minimums. This product has steady demand and limited local market competition.

E. Recommendations and Next Steps;

Two of the four products, cabbage (shredded) and carrots (shredded and sticked) are feasible to produce, have existing demand and can be produced using the existing processing infrastructure without significant capital expenditure.

Next steps:

- Continue to build relationships with local ferment producers and institutional buyers to create a pilot project for shredded cabbage and shredded carrots. Use existing post-harvest processors to process and deliver product.
- Due to limited demand for shelf-stable products, an ideal way to enter that market would be to partner with existing producers interested in sourcing local produce. Co-branding has a strong potential to serve the needs of both farmers and local product producers.
- Frozen vegetables have strong market potential and needs more research to identify and develop partnerships to facilitate a scale appropriate freezing plant to serve growers in the Puget Sound region.

VI. Review of Existing Processing Capacity

A survey of existing processors was conducted to assess the regional processing infrastructure, identify gaps, opportunities and challenges in the system.

A review of all WSDA food processor license holders for Whatcom, Skagit, Snohomish, King, Peirce, and Thurston Counties identified existing processors and co-packers. Processing plants were contacted via phone and/or email to identify businesses offering custom services appropriate for small lot, single origin product runs. Of the 32 processors contacted, 23 replied and 8 offer custom, single-origin processing; 3 post-harvest processors and 5 co-packers (See Appendix L).

Post-harvest Processors:

Post-harvest processors (PHP) are a vital link in the processing infrastructure value chain. Produce direct from the aggregation point is rarely accepted by co-packers, wholesale producers and produce distributors. Processors typically require product to be delivered minimally processed (chopped, sliced or otherwise processed). Additional considerations include: pre-processing location in relation to aggregation point, type of transportation services to maintain the cold-chain through the entire process, 3rd party audit documentation requirements, consistency in quality and/or volume the seasons, and post-processing storage (warehousing or cold storage).

There are three PHP's offering custom cut services for single origin, small lot runs. Two in Snohomish County and one in King County.

Hendrickson Farms, Marysville, is the only organic certified produce processor offering custom processing. They are currently running at capacity processing on contract for Organically Grown Company. They may be interested in additional custom work in the future.

Penny's Salsa, Auburn, offers single-origin, small lot custom processing with a 500-lb. minimum for a production run. Penny's distributes to co-packers, wholesale product producers, wholesale produce distributors and foodservice distributors. Penny's produces an in-house proprietary line of cold-pack, value-added products as well as processing for contract customers. They have been asked by Foodservices of America (FSA) to help congregate local produce to fulfil FSA's customer demand. Penny's current facility has capacity to act as the congregator and they are also in the process of building a larger facility in Sumner that will be able to accommodate increased production volumes and offer additional services. Though they are not currently organic, they have expressed willingness to consider adding certification for organic production runs. The new facility has an additional 8,000 sq. ft. currently undedicated and Penny's is actively interested working with local growers and in exploring a partnership opportunities. This site has potential to add a blast freezer or IQF tunnel.

Shawn's Produce, Everett, offers custom single origin processing with minimum 300 lb. lots. Shawn's has not expressed the same level of interest that Penny's has, but they are very competitively priced and are interested in talking with potential new customers.

Co-packers:

Co-packers or Contract Packers are businesses that create and package products for outside vendors. For example, services can include: recipe development, cold packing for products that require refrigeration, hot packing for shelf stable items, dehydration, or freezing.

San Gennaro Foods, Kent, offers hot and cold pack services, is organic and non-GMO project certified, and is interested in working with small producers. They currently package in plastic tubs, tubes, and bottles. They do not currently pack in glass but are considering adding this service. San Gennaro has capacity for tray freezing and have a poly-bag packaging line.

Essential Foods, Seattle, has capacity for cold pack in plastic buckets, tubs and bags and dry vacuum packaging. Essential is very interested in working with local producers especially to source IQF (Individually Quick Frozen) products.

Carso's Pasta, Lynnwood, offers production of a wide variety of value-added products, custom contracts, and produce their own proprietary product line for retail sale. In addition, they produce private label products for local and national companies and have customers with strong interest in using local produce. Carso's packages in a variety of plastic containers.

