STRATEGIES FOR GROWTH IN THE UPPER PENINSULA'S MEAT VALUE CHAIN

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PREPARED FOR

Marquette County Planning Division and
the U.P. Multi-species Processing Feasibility Study Project Advisory Committee

BY

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PROJECT TEAM

Karen Karp & Partners

Founded in 1990 as Karp Resources, Karen Karp & Partners (KK&P) is a food business consultancy with two divisions: Our *Good Food is Good Business* division supports the healthy development, execution, and operations of food businesses and initiatives in the public and private sectors. Our services include strategic sourcing, feasibility analysis, market research, business planning, project management, and evaluation. KK&P's clients include corporations, government agencies, small businesses, non-profits, and educational organizations. For more than 20 years, KK&P has spearheaded and has been integral to the development and execution of food businesses, policies, and partnerships in the United States and in the United Kingdom.

Karin Endy, Senior Consultant, and Ben Kerrick, Consultant, were the research leads for this project. Christophe Hille, Senior Consultant, Eleni Fischer, Consultant, and Jansyn Thaw, Research Associate, provided additional support to the project. Karen Karp, President, provided guidance, project oversight, and thought leadership over the course of the project.

John-Mark Hack

John-Mark Hack was a collaborator on this project. John-Mark Hack is recognized as a national leader in the area of small meat processor development and operations. As a co-founder and partner in Marksbury Farm Market, John-Mark has helped to guide the development of this venture from its inception in 2008. Working with five partners, John-Mark has helped to develop and implement all aspects of the business, including its business plan, facility design, building construction, operations, staffing and regulatory compliance plans. The company opened in August 2010, and now employs 42 people in a grass-based business that includes a 12,000-square foot, USDA-inspected slaughter and processing facility, a grocery and restaurant.

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Cover photos courtesy MSU Extension. Cattle photo by Ashley McFarland. Sheep and pig photos by Michelle Walk.

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EXECUTIVE SUMMARY

Strategies For Growth In The Upper Peninsula's Meat Value Chain

The Upper Peninsula's meat sector is poised for growth. The demand for locally grown meat is unmet and likely to grow, and many farmers in the region want to scale up their operations. Rainbow Packing, the region's only USDA-inspected slaughter and processing facility, operates at full capacity during the busy season. Bottlenecks in the supply chain, along with challenges related to the U.P.'s geography and infrastructure, constrain potential growth that would bring greater financial benefit to the region's farmers, processors, and food businesses, while also bringing more locally grown meat to the region's residents and tourists. Targeted investments, increased collaboration among stakeholders, and the creation of a Meat Value Chain Coordinator position would support and encourage incremental growth in the region's sector, and help realize the vision of a vibrant and thriving U.P. meat value chain.

This report is the outcome of a study initiated by a group of stakeholders including Marquette County, MSU Extension, Upper Peninsula Food Exchange, Farm Bureau, and regional planning organizations. The initiative was a response to challenges in the region's slaughter and processing capacity, and was initially framed as a feasibility study for a new facility. Karen Karp & Partners, a national food and agriculture consultancy, was retained to complete the research and prepare recommendations for the region's stakeholders. The research effort consisted of literature review, analysis of secondary data, two surveys of the region's farmers, extensive interviews with stakeholders and experts in the region, and on-site engagements.

Current Conditions: **Demand for local meat**

Consistent with national trends, demand for local meat in the Upper Peninsula is unmet and growing, though without a major urban center as anchor market, scale and growth of demand is more modest than in some regions elsewhere in the U.S. Nevertheless, more than two-thirds (68%) of farmer survey respondents said that they are not able to meet their customers' demand for local meat. The U.P.'s geography (about 320 miles east-to-west) and population distribution (52% rural) are important considerations in understanding how to meet that demand. The central U.P., where population and purchasing power are concentrated, is likely to be the anchor market for increased local meat purchasing. And with an estimated $392 million in food

68% *of farmer survey respondents said they are* ***not able to meet their customers' demand for local meat***

"I can't raise meat fast enough for our customers' demands, especially our grass-fed beef" - survey respondent

$392 million *in tourist food spending in 2010*

spending in 2010, tourism is another key component of demand. The characteristics that draw visitors to the U.P. – pristine, natural, unadulterated – align well with the qualities that motivate many people to eat locally, and eating locally is one way for tourists to experience the culture of a place. Finally, understanding the motivations and priorities of different customer segments – tourists, residents, institutions, restaurants, and retailers – will help the meat sector tap into the region's demand for local meat.

Current Conditions: **Meat production in the Upper Peninsula**

All counties in the U.P. are home to some level of meat production, though highest volumes are found in the central and eastern areas of the region. Beef production is concentrated in the south central and eastern portions of the U.P., while the Houghton County area is home to many small operations. Marquette County leads in pork and goat production (though goat production is quite small), while Alger leads in poultry and Chippewa leads in sheep and lamb. Production of meat in the U.P. is highly seasonal, with annual spikes for livestock processing in August through November, and for poultry processing from May to September; although year-round production is not impossible, it requires significant investments in feed and labor to enable overwintering. Over a third of survey respondents identified "access to USDA-inspected slaughter and processing" as their top barrier to expansion. Other top barriers were distance to processor, access to capital, and cost of production.

Current Conditions: **The U.P.'s slaughter and processing capacity**

The Upper Peninsula has just one USDA-inspected slaughter and processing plant, Rainbow Packing, centrally located in Escanaba. Farmers on the eastern or western ends of the peninsula have USDA-inspected options in Lower Michigan and Wisconsin, but these involve substantial travel distances. Several custom exempt processors operate across the peninsula, some of which offer slaughter services as well; Love Meats, in the eastern U.P., is in the process of incorporating USDA-inspected slaughter to its operations. There are no USDA-inspected poultry processors in the U.P. – a significant constraint to potential growth of U.P. poultry production.

The production calendar causes significant processing bottlenecks in the fall, during which time Rainbow operates at or near full capacity, and processing appointments there can be difficult to secure. Farmer survey respondents expressed a desire for improved access to USDA processing: in aggregate, they said they would process about two and half times as many beef and pigs as they currently process if they had access to "an ideally situated USDA facility." Customer service, convenience in location and scheduling, and a range of services were among the most desired characteristics of a USDA processor. Improved transportation options and infrastructure, especially freezer space, could increase efficiency and capacity in the region.

Key findings

This study was initiated to assess the feasibility of a new multi-species processing facility in the U.P. Based on a general finding of insufficient volumes to support a new facility, the project team concluded that such a facility would not be feasible at this time.

The team did, however, find a clear need for increased slaughter and processing capacity in the region. This need is evidenced by farmers' expressed desires for increased capacity (in interviews and surveys); Rainbow's operating at capacity during the busy season; and seasonal bottlenecks in the supply chain. Our research team concludes that targeted initiatives could increase the region's capacity and throughput by nurturing incremental growth in production, processing, and demand. Investments in the region's existing assets are central to this recommended approach.

Recommendations

The Upper Peninsula's meat sector is poised for incremental growth as demand for locally produced meat increases. The project team offers four overarching recommendations, each with a set of specific strategies, that will guide the U.P's meat sector toward greater efficiency, higher volumes, and increased economic impact. These recommendations and strategies are informed and justified by our research findings, and in particular aim to achieve growth through better communication, education (of consumers and supply chain actors), innovation, and the leveraging of existing assets in the region.

1. Facilitate effective communication and coordination across the U.P. meat sector.

Opportunities exist to communicate more through quarterly stakeholder meetings, maximize collaboration and use of existing assets with a new coordinator position, achieve efficiencies through shared transportation partnerships, and educate producers and processors on relevant regulations.

1.1 Convene Quarterly Meat Sector Meetings
1.2 Hire an Upper Peninsula Meat Value Chain Coordinator
1.3 Develop Educational Materials on State and Federal Regulations
1.4 Develop Transportation Support and Partnerships

2. Cultivate and tap into greater demand for U.P.-produced meat.

By working from multiple angles in branding and design development and support, producer coaching and consumer education around local meat, and wholesale customer outreach, the community of stakeholders in the U.P. can help ensure the marketplace is better equipped to align supply with demand.

2.1 Provide Marketing, Branding and Design Assistance to Farmers
2.2 Support Development of U.P. Agriculture Co-Brand
2.3 Consumer Education on Value and Benefits of Local Meat
2.4 Locate and Acquire Wholesale Customers for U.P. Meat Products
2.5 Develop Advance Meat Commitments from Wholesale and Retail Customers

3. Provide tools, guidance, and advocacy to farmers for increasing production.

By educating farmers on best practices for year-round production, assisting them with pricing and cost-modeling guides, and providing access to capital for farm equipment and feeder animals, MSU Extension and other regional stakeholders may be able to nurture increased production across the peninsula.

3.1 Educate Farmers on Opportunities for Year-Round Production
3.2 Develop Cost and Pricing Models for Producers
3.3 Develop Avenue for Policy Advocacy
3.4 Access to Capital for Producers and Processors

4. Expand processing capacity in the U.P.

There is a range of strategies available to increase the region's processing capacity, both in terms of overall kill slot availability and optimization of those slots. These strategies include infrastructural investment, pricing strategies, personnel training, plant upgrades, prescriptive scheduling and business-to-business communication improvements.

4.1 Increase Overall Processing Capacity and Service at Rainbow Packing
4.2 Maintain Processing Sector through Training and Succession Planning
4.3 Help Custom-Exempt Plants Upgrade to USDA Inspection

Finally, we present a long-range vision for an Upper Peninsula "meat center": an accessible and sustainable state-of-the-art processing, smoking, and curing facility for added-value products. If a significant portion of the recommendations and strategies presented in this report are successfully executed, some of the positive outcomes will likely include:

- Increased capacity and throughput at Rainbow Packing for USDA-inspected slaughter, cutting, and processing of beef, pork, and lamb. The facility features improved equipment, increased freezer storage, and improved quality overall
- Increased production of beef, pork, and lamb on U.P. farms and higher percentage of that production being processed and consumed on the peninsula, increasing the beneficial cycling of local food expenditures
- Active USDA-inspected fee-for-service poultry processing
- The return of a small-scale U.P. poultry growing sector, selling through direct local retail and intra- and inter-state wholesale

In any meat system dealing in whole animal units, there are products that sell easily and others that drag, some that are of peak value as raw meat only and others that can deliver more value through processing. With respect to beef and pork in particular, increased production in the U.P. will bring with it additional opportunities for value-added products, as well as the potential for inventory challenges. Through investment in a processing facility capable of generating all or some of these products, Marquette County and other stakeholders would be contributing to the long-term sustainability of the U.P.'s meat sector.

PROJECT OVERVIEW

In November 2015, the Marquette County Planning Division issued an RFQP on behalf of stakeholders including Marquette County, MSU Extension, Upper Peninsula Food Exchange, Farm Bureau, and regional planning organizations seeking a qualified consultant to conduct a feasibility study for a multi-species processing facility (or facilities) to serve the region. There is only one USDA-inspected meat processing facility in the Upper Peninsula, Rainbow Packing, in Escanaba. Limited access to USDA processing makes it difficult for U.P. livestock and poultry farmers to supply institutional purchasers and other wholesale customers in the U.P. and beyond. This challenge was identified as an issue that needed further investigation. Marquette County had an interest in determining if the former K.I. Sawyer Air Force Base would be a suitable location for such a facility. However, the feasibility study was intended to focus on the entire U.P. and consider other opportunities or locations as well.

Karen Karp & Partners, a national food and agriculture business consultancy based in New York, was retained to conduct the study with collaborator John-Mark Hack. Their work commenced in February 2016.

METHODOLOGY

The KK&P team employed a mix of primary and secondary research to execute this project. Throughout, the KK&P team maintained frequent communication with project contacts Thyra Karlstrom, Senior Planner for Marquette County and Michelle Walk, Michigan State University Extension Educator on Community Food Systems and Tourism. The KK&P team also provided several updates to the project's advisory committee, which was formed prior to issuance of the RFQP.

On-site research

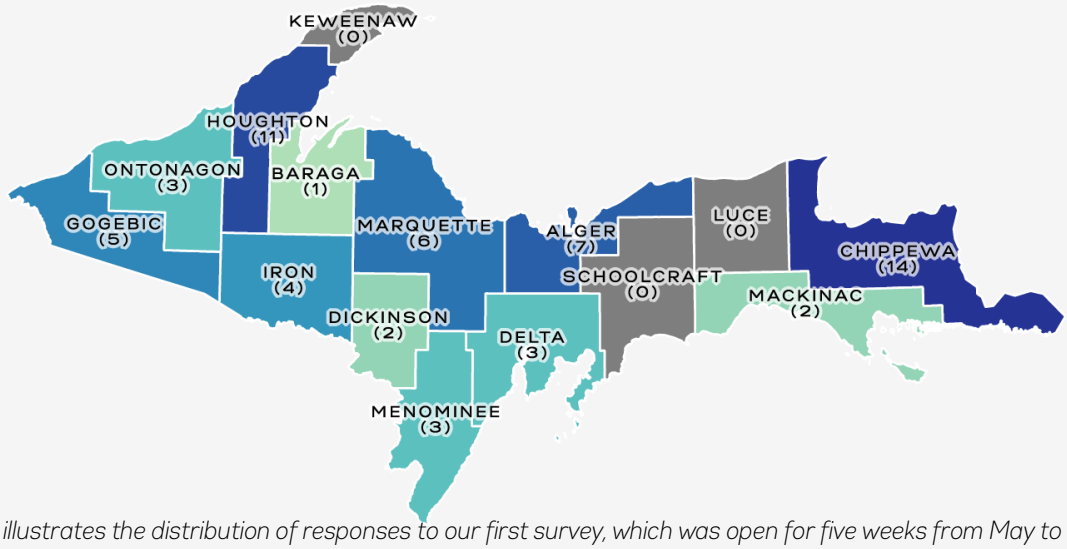
Members of the KK&P team traveled to the Upper Peninsula a total of four times (March 2016, twice in July 2016, and November 2016) to meet with farmers, processors, buyers, and other stakeholders. In addition to one-on-one meetings and site visits, the KK&P team also attended the Agriculture for Tomorrow Conference at Bay College in Escanaba in March 2016. Karin Endy and Ben Kerrick conducted a roundtable discussion immediately following the conference to discuss meat processing in the Upper Peninsula. During the July 2016 trip, Karin Endy and John-Mark Hack presented the project's preliminary findings at the Together at the Farm U.P. Local Food Conference. During the November 2016 trip, Ben Kerrick, Christophe Hille, and John-Mark Hack conducted a facilitated workshop with stakeholders. Also during that visit, John-Mark Hack conducted an on-site assessment at Rainbow Packing.

Other primary research

In addition to in-person meetings with farmers, buyers, processors, and other stakeholders, the KK&P team conducted about 30 additional interviews and conversations with U.P. stakeholders and other subject matter experts.

The KK&P team also created a survey for farmers on the Upper Peninsula to further understand their current use of USDA slaughter and processing, as well as unmet processing needs, customer profiles, and barriers to sales. The survey included 89 questions; respondents were able to skip questions they did not want to answer, and depending on their answers, some pages were skipped altogether. For example, if a farmer responded that they did not raise lamb, the series of questions about lamb slaughter was skipped. The survey was conducted online through SurveyMonkey, and was distributed to the region's farmers via email and other outreach through the project's advisory committee and professional networks. The survey was open for five weeks. Farmers who did not want to

Survey Results: Number of Responses by County



This map illustrates the distribution of responses to our first survey, which was open for five weeks from May to early June 2016.

complete the survey online were given the option to conduct the survey by phone. KK&P received 61 complete survey responses for analysis.

A follow-up survey was conducted in November 2016. This survey included 21 questions and asked respondents about their interest in a variety of services that could potentially alleviate some of the slaughter and processing challenges facing farmers in the Upper Peninsula. KK&P received 18 responses to the follow up survey.

Finally, John-Mark Hack conducted an on-site assessment of Rainbow Packing in November 2016. The purpose of the daylong site visit was to assess the processes, equipment, and facilities owned and operated by Rainbow Packing. The findings of the assessment were delivered to Rainbow Packing and the project client team.

Secondary research

KK&P also used state and national level data to gain an understanding of demographics and meat production and consumption in the Upper Peninsula. KK&P used data from the 2012 USDA Census of Agriculture, USDA Economic Research Service, USDA Food Safety and Inspection Service, the U.S. Census, and the American Community Survey. KK&P also obtained data from Rainbow Packing about their slaughter throughput in 2015.

KK&P also reviewed secondary literature to inform potential solutions proposed for the Upper Peninsula, including mobile slaughterhouses, ownership models for a slaughter facility, and successful programs and organizations in other parts of the United States.

SUMMARY OF FINDINGS

THE DEMAND FOR LOCAL MEAT IN THE UPPER PENINSULA

A successful initiative to expand the U.P.'s slaughter and processing capacity should be appropriately designed and scaled to the region's demand for locally produced meat. Our research revealed key characteristics of the region's demand for local meat, some of which are consistent with national trends, others of which are unique to the geography and economy of the U.P. These findings are summarized below.

The demand for locally produced meat is untapped and likely to grow.

In 2015, MSU's Center for Regional Food Systems reviewed 19 reports from across the U.S. to assess demand for local meat[1]. The findings from this review suggest that demand for locally produced meat has been growing nationally, and this growth is expected to continue. The National Restaurant Association has had "locally sourced meats and seafood" as its top-rated food trend since 2013[2]. The Wallace Center of the Winrock Foundation found that retail sales of domestic grass-fed beef grew from less than $5 million in 1998 to over $400 million in 2013[3]; although not all grass-fed beef is consumed locally to where it is produced, local meat supply chains are well-positioned to respond to demand for grass-fed beef. While these findings indicate a substantial and growing demand for locally produced meat, MSU's review also found that supply chain challenges are preventing that demand from being fully met.

