UPPER PENINSULA FOOD HUB AND LOGISTICS NETWORK FEASIBILITY STUDY

FINAL REPORT (JAN 2023)

PROJECT PARTNERS:

Center for Rural Health, Northern Michigan University

MSU Extension

U.P. Food Exchange, upfoodexchange.com

Feeding America West Michigan

CUPPAD

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CENTER FOR RURAL HEALTH NORTHERN MICHIGAN UNIVERSITY	The **Northern Michigan University Center for Rural Health (NMU-CRH)** seeks to improve the health and well-being of Upper Peninsula residents and communities by developing collaborative partnerships that improve the access and availability of affordable, quality healthcare services.
U.P. FOOD EXCHANGE upfoodexchange.com	The **U.P. Food Exchange (UPFE)** is a resource portal for farmers, businesses, and individuals looking to participate in the local food system. The UPFE supports local food projects of all kinds, including policy work, community education, food safety, business development, farm to school, and more. Key to the work of the U.P. Food Exchange is the UPFE Online Marketplace, a food hub that aggregates local food products for institutions and retail in Michigan's Upper Peninsula. The U.P. Food Exchange is a collaboration between many businesses and organizations working together to support local food and the goals of the Michigan Good Food Charter.
FEEDING AMERICA West Michigan	**Feeding America West Michigan (FAWM)** is at the center of a united community effort driven by the core beliefs that hunger is unacceptable, and meals can change lives. Feeding America West Michigan is one of 200 food banks in Feeding America's nationwide network and one of seven Feeding America member food banks located in Michigan. FAWM has been serving communities in need in Michigan since 1981 by gathering and distributing food to relieve hunger and increase food security in West Michigan and the Upper Peninsula.
MSU Extension	The **Michigan State University Upper Peninsula Research and Extension Center (MSU-UPREC)** is a hub for sustainable agriculture innovation and education that is relevant to the environment, economy, and needs of UP communities. The UPREC was established in 1899 at Chatham, Michigan, to conduct, "experiments pertaining to agriculture and horticulture...beneficial to the agricultural interests of the Upper Peninsula." For over 120 years, the UPREC has spearheaded research investigating the breadth of Upper Peninsula crops and livestock and delivered educational programming serving generations of Upper Peninsula farmers and community members.

CUPPAD	The mission of the **Central Upper Peninsula Planning and Development (CUPPAD) Regional Commission** is to foster cooperative analysis, planning, and action for economic, social, and physical development and conservation within the central Upper Peninsula. Dedicated planners, economic developers, and GIS[1] professionals are passionate about the prosperity of the region. Acting as an advocate, they help communities prosper with sound planning practices, federal funding opportunities, technical assistance, and much more.
NEW VENTURE ADVISORS LLC®	**New Venture Advisors (NVA)** is a consulting firm that specializes in food system planning and infrastructure development. Since 2009, New Venture Advisors has helped hundreds of communities across North America identify strategies to develop food systems, food enterprises, and food policies that are good for farmers, food entrepreneurs, consumers, and the intermediaries that connect them.

[1] GIS stands for Geographic Information System which is a type of database containing geographic data, combined with software tools for managing, analyzing, and visualizing that data.

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Executive Summary

Project Background

The Northern Michigan University Center for Rural Health **(NMU-CRH)** and several project partners engaged with the Upper Peninsula (U.P.) food system have all faced the same barrier – the absence of food system infrastructure. There is currently no food aggregation, distribution warehouse, or light produce processing center in the U.P.; therefore, most food consumed in the region depends upon transport from lower Michigan or Wisconsin. This lack of infrastructure minimizes access to high-quality food. It hinders local farms from developing new markets and drives up the cost of distributing food to businesses and charitable food organizations alike.

Mission, Vision, Proposed Infrastructure Project Goals

The **mission** of the proposed multi-purpose facility would be to support those working in both local and charitable food distribution. The feasibility study was designed to determine if the facility is needed, if it is economically viable, and, if so, how to build a collaborative aggregation and distribution system the facility would play a central role within.

A previous feasibility study examined the possibility of a light produce processing center. However, little information on aggregation and distribution was addressed or provided. While the study summary indicated a financially viable model based on potatoes with other income streams added, the number of respondents was statistically insignificant and not representative of the entire UP.

The project partners have a **shared vision** of a facility that increases the resiliency of the food system in the U.P. This would assist by growing sales of products (raw farm and value-added foods), increasing accessibility of food, and decreasing costs to do so through charitable distribution networks, while supporting the health and wellness of U.P. residents. Collaborative distribution is key to solving food system issues in the U.P. Food movement to and from the facility may use existing distribution networks. However, identifying potentially untapped resources and additional distribution options is necessary to ensure maximizing efforts with regard to efficiency and expense.

The proposed facility could support the following infrastructure objectives and **project goals**:

- Food aggregation, light processing, packing, and storage facilities, including dry, cold, and frozen storage
- Rental by farms, food producers, and others as identified for aggregated sales to institutional purchasers
- Support of charitable food programs in the U.P. with donations from farm, production, and business partners to pantries and other programs as facilitated by Feeding America West Michigan
- Receiving a range of food, some requiring processing or packaging, while other foods may be ready for distribution
- Distribution to a range of retailers, restaurants, and other identified recipients in the regional food network
- Future exploration of possible income streams through rentals in the building, such as a kitchen incubator or value-added food processing run by food entrepreneurs

Market Analysis

Upper Peninsula Michigan Overview

The Upper Peninsula comprises 15 counties: Alger, Baraga, Chippewa, Delta, Dickinson, Gogebic, Houghton, Iron, Keweenaw, Luce, Mackinac, Marquette, Menominee, Ontonagon, and Schoolcraft.

U.P. Value Chain (Logistics and Distribution Assets)

The U.P. supports a number of institutional and commercial assets that could contribute to or be an infrastructure asset (i.e., offering storage, holding, or drop-off locations for regional producers or network stakeholders) within a regional distribution network model. A network of identified sites was mapped across the Upper Peninsula to demonstrate the distribution of potential network partners across the geographic areas. The goal of the expanded distribution research and mapping exercise was to determine and illustrate the following:

1. Whether the U.P. supports enough potential buyers, distributors, and infrastructure sites to support a potential network model with or without the proposed food hub infrastructure
2. The geographic spread of existing potential buyer and stakeholder sites and whether the sites represent all major areas of the U.P. that would need to be transited via a network model
3. Where existing assets are grouped in relation to primary growing areas to help provide solution models for producers accessing markets and sales channels supported by the network model

Primary Research Overview

Primary research was conducted through interviews and surveys for targeted stakeholder groups between February 2022 and July 2022. Key research questions were designed to validate potential components of a food hub warehouse facility located in Marquette County or Algier County in the U.P. and to identify existing opportunities to improve the regional distribution landscape.

NVA worked with the study group to define the key research questions to guide the development of surveys and interview guides (see research plan in the attached appendix materials) and ensure project goals were being met. The research focused on several key components:

- Defining needs for the proposed facility infrastructure, including a food hub (aggregation space), warehouse space, storage spaces (dry, cold, frozen), a processing kitchen space for fruit/vegetable processing, and a possible space for value-added processing by outside users (producers or small businesses)
- Determining interest in and resources needed by producers and system stakeholders to support better local foods distribution
- Determining interest in and resources needed by producers and system stakeholders to support local foods for regional food access needs and organizations
- Determining interest in food processing, value-add (season extension) cooking or production, or small foods manufacturing space (as either a self-access model or service model)
- Determining interest in programming/classroom space for business incubation, skills training, and related offerings for small businesses, producers, or community members

Stakeholder groups surveyed and interviewed included farmers and producers, food buyers (institutional and wholesale), potential kitchen users, small businesses, and key regional food system stakeholders.

Operating Model Implications

The input provided via interviews and surveys was aligned across several key analysis points related to the proposed facility:

- ***Distribution is strained in the U.P.*** Distribution is a significant issue throughout the U.P., and the hub can serve a role related to distribution and logistics in partnership with regional distributors and partners (last-mile distribution[2]). This opportunity to improve the local value chain could have significant impacts on supporting local producer (and small business) growth and improving access to local foods for buyers. It will, however, impact overall operational budget (trucks, driver labor) and potential revenue mix for the hub or network model that is developed.
- ***Production space access interest is limited from most audiences.*** There is limited regional interest in production, processing, or kitchen space among producers and small businesses. The models should take this into consideration for future collaborations or opportunities, but these aspects should not drive the development models.
- ***Storage is a priority.*** Access to cold storage is a priority among all audiences and may offer outside revenue opportunities in terms of partnering with local organizations, food access organizations, and commercial distributors to lease or cross-dock at the facility.
- ***Partnerships will be key.*** Collaborations across the local food system will be needed to drive either a network or hub model. Space lease, distribution partnerships and opportunities, support of local producer access, and other needs or outcomes will all rely on programmatic, funding, and operational partnerships being identified.

These key analysis points drove the additional focus on distribution and network logistics modeling. With limited interest in processing and production – for outside users or as a revenue-generating service the hub could offer – the hub would need to identify other revenue opportunities (such as last-mile hauling, back-hauling, and storage/distribution supports) to supplement aggregation income and support sustainable operations.

Additional Network Analysis Operational Implications

The additional analysis evaluating existing network models and examples across the United States and identifying existing infrastructure assets (as well as buyer sites) across the U.P. supported the analysis points summarized above. The existing network models currently being operated by local hubs were developed in response to some of the same drivers as this project:

- Limited distribution (or consistent distribution) options for local institutional and retail buyers
- Wide geographic expanses (either within a state or a geographic region such as “New England”) that taxed local producers with getting products to populated market centers and products out to remote locations in the local value chain
- Interest among key stakeholder organizations and businesses to centralize aggregation, build local storage resources, or find common solutions to the above issues

The analysis looked at four case studies to evaluate their applicability to the U.P. and propose network models as a component of the business analysis:

1. The Wisconsin Food Hub Co-op’s trucking and logistics network model (WFHC Transport)

[2] “Last-mile distribution” refers to the distribution of commercial goods across the “last mile” of their value-chain to the customer.

2. The Iowa Regional Food Hub's inter-hub sales-exchange network model
3. The Colorado Food Hub Network's inter-hub sales-exchange network model
4. The Northwest Food Hub Network's inter-hub sales-exchange network model (with commercial inputs)

Business Analysis

Operating Model: Network Model with Hub Infrastructure

A network model was built out to identify what type of operating model would best support the objectives of the study and regional food system. NVA proposed two variations on a regional logistics network model (informed by the case study models discussed earlier and reviewed with the project team). The primary difference between the models was whether the network model required a central hub or infrastructure point; with the decision by the project team to focus on this inclusion, model 1, the model with the infrastructure required, was chosen and developed further as illustrated in table 1.

TABLE 1: PROPOSED NETWORK OPERATING MODEL OUTLINE (MODEL 1)

Key model aspect or question	Data points
Role of hub (Infrastructure)	• Acts as a central aggregation point for products in the U.P. • Facilitates producer pick-up (from cross-dock/partner sites) to ease the burden of transport on producers • Charges for last-mile distribution to support partnerships
Revenue sustainability	• Last-mile transport costs would need to be able to offset operational overhead (drivers, vehicles, logistics support) • The central hub site could act as a cross-dock to diversify revenue streams for the facility (offset operations)
Benefits of model structure	• Supports farmers/producers with logistics support and gets more products into the hub network (distribution network) • MAY diversify offerings in the U.P. and increase distributor willingness to increase delivery frequency
Negatives of model structure	• Will require collaboration and buy-in from a network of partners (not-for-profit and for-profit) to facilitate both demand and opportunity • Will require sufficient sales (on the buyer's side) to support demand and logistics needs.
Infrastructure required?	1. Yes, it relies on storage/warehouse sites with adequate cold storage and sufficient vehicles to handle transportation routes.

Core Business – Network and Facility Operational Costs and Revenue

In the model, the network's core business is the movement (distribution) of goods across the U.P. The network can generate revenue to support operation of infrastructure and other operational costs such as trucks and personnel through three levers:

1. ***Distribution/trucking:*** Last-mile delivery of commercial loads and goods is the primary revenue lever. The network can offer this as a service to commercial distributors, packers, manufacturers, regional organizations, partner organizations, and small business entities. This

may also include back-hauling of goods (between lower Michigan, Wisconsin, and the U.P.) and pick-up/drop-off services related to commercial or producer clients.
2. ***Space rental/lease:*** Lease or rental of storage and logistics space (cross-dock, parking, etc.) within the facility to outside entities such as food access organizations, local partners, or commercial entities is a secondary lever.
3. ***Aggregation income:*** Most of the hub's primary income is generated via the warehousing and distribution of local food products according to regional retail, institutional, and partner needs.

In the future, the facility has the potential to generate limited revenue by offering light produce processing as a service to local producers and by the sale of lightly processed or value-add products to regional institutional buyers. As analysis demonstrated, there is limited interest in this offering (either via self-access production or as a service as noted) from both producers and buyers. Once the network is developed, future growth among producers might support this additional offering (which would help to diversify revenue opportunities for the hub and network and increase operational sustainability).

Operational costs, discussed in the latter financial sections, include standard needs such as staff and labor payroll, utilities, SG&A, and general building maintenance and upkeep for the hub site. In addition, the network will have unique operational costs such as the maintenance and upkeep of their delivery vehicle fleet, as well as personnel to support driver, logistics, and sales roles.

For all business functions, the network has a limited group of customers or clients:

- ***Regional commercial entities*** involved in retail, grocery, or distribution related to food looking for logistics solutions in the U.P.
- ***Regional producers and growers*** looking for logistics solutions (or distribution/aggregation supports) to access markets across the U.P., lower Michigan, and eastern Wisconsin
- ***Partner organizations*** (such as food access and regional entities) looking for distribution, storage site, or local product access points in the local geography (as well as better access to local food products)

Facility Program

To develop the facility program, each of the functional spaces within the facility was examined to address how that space would need to be adapted to meet immediate and future needs of the network, respond to growth over time, address regulatory and licensing considerations (inventory and food safety), and respond to varying users' specific needs for access and holding.

The primary functional spaces identified included

- ***Logistics spaces:*** loading docks, receiving space, external truck routing space, parking
- ***Warehouse and storage spaces:*** warehouse, dry storage, equipment storage, cold storage, frozen storage
- ***Aggregation spaces:*** washing area, packaging/sorting space, holding (isolation space)
- ***Office and meeting spaces:*** private office, shared office space, meeting space
- ***Support spaces:*** toilets, staff welfare space, mechanical/storage space, transit/circulation space
- ***(Future option) processing and production spaces:*** future processing and/or kitchen space, scullery space

Facility Sizing

Warehouse, storage, and potential volumes for movement (hauling) by the network were informed using the possible volume of local products that regional producers would be willing to sell to the facility for aggregation, distribution, and processing (for fee or sale) and the possible volume of products that regional logistics partners would be willing to hire the facility to store or move (for a fee).

To accurately size the facility, NVA looked at three aspects of function:

1. The movement of food inventory and goods through the facility and the total volume (pounds, pallets) that would need to be held within storage spaces
    a. This was built upon data collected during the analysis phase (secondary data of the local agricultural system, inputs from farmers in surveys and interviews, and additional distribution inputs from potential network partners) that helped to create three sizing scenarios (small – conservative, medium – moderate, and large – aggressive) based on assumed farmer production and participation in the network and local distribution (hauling and storage) volume demands.
    b. These projected total pounds of product (detailed in the sizing tab of the Operating Workbook included in the appendix documents) was translated into pallets that informed the total static pallet positions that would be required in the storage and warehouse spaces.
2. The movement of people through the facility and the appropriate space for their work functions and transit/circulation needs
3. The process flow of people, goods, cars, and trucks in and around the facility and the supporting functional needs of these activities to support the network's services

Based on these needs, the facility's baseline sizing (or minimum acceptable square footage) was identified based on specific data sets for each of the primary functions outlined earlier. As noted, for each data point, three estimates were used to inform a potential square footage scenario of the infrastructure model:

- a low or conservative estimate to inform a "small size" scenario
- a moderate estimate to inform a "medium size" scenario
- a high or aggressive estimate to inform a "large size" scenario

The distinction here is that the conservative scenario, in comparison to other operating facilities of comparable function within the country, assumes low participation in aggregation and storage functions by regional partners, commercial entities, and producers, whereas the aggressive scenario assumes active participation and high-volume commitments from these same partners/clients.

These volumes were translated into square footage, and the three sizing scenarios were developed into a building program. In reviewing the proposed sizing scenarios, the project team identified that the medium or large scenario would be most advantageous to support both network growth and operational needs, noting that the small sizing scenario, while conservative, would reach capacity easily and might require future development to expand if the network was successful in its operations. With this feedback, the large sizing scenario, with a minimum building size of approximately 22,000 square feet, a total hard-surface lot size of approximately 33,000 square feet, and a minimum viable lot size of

approximately two to three acres was recommended and utilized for the financial model build (discussed in future sections).

Financial Analysis

Summary

The financial models provided are based on assumptions derived from the primary research, input from core team members with unique expertise in these areas, an assessment of comparable businesses, and NVA's expertise through previous projects. While these assumptions are based on rigorous research, some are driven by indirectly comparable businesses or analogs, or through input provided by the core team that is unable to be verified by outside sources.[3]

Therefore, these **assumptions and financial forecasts should not be viewed as exact revenue and cost figures that would be generated or incurred**. Actual cost, revenue, and budget figures will vary—sometimes significantly—based on additional research, final decisions made on the business model, decisions made by the actual operators of these businesses, and market conditions.

Two financial models were developed by the NVA team:

1. ***Network-only model*** – As discussed in the previous sections, this model is based on the assumptions that no new infrastructure would be developed and that the network would offer distribution, last-mile trucking, and related logistics services at a fee.
2. ***Network plus hub infrastructure model*** – This model includes all the operations of the network-only model with the addition of a central hub infrastructure site to support and expand the network operations.

Hub Cost Modeling: Construction Costs

Based on the proposed hub infrastructure, the cost of constructing each of the three different sizes is shown in table 2. A detailed equipment roster was built and is included in the appendix materials – identifying equipment needed across all spaces. The minimum viable land required for the building and supporting functionality is estimated to be three acres for financial modeling purposes. Since no site has been proposed or finalized for the hub to be built on, the average cost per acre is an estimated number and will need to be updated once the location has been finalized. Additional working capital needs have been estimated for scenarios B and C to support the facility till it is operational and has developed a financial cadence. This outlay should be sufficient not only for the purchase of trucks and pre-occupational capital expenses but also for the first six months of operational costs to close any gap till the facility achieves breakeven.

TABLE 2: CONSTRUCTION COSTS – THREE HUB SIZE SCENARIOS

Uses	Scenario A	Scenario B	Scenario C
Land	21,000	21,000	21,000
Building	2,515,236	3,621,466	5,897,435
Equipment	338,370	338,370	451,270
Working capital	415,595	1,212,915	1,430,674
Total	**3,290,202**	**5,193,751**	**7,800,380**

[3] The practice of using analogs is widely accepted in the venture capital industry when directly comparable businesses do not exist. Analysts develop models using ratios from existing businesses that have an operating feature that is analogous to the new venture, even when the core businesses are different.

The financial models are built on the assumption that the facility will be financed with 80 percent grants and 20 percent debt (at a 4.5% interest rate) as indicated in table 3.

TABLE 3: FUNDING SOURCES

Source	Interest rate	Weight	Scenario A	Scenario B	Scenario C
Grants		80%	2,632,161	4,155,000	6,240,304
Debt	4.5%	20%	658,040	1,038,750	1,560,076
Equity		0%	-	-	-
Total			**3,290,202**	**5,193,751**	**7,800,380**

The medium (scenario B) and large (scenario C) hubs were deemed the best fit for the project's objectives and are detailed in the following sections.

Revenue Component Assumptions

Revenue for the core operations of the facility is projected to be from the network/distribution business segment and from storage rentals. This comprises last-mile trucking, logistics or trucking support, pick-up and drop-off trucking services, and the rental or lease of storage space within the facility by commercial partners, producers, or other entities.

Additional revenue streams that would support the facility to ultimately breakeven and become self-sustaining include the following:

- ***Aggregator business segment*** – The hub will act as a local aggregator of produce and products. Products will be purchased from local producers at wholesale rates and resold to commercial clients (wholesale, retail, or institutional) at a 17 percent markup. Light processing of raw goods could be a future aspect of the business.
- ***Facility space lease business segment*** – The hub could lease 20 percent of the warehouse, storage, or production spaces to a partner or tenant for market or below-market-per-square-foot lease rates.