NutraDried, Ferndale, offers conventional dehydration at temperatures of 80 F- 120 F with minimum 3000 lb. run. NutraDried also offers freeze drying. Average yield for dehydration is 40%, a 2:5 ratio. Packaging in vacuum seal bags. Average cost per pound is \$1.50 but varies with type of final finished product.

Frozen Food Processors:

To date, no regional business offering blast freezing or Individual Quick Frozen (IQF) processing for custom processing of vegetables for Less-Than-Truckload (LTL), which is less than 44,000 lbs., has been identified. There are 2 freezing operations in Oregon that do custom fruit processing, one of which will do minimum 5000 lb. run but only for select fruit and they do not have the capacity for processing vegetables. The other operation is limited to blueberries. A freeze dry operation does exist in Ferndale that has a minimum processing run of a Full-Truckload (FTL) or 44,000 lbs.

Some businesses have capacity for tray or cold storage freezing. This type of freezing will work for test batches but it is labor intensive. Product must be processed by hand and hand packed – driving the price over what the market will bear and making larger, retail volume size runs not cost effective. Tray freezing works well for some heavier vegetables (broccoli, carrots, leeks) but can affect the quality of softer celled vegetable like leafy greens such as kale. Additional consideration with tray freezing include: the quality of final product, high labor input, limited volume runs, and packaging operations.

American Freeze Dry, Ferndale, offers conventional freeze drying with a full-truckload minimum (FTL). Average yield for freeze dry is 20%, a 5:1 ratio. It takes 5 lbs. wet weight of raw product to make 1 lb. dry weight finished product. Average processing fee is \$1.00 per wet pound which equals \$5.00 per pound, finished product.

Fruit Hill, Yamhill, OR, offers single origin custom IQF processing for stone fruit, blueberries and strawberries with a 5000-lb minimum production run. They do not have capacity for vegetable nor do they have an adequate packaging line for retail poly-bags.

Scenic Fruit, Gresham, OR, offer custom IQF processing is limited to blueberries.

Note: All co-packers and value-added processors require product to be delivered via an appropriately regulated produce distributor with full documentation and must be compliant with 3rd party audit.

Most of these operators are WSDA not USDA certified. Opportunity exists for a USDA co-packer for products containing more than 3% animal protein.

Data limitations

This survey was limited to the aforementioned counties plus Yakima county and Northern Oregon. Though the response rate was sufficient at 71% of the processors contacted responding, the data is insufficient to determine how much processing capacity is available in Washington State. More research

is being done by the WSDA for processors across the state and results should be consulted when completed.

Conclusions and Recommendations

At this time, there is adequate existing capacity for minimal post-harvest processing (custom cutting and cold packing) to accommodate the potential demand at current production capacity. Two of the four produce processors are interested in working with farmers to do small lot, single origin production runs. One PHP and one custom co-packer are in the process of expanding services and anticipate having the additional capacity handle the increased processing volumes for local produce lines.

There is a significant lack of processing for;

- Hot-fill lines for shelf-stable products
- Acidified foods (pickles)
- Packing in glass jars
- Small scale frozen vegetable processing

Additional research needs to be done to on the feasibility for a small scale frozen processing facility and acidified foods hot packing facility. Continued relationship building with existing processors is highly recommended.

VII. Processing Facility in the Snoqualmie Valley

The original focus of the study was to look at the feasibility of building a processing plant in the Snoqualmie Valley to serve Valley farmers. We looked at ideal product lines, identified existing processors, and toured existing facilities to identify what services existed, what additional services were warranted and where to prioritize research.

The overall lack of regionally located processing has long been established and some key challenges identified include: current capacity for growers to produce sufficient volume, consistency in size and quality of product, product aggregation, unification of farmers, and the lack of frozen produce processing services.

Opportunities and Challenges:

The report used this research, information and input gathered from experts and from reviewing existing studies to inform the processing plant options (See Appendices M and N).

We considered four levels of processing plants starting with an aggregation point as the base line to build upon:

- Level 1 - Good Agricultural Practices (GAP) certified aggregation point with wash and pack equipment housed at a central location for regional farms/aggregators. GAP certification is required for by processors and wholesale distributors. This is the lowest risk option. SnoValley Tilth could invest in equipment or be vested in the business in another way or an aggregator could be sole owner-operators. This is a highly seasonal business and would be challenging to staff.