These national growth trends are playing out in the U.P., though not as aggressively as in more urbanized markets. In our survey of farmers, over two-thirds (68%) of respondents that answered a question about demand indicated that they are not able to meet their customers' demands for local meat. In the open comments following that question, several respondents indicated that demand for local meat outstrips the current supply in the U.P.

"I can't raise meat fast enough for our customers' demands, especially our grass-fed beef"

"There is far more demand for locally grown meat than I can supply."

- responses to farmer survey

Interviews with farmers and retailers were consistent with the notion that demand for local meat in the Upper Peninsula exceeds current supply and is likely to grow. One natural foods retailer noted that meat is one of their top-selling items, with customers being especially particular about categories like organic, grass-fed, and locally grown. At the same time, farmers and retailers conveyed that price point sensitivities are a significant mitigating factor on demand for local meat.

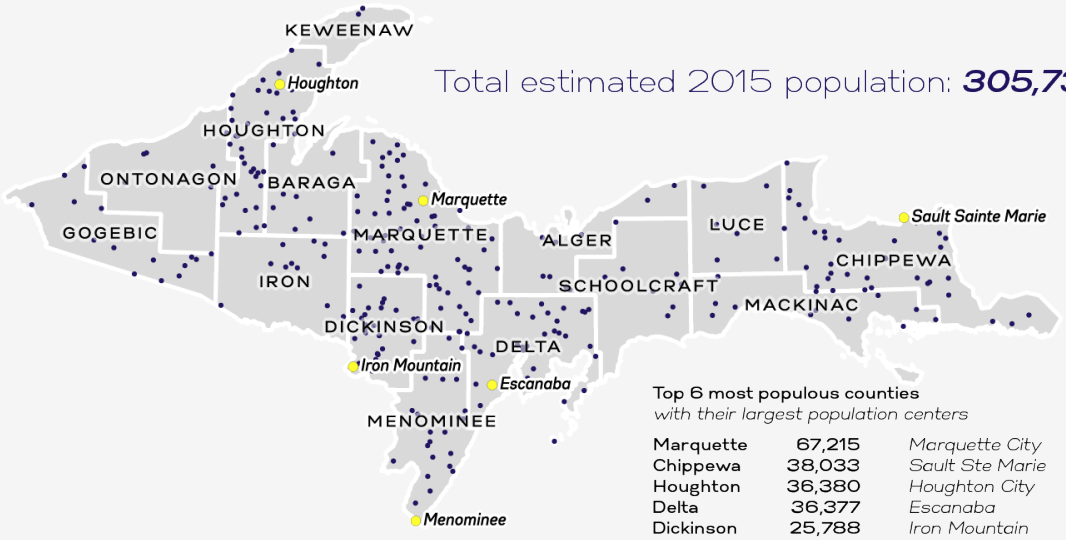
The geography of demand in the U.P. poses unique challenges.

The population of the U.P. is dispersed across the peninsula, though much of it is located in the central portion, which includes four of the region's six most populous counties (the exceptions are Houghton, in the northwest, and Chippewa, in the east). In these six counties, no more than one-third of their populations are located in their primary population centers, although some population is located in smaller cities. According to the 2010 U.S. Census, the U.P.'s population is 52% rural – a much higher proportion than Michigan (25%) or the U.S. (19%).

[1] http://foodsystems.msu.edu/resources/demand_for_local_meats_review
[2] http://www.restaurant.org/Downloads/PDFs/News-Research/WhatsHot2016
[3] http://www.foodbusinessnews.net/articles/news_home/Consumer_Trends/2015/04/Graze_craze_The_market_for_gra.aspx?ID=%7BF0218882-5B02-4ABE-8286-9C960D64164C%7D&cck=1

County-level Population Distribution in the UP

Each dot = 1000 people, randomly placed within county



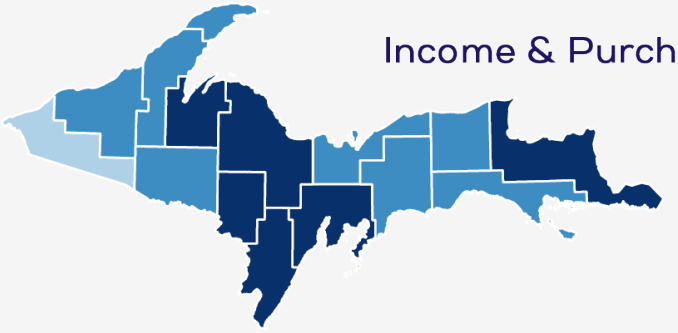
Total estimated 2015 population: ***305,731***

Top 6 most populous counties
with their largest population centers

Marquette	67,215	*Marquette City*	*21,297*
Chippewa	38,033	*Sault Ste Marie*	*13,827*
Houghton	36,380	*Houghton City*	*7,970*
Delta	36,377	*Escanaba*	*12,334*
Dickinson	25,788	*Iron Mountain*	*7,504*
Menominee	23,548	*Menominee*	*8,382*

Median household incomes follow a similar pattern, with higher-earning counties in the center and the east; it must also be noted, however, that even the highest-earning counties are well below the U.S. median income of $53,482. Total combined county household income (mean household income multiplied by number of households) is clearly highest in Marquette County, which accounts for almost one-fourth of the U.P.'s purchasing power. Marquette County also has the highest share (36%) of households with incomes exceeding $60,000, further underscoring its position as economic anchor of the U.P.

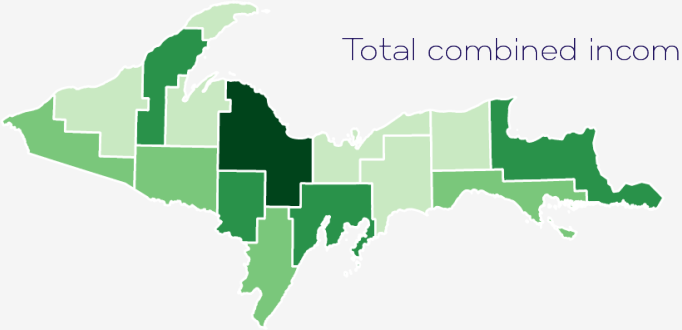
Income & Purchasing Power in the UP



Median Household Income

- $30,000 - $35,000
- $35,000 - $40,000
- $40,000 - $45,000

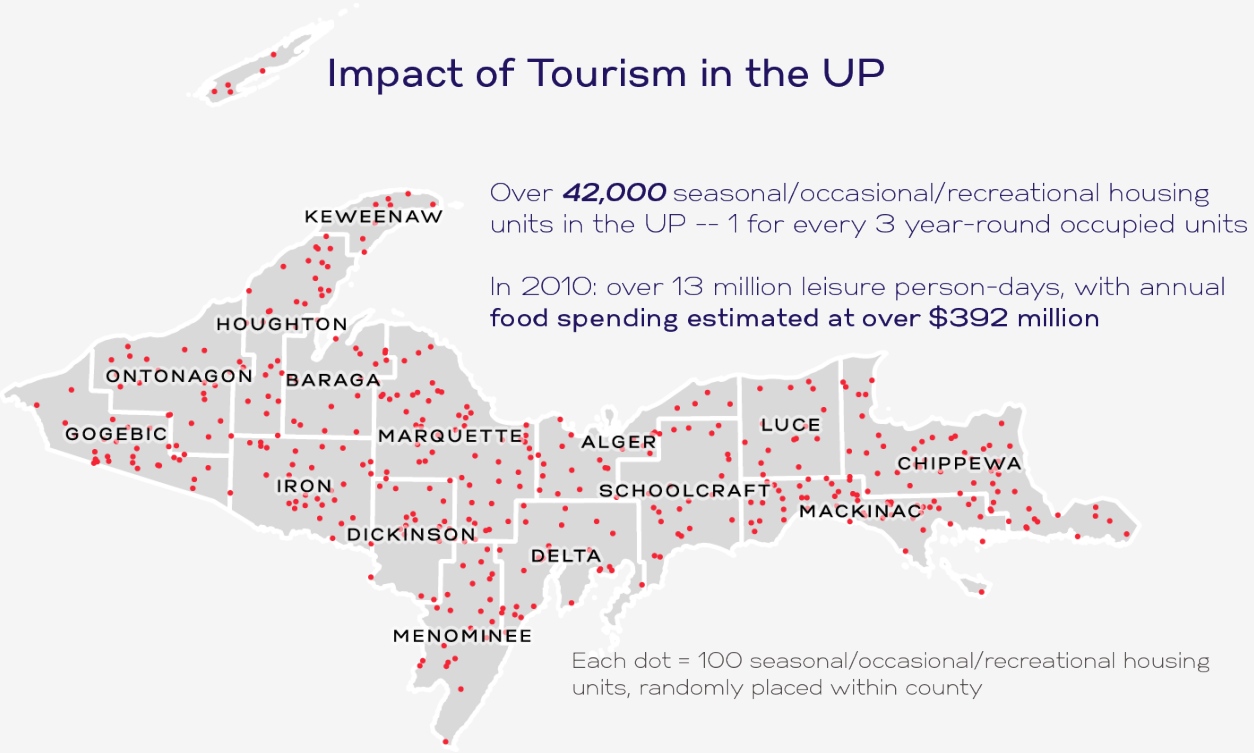
Total combined income in the UP: ***$6.6 billion***



Total County Household Income

- ‹ $185 million
- $185 million - $535 million
- $535 million - $810 million
- $1.5 billion

Other regions that have seen significant growth in demand for locally produced meat are anchored by one or more large urban markets, such as New York's Hudson Valley, where the niche meat sector is largely driven by New York City. The U.P. lacks such a significant urban market either within its borders or nearby, and is thus constrained by a more modest (though still unmet) demand for locally produced meat.



The tourism dollar is an important component of the region's demand.

As residents of the U.P. are well aware, tourism is a significant economic driver for the region. The U.P. is home to over 42,000 housing units classified as seasonal, occasional, or recreational use, i.e. not occupied year-round. That's approximately one part-time housing unit for every three units occupied year-round. These seasonal units are spread fairly evenly across the region. Many U.P. residents have their own seasonal dwellings, so not all of these units are owned by non-residents.

A tourism study completed for the state of Michigan estimated that in 2010, visitors to the U.P. accounted for more than 13 million leisure person-days, with food spending totaling over $392 million[4]. This study also noted that 50% of leisure person-days spent in the U.P. are during summer. And just this year, Lonely Planet listed the Upper Peninsula in its top ten best value destinations worldwide (the only U.S. selection)[5], citing its "stunning natural beauty and charming, Norman Rockwell-esque towns and villages[6]." The characteristics that draw visitors to the U.P. – pristine, natural, unadulterated – align well with the qualities that motivate many people to eat locally, and eating locally is one way for tourists to experience the culture of a place. Although no data has been collected on the extent

[4] http://www.michiganbusiness.org/cm/Files/Reports/2010%20MI%20Visitor%20Profile%20Report.pdf
[5] http://www.lonelyplanet.com/best-in-travel/value
[6] https://www.lonelyplanet.com/usa/michigan/lake-michigan-shore/travel-tips-and-articles/michigans-upper-peninsula-spectacular-in-all-seasons

to which U.P. tourists seek out local foods, it is nevertheless clear that tourists represent an important segment of potential consumers of local meat.

Current demand and consumption of locally produced meat is unknown.

It is notoriously difficult to quantify the consumption of locally produced food. The USDA announced in 2016 its first effort to benchmark national consumption of local food, but that data is still being collected[7]. Community Involved in Sustaining Agriculture (CISA), in Massachusetts' Pioneer Valley, estimated that 12.5% of its region's diet is produced locally, and they used that figure as a baseline to set a goal of 25%[8]. For the purposes of our study, we use 20% as a more modest (yet still aspirational) reference point.

There are, however, tools for projecting the consumption of all (not exclusively local) meat products. The Leopold Center's *U.S. Food Market Estimator* estimates county-level consumption of food groups and products based on USDA-ERS Food Availability Data System[9]. This tool estimates that U.P. residents consume retail weights of over 50 million pounds of beef, pork, and chicken combined, as shown at right, which equates to over 10 million pounds of locally produced meat if a 20% target was achieved. And since these estimates are based on full-time residents, they do not incorporate consumption by tourists.

	Total annual demand (lbs.)	Local demand (at 20%; lbs.)	# animals[10]
Beef	19.2 million	3.8 million	8,500
Pork	14.1 million	2.8 million	23,000
Chicken	18.8 million	3.8 million	833,600
Total	52.2 million	10.4 million	n/a

Different types of customers seek different qualities in local meat.

Retailers, restaurants, institutional purchasers, and individual consumers each have their own priorities, which have implications for producers and processors in the region. Higher-end restaurants and retailers want to be able to feature local meats, and require high quality, consistent supply, and specific cuts, though increasing knowledge and practice of whole animal butchery will mitigate the challenges of restaurants desiring only a narrow range of cuts. Institutional purchasers are driven by price, volume, and contractual obligations with broadline distributors that may limit their ability to source from other suppliers. Individual consumers in the U.P. tend to be price conscious, and many participate in the region's economy of "freezer beef", where consumers will buy quarter, half, or whole animals directly from a farmer at prices lower than retail. These divergent priorities can be complementary by, for example, distributing ground beef to institutions and price-conscious consumers and high-value cuts to restaurants and retailers – but detailed knowledge of the region's buyers and their priorities will be needed to coordinate and maximize the demand for locally produced meat.

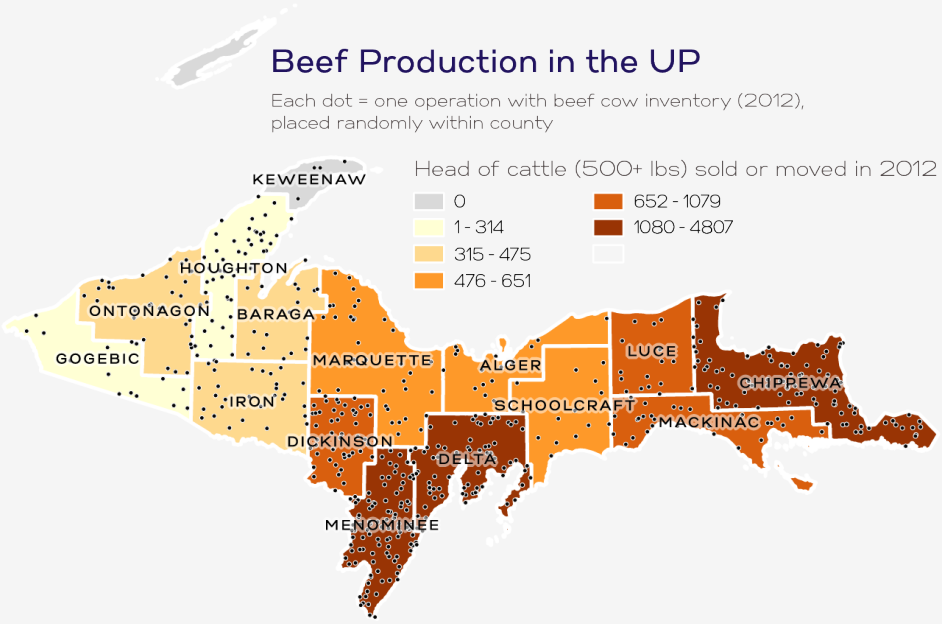
MEAT PRODUCTION IN THE UPPER PENINSULA

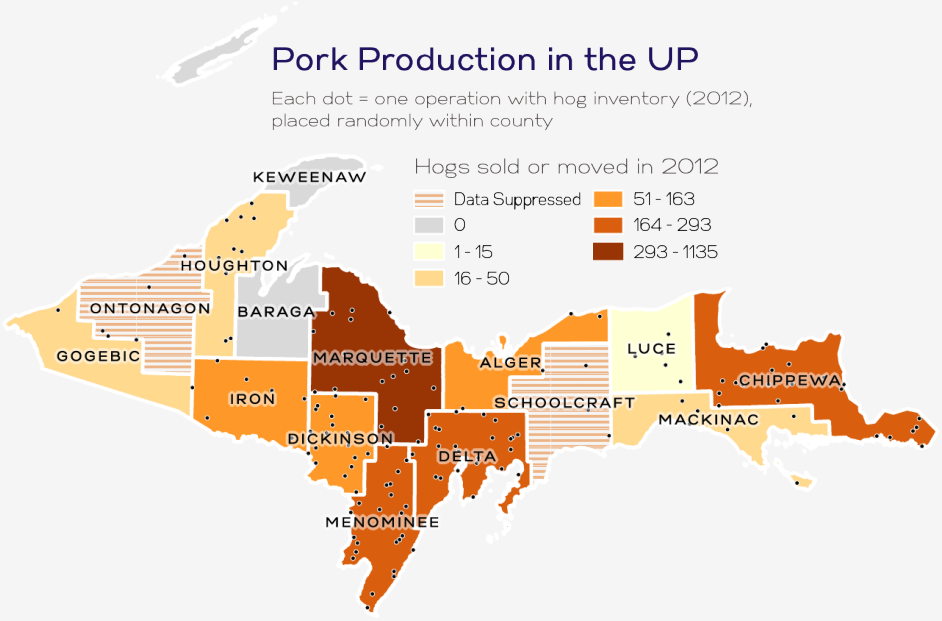
To understand the landscape of livestock and poultry production in the U.P., we assessed data from the 2012 Census of Agriculture[11], gathered the perspectives of farmers through two surveys, and interviewed farmers and agriculture sector experts in the region. The key findings from these inquiries are summarized below.

[7] https://www.agcensus.usda.gov/Newsroom/2016/04_07_2016.php
[8] http://www.buylocalfood.org/about/goal-double-local-food/25-percent/
[9] http://www.ctre.iastate.edu/marketsize/
[10] Assumed retail weight yield per animal as follows: beef – 450 lbs., pork – 122 lbs., chicken – 4.5 lbs.
[11] The 2012 Agriculture Census had a national response rate of 80.1%. The USDA compensates for the response gap with statistical methods; thus there is some uncertainty in these numbers.