Operating Budget - Cost Assumptions

The costs for the network and distribution segment are shown in table 4 and include the following:

1. Vehicle overhead costs, which include gas, vehicle maintenance, and insurance; these are based on the number of vehicles and the total miles forecasted to be driven
2. Labor costs (a detailed labor matrix has been provided in the appendix)
3. Selling, general, and administrative costs (SG&A[4]), which include maintenance of equipment, security monitoring, etc.
4. Utilities, which are estimated at $10 per square foot, based on comparable facilities
5. Taxes and Insurance, which are estimated at $2 per square foot, also based on comparable facilities

[4] SG&A stands for selling, general and administrative expenses and is an initialism used in accounting to refer to major non-production costs presented in an income statement.

TABLE 4: OPERATING COSTS – NETWORK AND DISTRIBUTION BUSINESS SEGMENT

	Mid-size					Large-size				
Costs	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Vehicle overhead cost	80,266	88,973	97,681	106,389	115,096	96,098	107,972	138,210	150,084	161,958
Labor costs	390,105	401,808	413,862	452,078	465,641	390,105	401,808	453,437	492,840	507,625
SG&A	51,837	53,392	54,994	56,644	58,343	63,127	65,021	66,971	68,981	71,050
Utilities ($10/sq.foot)	143,695	148,005	152,446	157,019	161,729	238,642	245,802	253,176	260,771	268,594
Taxes & insurance ($2/sq.foot)	143,695	148,005	152,446	157,019	61,729	238,642	245,802	253,176	260,771	268,594
Total operational costs	**809,597**	**840,184**	**871,428**	**929,148**	**962,539**	**1,026,614**	**1,066,404**	**1,164,969**	**1,233,446**	**1,277,821**

The costs for the aggregator segment are shown in table 5. It is assumed that this segment will incur 10 percent additional labor expenses to support the additional operations.

TABLE 5: OPERATING COSTS – AGGREGATOR BUSINESS SEGMENT

	Mid-size					Large-size				
Costs	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Labor costs (10% of hub costs)	31,550	32,497	33,471	37,056	38,167	31,550	32,497	33,471	37,056	38,167
Utilities ($2/sq.foot)	28,739	29,601	30,489	31,404	32,346	47,728	49,160	50,635	52,154	53,719
Total operational costs	**60,289**	**62,098**	**63,961**	**68,459**	**70,513**	**79,279**	**81,657**	**84,107**	**89,210**	**91,886**

Operating Profit and Loss by Business Segment

As can be seen in table 6, the network plus hub model, at either the medium or large size, does not generate enough revenue to cover operational costs via the distribution business segment alone. Both size facilities, operating at 80 percent utilization in year 5, will be operating at a loss of approximately $175,000 (medium-size) and approximately $178,000 (large-size). Labor (drivers, sales, and network support roles) is the single largest impact factor on high operational overhead for the models (as detailed in the previous slides). Additional business segments must be combined with the network model for the facility to be self-sustaining over more than five years.[5]

[5] The total operating profit and loss scenario (including all business segments, table 6) was built without debt carry to demonstrate the potential of the medium and large-size models to sustain operations in three to five years of operation. The total impact of depreciation and interest expenses is demonstrated in table 7.

TABLE 6: OPERATING PROFIT AND LOSS BY BUSINESS SEGMENT

	Mid-size					Large-size				
Network Segment	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Revenue	435,275	520,725	608,850	696,975	787,775	605,975	729,250	852,525	975,800	1,099,075
Operational expenses	809,597	840,184	871,428	929,148	962,539	1,026,614	1,066,404	1,164,969	1,233,446	1,277,821
Segment profit/loss	(374,322)	(319,459)	(262,578)	(232,173)	(174,764)	(420,639)	(337,154)	(312,444)	(257,646)	(178,746)
Aggregator segment										
Revenue	35,807	44,258	53,183	58,691	64,482	70,182	86,745	104,239	115,035	126,385
Operational expenses	60,289	62,098	63,961	68,459	70,513	79,279	81,657	84,107	89,210	91,886
Operational profit/loss	(24,482)	(17,840)	(10,778)	(9,768)	(6,031)	(9,096)	5,088	20,132	25,825	34,499
Segment profit/loss (including network segment)	(398,804)	(337,299)	(273,356)	(241,941)	(180,795)	(429,736)	(332,066)	(292,312)	(231,820)	(144,246)
Space lease segment										
Revenue	274,233	282,460	290,934	299,662	308,652	473,640	487,850	502,485	517,560	533,086
Total operational profit/loss	**(124,570)**	**(54,839)**	**17,578**	**57,721**	**127,857**	**43,905**	**155,784**	**210,173**	**285,739**	**388,840**

Summary P&L (Operating Model Detail)

The summary profit and loss along with the debt amortization and interest payments is shown in table 7. As the table illustrates, the mid-size model, with debt payments integrated does not have a pathway to break-even until post year five. The large-size model, even with debt payments integrated, has a pathway to break-even in year five generating approximately $67K in revenue with all business segments activated.

TABLE 7: SUMMARY P&L

	Mid-size					Large-size				
Revenue	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Network/ distribution	435,275	520,725	608,850	696,975	787,775	605,975	729,250	852,525	975,800	1,099,075
Aggregator	35,807	44,258	53,183	58,691	64,482	70,182	86,745	104,239	115,035	126,385
Lease	274,233	282,460	290,934	299,662	308,652	473,640	487,850	502,485	517,560	533,086
Total revenue	**745,316**	**847,443**	**952,967**	**1,055,329**	**1,160,909**	**1,149,798**	**1,303,845**	**1,459,249**	**1,608,395**	**1,758,547**

	Mid-size					Large-size				
Costs	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Vehicle overhead cost	80,266	88,973	97,681	106,389	115,096	96,098	107,972	138,210	150,084	161,958
Labor costs	421,655	434,305	447,334	489,134	503,808	421,655	434,305	486,908	529,895	545,792
SG&A	51,837	53,392	54,994	56,644	58,343	63,127	65,021	66,971	68,981	71,050
Utilities ($10/sq.ft)	172,433	177,606	182,935	188,423	194,075	286,371	294,962	303,811	312,925	322,313
Taxes & insurance ($2/sq.ft)	143,695	148,005	152,446	157,019	161,729	238,642	245,802	253,176	260,771	268,594
Total op costs	**869,886**	**902,282**	**935,389**	**997,608**	**1,033,052**	**1,105,893**	**1,148,061**	**1,249,075**	**1,322,655**	**1,369,707**
Op profit/ loss	**(124,570)**	**(54,839)**	**17,579**	**57,721**	**127,858**	**43,905**	**155,784**	**210,174**	**285,739**	**388,840**
Depreciation	143,274	143,274	143,274	143,274	143,274	226,666	226,666	226,666	226,666	226,666
Interest payment	46,401	45,631	44,826	43,984	43,103	69,689	68,532	67,323	66,058	64,735
Debt amort.	16,757	17,527	18,332	19,175	20,055	25,168	26,324	27,533	28,798	30,121
Earnings before taxes	**(331,002)**	**(261,271)**	**(188,853)**	**(148,711)**	**(78,574)**	**(277,617)**	**(165,738)**	**(111,348)**	**(35,783)**	**67,318**

Risks and Mitigation Strategies

There are key risks to consider that may have a material impact on the proposed facility's successful development, launch, and viability. However, the risks can be mitigated with the right upfront strategies discussed in depth in the following report. The mitigating strategies identified include

- Establishing wholesale pricing standards with local producers
- Establishing last-mile and distribution pricing with regional commercial partners
- Establishing network partners and buyers (especially key institutional buyers) across the region to support network movement
- Building institutional buyer demand to support revenue streams in a post-COVID buying environment
- Refining the role of the UPFE

Conclusion and Strategic Recommendations

The study presents a viable financial and operational model for a large-sized aggregation and distribution facility at the center of a regional distribution network model.[6] The largest-sized

[6] The full conclusions (page 77) does include several notes of essential actions that will need to be completed to ensure this viability.

infrastructure model generates greater throughput through the network activities and offers additional revenue streams via usage/rental fees and storage rentals, making it the most attractive model for creating a long-term, sustainable asset to the region and best servicing the project's objectives.

Further, the facility offers an infrastructure that can support identified community, regional producer, and small business needs and potentially help to provide needed support of regional distribution. The feasibility study identified significant need for solutions-based approaches to logistic and trucking issues for commercial, nonprofit, and regional agricultural operators. The network model presents a potential solution but will require collaboration and significant investment (both financial and mission-support) by all project partners and regional partners.

In summary, this project **creates a vital link in the local food value chain** – supporting greater connections to fresh, locally grown and produced products for local consumers.

Project Background

Introduction

The Northern Michigan University Center for Rural Health **(NMU-CRH)** and several project partners engaged with the Upper Peninsula (U.P.) food system have all faced the same barrier – the absence of food system infrastructure. There is currently no food aggregation, distribution warehouse, or light produce processing center in the U.P.; therefore, most food consumed in the region is dependent upon transport from lower Michigan or Wisconsin. This lack of infrastructure minimizes access to high-quality food. It hinders local farms from developing new markets and drives up the cost of distributing food to businesses and charitable food organizations alike.

Mission, Vision, Proposed Infrastructure Project Goals

The **mission** of the proposed multi-purpose facility would be to support those working in both local and charitable food distribution. The feasibility study was designed to determine if the facility is needed, if it is economically viable, and, if so, how to build a collaborative aggregation and distribution system that the facility would play a central role within.

A previous feasibility study examined the possibility of a light produce processing center. However, little information on aggregation and distribution was addressed or provided. While the study summary indicated a financially viable model based on potatoes with other income streams added, the number of respondents was statistically insignificant and not representative of the entire U.P.

The project partners have a **shared vision** of a facility that increases the resiliency of the food system in the U.P. This would assist by increasing sales of products (raw farm and value-added foods), increasing accessibility of food, and decreasing costs to do so through charitable distribution networks, while supporting the health and wellness of U.P. residents. Collaborative distribution is key to solving food system issues in the U.P. Food movement to and from the facility may use existing distribution networks. However, identifying potentially untapped resources and additional distribution options is necessary to ensure maximizing efforts with regard to efficiency and expense.

The proposed facility could support the following infrastructure objectives and **project goals**:

- Food aggregation, light processing, packing, and storage facilities that include dry, cold, and frozen storage
- Rental by farms, food producers, and others as identified for aggregated sales to institutional purchasers
- Support of charitable food programs in the U.P. with donations from farm, production, and business partners to pantries and other programs as facilitated by Feeding America West Michigan
- Receiving a range of food, some requiring processing or packaging, while other foods may be ready for distribution
- Distribution to a range of recipients, including retailers, restaurants, and other identified recipients in the regional food network
- Future exploration of possible income streams through rentals in the building, such as a kitchen incubator or value-added food processing run by food entrepreneurs

Study Hypothesis and Funding

The project partners joined together to commission a feasibility study funded by a planning grant from the Michigan Health Endowment Fund. The grant project, titled "Exploring Healthy, Sustainable Food Network in Michigan's Upper Peninsula" was to determine the feasibility of an aggregation, distribution, and light produce processing facility located in Marquette County or Alger County, Michigan.

The project team **hypothesized** that the proposed facility and its potential contribution to solving U.P. logistical issues would increase the resiliency of the U.P. food system and support the health and wellness of residents by increasing sales and accessibility of raw farm products and value-added foods and decreasing costs to do so through charitable distribution networks.

Project Teams

NVA executed the feasibility study in collaboration with a project team representing all the primary grant partners (table 8).

TABLE 8: MHEF PROJECT TEAM - FEASIBILITY STUDY PROJECT LEADS

Name	Title	Organization	Project Role
Elise M. Bur	Director	NMU-CRH	Co-lead and grant partner
James DeDecker	Director	MSU-UPREC	Co-lead and grant partner
Matt Gougeon	General manager	Marquette Food Co-op	Grant partner
Joseph Jones	Director of strategic initiatives and partnerships	FAWM	Grant partner
Sarah Monte	Outreach director	UPFE	Co-lead and grant partner
Ryan Soucy	Planner	CUPAD	Grant partner

The primary grant partners were also supported by representatives and students from the various organizations who supported analysis outreach, interviews, and other aspects of the project work (table 9).

TABLE 9: MHEF PROJECT SUPPORT ROLES - FEASIBILITY STUDY

Name	Title/role	Organization/business
Kelsie Dewar	Interview team	Marquette Food Co-op
Eli Hopp	Market manager	UPFE
Carolyn Robertson	Senior secretary	NMU-CRH
Trevor Rupiper	Graduate student	NMU-CRH

Study Methodology

NVA has developed a multi-stage planning process. The early stages examine the food system to uncover gaps and opportunities for development. The specific scope of NVA projects varies based on the needs of our clients. For this project, NVA conducted a feasibility assessment that included the following scope components:

- ***Landscape assessment and market analysis*** – Primary and secondary research tools, including interviews, surveys, and community engagement with stakeholder groups, were utilized to validate the study hypothesis, identify potential tenants and operators, and inform the operating model development and facility design.
- ***Distribution analysis*** – An analysis of the gaps in distribution in the local food value chain throughout the Upper Peninsula of Michigan was conducted utilizing interviews, comparable market research, and secondary research tools to examine how current distribution networks could be shared or made more efficient for all participants.
- ***Operating model and facility design*** – Informed by the market analysis (including case studies of comparable operations), a range of business models were proposed and then narrowed to a single operational model and facility design with the input and feedback of the project team and stakeholders.
- ***Financial modeling*** – Project budget, capacity, and break-even financial models were built to reflect the proposed operating model, evaluate cash flow potential, and inform the project's risk assessment.
- ***Finalization*** – The final report evaluated the feasibility of the model to inform the project team's go/no go decision to proceed into development, along with recommendations for the next steps for implementation.

Study Scope Modification

NVA and the project partner team modified the scope mid-project to incorporate additional research needed into distribution and logistical opportunities. Initial conclusions from the analysis scope – gathered via interviews, surveys, and secondary research – illustrated that distribution and network logistics were a preeminent focus of a majority of system stakeholders. Limited interest in the region in processing or kitchen access (by producers and key stakeholders) also re-affirmed the need to focus on transportation and network models. A full accounting of the scope adjustments is included in the appendix documents.

The modified scope reflected the following:

- ***Expanded distribution analysis*** – Additional research into marketplace comparables via interviews, case study development, and secondary research to identify key assets across the U.P., gain needed data for financial modeling of a network model, and explore existing models for financial and operational viability. This included mapping of the potential network models.
- ***Network operational and financial modeling*** – Modeling objectives were modified to reflect the need to model network logistic (value-chain) opportunities in addition to traditional infrastructure options.
- ***System stakeholder engagement*** – Traditional workshop or producer engagement scopes were replaced with re-engagement of stakeholders throughout the distribution and transportation networks existing in the U.P.

Project Plan and Timeline

The feasibility study was conducted between February 2022 and January 2023, with the final report on January 20, 2023. The full workplan and timeline are illustrated in table 10.

TABLE 10: PROJECT PLAN AND TIMELINE

Stage	Steps	Timeline
Project initiation and background research	• Hold kickoff meeting with core team and stakeholders • Gather background material from client • Review, summarize, and draw insights from all background material provided by client	February – March 2022
Landscape assessment	• Conduct secondary research of the food landscape, including area demographics, existing food system players, supply, demand, current infrastructure, competition, regional workforce, and critical demographics, etc. *Additional Scope:* • Conduct secondary research into the U.P. distribution and logistics networks and map assets across the U.P., northern Michigan, and eastern Wisconsin	March – May 2022 September – October 2022
Market analysis and primary research	• Interview key stakeholders across the local food system to form preliminary assessment of research needs • Develop research plan and instruments for interviews, surveys, and community engagement • Conduct interviews with members of the regional food system to assess opportunities, identify fresh food needs and gaps, validate and inform facility components, and direct facility design – (project team supports outreach and conducts a portion of interviews) – including producers, small businesses, system stakeholders, and key logistic assets/operators • Survey local producers, small businesses, and potential buyers to assess capacity and demand within the region to integrate into potential facility uses, volumes, and sizing implications • Identify important takeaways and implications for the proposed facility from all previous research steps • Hold milestone meeting with project team to review all analysis and shape implications for facility uses and components *Additional Scope:* • Re-interview system stakeholders with key roles in the value-chain and distribution networks across the U.P. • Interview operational leads from comparable network and logistic system models identified across the United States (currently operational or in development) • Perform additional analysis of existing assets and collect data to inform modeling on volumes and outputs • Identify important takeaways and implication for the proposed facility • Hold milestone meeting with the project team to identify implications for modeling	March – July 2022 August – October 2022

Stage	Steps	Timeline
Operating model development	• Develop 2–3 potential facility models based on assessment of potential operations *Additional Scope:* • Develop 2–3 potential network models based on assessment of regional assets (and existing marketplace comparables) *Modified Scope:* • Identify valuable examples across the country (of both infrastructure and network models); conduct case studies and draw insights and takeaways relevant to the proposed facility • Develop steady state revenue and cost assumptions for all aspects of the proposed facility and networks • Conduct milestone review with project team to select strongest facility scenario and refine models	July – October 2022
Financial model development	*Modified Scope:* • Develop baseline financials for proposed facility and network model • Establish detailed cost structure and capital expenses for the proposed facility and network model • Establish returns analysis based on client parameters	October – December 2022
Final deliverable and presentation	• Compile all study inputs, analysis, decisions, and strategies in a comprehensive final report to share with stakeholders • Prepare an executive summary presentation to share conclusions • Present final materials for discussion among the advisory committee and stakeholders; determine next steps	December 2022 – January 2023

Food System Overview

Landscape analysis of the region was conducted between March 2022 and May 2022 to gain a better understanding of regional demographics, agricultural and economic conditions, and the food system landscape. An additional analysis focused on identifying regional distribution assets was conducted between September 2022 and October 2022. Secondary research accessed public and syndicated data to create an overview of the local, regional, and statewide food systems.

Upper Peninsula Michigan Overview

The Upper Peninsula comprises 15 counties: Alger, Baraga, Chippewa, Delta, Dickinson, Gogebic, Houghton, Iron, Keweenaw, Luce, Mackinac, Marquette, Menominee, Ontonagon, and Schoolcraft. The total population is 301,608, with 86 percent White, 4 percent Native American, 2 percent Black/African American, 2 percent Latinx, and 5 percent two or more races.[7] There was a 5.6 percent decrease in population from 2010 to 2020.

There are five federally recognized Indian Reservations: Lac Vieux Desert Band of Lake Superior Chippewa Indians (Gogebic); Keweenaw Bay Indian Community (Baraga); Hannahville Indian Community (Menominee); Bay Mills Indian Community (Chippewa); and Sault Ste. Marie Tribe of Chippewa Indians (Chippewa).

Fifty percent of the population is in the workforce. Unemployment prior to the pandemic was approximately 5.9 percent in the Upper Peninsula. The effects of the pandemic remain as unemployment rates in April 2022 were 6.7 percent, which is higher than the state average (4.3%).[8]

FIGURE 1: UPPER PENINSULA OF MICHIGAN STUDY COUNTIES MAP

Logistics

The Upper Peninsula has limited transportation access to the Michigan mainland. The only land connection is the Mackinac Bridge on the lower eastern side of the peninsula. The Upper Peninsula has 14 public ports along the Great Lakes, primarily transporting limestone, steel, and other raw materials

[7] United States Census Bureau, QuickFacts Michigan, 2020, https://www.census.gov/quickfacts/MI.

[8] Michigan Bureau of Labor Statistics, Unemployment by County Rank, April 2020, https://milmi.org/DataSearch/Unemployment-by-County.

between the United States and Canada. All ports have access to the Great Lakes shipping system—and to the Atlantic via the St. Lawrence Seaway.

Agricultural Landscape

According to the most recent USDA Agricultural Census (2017), there are 2,313 farms in the Upper Peninsula, accounting for 230,550 acres. The average farm size is 181 acres. The total farms sales in 2017 was $99,553,000, which is only 1 percent of Michigan's total farm sales. Livestock accounts for 67 percent of farm sales in the Upper Peninsula; of the livestock sales, 67 percent are from dairy operations.[9]

The Upper Peninsula experienced an 11 percent increase in the number of fruit and vegetable operations from 2012 to 2017; however, there was a 6 percent decrease in the number of acres in production. As of 2017, there were approximately 2,4813 acres used for vegetable and fruit production, with 184 vegetable operations and 128 fruit operations.

