The Quest for B(eph):
Sourcing Locally for Williams College

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Class: ENVI 302 Environmental Planning Workshop

Land Acknowledgment

We respectfully acknowledge that Williams College stands on the ancestral homelands of the Stockbridge-Munsee Mohicans, who are the indigenous peoples of the region now called Williamstown. After being forced from their homelands, the Mohicans continued as a sovereign Tribal Nation in Wisconsin, where they currently reside. We honor and respect their ancestors, past and present, as we, the Williamstown community, become a more inclusive and equitable space for everyone.

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Project Overview

Summary/Abstract

The primary goal of this project is to provide a framework through which Williams College Dining Services could begin transferring its beef purchasing to local sources. Currently, Dining Services sources all of its beef from its two primary distributors, Ginsberg's Foods and Performance Food Group, both of which source their available foods from all around the country and transport everything great distances to get to Williamstown. Although Williams College has sourced beef locally at various times in the past, it currently does not have existing partnerships with local beef or dairy farms to supply students with locally raised beef products. The immediate Williamstown area and the larger Berkshire region (that includes Northern Berkshire County and parts of Southern Vermont and Rensselaer County, New York) have many family farms that produce beef and dairy, with the potential for providing beef to the College, both in the form of small-scale grass-fed beef operations and larger dairy operations. Many of these beef and dairy farms are struggling due to the consolidation of agricultural production through monocrop and feedlot practices, limited consistent local markets, and the ongoing COVID-19 pandemic and its detrimental economic effects. Furthermore, the trend of converting rural lands to large residential developments – large single-family homes, second homes, estate homes, etc. – has contributed to a significant loss of agricultural lands in the North Berkshires over the past several decades.

Given the considerable beef consumption per year at the college, Williams could offer a significant and reliable market for local farmers with its consistent yearly bulk purchases; this would help support the feasibility of their operations and provide an avenue for the expansion and reanimation of a thriving local agricultural economy. This project also fits firmly into the College's goals for sustainability as detailed by the ongoing Strategic Planning and Climate Action Plan.

Overall, purchasing local beef will help decrease the College's carbon footprint significantly by reducing the distance beef products and beef-raising products (feed, water, etc.) must be transported in the supply chain from farm to plate. Furthermore, by supporting local agriculture, the College will be able to take steps toward ensuring local rural lands continue to be used in environmentally sustainable ways, as well as supporting the local farmers whose operations have made the Berkshires such an important region for beef and dairy farming for so many decades.

With these considerations in mind, the project's goals are as follows:

1. ***Determine the feasibility of addressing Williams Dining's beef needs with local production.***
2. ***Address the logistical complexities of transitioning a large institution to locally sourced, smaller producers.***
3. ***Provide a comprehensive, equitable, and economically feasible plan and potential timeline for purchasing local beef.***
4. ***Engage with the College's Strategic Plan and Climate Action Plan to demonstrate how locally procured beef will further the College's sustainability goals.***

Introduction

Williams Dining has a goal of purchasing beef from local farmers to promote sustainability on several fronts, support local farms and regional agricultural economies, and further improve nutritional quality and food safety practices. The current considerations prefer that the beef served to students in Dining Halls be antibiotic-free and fed with either a 100% grass-fed or grass-fed and grain-finished model. Additionally, Williams Dining intends to increase the availability of Halal options, which tend to be more expensive due to the USDA approved processing facilities and HACCP practices required for Halal certification. Based on the high volume of beef consumption at the College, we know that currently, no existing cooperative or individual farm can meet Williams' beef demands entirely. However, a structure of strong communication and collaboration between local beef farms, Dining Services, and distribution partners will improve the flow of the purchasing process and increase transparency of operations along the supply chain.

The College currently acquires beef from two distributors - Performance Food Group and Ginsberg Foods. The most expensive premium cuts that Williams purchases are brisket, flank steak, and short ribs, which are all required to be Halal certified. The easiest cut to handle is ground beef, which accounts for the vast majority of overall beef purchases. Half of the volume of ground beef, hamburger, top round, and eye round purchased also must be Halal.

Prior to the end of Provost Dukes Love's upcoming tenure, Dining Director Temesgen Araya hopes to leverage sustainability goals to implement local beef procurement. By organizing a localized farm-to-table process that is scalable and feasible for all parties involved, Williams can increase its local beef purchasing over time, in conjunction with local farms progressively expanding their operations to meet the guaranteed local demand. Building relationships and

cooperating with local farms will allow a positive feedback loop that incentivizes all stakeholders involved. The main challenges include:

1. Identifying farm operations willing and able to sell beef to Williams Dining.
2. Locating slaughterhouses, processing facilities, distribution partners, and freezer storage sites that are nearby to Williamstown and able to accommodate the volume of beef purchased.
3. Maintaining communication throughout the flow of product and transparency of information so that Dining Services can track carbon emissions accurately and holistically.
4. Organizing a logistical point person or persons to ensure that the whole process can run smoothly and efficiently, and that both Williams Dining and farmers can scale up their respective ends of the supply chain overtime.
5. Gaining local farmers' trust in the project overall by following through on the sustainability goals and market support that Williams Dining hopes to engage with.

Methodology

To better understand the scope of the project, we needed to research the history of agriculture in the Berkshires and the associated farming challenges given the geology of the area through literature research and farm interviews. On the Williams Dining side, we needed to understand the procurement process in addition to the challenges currently present in Dining operations, such as the ongoing labor shortage, the implications for storage availability since the conversion of Mission Park to a production kitchen, and the budget concerns that emerge when providing high quality and consistently available products to an institution of this size. Much of this background information came from monthly or bi-monthly meetings with Temesgen Araya

and local farmer Averill Cook, as well as meetings with Professor Sarah Gardner, whose agricultural knowledge was invaluable. This local beef project also seeks to incorporate the pillars from Williams' Strategic Plan for sustainability. In developing the potential solutions, we needed to identify and consult with existing systems of processing, distribution, storage, and transportation, as well as survey the options for making our proposed plan financially feasible for Dining Services and for farmers. Drawing on a series of interviews, analysis of existing beef procurement systems, anecdotal suggestions for restructuring current beef purchasing, and incorporating Dining Services Director Temesgen's goals for the positive impact that Williams can have on local agricultural business, the following report details a comprehensive plan for starting the local beef procurement process from both the farmers' side and the Dining Services side of the supply chain. The following is a list of people we spoke to and/or interviewed:

1. Temesgen Araya, Williams Dining Director
2. Averill Cook, Wendling Farm
3. Crystal Gardner, Hilltop Farm
4. Topher Sabot, Cricket Creek Farm
5. David Young, Hemlock Farms
6. Sarah and Darryl Lipinski, Sweetbrook Farm
7. Wally Chenail, Chenail Brothers' Farm
8. Jay Galusha and Justin Jennings, Fairfields Farm
9. Mike Webster, Tory Hill Dining, LLC
10. Ashley Randle, Deputy Commissioner Massachusetts Department of Agriculture
11. Donald Campbell, Vermont Land Trust
12. Mark Thompson, Williams Executive Chef

Beef Production

Supply Chain Ins and Outs

Beef production is a complex process that includes many different parties doing a variety of tasks for certain amounts of time. The supply chain for beef is extremely delicate and requires meticulous logistical planning. In the simplest terms, farmers raise cows, cows are shipped to slaughterhouses, slaughterhouses process and package the beef, distributors purchase the packaged product, consumers buy from distributors. The actual process, the varying routes that this process takes, and the considerations and calculations that must be made at every step make it so the process is rarely this straightforward. This is especially true for local beef and dairy producers in a place like Williamstown. Given its relatively rural location, the fact that the largest institution and employer in the region sources beef from outside producers, and the ongoing challenges of beef and dairy production, alternatives to this simple supply chain are often introduced, generally including even more parties to process. To fully understand the scope of the project, the logistical implications of purchasing local beef, the heads (number) of cattle required to fill Williams' beef needs, and how to make this project equitable, an in-depth understanding of beef production is essential.