- Level 2 - Adding minimal processing and custom cut equipment for shredding, slicing/dicing, peeling, carrot sticks and packaging equipment allowing additional sales channels to food service, institutional sales and sales to value-added producers. Most of this equipment is highly specialized and is very expensive. A survey would be needed to identify the most useful items to buy. In addition to staffing, as previously noted, and staff training, a manager and a Quality Assurance specialist would be needed to develop and maintain Standard Operating Procedures (SOPs), Hazardous Analysis and Critical Control Point (HACCP) plans and to assure adherence to regulations. Identifying a business structure appropriate for operations, business communication and liability requirements to ensure sustainable operations.
- Level 3 - Adding Freezing services – either Blast Freezing or IQF tunnel with the appropriate packaging line. This is a highly seasonal operation, has a high capital cost of equipment, a high cost of operation due to the energy draw and staffing.
- Level 4 - Adding a fully staffed, commercial kitchen with value-added production and co-packing services. The plant would be WSDA and USDA certified to handle poultry and other protein processing in future. Having a full production commercial kitchen adds to the year-round operation and economic stability. During the high season, the main activity would be as an aggregation point and fresh produce processor, freezing produce at peak production taking it offsite for storage. Off season, frozen product could be brought back in to create proprietary products for distribution into retail and grocery markets. Additionally, offering fee-for-service and product development would create additional revenue streams for the facility and opportunities for the growers. Again, there is a high capital cost for buildout and equipment. It is not verified that the valley has enough volume to support operations. This type of business has the highest likelihood of operating year-round and would require drawing on growers and businesses outside the Valley to supply the volume to be economically viable.

Conclusions, Recommendations and Next Steps:

We are not confident that building a facility is the best option at this point. There are other existing businesses with the capacity and interest to fulfill current demand and there is tremendous opportunity to collaborate or partner with existing business/s and people interested in creating new plants.

The three areas of opportunity we identified are:

Freezing Processing Facility

- There is enough anecdotal demand to continue researching facilities, identifying specific technologies and gathering additional market research data. More research needs to be done on the feasibility of a freezing processing center. This could be done with public-private partnerships. A deep dive into costs, regulations, efficiencies of different technologies and what is most economical.
- It is not currently recommended that SVT lead the building a new facility. There are other agencies and business that have expressed interested in exploring installing a freezing processing line in the region. It is strongly recommended to continue to build these relationships.

Supporting Farmers as they add Wholesaling to their business model

- Farmers and buyers both would benefit from a clear roadmap to help producers navigate how to get produce out of the ground into consumers' mouths and all the hurdles in between. this could be hiring a liaison or matchmaker to foster those connections and assist with:
 - Certifications
 - Logistics
 - Storage facilities
 - Potential processing partners
 - Potential buyers
 - Identifying farmers able to supply in scale
- A key finding is the continued need for relationships to be built between stakeholders, public and private. Many businesses and agencies are supportive of the idea creating a truly robust working, regional food system that includes farms, transportation, processing, and distribution to markets. If the groups are brought together in a collaborative network, there will be more potential for profitable businesses that can sustain growth and support the local food system.
- There is great opportunity in exploring co-branding where producers and processors or retailers work together to bring a product to market. In this way, the risk is shared and farmers have a more predictable market while partnering with experts on both marketing and distributing the product to customers.
- Support farmers as they get GAP certified or certified for other Food Safety standards.

Investment in existing aggregation facilities

- Additional investment could be made in current aggregation points in the Snoqualmie Valley. The addition of select processing equipment (shredder, peeler, custom cut) and a fee-for-service model to do custom, single origin, small lot processing would help fund the project while providing a service for farmers not able to meet the minimum run for PHP or want to utilize the other processors or co-packers.
- Further study could be focused on investing in additional dry and or cold storage at the aggregation point. This would allow smaller farms to participate.

VIII. Conclusion

Farming in Snoqualmie Valley is expensive. Land is expensive. Labor is expensive. A farmer's ability to sell directly to consumers via Farmers Markets, CSA subscriptions, and to restaurants where they can receive a higher price, helps to balance out these expenses but each of these sales avenues require high labor input for lower volume of product. It takes more labor to produce cosmetically appealing products, for harvest and transportation, for set-up/breakdown, and for the customer service associated with selling at the Farmers Market (plus the percentage of sales paid to the market), and for the customer service involved with direct to restaurant sales (including invoicing and delivery). Most farmers do not take their own time into full account, thus skewing the perception of the actual return on investment.