TABLE 11: NUMBER AND SIZE OF FARMS IN THE UPPER PENINSULA

County	Fruit operations	Vegetable operations	Veg/fruit acres[10]
Alger	4	30	61
Baraga	6	0	7*
Chippewa	14	22	230
Delta	20	19	874
Dickinson	13	10	465
Gogebic	5	4	14
Houghton	13	23	91
Iron	4	6	500
Keweenaw	6	0	15
Luce	3	3	6*
Mackinac	8	9	42
Marquette	9	32	61
Menominee	21	20	94
Ontonagon	2	2	10*
Schoolcraft	0	5	13

The top fruit and vegetables in production are apples, potatoes, green beans, winter squash, lettuce, tomatoes, and garlic. Produce operations are much smaller as the average size for each is only eight acres.

[9] United States Department of Agriculture, Census of Agriculture, 2017, https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Census_by_State/Michigan/index.php.

[10] Exact acres are withheld to avoid disclosing data for individual farms; thus, the number may be higher.

TABLE 12: MOST COMMON FRUIT AND VEGETABLE OPERATIONS

	# Producers		# Producers
Asparagus	31	**Lettuce**	50
Green beans	70	**Onions**	34
Beets	39	**Peppers**	42
Cabbage	42	**Potatoes**	77
Carrots	52	**Pumpkins**	47
Cucumbers	42	**Squash**	55
Garlic	50	**Sweet corn**	48
Kale	33	**Tomatoes**	52
Herbs	31	**Apples**	89

There are 3,846 producers in the Upper Peninsula. Of these 96 percent are White and 2 percent are American Indians. The average income per operation is $7,747, which is much lower than the state average of $31,415. Only 2 percent of operations are certified organic, and six produce farms are GAP Certified.

Local Food Sales

The Upper Peninsula has a low percentage of direct marketed sales as a segment of total sales and in comparison, to other regions of similar size.[11]

TABLE 13: LOCAL FOOD SALES

	Number operations with direct marketed sales	Direct marketed sales ($)	Total sales ($)	% DTC of total sales
Alger	51	$ 218,000	$ 3,025,000	7%
Baraga	10	$ 102,000	$ 2,210,000	5%
Chippewa	54	$ 594,000	$ 10,675,000	6%
Delta	35	$ 203,000	$ 10,800,000	2%
Dickinson	21	$ 233,000	$ 4,732,000	5%
Gogebic	15	$ 60,000	$ 747,000	8%
Houghton	47	$ 342,000	$ 6,307,000	5%
Iron	13	$ 46,000	$ 3,665,000	1%
Keweenaw	6	-	$ 2,000	0%
Luce	2	-	$ 3,771,000	0%
Mackinac	15	$ 35,000	$ 7,140,000	0%
Marquette	52	$ 388,000	$ 3,676,000	11%
Menominee	40	$ 100,000	$ 37,598,000	0%
Ontonagon	12	$ 236,000	$ 3,096,000	8%
Schoolcraft	10	-	$ 2,109,000	0%

[11] United States Department of Agriculture, 2017.

The Local Food MarketSizer® illustrates there is unmet demand for local meat, poultry/eggs, and fruit/vegetable products in the Upper Peninsula foodshed. There is, however, sufficient dairy production.[12] This tool estimates unmet demand for locally produced food in a chosen geographic area using data from public and private sources to calculate unmet demand for local food at the state and county level (table 14).

GUIDE TO THE MARKETSIZER

- **Local quotient** is the percentage of category food sales produced within the area. A result of greater than 100 percent indicates that local demand could be met entirely with local production if it were directed to these markets through a local food system.
- **Local food demand** is the approximate value of category wholesale sales which could come from local sources if supply were available.
- **Local food supply** is the approximate value of category wholesale sales produced within the counties.

TABLE 14: ESTIMATES FOR UNMET DEMAND FOR LOCALLY PRODUCED FOOD IN THE U.P. (NVA MARKETSIZER)

	Dairy	Meat	Poultry/Eggs	Fruits/Vegetables
Local quotient	124%	40%	2%	14%
Local food demand	$31,200,000	$28,620,000	$10,189,000	$78,710,000
Local food supply	$43,300,000	$9,945,000	$202,500	$12,146,400
Unmet market for local food	-	$18,759,000	$9,919,000	$66,010,000

Local Food Infrastructure

The Upper Peninsula lacks infrastructure to support local food trade, including packing, processing, aggregation, and distribution facilities and access to capital for farmers.

- There is one **food hub**: Upper Peninsula Food Exchange in Marquette, which also offers cold and dry storage for producers.
- There are four commercial kitchens:
  - Café L'Anse (L'Anse)- currently hosts six independent food businesses
  - Escanaba Marketplace (Escanaba)
  - Les Chenaux Culinary (Hessel)
  - Woodland Kitchen Incubator (Aurora)
- There are **12 meat processors.**[13]
- There are **12 restaurants** that practice farm-to-table sourcing.

[12] New Venture Advisors, Local Food *MarketSizer®,* accessed September 20, 2021, https://toolsite.newventureadvisors.net.

[13] Only one of the twelve meat processors is a USDA certified processing facility. The other eleven are certified exempt meaning that producers who elect to process animals at these facilities can only sell meat within the state of Michigan and only via direct-to-consumer sales. Only USDA certified processing facilities allow producers to offer meat into wholesale or other institutional sales channels.

The USDA Food and Nutrition Services reports 94 grocery stores in 2015. Of these, 12 market fresh produce and local goods for purchase: Keweenaw Co-op Market (Hancock), Crystal Fresh Market (Crystal Falls), Lakeshore Depot (Marquette), Marquette Food Co-op (Marquette), Backwoods Farm Market (Rudyard, Brevort, and Hessel), Applecore General Store (Cedarville), Frozen Farms Co (Calumet), and Tadych's Market Place Foods (Houghton, Marquette, and Iron Mountain). In addition, there are three registered CSA operations and 30 seasonal farmers markets of which 12 accept SNAP/EBT benefits.

TABLE 15: U.P. LOCAL FOOD INFRASTRUCTURE

	Farmers markets	Farmers markets that accept SNAP	Grocery stores
Alger	3	1	6
Baraga	2	0	4
Chippewa	3	1	13
Delta	2	2	11
Dickinson	1	0	6
Gogebic	2	1	3
Houghton	4	2	8
Iron	0	0	3
Keweenaw	0	0	2
Luce	1	0	4
Mackinac	5	0	7
Marquette	2	2	14
Menominee	4	3	7
Ontonagon	0	0	3
Schoolcraft	1	0	3

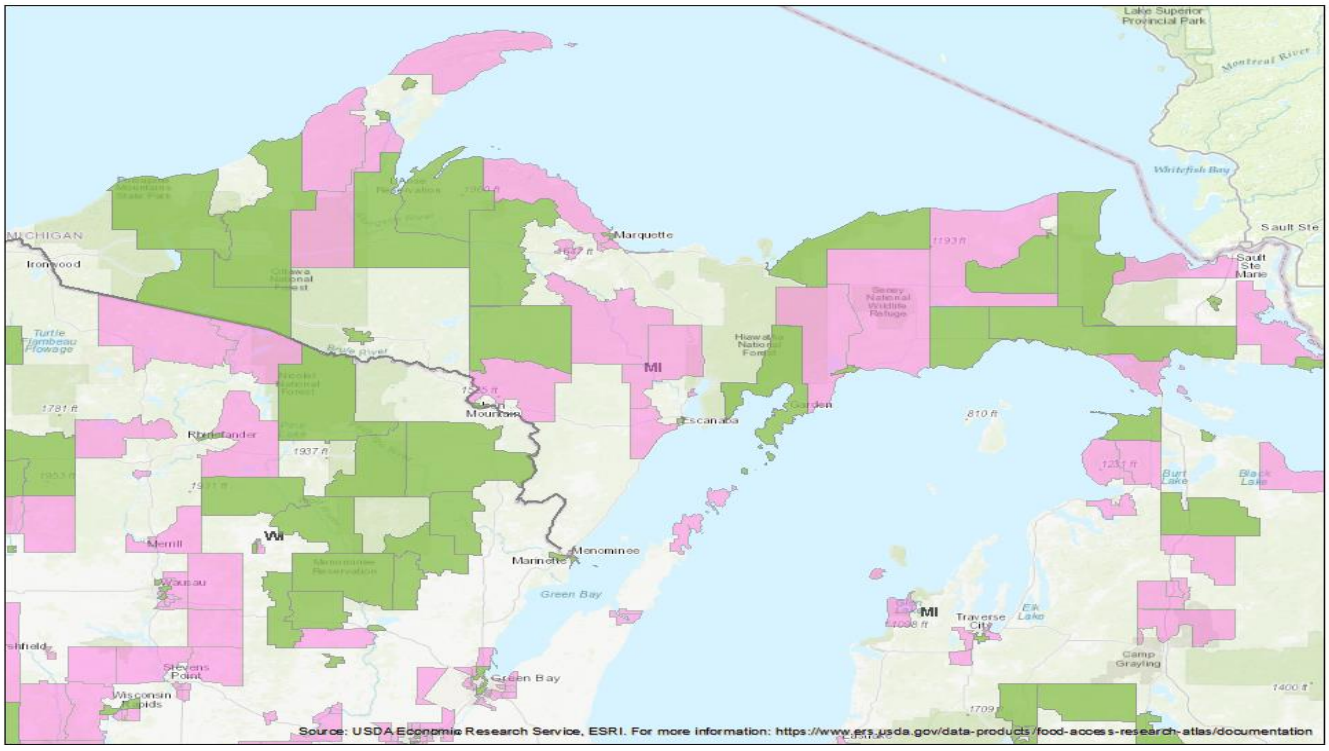
Food Access

Access to healthy food options is essential to healthy eating habits, which are, in turn, essential to good health. Food access is determined by three factors:

1. A consumer's ability to physically get to places where healthy foods are available for purchase
2. The affordability of healthy food options within a regional designation
3. The availability of assistance to ensure consumers have the means to purchase healthy food

Physical access is a challenge for most of the U.P. as illustrated in figure 2. The purple indicates low-access areas, and the green indicates low-access areas that also have high rates of low-income households. (Note: "Low access" refers to urban areas where the nearest grocery store is one or more miles away and in rural areas where the nearest grocery store is ten or more miles away).

FIGURE 2: LOW GROCERY STORE ACCESS, 2019[14]



Data from these counties show a need for more food at accessible prices. Compared to the state of Michigan, these counties have the following:

- Higher rates of food insecurity; Michigan state's food insecurity rate is 13 percent, while these counties have food insecurity rates of 14–18 percent.[15]
- A median household income below the state median household income of $59,234[16]
- On average, higher poverty rates than the state average of 12.9 percent[17]
- A higher ALICE rate than the state average of 25.1 percent. ALICE (Asset Limited, Income Constrained, Employed) is an indicator that demonstrates how many households not included in the poverty rate still have incomes that can't afford the actual costs of housing, childcare, food, health care, technology, and transportation.[18]

[14] USDA, Food Access Research Atlas, 2019, https://www.ers.usda.gov/data-products/food-access-research-atlas/go-to-the-atlas/.

[15] Feeding America, Map the Meal Gap, 2019, https://map.feedingamerica.org/county/2019/overall/michigan.

[16] American Community Survey, 2019.

[17] Ibid.

[18] Michigan Association of United Way, ALICE in Michigan, 2021, https://static1.squarespace.com/static/61802352224f2a00897ee6aa/t/61819452a89b867b55dd0444/1635882070587/2021ALICEReport_MI_FINAL-3-15-21.pdf.

TABLE 16: HOUSEHOLD HARDSHIPS

County	Median household income	% food insecurity rate, 2019	% poverty rate	% ALICE	% households enrolled in SNAP
Alger	$45,184	14.3	12.6	41.4	10.2
Baraga	$46,581	14.7	13.7	35.3	15.7
Chippewa	$50,454	17.0	18.4	28.6	15.1
Delta	$47,008	14.8	13.8	25.2	13
Dickinson	$51,704	13.6	9.9	28.1	12.1
Gogebic	$38,625	15.1	17.1	33.9	15.9
Houghton	$44,839	15.0	14.7	34.3	11.9
Iron	$44,183	14.4	13.7	32.3	10
Keweenaw	$51,750	12.3	10.3	24.7	8
Luce	$50,000	16.3	19.2	29.8	15.2
Mackinac	$50,058	17.9	14.1	27.9	11.7
Marquette	$54,585	13.9	11.8	22.2	10
Menominee	$48,548	13.9	13.5	32.5	10.5
Ontonagon	$41,776	15.1	13.4	37.6	10.8
Schoolcraft	$48,443	17.2	14.3	32.7	15.3

Food distribution is provided by Feeding America West Michigan at 62 partnering agencies and by a mobile market with stops in 14 different communities.

There are more than 80 schools participating in farm to school programs. Of these, 11 schools/districts receive 10 Cents a Meal funding, serving 8,852 children: Inter-Tribal Council of Michigan Head Start, Brimley Area Schools, Burt Township School District, Big Bay De Noc School District, Escanaba Area Public Schools, Gwinn Area Community Schools, Negaunee Public Schools, Ishpeming Public School District No. 1, Hancock Public Schools, Houghton-Portage Township School District, and Dollar Bay-Tamarack City Area K-12 School.

Local Food Initiatives

There are a few key initiatives within the state of Michigan that support purchasing and access to local food:

- **Michigan Good Food Charter**- a charter that outlines a sequence of steps to be taken over the next decade to move Michigan toward emphasizing local and regional food systems to enhance agriculture's contribution to the economy, protect the natural resource base, and improve the health of the citizens. The following key initiatives support the charter goals:
    - **Michigan Good Food Fund**- a statewide loan fund that invests in good food enterprises working to increase access to healthy food and spark economic opportunity in places that need it most
    - **10 Cents a Meal**- a state-funded program providing schools and early childhood education centers with match incentive funding up to ten cents per meal to purchase and serve Michigan-grown fruits, vegetables, and legumes
- **Neighborhood Grocery Training**- a training program to help neighborhood stores increase their healthy food inventory in a profitable way

There is a small but strong network of organizations and institutions working to improve food systems progress by offering training and educational programs (table 17).

TABLE 17: U.P. REGIONAL ORGANIZATIONS SUPPORTING FOOD SYSTEMS THROUGH FARMER EDUCATION AND TRAINING

Organization	Core focus
Michigan GroupGAP Network	A statewide collaborative food safety certification program, utilizing the USDA GroupGAP framework; administered by the Michigan Food and Farming Systems
Bay College (Escanaba)	Associate agriculture program (associated with MSU)—develops career-ready graduates with a solid background in plant and soil science, precision agriculture, water management, plant pathology and business management
MSU U.P. Research and Extension Center (Chatham)	The North Farm is an incubator farm specializing in diversified organic vegetable production, research, education, and outreach for northern latitude climates; the Farm Business Incubator is a residential program that provides agriculture entrepreneurs with tools and technical assistance to build a solid foundation for their farm business
Northern Michigan University (Marquette)	Indoor agriculture associate degree—adaptation of indoor, urban farming models to northern climates in multiple structure and building types to provide fresh, local food sourcing year-round highlights

U.P. Value Chain (Logistics and Distribution Assets)

The U.P. supports several institutional and commercial assets that could contribute to infrastructure (i.e., offering storage, holding, or drop-off locations for regional producers or network stakeholders) within a regional distribution network model. In the expanded scope, these assets were identified based on public records, desktop research, and outreach to produce a comprehensive listing used for mapping.

TABLE 18: U.P. NETWORK ASSETS (MAPPING DATA)[19]

Name	Address	Latitude	Longitude	Type of facility
Commercial kitchens				
Cafe L'Anse	104 N. Main St., L'Anse, MI 49946	46.75875	-88.45369	Commercial kitchen
Escanaba Marketplace Kitchen	1025 Ludington St., Escanaba, MI 49829	45.7453331	-87.0623144	Commercial kitchen
Les Chenaux Culinary	186 S. Pickford Ave., Hessel, MI 49745	46.0038264	-84.4261082	Commercial kitchen
Woodland Kitchen Incubator	2030 Calvary Dr., Aurora, WI 54151	45.7855125	-88.1142559	Commercial kitchen

[19] The table in the data reflects primarily businesses located within the geographic area of the Upper Penninsula of Michigan. However, a couple of sites that were interviewed or interacted in the project area listed from outside of this specific area.

Name	Address	Latitude	Longitude	Type of facility
Distribution Center				
Dina Mia Kitchens	751 N. 4th Ave., Iron River, MI 49935	46.0951966	-88.6428313	Distribution center
Dobber's Pasties	827 N. Lincoln Rd., Escanaba, MI 49829	45.7559791	-87.0776811	Distribution center
Northland Foods and Distribution	5045 S. Pond Rd., Poplar, WI 54864	46.581998	-91.7934019	Distribution center
Nylund Food	1 E. Superior Ave., Crystal Falls, MI 49920	46.0965156	-88.3220596	Distribution center
Spiessels	Ishpeming, MI 49849	46.48672	-87.7171	Distribution center
Vollwerth	200 Hancock St., Hancock, MI 49930	47.1258495	-88.5808716	Distribution center
Potential Institutional Buyer				
Aspirus Ontonagon Hospital	601 S. 7th St., Ontonagon, MI 49953	46.8658435	-89.3003762	Potential institutional buyer
Aspirus Iron River Hospital	1400 W. Ice Lake Rd., Iron River, MI 49935	46.0997441	-88.6192244	Potential institutional buyer
Aspirus Ironwood Hospital	N10561 Grand View Ln., Ironwood, MI 49938	46.4782836	-90.1057372	Potential institutional buyer
Aspirus Keweenaw Hospital	205 Osceola St., Laurium, MI 49913	47.2387168	-88.4435429	Potential institutional buyer
Baraga County Memorial Hospital	770 N. Main St., L'Anse, Michigan 49946	46.7644802	-88.4471345	Potential institutional buyer
Bay University	2001 N. Lincoln Rd., Escanaba, MI 49829	45.7721784	-87.0855405	Potential institutional buyer
Dickinson County Hospital	1721 S. Stephenson Ave., Iron Mountain, MI 49801	45.8098407	-88.0445283	Potential institutional buyer
Gogebic Community College	E4946 Jackson Rd., Ironwood, MI 49938	46.472624	-90.16465	Potential institutional buyer
Helen Newberry Joy Hospital	502 W. Harrie, Newberry, MI 49868	46.352993	-85.5156071	Potential institutional buyer
Iron Mountain VA Hospital	325 E. "H" St., Iron Mountain, MI 49801	45.8101762	-88.061768	Potential institutional buyer
Lake Superior State University	650 W Easterday Ave., Sault Ste. Marie, MI 49783	46.4913627	-84.3641769	Potential institutional buyer
Michigan Tech	1400 Townsend Dr., Houghton, MI 49931	47.1196551	-88.5482234	Potential institutional buyer
Munsing Memorial Hospital	1500 Sand Point Rd., Munising, MI 49862	46.4247984	-86.625081	Potential institutional buyer
MyMichigan Medical Center Sault	500 Osborn Blvd., Sault Ste. Marie, MI 49783	46.4976778	-84.3494632	Potential institutional buyer
NMU	1401 Presque Isle, Marquette, MI 49855-5301	46.5602934	-87.3937784	Potential institutional buyer
OSF St Francis	3401 Ludington St., Escanaba, MI 49829	45.7426626	-87.0963393	Potential institutional buyer
Schoolcraft Memorial Hospital	7870W U.S. Rte. 2, Manistique, MI 49854	45.9465805	-86.2760938	Potential institutional buyer
UP Health System-Bell	901 Lakeshore Dr., Ishpeming, MI 49849	46.5047802	-87.6845552	Potential institutional buyer
UP Health System-Marquette	850 W. Baraga Ave., Marquette, MI 49855	46.543763	-87.409801	Potential institutional buyer
UP Health System-Portage	500 Campus Dr., Hancock, MI 49930	47.1400313	-88.5869261	Potential institutional buyer
Retail/Grocery				
Backwoods Farm Market	E1151 M-134, Hessel, MI 49745	46.0566948	-84.678705	Retail/grocery
Backwoods Farm Market	9707 M-48, Rudyard, MI 49780	46.2300729	-84.5654837	Retail/grocery