Highest production volumes are concentrated in the central and eastern U.P.

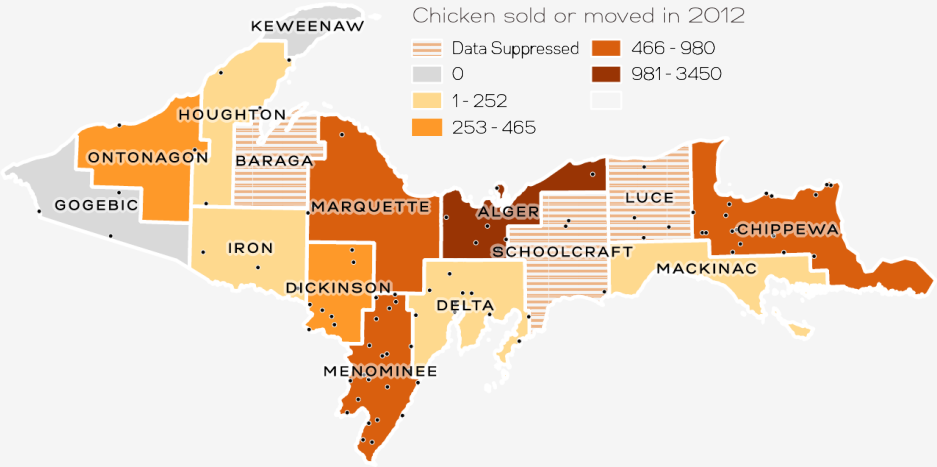
Livestock production is seen in every county across the U.P. (although in the main secondary dataset used for this report, the 2012 Census of Agriculture, no sales were recorded in Keweenaw County for that year), but production is not uniform across the region. The maps on the following pages illustrate the distribution of operations and volumes by animal type.





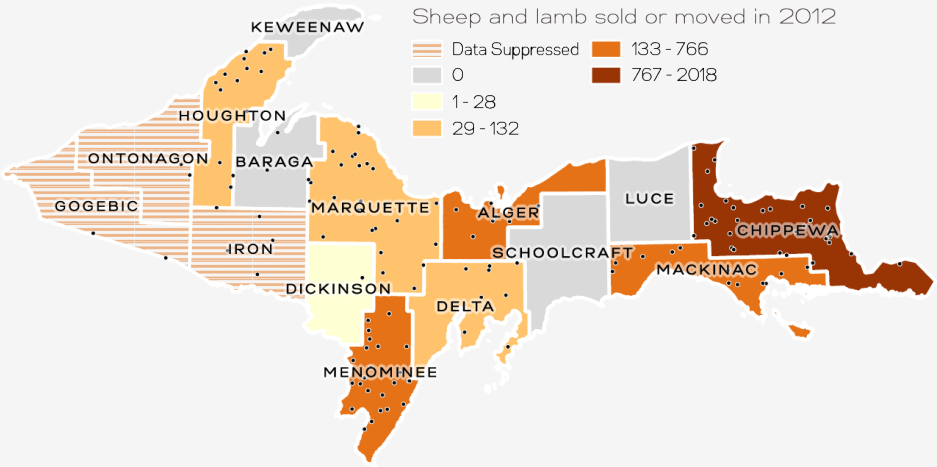
Chicken Production in the UP

Each dot = one operation with chicken inventory (2012), placed randomly within county



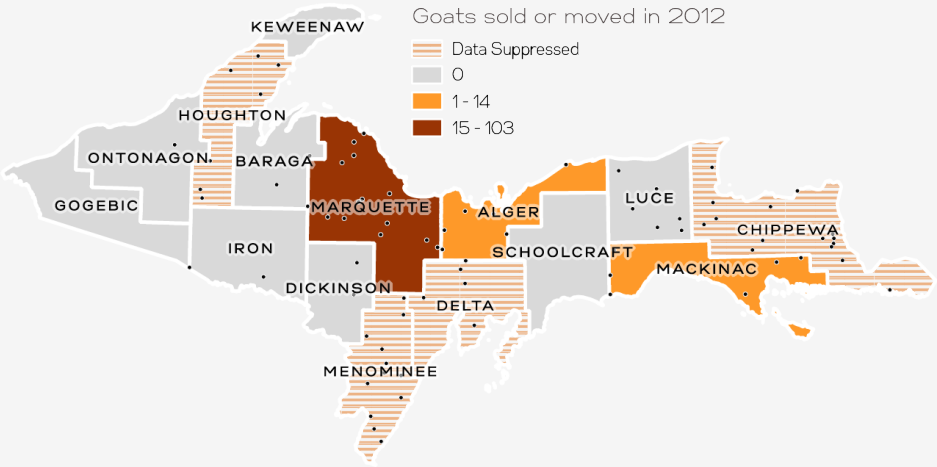
Sheep & Lamb Production in the UP

Each dot = one operation with sheep or lamb inventory (2012), placed randomly within county



Goat Production in the UP

Each dot = one operation with goat inventory (2012), placed randomly within county



Beef production is concentrated in the south central and eastern portions of the region, while the density of operations in the Houghton County area, in contrast with its low volume of cattle sales, suggests that it is home to many small operations. Marquette County leads in pork and goat production (though goat production is quite small), while Alger leads in poultry and Chippewa leads in sheep and lamb. When comparing these numbers with the projected aspirational demand for 20% local, we find that current production of beef and lamb exceed that demand, while current pork and poultry production would be insufficient to meet 20% of total consumption if sourced locally. The U.S. Food Market Estimator does not calculate demand for goat. Interviews indicate that the majority of beef production is sold into feedlots and packing houses outside of the U.P., especially in Wisconsin.

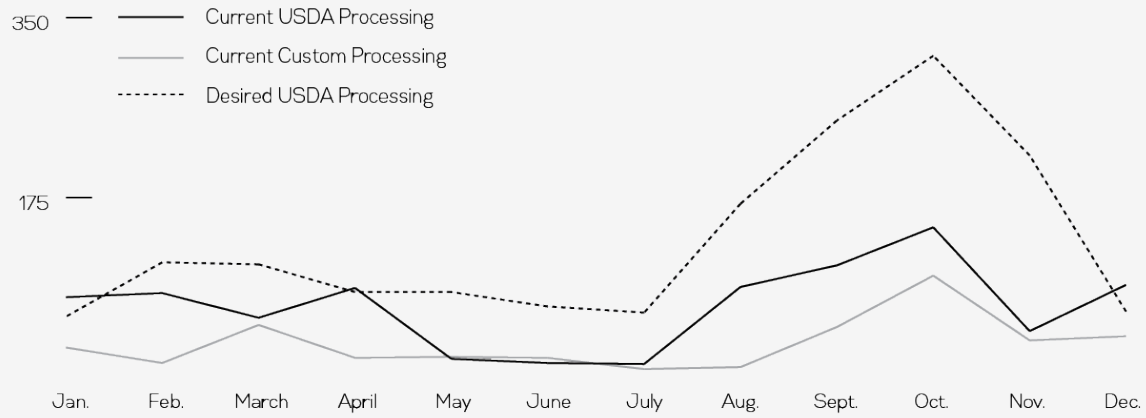
	# animals for 20% local	Current U.P. production
Beef	8,500	15,225
Pork	23,000	2,458
Lamb	1,200	3,528
Chicken	833,600	7,220

USDA Census of Agriculture 2012

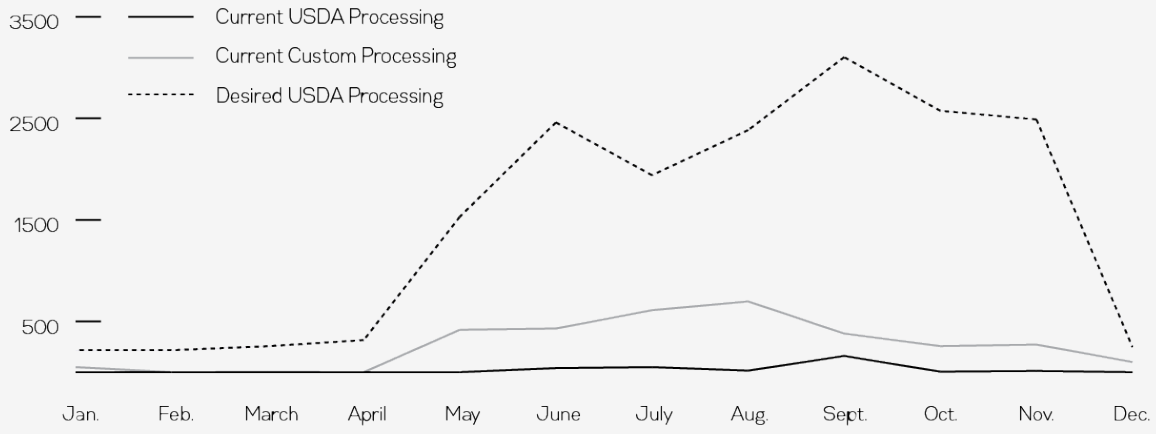
Livestock production is highly seasonal in the U.P.

The climate of the Upper Peninsula, with its short growing season and cold winters, drives a production calendar that

Survey Results: Seasonality of Livestock Production
Animals per month



Survey Results: Seasonality of Poultry Production
Birds per month



is heavily seasonal, with livestock slaughter peaking August through November of each year, and poultry peaking a bit earlier from May to September. Although year-round production is not impossible, it requires significant investments in feed and labor to enable overwintering.

Accessibility of slaughter and processing is a leading barrier to farm expansion.

In interviews and in our survey, farmers identified a range of barriers to scaling up. Over a third (35%) of survey respondents said that "access to USDA-inspected slaughter and processing" was their top barrier to expanding their operations; another 13% cited "distance to processor." "Access to capital" (11%) and "cost of production" (11%) were other leading barriers. Access to USDA slaughter and processing includes both geographical and temporal access: many farmers referred to the bottleneck in slaughter capacity during the fall, at which time it can be quite difficult to get an appointment at Rainbow Packing. On-farm infrastructure, such as cold storage, could also increase capacity but requires capital investment.

SLAUGHTER AND PROCESSING IN THE UPPER PENINSULA

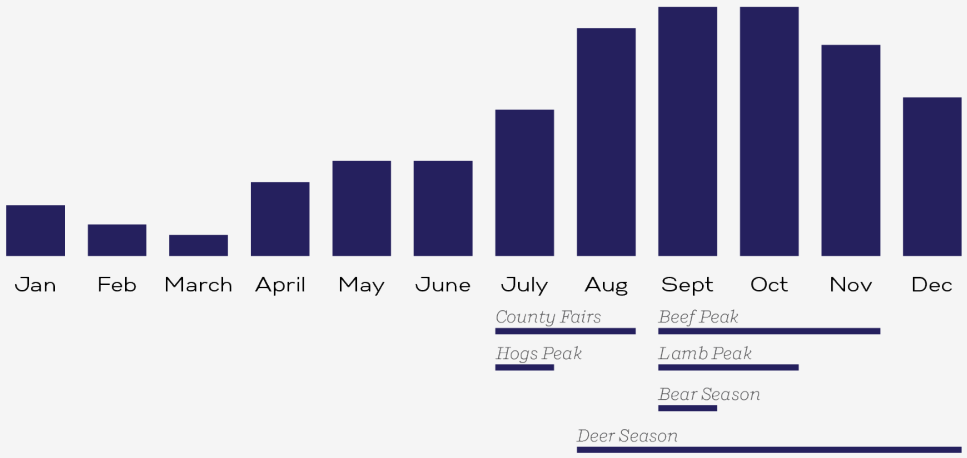
Our team's understanding of slaughter and processing needs in the U.P. has been developed through interviews with the region's processors and farmers, our farmer surveys, and an on-site assessment of Rainbow Packing, the U.P.'s only USDA-inspected slaughter and processing facility, located in Escanaba. Key themes are summarized below.

The seasonality of the production calendar causes significant capacity bottlenecks in the fall.

As discussed in the previous section, meat production in the U.P. has wide seasonal variation that in turn causes processing bottlenecks in the fall. August to November is the preferred time for many beef producers to process their animals. The county fair season in July and August compounds this bottleneck, while deer season occupies much of the custom exempt processing capacity that might otherwise be geared to meat producers who do not require USDA inspection. During this bottleneck time, processing appointments are difficult to get and must be

Seasonal Variation in the Region's Processing Throughput

With other seasonal considerations



This figure combines and approximates data received from processors and farmers to illustrate the general shifts in processing numbers across the year.

booked far (sometimes a year) in advance. Storage capacity is also strained during this time.

Farmers want better access to USDA-inspected processing.

Farmers across the peninsula express a desire for increased or improved access to USDA slaughter and processing. For some that means easier or more flexible booking of appointments, while for others it means reduced travel time to the processor. Farmers who took the survey were asked how many more animals per year they would process with "an ideally situated USDA facility"; in aggregate, farmers said they would process about two and half times as many beef and pigs as they currently process – a significant increase. For poultry, the desired increase is even more dramatic, with farmer respondents saying they would increase USDA poultry processing from a few hundred to over 17,000 birds per year. Comments on the survey indicated that distance to USDA processing and difficulty booking appointments were the most common concerns.

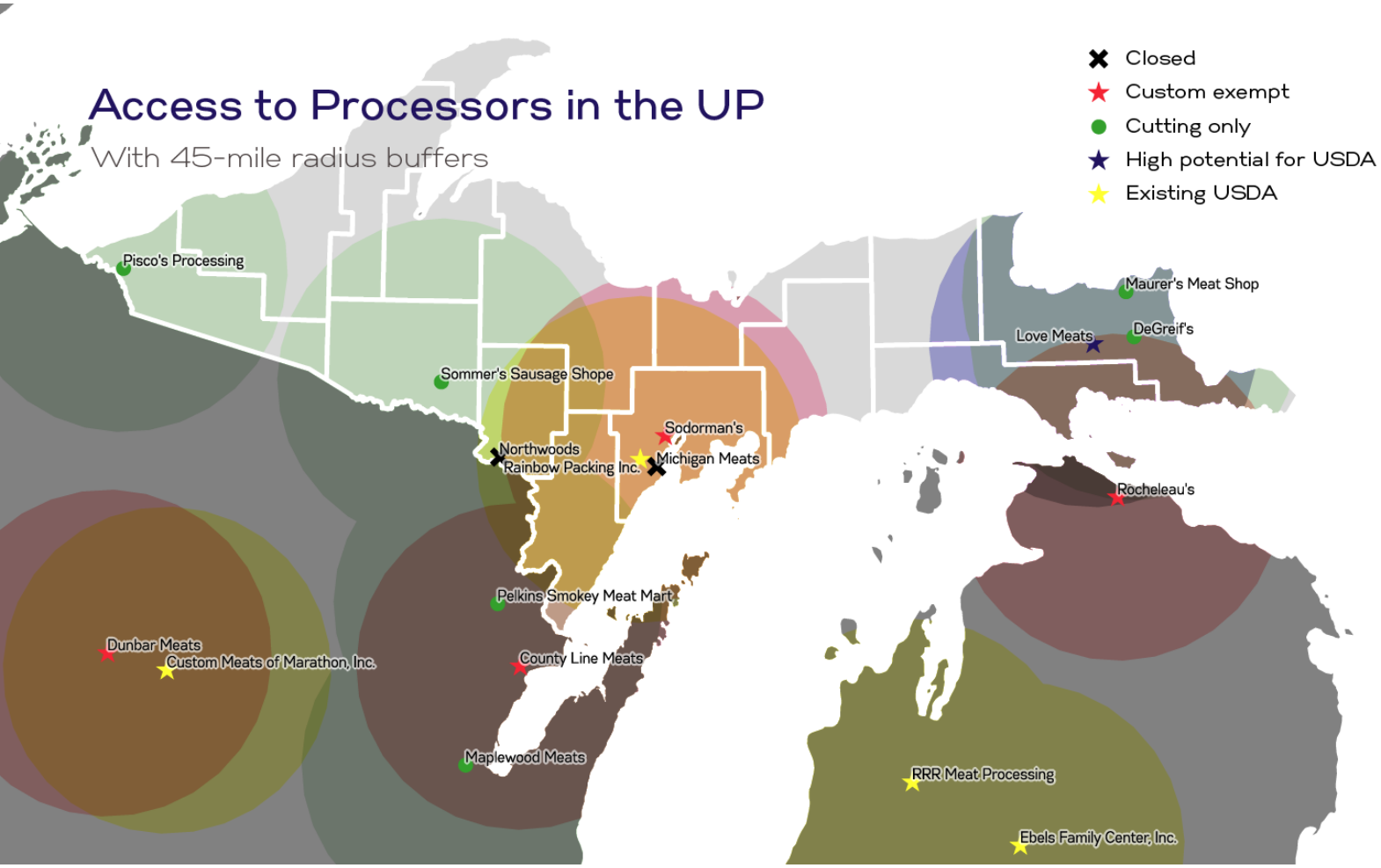
""With a facility closer to our farm we would be looking at butchering every month and increasing our amount of animals on the farm."