At the beginning of the supply chain are farmers. In Williamstown, there are three main kinds of farms that raise cows: cow/calf operations, dairy operations, and beef operations. Cow/calf operations raise calves from 6 months to a year before selling them to beef producers who then "finish" (raise them for the next year until they are ready for slaughter) them. Beef cattle farmers will buy from these operations on occasion, but many farmers will sell their calves at auction to buyers if they do not have existing relationships. Most dairy farmers will raise their own

calves, as calving is a necessary part of the milk producing process, and many beef farmers will do the same. Beef farmers are simply more likely to purchase calves if they intend on increasing the size of their herd.

Dairy farms are an interesting potential source of beef production. At the moment, dairy cows account for 21% of beef production in the United States ("Dairy Cattle a Big Part of US Beef Supply"). Within the context of Williamstown, the most likely source of beef from dairy farms is dairy culls. Culls are the parts of the herd which are no longer productive, whether they be cows which have aged out of their productive years, injured animals that will have trouble surviving, or animals with another reason that they would not be useful within the herd. These cattle are a much more variable potential source of beef. They come from a wide variety of ages and sizes and can be ready for slaughter at unpredictable times. Nevertheless, dairy farms generally have fairly large herds, making them a likely potential source for beef even with these complications.

Beef cattle farms are the most consistent sources of beef. Farmers will raise their cattle until they are about two years old. At two years, these cows can weigh anywhere between 800 and 1,400 pounds and often have much of their fat incorporated into their muscle tissue, producing better quality meat.

When farmers have raised their cows to their ideal slaughter weight, they will either book their own slaughter dates with a slaughterhouse, sell them at auction, or sell them to a buyer with which they have a consistent relationship, who will handle processing. Cows are brought to the slaughterhouse where they are weighed for their live weight, or their weight "on the hoof." Slaughterhouses vary in their certifications, with USDA generally being the gold standard as it requires an inspector to be on premises, with additional certifications for halal and kosher slaughtering/processing. From there they are killed, skinned, dehoofed, bled, and the internal

organs are removed. The carcass is then weighed again to determine the “hanging weight,” also known as the dressing percentage (“Meat Processing Terminology”). The carcasses can weigh anywhere from 50-65% of the live weight, with feedlot beef typically being higher yield while grass-fed and dairy culls are lower (Saner). From there, slaughterhouses will break down carcasses based on “cut sheets" that customers have filled out. These sheets request the kinds of cuts they want from the carcass and determine the price of processing (“Meat Processing Terminology”). The yield in usable meat will vary animal to animal based on the quality of the animal, and slaughterhouse to slaughterhouse based on the skill of the workers. Different yield grades are assigned to animals based on how much unusable fat they have, which ultimately determines how much meat is rendered. Yields generally range from 60-80% (Schweihofer et al.). Ultimately, only a fraction of the cow’s weight, around 30-40%, is turned into usable meat. Once the carcass is broken down, processing facilities package the meat and prepare it for pick up.

Many beef producers, if they do not handle the sale of their meat themselves, will partner with distributors to sell their product. Distributors will pick up the packaged product and either deliver it to customers or store it until it is purchased. Distributors will often manage the transportation of the finished product, which must be in some sort of refrigeration to maintain food safety standards and keep clean and safe storage facilities. The infrastructure for all of this can become very expensive, especially when purchasing high volumes, making distributors an essential part of the supply chain. They serve as an oftentimes necessary middleman between processor and customer. They also manage the logistical complexities of picking up and delivering finished products.

Last in the supply chain is the customer. The customer is certainly an essential part of the process as they ensure that the rest of the supply chain can support itself and see some level of

income. Customers will provide the markets needed to ensure the feasibility of every other aspect of the process. The guaranteed market that large institutions like Williams can offer is a significant part of supporting the beef industry, especially in regard to local agriculture.

Brief History of Beef in the Berkshires

The Berkshires, home to the slopes of Jiminy Peak and the breathtaking views of the autumn foliage atop Mount Greylock, is also a rural region with large swaths of pastures with much untapped potential. For generations, much of the land in Berkshire County, and especially the land around Williamstown, has been traditionally held as pasture and farmland. During the peak of the agricultural economy in Williamstown, much of the surrounding forests were cleared to expand the agricultural uses of the land. Unfortunately, due to the fact that Williamstown is located in a glacial valley (a valley created by a migrating glacier thousands of years ago), there is a limited amount of prime agricultural soil. Much of the land has thin, rocky soil, unsuitable for cultivation (Bigham, Rebolledo, Sommer). The steeper foothills also make cultivation a challenge due to the erosion of soil, even further limiting the available prime land. Lastly, the growing season in northern Berkshire County is fairly short. With freezes as late as mid-May and as early as late September, the number of crop successions (the staggered growth of vegetables throughout a season in order to maximize production efficiency, essential to the profitability of a vegetable farm operation) possible per season is significantly limited.

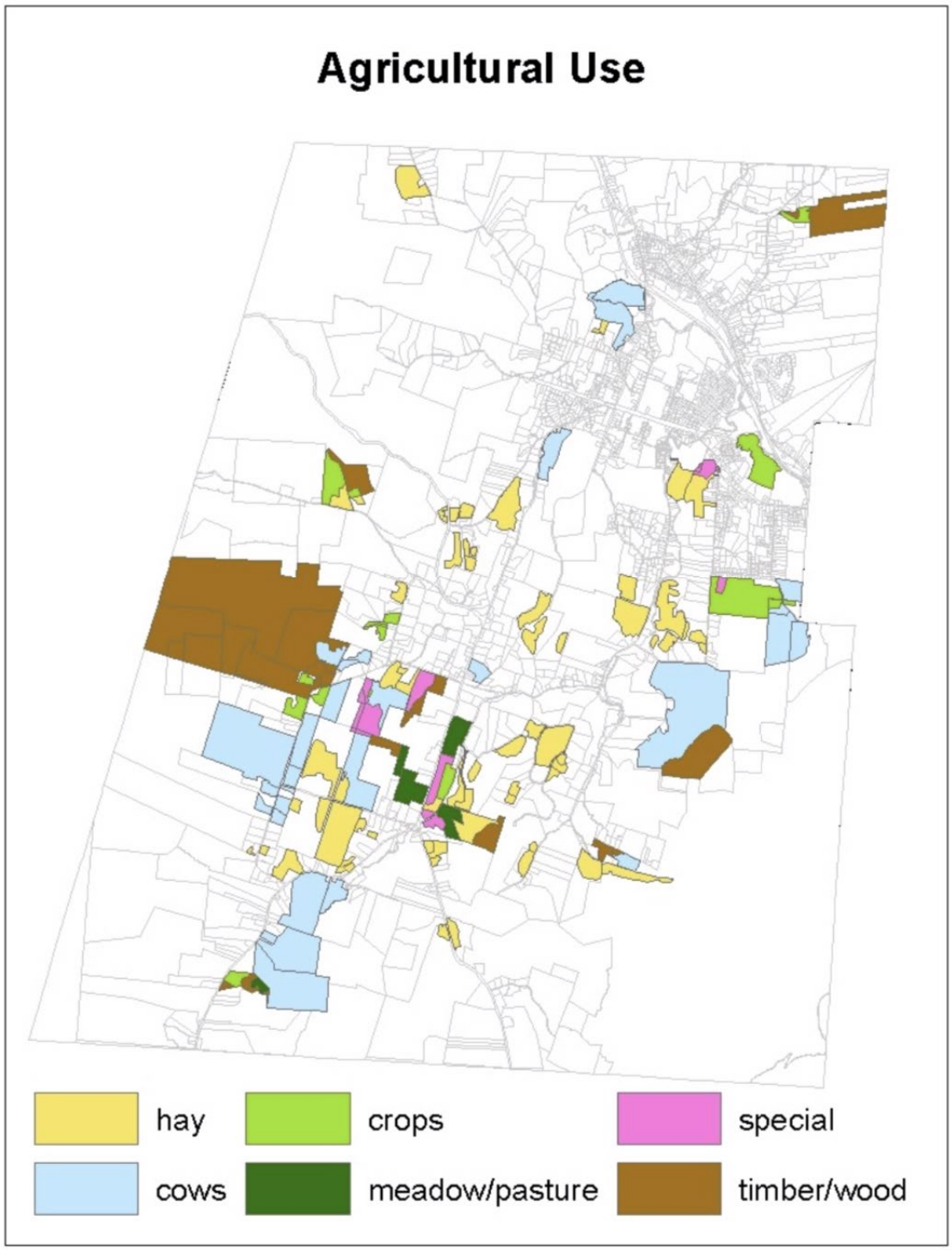
The land in the Northern Berkshire region, however, is optimal for raising livestock; in fact, the Berkshires are the main dairy producing county in the state of Massachusetts overall. With