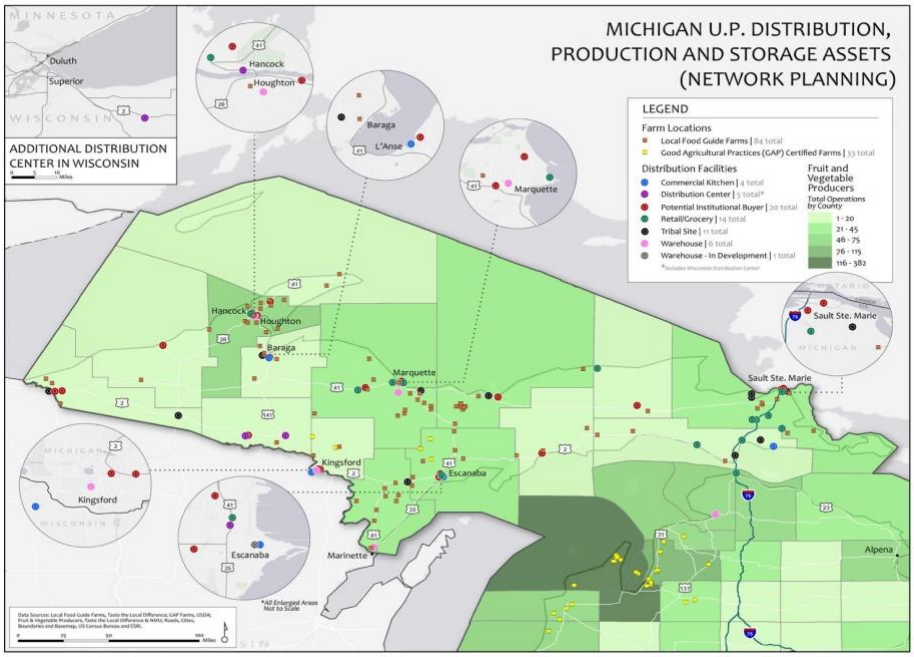
Name	Address	Latitude	Longitude	Type of facility
Retail (cont)				
Backwoods Farm Market	4485 US Hwy 2, Moran, MI 49760	46.0191031	-85.0391195	Retail/grocery
Gordon Foods	3480 US Hwy 41, Marquette, MI 49855	46.5499648	-87.4683276	Retail/grocery
Gordon Foods	3195 Interstate 75 Business Spur, Sault Ste. Marie, MI 49783	46.4710667	-84.3609759	Retail/grocery
Gordon Foods	1126 N Lincoln Rd., Escanaba, MI 49829	45.7602077	-87.0764061	Retail/grocery
Grand Marais Food Co-op	22595 Grand Marais Truck Trail, Grand Marais, MI 49839	46.6686449	-85.8348999	Retail/grocery
Keweenaw Co-op Market	1035 Ethel Ave, Hancock, MI 49930	47.133655	-88.5995165	Retail/grocery
Kinross Coop Food Pride	16829 S. Watertower Dr., Kincheloe, MI 49788	46.2673716	-84.4675708	Retail/grocery
Lakeshore Depot	560 Fern Pl., Marquette, MI 49855	46.5478838	-87.380786	Retail/grocery
Marquette Food Co-op/ UP Exchange	502 W. Washington St., Marquette, MI 49855	46.545034	-87.402735	Retail/grocery
Minogin Market	229 S. Huron Ave., Mackinaw City, MI 49701	45.7793937	-84.7250356	Retail/grocery
Pickford Cood Food Pride	130 S. Pleasant St., Pickford, MI 49774	46.1564396	-84.3603346	Retail/grocery
Rudyard Coop	11312 S. Main St., Rudyard, MI 49780	46.2326337	-84.5972988	Retail/grocery
Tribal Site				
Bay Mills Resort & Casinos	11386 W. Lakeshore Dr., Brimley, MI 49715	46.4221558	-84.602477	Tribal site
Island Resort and Casino	Harris, MI 49845	45.7028791	-87.3490853	Tribal site
Kewadin Casino Christmas	N7761 Candy Cane Ln., Christmas, MI 49862	46.4368869	-86.7015468	Tribal site
Kewadin Casino Hessel	Hessel, MI 49745	46.0594259	-84.531133	Tribal site
Kewadin Casino Manistique	5633 W. US Hwy 2, Manistique, MI 49854	46.474604	-90.211797	Tribal site
Kewadin Casino Sault Ste. Marie	2186 Shunk Rd., Sault Ste. Marie, MI 49783	46.4759107	-84.3234822	Tribal site
Kewadin Casino St. Ignace	3015 Mackinac Trail, St. Ignace, MI 49781	45.9291454	-84.7330355	Tribal site
Kings Club Casino	12140 W. Lakeshore Dr., Brimley, MI 49715	46.4521391	-84.6019599	Tribal site
Northern Waters Casion	Watersmeet, MI 49969	46.2679475	-89.1783221	Tribal site
Ojibwa Casino-Baraga	16449 Michigan Ave., Baraga, MI 49908-9209	46.7804067	-88.5077026	Tribal site
Ojibwa Casino-Marquette	105 Acre Trail, Marquette, MI 49855	46.4790285	-87.2427292	Tribal site
Warehouse				
Dickinson-Iron Community Service Agency	611 N Hooper St., Kingsford, MI 49802	45.8004793	-88.0759368	Warehouse

Name	Address	Latitude	Longitude	Type of facility
Warehouse (cont.)				
Great Lakes Foods[20]	1230 48th Ave., Menominee, MI 49858	45.1460037	-87.6165172	Warehouse
Manna Food Project	8791 McBride Park Ct., Harbor Springs, MI 49740	45.4245527	-84.8911118	Warehouse
Reinhardt Foodservices	881 Co. Rd. 480, Marquette, MI 49855	46.4637565	-87.4220129	Warehouse
Western UP Food Bank	310 E. Sharon Ave., Houghton, MI 49931	47.1127682	-88.569676	Warehouse
Warehouse- In Development				
Future UPCAP Site	Escanaba, MI 49829	45.7452466	-87.0645801	Warehouse-in-development

The identified sites were mapped across the Upper Peninsula to demonstrate the distribution of potential network partners across the geographic areas (figure 3).[21] The goal of the expanded distribution research and mapping exercise was to determine and illustrate the following:

1. Whether the U.P. supports enough potential buyers, distributors, and infrastructure sites to support a potential network model with or without the proposed food hub infrastructure
2. The geographic spread of existing potential buyer and stakeholder sites and whether the sites represent all major areas of the U.P. that would need to be transited via a network model
3. Where existing assets are grouped in relation to primary growing areas to help provide solution models for producers accessing markets and sales channels supported by the network model

FIGURE 3: MICHIGAN U.P. DISTRIBUTION, PRODUCTION, AND STORAGE ASSET MAP FOR NETWORK PLANNING



[20] Great Lakes Foods was purchased by SpartanNash in January of 2023 following its initial identification and inclusion in the project.

[21] A full size version of the map (figure 3) is included in the presentation slides and appendix documents.

Primary Research Plan and Results

Primary Research Overview

Primary research was conducted through interviews and surveys for targeted stakeholder groups between February 2022 and July 2022. Key research questions were designed to validate potential components of a food hub warehouse facility located in Marquette County or Algier County in the U.P. and to identify existing opportunities to improve the regional distribution landscape.

NVA worked with the study group to define the key research questions to guide the development of surveys and interview guides (see research plan in the attached appendix materials) and ensure project goals were being met. The research focused on several key components:

- Defining needs for the proposed facility infrastructure, including a food hub (aggregation space), warehouse space, storage spaces (dry, cold, frozen), a processing kitchen space for fruit/vegetable processing, and a possible space for value-added processing by outside users (producers or small businesses)
- Determining interest in and resources needed by producers and system stakeholders to support better local foods distribution
- Determining interest in and resources needed by producers and system stakeholders to support local foods for regional food access needs and organizations
- Determining interest in food processing, value-add (season extension) cooking or production, or small foods manufacturing space (as either a self-access model or service model)
- Determining interest in programming/classroom space for business incubation, skills training, and related offerings for small businesses, producers, or community members

Stakeholder groups surveyed and interviewed included farmers and producers, food buyers (institutional and wholesale), potential kitchen users, small businesses, and key regional food system stakeholders.

Collaborative Michigan Survey Scope

The primary project partners for this feasibility study also agreed to collaborate with two other research scopes underway in the state of Michigan by sharing data across a state-wide survey for producers and farmers. The following were objectives of the collaborative scope:

- Unifying outreach efforts directed at farmers and producers in the state as several outreach regions overlapped so that farmers and producers would not receive multiple requests for interview and survey participation but one unified request for their time and input
- Identifying opportunities to share information across projects in relation to overlapping interest in regional distribution networks, proposed infrastructure assets, and producer/farmer interest in both
- Identifying opportunities where proposed infrastructure or network models could benefit from collaboration or prevent the duplication of new development or offerings to common communities
- Creating a more comprehensive map of the nature and supply of unprocessed and processed local foods across the state

Three projects were included in the collaborating Michigan research (table 19). A shared Michigan Farmer Survey was distributed throughout the state, and the projects shared access to buyers and stakeholders involved in distribution and logistics networks for surveys and interviews.

TABLE 19: MICHIGAN COLLABORATIVE RESEARCH PROJECTS

Project	Project geographic focus	Project objective (shared)
Eastern Market Corporation (EMC)	Detroit metro area	The business case for expansion of fresh cut and frozen processing capacity, adding a public wholesale market and bringing a regional or national distributor to the market based in Detroit, MI (but with state-wide inputs)
Food Bank of Eastern Michigan (FBEM) and Feeding America West Michigan (FAWM)	Northern Michigan counties and U.P.	Feasibility study for a shared warehouse and resource center along I-75 in Gaylord to increase distribution through their nonprofit partner agencies in the U.P. and northern lower peninsula
NMU and Partners	U.P.	Feasibility study to determine the type of infrastructure in the U.P. that will increase sales and accessibility of locally produced raw farm products and value-added foods and decrease costs through charitable distribution networks

Methodology (Interviews and Survey Tools)

Interviews were conducted by phone between March 2022 and June 2022 by NVA and the interview team comprising project leads. The project partners worked with NVA to generate a list of regional food buyers (8), farmers and producers (11), local food businesses or organizations (4), regional system stakeholders (7), and regional network stakeholders (9) to be interviewed for the study. In total, 39 interviews were conducted (table 19). Recommendations were based on a desire to gain perspectives from these groups and insight into their needs and challenges. NVA designed tailored interview guides for each audience (found in the appendix materials). Interviewees were compensated for their time and input with a gift card provided for by the grant funding.

TABLE 20: INTERVIEWS BY CATEGORY

First name	Last name	Title	Organization
Buyers (8)			
Calvin	Atwell	Food System Director	Ishpeming & Neganuee Schools-Chartwells
Derek	Estes	NMU Northern Center Events Catering	Northern Michigan University
Kathy	Gischia	NMU Dining Services	Northern Michigan University
Alden	Griffus	Executive Chef	Northern Michigan University

First name	Last name	Title	Organization
Bri	Larson	Produce Buyer	Marquette Food Co-op
Alex	Palzewicz	Event Coordinator	Barrel+Beam
Tammy	Rosa	Nutrition Program Manager	UPCAP
Toni	Whaley	Owner	Grand Marais Food Co-op
Farmers/Producers (11)			
Laura	Brosius	Owner/Operator	Full Plate Farm
Sarah	Goodman	North Farm Coordinator	MSU-UPREC
Jeff	Hatfield	Farmer	Seeds and Spores Family Farm
Tensi	Parsens	Owner/Operator	Little Parsley Farm
Lester	Perkins	Owner/Operator	Swanzy Farm
Trevor	Case	Owner/Operator	Case Country Farm
Dave	Dziedzic	Owner/Operator	Snowy Acres Veg Farm
Kat	Jacques	Farm Manager	Waishkey Bay Farm
Greg	Zimmerman	Owner/Operator	Ski Country Farm
Chad	Kottke	Owner/Operator	UP Gourmet
Ashley	TenHarmsel	Owner/Operator	North Harvest CSA
Food Businesses or Food Business Organizations (4)			
Matt	Beardsley	Owner/Operator	231 West
Sloan	Dorr	Owner/Operator	Misery Bay Coffee
Kimball	Joan	Executive Director	Food Start UP
Arthur	Lyons	Owner/Operator	Skinny Pete's Bakery
System/Regional Stakeholders (7)			
Phil	Britton	Chief Ruckus Maker	Fresh Systems LLC
Mike	Hainstock	Owner/Operator	Lakeshore Depot

First name	Last name	Title	Organization
Joseph	Jones	Director of Strategic Initiatives & Partnerships	Feeding America West Michigan
Rachael	Pressley	Regional Planner	Western U.P. Planning & Development Region (WUPPDR)
Evan	Smith	Consultant	Alden Services (used to work for Cherry Capital)
Bill & Payne	Steinhardt	Owner/Operator	Cafe L'Anse
Landen	Tetil	Produce Safety Technician	Marquette Conservation District
Distribution/Logistics – Regional Network Stakeholders (9)			
Heather	Ratliff	Sales Manager	Cherry Capital foods
Michael	Lahti	CEO	Tamarack Holdings
Joseph	Jones	Director of Strategic Initiatives and Partnerships	FAWM
Multiple[22]		Regional Sales/Territory Manager	Gordon Food Service
Multiple		Distribution/Logistics Manager	Sysco Food Service
Multiple		Procurement Manager	Van Eerden
Ben	Hayes	Account Rep	PFGC (formerly Reinhart)
Bryan	Wickstrom	Director of Operations	Great Lakes Food
Evan	Lucas	Assistant Professor - Indoor Agriculture	NMU

Three surveys—the Michigan Farmer Survey (state-wide), one for small food businesses, and one for buyers—were launched in May 2022 and remained open through June 2022. Surveys were distributed by project leads (as well as collaborative project partners for the Michigan Farmer Survey[23]) and NVA through social media, email outreach, listservs, local government agencies, and other channels.

[22] A few key interviewees were contacts supplied by the collaborative project partners and kept confidential to those projects. Questions and responses specific to this study were itemized in the findings and discussed below.

[23] The Michigan Farmer Survey was distributed to over 100 contacts via the three primary project teams to be pushed out further to producers and farmers throughout the state.

TABLE 21: SURVEY RESPONSES SUMMARY (THREE SURVEYS)

Farmer Survey (UP ONLY)		Small Business Survey	Food Buyer Survey
54 total respondents[24]		**16 total respondents**	**5 total respondents**
36 Veg 30 Fruit 27 Meat 24 Eggs 18 Herbs 11 Value-added	10 Legumes 10 Flowers/ ornamentals 9 Grains 9 Processed f/v 6 Dairy	3 Baked goods 3 Packaged goods (CPG) 2 Value-added products 2 Beverage 2 Small food manufacturers 1 USDA processed meat 1 Restaurant 1 Commercial fish 1 Grocery store	2 Restaurant/cafe/food truck 1 Grocery (independent or specialty) 1 Institution (college) 1 Institution — K–12 school

The Michigan Farmer Survey results were sorted according to regional identification (a response that survey respondents self-selected) cross referenced with their regional ZIP Codes to identify and count those survey responses that came from farmers within the study region (the counties of the U.P.).[25]

Methodology (Network Analysis)

In addition to the secondary analysis initially performed to address the distribution landscape of the U.P., the modified scope included interviews, follow-up interviews, and case studies to evaluate the efficacy of a network or regional logistics model as a part of the project. Research identified three potential network models in practice or in development within the continental United States. Interviews were scheduled with representatives from various roles within those networks, as well as regional organizations supporting the development or execution of those models.

Eleven additional interviews were conducted with network model case studies, and six follow-up interviews were conducted with regional stakeholders (network or distribution focus) in the additional scope between September 2022 and November 2022 (table 22). The full case studies reviewed with the project team are included in the appendix documents.

[24] Survey respondents were able to identify in more than one category, so identifiers will not add up to total respondent count.

[25] It was agreed by study leads that all respondents using a U.P. county ZIP Code as an answer to question 2 would be included in final tallies. All respondents who self-identified as U.P. in question 1 but did not provide a matching ZIP Code (in question 2) were eliminated from this data analysis (but remain in the raw data stack). All respondents who did not identify but provided a U.P. county ZIP Code were included.

TABLE 22: ADDITIONAL DISTRIBUTION/NETWORK INTERVIEWS

Network system	Interview contact	Organization/role
WI Food Hub Co-op: Transport Network	Tara Roberts-Turner	General Manager
WI Food Hub Co-op: Transport Network	Michelle Miller	UW Center for Integrated Ag Systems, Researcher
Iowa Regional Transport Network	Peter Kraus	Iowa Food Hub, General Manager
Iowa Regional Transport Network	Caroline Krejci	Univ. of Iowa/The University of TX Arlington, Researcher[26]
Colorado Local Food Hub Network	Nick Chambers	Valley Roots Food Hub, General Manager
Northwest Food Hub Network	Elliott Smith	Kitchen Sync Strategies, Principal
Northwest Food Hub Network	Charlie Michel	Network Manager
Eastern Food Hub Collaborative	Will Gray	Managing Director
Eastern Food Hub Collaborative	Tania Taranovski	Farm to Institution New England, Director of Programs
Eastern Food Hub Collaborative	Jesse Rye	Farm Fresh Rhode Island, Co-Executive Director
Eastern Food Hub Collaborative	Katelyn Porter	NH Food Hub Network, Project Manager

Primary Research Findings

The following sections analyze survey and interview results and highlight key insights and findings impacting the proposed food hub facility and network model. All supporting materials from the primary research tools – including the full Michigan Farmer Survey results, analyzed results, interview guides, and related documents – are included in the appendix documents.

Interviews: Results and Analysis

Interviews: Farmers and Producers – Demographics and Key Insights

Eleven total farmers and producers growing or raising animals in the U.P. were interviewed. The interviewees predominantly represented vegetable (row crop farmers) with five farmers identifying as specialty or animal agricultural. All producers noted that they grow during the primary growing season (April–October) with four farmers noting season extension methods or infrastructure to support growing during the shoulder seasons. All

[26] The researcher conducted the research and helped to spearhead the project development while a research professor associated with the University of Iowa. She currently holds a position at the University of Texas at Arlington and continues to carry out research focused on logistics, agricultural systems, and technology innovation.

interviewees practice some sort of sales season extension to be able to sell during at least ten months of the year.

- A majority of producers interviewed are interested in the hub as a point for aggregation, distribution, and potential logistics solutions.
- Farmers are evenly split on interest in processing and value-add services, with a small minority interested in value-add (especially to extend the season during the glut of summer crops).
- Farmers are evenly split on interest in value-add production on their own (access) or paid for as a service provided by the hub or facility.
- Farmers do not see high value in additional programs or classes (these are offered regionally by other organizations such as MSU).
- Farmers are willing to negotiate price and reasonable wholesale percentage mark-downs; they are also interested in supporting local foods into food access networks and willing to negotiate on bulk pricing to support these efforts.
- Input on the best site for the proposed facility was varied, but Marquette or near Marquette are top suggestions.

Interviews: Small Businesses and Food Business Organizations – Demographics and Key Insights

Three small business owners and one food business organization were interviewed, with two bakeries and one coffee roaster/coffee store represented in the businesses. All businesses were younger than three years old and self-identified as being in the scaling or growth phase of their business. The organization is a regional nonprofit supporting scale, growth, and incubation for small food manufacturers and operators.

- Small businesses (very limited sample size) are interested in using the food hub to increase sales opportunities (aggregation, distribution) beyond their DTC[27] current channels and offerings.
- There is minimal interest in access to a kitchen or production space—all interviewees currently have space to support their operations.
- There is an opportunity to partner with Food Start U.P., but there are some competitive aspects that will need to be navigated through further conversations.

Interviews: Food Buyers – Demographics and Key Insights

Eight interviews were conducted with buyers of local produce or products, representing mostly institutional and retail/grocery within the region. The group comprised four food service or institutional buyers, one feeding program or food access organization, one event/retail space, and two grocery or co-op buyers. The product mix that interviewees identified as currently being sourced or being of most interest included local meats, seasonal local vegetables, local dairy, local grains, and local DTC products (beverages, snack items, or lightly processed products). A majority of the buyers were purchasing directly from producers or regional manufacturers for their products, with the rest sourcing from UPFE or a regional distributor.