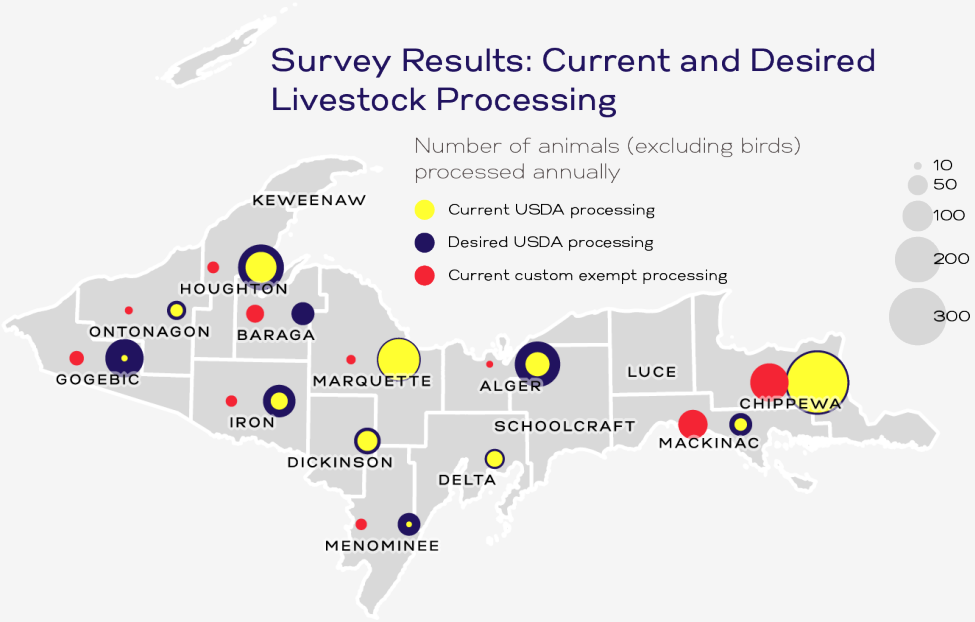
"If I had close facilities I could increase my herd and my marketing."

- responses to farmer survey

Farmer outlooks on access to slaughter and processing vary by U.P. subregion.

With a maximum east-west distance of about 320 miles and a nearly seven-hour drive from end to end, it is useful to think of the U.P. in terms of subregions – west, central, and east – when considering variations in access to





This map illustrates county-level survey results for annual current USDA processing, current custom exempt processing, and desired USDA processing. Current and desired USDA processing symbols are "stacked" to illustrate the gap between current and desired processing in each county.

slaughter and processing services.

The Upper Peninsula has just one USDA-inspected slaughter and processing plant, Rainbow Packing, centrally located in Escanaba. Farmers on the eastern or western ends of the peninsula requiring USDA inspection have options in Lower Michigan (Ebels Family Center, RRR Meat Processing) and Wisconsin (Custom Meats of Marathon), but these involve fairly substantial travel distances: the drive from Sault Ste. Marie to Ebels is 185 miles, and the drive from Bessemer to Custom Meats of Marathon is 134 miles. Several custom exempt processors operate across the peninsula, some of which offer slaughter services as well. Love Meats, in the eastern U.P., is in the process of incorporating USDA inspected slaughter to its services. There are no USDA-inspected poultry processors in the U.P. Access to slaughter in Wisconsin is not as robust for Michigan producers as might otherwise be expected because Wisconsin offers state inspection. Thus, Wisconsin growers can use Wisconsin state-inspected facilities and sell retail within the state, but Michigan producers do not have that option available to them if they wish to return their product to sell in Michigan.

Livestock farmers in the central U.P. have easy geographical access to Rainbow Packing; any access concerns these farmers have tend to be related to difficulty scheduling during the busy season. Farmers in the east have long travel distances to Rainbow, but many opt to process in Lower Michigan, which has the added benefit of providing convenient entry to markets in Traverse City. Farmers in the western U.P. are most challenged with respect to accessing slaughter and processing. Travel distances to Rainbow are long (e.g. about three hours from both Bessemer and Houghton), as are distances to the closest USDA processor in Wisconsin. These conclusions are illustrated in the map of survey results above, where more purple in the west (especially in Gogebic County) indicates a greater unmet demand for USDA processing. Farmers in the west express interest in expanding production, but the time and expense in accessing processing is a major hurdle.

Farmers desire a mix of characteristics in an ideal processor. Priorities include good customer service, convenience, and a range of services.

Farmer survey respondents were asked about the importance of various processor characteristics to their business. For the following characteristics, at least 80% of respondents said the service was either "very important" or "moderately important":

- Good customer service (88.2% said "very important")
- Cutting options (73.1% said "very important")
- Convenient scheduling (63.5% said "very important")
- USDA-inspected slaughter and processing (61.5% said "very important")
- Convenient location (61.5% said "very important")
- Aging (58.8% said "very important")

Customer service is a clear priority for farmers, as is convenience in both scheduling and location access. Services such as cutting options and aging are also important; other desired services ranking slightly lower (but with at least two-thirds citing them as moderately or very important) included smoking, curing, cryo-packaging, sausage-making, and private farm labeling. Interestingly, USDA-inspected slaughter and processing was only the fourth-highest ranked characteristic cited as "very important".

Rainbow Packing in Escanaba

As the only existing USDA-inspected meat processing facility in the entire U.P., Rainbow Packing is an anchor asset and key stakeholder to be engaged in pursuit of a stronger U.P. meat sector. To this end, project team member John-Mark Hack of Marksbury Farm spent dedicated time with Rainbow owners Jeff and Sue Sicotte to identify key areas for facility and systems improvement. This assessment resulted in a set of recommendations that have been submitted separately to Rainbow and to the client team for this project. In particular, that assessment found that expansion of Rainbow's freezer space could significantly improve efficiency, capacity, and throughput.

Interviews with farmers add some detail to this snapshot, while also underscoring the notion that farmers are not monolithic in their priorities. Some farmers are interested in creating a high-end retail product with distinctive custom packaging, while others are more concerned about convenience, efficiency, and price. Even though several farmers may desire a particular service, from the processor's perspective there may not always be the economic justification to offer such a service. Improved communication and understanding between farmers and processors could bring about greater alignment on service priorities.

Insufficient infrastructure and inefficient transportation constrain capacity and exacerbate bottlenecks.

Although cold storage (freezer space) was not identified as one of the top 5 barriers by farmers in our first survey, storage challenges were mentioned in several comments on the survey. It also became clear from our interviews with processors that cold storage is a major constraint in the region's throughput. In our brief follow up survey, we asked farmers about their interest in a shared cold storage unit closer to their farm. One-third of respondents expressed interest in such an option. Of those that expressed interest, two-thirds said they would be somewhat likely (50%) or very likely (17%) to use an option 30 miles from their home at the monthly rental rate of $50 per pallet space. At a distance of 75 miles, only one respondent said they would be somewhat likely to participate. Only two of 18 respondents said they would prefer the option to store their meat at Rainbow for a longer time.

The long distances and sparse population of the U.P. lead to inefficiencies in transportation, from farmer to processor as well as after processing. Farmer survey respondents are currently driving up to 265 miles to process at a USDA-inspected facility (though that maximum is an outlier; the mean and median distances were 105.5 and 80 miles, respectively). In our first survey, not quite half (46%) said they would be interested in hiring a service to transport their animals. In our second survey, a little more than half (56%) expressed interest in that idea, with willingness to pay an average of about $50 per animal for that service (range: $20-$100). Slightly more respondents (61%) expressed interest in coordinating with nearby farmers to consolidate animals for transport, and they were willing to pay less for that approach (range: $0-$100, mean: $21). After processing, some farmers deliver the finished meat directly to their customers, while others have the customer pick up from the farm or from the processor. Only about a third of farmers expressed interest in hiring a delivery service to deliver to customers.

In general, although there are needs for better infrastructure and transportation logistics in the U.P., the sparsity of the region's farms and relatively low production numbers present challenges to finding cost-effective solutions. Survey responses were mixed – neither resoundingly positive or negative – on the possibility of new approaches such as shared transport or shared cold storage.

The lack of USDA-inspected poultry processing in the U.P. significantly constrains potential growth of U.P. poultry production.

There is currently no USDA-inspected poultry processor in the Upper Peninsula. Rainbow Packing offered poultry processing for two years (2013-2014), but in light of the significant time and labor involved, they discontinued that service and sold the equipment to BSB Farms. BSB currently processes their own poultry under the USDA's 20,000-bird limit exemption for poultry producers; BSB also does a small amount of custom exempt processing for other farmers' personal use (this poultry cannot be sold to others).

On our first survey, 34 farmers indicated that they would, in aggregate, raise over 15,000 chickens if an ideally situated USDA-inspected poultry processor were available to them. Two farmers alone accounted for more than 9,000. On our second survey, farmers interested in poultry processing indicated a much greater interest in selling direct to consumer rather than to wholesale customers like restaurants and grocers. Almost three-fourths of respondents (73%) said they would be "somewhat likely" or "very likely" to travel up to 50 miles for poultry processing that met their needs; 45% said they would be "somewhat likely" to travel up to 100 miles.

Based on our understanding of USDA regulations, farmers wanting to sell meat birds have two main options: process their own birds under a USDA exemption, or use a USDA-inspected processor. Farmers we interviewed did not indicate a strong interest or capacity for processing their own birds, and that approach would require new dedicated infrastructure, hence a strong preference on the part of farmers for a USDA-inspected plant.

Luke Bell of BSB Farms has considered adding USDA inspection to their operation. He estimates that about $50,000 of capital improvements would be required to make the transition, and that 10,000-15,000 birds processed annually would get the effort past the break-even point. Located in Skandia, about 15 miles southeast of Marquette, BSB is geographically well situated to meet the needs of poultry producers in the U.P.

RESEARCH IMPLICATIONS

The Upper Peninsula's meat sector is poised for incremental growth, as more consumers and wholesalers catch on to the value of locally grown meat, as improvements to the region's processing capacity increase efficiency and throughput, and as farmers respond to the market by increasing production. Our research builds the case for increased investment and support for the region's meat value chain, with attention to these overarching themes:

- **Geography:** The U.P. has a distinct geography that significantly impacts its meat supply chain, perhaps more so than in most regions, and the sparseness of its population intensifies the effects of its geography. Consideration of the U.P.'s geography, subregions, and distribution of population and agricultural production will be key to successful initiatives.
- **Seasonality:** With its short growing season and intense winters, the seasonality of the U.P.'s production and processing calendar is a significant driver of bottlenecks and constraints. Efforts to extend the production season and increase processing during the less busy months will unlock capacity that already exists in the region's infrastructure.
- **No single gap in the supply chain:** In some regions, the meat supply chain is constrained by a single, clear gap in the supply chain; for example, there might be significant demand and ample production, but not enough processing capacity. The U.P. exhibits potential for growth in all three of these value chain segments: demand, processing, and production. These segments must grow incrementally and in tandem for growth to be successful and sustainable.
- **Coordination, collaboration, and communication:** Our research suggests that there is much to be gained from greater coordination and communication across the U.P.'s meat supply chain. Improved communication will help supply chain actors identify ways to more efficiently and effectively leverage the region's assets through collaboration.

This study was initiated to assess the feasibility of a new multi-species processing facility in the U.P. As our research progressed, we came to the conclusion that a new facility would not be feasible at this time. This conclusion was based on a general finding of insufficient volumes to support such a facility, both through our interviews and survey and through our review of USDA data. One of our key reference points in this conclusion was a model business plan prepared for a small USDA-inspected meat processing plant in Oregon, which relied on assumptions of processing 1,200 beef, 1,800 hogs, 480 lambs, and 360 cull cows annually[12] – numbers that are far out of reach in the current landscape of production. To illustrate this point, we assumed that a new facility would primarily serve the western U.P., where access to slaughter is most limited. According to the USDA, the six western-most counties sold about 1,500 head of cattle in total in 2012, and fewer than 200 hogs. It would be unreasonable to expect a large enough proportion of current production to be redirected to a niche meat processor to make it sustainable.

The team did, however, find a clear need for increased slaughter and processing capacity in the region. This need is evidenced by farmers' expressed desires for increased capacity (in interviews and surveys); Rainbow's operating at capacity during the busy season; and seasonal bottlenecks in the supply chain. Our research team concludes that targeted initiatives could increase the region's capacity and throughput by nurturing incremental growth in production, processing, and demand. Investments in the region's existing assets are central to this recommended approach. The project team therefore redirected its focus midway through the process to identify other initiatives and efforts that could support and encourage the growth of the U.P.'s meat sector. These recommendations are described in the following section.

[12] http://articles.extension.org/sites/default/files/Generic%20meat%20plant%20business%20plan.PDF

RECOMMENDATIONS

Our team concluded that a new USDA-inspected slaughter and processing facility is not an appropriate or sustainable solution for the U.P.'s meat supply chain challenges at this time; however, we also conclude that the sector is poised for incremental growth as demand for locally produced meat increases, and that more modest increases to the region's slaughter and processing capacity are both needed and achievable through targeted initiatives. We have thus developed four overarching recommendations, each with a set of specific strategies, that will guide the U.P's meat sector toward greater efficiency, higher volumes, and increased economic impact. These recommendations and strategies are informed and justified by our research findings, and in particular aim to achieve growth through better communication, education (of consumers and supply chain actors), innovation, and the leveraging of existing assets in the region.

Our recommendations to the community of stakeholders in the Upper Peninsula are summarized here, with detail to follow.

1. **Facilitate effective communication and coordination across the U.P. meat sector. Whether on questions of** USDA and Michigan policies, slaughterhouse scheduling, labeling process and requirements, marketplace education, available resources, or many other topics, the producers, processors, and buyers of the U.P. are insufficiently connected and resourced. Opportunities exist to communicate more through quarterly stakeholder meetings, maximize collaboration and use of existing assets with a new coordinator position, achieve efficiencies through shared transportation partnerships, and educate producers and processors on relevant regulations.

2. **Cultivate and tap into greater demand for U.P.-produced meat. Our findings for the U.P., supported by** analogous findings in other regions, suggest that the demand for locally produced meat is not currently being met, and that demand is growing. By working from multiple angles in branding and design development and support, producer coaching and consumer education around local meat, and wholesale customer outreach, the community of stakeholders in the U.P. can help ensure the marketplace is better equipped to align supply with demand.

3. **Support increased production of meat in the U.P.** Our findings show that the annual production calendar is skewed heavily toward the late summer and fall months, with greatly reduced production in winter through early summer. Other findings also suggest that producers are especially interested in expanding USDA-inspected retail and wholesale markets, and less so the custom-exempt markets. Year-round demand needs to be met – at least to some extent – with year-round production. By educating farmers on best practices for year-round production, assisting them with pricing and cost-modeling guides, and providing access to capital for farm equipment and feeder animals, MSU Extension in partnership with other regional stakeholders may be able to nurture increased production across the peninsula.

4. **Expand the region's processing capacity.** Corollary to the U.P.'s livestock production calendar, our findings show that the processing cycle is heavily compressed into five months of the year during which infrastructure and labor resources are at maximum capacity. Those same resources are underutilized during most of the remaining seven months of the year. There is a range of strategies available to increase the region's processing capacity, both in terms of overall kill slot availability and optimization of those slots. These strategies include infrastructural investment, pricing strategies, personnel training, plant upgrades, prescriptive scheduling and business-to-business communication improvements.

This "implementation roadmap" provides an overview of how these four recommendations can run in parallel with phased strategies.

	Within 6 months	*Within 2 years*	*Within 5 years*	*5 years and beyond*
1. Facilitate effective communication and coordination across the U.P. meat sector.				
1.1 Convene Quarterly Meat Sector Meetings	●			
1.2 Hire an Upper Peninsula Meat Value Chain Coordinator		●		
1.3 Develop Educational Materials on State and Federal Regulations	●	●		
1.4 Develop Transportation Support and Partnerships		●		
2. Cultivate and tap into greater demand for U.P.-produced meat.				
2.1 Provide Marketing, Branding and Design Assistance to Farmers		●		
2.2 Support Development of UP Agriculture Co-Brand		●	●	
2.3 Consumer Education on Value and Benefits of Local Meat			●	
2.4 Locate and Acquire Wholesale Customers for UP Meat Products		●		
2.5 Develop Advance Meat Commitments from Wholesale and Retail Customers			●	
3. Provide tools, guidance, and advocacy to farmers for increasing production.				
3.1 Educate Farmers on Opportunities for Year-Round Production		●		
3.2 Develop Cost and Pricing Models for Producers		●		
3.3 Develop Avenue for Policy Advocacy			●	
3.4 Access to Capital for Producers and Processors		●		
4. Expand processing capacity in the U.P.				
4.1 Increase Overall Processing Capacity and Service at Rainbow Packing	●	●		
4.2 Maintain Processing Sector through Training and Succession Planning		●		
4.3 Help Custom-Exempt Plants Upgrade to USDA Inspection		●	●	
Vision: Create a U.P. Regional Meat Center				●

RECOMMENDATION

1. Facilitate effective communication and coordination across the U.P. meat sector.

As is the case in many rural communities of farmers and processors, stakeholders in the Upper Peninsula's meat sector are insufficiently connected and resourced, and lack the tools to coordinate adequately on their shared needs and goals. Our findings suggest that a great deal of development in the UP's meat sector could be accomplished with a mix of communication, coordination, education, and logistics assistance.

Our first recommendation is therefore divided into four strategies: development of Quarterly Meat Sector Meetings to encourage exchange of ideas and promote business development; creation of an Upper Peninsula Meat Value Chain Coordinator to spearhead many of the strategies herein; development of educational materials for producers and processors around state and federal regulations impacting their business decisions; and development of contracted transportation resources for producers located far from processors.

The proposed phasing of these strategies is as follows. The creation of Quarterly Meat Sectors Meetings is viewed as low-investment and high-reward and should be implemented in the near-term (target first meeting before end of 1Q17). Establishing the Upper Peninsula Meat Value Chain Coordinator has a higher funding requirement but will be key to the efficient and successful implementation of many strategies outlined in this report, and should thus be a priority to accomplish within the first 12-18 months. Until the coordinator is hired, the project advisory committee, meat stakeholder group, and/or other appropriate partners should work together to advance these strategies.

Strategy 1.1: **Convene Quarterly Meat Sector Meetings**

RATIONALE AND DESCRIPTION

The process of undertaking this study – the volumes of data gathered and analyzed, the roundtables convened, and the ideas explored – suggests the first strategy of this recommendation, which is for MSU Extension and/or this project's advisory committee to convene quarterly meat sector roundtables for ongoing collaboration and innovation.