vast open spaces ideal for grazing, hardy animals like cattle are able to survive the cold winters and thrive on the summer growth in pastures. As a result, dairy and cattle farming has had a long history in Williamstown, with several farms going back generations and still in operation today. In 2017, there were 36 dairies with 3,101 head of dairy cows total and 92 beef cattle operations with 905 head total ("Cattle and Calves - Inventory and Sales Berkshire County, MA."). While many of these operations consist of between 1-9 cows, 10 of the dairy operations had over 100 cows and 13 of the beef had over 20. In 2017, Berkshire dairy farms account for almost a third of the dairy farms in Massachusetts and accounts for 15% of the state's dairy production ("Local Dairy"). Since there are a lot of small beef operations, relative to larger dairy operations, there is great potential and incentive for local beef farms to scale up.

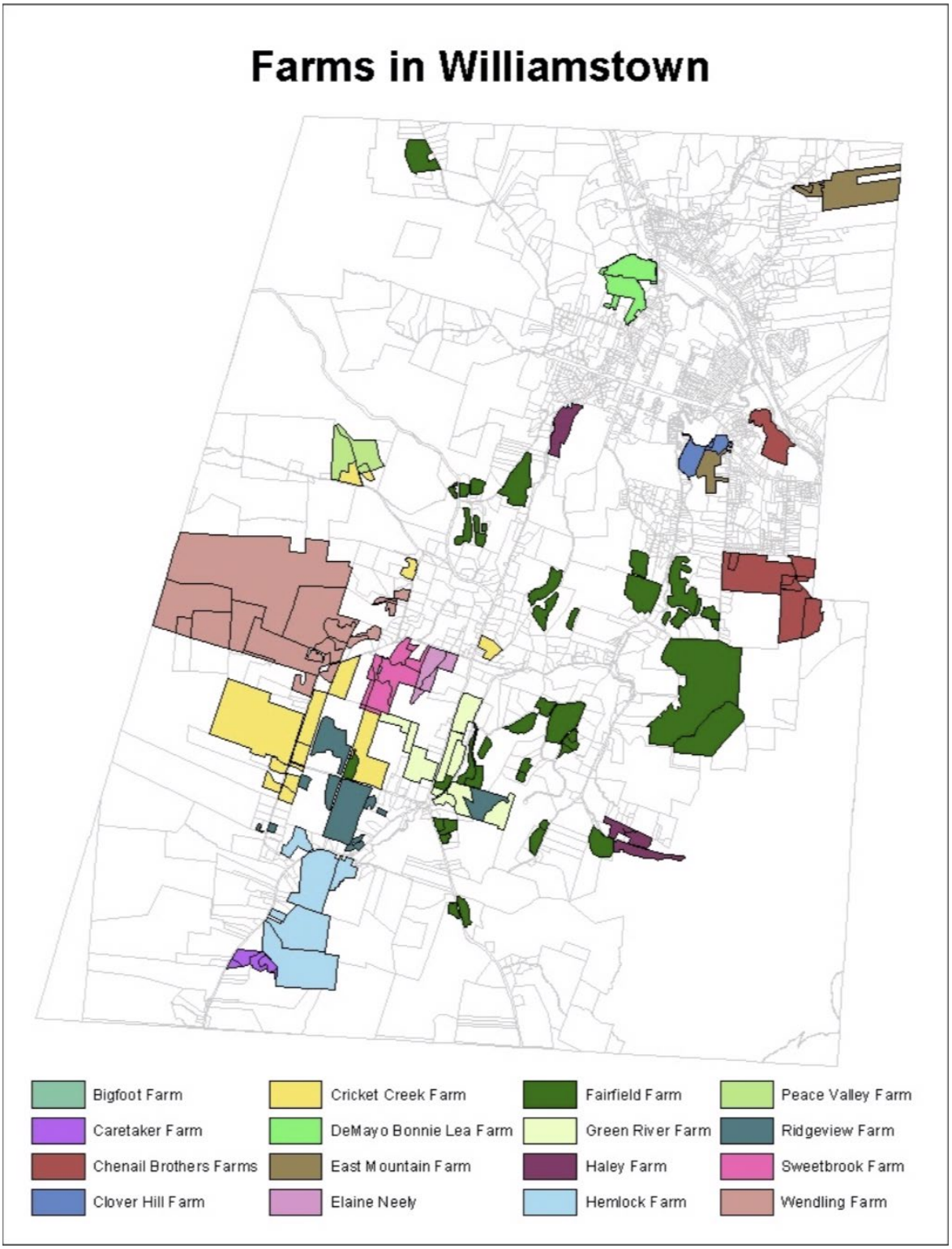
USDA, 2017, Berkshire County								
	Heads of Cattle per Operation							
	1-9	**10-19**	**20-49**	**50-99**	**100-199**	**200-499**	**500+**	**Total**
Beef	65	14	10	3	-	-	-	92
Dairy	13	3	5	5	6	3	1	36

Local dairy and cattle farms in the Berkshires, however, are struggling. Competition with larger corporate farms has made the survival of small farms challenging across the nation. For some, competing with massive feedlot beef and dairy operations is just not possible. Furthermore, land in Williamstown has slowly been encroached upon by outside developers, keen on turning

farmland into sights for new homes (increasingly these new constrictions are second homes for those who enjoy summering in the Berkshires as opposed to much needed affordable housing). Since 2017, 20 dairies have closed, leaving only 16 in Berkshire County, 7 of which are located in North Berkshire County in the area around Williamstown (Professor Sarah Gardner). Much of the agricultural land in Williamstown is devoted to beef or dairy farming. Land devoted to hay and pasture is also essential to these farms as it provides locally sourced feed to cattle and dairy farmers. When comparing the agricultural land use in Williamstown to the individual farms, it becomes apparent that many of the local farms are either currently raising beef and/or dairy cattle, tangentially related through hay production, or own pasture. That is not to mention the variety of different ways that other farms may be related to the beef and dairy industries, from procuring manure as fertilizer to potentially renting land from cattle farms that have decreased herd size given ongoing struggles.



Map of Agricultural land use in Williamstown, MA. Elizabeth Bigham, Juan Rebolledo, Nicholas Sommer, 2020.



Map of Farms in Williamstown, MA. Elizabeth Bigham, Juan Rebolledo, Nicholas Sommer 2020.

Beef at Williams College

On any given day at Williams College, a student will have beef as an option for at least one of their meals. There are three different dining halls on campus: Driscoll Hall, Whitmans', and Mission Park, with additional options for quick meals and snacks at multiple smaller venues, including the '82 Grill and Late Night at Whitmans'. On any day, at least one of the dining halls will likely be serving beef, and students have access to hamburgers at multiple of the alternative venues throughout the day and into the night. Despite having a relatively small student body, one that also consists of vegetarians, vegans, and those who avoid red meat, Williams still consumes significant amounts of beef each year. Given that Williams does not have the facilities available to fabricate whole animals, or to even produce its own hamburger patties, the beef purchased must be already processed and packaged ready to use for the Dining Services staff. The figure below outlines the average usage of various cuts of beef per academic year.

Cut	**Average lbs./yr.**
Ground Beef	23,000
Top Round	4,000
Beef Brisket	2,000
Hamburgers	6,000
Flank Steak	1,000
Short Ribs	1,000
Eye Round	6,000
TOTAL	**43,000**

Source: Temesgen Araya, Williams Dining Director. November 2021.