Liability issues will also require careful consideration. All processors require growers to comply with third-party food safety audits. Some small farmers are not yet GAP certified limiting their access to this market. GAP certification is time-consuming and has costs associated with it. Many small farmers either don't have the time or money to go through the process and to maintain the documentation associated with the regulations.

Having access to additional markets through wholesale can have a positive impact on their revenue stream but considering getting into the wholesale market requires a shift in thinking for the farmer. Factoring the labor savings of bulk, contract planting a crop that will not need to be heavily tended to keep it cosmetically appealing, the ability to harvest it in larger quantities thus reducing the labor costs, help offset the lower per pound cost. Contract growing can allow a farmer to bring additional acreage under production with less labor per acre to add to their bottom line and help to keep them on the land farming.

By providing access to information to existing processors, fostering a GAP certified minimal processing facility for Snoqualmie Valley Farmers Co-op and continuing to develop partnerships with processing businesses and regional ag agencies, the SnoValley Tilth can offer support to its member farmers.

Appendix A: Farmer and Producer Stakeholders Interviewed

Stakeholder	Primary Segment	Secondary Segment	Business	Currently producing V/A product?	Comments
Meredith Molli	Farmer	Aggregation Point	Goose and Gander Farm		Developing GAP cert aggregation point interested in adding v/a processing equipment to farm and having access to additional processing off site
Matt Tregoning	Farmer		Sol to Seed Farm	occasionally	Interested in accessing v/a processing
Jeff Miller	Farmer	Processor	Willie Greens	yes	Processing leafy greens on farm and supportive of adding access to more processing in region
Cathryn Baerwald	Farmer		Summer Run Farm	yes	Interested in accessing v/a processing
Jessica Price	Farmer		Oxbow Farm		Interested in accessing v/a processing especially Frozen Vegetable Processing
Siri Erickson-Brown	Farmer		Local Roots Farm		Interested in accessing v/a processing
Sean Stratman	Farmer		Dancing Crow Farm and SnoValley Tilth Experience Project		Interested in accessing v/a processing especially Freeze Drying
Hannah Cavendish-Palmer	Coop manager		Snoqualmie Valley Farmers Coop		Developing GAP cert aggregation point interested in adding v/a processing equipment to farm and having access to additional processing off site
Christeena Marzoff	Farmer	Processor	Marzoff Meat's and Porter's Pride	yes	Processing meat for animal food. Interested in access to USDA processing for additional sales channels
Erick Haakenson	Farmer		Jubilee Farm		Interested in accessing v/a processing
Becky deVries	Farmer		Ralph's Greenhouse		Interested in farm-gate sales to processor
Nash Huber	Farmer	Processor	Nash's Organics	yes	Currently doing minimal processing on farm and very supportive of additional access to processing
Harley Soltes	Farmer	Processor	Bow Hill Blueberries	yes	Interested in accessing v/a processing
Neil Subhash	Farmer		Present Tense		Interested in accessing v/a processing
Rob Smith	Farmer		Viva Farms		

Appendix B: Buyers Interviewed

Stakeholder	Primary Segment	Secondary Segment	Business	Comments
Adam Hewey	Product producer	Co-packer	Essential Foods	Interested in sourcing IQF product locally
Diane Dempster	Produce Distributor		Charlie's Produce	Interested in increasing locally sourced product
Chris Schwartz	Restaurant		Tom Douglas Restaurant Group (TDR)	Has own farm and interested in co-packing
Eric Wright	Food Service		Bon Appetit Management Company (BAMCO)	Interested in increasing locally sourced product
Denise Breyley	Retail		Whole Foods Pacific Northwest Forager	Interested in increasing locally sourced product but says some market segments are saturated (jam, pickles, sauces)
Brad Glaberson	Product producer		Cucina Fresca	May be interested in sourcing locally
Scott Owen	Retail		Puget Consumers Coop (PCC)	Interested in increasing locally sourced product
Julie O'Brien	Product producer		Firefly Kitchen	Interested in increasing locally sourced product
Leslie Mackie	Product producer	Restaurant	Macrina's Bakery	Interested in increasing locally sourced product
Steve Corson	Restaurant		Homegrown Sandwiches	Interested in increasing locally sourced product and finding regional certified organic co-packers
Christopher Coburn	Product producer		Seattle Pickle Company	Interested in increasing locally sourced product and may starting an acidified foods co-packing business
Jeff Prehm	Produce Distributor	Co-packer	Penny's Salsa	Interested in locally sourced product and exploring partnership for additional processing services
Richmond Tracy	Specialty Food Broker		Haversack Sales	Interested in increasing locally sourced product