- Demand exists for local products, and buyers are interested in a hub helping to create a "one-stop-shop" for local options in the U.P., with demand highest for specific vegetables, local meat options, and CPG or locally produced snack options for retail sales.

[27] DTC stands for direct-to-consumer and generally applies to food businesses selling product directly to consumers via brick-and-mortar retail locations, markets, or online marketplaces.

- Price sensitivity and volume concerns are the two biggest obstacles (especially for institutional buyers) in purchasing local products.
- All interviewees noted that distribution—getting products from regional distributors, deliveries on a consistent or regular basis, and challenges faced by producers in getting their local products to distributors or local markets—is a key element that needs to be addressed before additional infrastructure will be a solution.
- Most interviewed buyers have minimal requirements for working with local producers (food safety, packaging, volume, and scheduling were all mentioned).

Interviews: Regional System Stakeholders – Demographics and Key Insights

Seven total interviews were conducted with regional stakeholders who represented food system consultants, a grocery/distribution hub, government offices, regional systems offices, and a café/retail space (and local shared kitchen space). Interviews with stakeholders focused on their assessment of the local food system to identify both opportunities (priorities for the outcome of this project) and constraints. Distribution was a key topic of these conversations, as well as the limits the widespread regional geography places on the evolution of a coordinated value chain.

- Stakeholders present multiple opportunities to partners or to engage expertise once the facility is in development.
- Stakeholders are interested in supporting logistics or distribution network systems if they can be developed, as this was identified as a major constraint on the region.
- Interviewees stressed that the project needs to prioritize farmer needs, distribution, and economic viability among the multitude of challenges facing the U.P. and ag producers.
- Stakeholders see a collaborative solution – involving all facets of the local food system – will be required to support producer growth and food access solutions for the U.P.

Surveys: Results and Analysis

The following sections discuss each of the surveys and key insights gleaned from the responses. The full survey tables and data are included in the appendix documents.

Buyer Survey Demographics and Results

Buyer survey responses were limited, with only five complete submissions. The responses came from independent and specialty grocers, restaurants, a deli/brewer, and one K–12 school. The buyers purchase mostly whole, fresh produce (approximately $21,000 annually), followed by meat/poultry/eggs (approximately $27,000 annually), and processed produce (approximately $19,000 annually).

TABLE 23: BUYER ANNUAL SPEND BY CATEGORY

Approximate annual spend ($)	0–$20,000	Over $20,000	Total	Average
Whole, fresh produce (vegetables, fruit, berries)	3	2	$ 107,000	$ 21,400
Processed produce (fresh cut, washed, frozen, etc.)	3	2	$ 93,000	$ 18,600

Approximate annual spend ($)	0–$20,000	Over $20,000	Total	Average
Meat, poultry, eggs	2	3	$ 134,000	$ 26,800
Milk/dairy	4	1	$ 57,000	$ 11,400
Baked goods/bread	5	0	$ 15,500	$ 3,100
Seafood	5	0	$ 18,100	$ 3,620
Specialty products (sauces, honey, syrup, beverages, jams, etc.)	3	2	$ 76,000	$ 15,200
Total Respondents	**5**			

Buyers indicated that they are willing to pay a premium for locally grown (label) products,[28] followed by organics and non-GMO. The primary challenges that buyers face in sourcing locally grown products are

- **Volume and availability –** not able to consistently provide product
- **Timing -** seasonality does not align with consumer demand
- **Pricing** - product is too expensive
- **Effort -** too much effort required to find and source local
- **Traceability -** suppliers can't meet traceability requirements

Three out of four buyers interviewed said that they would support a regional food hub assuming that it would support greater product availability and offer a "one stop shop" for items to be purchased (aggregating local offerings in one centralized sales channel).

TABLE 24: FOOD HUB OFFERINGS PRIORITIZED BY BUYERS

Top services a food hub could provide	Count
Delivers orders directly to my facility/business	3
Has an online ordering system	3
Offers fresh cut or minimally processed local produce	2
Offers local proteins	2
Offers local dairy products	2
Offers frozen local produce	1
Offers local grains	1
Offers consistent, year-round supply of the items we use most	1

The survey respondents are currently purchasing from a mixture of sources and are price sensitive. When asked if they would pay a premium for local products, responses were mixed across all elected answers (yes, no, should match pricing for non-local products). Survey respondents are sourcing from all channels for local products.

[28] "Local" is defined by respondents as grown/processed within a radius of 150 miles or grown/processed in the U.P.

TABLE 25: BUYER SOURCES FOR LOCAL PRODUCTS

Primary suppliers	Count
Farmers	3
Broad line distributor	3
Food hub or agricultural cooperative	3
Specialty or local distributor	2
Farmers markets	2
Retailers (i.e., other grocery stores)	0
Total respondents	**4**

Food Business Survey Demographics and Results

Fifteen local food businesses responded to the survey, representing a mix of local makers and small food manufacturers or retailers. Most were currently operating a licensed business and producing within their own or a locally licensed commercial facility.

TABLE 26: TYPES OF FOOD BUSINESSES RESPONDING TO SURVEY

Type of food business	Count
Baked goods	3
Specialty packaged products (i.e., jams, pickles, pasta, sausage, granola, etc.)	3
Farmer processing crops for value-added products (i.e., jams, pickles, salsas, canned goods, grains, etc.)	1
Beverage (including beer/wine/spirits)	2
Small food manufacturing	2
USDA processed meat by the cut	1
Restaurant	1
Commercial fish, value added products wholesale/retail	1
Grocery store	1
Total respondents	**15**

TABLE 27: DUAL SURVEY TABLE (LICENSES / PRODUCTION LOCATIONS)

License Types for Small Food Businesses

Operation	Count
Operate a licensed food business	10
Operate a food business, not licensed	4
Ready to launch a food business	1
Total respondents	**15**

Production Locations for Small Food Businesses

Production location	Count
A commercial kitchen	10
At home	3
At my farm	3
Other[29]	**4**

[29] "Other" write-ins included a USDA processing facility, a commercial processing facility, and an MDARD licensed facility – which could all apply to a commercial kitchen or related facility.

Interest in the food hub was minimal in surveyed food businesses, with only four respondents expressing high interest. Of those noting interest, storage and space for baking and small batch production ranked highest.

A majority of those responding to the survey indicated they already have production or commercial kitchen access, thus a hub would not be beneficial. However, 10 of the 15 respondents expressed interest in selling via the food hub or getting assistance with new sales channels or distribution options. Products that respondents were interested in selling through the food hub varied and included a variety of CPG products[30] and value-add products produced from local crops.

TABLE 28: RANKED SERVICES OF INTEREST FROM THE PROPOSED FOOD HUB

Top services a food hub can offer	Count	%
Diversifying my sales outlets	8	53%
Enabling me to spend less time on sales and marketing	5	33%
Enabling me to spend less time on paperwork for certifications, state specifications, and regulations	6	40%
Distribution support	5	33%
Identifying markets for surplus product and/or seconds	4	27%
Providing me with large volume sales outlets	3	20%
Helping me mitigate risk, knowing that other businesses will supplement my supply if needed	2	13%
Total respondents	**15**	

Michigan Farmer Survey Demographics and Results

The Michigan Farmer Survey received 176 total responses, with 54 responses matching to 13 U.P. ZIP Codes. The responding majority were experienced, predominantly White, male farmers ranging from 30 to 69 years old.

TABLE 29: MI FARMER SURVEY RESPONDENT DEMOGRAPHIC RESPONSES

Ethnicity	Count
White	40
Black or African American	1
Hispanic, Latino, or Spanish origin	3
Prefer not to answer	2
American Indian or Alaska Native	2
Biracial	1
Native Hawaiian or Pacific Islander	0
Total respondents	**49**

Years Farming	Count
0–5	9
6–10	14
11–20	12
21+	**19**

Gender identification	Count
Male	30
Female	15
Prefer not to answer	4
Non-binary	0
Total respondents	**49**

[30] CPG stands for consumer-packaged goods.

Most farmer respondents were vegetable and fruit producers; there was also strong representation from meat producers. Flowers and ornamental crop farmers reported high volumes (larger scale). A majority of vegetable farms are very small, farming under an acre or under four acres of produce.

TABLE 30: RESPONDENT PRODUCTION CROPS AND VOLUMES

Current production volume	Count	Total pounds
Vegetables (lbs.)	36	66,610
Fruits (lbs.)	30	126,770
Meat (beef, pork, lamb, poultry) (lbs.)	27	172,800
Eggs (doz.)	24	27,565
Herbs (lbs.)	18	2,961
Value-added products (cases, pallets, jars, lbs., etc.)	11	3,250
Legumes (lbs.)	10	10,260
Flowers/Ornamental Crops	10	201,020
Grains (bushels or lbs.)	9	66,650
Processed fruits and vegetables (frozen, chopped, etc.)	9	12,200
Dairy (milk, cheese, other) (gals., lbs.)	6	7,515,500
Total Respondents	**54**	

Top business challenges include weather, adequate meat processing facilities, storage capacity, and access to capital and land. Crop processing, financial, and management skills were of lowest priority.

TABLE 31: PRIORITIZED (TOP) CHALLENGES FACING PRODUCERS

Challenge	Count	%
Weather—i.e., extreme events such as flood, drought, tornados, or seasonal changes	19	35%
Adequate slaughter and meat processing facilities	17	31%
Storage capacity (cold, frozen)	16	30%
Access to capital or knowledge of government grants/programs	14	26%
Availability/cost of suitable land	13	24%
Availability/cost of labor	12	22%
Customer knowledge/awareness of local food production	10	19%
Production equipment (tilling, planting, weeding, harvesting)	10	19%
Fair pricing	8	15%
Time and effort required for meeting food safety standards, including FSMA and GAP certification	7	13%
Equipment for post-harvest handling (grading, cooling, washing, packing)	7	13%

Challenge	Count	%
Delivery or shipping costs/logistics	7	13%
Difficulties finding and/or negotiating with buyers	5	9%
Other (please specify)	5	9%
Crop processing capacity	4	7%
Financial management and/or record-keeping	3	6%
Management skill to run a larger operation	1	2%
Total Respondents	**54**	

Interest in the food hub was high, with most farmers interested in selling through the food hub; 61 percent said they were extremely interested or interested, and 31 percent remain undecided, meaning there could be an opportunity to further educate farmers about the value and possibilities of the hub. Only 4 growers out of 54 said they were not interested. When asked what appeals most about working with a food hub, 80 percent of farmer respondents (40) cite increased demand and access to customers. Other unaided responses included distribution, pricing, reliable sales, food access, and networking.

TABLE 32: REASONS/INTEREST AREAS FOR PROPOSED FOOD HUB

What appeals most about food hub?	Count	%
Increased demand	40	80%
Distribution	8	16%
Better prices	7	14%
Fixed sales channel	7	14%
Increase community food access	7	14%
Networking & collaboration	7	14%
Easier transactions	3	6%
More opportunities	3	6%
Better local food education	2	4%
Reduce waste	2	4%
Freezer space	1	2%
Government support	1	2%
Greater buyer convenience	1	2%
Less investment	1	2%
More efficient business	1	2%
Total respondents	**50**	

Distribution is a top cited service for farmers, with 59 percent (27) of respondents selecting “pick-up and distribution service” as the number one service. Also top of mind for farmers is an online marketplace where buyers can purchase products (39%), business/entrepreneur training (24%), and bulk purchasing of packaging (24%). Flash freezing, contract manufacturing, vegetable processing, and access to a kitchen were the least requested services.

TABLE 33: INTEREST IN SERVICES FROM PROPOSED FOOD HUB

Top services a food hub could provide	Count	%
Pick-up and distribution service	27	59%
An online marketplace where buyers can view/purchase my products	18	39%
Bulk purchasing of packaging, boxes, containers	11	24%
Business/entrepreneur training	11	24%
Food safety training	9	20%
Cold or frozen storage service	8	17%
Quick cooling service to remove field heat	6	13%
Coordinates preseason crop planning between buyers and producers	6	13%
Wholesale readiness training	6	13%
Washing, grading and/or packing services	5	11%
Access to a kitchen where I can process my farm products	5	11%
Vegetable processing	5	11%
Contract manufacturing services for my products	4	9%
Flash-freezing services	1	2%
Total respondents	**46**	

The top support service that was identified by respondents to be of interest was the hub enabling farmers to spend less time on sales and marketing. Half of the respondents indicate that enabling them to spend less time on sales and marketing would be valuable from an administrative perspective. Tied for second priority at 46 percent was identifying markets for surplus product, diversifying sales outlets, and spending less time on paperwork. Less valuable, but with 35 percent of respondents, was enabling farmers to expand production.

TABLE 34: TOP SUPPORT SERVICE INTERESTS FOR PROPOSED FOOD HUB

Top marketing or administrative services a food hub could offer	Count	%
Enabling me to spend less time on sales and marketing	23	50%
Identifying markets for surplus product and/or seconds	21	46%
Diversifying my sales outlets	21	46%
Enabling me to spend less time on paperwork for certifications, state specifications, and regulations	21	46%
Enabling me to expand my production volume	16	35%
Helping me mitigate risk, knowing that other growers will supplement my supply if needed	13	28%
Providing me with large volume sales outlets	11	24%
Total respondents	**46**	

On average, farmers reported that they would be interested in selling up to 32 percent of their total production through a food hub, with 24 growers reporting they'd sell up to 25 percent and 19 growers saying they'd sell up to 50 percent of their total volume. This indicates strong interest and potential of this sales channel. Products were mixed and ranged from apples and tomatoes to beef and proteins to specialty products like honey and maple syrup.

A majority of respondents did not have a specific location preference for the food hub location, but Marquette received the highest number of votes.[31] Most farmers are willing to travel a maximum of one hour to work with a food hub, and most farmers would prefer to be able to work with a food hub weekly (with several noting this would be crucial during high season).

Farmers were somewhat interested in using a commercial space to process products, with about one-third reporting interest. Of those interested in a commercial space, the majority wanted to process the crops themselves (67%) versus having the facility process for them (33%). Crops ranged from apples to all value-add for crops.

TABLE 35: SURVEY - INTEREST IN PROCESSING (SERVICES VS. SELF - PART 1)

Interested in using commercial space to process	Count	%
Yes	16	32%
No	23	46%
Not sure	11	22%
Total respondents	**50**	

TABLE 36: SURVEY - INTEREST IN PROCESSING (SERVICES VS. SELF - PART 2)

Processing preference	Count	%
I would like to have the facility process or produce my products according to my specifications, for a fee (co-packing or contract manufacturing)	9	33%
I'd like to process my crops or produce my own food products in a commercial kitchen, rented by the hour or day	18	67%
Total respondents	**27**	

Interest in additional support services was mixed, and responses were similar across all programs. Farmers had highest interest in value-added processing classes and a classroom for food/ag related activities. Farmers were least interested in business incubation services. Although write-in responses noted that some of these offerings are already offered by local organizations like MSU and others.

[31] Thirteen out of 46 U.P. growers (28%) were interested in selling into a wholesale market based in Detroit, which was a question asked as part of the collaborative survey scope.

Farmers were in alignment regarding price transparency across the supply chain as a key pricing requirement. Also of importance was negotiating price on an ongoing basis and setting their own prices based on production. Fewer farmers are willing to accept lower prices regardless of volume. But farmers also have a willingness to donate and/or accept lower prices for an excess product that would support food access efforts.

TABLE 37: SURVEY INPUTS REGARDING PRICING

Pricing Responses	Agree	%	Neutral	%	Disagree	%
I must receive prices that are equal to or greater than prices I am currently receiving for my goods	24	52%	17	37%	5	11%
I am willing to accept lower prices as long as the volume is high enough (please provide more detail in comments)	15	33%	21	46%	10	22%
I am willing to accept lower prices if the food hub takes on sales, marketing, and distribution	19	41%	22	48%	5	11%
I will set my own prices based on my cost of production	28	61%	16	35%	2	4%
It is important to me that there is complete price transparency across the supply chain	33	72%	12	26%	1	2%
I am open to negotiating price on an ongoing basis based on the market	26	57%	18	39%	2	4%
Total respondents	**46**					

Research Summary and Operating Model Implications

Operating Model Implications

The input provided via interviews and surveys was aligned across several key analysis points related to the proposed facility:

- ***Distribution is strained in the U.P.*** —Distribution is a significant issue throughout the U.P., and the hub can serve a role related to distribution and logistics in partnership with regional distributors and partners (last-mile distribution). This opportunity to improve the local value chain could have significant impacts on supporting local producer (and small business) growth and improving access to local foods for buyers. It will, however, impact overall operational budget (trucks, driver labor) and potential revenue mix for the hub or network model that is developed.
- ***Production space access interest is limited from most audiences.*** —There is limited regional interest in production, processing, or kitchen space among producers and small businesses. The models should take this into consideration for future collaborations or opportunities, but these aspects should not drive the development models.
- ***Storage is a priority.*** —Access to cold storage is a priority among all audiences and may offer outside revenue opportunities in terms of partnering with local organizations, food access organizations, and commercial distributors to lease or cross-dock at the facility.

- ***Partnerships will be key.*** —Collaborations across the local food system will be needed to drive either a network or hub model. Space lease, distribution partnerships and opportunities, support of local producer access, and other needs or outcomes will all rely on programmatic, funding, and operational partnerships being identified.

These key analysis points drove the additional focus on distribution and network logistics modeling. With limited interest in processing and production – for outside users as a revenue-generating service the hub could offer – the hub would need to identify other revenue opportunities (such as last-mile hauling, back-hauling, and storage/distribution supports) to supplement aggregation income and support sustainable operations.

Additional Network Analysis Operational Implications

The additional analysis evaluating existing network models and examples across the United States and identifying existing infrastructure assets (as well as buyer sites) across the U.P. supported the analysis points summarized above. The existing network models currently being operated by local hubs were developed in response to some of the same drivers as this project:

- Limited distribution (or consistent distribution) options for local institutional and retail buyers
- Wide geographic expanses (either within a state or a geographic region such as "New England") that taxed local producers with getting products to populated market centers and products out to remote locations in the local value chain
- Interest among key stakeholder organizations and businesses to centralize aggregation, build local storage resources, or find common solutions to the above issues

The analysis looked at four case studies to evaluate their applicability to the U.P. and propose network models as a component of the business analysis (table 38).

TABLE 38: NETWORK CASE STUDY MODELS

Network example	Model type	Model key focus
WI Food Hub Co-op (WFHC Transport)	Trucking/logistics network model	• The demand in the WI model was from both farmers/producers and end-users with larger end-users creating the financial viability for the model • Large institutional (volume) buyers create key funding that supports the model • Other examples: Boston Food Hub Trucking, Farm Fresh RI
Iowa Regional Transport Network	Inter-hub network (sales exchange model)	• Goal of distribution pilot (with local university partners) was to smooth out storage and high-value crop levels during off and shoulder seasons to better support all hubs (at an operating baseline) • Build is (1) identify anchor buyers, then (2) integrate hub (add to infrastructure as needed)

Network example	Model type	Model key focus
CO Food Hub Network	Inter-hub network (sales exchange model)	• Goal of network development was to share inventory to support the hub's ability to grow/scale • One hub (CO Food Hub) supports the site-to-site logistics, but each hub handles its own last mile distribution needs • They have not had issues with farmers getting product to the primary hub sites (no drop locations)
NW Food Hub Network	Inter-hub network (sales exchange model) + outside commercial link	• Goal of network development was to share inventory to support the hub's ability to grow/scale and handle institutional sales (which the outside sales team creates) • Each hub supports distribution needs (between hub sites and with their own producer networks) • Do integrate some third-party distribution support for transportation between hub sites • Other examples: Eastern Food Hub Network

Business Analysis

Concept Model – Network Model and Infrastructure Models

Informed by the analysis implications, NVA developed two concept models that addressed the current operational needs of the local food system. The important distinction between the two concepts was the addition of a physical infrastructure (proposed hub) as part of model 2 as outlined in table 39.