In total, the college uses approximately 43,000 pounds of beef per year on average, which is over 100 heads of cattle. Recently, the college has additionally expanded access to Halal beef in the dining halls, purchasing all halal brisket, flank steak, and short ribs, and purchasing halal for 50% of the other cuts. These numbers largely represent yearly averages. As of late November 2021, the college had purchased 13,540 pounds of halal ground beef and 3,120 pounds of hamburgers, suggesting a yearly estimate closer to 35,000 pounds of ground beef and 8,600 pounds of hamburger. Purchasing may vary year to year based on the population of students on campus, how many students consume beef, and the availability of beef for the college.

Dining Services currently partners with Ginsberg's Foods and Performance Food Group to source a majority of the food served in dining halls. The college does have an auxiliary fund for the dining halls to source from local farms; however, much of these are based on specific purchasing where a single item can be sourced at lower volumes, such as some produce, yogurt, and maple syrup. Given the large volume of beef, in the past two decades or so Williams has sourced its beef from corporate distributors. Currently, most of the beef is sourced from Ginsberg's Foods, which the college has an agreement with to ensure access to the necessary volume, off site storage (which is necessary given the limited amount of freezer space available to Dining Services), and delivery three times a week in refrigerated trucks. They work with USDA certified slaughterhouses, processing facilities with cryovac packaging, and follow HACCP food safety practices, all essential elements for a distributor working with a large institution like Williams. Ginsberg's furthermore submits to regular audits to Williams staff to ensure that their practices are in line with Dining Services' standards. Volume, logistical ease, and food safety are all essential services offered by distributors that make work for Williams' Dining Services much easier.

Ginsberg's, a business started by the Ginsberg family in 1909, is an independently owned distributor out of Hudson, NY. It is a part of the UniPro Foodservice conglomerate that ensures smaller distributors around the country can procure necessary stock and pass it along to their clients ("About Us"). Despite its smaller scale and the company's pledge to community engagement, as a significant distributor in the Hudson Valley and Berkshire Region, it still follows similar practices of other larger corporate distributors. Much of the beef sourced by Ginsberg's comes from corporate beef operations in the Midwest ("Search Products - Beef"). Larger corporatized beef production in the Midwest means likely purchasing feedlot beef, an environmentally and ethically questionable practice that concentrates methane emissions and relies on monocrop feed use. On their product lists, Ginsberg's lists IBP, Iowa Beef Processors, as a supplier. IBP is an offshoot of Tyson Meats, a company notorious for their harmful practices and exploitative contract farming ("Search Products - Beef" and "IBP Trusted Excellence® Beef and Pork"). Although Williams Dining Services does not purchase these exact products and partnering with Ginsberg's demonstrates their commitment to actively sourcing from a smaller distributor with a dedication to building strong relationships with producers and communities, mass produced beef is difficult to find produced in ethical and environmentally friendly ways, and oftentimes larger farms are less upfront with their practices. Even with buying the best possible products from Ginsberg's, the beef nevertheless must be transported across the country.

Farm Profiles

We visited six local farms and interviewed the farmers who operated them. Many of the farms have various operations on-site, including dairy, maple syrup, pork, chickens, and produce. The following farm profiles will feature each farm based on farm size, herd size, current supply, and potential to scale up. Since the profit potential for beef is high given the geography, it is important to pay attention to the farmers' willingness to and ability to scale up their operations.

On November 9th, we visited Hilltop Farm, Cricket Creek, and David Young's Farm, and the following week on November 16th, we visited Sweetbrook Farm. We met Crystal Gardner, Topher Sabot (and his child!), David Young, and Sarah and Darryl Lipinski, and were fortunate enough to spend time talking to each of them about their operations and the general stories of the farms. On November 30th, we met Wally Chenail on his farm, and on December 2nd, we met with Jay Galusha and Justin Jennings to learn about their dairy operations. We walked around each farm and explored the farm stands, gazed romantically upon the herds of cattle, and even got to pet the young dairy calves at Hilltop. It was incredibly meaningful to be welcomed onto each farm site, and it was exceptionally helpful to actually see in-person what the operations looked like, and what the main infrastructural differences between each farm are. The following profiles of each farm have been compiled based on the conversations we had with each farmer on their respective sites, and we have broken down the information we learned into uniform categories for ease of interpretation and comparison. Keeping in mind the concurrent needs of Williams Dining and each farm's operation, we organized the information from the farm interviews into broad categories of basic background information and biographical details, farm practices, the slaughtering and processing situations, pricing information, relevant details around scaling up capacities, succession planning, as well as other notable interview points. This is by no means a comprehensive list of all

possible pertinent information, but based on the conversations we had, these are the primary takeaways. It should be noted that we compiled these standardized lists of information as distillations of our interview conversations, and in so doing, the level of detail that we learned from each farmer about the processes of their operation differed slightly based on how comfortable the conversations were and how much farmers were willing to share with us in great detail upon first meeting. For this reason, there are some blank answers and/or "N/A" answers in profiles; for consistency's sake, we have chosen to leave those in, and to be mindful of how much each farmer is willing to publicize about the details of their operations.

Hilltop Farm

Farm Characteristics

- Location: Pownal, VT
- Contact: Crystal Gardner
- Employee Situation/Who does the work: Family farm, Crystal and husband do the most labor, a son is also involved
- Background/Story of the Farm: Crystal looking to provide local community with good quality, local, sustainable meat, so also has a full-time accounting job
- Farm Size: 500 acres
- Type of Operation: Certified Organic dairy, as well as grass fed beef and maple syrup, pork, chickens
- Current Herd Size: 33 cows for beef, another herd for dairy
- Current Market(s): Horizon Organic Dairy, retail website, general store, farmer's markets, Village Market, Willy's Variety, a few local restaurants occasionally

Farm Practices:

- Feeding: 100% grass fed (90/10 fat ratio for the most part), all feed planted and grown onsite
- Certifications: USDA Organic dairy
- Health and Safety: All flash frozen, cryovac packaging, chest freezers
- Animal Wellbeing: Lots of pasture access

Slaughter:

- Dates: Yes, at Mapleridge Meat (certified organic, USDA)
- Location/Slaughterhouse Relationships: Mapleridge for processing, also sells dairy culls at auction in Cambridge, NY
- Processed cuts or whole animal: Sells cuts, but open to selling culls and whole animals maybe if the price is worth it
- Transportation: Uses trailer, has a functional system in place but relies on family members to help out

Pricing:

- Current retail for ground beef/hamburger: $6.95/lb. mostly, $5 some places
- Wholesale (if known): $5/lb. bulk/whole deals ($100 for 20 1lb packs of hamburger), generally 25% less than retail

Scaling Up:

- Interest: Unintentionally scaling up already, started off with 5 cows and now has 17 calving heifers
- Is the land available: Yes
- Is the labor available: Maybe, depending on future size of dairy operation
- Necessary up-front investments (infrastructure, capital, labor, etc.):

Succession:

- Who owns land: Gardner family
- Family operation: Yes
- Plan for generational succession:

Other Notable Interview Points

1. Received NOFA grant at the beginning of pandemic for 16x8 ft enclosed freezer trailer and new freezers

Cricket Creek Farm

Farm Characteristics

- Location: Oblong Rd, Williamstown
- Contact: Jude Sabot, Topher Sabot
- Employee Situation/Who does the work: Significant number of employees, including apprenticeship program and part-time employees
- Background/Story of the Farm: Sabot family bought the farm in 2001 to protect land and keep it within agriculture
- Farm Size:
- Type of Operation: Primarily dairy and cheesemaking, grass-fed beef and whey-fed pork as well, farm store
- Current Herd Size: 80ish dairy animals
- Current Market(s): Farm store, retail, cheese to Marty's Local

Farm Practices:

- Feeding: Grass fed, fully "grass-based," rotational grazing
- Certifications: N/A
- Health and Safety: Frozen, cryovac packaging
- Animal Wellbeing: Beef cattle live fully outside

Slaughter:

- Dates: Secured through 2022
- Location/Slaughterhouse Relationships: Eagle Bridge
- Processed cuts or whole animal: Selling cuts, but recognizes that selling more whole animals could be beneficial in terms of minimizing losses throughout the process of processing/distributing/etc.
- Transportation:

Pricing:

- Current retail for ground beef/hamburger: $8/lb. ground beef, currently $4/lb. hanging weight + processing costs overall
- Wholesale (if known):

Scaling Up:

- Interest? They could scale up somewhat, but the real question is whether it would be profitable- scaling up beef specifically would mean a significant shift in farm operations, since dairy has been their primary focus for so long
- Is the land available:
- Is the labor available:
- Necessary up-front investments (infrastructure, capital, labor, etc.):

Succession:

- Who owns land: Sabot family
- Family operation: Yes
- Plan for generational succession:

Other Notable Interview Points

- Currently dealing with a surplus of beef inventory, since production ramped up during early pandemic and then consumption dropped back again
- Appealing to work with Tory Hill in terms of how much logistically simpler it would be- Topher would put significant value in the guaranteed market and how much can be said for the certainty of that in terms of long-term feasibility for the relationship
    - Direct-to-consumer model is so labor intensive, and they already employ far more people than the other operations we have spoken to

Hemlock Farms

Farm Characteristics:

- Location: Williamstown
- Contact: David Young, Brian Young
- Employee Situation/Who does the work: David and Brian
- Background/Story of the Farm: Former dairy farm, converted to cow-calf operation
- Farm Size: 40 cows max, currently smaller
- Type of Operation: Cow-calf
- Current Herd Size:
- Current Market(s): Friends and family, selling calves at auction

Farm Practices:

- Feeding: 100% grass fed, feed produced onsite
- Certifications: N/A
- Health and Safety:
- Animal Wellbeing:

Slaughter Situation:

- Dates: Needs help getting consistent dates
- Location/Slaughterhouse Relationships: N/A
- Processed cuts or whole animal: Whole animals
- Transportation:

Pricing:

- Current retail for ground beef/hamburger: $5/lb., $8-10/lb. steaks
- Wholesale (if known):

Scaling Up:

- Interest: Dependent on market consistency
- Is the land available: Yes
- Is the labor available: No
- Necessary up-front investments (infrastructure, capital, labor, etc.):

Succession:

- Who owns land: Young family
- Family operation: Yes
- Plan for generational succession?

Other Notable Interview Points

- Open to raising animals to slaughter weight instead of selling feeders, but needs slaughter dates to think about committing to any selling to Williams

Sweetbrook Farm

Farm Characteristics:

- Location: Williamstown
- Contact: Sarah and Darryl Lipinski
- Employee Situation/Who does the work: Sarah and Darryl, no employees
- Background/Story of the Farm: Farm has been in the family for quite a long time, initially as a dairy operation, but since converted to maple, beef, and a farm stand; beef operation is only 1 year old
- Farm Size: 120 acres (https://www.bostonglobe.com/2021/09/14/lifestyle/after-devastating-fire-an-eighth-generation-farmer-rebuilds-her-familys-maple-sugar-farm/)
- Type of Operation: Maple products, grass fed beef, farm stand
- Current Herd Size: 7 heifers, 6 feeders
- Current Market(s): Williamstown farmers markets/Berkshire Grown markets (selling burgers at markets has been quite profitable), farm store year-round, hoping to have Williams Dining as a primary market for beef

Farm Practices:

- Feeding: All grass-fed black angus
- Certifications: N/A
- Health and Safety: Freezer storage on site, but not a ton (not enough for 20-40 heads' worth of meat), Health Inspector audited
- Animal Wellbeing: Lots of pasture access, cattle live outside year round

Slaughter Situation:

- Dates: Dates for 6 cows in 2022, nothing beyond that yet
- Location/Slaughterhouse Relationships: Plymouth Meats and Adams in Athol (notably, could not get dates at Eaglebridge)
- Processed cuts or whole animals: Selling cuts currently

- Transportation: have trailer and corral system

Pricing:
- Current retail for ground beef/hamburger: $8/lb.
- Wholesale (if known):

Scaling Up:
- Interest: Would like to scale up to 20-40 head of cattle on existing land, would like to scale up to selling 12-14 heads wholesale per year
- Is the land available: Yes
- Is the labor available: Maybe, if it were profitable enough for Sarah to do less work in addition to farming
- Necessary up-front investments (infrastructure, capital, labor, etc.) - Need money for new water system, corrals, pens/barn/indoor cow shelter, general farm renovations (to be more visitor-friendly, more cleaned up)

Succession:
- Who owns land: Sarah's family (Phelps Family)
- Family operation: Yes, just Sarah and Darryl Lipinski
- Plan for generational succession?

Other Notable Interview Points
- Looking to get a Farm Viability Grant for expanding beef operation, with solar panels, walk-in freezer, and old barn renovations
- Current herd is half feeders (from Josh Porter family farms) and half raises from birth, but they would prefer all 100% black angus raised from birth; also open to buying feeders from local calf/cow operations to support the co-op
- Definitely need to know pricing information in order to determine whether such scaling up will be possible and sustainable financially - would really love to sell a number of heads to Williams each year, but unclear on whether or not it will really make sense financially based on Dining Services volume needs

Chenail Brothers Farm

Farm Characteristics:

- Location: Williamstown
- Contact: Wally Chenail
- Employee Situation/Who does the work: Wally and several family members
- Background/Story of the Farm:
- Farm Size: 400 acres
- Type of Operation: Primarily DFA dairy co-op, though also grow corn, hay, some vegetables (seasonally dependent)
- Current Herd Size: 180 cows, about 80 for milking at any given time
- Current Market(s): Dairy to DFA, culls to a broker, small on-site farm stand (seasonal)

Farm Practices:

- Feeding: Pelleted feed mix, corn/soy/grain-based, hay grown on site
- Certifications: N/A
- Health and Safety: Antibiotic-free
- Animal Wellbeing: 50-60 acres of pasture for grazing

Slaughter Situation: Sells to a broker who arranges sales to processing

- Dates: N/A
- Location/Slaughterhouse Relationships: N/A
- Processed cuts or whole animal: Sells whole culls on the hoof
- Transportation: None

Pricing:

- Current retail for ground beef/hamburger: N/A
- Wholesale (if known):

Scaling Up:

- Interest: none, farm is already at capacity and labor is limited
- Is the land available: N/A
- Is the labor available: N/A

- Necessary up-front investments (infrastructure, capital, labor, etc.): looking to build new barn, generally needing investments for overall upkeep of farm

Succession:

- Who owns land: Partially owned, partially leased
- Family operation: Yes
- Plan for generational succession: Yes, Wally has a nephew and niece who are willing and able to take over farm operations

Other Notable Interview Points

- On average, the Chenail operation is selling 30 culls and 50 calves each year
- Broker pays live weight, $.50/lb.- this amounts to around $600 per cull typically
- Already have brought 50 cows to auction this year

Fairfields Farm

Farm Characteristics:

- Location: Williamstown
- Contact: Jay Galusha
- Employee Situation/Who does the work: Justin Jennings and Jay Galusha work full-time
- Background/Story of the Farm: Used to bottle milk onsite and sell to many local markets, including Williams
- Farm Size: 1400-1800 acres
- Type of Operation: Dairy
- Current Herd Size: 450 animals
- Current Market(s): Sell dairy to Agrimart Co-Op (since 60s/70s!), Cabot

Farm Practices:

- Feeding: Total Mix Ration/TMR (corn silage, hay, grain, total mix ration) daily, could do grass silage for beef
- Certifications:
- Health and Safety: State and federal milk inspectors come regularly
- Animal Wellbeing: Some pasture

Slaughter:

- Mostly sells to a broker who takes care of processing processes, but not exclusively
- Dates:
- Location/Slaughterhouse Relationships: Hilltown (in Canaan, NY) and Eaglebridge
- Processed cuts or whole animal: Sells whole culls
- Transportation: Available, but generally the broker transports the animals; Justin does transportation to slaughterhouses for a lot of farms

Pricing:

- Current retail for ground beef/hamburger: N/
- Wholesale (if known):

Scaling Up:

- Interest: trying to scale back dairy and scale up beef (Justin is experienced in scaling up beef), but only scaling up in terms of raising animals (not investing in on-site freezer)
- Is the land available: Yes, and Jay would be willing to host a hypothetical additional Williams freezer
- Is the labor available: Maybe, depending on future size of dairy operation and milking robots

- Necessary up-front investments (infrastructure, capital, labor, etc.): Just applied for dairy robot grant, would be very helpful to have freezer storage increased, freezer truck would be helpful

Succession:

- Who owns land: Mixture of owned and leased land
- Family operation: Yes
- Plan for generational succession?