It was our experience that KK&P's roundtables and conversations throughout the research process yielded invaluable insights for ourselves, dispelled assumptions about both individuals and processes, and led to fruitful discussions between farmers, processors, and retailers. Notable topics from our roundtable meeting that revealed a lack of shared information across the peninsula included labeling requirements and production logistics thereof, and regulations and available locations for poultry processing. In both cases, discussion between stakeholders led to some immediate clarity and specific strategies, which have been further developed here.

Topics for discussion in Quarterly Meat Sector Meetings would include any of the findings, recommendations, and strategies found in this report, and expand from there as suits the needs and interests of the stakeholders. A key mission of the meeting would be to support intra-sector education – farmers, processors, retailers and agencies all learning from one another, benefiting from expertise residing in the group, and collaborating towards solutions. Seeking representation from a range of potential buyers (retailers, institutions, restaurants, etc.) will help develop the sector's understanding of their different needs and priorities; additional efforts such as focus groups and customer surveys may be pursued to develop that understanding further. To the extent that any topic serves the mission of increased collaboration and understanding across the sector, it should be explored.

IMPLEMENTATION

We recommend that the meetings be implemented and facilitated, at least initially, by MSU Extension and/or this project's advisory committee, and be held at rotating locations to accommodate the largest possible number of interested stakeholders. Recommended partners to encourage as regular participants are Rainbow Packing,

Marquette Food Co-op, UP Food Exchange, livestock and poultry farmers, retailers and restaurants, and any other key stakeholders with a relatively high impact in the region.

PHASING

We recommend that this strategy be implemented in the near-term, as it requires minimal funding or resources, and yields benefits immediately.

MODELS & RESOURCES

The Michigan Meat Network (http://foodsystems.msu.edu/our-work/michigan_meat_network/) convenes and provides resources for a statewide network of meat value chain stakeholders. Not only can this network serve as a model for a U.P. stakeholder group, it can also be a partner and avenue for connecting with a larger community of stakeholders.

Food policy councils are another good model of multi-sector stakeholder groups convening on a regular basis to discover points of alignment and potential collaboration. While the U.P. Food Exchange functions in some ways as a food policy council, the U.P. meat sector stakeholder group may benefit from looking at other examples, such as the Detroit Food Policy Council (http://detroitfoodpolicycouncil.net/) and the Puget Sound Regional Food Policy Council (http://www.psrc.org/about/advisory/regional-food-policy-council/). The Rhode Island Food Policy Council has sector-specific work groups (http://rifoodcouncil.org/work-groups/), including one for agricultural production, which aims to increase the supply of RI-grown foods.

Strategy 1.2: **Hire an Upper Peninsula Meat Value Chain Coordinator**

RATIONALE AND DESCRIPTION

Our findings in the U.P.'s meat sector included skewed seasonal animal production, lack of producer knowledge of regulations and available tools, both seasonal processing bottlenecks and underutilization, and ultimately, unmet demand for local meat. All of these dynamics could be greatly improved by the work of an Upper Peninsula Meat Value Chain Coordinator acting as an advocate, advisor, collaborator, and logistical support provider for the U.P.'s meat sector.

The Coordinator's roles would include but not be limited to:

- Organize and facilitate the Quarterly Meat Sector meetings (strategy detailed above).
- Facilitate long-range and prescriptive scheduling at processors (strategy detailed below).
- Advocate for U.P. meat producers at state level and coordinate advocacy with most advantageous policy stakeholders (strategy detailed below).
- Facilitate transportation and infrastructure partnerships (strategy detailed below).
- Nurture development of U.P. agricultural identity and branding (strategy detailed below).
- Coordinate with ancillary service providers such as labeling support, marketing, etc. (strategy detailed below).

IMPLEMENTATION

The Coordinator position could be hosted by MSU Extension, the U.P. Food Exchange, or a regional planning organization, and could be an additional part-time role tasked to existing personnel or a new full-time position if it is determined that adequate funding and workload for the position exist. In other regions where similar positions have been created, funding has been secured through private foundation funding, state economic development funding, and/or other governmental funding channels. The position would likely involve travel throughout the peninsula on a regular basis and occasionally farther as well (for example, to visit processors in neighboring Wisconsin and Lower

Michigan). Important partners and supporting organizations for the Coordinator position would be: UP Food Exchange, Marquette Co-op, Rainbow Packing, the Michigan Meat Network, and the region's farmers.

PHASING

We recommend that this strategy be implemented as quickly as is feasible, with a search launch within 6 months and a hire in place by fall or sooner. This would allow the coordinator to be in place for peak season in 2017, during which time that person could execute near-term initiatives and gain hands-on experience of the region's busy season. Of course, hiring timelines can be unpredictable, especially contingent on funding and institutional approval. ***Until a coordinator is hired and/or in the event that hiring is delayed, many of the strategies assigned in this report to the coordinator can be advanced and executed by the project advisory committee, meat stakeholder group, and/or through other appropriate partnerships.***

MODELS & RESOURCES

The Central Louisiana Economic Development Alliance (CLEDA) created a new position of Farm to Table Coordinator in 2015 as a direct outgrowth of research and recommendations made by KK&P. The coordinator helps develop relationships and identify distribution and business opportunities across the local food sector.

Also in 2015, Douglas County, Kansas, created a Food Systems Coordinator position whose goal is to advance local food systems initiatives (http://www.unh.edu/ecogastronomy/food-systems-coordinator).

Strategy 1.3: **Develop Educational Materials on State and Federal Regulations**

RATIONALE AND DESCRIPTION

Our research found significant gaps in knowledge among farmers especially, and processors secondarily, of the finer points of state and federal policies regarding livestock and poultry processing and sale. Some farmers may understand some parts of the regulations and not others, or have knowledge limited to their existing relationships, which leave them under-resourced when circumstances change. The result is that U.P. producers are hindered in their efforts to bring meat to market and grow their businesses.

U.P. meat producers and processors would benefit significantly from a consolidated and distilled overview of all relevant state and federal regulations impacting their business decisions about raising and processing livestock. The envisioned format is a highly accurate primer or white paper, possibly paired with a webinar, addressing the most common and important issues (in-state vs. out-of-state sale, USDA vs. non-USDA processing options, label approval, poultry exemptions, etc.). Greater detail on any single regulation as well as additional resources can be provided via links and specific code references.

MSU's Center for Regional Food Systems has an initiative underway that aligns with this strategy. They are producing a simplified and visual version (diagram or infographic) of a detailed academic study that evaluated the state and federal regulatory environment affecting Michigan's processing capacity. This resource, which will trace the pathways of meat from farmer to consumer while highlighting relevant regulations along the way, is expected to be ready in early 2017.

IMPLEMENTATION

The CRFS effort described above is a significant step toward closing the gap in understanding around regulations. After it is released, the meat sector stakeholder group may discuss and identify ways of disseminating that resource, and following it up with additional useful tools and resources. CRFS, MSU Extension, MDARD, and FSIS are all potential partners in this effort.

PHASING

We recommend that this strategy be implemented in the near-term, starting with the release of the CRFS resource, and growing and continuing from there as needed.

MODELS & RESOURCES

The Michigan Meat Network has compiled reports and webinars as a clearinghouse of resources for members of the network and the public (http://foodsystems.msu.edu/our-work/michigan_meat_network/resources).

The Niche Meat Processor Assistance Network (NMPAN) has created a series of fact sheets and other resources for small to mid-scale meat processors, available on its website (http://www.nichemeatprocessing.org/beginners-guide-to-local-meat-processing).

Strategy 1.4: **Develop Transportation Support and Partnerships**

RATIONALE AND DESCRIPTION

Our research findings included a minority of livestock producers for whom travel time to a USDA processor was a limiting factor. Insofar as those USDA processors are not likely to move closer to any given farm, and with the assumption that farmers prefer to farm than drive, it would be possible to help farmers farthest from processing bridge the gap through contracted and shared delivery services.

TRANSPORTATION:
SNAPSHOT FROM OUR SURVEYS

Almost half of respondents are driving 100+ miles to USDA processing

46-56% were interested in animal transport service, with average willingness to pay **$50/animal**

61% were interested in coordinating with other farmers to consolidate animal transport

32% were interested in delivery service for processed meat

Such a delivery service would likely be provided by an existing producer with equipment sizable enough to have surplus spaces for small livestock numbers to piggyback on scheduled trips. Alternately, it might take the form of a non-farmer equipped for and interested in running transport services. In either case, this strategy should not be one that requires significant capital investment. Typical livestock and farm product transportation services charge $4 per loaded mile (usually with a minimum of around $150). For a producer 125 miles away from a processor, that means a transportation charge of $500. On a load of 4 beef, that translates to an additional cost-per-pound of approximately $0.18 (assuming 700 lbs. HCW). This strategy therefore favors farmers sending at least that many beef per load, as more cost-per-pound is likely to be unacceptable.

IMPLEMENTATION

Development of this service (or multiple services) would be under the purview of the Upper Peninsula Meat Value Chain Coordinator. Likely partners would include MSU Extension, Rainbow Packing, and especially the U.P. Food Exchange. Much as local products are being marketed and purchased on UPFE's platform, transportation services for the peninsula may be traded as well. Local Orbit, the creator of UPFE's platform, could provide customization for transport services. The Coordinator's role in this strategy would largely be one of facilitating and connecting. Once the commercial relationships are established, they will likely be self-directing, as long as participating stakeholders are satisfied.

PHASING

We recommend that this strategy be implemented in the mid-term under the facilitation of the Coordinator; until a coordinator is in place, the meat sector stakeholder group and other partners can begin to identify potential partnerships and interested parties.

MODELS & RESOURCES

The Northeast Livestock Processing Service Company (NELPSC; http://nelpsc.com/) facilitates transport of live animals as well as finished product to and from processors in the Hudson-Mohawk region of upstate New York. NELPSC was created with grant funding but is now a self-sustaining for-profit business. Please see accompanying case study for more detail.

RECOMMENDATION

2. Cultivate and tap into greater demand for U.P.-produced meat.

The Upper Peninsula has a strong regional culture and identity. Like many regions, data shows that its residents value locally-produced goods and especially have unmet demand for local food. In the U.P. meat sector, identity and demand have not been cultivated and leveraged optimally, and are currently proceeding in an ad hoc fashion. We believe that there are several areas in which the community of stakeholders in the U.P. can lay claim more intentionally and fruitfully to identity and pursue the demand for local food from both consumer and supplier sides, and lay the groundwork for several years of growth.

Our second recommendation is divided into five strategies: provide producers with marketing, branding, and design support to facilitate them bringing new and better products to market; nurture the development of a U.P. agricultural co-brand representing all locally produced farm products, including meat; engage in a consumer education campaign on the values and benefits derived from purchasing locally raised meat; assist producers in developing a robust network of wholesale relationships across the peninsula in order to drive overall production growth; and develop advance purchasing opportunities at the retail level with CSAs and at the wholesale level through institutional buyers.

The recommended phasing for these strategies is generally in the mid-to-long-term. The marketing, branding, and design strategy and the wholesale outreach strategy can both be launched following the creation of the Coordinator position, as both involve establishing business-to-business networks that will develop and grow over time. The agricultural co-brand and consumer education strategies would be best developed in tandem, as they will share resources and themes, and should share space in final deliverables. The advance purchasing strategy is likely a long-term project although the CSA portion of it could be prototyped earlier at low risk.

Strategy 2.1: **Provide Marketing, Branding and Design Assistance to Farmers**

RATIONALE AND DESCRIPTION

In the course of our roundtables and research, a familiar obstacle to growing meat production was expressed, which is the lack of expertise among farmers and processors in brand development, marketing, and the design and production of collateral. These soft skills are essential to generating increased demand for agricultural products and are accessible with some training and/or appropriate support. The technical (e.g. design and production) and legal (e.g. permitted claims, approval process) aspects of producing labels for a variety of meat products are particularly complicated, often a stumbling block for new brands, and merit skilled support. The lack of competence in this area is hindering well-branded and correctly labeled U.P. meat products from entering the marketplace.

This strategy would be manifest through a small network of collaborators from the Michigan region willing to assist (pro-bono or paid, as suits the individual case) U.P. producers in brand development, marketing, and the design and production of collateral. As a great deal of this work is now performed digitally, if put in the hands of skilled collaborators it can be done on a timeline and in a setting that doesn't compete with the normal schedule of farmers or processors.

IMPLEMENTATION

Development of this network of collaborators should be pursued by the proposed Coordinator and/or stakeholders using all available professional contacts and knowing that the needs of producers and contributions of those collaborators will change over time. Logical partners for this strategy are groups with skills, tools, and interests in the areas of branding, marketing, and design. Several universities in the region have relevant programs, such as the

School of Art & Design at NMU, UM's Ross Business School MAP program, and WMU's Department of Marketing; independent graphic designers in the region would also be valuable collaborators.

PHASING

We recommend that this strategy be implemented in the mid-term, following the hiring or assignment of the Coordinator. However, the sooner that expert assistance can be applied to collateral design and production specifically, the sooner producers like Wilson Creek Farm will benefit.

MODELS & RESOURCES

Practical Farmers of Iowa (http://www.practicalfarmers.org/) partnered with brand expert Andrew Clark to offer a branding workshop and seminar to farmers interested in developing their farm brand identities. Farmer participants received $1,000 worth of free branding assistance. One farmer noted that with Clark's assistance they "quickly found a logo that works for us, developed eye-catching labels for our products, and are currently working on a website[13]."

Strategy 2.2: **Support Development of U.P. Agriculture Co-Brand**

RATIONALE AND DESCRIPTION

Our findings make evident the gap between demand for and supply of local meat, a gap that has corollaries in other local agricultural products. While the specific identity of the peninsula's meat production may not yet be clearly definable (e.g. consistently pasture-raised, heritage breeds, or some other unifying feature), national data shows that consumers respond well to the idea of locally produced foods and seek them out.

Therefore, we recommend a strategy of aligning the U.P. meat sector's identity with a broader U.P. food identity. Such an identity would make an impact through individual product packages, signage at farmers' markets, retail grocery stores, and in digital marketing materials. There is an existing statewide agricultural brand identity with the "Taste the Local Difference" (TLD) guide and mark, and the U.P. Food Exchange participates in their guide. The final U.P. Agricultural Co-Brand could leverage the TLD mark and designation, or a different mark could be developed, perhaps in consultation with the partners in the above marketing and brand strategy recommendation. The development of a new brand identity separate from TLD would provide greater flexibility, control, and could more explicitly reference the appeal of the U.P.

IMPLEMENTATION

The Agricultural Co-Brand strategy could be led by the U.P. Food Exchange with support from the community of stakeholders, and would require specific funding to go from conception to rollout. Anticipated partners for this strategy would be the U.P. Meat Value Chain Coordinator, MSU Extension, the Quarterly Meat Sector Meeting group, local farmers of all product types, and branding-marketing-design collaborators from the above strategy point.

PHASING

We recommend that this strategy be implemented in the mid-term as a proper design discovery and development process should be approached with deliberation. It is an investment in an identity that delivers the most value when the greatest number of stakeholders adopts that identity.

MODELS & RESOURCES

Santa Cruz Valley Harvest (http://www.santacruzheritage.org/foodbrand) created a brand and logo to differentiate foods that are "locally produced [and] tied to the region's history and cultural identity." The brand is used to mark fresh and packaged foods as well as menu items at restaurants.

[13] http://www.practicalfarmers.org/news-events/newsroom/news-release-archive/1374/

Central Louisiana's "Fresh Central: Grown in the Heart of Louisiana" (http://www.cenla.org/freshcentral/) initiative similarly provides a brand mark for locally grown food products. Their website also allows growers to list themselves on an interactive map available to consumers.

Strategy 2.3: **Consumer Education on Value and Benefits of Local Meat**

RATIONALE AND DESCRIPTION

Corollary to the development of a consumer-facing, U.P. agricultural co-brand, there is an opportunity to educate U.P. consumers about the value and benefits of purchasing local meat, as an avenue to increasing production. Our findings confirmed that there is a gap between the demand for local meat and the available supply. That gap serves as motivation for all of the strategies herein, but it is beneficial to the producers that there always be some unmet demand, some market space to grow into. With that in mind, nurturing demand for local meat in consumers is a valuable long-term strategy.

This consumer education campaign might take several forms, including promotional stands and demonstrations at farmers' markets, print advertising campaigns tying in with the U.P. agricultural co-brand, featured placement at local retailers, and radio appearances by successful U.P. livestock farmers. The salient points to communicate to customers are: pricing (typically higher than for conventional meat, but keeps revenue within the region); quality (almost universally superior in taste and freshness); transparency (the consumer knows the farm where an animal was raised and where it was processed); and community connections (between consumers, farmers, and processors).

IMPLEMENTATION

Our recommendation is that this strategy be implemented by the Coordinator and MSU Extension, with the deliverables being a mix of digital and print marketing collateral, retail strategy, and live events. Key partners in this strategy will be local farmers markets, the Center for Regional Food Systems (for help with effective language and tactics), and U.P. meat producers (as spokespeople).

PHASING

We recommend that this strategy be phased with the U.P. Agricultural Co-Brand strategy, in order to take best advantage of the same conversations, networks, and output materials.

MODELS & RESOURCES

The Center for Environmental Farming Systems in North Carolina initiated the NC 10% Campaign (https://cefs.ncsu.edu/extension-and-outreach/nc-10-campaign/) to encourage individuals and businesses to spend 10% of their food dollars on locally produced foods. The campaign is a multi-pronged strategy consisting of a web-based platform, multi-media promotional and educational materials, educational programming, and business-to-business and business-to-consumer networking.

The Real Food Challenge (http://www.realfoodchallenge.org/) is a campaign to shift university food budgets across the U.S. to more local, ecologically sound, and humane food sources. Although the campaign is primarily targeted to university food purchasing departments, its messaging effectively conveys the value of locally produced foods in a way that might also be effective with consumers.