TABLE 39: TWO CONCEPT MODELS FOR U.P. FOOD SYSTEM NETWORK MODEL

MODEL CHARACTERISTICS	MODEL 1: NETWORK (NO HUB)	MODEL 2: NETWORK + HUB
CENTRAL OPERATOR	TBD - Network operator	HUB
CENTRAL OPS ROLE	• Organizes logistics across network (drop sites, pick-ups, distribution routing) • Facilitates producer pick-ups (from all partner sites) • Owns logistics and trucks • Offers last-mile distro to clients	(SAME) • PLUS: Central aggregation/ storage facility to support network needs
OTHER ROLES	• ***Aggregation site partners:*** provide product drop sites for producers/distro partners across the U.P. in centralized spots (cold storage or holding to support) • ***Distro partners:*** do short run hauls of product between hub and drop points OR farm pick-ups	(SAME)
REVENUE LEVERS	• Last mile transport (distribution) fees • Product sales (or %)	(SAME) • PLUS: Cross-dock fees (for partners) – access • Storage leasing (producers) • Future (?) – processing/production offerings
COSTS	• Logistics ops (staff, technology) • Distro ops (staff, technology, vehicles) • Sales network (staff, technology)	(SAME) • PLUS: Infrastructure operations (storage/hub site)
PRODUCT INPUTS	• Producers • Small businesses	(SAME)
DISTRO CLIENTS	• Producers (pick-up from farms/drop sites for distro) • Partners (pick-up from drop sites for distro) • End users (drops for distro)	(SAME)

MODEL CHARACTERISTICS	MODEL 1: NETWORK (NO HUB)	MODEL 2: NETWORK + HUB
INFRASTRUCTURE NEED(S)	- Drop sites support storage/aggregation points across U.P. - Parking/docking point for distro vehicles - Home base for staff (sales, distro ops)	- Central aggregation point (storage and aggregation facility) - Network of drop sites (support storage - short term only) - Parking/loading/cross-dock access - Staff base (aggregation, sales, distro, ops)

In discussions with the project team leads, it was identified that model 2, a network model with the addition of a centralized infrastructure "hub," was the best fit for the regional U.P. food system. This model was then taken into operational design (discussed below).

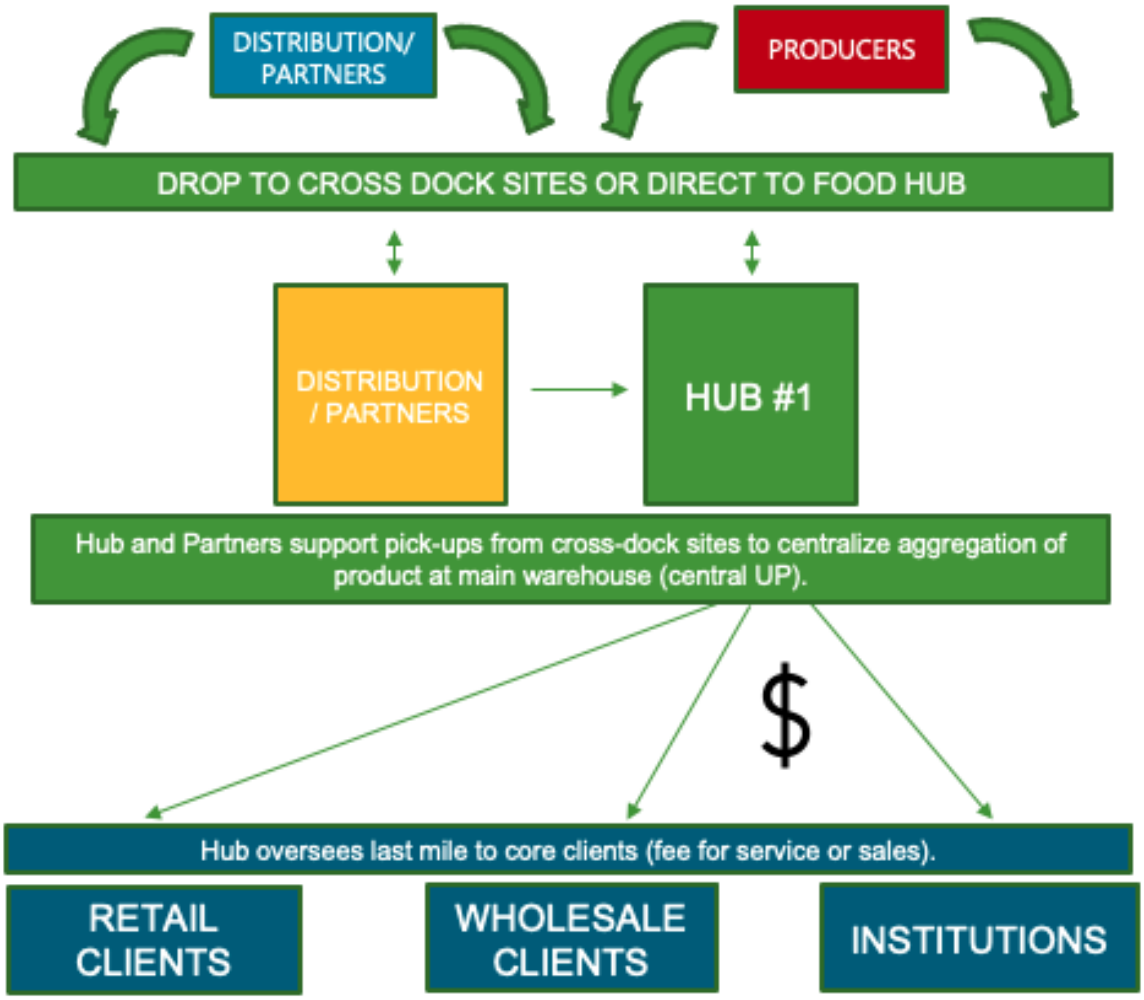
Operating Model: Network Model with Hub Infrastructure

The concept model was then built out to identify what type of network operating model would be a best fit to support the objectives of the study and regional food system. NVA proposed two variations on a regional logistics network model (informed by the case study models discussed earlier and reviewed with the project team). The primary difference between the models was whether the network model required a central hub or infrastructure point – with the decision by the project team to focus on this inclusion, model 1, the model with the infrastructure required, was chosen and developed further (table 40, figure 4).

TABLE 40: PROPOSED NETWORK OPERATING MODEL OUTLINE (MODEL 1)

Key model aspect or question	Data points
Role of hub (infrastructure)	• Hub acts as a central aggregation point for products in the U.P. • Hub facilitates producer pick-up (from cross-dock/partner sites) to ease the burden of transport on producers • Hub charges for last-mile distribution to support partnerships
Revenue sustainability	• Last-mile transport costs would need to be able to offset operational overhead (drivers, vehicles, logistics support) • The central hub site could act as a cross-dock to diversify revenue streams for the facility (offset operations)
Benefits of model structure	• The model supports farmers/producers with logistics support and gets more products into the hub network (distribution network) • Model MAY diversify offerings in the U.P. and increase distributor willingness to increase delivery frequency
Negatives of model structure	• Will require collaboration and buy-in from a network of partners (not-for-profit and for-profit) to facilitate both demand and opportunity • It will require sufficient sales (on the buyer's side) to support demand and logistics needs
Infrastructure required?	Yes, it relies on storage/warehouse sites with adequate cold storage and sufficient vehicles to handle transportation routes

FIGURE 4: PROPOSED NETWORK OPERATING MODEL PROCESS/ FLOW OF GOODS



Core Business – Facility Operational Costs and Revenue

In the model, the network's core business is the movement (distribution) of goods across the U.P. The network can generate revenue to support operation of infrastructure and other operational costs such as trucks and personnel through three levers:

1. ***Distribution/trucking:*** Last mile delivery of commercial loads and goods is the primary revenue lever. The network can offer this as a service to commercial distributors, packers, manufacturers, regional organizations, partner organizations, and small business entities. This may also include back-hauling of goods (between lower Michigan, Wisconsin, and the U.P.) and pick-up/drop-off services related to commercial or producer clients.
2. ***Space rental/lease:*** Lease or rental of storage and logistics space (cross-dock, parking, etc.) within the facility to outside entities such as food access organizations, local partners, or commercial entities is a secondary lever.
3. ***Aggregation income:*** Most of the hub's primary income is generated via the warehousing and distribution of local food products according to regional retail, institutional, and partner needs.

In the future, the facility has the potential to generate limited revenue by offering light produce processing as a service (to local producers) and by the sale of lightly processed or value-add products to regional institutional buyers. As analysis demonstrated, there is limited interest in this offering (either via self-access production or as a service as noted) from both producers and buyers. Once the network is developed, future growth among producers might support this additional offering (which would help to diversify revenue opportunities for the hub and network and increase operational sustainability).

Operational costs, discussed in the financial sections, include standard needs such as staff and labor payroll, utilities, SG&A, and general building maintenance and upkeep for the hub site. In addition, the network will have unique operational costs such as the maintenance and upkeep of their delivery vehicle fleet, as well as personnel to support driver, logistics, and sales roles.

For all business functions, the network has a limited group of customers or clients:

- ***Regional commercial entities*** involved in retail, grocery, or distribution related to food looking for logistics solutions in the U.P.
- ***Regional producers and growers*** looking for logistics solutions (or distribution/aggregation supports) to access markets across the U.P., lower Michigan, and eastern Wisconsin
- ***Partner organizations*** (such as food access and regional entities) looking for distribution, storage site, or local product access points in the local geography (as well as better access to local food products)

Facility Operator and Tenant Roles

The facility will need a capable operator as all three models assume a high expectation of operational experience.[32] The operator will need to be able to support the following functions within the facility and network:

- Operation and sales related to a distribution network supporting commercial and nonprofit food movement needs throughout the region (trucking, last mile, backhauling, pick-up/drop-off)
- Basic upkeep, day-to-day operations, maintenance, and janitorial oversight of the facility and grounds
- Employee (and potential volunteer) management
- Booking of space for tenants or outside users
- Operation of an aggregation and distribution network (including sales, marketing, and client management)
- ***Possible future:*** Operation and execution of processing activities (of varying levels of complexity)

Tenants or leases could be commercial entities such as distributors, local manufacturers, regional producers, or partner organizations needing storage or logistics space (either stand-alone or in addition to distribution or

[32] UPFE is currently operating a small hub operation in Marquette to support regional producers. The proposed hub has been discussed as an opportunity for them to centralize and expand their operations with sufficient network support and storage space to support functional needs. It was noted frequently by survey respondents and interviewees that the role of UPFE in this project should be clearly spelled out to prevent confusion (and protect their existing relationships with regional producers and buyers) as this network and facility model develops and moves forward. For the purposes of this report, it is assumed that UPFE is a potential candidate for the qualified operator role of the network and new facility.

aggregation services as outlined earlier). These tenants could be offered monthly or annual rental or lease terms based on the desired square footage, space access points, and a percentage of overall operational costs related to those uses.

Labor Considerations of the Model

The operating model was informed by a labor matrix that identified roles required to operate (oversee) the facility, administer network services, and support facility upkeep and maintenance. A labor matrix was created across the network and infrastructure model as roles changed based on the additional services, spaces, and programs that the increasingly complex models would need to function correctly. The full labor matrix is included in the appendix documents.

Facility Program and Sizing

Facility Program (Hub Infrastructure and Network Inputs)

To develop the facility program, each of the functional spaces within the facility was examined to address how that space would need to be adapted to meet immediate and future needs of the network, respond to growth over time, address regulatory and licensing considerations (inventory and food safety), and respond to varying users' specific needs for access and holding.

The primary functional spaces identified included

- ***Logistics spaces:*** loading docks, receiving space, external truck routing space, parking
- ***Warehouse and storage spaces:*** warehouse, dry storage, equipment storage, cold storage, frozen storage
- ***Aggregation spaces:*** washing area, packaging/sorting space, holding (isolation space)
- ***Office and meeting spaces:*** private office, shared office space, meeting space
- ***Support spaces:*** toilets, staff welfare space, mechanical/storage space, transit/circulation space
- ***(Future Option) Processing and production spaces:*** future processing and/or kitchen space, scullery space

Facility Sizing

Warehouse, storage, and potential volumes for movement (hauling) by the network were informed using the possible volume of local products that regional producers would be willing to sell to the facility for aggregation, distribution, and processing (for fee or sale) and the possible volume of products that regional logistics partners would be willing to hire the facility to store or move (for a fee).

To accurately size the facility, NVA looked at three aspects of function:

1. The **movement of food inventory and goods** through the facility and the total volume (pounds, pallets) that would need to be held within storage spaces
    a. This was built upon data collected during the analysis phase (secondary data of the local agricultural system, inputs from farmers in surveys and interviews, and additional distribution inputs from potential network partners) that helped to create three sizing scenarios (Small – conservative, Medium – moderate, and Large – aggressive) based on assumed farmer production and participation in the network and local distribution (hauling and storage) volume demands.

b. These projected total pounds of product (detailed in the sizing tab of the Operating Workbook that is included in the Appendix documents) was translated into pallets that informed the total static pallet positions that would be required in the storage and warehouse spaces.

2. The **movement of people** through the facility and the appropriate space for their work functions and transit/circulation needs
3. The **process flow of people, goods, cars, and trucks** in and around the facility and the supporting functional needs of these activities to support the network's services

Based on these needs, the facility's baseline sizing (or minimum acceptable square footage) was identified based on specific data sets for each of the primary functions outlined earlier. As noted, for each data point, three estimates were used to inform a potential square footage scenario of the infrastructure model:

- a low or conservative estimate to inform a "small size" scenario
- a moderate estimate to inform a "medium size" scenario
- an aggressive estimate to inform a "large size" scenario

The distinction here is that the conservative scenario, in comparison to other operating facilities of comparable function within the country, assumes low participation in aggregation and storage functions by regional partners, commercial entities and producers whereas the aggressive scenario assumes active participation and high volume commitments from these same partners/clients.

These volumes were translated into square footage and the three sizing scenarios were entered into a building program (table 41).[33]

TABLE 41: PROPOSED FOOD HUB BUILDING PROGRAM (THREE SIZING SCENARIOS)

DESIGNATED USE	SCENARIO A (SMALL)	SCENARIO B (MEDIUM)	SCENARIO C (LARGE)
Loading dock (cold dock)	440.00	440.00	660.00
Loading dock (street access)	120.00	120.00	240.00
Warehouse/dry storage (equipment storage)	1,828.07	3,262.58	6,069.23
Cold storage 1 (38')	2,046.36	3,730.35	6,973.59
Cold storage 2 (vegetable - temp zone 2)	643.04	986.07	1,640.96
Frozen storage (0')	923.70	1,547.40	2,701.25
Processing 1: dry/pack space	920.00	1,000.00	1,250.00
Processing 2: wet/wash space	750.00	900.00	1,100.00

[33] A building program is a data-based grid or matrix that identifies the minimum square footage that each functional space within a facility would require to meet operational goals. This document is used by architects and designers to translate the data into design and layout renderings of a proposed facility. The final sizing of the facility will generally fluctuate by 5–10 percent based on the translation of this "concept" of the space into functional design but the building program provides a minimum viable square footage that is useful in approximating facility size to match to a location and project costs.

DESIGNATED USE	SCENARIO A (SMALL)	SCENARIO B (MEDIUM)	SCENARIO C (LARGE)
Private offices x # (operational roles)	288.00	288.00	288.00
Staff welfare space with lockers	450.00	450.00	600.00
Toilets	455.00	455.00	530.00
Mechanical room	200.00	250.00	250.00
DEVELOPMENT SPACE TOTALS	**9,064.16**	**13,429.40**	**22,303.02**
Circulation/transit hallways	634.49	940.06	1,561.21
BUILDING (INTERIOR) SPACE TOTALS	**9,698.65**	**14,369.45**	**23,864.23**
External lot space[34]	3,879.46	5,747.78	9,545.69
TOTAL MINIMUM LOT SIZE NEEDED	**13,578.11**	**20,117.23**	**33,409.92**

In reviewing the proposed sizing scenarios, the project team identified that the medium or large scenario would be most advantageous to support both network growth and operational needs. It was noted that the small sizing scenario, while conservative, would reach capacity easily and might require future development to expand if the network was successful in its operations. With this feedback, the large sizing scenario, with a minimum building size of approximately 22,000 square feet, a total hard-surface lot size of approximately 33,000 square feet, and a minimum viable lot size of approximately two to three acres was recommended and utilized for the financial model build (discussed in future sections).

Equipment Considerations

The size and design of the final facility proposed were also informed by equipment that will be required to support the services and programs. A detailed equipment roster was built and is included in the appendix materials – identifying equipment needed across all spaces.

The primary inputs included

- Items to support logistics and warehouse needs, including racking, pallet jacks, forklifts, and compressor/condenser units for cold spaces
- Vehicles needed to support network needs (both immediate and with projected growth) and vehicle CapEx[35] to support upkeep, maintenance, and gas.
- Items to support sorting and light processing needs, including sinks and workstations

[34] The external lot space represents needed hard surface to support the building code – i.e., sidewalks, designated minimum parking and access areas. This (and the total minimum lot size) do not reflect the total turn areas, approach areas, and routing lanes for truck and facility traffic that will need to be defined for the final site layout.

[35] CapEx is an initialism used to represent capital expenditure or capital expense. This term includes money an organization or business spends to buy, maintain, or improve fixed assets such as buildings, vehicles, equipment or land.

The SG&A costs (discussed in detail in the financial sections later in this report) were also informed by the impact of essential services and upkeep needs related to equipment and production spaces. These inputs included

- Chemical, mat, linens, and cleaning contracts for the facility
- USDA[36] compliance inspections and HACCP[37] plan development and upkeep, as well as related regulatory inspections related to food programs supported by the facility
- Preventative and routine maintenance and replacement for high-dollar equipment (CapEx) and vehicles
- Security and access considerations related to the various spaces
- Insurance costs related to vehicles and the facility infrastructure

Distribution Network Sizing and Build

The integration of the facility into a network model required a few additional sizing considerations and model considerations to be evaluated. The network model included the following sizing exercises that helped to inform its infrastructure need (storage and related spaces in the hub infrastructure), potential vehicle and driver demand (to inform equipment and labor models), and revenue opportunity (to inform cost and revenue projections discussed in the financial sections below):

- ***Regional asset and location mapping*** – a detailed asset identification of potential network sites, potential buyer locations, and related infrastructure that could impact the overall network operations was developed as a part of the expanded secondary analysis (discussed in the report earlier). This data was used to identify the total potential sites across the network and model approximate distances between sites and the proposed infrastructure location (Marquette).
- ***Driver and vehicle demand to support routing*** – based on the total number of potential sites within the network, vehicle and driver need was identified based on scenarios that set total drivable miles per shift to ensure that all network drivers would be day-based routes and not require overnight accommodations or overtime pay. The total number of drivers was matched to the volumes used in sizing the facility with inputs into the movement of goods supporting the aggregation network and the movement of goods supporting local distribution paid functions (last-mile, backhauling, pick-up, etc.).
- ***Vehicle costs*** – using industry inputs that approximate vehicle maintenance cost per mile, vehicle gas cost per gallon, and vehicle insurance cost per year, assumptions were built for CapEx to support the network model.

Site Analysis

The analysis portions of the study asked stakeholders and producers to provide input into the most desirable location or site for the facility based on accessibility, regional location, transit and routing considerations, and

[36] USDA stands for the United States Department of Agriculture, which is the federal executive department responsible for regulatory policies, codes, and standards related to agriculture and food manufacturing that are upheld by state and municipality departments.

[37] HACCP stands for Hazard Analysis Critical Control Point and is a management system in which food safety is addressed through the analysis and control of biological, chemical, and physical hazards from raw material production, procurement and handling, to manufacturing, distribution and consumption of the finished product. Facilities handling raw produce will be required to develop HACCP plans to address how they would respond to potential issues, recalls, or other hazards encountered in their production.

other factors. Marquette was identified as the primary location of interest by most audiences based on its proximity to local transportation corridors and central location to agricultural areas.