Other Notable Interview Points

- Just applied for grant to put milking robots into farm operation for ease of scaling up
- Interested in selling dairy culls to Williams if price is significantly better than auction
- Losing 50-60% of live weight to hanging weight for dairy culls
    - 25% yield more or less for dairy culls to ground beef (93/95%)
- Relationship with Hilltown Slaughterhouse (Canaan, NY) could potentially result in longer-term contract for securing dates
- Justin could possibly be a coordinator for moving product and animals around?
- Jay would rather not go through Tory Hill because it's easier to just deal with Williams directly
- Looking for upfront payment to Justin who could potentially do a lot of the logistical legwork
- $2500 to raise a single dairy cow is general
- Open to supplying for special events/pilot programs at the end of summer/early fall 2022!

Farm Visit Summary

Farm	Location	Operation	Farm Size (acres)	Herd Size	Scaling Up Potential
Hilltop	Pownal, VT	Dairy, beef, maple syrup, pork, chickens	500	33 cows for beef + another dairy herd	Yes
Cricket Creek	Williamstown, MA	Dairy, beef, pork, farm store	500	~80 dairy animals	-
Hemlock Farms	Williamstown, MA	Beef	360	-	40 cows max.
Sweetbrook	Williamstown, MA	Beef, maple syrup, farm stand	120	7 heifers, 6 feeders	20-40 heads, sell 12-14 heads wholesale
Chenail's	Williamstown, MA	Dairy	400	180	Max Capacity
Fairfield	Williamstown, MA	Dairy and Crops	1400-1800	450	Scale up Beef

Beef and Dairy Farming in Practice

Producing Grass Fed Beef

Williams Dining is always trying to provide students with the most healthful and high-quality foods, so the practices with which farmers raise their animals matter significantly when thinking about the impacts of purchasing. In terms of the farming practices implicated in beef production, as well as in thinking through how to support and invest in regenerative agriculture, it is important to understand the differences in how animals are raised and maintained on beef operations versus dairy operations. All differences aside, every operation we visited and spoke to maintains sound safety and inspection practices on their farm sites as well as the products that they sell, which is always important to know.

As for feeding, the beef farmers we spoke to grow all feed onsite most often, to ensure that it will be non-GMO and antibiotic free; this way, farmers also know the contents of the feed that cattle are ingesting (as opposed to buying pelleted feed, which often contains all sorts of processed sugar-based products). Grass-fed cows eat a diet primarily of hay – often bailed on the farms themselves or at nearby Berkshire operations – and grazing pasture. Some animals are finished on grain as well; this practice refers to the time during which animals are raised to their final slaughter weight, which is most commonly four to six months, or up to two years for feeders bought from cow-calf operations. Finishing animals on grain is meant to up their fat content right before processing so as to maximize meat yield, but many of the farmers in our area do not finish on any grain at all but prefer to feed their animals with a 100% grass-based diet. While grass-fed and grain-finished is a fairly standard model of beef feeding, keeping feed to 100% grass sourced locally is a way for farmers to exercise complete control over what their animals consume and therefore yield a product that is particularly attractive to certain niche markets.

Grazing pastures are most commonly structured rotationally, meaning that the pasture is subdivided into smaller subplots of pasture, and animals graze on one at a time, rotating as often as the farmer deems appropriate based on the amount of land available. With this method, the benefits are two-fold: animals have a lot of open space (and therefore tend to be less stressed) and access to grass, and the pastures themselves have time to regrow as the animals move on and off of them. Pasture grazing in a rotational system is an excellent method of taking care of soils too, as the cow manure provides a significant source of diverse nutrients, and with a rotating system, the manure is spread out enough to have to time to be properly absorbed into the soils (EPA, 2021).

Raising Dairy Cows

The most significant difference between the operations of the beef and dairy farms that we visited is the overall size of the farm and herd. Of the four farms involved in dairy production – Cricket Creek, Hilltop, Chenail Brothers, and Fairfields – all of them had significantly larger herd sizes than the smaller beef-based operations. This also meant that acreage was much greater for each farm. Another significant difference is in the built environment that the animals live in; for dairies, the milking herd is housed inside a barn instead of spending all of their time in grazing pastures. Dairy production requires significantly more direct hands-on labor with the animals, as milking is very time-consuming, and so the animals need to be kept in fairly close quarters.

In terms of feeding, it is conventional practice to feed dairy cows a diet based on grain, but we saw a wide variety of feeding practices across the dairy operations we visited. The Chenail Brothers' farm and Fairfields Farm both feed their animals primary on a daily TMR (Total Mix Ration), which is a pelleted mixture of corn, grain, soy, and hay silage ; these operations both grow hay and corn on-site as well, so the feed mixes given to the animals are overall an assortment of

locally sourced and processed plant materials. Jay Galusha of Fairfield Farm also discussed the possibility of transitioning to a diet of just grass silage, which would then be considered a 100% grass-fed practice, though the grass would be brought to the cows instead of giving them access to it via pasture grazing. In contrast to these larger operations (the largest two farms that we visited overall), Hilltop and Cricket Creek feed their dairy cows a grass-based and farm-grown diet already, and they rotationally graze their herds. Notably, Hilltop also has Organic Certification for its dairy, so all feed is grown onsite for that reason as well. In all cases, feed is entirely free of antibiotics and/or artificial growth hormones.

The relative lifespans of dairy cattle are also quite different from animals raised exclusively for beef. Because dairy cows generally calf every year (or every 12-14 months) while they are still active members of the milking herd, they tend to live far longer than beef steer, which are generally raised to two or so years of age. This means that dairy cows are housed differently and given differing amounts of access to pasture throughout their lives. Cows that are not part of the milking herd at any given time (usually between one third and one half of the total herd, based on the farms we spoke to) have access to grazing pasture since they do not need to be housed in the milking barn for ease of access by farm workers. Cows that are calving or about to calf are also given particular care to ensure that they have safe and healthy births, including vitamin-enriched feed.

When a cow is no longer able to be part of the milking herd on a dairy farm, or they otherwise have no use to the dairy production operation, they are known as culls. According to 2018 cattle census data, these dairy culls actually account for around 21% of the national beef supply overall (Geiser, 2019). This is where the potential for Williams Dining to partner with local dairy operations comes in. Both Fairfields and Chenail Brother's Farms currently sell their culls to a broker who then transports them to and sells them at auction. Because culls are not uniform in

size or shape (since they can really be taken out of the dairy herd for a whole array of different reasons), the prices they get at auction are very inconsistent. This poses a difficulty for farmers, as it is possible (and not so unlikely!) for a cull to not turn them any profit whatsoever. If Williams Dining were able to partner with dairy farms to buy a portion of their culls, these farmers would not have to worry as much about the inconsistency and unreliability of auction prices and selling culls might be able to become a profitable part of their overall operation instead of a complicated secondary market to manage.

The Importance of Investing in Regenerative Agriculture

We have already established the importance of investing in our local Williamstown farms to support their ability to persist as operations, and to prevent further loss of agricultural economy in the Berkshires. It is urgent that Williams College use some of its vast array of resources to keep farms in business and to farmers in security. From an ecosystem resiliency standpoint, it is vital to protect farmland for its soil regenerative and carbon sequestration benefits, and the family farms of the Williamstown area utilize regenerative cattle raising practices (Regeneration International, 2017). This point has major implications for sustainability writ large, and for Williams' sustainability actions specifically.

While meat has been controversial in conversations about nutrition, environment, and ethics, it is important to acknowledge the role of livestock in the environment. Nearly 40% of the earth's surface is grassland (Rodgers and Wolf, 2020). Below the ground, microorganisms, which are fed by the plants, work to capture energy from the sun and add minerals to the soil. Cattle manure is important in grassland ecosystems since without animal dung, microbes would be absent. Cattles can break up the soil by moving around and distribute nutrients and grass seeds to

higher elevations through manure. Furthermore, maintaining biodiversity would improve the resilience of the soil ecosystem, preventing a catastrophic breakdown of the grassland.