Appendix C: Processors Interviewed

Stakeholder	Primary processing	Secondary processing	Business	Comments/notes
Jeff Prehm	Custom cut	Cold pack	Penny's Salsa	Working with FSA to congregate local product to add to sales channels
Adam Hewey	Cold pack	Dry pack	Essential Foods	Interested in working with small producers
Tony Mascio	Hot fill	Cold pack	San Gennaro Foods	Certified Organic and non-GMO.
Mike Bennett	Custom cut		Hendrickson Farm	Certified Organic. Currently working with Organically Grown Company
Mike Locking	Custom cut		Shawn's Produce	Interested in working with small producers
Ron Gustin			Duck Delivery	Does not process in WA state
John Paul Kunselman			Garden Fresh Foods	Does not offer single origin processing
Dave Brown	Hot pack		Carsos Pasta	USDA. Interested in sourcing locally
Trevor Parrick	Dehydration		NutraDried LLP	
Jonathon Thomas	Freeze Dry		American Freeze Dry	Full-truck load minimum
Lee Schrepel	IQF		Fruit Hill	Only processes select fruit
	IQF		Scenic Fruit	Only processes Blueberries
George Wolf	Acidified Foods		Wolf Pack	No longer in business

Appendix D: Interview questions and topics

Farmers
Do you feel that having access to a produce processing facility would add value to your operation and long-term viability?
What are your principal crops needing processing?
What is your existing capacity? What is your 3 - 5-year projected capacity?
What types of processing are needed? (Wash-and-Pack, Chop/Slice, Dehydrating, IQF, Value-added -Cooked/canned, Shelf stable)
Do you have more interest in self-processing or utilizing a staffed facility?
What barriers do you foresee?
Buyers
What products are in demand?
Are there any packaging restrictions? (glass, plastic, recyclable)
What is there greatest interest in? Frozen or chilled product? shelf stable?
What type of insurance/s do you require producers to carry?
What type of food safety measures do you require (e.g. GAP, HACCP, BRC)
What barriers do you foresee?

Appendix E: Additional Influencers and Contributors

Stakeholder	Business/ Agency	Position	Comments
Robin Crowder	21 Acres Center for Sustainable Living	Marketing and Development Director	Very supportive of additional v/a processing
Lynn Coale	Hannaford Career Center, Vermont	Director	Worked mobile Frozen Vegetable processing unit. Project was not successful due to lack of adequate power supply on farm, inappropriate freezing technology and lack of packaging line in design
Claudia Karach	James Beard Foundation (JBF)	Director of House Events and Membership	JBF is becoming active in sustainable agriculture and interested in helping coordinate projects around the country
Elena Dashti	Cascadia College	Student intern	Sustainability program student doing a Capstone project on transportation issues in the sustainable food system
Kristin Beaulieu	Woodruff-Sawyer & Co.	Vice President	Woodruff-Sawyer, Risk Management and Insurance company that carries policies for food processing companies
Wade Miller	CROPP - Organic Valley Coop	Farmland Acquisition/Profitability Coordinator	CROPP has started Produce pilot projects and willing to connect and offer advice
Mike Lufkin	King County	Local Food Economy Manager	Very supportive of additional v/a processing
Mary Embleton	King Conservation District	Grant Coordinator	Very supportive of additional v/a processing
Luke Woodward	NABC	King County Project Manager	Collaborated on project
Linda Neunzig,	Snohomish County	Agriculture Coordinator	Snohomish county is very interested in adding v/a processing
Patrice Barrentine	King County	Project Program Manager	Noted concerns with production volume in Valley and coordination between farmers. Noted lack of frozen processing in region
Sarah Wilcox	Pierce Conservation District		Pierce County interested in adding v/a processing
Chris Iberle	WSDA	Farm to School & Value Chains Specialist	Collaborated on project