No exact location within the county or city was identified at this time. Assumptions in the design and development of the models were based upon a greenfield build (new construction) site but could be adapted to renovate an existing, adequately zoned industrial facility. The following parameters were provided as necessary for the eventual site selection:

- Minimum primary lot size of approximately 33,000 square feet for the primary facility (building and hard-surface allocation), with an appropriate buffer of additional space to allow for parking of cars and trucks, user traffic patterns, truck loading/unloading, turnaround patterns, and required walkways and roadways (approximately 2- to 3-acre total lot size)
- Adequate external space to support trash, recycling, compactors, oil/grease storage, and potential generator support space
- Adequate access via roadways for full-size transport trucks, box trucks, and sprinter vans from major routes

Financial Analysis

Construction, Development, and Operating Model Introduction

The financial models provided are based on assumptions derived from the primary research, input from core team members with unique expertise in these areas, an assessment of comparable businesses, and NVA's expertise through previous projects. While these assumptions are based on rigorous research, some are driven by indirectly comparable businesses or analogs, or through input provided by the core team that is unable to be verified by outside sources.[38] Therefore, these **assumptions and financial forecasts should not be viewed as exact revenue and cost figures that would be generated or incurred**. Actual cost, revenue, and budget figures will vary—sometimes significantly—based on additional research, final decisions made on the business model, decisions made by the actual operators of these businesses, and market conditions. The NVA team developed two financial models:

1. ***Network-only model*** – As discussed in the previous sections, this model is built based on the assumptions that no new infrastructure would be developed and that the network would offer distribution, last mile trucking and related logistics services at a fee.
2. ***Network plus hub infrastructure model*** – This model includes all the operations of the network-only model with the addition of a central hub infrastructure site to support and expand the network operations.

Hub Cost Modeling - Construction Costs

Based on the proposed hub building, the cost of constructing the each of the three different sizes is shown in table 42. A detailed equipment roster was built and is included in the appendix materials – identifying equipment needed across all spaces. The minimum viable land required for the building and supporting functionality is estimated to be three acres for financial modeling purposes. Since no site has been proposed or finalized for the hub to be built on, the average cost per acre is an estimated number and will need to be updated once the location has been finalized.

TABLE 42: HUB CONSTRUCTION COSTS

Construction cost category	Scenario A	Scenario B	Scenario C	Depreciable life
Land cost	21,000	21,000	21,000	
Min. viable acreage	3.0	3.0	3.0	
Avg. cost per acre	7,000	7,000	7,000	
Building cost	2,515,236	3,621,466	5,897,435	30
Total facility space	13,578	20,117	33,410	
Avg. cost per sq. ft	*185*	*180*	*177*	
Equipment	338,370	338,370	451,270	15
Total	**2,874,606**	**3,980,836**	**6,369,705**	

[38] The practice of using analogs is widely accepted in the venture capital industry when directly comparable businesses do not exist. Analysts develop models using ratios from existing businesses that have an operating feature that is analogous to the new venture, even when the core businesses are different.

Additional working capital needs have been estimated (table 43) for scenarios B and C to support the facility till it is operational and has developed a financial cadence. This outlay should be sufficient not only for the purchase of trucks and pre-occupational capital expenses but also for the first six months of operational costs to close any gap till the facility achieves breakeven.

TABLE 43: HUB SOFT COSTS (WORKING CAPITAL)

	Scenario A	Scenario B	Scenario C
6 months of COGS and OpEx[39]	NA	434,943	552,946
Support facility till breakeven	NA	179,409	-
Purchase of trucks	200,000	300,000	400,000
Pre-occupational capital expenses (@20% of PP&E)	215,595	298,563	477,728
Total working capital	**415,595**	**1,212,915**	**1,430,674**

The combination of the constructions costs and the soft costs provide the total cost model budget for the hub infrastructure project (table 44).

TABLE 44: HUB COST MODEL

Uses	Scenario A	Scenario B	Scenario C
Land	21,000	21,000	21,000
Building	2,515,236	3,621,466	5,897,435
Equipment	338,370	338,370	451,270
Working capital	415,595	1,212,915	1,430,674
Total	**3,290,202**	**5,193,751**	**7,800,380**

The financial models are built on the assumption that the facility will be financed with 80 percent grants and 20 percent debt (at a 4.5% interest rate) as indicated in table 45.

TABLE 45: FUNDING SOURCES (REQUIRED – BREAKDOWN)

Source	Interest rate	Weight	Scenario A	Scenario B	Scenario C
Grants		80%	2,632,161	4,155,000	6,240,304
Debt	4.5%	20%	658,040	1,038,750	1,560,076
Equity		0%	-	-	-
Total			**3,290,202**	**5,193,751**	**7,800,380**

[39] OpEx stands for operating expense, operating expenditure, operational expense, or operational expenditure. OpEx is an ongoing cost for running a product, business, or system.

Capacity Calculations

Sites and Mileage

Based on market research, interviews, and facility sizing (that was covered in the previous sections), the total number of potential partner sites across the proposed area were estimated for the three facility sizes and shown in table 46. A modest growth rate of 5 percent per year was incorporated into the site growth.

TABLE 46: TOTAL NUMBER OF SITES PER SCENARIO

SCENARIO	YEAR 1 (2024)	YEAR 2 (2025)	YEAR 3 (2026)	YEAR 4 (2027)	YEAR 5 (2028)	AVERAGE
Scenario A (low)	20.00	21.00	22.05	23.15	24.31	**22.00**
Scenario B (medium)	30.00	31.50	33.08	34.73	36.47	**33.00**
Scenario C (high)	40.00	42.00	44.10	46.31	48.62	**44.00**

Table 47 shows the number of sites that are within a certain range of facility site (the total sites for each sizing model were equally split between the three distance ranges; this was done because the location of the site has not been finalized but we trust that the location would be central to the site partners).

TABLE 47: NUMBER OF SITES AND DISTANCE FROM PROPOSED FACILITY LOCATIONS

Scenario	Total # of sites within distance		
	0–50 mi.	**51–100 mi.**	**101–151 mi.**
Scenario A (low)	7.00	7.00	7.00
Scenario B (medium)	11.00	11.00	11.00
Scenario C (high)	15.00	15.00	15.00

The total number of miles that would need to be covered by each scenario is calculated as a summation of (number of sites) x (maximum number of miles in each range). For example, the capacity of the total miles in scenario B per week would be (11 x 50) + (11 x 100) + (11 x 151) = 3,311, which gives us an annual capacity of 165,550 miles (3,311 x 50) under the assumption that the facility could be functional for 50 weeks per year.

Storage Rentals

Based on the sizing of the three variations of the facility and sizes of the pallets and under the assumption that 50 percent of the storage would be leased to external parties while the rest would be available internal for hub usage, the available storage rentals was calculated for each of the storage types and is shown in table 48.

TABLE 48: POTENTIAL STORAGE RENTAL SPACE SIZING

	Scenario A	Scenario B	Scenario C
Dry storage	1,250	2,400	4,650
Cold storage	700	1,400	2,700
Cold storage (variable temp)	300	550	1,100
Frozen storage	500	1,000	1,950

Labor Matrix

The labor needs for the different facility scenarios and the network-only model are detailed in the labor matrix included in the documents of the appendix. The drivers needed are calculated based on the utilization of the facility and the miles that would need to be covered to achieve that goal.

Network-Only Model

The network-only model was built based on the scenario B sizing, described in the previous sections, to estimate the number of network sites, trucks and drivers, and other operational support needed to serve those network sites. The initial outlay that is potentially required to setup a network-only operation is laid out in table 49. It is estimated that six vehicles (three box trucks and three sprinters) would be needed to support the distribution network.

TABLE 49: NETWORK-ONLY COST MODEL (BUILD COST)

Costs	Initial outlay	Amortization
HACCP/food safety plan development	10,000.00	
Network site upgrades	30,000.00	
Vehicles	600,000.00	10
Total	**640,000.00**	

To evaluate the feasibility of the network model, we calculated the utilization of the total miles capacity needed for breakeven. The calculations are shown in tables 50 and 51 and are based on recurring annual expenses.

TABLE 50: CAPACITY AND UTILIZATION FOR NETWORK-ONLY MODEL (PART 1)

	Year 1	Year 2	Year 3	Year 4	Year 5
Vehicle overhead	$ 197,260	203,178	209,273	215,551	222,018
Payroll	$ 313,315	$ 322,714	$ 396,896	$ 408,803	$ 421,067
Technology	$ 7,500	7,500	7,500	7,500	7,500
Office space & utilities	$ 24,000	24,000	24,000	24,000	24,000
Subtotal	**$ 542,075**	**557,392**	**637,669**	**655,854**	**674,584**
Outlay amortization	$ 100,000	60,000	60,000	60,000	60,000
Total	**$ 642,075**	**617,392**	**697,669**	**715,854**	**734,584**

TABLE 51: CAPACITY AND UTILIZATION FOR NETWORK-ONLY MODEL (PART 2)

	Year 1	Year 2	Year 3	Year 4	Year 5
Miles needed to breakeven	128,415	123,478	139,534	143,171	146,917
Miles available	165,550	165,550	165,550	165,550	165,550
% utilization	78%	75%	84%	86%	89%
# of trucks	6	6	6	6	6
Miles per truck	21,402	20,580	23,256	23,862	24,486
Miles/truck/day	**86**	**82**	**93**	**95**	**98**

Network-Hub Model

The rest of the financial analysis is detailed for the medium- (scenario B) and large- (scenario C) sized hubs, which were deemed the best fit for the project's objectives.

Revenue Component Assumptions

Revenue for the core operations of the facility is projected to be from the network/distribution business segment and from storage rentals. This comprises last-mile trucking, logistics or trucking support, pick-up and drop-off trucking services, and the rental or lease of storage space within the facility by commercial partners, producers, or other entities.

Additional revenue streams that would support the facility to ultimately breakeven and become self-sustaining are

- ***Aggregator business segment*** – The hub will act as a local aggregator of produce and products. Products will be purchased from local producers at wholesale rates and resold to commercial clients (wholesale, retail, or institutional) at a 17 percent markup. Light processing of raw goods could be a future aspect of this business segment.
- ***Facility space lease business segment*** – The hub could lease 20 percent of the warehouse, storage, or production spaces to a partner or tenant for market or below market per square foot lease rates.

Network/Distribution Business Segment

The revenue for this business segment is based on the assumptions in table 52 and the utilization matrix for the last-mile deliveries and the different types of storage rentals as shown in table 53.

TABLE 52: ASSUMPTIONS FOR NETWORK/DISTRIBUTION BUSINESS SEGMENT

Assumption	Data
Days/week	5
Weeks per year	50
Average miles/load	100
Avg last cost/mile	$ 5.00
Inflation	3%
Average miles/day/driver	300
Rent Assumptions per pallet space (per week)	**Cost**
Dry storage	$ 10
Cold storage	$ 10
Cold storage (variable temp)	$ 10
Frozen storage	$ 10
Lease %	50%

TABLE 53: UTILIZATION MATRIX FOR LAST-MILE DELIVERIES (NETWORK/DISTRIBUTION BUSINESS SEGMENT)

	Mid-size					Large-size				
Capacity	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Miles/year	165,550	165,550	165,550	165,550	165,550	225,750	225,750	225,750	225,750	225,750
Dry storage (rentable units/yr)	2,400	2,400	2,400	2,400	2,400	4,650	4,650	4,650	4,650	4,650
Cold storage	1,400	1,400	1,400	1,400	1,400	2,700	2,700	2,700	2,700	2,700
Cold storage (Variable temp)	550	550	550	550	550	1,100	1,100	1,100	1,100	1,100
Frozen storage	1,000	1,000	1,000	1,000	1,000	1,950	1,950	1,950	1,950	1,950
Utilization	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Last-mile deliveries	50%	60%	70%	80%	90%	50%	60%	70%	80%	90%
Dry storage	40%	45%	55%	65%	80%	40%	50%	60%	70%	80%
Cold storage	40%	45%	55%	65%	80%	40%	50%	60%	70%	80%
Cold storage (Variable temp)	40%	45%	55%	65%	80%	40%	50%	60%	70%	80%
Frozen storage	40%	45%	55%	65%	80%	40%	50%	60%	70%	80%
# of miles based on utilization	**82,775**	**99,330**	**115,885**	**132,440**	**148,995**	**112,875**	**135,450**	**158,025**	**180,600**	**203,175**
# of trucks/drivers needed	**2.0**	**2**	**2**	**2**	**2**	**2**	**2**	**3**	**3**	**3**

The revenue calculations for the network/distribution business segment are shown in table 54 and are based on the cost per mileage, rental, and utilization assumptions from the tables above.

TABLE 54: REVENUE CALCULATIONS FOR NETWORK/DISTRIBUTION BUSINESS SEGMENT

	Mid-size					Large-size				
Revenue	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Last-mile deliveries	413,875	496,650	579,425	662,200	744,975	564,375	677,250	790,125	903,000	1,015,875
Dry storage	9,600	10,800	13,200	15,600	19,200	18,600	23,250	27,900	32,550	37,200
Cold storage	5,600	6,300	7,700	9,100	11,200	10,800	13,500	16,200	18,900	21,600
Cold storage (Variable temp)	2,200	2,475	3,025	3,575	4,400	4,400	5,500	6,600	7,700	8,800
Frozen storage	4,000	4,500	5,500	6,500	8,000	7,800	9,750	11,700	13,650	15,600
Total revenue	**435,275**	**520,725**	**608,850**	**696,975**	**787,775**	**605,975**	**729,250**	**852,525**	**975,800**	**1,099,075**

Aggregator Business Segment

Agricultural hub facilities typically generate a portion of their revenue from the aggregation and sale of local produce. Two assumptions informed the revenue model for this business segment:

1. ***The quantity of the produce going through the facility*** – Based on the total number of farms and the total acreage of those farms, the pounds of local produce available to sell to the hub were calculated. The projected volumes are shown in table 55.[40]
    a. Medium-size scenario: 655,000 pounds
    b. Large-size scenario: 1.28 million pounds
2. ***An aggregated price assumption*** - Based on the mix of products that farms involved in the analysis were interested in selling to the hub and the average price per pound for each crop type was used, an average across the different products was taken. The purchase price was set at $0.64 per pound. A 17 percent resale markup (based on market research) was the sale price assumption (illustrated in table 56).

TABLE 55: PROJECTED VOLUME OF GOODS THROUGH HUB – U.P. COUNTIES USDA STATISTICS (FARMS)

Scenarios (fruit & vegetable producers)	Total farm count (#)[41]	Participating farm count (#)	Average acres per farm (acres)[42]	Average yield per acre (lbs.)	Average total yield per farm (lbs.)	Average % farms may sell through hub	Average pounds per farm to sell into hub (lbs.)	Total pounds to sell into hub from farms (per year) (lbs.)
MODERATE:	**312.00**	**43.68**	2.50	42,814.00	107,035.00	14.00%	14,984.90	**654,540.43**
AGGRESSIVE	**312.00**	**61.15**	2.50	42,814.00	107,035.00	19.60%	20,978.86	**1,282,899.25**

TABLE 56: YIELD AVERAGES AND PRICING AVERAGES BASED ON PRIMARY PRODUCTS IN PRODUCT MIX FOR STUDY AREA[43]

	Yield per acre (cwt)[44]	Conversion to pounds/ yield per acre (lbs.)	Price per cwt ($)	Conversion to price per pound ($)
LETTUCE (HEAD)	362.00	36,200.00	47.30	0.47
GREENS (SPINACH)	146.00	14,600.00	24.00	0.24
POTATOES	217.90	21,790.00	223.00	2.23
TOMATOES	874.70	87,470.00	12.90	0.13
AVERAGE	**428.14**	**42,814.00**	**64.36**	**0.64**

The projected revenue for the aggregation business segment is displayed in table 57 along with the utilization assumption (50% in year 1 to 80% in year 5) for both the facility sizes.

[40] USDA, Agricultural Census, 2017.
[41] 15 Study Counties: Alger, Baraga, Chippewa, Delta, Dickinson, Gogebic, Houghton, Iron, Keweenaw, Luce, Mackinac, Marquette, Menominee, Ontonagon, Schoolcraft
[42] Average acres per farm reflects survey data where 43% identified as 0–1 acres and 26% identified as 2–4; 2.5 acres represents the average of 0–4 acres.
[43] USDA, Vegetables 2019 Summary, February 2020, https://www.nass.usda.gov/Publications/Todays_Reports/reports/vegean20.pdf.
[44] CWT stands for a "hundredweight" when used in agriculture reporting. It is a unit of measurement used to define the quantities of certain commodities (such as crop types) being bought and sold in the commercial marketplace.

TABLE 57: PROJECTED REVENUE OF AGGREGATION BUSINESS SEGMENT (HUB)

	Mid-size					Large-size				
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue	**35,807**	**44,258**	**53,183**	**58,691**	**64,482**	**70,182**	**86,745**	**104,239**	**115,035**	**126,385**
% of total lbs.	50%	60%	70%	75%	80%	50%	60%	70%	75%	80%
# of pounds	327,270	392,724	458,178	490,905	523,632	641,450	769,740	898,029	962,174	1,026,319
Avg. price/lb.	0.64	0.66	0.68	0.70	0.72	0.64	0.66	0.68	0.70	0.72
Markup	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%

Facility Lease Segment

To further diversify revenue potential for the proposed facility, assumptions were built for potential lease or rental of storage or warehousing space by regional partners or commercial entities doing business across the U.P. The following two assumptions were made for this segment of business:

1. 20 percent of the facility would be available to be rented by an anchor tenant or tenants
2. Average rent/month per square foot = $10 (rising at a 3% inflation year over year) – informed by a breakeven analysis that identified this as a viable rent per month needed to support operational overhead (shown in table 58)

TABLE 58: FACILITY LEASE SEGMENT - RENT NEEDED TO BREAK EVEN (SENSITIVITY)

	Mid-Size					Large-Size				
(YEARS)	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
(DOLLARS)	**14.54**	**12.30**	**9.97**	**8.82**	**6.59**	**9.07**	**7.01**	**6.17**	**4.89**	**3.05**

Revenue potential from leasing some of the facility space is as shown in table 59.

TABLE 59: REVENUE POTENTIAL OF LEASE BUSINESS SEGMENT

	Mid-size					Large-size				
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 1	Year 2	Year 3	Year 4	Year 5
Available sq. footage	**2,285.28**					**3,947.00**				
% of total	**20%**					**20%**				
Rent/mo./sq.ft	10	10	11	11	11	10	10	11	11	11
Monthly rent	22,853	23,538	24,245	24,972	25,721	39,470	40,654	41,874	43,130	44,424
Annual rent	274,233	282,460	290,934	299,662	308,652	473,640	487,850	502,485	517,560	533,086

Operating Budget

Operating Cost Assumptions

The costs for the network and distribution segment are shown table 60 and include the following:

1. Vehicle overhead costs, which include gas, vehicle maintenance, and insurance; these are based on the number of vehicles and the total miles forecasted to be driven
6. Labor (a detailed labor matrix has been provided in the appendix)
2. Selling, General, and Administrative (SG&A) costs, which include maintenance of equipment, security monitoring, etc.
3. Utilities, which are estimated at $10 per square foot, based on comparable facilities
4. Taxes and insurance, which are estimated at $2 per square foot, also based on comparable facilities

TABLE 60: OPERATING COSTS – NETWORK/DISTRIBUTION BUSINESS SEGMENT

	Mid-size					Large-size				
Costs	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Vehicle overhead cost	80,266	88,973	97,681	106,389	115,096	96,098	107,972	138,210	150,084	161,958
Labor costs	390,105	401,808	413,862	452,078	465,641	390,105	401,808	453,437	492,840	507,625
SG&A	51,837	53,392	54,994	56,644	58,343	63,127	65,021	66,971	68,981	71,050
Utilities ($10/sq.ft)	143,695	148,005	152,446	157,019	161,729	238,642	245,802	253,176	260,771	268,594
Taxes & insurance ($2/sq.ft)	143,695	148,005	152,446	157,019	161,729	238,642	245,802	253,176	260,771	268,594
Total operational costs	**809,597**	**840,184**	**871,428**	**929,148**	**962,539**	**1,026,614**	**1,066,404**	**1,164,969**	**1,233,446**	**1,277,821**

The costs for the aggregator segment are shown in table 61. It is assumed that this segment will incur 10 percent additional labor expenses to support the additional operations.

TABLE 61: OPERATING COSTS – AGGREGATION BUSINESS SEGMENT

	Mid-size					Large-size				
Costs	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Labor costs (10% of hub costs)	31,550	32,497	33,471	37,056	38,167	31,550	32,497	33,471	37,056	38,167
Utilities ($2/sq.ft)	28,739	29,601	30,489	31,404	32,346	47,728	49,160	50,635	52,154	53,719
Total operational costs	**60,289**	**62,098**	**63,961**	**68,459**	**70,513**	**79,279**	**81,657**	**84,107**	**89,210**	**91,886**

Operating Profit and Loss by Business Segment

As can be seen in table 62, the network plus hub model, at either the medium or large size, does not generate enough revenue to cover operational costs via the distribution business segments alone. Both size facilities, operating at 80 percent utilization in year 5, will be operating at a loss of approximately $175,000 (medium-size) and approximately $178,000 (large-size). Labor (drivers, sales, and network support roles) is the single largest impact factor on high operational overhead for the models (as detailed in the previous slides). Additional business segments must be combined with the network model for the facility to be self-sustaining over more than five years.