Strategy 2.4: **Locate and Acquire Wholesale Customers for U.P. Meat Products**

RATIONALE AND DESCRIPTION

A major component of developing local meat networks is finding access to wholesale markets (restaurants, institutions, third party retail), which can often complement and drive direct retail sales. Our findings on the gap

between demand for U.P. meat and available supply suggest that establishing relationships between producers and wholesale buyers would be fruitful on the bases of increasing absolute throughput of U.P. meat, increasing local awareness of U.P. meat, and creating discrete test-cases for prototyping wholesale products, packaging, and fulfillment.

In practice, developing a robust wholesale network is slow and methodical work, requiring identifying likely target customers, discussing needs of the customer and capabilities of the seller, and with some luck, eventually establishing a lasting relationship. The process will occur mostly in direct communication between producers and customers, but larger entities such as non-profits and local distributors can often help by making initial connections or assisting with distribution. A vital part of the process is for producers to determine what meat products they can reliably sell into wholesale markets (e.g. ground beef, bacon, stew beef, beef rounds, pork loins) and understand what condition (e.g. frozen or fresh) and pricing will get those products in the door. The latter may require an examination of the cost-benefit of reducing margins to increase throughput. In most markets, the test-case product for the viability of durable wholesale relationships is ground beef, as volume in ground beef sales directly correlates to the potential processing volume.

IMPLEMENTATION

This strategy will be best implemented under the guidance of the Coordinator but spearheaded by the U.P. producers who are best equipped in terms of cold transport, processing volume, existing customer base, and bandwidth for sales outreach and marketing. A key parner in this strategy will be the U.P. Food Exchange, who has already begun to develop partnerships with potential wholesale customers and whose work to do so will continue. Other partners will include MSU Extension, the Marquette Food Co-op, Rainbow Packing (if successful, processing and storage requirements will increase), the Michigan Restaurant Association, and perhaps local chambers of commerce.

PHASING

We recommend that this strategy be addressed in the mid- and long-term, insofar as a few linchpin relationships may be established in the coming year but a durable and wide-reaching network may take several years to build.

MODELS & RESOURCES

Community Involved in Sustaining Agriculture (CISA; http://www.buylocalfood.org/) in Massachusetts, and the Farmers Guild (http://www.farmersguild.org/) in California are two examples of local food organizations that have held farmer/buyer mixers or networking events to connect farmers with potential buyers to learn about each other's businesses and discuss potential partnerships[14].

Central Louisiana's Fresh Central program maintains an online directory of local producers to make it easy for interested buyers to find local suppliers (http://www.cenla.org/freshcentral/sell-your-produce).

Strategy 2.5: **Develop Advance Meat Commitments from Wholesale and Retail Customers**

RATIONALE AND DESCRIPTION

Corollary to the wholesale outreach strategy described above, we recommend a strategy of pursuing long-term commitments wherever possible at the wholesale and retail levels. Our interviews revealed a preference among U.P. farmers for long-term commitments from customers, and securing those would have a positive impact on processing volumes. It is easy to understand that knowing all or portions of a beef herd are spoken for in advance gives a farmer security on that animal and furthermore enable the farmer to speculate on additional beef.

[14] http://www.buylocalfood.org/event/farmerbuyer-meet-greet-on-building-relevant-wholesale-relationships/; http://www.farmersguild.org/farmer--buyer-mixer-dec-1st-2015.html

At the retail level, the most commonly used advance purchasing commitment is the CSA model. Meat CSAs are now a well-known option, are usually purchased at the start of a farming season by the share or half-share, and often feature a mix of beef, pork, lamb, and poultry. Meat CSAs would integrate well with and build on the "freezer beef" culture of the U.P., especially for consumers who are interested in more variety and have less frozen storage available to them. Unlike freezer beef, however, CSA meat would require USDA inspected processing because it is distributed as retail cuts rather than sold as "live animal". Because meat CSA cuts are commonly delivered frozen, they're convenient to the producer, processor, and consumer. Of the 61 respondents to our survey, only two participated in beef or pork CSA sales.

At the wholesale level, advance-purchasing commitments represent far greater volumes and are almost always highly price sensitive. In practice, these types of commitments are most likely to be developed subsequent to further growth in the U.P. meat sector and only with specific low-margin, frozen products available in high volumes, such as ground beef and rounds. Despite the need to accommodate lower prices for these advance commitments, the volumes involved can be a powerful driver of production growth and are worth pursuing.

IMPLEMENTATION

In both of the above strategies, retail and wholesale, U.P. producers are most likely to be the drivers of the strategy. CSAs in particular will be a direct relationship between producer and consumer. Wholesale advance purchasing is likely to involve more parties, either multiple producers collaborating for supply or a processor acting as an aggregator. In both cases, valuable partners will be found in the Center for Regional Food Systems (for assistance with CSA set-up and institutional purchasing background), Rainbow Packing (due to specific cut sheet requirements for CSAs or bulk ground beef or patty production for institutions), and the U.P. Food Exchange (for sales platform and customer network). The Value Chain Coordinator could also play a role in building and maintaining a list or common knowledge base of interested potential wholesale customers.

PHASING

We recommend that this strategy be addressed in the mid- and long-term. The CSA strategy could be prototyped in the mid-term by motivated producers such as Wilson Creek Gardens. Advance purchasing on the wholesale side is a long-term strategy, likely to follow the development of the general wholesale strategy detailed above.

MODELS & RESOURCES

Herondale Farm (http://herondalefarm.com/csa/) in New York and Trillium Wood Farm (http://trilliumwoodfarm.com/) near Lansing, MI are two examples of small-scale farms offering meat CSA shares direct to consumer.

Farm to Institution New England has done extensive research and developed strategies for getting more local food into institutions. Their Food Service Toolkit (http://www.farmtoinstitution.org/food-service-toolkit) provides detailed guidance, including ways for institutions to develop quantitative purchasing commitments.

RECOMMENDATION

3. Provide tools, guidance, and advocacy to farmers for increasing production.

One of the foundational goals guiding this study has been to see increased production of livestock and poultry in the Upper Peninsula. While many of the obstacles to this goal lie in infrastructural, processing, and market areas, many of the obstacles are more directly tied to farms. Our findings led us to existing dynamics and stated needs that were at times unique to the U.P., and at times, very typical producer issues. The resulting recommendation – providing tools, guidance, and advocacy to farmers for increasing production – is therefore focused on solutions that leverage on-farm and farmer activities and assets.

Our recommendation is divided into four strategies: educating farmers on the opportunities for year-round production, in order to optimize available processing infrastructure; developing cost and pricing models around different livestock raising and pricing strategies, for producers to use for evaluating business decisions; developing an avenue for policy advocacy driven by producers, in the interest of engaging them actively with the regulatory bodies impacting their work; and assist producers in accessing capital, especially for growth of animal herds.

These strategies may be implemented from the near-term to long-term. Seeking increased access to capital for producers can by pursued in the near-term, insofar as the relevant entities likely to lend capital already exist. The development of cost and pricing models can be implemented in the mid-term, as doing so would require an established Coordinator and would be a significant data and research project. Nurturing an avenue for policy advocacy would be addressed in the long-term through the work of the Quarterly Meat Sector Meetings, the goal being development of a process as much as achieving specific policy goals. Finally, the work of educating farmers on opportunities for year-round production is also a long-term one, insofar as it represents a blend of behavioral/cultural change and practical applications of the aforementioned cost and pricing models.

Strategy 3.1: **Educate Farmers on Opportunities for Year-Round Production**

RATIONALE AND DESCRIPTION

We found that meat production in the U.P. was significantly skewed toward finishing animals from July through December, with some variation in that between animal species. Many farmers considered carrying livestock through the long U.P. winter to not be financially worthwhile and therefore timed animal finishing for the fall. Furthermore, the strong local "freezer beef" culture tends towards purchases of large quantities of frozen beef seasonally, rather than fresh beef throughout the year. Consequently, both farmers and processors described a bottleneck of livestock to be processed in the late summer and fall months.

Encouraging the use of tax return funds to purchase freezer beef (a potential education/marketing campaign) could help shift freezer beef purchases from the fall to the early summer. In our conversations with farmers, there was low interest in developing additional "freezer beef" trade but significant interest for additional overall USDA processing capacity in the same half of the year (July-December) that is already the busiest. Expanding overall meat production into new markets such as direct-to-consumer retail (e.g. farmer's markets), third-party retail (e.g. Marquette Coop, Econo Foods), and restaurant wholesale (e.g. direct fulfillment or distributed) will require developing a more consistent year-round supply with increased options for fresh rather than frozen meat. Furthermore, the meat sector is more likely to run into limits – whether processing capacity, labor, cold storage, transportation logistics, or market saturation – if always skewed towards the same time of year.

Modifying this tendency will require an education strategy directed at farmers to encourage animal finishing year-round, or at least more so than is the current case. If additional U.P. meat production is the goal, then farmers will

need to trade some of their cost predictability (e.g. not carrying animals through winter) and rationalized work schedule (e.g. always calving at the same time of year) for the long-term benefits of increased throughput and revenue. Research projects at MSU's Upper Peninsula Research and Extension Center (UPREC) may provide some guidelines and best practices for farmers who wish to start shifting their production calendar. Some specific strategies towards this goal are detailed below for both producers and processors.

IMPLEMENTATION

Insofar as this strategy is a general education campaign, it is likely best implemented through the Coordinator and MSU Extension. Support would come from partners such as Rainbow Packing (through pricing strategy detailed below and availability of slots) and the Center for Regional Food Systems (through cost modeling assistance detailed below and educational materials). All partners should also address opportunities for value-added processing projects that are suited to slower production periods, such as beef jerky, hot smoked meats, deli products, etc.

PHASING

We recommend that this strategy be addressed in the long-term. As it involves significant cultural shifts and changes to cash flow strategies for farmers, it is a goal to work towards with deliberation and without inducing resistance. Small shifts among many producers will accrue into significant change.

MODELS & RESOURCES

Several Extension programs across the country have synthesized academic literature to recommend season extension strategies for farmers, including:

- South Dakota State University: http://igrow.org/livestock/beef/swath-grazing-extending-the-grazing-season/
- University of Minnesota: https://www.extension.umn.edu/agriculture/forages/utilization/docs/umn-ext-extending-the-grazing-season-for-beef-cattle.pdf
- Penn State: http://extension.psu.edu/plants/crops/forages/pastures/plants/strategies-for-extending-the-grazing-season

Strategy 3.2: **Develop Cost and Pricing Models for Producers**

RATIONALE AND DESCRIPTION

Our research revealed that U.P. producers are cautious with respect to speculating on growth and modifying habits. As detailed in the above strategy, moving towards more production in the sector will require growth in finishing animals year-round and not simply in one concentrated season. Detailed under the first recommendation is also a strategy of developing a network of wholesale customers. Both strategies require careful considerations and modeling of input cost and potential revenue under different scenarios. In the case of encouraging more year-round livestock finishing, for instance, what are the cost implications of feeding beef through the winter for spring processing, versus the known return of finishing most beef in the fall? In the case of expanding wholesale customers in the U.P., for instance, what would revenue look like with lower margins on wholesale ground beef but increased overall throughput of beef animals?

We envision a few deliverables from this strategy. First, a cost and revenue white paper as in the above strategy of consolidated state and federal regulations. This would provide basic comparatives, including average estimated daily weight gain for U.P. beef in winter versus summer, cost of feed to gain at the daily average weight rate, relative costs of feed types (hay, silage, sorghum sudangrass, corn, soy, etc.), market prices for conventional vs. premium wholesale ground beef, and so forth. Second, a modeling template (e.g. a Google form, spreadsheet, or web page) in which the above considerations can be applied to a producers specific timing, herd size, target finishing date, and resources, in

order to calculate the estimated returns from finishing animals at different times of years. Additionally, we recommend a second template with which to explore different cost models for processed animals – selling live directly to conventional packing houses, selling whole cut-and-wrap into the home chest freezer market, selling partially into wholesale markets and partially through direct retail, or selling entirely through direct retail.

IMPLEMENTATION

This strategy would be best implemented as a collaborative project between the Center for Regional Food Systems, the Coordinator, and MSU Extension. The deliverables include a significant amount of research and technical work, therefore this would be an excellent opportunity for partnership with a program like UM's Ross Business School MAP program, to benefit from their modeling and research skills. Other partners would include any members of the Quarterly Meat Sector Meetings for qualitative feedback on assumptions.

PHASING

We recommend that this strategy be addressed in the mid-term. Its components have the potential to deliver significant value to producers, involve a lot of development time, and will need to be evaluated for accuracy. Therefore, each component will benefit from undergoing several iterations.

MODELS & RESOURCES

MSU Extension has developed and assembled an array of decision-making tools for farmers of many product types: http://msue.anr.msu.edu/topic/farm_management/budgets_cost_of_production_and_decision_making_tools.

Iowa State University has a similar set of tools for "whole farm" decision-making: https://www.extension.iastate.edu/agdm/decisionaidswd.html

Strategy 3.3: **Develop Avenue for Policy Advocacy**

RATIONALE AND DESCRIPTION

Our research found significant gaps in knowledge among farmers and processors about state and federal food safety regulations and some disaffection for regulations in general. Farmers and producers typically understood the major parts of regulations specific to their role in the meat sector, but lacked a broad enough view to make well-informed business decisions. In particular, the discrepancies, gaps, and opacity within state and federal agriculture regulations as they regard types of inspection below FSIS daily inspection threshold (e.g. custom slaughter exemption, producer/grower 1000 limit, small enterprise exemption for poultry) and the types of permitted sale thereof are a source of concern and confusion.

While FSIS and state agriculture and health regulations help support public safety, it is clear that small farmers and processors often feel those regulations are a burden or are not useful to their customers. Developing an avenue to advocate for policy improvements can make these stakeholders feel engaged with the process and prompt them to take ownership of their role in the regulatory framework. We recommend a strategy of using the Quarterly Meat Sector Meetings to develop a platform of policy proposals that serve the ambitions of the group in a positive and realistic fashion. From there, a framework for presenting these proposals to the appropriate state advocates. From our findings, the most useful policy accomplishments would be around those poultry regulations impacting producers operating below FSIS's 20K bird threshold.

IMPLEMENTATION

We envision this strategy being an outgrowth of the Quarterly Meat Sector Meetings and spearheaded by the Coordinator, with support from the Center for Regional Food Systems and MSU Extension, who have the most policy expertise among this group of stakeholders. Further clarity on regulations and regulatory bodies can be sought through the Niche Meat Processors Assistance Network (NMPAN).

PHASING

Our expectation is that this strategy would be a long-term one, as a clear and well-informed policy point-of-view and realistic regulatory ambitions will take time to develop for this sector.

MODELS & RESOURCES

The Farmers Market Coalition developed a Policy Toolkit (https://farmersmarketcoalition.org/advocacy/) to provide guidance for policy advocacy on behalf of farmers' markets.

The Connecticut Farm Bureau also offers a toolkit (http://www.cfba.org/ctfarmbureauadvocacytoolkit.htm) with a set of fact sheets about the state's agricultural definitions, regulations, and commissions, and provided model ordinances for a range of issues.

Strategy 3.4: **Access to Capital for Producers and Processors**

RATIONALE AND DESCRIPTION

In our survey of U.P. producers, access to capital emerged as one of the top four barriers to expanded production. Difficulties with cash flow and impediments to long-term investments are commonplace problems among livestock farmers. Finding pathways to credit lines, grants, investments and agricultural loans can, however, be transformative for small farmers aiming to grow their business. Beef farmers, in particular, require a long period between investment and return, as much as two years from the purchase of a feeder to slaughter for a pasture-raised animal. In that time, the market price can change sufficiently to wipe out any gains or worse. As banks almost never loan on the value of a herd, but rather on hard, non-collateralized balance sheet assets (land, equipment, cash, homes), it can be difficult for a small beef farmer to grow on natural income growth.

We are recommending a fairly self-evident strategy here, but one that is nonetheless often neglected. To the extent that non-producing and non-processing stakeholders in the U.P. (e.g. Marquette County, MSU Extension, chambers of commerce) can advocate for pathways to capital for the producers, it will benefit the region. Efforts are already under way to find capital for Rainbow Packing. Similar efforts can be undertaken for the most promising of the region's producers as well with the goal of funding increased animal counts on the ground, as that is fundamentally where increased meat production begins.

IMPLEMENTATION

Our recommendation is for this strategy to be pursued by the Coordinator, in collaboration with MSU Extension and Marquette County. The Coordinator should develop survey materials for soliciting interest in debt funding from producers, a checklist for required documentation and qualifying conditions (e.g. adequate assets owned clear of other debt, business plan for growth, past credit history), and a process for assisting farmers through to signing and funding. Since the most likely lender will be Greenstone Farm Credit, they should be involved as a partner.

PHASING

This strategy can be initiated in the near-term, on a case-by-case basis with producers in this sector who express interest in taking on debt for the purposes of growth. It would be ideal to have a few success stories over the next year (e.g. Wilson Creek Gardens, with debt funded pigs, a measurable return, and a repaid loan rolled over into new credit for 2018).

MODELS & RESOURCES

The USDA New Farmers program compiles resources for access to land and capital (https://newfarmers.usda.gov/access-land-and-capital).

BeginningFarmers.org also has a clearinghouse of funding resources in the form of both loans and grants (http://www.beginningfarmers.org/funding-resources/).

RECOMMENDATION

4. Expand processing capacity in the U.P.

We concluded, based on our research, that a new slaughter and processing facility would not be an appropriate use of resources at this time. The key findings underpinning that conclusion are: 1) insufficient production volumes to sustain a new facility, and 2) the fact that existing infrastructure and assets in the U.P. are underleveraged and operating below capacity. Thus, with this recommendation, we provide a framework for targeted investment and action to strategically maximize use of the region's existing infrastructure.

This recommendation comprises three strategies: increasing capacity at Rainbow Packing, the region's only USDA-inspected slaughter and processing facility; maintaining existing capacity throughout the region through training and succession planning; and providing assistance for custom exempt processors who want to add USDA inspection to their services.