Appendix F: Table of Products

Vegetable	Product	Type of Buyer	Processes	Level of Buyer Interest	Existing Infrastructure	Recommend	Reason
Beets	Spiced Pickled Beets	Retail	Slice, Pickle, Co-pack	Low/Medium	No	No	No existing processors
Broccoli	Frozen, 12 oz.	Retail	Floret, Blanch, Freeze	High	No	No	No existing processors
Cabbage	Bulk shred, 2# bag	Wholesale	Shred	High	Yes	Yes	Strong demand
							Existing processors
Carrots 1	Coriander Pickled Carrots	Retail	Slice, Pickle, Co-pack	Low/Medium	Yes	No	No existing processors
							Need to develop secondary product from waste
Carrots 2	Bulk shred and sticks, 2# bag	Wholesale	Shred and sticked	Medium/high	Yes	Yes	Good demand
							Existing processors
Garlic	Whole, case pack	Wholesale	Wash & Pack	Low	Yes	No	Wholesale market will not bear price
Kale	Frozen, 12 oz.	Retail	Wash, Rib, Chop, Blanch, Freeze	Low	No	No	No existing processors
Zucchini	Whole, case pack	Wholesale	Wash & Pack	Low	Yes	No	Wholesale market will not bear price

Appendix G: Pickled Beet Costing Analysis

Costing		Pickled Beets			
Producer		High		Low	
Fixed Costs					
Labor		\$ 159.60		\$ 159.60	
Transportation		\$ 175.00	/day	\$ 175.00	/day
Mileage		\$ 103.35	/trip	\$ 112.71	/trip
cost per lb		\$ 0.22	/lb.	\$ 0.22	/lb.
COGS					
Primary Processing					
Beets / lb.*		\$ 0.68		0.68	
Processing cost		\$ 1.18	/lb.	\$ 0.50	/lb.
Raw cost per lb.		\$ 1.86		\$ 1.18	
90% yield		\$ 2.05		\$ 1.30	
# raw cost per finished lb.		0.75	\$	0.75	
Secondary processing					
Supplies					
12 oz. mayo jar & lid		\$ 0.69	each	\$ 0.69	
Beets		\$ 1.53		\$ 0.97	
Other ingredients		\$ 0.24		\$ 0.24	
Total cogs		\$ 2.46		\$ 1.90	
Labor		\$ 0.30		\$ 0.30	
Factory Fee		\$ 0.46		\$ 0.46	
total estimated raw cost		\$ 3.41		\$ 2.84	
Est overhead and unknowns 25%		\$ 0.85		\$ 0.71	
Est finished cost		\$ 4.27		\$ 3.55	
Est. distribution cost 25%		\$ 1.07		\$ 0.89	
Est. broker fee 20%		\$ 0.85		\$ 0.71	
Est wholesale 12 oz. jar		\$ 6.19		\$ 5.15	
Est Retail, 12 oz. 40% mark up		\$ 8.66		\$ 7.22	

Mileage included transportation from aggregation point → primary processing → secondary processing

*Price based on USDA Specialty Crops Terminal Markets Standard Reports, San Francisco Terminal, 4/12/2017

Appendix H: Frozen Broccoli Costing Analysis

Costing		Broccoli	
Producer		cost	
Fixed Costs			
Labor		\$159.60	
Transportation		\$175.00	per day
Mileage		\$?	per trip
cost per lb.		\$0.18	per lb.
COGS			
Primary processing			
Broccoli/ lb.*		\$2.00	
Processing cost		\$0.60	Per lb.
Raw cost per lb.		\$2.60	
60% yield		\$3.64	
# raw veg per finished lb.		1.00	
Secondary processing			
Processing cost		Unknown*	Per lb.
95% yield			
# raw veg per finished lb		1.00	
Tertiary processing			
Processing cost		?	Per lb.
Raw cost per lb.		\$-	
# raw veg per finished 12 oz. package		0.75	
95% yield		?	
Packaging			
Supplies			
Bag		\$0.08	per bag
		\$-	
Total cogs		?	
Labor			
Factory Fee		?	
total estimated raw cost		?	
Est overhead and unknowns 25%		?	
Est finished cost		?	
Est. distribution cost 25%		?	
Est. broker fee 20%		?	
Est wholesale 12 oz. bag		?	
Est Retail, 12 oz. 40% mark up		?	