TABLE 62: OPERATING PROFIT AND LOSS BY BUSINESS SEGMENT[45]

	Mid-size					Large-size				
Network segment	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Revenue	435,275	520,725	608,850	696,975	787,775	605,975	729,250	852,525	975,800	1,099,075
Operational expenses	809,597	840,184	871,428	929,148	962,539	1,026,614	1,066,404	1,164,969	1,233,446	1,277,821
Segment profit/loss	(374,322)	(319,459)	(262,578)	(232,173)	(174,764)	(420,639)	(337,154)	(312,444)	(257,646)	(178,746)
Aggregator segment										
Revenue	35,807	44,258	53,183	58,691	64,482	70,182	86,745	104,239	115,035	126,385
Operational expenses	60,289	62,098	63,961	68,459	70,513	79,279	81,657	84,107	89,210	91,886
Operational profit/loss	(24,482)	(17,840)	(10,778)	(9,768)	(6,031)	(9,096)	5,088	20,132	25,825	34,499
Segment profit/loss (including network segment)	(398,804)	(337,299)	(273,356)	(241,941)	(180,795)	(429,736)	(332,066)	(292,312)	(231,820)	(144,246)
Space lease segment										
Revenue	274,233	282,460	290,934	299,662	308,652	473,640	487,850	502,485	517,560	533,086
Total operational profit/loss	**(124,570)**	**(54,839)**	**17,578**	**57,721**	**127,857**	**43,905**	**155,784**	**210,173**	**285,739**	**388,840**

[45] The total operating profit and loss scenario (including all business segments, table 61) was built without debt carry to demonstrate the potential of the medium and large-size models to sustain operations in three to five years of operation. The total impact of depreciation and interest expenses is demonstrated in table 62.

Summary Profit and Loss (Operating Model Detail)

The summary profit and loss along with the debt amortization and interest payments is shown in table 63.

TABLE 63: SUMMARY P&L

	Mid-size					Large-size				
Revenue	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Network/ distribution	435,275	520,725	608,850	696,975	787,775	605,975	729,250	852,525	975,800	1,099,075
Aggregator	35,807	44,258	53,183	58,691	64,482	70,182	86,745	104,239	115,035	126,385
Lease	274,233	282,460	290,934	299,662	308,652	473,640	487,850	502,485	517,560	533,086
Total revenue	**745,316**	**847,443**	**952,967**	**1,055,329**	**1,160,909**	**1,149,798**	**1,303,845**	**1,459,249**	**1,608,395**	**1,758,547**
Costs	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Vehicle overhead cost	80,266	88,973	97,681	106,389	115,096	96,098	107,972	138,210	150,084	161,958
Labor costs	421,655	434,305	447,334	489,134	503,808	421,655	434,305	486,908	529,895	545,792
SG&A	51,837	53,392	54,994	56,644	58,343	63,127	65,021	66,971	68,981	71,050
Utilities ($10/sq.ft)	172,433	177,606	182,935	188,423	194,075	286,371	294,962	303,811	312,925	322,313
Taxes & insurance ($2/sq.ft)	143,695	148,005	152,446	157,019	161,729	238,642	245,802	253,176	260,771	268,594
Total op costs	**869,886**	**902,282**	**935,389**	**997,608**	**1,033,052**	**1,105,893**	**1,148,061**	**1,249,075**	**1,322,655**	**1,369,707**
Op profit/(loss)	**(124,570)**	**(54,839)**	**17,579**	**57,721**	**127,858**	**43,905**	**155,784**	**210,174**	**285,739**	**388,840**
Depreciation	143,274	143,274	143,274	143,274	143,274	226,666	226,666	226,666	226,666	226,666
Interest payment	46,401	45,631	44,826	43,984	43,103	69,689	68,532	67,323	66,058	64,735
Debt amortization	16,757	17,527	18,332	19,175	20,055	25,168	26,324	27,533	28,798	30,121
Earnings before taxes	**(331,002)**	**(261,271)**	**(188,853)**	**(148,711)**	**(78,574)**	**(277,617)**	**(165,738)**	**(111,348)**	**(35,783)**	**67,318**

Funding Development Plan

If the partners decide to pursue the development of the network and the build of the hub infrastructure, the project will need to secure funding to complete the project. Based on the cost modeling for the combined network and hub models, this would be approximately $5.2 million for the medium-sized facility and approximately $7.8 million for the large-sized facility. Finding financial support is a practice of patience and relationship building, and it often comes from different sources (table 64).

The partners will need to identify both government and non-government grant opportunities. It should be noted that most grantors do not support capital projects. Non-capital grants will play a larger role in financing the later stages, such as for programming, personnel, and equipment.

TABLE 64: FUNDING DEVELOPMENT PLAN – TOOLS OUTLINE

Funding source	Description	Timeline[46]	Resources needed	Funding range
Donations/capital campaign	Unrestricted use	Ongoing (capital campaigns typically last 2–4 years)	Planning, strategy with outlined goals, board support, dedicated committee, collateral, naming considerations	Determined by organization of what is feasible based on findings
Grants	**Capital grants**: General support of campus development **Program grants**: Support for program-related expenses that correspond with specific outcomes	2–6 months	Application, development/operating plan, informational memorandum, staff support, cash flow as federal grants are typically reimbursable	Specified in each grant Capital grants can be >$1M Program grants are <$1M
Debt	Fund construction/development and ongoing operating budget	6–12 months	Financial model, business and operational due diligence items, permits, zoning, legal documents, local government approval, etc.	75-80% LTV, multiple of earnings or multiple of book value of equity
Equity	Fund construction/development and long-term investment in the project	6–12+ months	Financial model, confidential investment memorandum, legal documentation, investor due diligence, etc.	Depending on form/terms of investment, investor base, and market conditions/timing

Funding Recommendations (Grants and Fund Sources)

The Funding Development Plan is a customized overview of the different opportunities available for this project. Based on the findings of this study and input from the project partners, NVA recommends pursuing the possible opportunities outlined in table 65.

TABLE 65: FUNDING DEVELOPMENT PLAN – GRANTS/SOURCES OUTLINE

Funding source	Amount range	Priority	Support type
Economic Development Administration- Public Works and Economic Adjustment Assistance	Up to $30,000,000	The Economic Adjustment Assistance (EAA) (PW) program provides a wide-range of financial assistance to communities and regions as they respond to and recover from the impacts of the pandemic through job creation	Purchase, construct, and/or improve essential community facilities, purchase equipment, and pay related project expenses

[46] Typical timeline from solicitation process to close. Internal timeline to prepare marketing materials, finalize financial model, and organize necessary due diligence items could extend process.

Funding source	Amount range	Priority	Support type
EPA- Brownfield Cleanup Grant	$500,000 per site over 4 years	Grants may be used to address sites contaminated by hazardous substances, pollutants, or contaminants (including hazardous substances co-mingled with petroleum) and petroleum	Brownfield cleanup
MI Food & Agriculture Investment Fund Grant	$100,000	Provides financial support to expand the Michigan food and agriculture sector, grow Michigan exports, and increase food processing activities	Capital, equipment, program
MI Rural Development Fund Grant	$100,000 (renewable up to 3x)	Projects that address expansion and sustainability of land-based industries and support infrastructure that benefit rural communities	Infrastructure development, rural capacity building, business development
USDA Rural Development- Community Facility Grants	Contact for terms.	Provides grants and loans to assist in the development of essential community facilities in rural areas and towns of up to 20,000 in population	Capital, equipment, program
USDA Local Food Production Promotion Implementation Grant (LFPP)	$500,000 over 3 years	To improve or expand a food business that supports locally and regionally produced agricultural products and food system infrastructure	Program implementation, salaries, equipment
W. K. Kellogg Foundation	$100,000–$500,000	Support Michigan families thru models that increase access to healthy food and improve nutrition in children; also support efforts that improve agriculture production, product development, and value chains	Program, general operating
Capital Impact Partners **(NMTC loans)**	Contact for terms	Leverage new market tax credits to incentivize community development and economic growth through the use of tax credits that attract private investment	Typical borrower use: • Growth capital and general working capital • Acquisitions or expansion into new markets • Equipment purchases
MI Good Food Fund **(loan fund)**	Contact for terms (loans for up to $6 million)	Provides financing to good food enterprises who are working to increase access to affordable, healthy food in low-income and underserved communities in Michigan; this includes businesses that grow, process, distribute, and sell healthy food that reaches those who need it most	• Permanent working capital • Inventory • Equipment purchase • Real estate acquisition • Construction & property Improvements • Facility expansion or upgrades
MI Economic Development Corporation- Industrial Property Tax Abatement	Abatements up to 12 years	Incentives for eligible businesses to make new investments in Michigan; these abatements encourage Michigan manufacturers to build new plants, expand existing plants, renovate aging plants, or add new machinery and equipment; must be approved at both the local and state levels	Facilities used for warehousing, distribution or logistics purposes can be eligible

Risks and Mitigation Strategies

There are key risks to consider that may have a material impact on the proposed facility's successful development, launch, and viability. However, the risks can be mitigated with the right upfront strategies.

- **Establishing Wholesale Pricing Standards with Local Producers**
  - ***Risk:*** The regional network of producers identified in the study work predominantly with DTC and retail sales formats and, thus, are less familiar with wholesale pricing structures. The hub will need to establish fair and transparent pricing structures that adequately compensate producers for their crops (for both aggregation and processing services) but still allow a margin to be attached to offset operational expenses.
  - ***Mitigation:*** The study identified that a 17–20 percent markup on aggregation goods and a 30–35 percent markup on processed goods would be acceptable to the local producers. Establishing baseline pricing that allows these markups to still offer competitive prices on goods to buyers (institutional, retail, and partners) will require continued conversation with local producers. Transparency in pricing, ordering, and sales platforms will help alleviate producer groups' concerns around pricing and should be utilized.
- **Establishing Last-Mile and Distribution Pricing with Regional Commercial Partners**
  - ***Risk:*** There is a regional network of distributors and manufacturers looking for logistics solutions to better address distribution, routing, and sales opportunities across the U.P. marketplace. However, all these entities will be price sensitive in attaching additional cost to logistics – last-mile per mile cost, storage fees, backhauling fees, pick-up/drop-off fees. The network/hub will need to establish fair and transparent pricing structures that can offset operational need and still entice these clients to utilize the hub for distribution support.
  - ***Mitigation:*** The study identified demand within the local marketplace for these services – which could also be impactful in allowing regional distributors to build and service more accounts across the U.P. more efficiently and more frequently. The cost-benefit of these options will need to outweigh driver overnighting or business loss – which should be achievable.
- **Establishing Network Partners and Buyers (Especially Key Institutional Buyers) across the Region to Support Network Movement**
  - ***Risk:*** In addition to identifying and setting pricing with regional network users, the network and hub will also need to identify both (a) network sites that can help to break up travel distances for producer drops or movement of goods and (b) key revenue partner opportunity sites that support the network's overall operational costs. Identifying key buyer sites – either through distribution partners or through the hub's aggregation sale – will be essential in building and supporting growth for the network and the producers it supports.
  - ***Mitigation:*** The study identified that buyer demand and interest exists with retail, institutional, and distribution network sites throughout the region[47]. Further, growers expressed interest in growth and scaling to support these new sales channels and opportunities. Additionally, the comparable models clearly demonstrated that incremental growth across a similar network model is possible if partners actively engage. Starting with building buyer and network relationships with the

[47] It is important to note that this study was able to identify interest (demand) from regional buyers – in local products, logistics solutions, and trucking solutions but that system capacity to meet these demands is very limited. Both in producer volumes to meet demand and in readiness of these potential partners to activate the network. This is the work which still needs to be completed as the mitigation note outlines.

institutions and organizations represented by the core project team would be a significant first step in the network buildout.

- **Building Institutional Buyer Demand to Support Revenue Streams in a Post-COVID Buying Environment**
  - ***Risk:*** The impact of the COVID-19 pandemic on institutional buying patterns was substantial, but a slow return to local buying patterns and support for local value chains is being seen. The hub will need to build and establish purchasing relationships with institutional buyers to help support a base of demand and revenue that would help to stabilize operations and allow the facility to grow over time.
  - ***Mitigation:*** Local institutions – such as regional universities and colleges, local school system partners, food access organizations, and local hospital systems – present opportunities for establishing core purchasing relationships. However, the hub will need to develop clear pricing parameters, sourcing/supplier standards, and seasonality/quality standards that support these procurement needs for the buyers. Establishing these standards early and identifying producer partners that can meet volume needs for any potential institutional partner will help to create the foundation for these contracts or relationships that are important to the hub's financial health and provide stability.
- **Refining the Role of UPFE**
  - ***Risk:*** UPFE's potential role as the primary operator has been identified as an operational element of the project supported by regional producers who have existing relationships with UPFE and the Marquette Food Co-op. However, UPFE's relationship to the facility in terms of the integration of network programs and services and funding still needs further definition to finalize the facility's revenue expectations to offset operational needs and the use and function of the space and to eliminate any confusion for their continued operational efforts in relation to this project.
  - ***Mitigation:*** Continued conversations with critical leadership positions at UPFE will define the hub's ability to support the network services and programs and will help to determine both the demand on the facility's infrastructure and programmed uses and the potential injection of additional funding to support these programs. These uses may not be applied for the initial operational years as the facility is established and services its core functions (network movement) – but clarity around their impact on space use and funding inputs should be more clearly delineated in the origination of the facility and its growth plans.

Conclusion and Strategic Recommendations (Development Planning)

Conclusions

The study presents a viable financial and operational model for a large-sized aggregation and distribution facility at the center of a regional distribution network model. The largest-sized infrastructure model generates greater throughput through the network activities and offers additional revenue streams via usage/rental fees and storage rentals, making it the most attractive model for creating a long-term, sustainable asset to the region and best servicing the project's objectives.

However, the ability to build a viable facility and achieve the benchmarks of a sustainable model is contingent on several factors being met:

- The distribution network is a significant component of the model's design and revenue derivation. Identifying and establishing cooperative network partnerships is the principal driver of that network's success. The project team must support the development of these partnerships (as outlined in the following section, Strategic Partnerships) to ensure the viability of the network and this model.
- The model is also structured around the identification of a potential anchor tenant or tenants who could lease space in the facility – such as partners, commercial entities, or farmers/producers in the region. As with the above note, identifying these potential tenants will require initial outreach by the project team and is important in realizing the utilization parameters set by the model.
- Finally, the model is conservatively built to represent a greenfield site or new build. The project team and partners must identify a compatible site or existing facility (for redevelopment) for the infrastructure piece to move forward. As noted in the financials, this may have additional implications on the total cost for development and thus should be pursued before finalizing funding.

The facility offers an infrastructure that can support identified community, regional producer, and small business needs and potentially help to provide needed support of regional distribution. The feasibility study identified significant need for solutions-based approaches to logistic and trucking issues for commercial, nonprofit, and regional agricultural operators. The network model presents a potential solution but will require collaboration and significant investment (both financial and mission-support) by all project partners and regional partners.

In summary, this project **creates a vital link in the local food value chain** – supporting greater connections to fresh, locally grown and produced products for local consumers.

Strategic Recommendations (Next Steps)

Once the project partners have made a final decision to proceed with the project as proposed, the following are recommended actions to move from concept development into implementation:

- **Refine the role of UPFE** in the hub (operator, landlord, network programs and services, aggregation integration, etc.)
- Continue to **develop and clarify the network through identification of partners and network assets** by explicitly identifying the sites across the proposed network model who are interested in distribution services (last-mile, backhauling, drop-off/pick-up), storage or cross-dock access, and goods aggregation and having transparent conversations on pricing models to support their inclusion in the services offered by the network and its ability to sustainably operate (table 66)
- **Further develop the network through pricing discussions with local growers and producers** to refine pricing margins for aggregation (and volumes) and confirm interest in storage or processing services to refine revenue assumptions
- **Confirm site selection** and refine site criteria, facility design, and business planning – this may include updates to the operating model and building program based on the chosen site and confirmed operator role
- **Finalize the facility design** and refine infrastructure needs (and phasing of purchasing of equipment or operationalizing of spaces). This will require engaging a licensed Michigan architecture firm to oversee architectural design for construction and development and to generate the needed drawings for the site (floor plans, elevations, etc.).
- Continue **fundraising**. The project leads and partners will need to create a fundraising plan to explore and secure diverse capital streams from all available sectors for both the network development and facility build.

As noted in bullet point #2 above, following up for additional conversations with potential partners throughout the U.P. network system (fully itemized by entity in table 18 earlier in this report) will be a crucial next step as the team looks to validate the network model. The following individuals were identified during the network analysis as leads for future conversations and development (table 65, full contacts are included in the appendix documents).

TABLE 66: FOLLOW-UP NETWORK CONVERSATION CONTACTS

Organization	Name	Role	Potential Network Involvement
Cherry Capital Foods	Heather Ratliff	Sales Manager (Territory)	Part of the MSU study on logistics; Michael L has more details on full expansion opportunities that the organization is undertaking across the state. Both company reps noted an interest in a U.P. cross-dock point or support for last mile.
FAWM	Joseph Jones	Director of Strategic Initiatives and Partnerships	FAWM's involvement may be limited due to charity status. But, may have use for cross-dock or last-mile partnerships across the U.P. to ease distribution routing issues.
Food SPICE Project (via MSU)	Parker Jones	Education, Innovation Counselor	Exploring logistics and related topics in the U.P.
Food SPICE Project (via MSU)	Jamie Rahrig	MI Good Food Fund Specialist, Innovation Counselor	Exploring logistics and related topics in the U.P.
Gordon Food Service	(TBD)	Territory Manager (UP)	Spoke with multi-state rep, they have partnered in other locations with hubs and have a presence in the U.P.
Great Lakes Food[48]	Bryan Wickstrom	Director of Operations	Open to conversation.
Lakeshore Depot	Mike Hainstock	Owner/operator	Interested in logistics, trucking, and distribution solutions for the U.P.
NMU's CDL Program	(TBD)		Potential trucking or labor resource.
Northwest Food Hub Network	Elliott Smith	Lead (Kitchen Sink Strategies)	Case study – UP project team has a contact at Kitchen Sink Strategies which helped to develop the NW Food Hub Network model.
Northwest Food Hub Network	Charlie Michel	Project Manager (NW Food)	Case study – UP project team has a contact at Kitchen Sink Strategies which helped to develop the NW Food Hub Network model.
Spiessels	(TBD)		Present in the region related to distribution (no response to interview requests).
Sysco Food Service	(TBD)	Regional Rep (MI/WI)	Have partnered with other hubs (specifically WI hub) – this project will need to be connected with representative who services the region and WI.
Tamarack Holdings	Michael Lahti	CEO	Part of the MSU study on logistics; exploring full expansion opportunities across the state. Both

[48] Post analysis, Great Lakes Foods was purchased by SpartanNash in January of 2023 which may change their potential involvement.

Organization	Name	Role	Potential Network Involvement
			company reps noted an interest in a U.P. cross-dock point or support for last mile.
UPCAP	Tammy Rosa	Nutrition Manager/ QA Specialist	Looking to build a facility in Escanaba (warehouse/storage facility).
Vollwerth's	Adam Manderfield	Manager	Has worked with Cherry Capital on backhauling and last mile.
WFHC Transport (WI Food Hub Co-op)	Tara Roberts Turner	General Manager (Transport)	Operates a distribution/network model throughout the Great Lakes.

Appendix: List of Additional Documents Provided for Reference

A folder of supporting resources referenced through the report has been provided. It includes the following documents:

- **Market analysis resources,** including the original summary slide deck, research plan, interview guides, contact outreach spreadsheet, survey drafts, and charrette slide deck
- **Operating workbook excerpts**, including the building program, equipment model, labor model, and summary review slides (including case studies)
- **Financial model excerpts**, including the breakeven and utilization models
- **Final workplan (complete)**
- **Recommended outreach matrix (names/contacts)**