This recommendation will extend from near-term activity to long-range planning. Capital improvement funding requests are indeed already underway for Rainbow. Training and succession planning will be an ongoing effort that will benefit from the "35,000-foot" vantage point of the Value Chain Coordinator. Finally, there may be near-term opportunities for upgrades of custom-exempt plants, but other opportunities may also arise further into the future.

Strategy 4.1: **Increase Overall Processing Capacity and Service at Rainbow Packing**

RATIONALE AND DESCRIPTION

By far the largest obstacle to increased production cited by U.P. farmers in our research was access to USDA-inspected slaughter and processing. With Rainbow Packing as the only USDA-inspected facility on the peninsula, a majority of the potential growth in overall processing on the peninsula lies with Rainbow Packing. The major technical issues and equipment investments that will facilitate qualitative and quantitative processing improvements at Rainbow have been addresses in a separate report authored by John-Mark Hack. In this section, we will briefly re-iterate key points and add several soft strategies for increasing overall processing capacity.

- ***Freezer storage*:** Addressed in Mr. Hack's report, Rainbow's main bottleneck is limited freezer storage. Expansion of cold storage capacity will significantly increase throughput capacity and improve efficiency.
- ***Infrastructure, equipment, and facility design*:** Addressed in Mr. Hack's report, there are some areas in which Rainbow's processing methods, structure, layout, and equipment could benefit from targeted investment. These improvements would ultimately help Rainbow continue to meet the needs of U.P, producers, despite it being a very satisfactory facility overall.
- ***Storage fees*:** Besides the investment in additional freezer storage, we recommend that long-term storage fees be considered as a means to generate revenue at Rainbow. This will incentivize smart use the space – producers who do not really need long-term storage will not pay for it; producers who would benefit from the additional capacity will likely be willing to pay a small fee.
- ***Dynamic pricing*:** A possible strategy around the annual processing bottleneck from August through December lies in dynamic pricing for slaughter and processing services at Rainbow. Assuming a baseline of $50/head for beef kills, a small premium of $5/head for slaughter slots in the busiest months (September-December) and a discount of $5/head in the slowest months (January-April) might incentivize producers to make small shifts in the timing of animal finishing that will ultimately help smooth out the seasonal disparities in processing volume at Rainbow. An equivalent premium and discount pricing structure might be applied to

cut-and-wrap services as well. The goal is a price differential that affects behavior positively without impeding anyone from seeking processing in the premium months if it is needed.

- ***Prescriptive scheduling*:** Further improvements in the distribution of seasonal processing demand may be made with more deliberate, long-range, prescriptive scheduling. Rainbow might use the pricing incentives above to steer customers to off-seasons. Long-range advance scheduling should be encouraged and actively pursued by Rainbow's scheduling coordinator (e.g. call known customers pro-actively to book their slots). Priority for slots should explicitly be given to producers who bring animals to process on a regular forecasted schedule (e.g. 4 beef per quarter or month) rather than customers who process only annually or irregularly.
- ***Collaboration with customers*:** For Rainbow and for their farmer customers, a transition to a collaborative rather than transactional relationship is likely to be beneficial to both parties. A need for mutual understanding and commitment between processors and farmers has been identified as a key route to success in studies by the Niche Meat Processors Assistance Network. There are many opportunities for collaboration and partnership, including streamlined order and scheduling processes, expanded services (e.g. labeling) that meet the needs of farmers while improving Rainbow's bottom line, and, especially through the meat sector stakeholder meetings, collaborative approaches to problem-solving and sector development.
- ***Incremental kill slot growth*:** Ultimately, one major measure of increasing processing capacity in the U.P. will be incremental growth in the number of available kill slots at Rainbow. The project advisory committee and/or meat stakeholder group should make this a specific goal and tracked metric. The current estimate is that Rainbow has capacity for 40 beef per week (and is operating at full or near-full capacity from September through December). A goal for the 2017 peak season could be 50 beef per week. That growth in capacity will largely come from improvements contained in Mr. Hack's report and the strategies herein.

IMPLEMENTATION

The strategies outlined above will necessarily be implemented by Rainbow ownership with the guidance of different parties, as they touch on disparate parts of Rainbow Packing's operations. Capital investment projects involving equipment and infrastructure would likely occur through partnership between Rainbow ownership and MSU Extension for assistance on funding, and with input from FSIS (if changes ensue to SOP and HACCP plans). Soft projects involving administration, scheduling, pricing changes, and customer service would best be implemented under the guidance of the Coordinator, with input from participants in the Quarterly Meat Sector Meetings (as the principally affected group of stakeholders in any changes at Rainbow).

PHASING

These strategies would be implemented under distinct schedules, but all of them can be accomplished within the near-term, or by the end of 2017. Provided grants and other forms of capital can be secured, all of the equipment and infrastructure proposals are achievable by summer 2017. The soft projects should be implemented over the course of the year, one at a time so as to not excessively disrupt the meat sector. Prototyping, adjustments, and rollbacks are to be expected along the way to lasting change.

MODELS & RESOURCES

NELPSC (see case study) is actively engaged in prescriptive scheduling, and in its coordinator role it is able to match farmers with slaughter slots to maximize system-wide capacity.

Vermont Packing House (http://www.vermontpackinghouse.com/) has offered winter discounts to encourage business during the slow months: "Dead of Winter Discount: Bring livestock in Feb. or March and get 10% off slaughter and processing."

Strategy 4.2: **Maintain Processing Sector through Training and Succession Planning**

RATIONALE AND DESCRIPTION

Our research highlighted the degree to which U.P. livestock farmers rely on Rainbow Packing as their principal path to USDA-inspected processing, if they're not located on the eastern end of the peninsula and able to drive livestock to the Lower Peninsula. This situation establishes a single point of potential failure for a significant amount of U.P. processing, should the operators of Rainbow find themselves no longer able to operate. Furthermore, the region's many custom exempt facilities perform a vital function in relieving pressure from Rainbow for slaughter and processing that need not be USDA inspected. The project advisory committee and the meat stakeholder group therefore have a distinct interest in seeing Rainbow and the region's custom processors thrive in the near-term and, more importantly, have succession plans for the next generation to take the helm and grow.

We propose a two-part strategy to address this sensitive problem. First, all levels of processors in the region can be given hands-on training on-site and off-site by leaders in the field, to ensure that their skills are continually growing, to motivate them to provide high-quality service, and to establish as much cross-trained expertise in the event that roles need to be shuffled. Second, thorough plans for succession at Rainbow and the region's custom processors can be developed to ensure that operations continue for years to come. The essential elements of this plan include identifying the goals of existing operators and likely successors, crafting succession in management and ownership, mapping out the best-case scenario for a successful transition, and addressing the corporate and legal aspects of business succession.

IMPLEMENTATION

The Coordinator, using distinct partners for the training component and the succession component, would best oversee this strategy. Insofar as the training portion of the strategy involves hands-on, practical work, the Coordinator would look to partners such as Lorentz Meats (Cannon Falls, MN; high-level slaughterhouse operations training), Fleishers Craft Butchery (Brooklyn, NY; focused breaking and butchery training), and Vermont Packing House (Springfield, VT; small facility custom processing, smoking, packing). The succession portion of the strategy will require partners from the advisory committee and stakeholder group to provide legal and corporate counseling or referrals and advisement on prior agriculture/processing business successions.

PHASING

We recommend phasing this strategy in the mid-term to long-term. The training component may be initiated over the next 1-3 years and be staggered into multiple segments for different people involved in each business, so that the operations are never without critical personnel. The succession component is a long-term initiative that may take longer to plan, outline, and execute.

MODELS & RESOURCES

The Niche Meat Processor Assistance Network (NMPAN) provides a meat processor succession planning toolkit: http://articles.extension.org/pages/19825/meat-processor-succession-planning.

NMPAN also provides an overview of meat processor workforce management strategies, including how to set up an apprentice program: http://articles.extension.org/pages/17191/meat-processor-workforce-management.

Strategy 4.3: **Help Custom-Exempt Plants Upgrade to USDA Inspection**

RATIONALE AND DESCRIPTION

Respondents to our farmer survey identified nearly 20 custom-exempt processors that they currently patronize. Because these processors already have facilities, processes, and labor in place, they represent the "low-hanging fruit" in terms of adding USDA-inspected processing capacity to the region. Some that we spoke with have no

interest in upgrading, but others were open to the idea; in a 2014 statewide survey, about one in five custom exempt processors (19%) said they were considering upgrading to USDA inspection. If the opportunity and viability of upgrading are clearly explained and illustrated, custom exempt processors in the U.P. may wish to pursue the transition. Indeed, Love Meats is already in the process of adding USDA-inspected slaughter to its services.

This strategy would start with educating custom-exempt processors about the potential to add USDA inspection, and what that would mean for them in terms of added profits, shifts in workflow, increased demand, and the upfront and ongoing costs of such a conversion. For interested parties, consultation can be provided on the topics of facility upgrades, funding and financing sources, and key regulatory hurdles. Finally, if and when additional USDA inspection comes online, the Coordinator can help facilitate new relationships in a way that encourages sustainability for all parties (including pre-existing facilities like Rainbow).

IMPLEMENTATION

This initiative would likely be spearheaded by the Value Chain Coordinator in partnership with the meat sector stakeholder group, who would help to identify high-potential custom exempt processors. MSU Extension can help identify and pursue grant-funding sources, while Marquette County, other U.P. counties, and Greenstone Farm Credit could help identify additional financing. Experts from other USDA-inspected facilities (possibly from the Michigan Meat Network) could consult on business planning and facility upgrades.

PHASING

This strategy is likely to be a medium to long-term effort, as opportunities and interested parties will emerge in their own time and likely require some ongoing cultivation. There is, however, one near-term potential opportunity to add USDA poultry processing capacity to the U.P., which would

NEAR-TERM OPPORTUNITY

Facilitate and Fund Upgrade of BSB Farms to USDA Poultry Processing

The lack of USDA-inspected poultry processing is a major barrier to expanded U.P. poultry production, as was clearly illustrated by our survey results indicating that respondents would produce over 15,000 chickens annually, compared to just over 250 now, if they had access to an ideally situated USDA facility.

Mobile poultry processing is an option (see accompanying case study), but USDA inspection for mobile processing is especially challenging. Farmers could process their own birds without inspection under an exemption by renting a mobile unit, if one were available, but farmers we spoke to indicated a strong preference for being able to have their birds processed by someone else.

At the same time, inspected fee-for-service poultry processing is notoriously challenging, as described in a report produced by NMPAN:

> Very few inspected poultry processors do fee-for-service processing, far fewer than for red meat, largely because it is very hard to be profitable. One solution is to be one's own "anchor tenant," processing primarily in-house birds for in-house sales. As a small, USDA-inspected poultry processor explains, "We have a successful plant but would be a complete failure if we were relying on processing for others." He is willing to process for other farmers, but needs them to bring "relatively consistent numbers for most of the growing season."
> (www.ers.usda.gov/webdocs/publications/err150/37949_err-150.pdf, p.9)

Given these conditions, BSB Farms is an excellent candidate to step in to meet the need for USDA-inspected poultry processing, precisely as their own "anchor tenant" as described above. Luke Bell of BSB Farms has considered adding USDA inspection to their operation, which began after purchasing Rainbow's poultry equipment two years ago. He estimates that about $50,000 of capital improvements would be required to make the transition, and that 10,000-15,000 birds processed annually would get the effort past the break-even point. Located in Skandia, about 15 miles southeast of Marquette, BSB is geographically well situated to meet the needs of poultry producers in the U.P.

A first step for this effort would be a deeper conversation between Bell, MSU Extension, and Marquette County, to identify necessary funding, potential sources, and go/no-go thresholds in the decision-making process.

provide an excellent pilot/test case for this strategy (see below).

MODELS & RESOURCES

NMPAN has gathered funding resources for meat processors wishing to expand, upgrade, buy equipment, or build a new facility: http://articles.extension.org/pages/70522/finding-capital:-financing-options-for-meat-processors.

Malafy's Meat Processing (http://www.malafysmeatprocessing.com/home) in Red Hook, NY upgraded from custom-exempt to USDA inspection in 2014. Joe Malafy, the owner, said that he did not utilize any outside resources for that conversion, which only required an additional office, but he said he especially could have used consulting assistance on the development of the facility's HACCP plan.

VISION

Create a U.P. Regional Meat Center: an accessible and sustainable state-of-the-art processing, smoking, and curing facility for added-value products.

If a significant portion of the recommendations and strategies presented in this report are successfully executed, some of the positive outcomes will likely include:

- Increased capacity and throughput at Rainbow Packing for USDA-inspected slaughter, cutting, and processing of beef, pork, and lamb. The facility features improved equipment, increased freezer storage, and improved quality overall
- Increased production of beef, pork, and lamb on U.P. farms and higher percentage of that production being processed and consumed on the peninsula, increasing the beneficial cycling of local food expenditures
- Active USDA-inspected fee-for-service poultry processing
- The return of a small-scale U.P. poultry growing sector, selling through direct local retail and intra- and inter-state wholesale

In any meat system dealing in whole animal units, there are products that sell easily and others that drag, some that are of peak value as raw meat only and others that can deliver more value through processing. With respect to beef and pork in particular, increased production in the U.P. will bring with it additional opportunities for value-added products, as well as the potential for inventory challenges.

The major beef and pork products that see use in added-value processing – whether because they are often surplus products or because higher revenue can be achieved in further processing – are pork bellies (bacon), pork fresh hams (smoked ham), beef rounds (jerky), beef briskets/navels (hot smoked meats), and beef trim (dried beef sticks, pepperoni, summer sausage).

We envision investment in an Upper Peninsula processing facility capable of generating all or some of these products in the **5-to-10-year horizon**. By doing so, Marquette County would be contributing to the long-term sustainability of the U.P.'s meat sector. The scope and size of the proposed facility would fill in what would remain as the principal USDA processing gap on the peninsula.

Aspects of this proposed value-add facility to be considered and elaborated on are:

- **Overlap with Existing Processors:** The proposed value-add facility's services should overlap as little as possible with those of existing USDA processers in the U.P. The goal is to complement existing processors, not to compete with them. While there are existing custom-exempt facilities in the U.P. that offer smoking and dehydrating services, those are of no use for commercialized meat products. Rainbow Packing has capacity to produce smoked meats. However, the batch volumes are relatively small due to the size and age of the existing smoker equipment. Furthermore, due to the relatively small numbers of animals being processed per kill batch for a given producer, the potential for larger batches of smoked meats under one brand is reduced. The proposed facility would bridge the gap between Rainbow's capacity and the volume requirements for much larger regional co-packers.
- **Physical Location:** The decommissioned K.I. Sawyer Air Force Base has been identified as a preferred location for any new meat processing facility. The base features large single-story buildings, existing refrigeration facilities, loading docks, access roads, and essential water/sewer infrastructure. The proximity of the base to Marquette and Rainbow Packing is also favorable for efficient commerce.

- **Ownership Structure:** The most likely successful ownership structure for the proposed value-add processing facility would be private ownership, supported with regional, state, and USDA grants for processing equipment and development costs. In this scenario, the advisory committee would issue an RFP and select the best candidate to operate the facility and contribute to the overall success of the U.P. meat sector. A secondary possible ownership structure would be one in which Marquette County develops and owns the facility – taking advantage of similar grants and loans – and leases the facility whole or in portions to operators.

The essential value-add processes that we envision this facility being able to provide are:

- **Smokehouse Services:** High-quality smokehouse services with significant capacity are essential to a robust added-value program. Standard output products include slab bacon, smoked hocks, smoked hams, Canadian bacon, chorizo (beef or pork or blend), summer sausage, smoked brisket, pastrami, and beef kielbasa. Typical minimum batch sizes for a small custom smokehouse may be in the range of 300 lbs. per product. Essential ancillary equipment is a vacuum tumbler (to accelerate brining process) and a rollstock machine (for commercial-grade packaging and labeling, addressed separately below).
- **Slicing Services:** An attractive add-on service for smokehouse to provide is the capacity to machine-slice smoked meats for retail packaging. This service usually applies (equipment depending) to bacon, smoked hams, pastrami, and brisket. Uniformly sliced, well-branded and sealed 1 lb. retail packages of these products are a valuable differentiating item for meat producers looking to enter retail markets.
- **Fermented & Dried Product Services:** Fermented and dried meat products such as pepperoni, Genovese salami, and soppressata represent another added-value meat category that the proposed facility may be designed and equipped to process. While an inherently more complicated and sophisticated process due to the carefully controlled fermentation and dehydration stages, the products in this sector remain popular in American culinary cultures and are some of the oldest added-value meat products in human history due to their very long shelf life.
- **Dehydrated Product Services:** Two highly popular dehydrated meat snacks are beef jerky and meat sticks (e.g. landjaeger). Jerky makes use of relatively low-value and high-abundance beef cuts (top, bottom and eye rounds) and through simple slicing, seasoning, and dehydration, yields a shelf-stable product with significantly higher market value-per-pound than the corresponding raw cuts. Meat sticks typically combine lean beef and fatty pork, and through grinding, seasoning, casing, and dehydration, yield a simple and delicious shelf-stable snack food.
- **Rollstock Packaging:** In order to deliver maximum value to the final products, a facility with any of the above services will require a high-quality rollstock machine for packaging and labeling. These features can be significant differentiators between local packinghouse grade products (basic B/W non-graphic labeling, usually clear plastic only, no differentiating claims) and ones that are retail ready and attractive for regional or national distribution (multiple color labels with graphics, branding, and claims).

It is not required that all five service categories exist for a processing facility to be functional and useful, though a rollstock machine or suitable automated packing system is essential for any of the product lines to be properly commercialized. Each of these added-value processing services helps farmers in four major ways:

- Farmers are able to earn more value per pound on average for their overall meat inventory.