*Price based on Rodale Organic Vegetable Price Report, Seattle Terminal, 4/12/2017

NB - We are unable to estimate the cost of this product because a processor could not be found who would be able to do the work of freezing the broccoli.

Appendix I: Shredded Cabbage Costing Analysis

Costing	Cabbage	
	High	Low
Producer		
Fixed Costs		
Labor	\$159.60	\$159.60
Transportation	\$175.00 /day	\$175.00 /day
Mileage	\$35.00 /trip	\$26.00 /trip
cost per lb.	\$0.18 /lb.	\$0.18 /lb.
COGS		
Processing		
Cabbage/ lb.*	\$0.60	\$0.60
Processing cost	\$0.34 /lb.	\$0.34 /lb.
Raw cost per lb.	\$0.94	\$0.94
90% yield	\$1.03	\$1.03
# raw veg per finished package	5.00	5.00
Packaging		
Supplies		
Bag	\$0.08 / bag	\$0.08 / bag
Cabbage	\$5.16	\$5.16
Total cogs	\$5.24	\$5.24
Labor		
total estimated raw cost	\$5.43	\$5.42
Est overhead and unknowns 30%	\$1.63	\$1.63
Est finished cost 5 lb. bag	\$7.06	\$7.05
Est. distribution cost 25%	\$1.76	\$1.76
Est wholesale 5 lb bag	\$8.82	\$8.81

Mileage included transportation from aggregation point → primary processing

*Price based on Rodale Organic Vegetable Price Report, Seattle Terminal, 4/12/2017

Appendix J: Shredded and Sticked Carrot Costing Analysis

Costing		Carrots - shred/stick			
Producer		High		Low	
Fixed Costs					
Labor		\$159.60		\$159.60	
Transportation		\$175.00	/day	\$175.00	/ day
Mileage		\$35.00	/ trip	\$26.00	/ trip
cost per lb.		\$0.18	/ lb.	\$0.18	/ lb.
COGS					
Processing					
Carrots/ lb.*		\$0.83		\$0.83	
Processing cost		\$0.86	/ lb.	\$0.83	/ lb.
Raw cost per lb.		\$1.69		\$1.66	
85% yield		\$1.95		\$1.91	
# raw veg per finished package		2.00		2.00	
Packaging					
Supplies					
Bag		\$0.08	/ bag	\$0.08	/ bag
Carrots		\$3.89		\$3.82	
Total cogs		\$3.97		\$3.90	
Labor					
total estimated raw cost		\$4.16		\$4.08	
Est overhead and unknowns 30%		\$1.25		\$1.23	
Est finished cost 2 lb. bag		\$5.40		\$5.31	
Est. distribution cost 25%		\$1.35		\$1.33	
Est wholesale 2 lb bag		\$6.75		\$6.64	

Mileage included transportation from aggregation point → primary processing

*Price based on Rodale Organic Vegetable Price Report, Seattle Terminal, 4/12/2017

Appendix K: Table of Assumptions

Fixed Cost

Mileage				
Starting point:	To Penny's		To Shawn's	
Goose and Gander	35	miles	26	miles
Dundee Fruit	195	miles	237	miles
Carso's Pasta	38	miles	14	miles
Essential	31	miles	30	miles
Nutridried	130	miles	85	miles
American Freeze Dried	119	miles	74	miles

Truck				
Del Truck rental	\$175.00	per day		
16 ft refer truck w lift	\$3.50	per refer hour	average running 56% of rental time	
Mileage fee	\$0.39	per mile		

Staffing		
Wage	\$15.00	per hour
benefits and taxes	\$4.95	per hour
Total cost per hour	\$19.95	