Another aspect of cattle grazing is carbon sequestration, which starts when plants go through photosynthesis. When plants convert carbon dioxide into oxygen, they also send carbon through their roots to feed the microbes in the soil. These microbes can then move through the soil via fungal networks that makes minerals bioavailable to the plants. Overgrazing results in soil erosion and compaction, but this can be avoided by allowing the grazing animals to roam after harvest at the end of the cash crop season. By increasing the fertility of the soil via grazing cattle, biodiversity will also be increased above and underground. This process is also much more efficient than using synthetic fertilizers, which requires transport uphill and could result in eutrophication through runoff.

So, what do we mean when we say "Regenerative Agriculture"? It encompasses holistic farming practices that improve air and water quality, increase biodiversity, and sequester carbon in the soil. Regenerative agriculture minimizes the disturbance to the soil, keeps the soil covered, increases biodiversity, preserves roots in the soil, and integrates animals into the farm via manure. Positive externalities include improved ecosystem resilience, soil health, and farm productivity, resulting in economic and environmental benefits. For example, at the Drager Farms in Marietta, PA, Farmer Drager moves his herd of grass-fed beef cattle between pastures daily, allowing the land to regenerate while the herd can spread their manure, adding organic matter and seeds to the soil (Chesapeake Bay Foundation, 2020).

The practices that Jay Galusha of Fairfields Farm employs for growing his animals' feed is a great example of regenerative techniques for cattle farming that expand beyond just the animals themselves. He uses entirely no-till farming for growing the corn that is used to feed his dairy herd,

a particularly beneficial choice financially, in addition to increasing the soil health of his operation. Especially considering that the footprint of Fairfields Farm has many steeply inclined parcels of land, being able to grow feed in this way, which directly contributes to improved soil health and quality, is an excellent way to improve long-term farm viability overall (*National Association of Conservation District,* 2016).

Rethinking Our Current Practices

Summary of the Impacts of Williams' Current Purchasing Practices

As stated in the "Introduction" and "Beef at Williams," Williams Dining currently purchases all of its beef from Ginsberg's Foods, headquartered in Hudson, NY. Ginsberg's is a relatively small distributor compared to Performance Food Group (PFG), Dining Services' other main distribution partner, and as a company, works to prioritize community relations within its chains of sourcing. Ginsberg's is a local family business that works in connection with hundreds of other small distributors across the country to increase processing power and maintain low prices, but it maintains connections to some very large corporate farms and relatively unsustainable agricultural operations. Furthermore, products still travel great distances to reach Williamstown.

Williams Dining Services consistently works to purchase the best quality options offered by the company, which is very important to note, but working with distributors that are part of larger existing supply chains has greater negative environmental impact than directing Williams' budget dollars towards locally-sourced, sustainably and regeneratively produced farm products. Overall, the transportation of beef from larger corporate farms out west, to major slaughterhouses, to the Ginsberg's facilities results in significant carbon miles, and the deliveries from their facilities

to Williams College (on three times a week basis) adds even more.

Additionally, many of these larger farms engage in environmentally and ecologically harmful practices, such as Concentrated Animal Feeding Operations (CAFOs). These CAFOs are significant sources of emissions, disease, and pollution, while also being ethically questionable with regard to labor practices and workers' safety. They also do not produce the same beneficial environmental impacts of using land for cattle grazing, since animals are kept in too close quarters for pastures to reap the fertilizing benefits of animal manure. Moreover, many of these operations rely on feed for their animals containing genetically modified plant material (GMOs) that is grown on large monocrop operations in the Midwest, which then has to be transported across states to the CAFOs themselves, adding additional carbon miles. Consolidated corporate agriculture like that which is so prevalent across the U.S. is ecologically damaging from feeding and land management perspectives, and it is societally damaging by putting small family farms out of business. Investing in purchasing more beef from local family farms would reduce the negative environmental and social impacts on all of these fronts, as the practices with which our local operations raise their animals are significantly more sustainable, and the product will not have to travel nearly as far to reach students' plates.

Learning from Peer Institutions

There are many colleges and universities around the country trying to increase their local food purchasing in order to have a greater positive social, economic, and environmental impact on the communities they inhabit, and many organizations have been started with these goals in mind to help institutions in transitioning their purchasing practices. Regional and national groups such

as (to name a few) Farm to Institution New England (FINE), the Real Food Challenge, the Cool Food Pledge (which Williams Dining is already a part of!), the New England Farm and Sea to Campus Network, Massachusetts Coalition for Local Food and Farms, and Berkshire Grown are all entities we can look to for support and inspiration. It may be that in the form of resources (grant programs, agricultural consulting services, educational materials, etc.) or partnerships; many of them are also directly involved in projects that work on institution-based sustainable and just food purchasing. Some of these organizations are already directly involved in similar projects to this one in New England. While we recognize that each college and university has its own unique set of circumstances, surrounding environment, available resources, and existing infrastructure – including Williams – it can still be useful to learn from existing models of institutional local beef purchasing in order to assess possible options. Overall, what we can glean from looking to peer institutions is that there are many different models that can work to various degrees of scale in purchasing a greater percentage of campus beef locally, and we need to invest in infrastructure upgrades as well as in the purchases themselves in order for the whole project to be feasible and sustainable. A few notable examples we have found in our research are the following:

1. *Smith College/Mount Holyoke/Amherst/Westfield State University Partnership*

In 2018, Smith College, Mount Holyoke College, Hampshire College, and Westfield State University partnered on a project to increase their institutions' local beef and pork purchasing, so that they might be able to directly invest in local farming communities across New England. The coalition of colleges received a grant from the Henry P. Kendall foundation for their project, "Whole Animals for the Whole Region," in which they also partnered with Walden Local Meat Company and Northeast Family Farms as well to organize processing and distribution. Notably, a

significant amount of the grant money was used for "infrastructure upgrades to accommodate large volumes of beef and pork at the colleges," including a 2400 square foot freezer at Smith to store the volume of meat onsite. In conjunction with Smith's existing commitments to buying much more "real food" (per their participation in the Real Food Challenge, a nationwide project to encourage more economically, socially, and environmentally sustainable food purchasing choices on behalf on institutions), the work they have done with the Kendall Foundation's Food Vision Prize has helped increase their volume of local purchasing to a budget of $850,000 in 2019 alone, which accounts for about 30% of the school's food budget overall (Smith College, 2020; Kendall, 2018; Smith College, 2016).

2. *Middlebury College*

Middlebury College Dining purchases directly from farms with individual contracts, a model that is particularly conducive to building relationships for small-scale local purchasing. In a similar model to that which we have been looking at for Williams to try small-scale local purchasing, Middlebury works with groups like the Addison County Local Food Collaborative (ACLFC) in order to facilitate small farm collaboration. Organizations like ACLFC are helpful for some smaller farms to work together in order to supply for larger institutions without dramatically changing the structure of their operations. The College is actively working to find ways to scale up their local beef purchasing, and at the moment are only purchasing ground beef locally since it is most straightforward and highest in volume relative to other premium cuts of beef. This said, Middlebury's working definition of "local" is within 250 miles, which is a far greater radius than what we are working with here in the immediate Williamstown and Pownal area (Food Management, 2016).

3. *Hotchkiss School*

On the preparatory school front, the Hotchkiss School in Lakeville, CT was also involved in the 2018 New England Food Vision Prize, and they worked together with the coalition of Pioneer Valley Schools to come up with a network of farmers and distributors to start supplying their Dining Services with locally sourced whole animals. Director of Hotchkiss Dining Mike Webster also started Tory Hill Dining, a company dedicated to developing local food supply chains for institutional purchasing. The programming developed by Hotchkiss and Tory Hill has successfully implemented whole animal purchasing since 2016, as well as scaling up local (within 100 miles) purchasing to 50% of the food available to students through Dining Services (Tory Hill, 2021).

4. *UMass Amherst*

Another institution to look to is UMass Amherst, which also received a large Kendall Grant to increase their volume of local purchasing and expand dining infrastructure to accommodate supply chain logistics (Nelson, 2021).