- Farmers are able to divert specific beef cuts and by-products that are in high supply and have low value (i.e. beef trim and round cuts).
- These products extend the shelf life of producer inventories to different degrees (from refrigerated or frozen cooked products with extended shelf life to non-refrigerated shelf-stable products), giving a producer more time to find customers and move their inventories.
- The greater diversity of product types allow a producer or meat brand to enter the marketplace at several different points (raw meat butchery cases, deli meat cases, grab-and-go snacks, retail packaged meat cases, etc.), which increases revenue potential.

The major indicators that the Upper Peninsula meat sector is adequately developed to capitalize on this kind of facility are:

- Significant increased production and processing of livestock and poultry within the U.P. overall.
- Significant increased interest in and demand for locally sourced and locally produced added-value products (e.g. U.P. bacon, jerky) within the peninsula and the broader region (e.g. lower Michigan, Wisconsin, Minnesota).
- Successful meat sector producers or processors with the financial and logistical capacity to aggregate product (e.g. purchase and hold rounds or pork bellies from multiple farmers for jerky and bacon production, respectively).
- Availability of meat inventory in the U.P. for those producers or processors to aggregate (i.e. sufficient local beef production to make aggregating rounds for a batch of jerky possible).

The following entities may provide starting points for modeling the development of the K.I. Sawyer Air Force base into a regional meat center. The first entity serves as an example of the repurposing of a large, decommissioned industrial campus. The three subsequent entities are examples of USDA-inspected processing facilities with varying degrees of focus on in-house brands versus fee-for-service co-packing.

- **Campus Usage Comparisons – IBM Campus, Kingston, NY:** In 1995, IBM vacated a 258-acre facility in the Hudson Valley. The campus was purchased in 1998 by a developer, who has succeeded in achieving 40 percent occupancy of the facility by a diverse group of manufacturing, food production, tech, and office tenants. Some of the tenants, such as The Farm Bridge (http://thefarmbridge.com/), have been valuable contributors to added-value processing for New York State farmers. http://www.techcityny.com/
- **USDA Processing with Brand Development – The Piggery, Trumansburg, NY:** The Piggery has established itself as a strong player in New York State's local meat sector, with a butcher shop, a well-equipped USDA processing facility, and a regionally distributed line of raw and processed meats under its own brand (almost all pork products, mostly sliced deli meats, some portioned and fabricated raw cuts as well). The Piggery also offers white-label co-packing services and is currently expanding its processing capacity to accommodate additional demand for its products and co-packing services. The Piggery sources pasture-raised, antibiotic- and hormone-free meats for all products from a small group of partner farms in New York State. http://www.thepiggery.net/pigblog/
- **Jerky and Smoked Meats Co-Packing – Michigan Brand, Bay City, MI:** Michigan Brand is a company in lower Michigan that evolved from a traditional meat supplier and smokehouse into a facility specialized in a broader array of smoke meats and shelf-stable products such as beef jerky. These products are produced under their own label as well as co-packed for other brands across the US. https://www.michiganbrand.net/index.html

- **Smoked Meats Co-Packing – Vermont Packing House, Springfield VT:** A partner facility to Lorentz Meats in Cannon Falls, MN, Vermont Packing House (VPH) offers a full spectrum of slaughter, cut-and-wrap, and processing services. Relevant to this proposal, however, are VPH's capacity for high-quality sausage-making, smokehouse, slicing, and rollstock packaging services. VPH only engages in fee-for-service co-packing, with the customers supplying their own raw products, and has no branded product of its own. http://www.vermontpackinghouse.com/

In summary, we believe that successful implementation of the recommendations and specific strategies detailed in this report will lead to the conditions listed above that validate long-term development of an added-value processing facility. If this facility is able to provide some or all of the services outlined above, it is very conceivable that the Upper Peninsula would become home to several strong regional brands of popular added-value products. Proud regional branding along the lines of "Yooper Sticks" (landjaeger) and "U.P. Jerky" can capitalize on local pride as well as appeal to tourists and people outside the region interested in associating with authentic local products and culture.

APPENDICES

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CASE STUDY: **CHARCUTERIE**

La Quercia Handcrafted Cured Meats

La Quercia (pronounced *La Kwair-cha*, meaning "oak" in Italian), located in Norwalk, Iowa, creates premium quality American prosciutto using locally raised pigs. The company's founders draw their methods from three years spent living in Parma, Italy, the origin of prosciutto. La Quercia prioritizes sustainability and reducing their carbon footprint in their operations.

La Quercia sources their pork from sustainable producers who treat their animals and land responsibly. All farmers wishing to partner with La Quercia meet the company's standards and protocols: 1) pigs must have access to the outdoors, have room to move around and socially congregate, and be able to root in deep bedding; 2) pigs do not receive non-therapeutic antibiotics, ionophores, hormones, or synthetic hormones; 3) pigs are not fed animal byproducts. La Quercia does not source pigs from CAFOs. Pricing is based on negotiations and not based on commodity prices. The vast majority of the pork that La Quercia sources comes from slaughterhouses within 200 miles of their facility, and most of the pigs are also raised within that radius. The owners of La Quercia make frequent visits to their partner farms.

La Quercia aims to use all parts of the pig when possible, using a variety of products, including prosciutto, speck, lardo, pancetta, and coppa. During processing, each ham is individually handled and evaluated at least 25 times during its curing, aging, and trimming.

In addition to its sourcing guidelines, La Quercia has undertaken many other sustainability initiatives. La Quercia also uses American organic spices and sea salt in an effort to reduce its carbon footprint. Their facility was built with energy efficient materials and use eco-friendly refrigerants, and they continue to incorporate technology and infrastructure that helps to reduce the company's carbon footprint, including on-demand hot water heaters and computer optimized compressors to minimize horsepower on-line.

La Quercia also uses packaging made from plant sources for its spread and shrink bags that use less energy, material, and produce less CO_2 emissions. For sliced meats, La Quercia uses lighter plastic films, recyclable paper sleeves, biodegradable and compostable interleaving, and Eco-Tite bags made with recycled materials.

La Quercia's commitment to local farmers, sustainability efforts, and high quality, uniquely flavored products have garnered them national attention in the culinary world. Their products are sold online and to restaurants around the United States.

La Quercia demonstrates that aggregation and processing of meat can add tremendous value to a meat supply chain, creating a unique, high-value product and earning more return for the farmer and other actors in the supply chain. The U.P. Regional Meat Center proposal takes inspiration from La Quercia to imagine an innovative processing center for the Upper Peninsula.

All photos from La Quercia's website: laquercia.us

CASE STUDY: **COLD STORAGE AND MEAT LOCKERS**

Edgewood Locker, Finger Lakes Meat Project, and others

Many farmers on the Upper Peninsula are required to drive long distances to take their animals to be slaughtered and processed, particularly if they require USDA-inspected services. These long distances can pose challenges to the farmers' business models and use of time. Some of these farmers also may not have the freezer capacity necessary to store the meat they have had processed, while Rainbow Packing is also constrained by limited cold storage capacity. This project's assessment of the Rainbow facility notes that its very limited freezer space is the site's "single greatest bottleneck".

A potential solution to this constraint on farmers and on Rainbow is for additional freezer space to hold processed meat. This freezer space could be at Rainbow, at an off-site shared freezer facility for farmers, or at an off-site shared facility for consumers/buyers.

Edgewood Locker, a meat processor in Edgewood, Iowa, offers cold storage rental as an add-on service for its customers. Edgewood charges $8 per month for meat that is processed on-site, and $12 per month for other items. The benefit to storing meat on-site is that the product is inspected by the USDA Food Safety and Inspection Service and does not need to be transported to another site by the farmers, a transportation service, or Edgewood. Farmers are charged monthly based on the volume of the meat they are storing or the amount of storage space needed.

Off-site shared cold storage facilities such as Michigan Natural Storage in Grand Rapids or Minnesota Freezer Warehouse Company in Albert Lea, Minnesota are another potential solution for farmers. Some existing shared cold storage facilities, including Minnesota Freezer Warehouse Company, also have USDA inspection. Customers are typically charged a monthly fee by pallet space.

Finally, a shared meat locker for customers is another potential solution for additional cold storage space. The Finger Lakes Meat Project is an initiative of the Cornell Cooperative Extension (CCE) of Tompkins and Steuben Counties to grow the freezer trade (the sale of meat in bulk quantities). The initiative consists of educational efforts, an online directory of farms, and two community freezer storage locations (meat lockers). Funding for the project comes from the USDA's Farmers Market Promotion Program. The meat lockers, located in Ithaca and Corning, NY, provide inexpensive, shared freezer space for local residents to store bulk meat purchases. Meat is purchased directly from farmers (typically with assistance of the online farm directory of the initiative, www.meatsuite.com), who have it cut, wrapped, frozen, and delivered to the locker. Then, locker members can access their supplies during scheduled hours each week (like a CSA pick-up). Regularly scheduled pick-up hours are Thursdays from 3pm-6pm and also by appointment. Individuals can rent an 18-gallon bin for $3/month or a 25-gallon bin for $5/month. The CCE hopes to encourage residents to purchase locally produced quarter or half animals by making freezer space available at an affordable price.

K.I. Sawyer Air Force Base could be a valuable asset for creating additional meat locker or cold storage infrastructure in the Upper Peninsula. Although the survey results from farmers were mixed on the question of their interest in a meat locker model, the space and buildings potentially available at Sawyer, as well as the partnership of Marquette County, make it a good candidate location. If the U.P. Regional Meat Center idea is eventually pursued, there could also be synergy between these models.

Photo from Minnesota Freezer Warehouse Company website: mfwc-cold.com

CASE STUDY: **COORDINATED TRANSPORTATION AND PROCESSING**

Northeast Livestock Processing Service Company (NELPSC)

The Northeast Livestock Processing Service Company (NELPSC) was created by livestock farmers in 2005 to help other farmers to overcome processing and marketing challenges. NELPSC currently has 186 members from 24 counties in upstate New York, and has agreements with 15 livestock processors. Farmers sign affidavits certifying that their animals were raised sustainably.

NELPSC facilitates processing and marketing of locally raised meats (beef, pork, lamb, chicken, turkey, venison, and elk) and allows for customizable orders from buyers. First, NELPSC will receive an order from a buyer, and then works with farmers to meet the order. NELPSC selects livestock at the farm and arranges for live animal transport to the appropriate USDA-inspected processing plant, while also working with the processor to schedule the slaughter and processing of the animals. After the cattle are delivered to the processing plant, NELPSC pays the farmer for the livestock within 24 hours of slaughter. The processor will slaughter, process, pack, label, and freeze the meat under USDA inspection according to the buyer's specification and under NELPSC supervision. NELPSC then coordinates the delivery of the finished product to the buyer and delivers one invoice per shipment to the buyer, regardless of the number of farms contributing to the order. NELPSC's role as the coordinator for small meat farmers allows the farmers to focus their efforts on sustainable production, rather than the time-consuming process of marketing and transporting their animals for processing.

NELPSC's place in the food system also mitigates livestock processing bottlenecks and enhances market access for regional livestock farmers by giving them access to buyers whose orders they would not be able to fill on their own.

NELPSC's role as connector also allows consumers and commercial and institutional buyers to more easily purchase orders of regional meats. NELPSC assists member farms in the development of their own value added products and markets. Any direct marketing efforts that NELPSC undertakes do not directly compete with member and other regional direct marketing farms but instead focus on serving larger markets that are beyond the scope of single member farms. NELPSC encourages environmentally sound agricultural practices among its members.

NELPSC is a for-profit business that was developed out of the non-profit Hudson Mohawk Resource Conservation and Development Council. While initially funded by grants from entities like the USDA, New York State Department of Agriculture and Markets, the David Rockefeller Foundation, and the Heifer Project, it has now transitioned to a self-sustaining business entity.

All photos from NELPSC website: nelpsc.com

CASE STUDY: **MOBILE POULTRY PROCESSING**

Kentucky State University Mobile Poultry Processing Unit

The farmer survey revealed that farmers on the Upper Peninsula are interested in raising a much larger quantity of chicken for harvesting than the current level. However, the lack of availability of a USDA-inspected slaughter facility for poultry in the Upper Peninsula and current Michigan poultry regulations make raising poultry less financially feasible for farmers. A mobile poultry processing unit (MPU) could provide poultry slaughter services to different areas of the Upper Peninsula, saving farmers a long drive to a processing facility.

One example of mobile poultry processing is the mobile unit operated by Kentucky State University (KSU). The unit, which is described as the "Cadillac" of mobile poultry processing units, was designed and initially owned by Heifer International. Research and planning for the unit was conducted in the late 1990s through a $15,000 grant from the Sustainable Agriculture Research and Education Program (SARE). The unit was built in 2000, and in 2005 KSU bought the unit for $1 from Heifer International. The principal reason for the transfer of ownership was that Heifer International required a much higher level of liability insurance from farmers ($1 million) than Kentucky State required. Kentucky State University only requires farmers to sign a waiver of liability every time they use the unit, and are advised to carry a product liability rider on their farm's insurance. Should an MPU be considered for the Upper Peninsula, it will be important to understand the insurance requirements that the owning entity would have for farmers using the unit.

The Kentucky MPU cost $55,000 to build, through a fundraising effort led by Kentucky State University, Partners for Family Farms, and the Kentucky Department of Agriculture. The MPU is in an enclosed, gooseneck cargo trailer, 20' x 8', with the processing equipment pulled into a building shell. The trailer must be pulled by at least a ¾ ton pickup truck with a gooseneck ball and electrical connections for trailer and brake lights. Birds are slaughtered outside, and then passed into the trailer through a window to be eviscerated, cleaned, and chilled.

Farmers rent the unit to carry out their own processing and pay a per-bird fee. Farmers can rent the unit for up to 7.5 hours a day. In order to use the unit, farmers must complete a training through Kentucky State University every two years, which costs $75 for the first two years, and $50 for every subsequent two year training. The per-bird fee is $75 for the first 50 chickens and $0.75 for each additional chicken; for turkeys it is $75 for the first 15 turkeys and $3.50 for each additional turkey. Rental fees include water, electricity, aprons, booties, and cleaning. Farmers must provide their own propane for the scalder and bags for the processed birds. There is a vacuum packaging machine also available for rent. The maximum number of chickens processed in one day is between 200-250. Farmers conduct their own marketing for their products.

Kentucky State University employs a MPU coordinator, who drives the MPU to its three different docking locations, makes sure that the MPU's HACCP, Standard Operating Procedure, Sanitation Standard Operating Procedure, Good Manufacturing Practices, and Recall Plan are all followed when the MPU is in use. The coordinator is also trained to condemn unhealthy live birds and identify internal signs of disease, and provides general oversight and assistance as needed.

One challenge that the MPU faced was finding appropriate docking sites. While it was originally intended that the unit would be able to dock at most any farm, site and docking regulations at the state level prevented this plan. Understanding any constraints on docking locations should be included in any feasibility study for an MPU for the Upper Peninsula. The Kentucky unit must have its own septic system, and in order to meet the requirement that slaughter take place in an enclosed kill room, the unit is parked inside a larger, enclosed building at its three docking sites.

A facility processing over 20,000 birds per year requires USDA inspection, but there are several federal exemptions that provide conditions under which small-scale poultry processing can proceed without continuous USDA inspection. Farmers using MPUs or their own on-farm facilities commonly process under the Producer/Grower 1,000 or 20,000 bird exemptions. In order to qualify, the producer needs to also be involved in the processing; that is, the farmer could not drop the birds off to be processed by someone else (otherwise, custom exempt regulations apply). Slaughtering and processing of birds under these exemptions typically must occur on the farmer's premises, though exceptions to this qualification can be made for a mobile unit that does not travel to every farm. Michigan does not have state regulations regarding poultry slaughter and inspection.

The following pro forma budget is based on construction and operating costs of several mobile poultry processing units across the United States. The examples the figures are based on are denoted within the budget. This hypothetical unit is based on a membership structure, where farmers pay an annual membership fee, and then the unit is taken to their farm and supervised by a coordinator. It is assumed the feasibility study and construction of the unit would be covered by grant funding.

PLANNING AND CAPITAL COSTS

EXPENSE	COST
Feasibility study (based on KY model)	**$20,000**
Processing Equipment (estimations taken from Massachusetts enclosed mobile poultry unit)	
Scalder	$9,000
Plucker	$6,600
Stun knife	$2,150
Catch basin for kill station	$2,390
Killing cones for kill station	$1,068
Evisceration table	$2,595
Chill tubs	$630
Subtotal	**$24,433**
Trailer components (including the following)	
Poultry processing trailer	
Running gear	
Trailering equipment	
Additional body equipment	
Interior wall, ceiling, floor finish	
LP gas equipment	
Electrical service equipment	
Plumbing equipment	
Subtotal	**$65,567**
Construction of enclosed unit (most expensive forecast) excluding feasibility study	**$90,000**

OPERATING BUDGET

Operating Expenses	
Mobile poultry unit coordinator salary (part time)	$25,000
Cleaning/maintenance services	$3,000
Insurance (VT model)	$3,500
Mileage: $1.50/mile (assume it will drive 2000 miles in 200 working days per year)	$3,000
Other equipment and contingency	$5,175
Operating expenses subtotal	**$39,675**
Revenue	
Membership fee: $75/year (assuming 20 members)	$1,500
Per bird fee: $1/bird (assuming 150 birds/day, 200 days/yr.)	$30,000
Bagging/vacuuming (optional, assuming 50%): $0.50 for bagging, $0.75 for vacuuming	$18,750
Revenue subtotal	**$50,250**
Profit margin	**$10,575**

Important considerations:

- Insurance requirements by operator
- Docking requirements adhering to state regulations and identifying appropriate docking sites that meet both regulatory and geographic needs.
- Creation of HACCP and other operating plans
- Appropriate operator who can fund the salary of an MPU coordinator
- Hiring search for an appropriate MPU coordinator
- This pro forma is based on running at capacity of 150 birds/day, 200 days/year for 30,000 birds total. This is an ambitious goal that would likely take a few years to scale up to (with active promotion, marketing and outreach of this resource), even assuming that level of demand is present.