Appendix L: Processors Offering Custom Services

Processing Type	Business Name	Location	Certifications	Additional Services offered					
				custom cut	acidified foods	cold-pack	hot-pack	product development	Min. lbs./run
Post-harvest processing	Hendrickson Farms	Marysville	WSDA, Organic (Oregon Tilth)						
Post-harvest processing	Penny's Salsa	Auburn	WSDA			x			500
Post-harvest processing	Shawn's Produce	Everett	WSDA						300
Hot-pack	21 Acres	Woodinville	WSDA	x				x	N/A
Hot-pack	San Gennaro	Kent	WSDA			x		x	N/A
Hot-pack	Carso's Pasta	Lynnwood	WSDA, USDA				x		N/A
Cold-Pack	Essential Foods	Seattle	WSDA	x				x	N/A
Conventional Dehydration	NutraDried LLP	Ferndale	WSDA						3000
Freeze Dry	America Freeze Dry	Ferndale	WSDA						44,000
Individually Flash Frozen	Fruit Hill	Yamhill, OR	ODA						5000
Acidified Foods	Dundee Fruit	Dundee, OR	ODA		x				5000

Appendix M: Processing Plant Equipment List

Category	Item	Wash & Pack	Min Proc.	Min Proc. (100/100)	Full Cap. USDA	Est. Price Range
Product Prep	Peeler		1	1	1	\$260 - \$1700
	In-feed Belt	1	1	1	1	\$650 - \$3000
	Produce Scale	1	1	1	1	\$1700 - \$2000
Bin Dumper		1	1	1	1	\$4,000
Cutting Machine	Slicer, Shredder and Granulator		1	1		\$1500 - \$3000
	Slicer, Strip Cutter and Dicer		1	1		\$750 - \$10000
	Uniform Dice, Strip Cut or Slice				1	\$6,500
	Dual Stick Cutter			1		\$500 - \$1000
	Industrial Food Processor-1000				1	\$4,000
	Vegetable Shredder				1	
Wash System	Vegetable & Fruit Wash	1			1	\$3600 - \$5250
	Spray and Wash Conveyor		1	1		\$1500 - \$2500
	Jr. Double-Wash	1				
	Triple Wash System		1	1	1	
	Barrel Washer		1	1	1	
	Soak Tank	1	1	1	1	
	Water Treatment System	1	1	1	1	
Drying	Centrifuge Dryer			1	1	
	Vegetable Dryer - 20 - 40 lb	1	1			\$850 - \$1500
Blanching and Freezing	Blanching System		1	1	1	
	Cooling System for Blancher		1	1	1	
	Flash Freezer Batch Size		1			\$7000 - \$25000
	Flash Freezer				1	
	IQF Tunnel Freezer			1	1	\$75000 - \$180000
	Compressor unit (sold separately)			1	1	
	Freezer Storage System		1	1	1	\$3000 - \$10000
Juice Extractor				1	1	\$3000 - \$5000
Pulp/Finisher					1	
Continuous Pasteurizer					1	
Packing and Sealing	Packing Table		1	1	1	\$150 - \$2800
	Sizer		1	1	1	\$750 - \$1100
	Band Sealer with Conveyor		1	1	1	
	Bagging Machines		1	1	2	\$2000 - \$6400
	Bag Conveyor			1	1	\$850 - \$1000
	IQF Box Filler			1	1	
	Metal Detector	1	1	1	1	
	Rotary Packing Table	1	1	1	1	
	Taping Machine		1	1	1	

Appendix N: Commercial Kitchen Equipment

Category	Item	Est. Price Range
Cooking equipment	Tilt Kettle	\$3500 - \$5000
	Gas grill	\$650 - \$2000
	Gas Oven	\$2500 - \$7500
	Convection Oven	\$2200 - \$7200
	Microwave	\$175 - \$300
	6 burner Range - Dual oven	\$1000 - \$3000
Cooling	Walk-in Cooler 8 x 8, self-contained	\$7500 - \$10000
	Walk-in freezer 8 x 8, self-contained	\$8750 - \$11000
	Reach in Refer, 2-door	\$2100 - \$4000
	Reach in Freezer, 1 door	\$1000 - \$3200
	Ice machine	\$1000 - \$1500
Prep	Stainless steel worktables	\$2000 - \$5000
	Stainless prep steel sinks	\$500 - \$1000
	Standing mixer	\$2000 - \$15000
Dishwasher	Door Type / Rack Dishwasher	\$10000 - \$12500
	3 compartment sink	\$500 - \$1000
Shelving Units		\$2000 - \$3000
Hot Water Heaters		\$2000 - \$5000
Dry Storage Unit		\$1000 - \$2000
Hood		\$10000 - \$20000
HVAC		\$10000 - \$50000
Smallwares	Pans	
	Pots	
	Utensils	
	Ingredient Bins	