Sourcing Locally and Williams Strategic Plan

Not only does sourcing more beef locally preserve agricultural land, enhance local market resiliency, support affordable and high-quality food access for all residents, and improve our ability to track all of the hands that our food goes through on the journey from farm to plate, but it is also very much in line with the College's Strategic Planning Goals. We can first point to the recent iteration (version 2.0) of the College's Climate Action Plan Report, which clarifies the

Strategic Planning goal of reducing greenhouse gas (GHG) emissions from procurement of food. It specifically calls for Williams to invest in "community projects that yield tangible GHG emissions reductions while providing social and economic benefits to the community" (CAP Report, 2021, 17). The further details of that Action Step are the following:

> **Action 9: Reduce GHG emissions from procurement**
> In the summer of 2021, the college joined the Cool Food Pledge (CFP) and the Green Restaurant Association (GRA). CFP members "commit to a target of reducing the greenhouse gas (GHG) emissions associated with the food they serve by 25 percent by 2030 relative to a 2015 baseline – a level of ambition in line with achieving the goals of the Paris Climate Agreement." The GRA provides accountability across a number of environmental impact areas including sustainable food, energy use, water efficiency, and waste reduction. (CAP Report, 2021 18/19)

With the specific language of the CAP report in mind, it is important to consider how sourcing more beef from local farms would reduce a massive amount of College GHGs from procurement. This reduction would emerge in several places; on the broadest level, transporting beef to the Williams campus from farms around Williamstown and Pownal is a significant decrease in distance travelled by the beef, especially when we consider that the current beef supply comes from feedlots supplied through Ginsberg's, most often located in the Mid- and/or Southwest regions, or the agricultural hubs of California (SITE GINSBERGS). This already cuts a huge amount of carbon miles from the College's current purchasing. Moreover, we can point to where feed is grown for the animals in feedlots; this mass-produced beef is fed with grain, soy, and corn mixes that are produced in monocrop fields in the Midwest and then transported to the feedlots themselves. The dual process of growing feed with unsustainable agricultural practices and then transporting that feed across great distances to feed animals housed in unsustainable operations results in major GHG emissions. In contrast, the local beef farmers we've spoken to either grow

their feed on-site or source from other local hay operations, which cuts a very large portion of transportation emissions already.

Williams' 2021 Strategic Plan has six main goals to extend Williams' excellence by:

- *Defining a new academic excellence*: Redoubling our commitment to the liberal arts while tapping new opportunities to match emerging academic strengths with global challenges.
- *Providing a complete education*: Expanding on what we do best through a 4-year/12-month model that supports intellectual, personal and professional development.
- *Expanding access and affordability*: Further investing in our capacity to attract exceptional students and ensuring their access to all elements of a Williams education.
- *Engaging alumni*: Honoring our graduates as partners by creating new opportunities to engage with Williams, our students and each other.
- *Substantially increasing our commitments to Sustainability and to Diversity, Equity, Inclusion and Accessibility as fundamental societal challenges*: Transforming our values into shared commitments by weaving them throughout all aspects of the college's program and operations.
- *Caring for the resources we depend on:* Fully leveraging our most important assets—people, facilities and financial resources—and stewarding them for the long run.

On the academics front, Williams as a higher learning institution has a responsibility to provide the highest level of education both in and outside the classroom. For example, cooperation with local farms could result in experiential learning of sustainable and regenerative farming practices. Peace Valley is one of the farms that has student interns during the summer to learn about agriculture. For campus engagement, we need greater focus on the post-graduation opportunities in sustainability. Whether in academia, government, or corporations, work in sustainability is in high demand. Chemistry techniques have "gone green" and corporations are looking into Environmental, Social, and Governance (ESG) and Corporate Social Responsibility (CSR). Diversity, Equity, Inclusion, and Accessibility (DEIA) are important to incorporate as an

institution to become a more inclusive and equitable environment for the campus community and the adjacent Williamstown communities. By highlighting the DEIA benefits, we can best prepare students for the diverse workforce and post-Williams plans.

Overview of Primary Challenges

Overall, we have identified two distinct sectors of difficulty when it comes to transitioning Williams Dining Services to more local beef purchasing: Supply and Logistical Coordination. In terms of supply, the three most pressing questions we have to contend with are a. volume, b. consistency of markets, and c. distribution partners. What this means is that in every possible scenario, small farms would need to scale up in order to produce the high volume of beef that Williams Dining needs. Especially if we are taking premium cuts with lower per-animal yields into account, Williams could be looking at purchasing hundreds of heads of cattle per year for full 100% implementation of local beef procurement. Considering that producing this degree of large volume without a guaranteed equally large market is not profitable for small farms, there needs to be a shared agreement for consistency of market and production on both ends of the purchasing spectrum. Williams needs to be able to promise that it will purchase every cow that it asks smaller farmers to raise, and smaller farmers have to be able to commit to raising a certain number of animals each year that would contribute directly to Williams Dining's beef supply. This is a challenge to negotiate by thinking very deliberately on how to make up-front investments in the supply chain that will encourage and support scaling up farm operations overtime, on a timeline that works for each operations' capabilities.

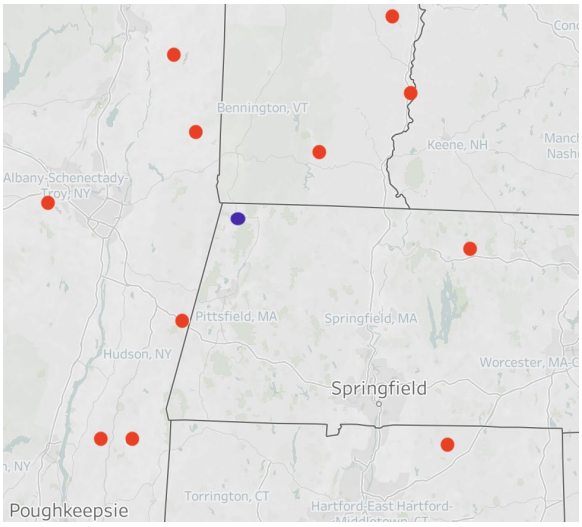
Additionally, the volume question implicates other existing market questions, namely that many smaller producers already have existing markets such as farm stores, farmers' markets, and

retail partnerships, and therefore scaling up to meet some of Williams' demands needs to be a project that can fit into each farm's existing market relationships. Moreover, the question of volume also concerns distribution and distribution partners: larger distributors' practices may not correspond with existing local markets, and corporate distribution companies may not be willing to contract with small farm operations. This is another reason why Williams needs to rethink its current purchasing practices, as the scale of distribution needs to align on all fronts.

On the logistical side of the equation, we have identified a) processing, b) storage, and c) delivery as the primary challenges to negotiate. As for processing, several factors come into play: finding slaughterhouses to work with who are USDA certified and compliant with all of Williams Dining's food safety and handling needs, securing dates for bringing animals to slaughter, and locating cut-and-pack facilities that can process the animals into the appropriate packaging sizes and shapes that Dining Services needs at the necessary volume and feasible price. There is currently a significant dearth of slaughterhouses in the Berkshires, as shown in the attached slaughterhouse map. The closest few operations are Hilltown, in Canaan, NY, Higley Hill, in Wilmington, VT, Eagle Bridge, in Eagle Bridge, NY, and Adams Family Farms in Athol, MA, and all of these are fairly far from Williamstown. Moreover, with slaughter dates booked out several years in advance, we need to think critically about how to match slaughter capacity with the volume of beef being asked for, and subsequently, how to transport animals to processing facilities in a way that works into the infrastructural, financial, and temporal capacities of each

farm operation.

In terms of storage and delivery, it is vital for health and safety of food practices that beef be stored frozen and can remain frozen until use, which means that it must be frozen at the point of processing and packaging and remain in freezers until it is unpackaged in Williams dining halls in preparation for student meals. Currently, Williams does not have adequate freezer storage space for the volume of beef used and consumed, which is the primary reason why Dining receives meat deliveries from Ginsberg's three times per week. We need to locate and secure locations for freezer storage and refrigerated transportation, so that products are not defrosting in transit between processing, distribution, and consumer reception. Thus, increasing Williams' freezer capacity somewhere along the chain of custody is another problem we have identified as needing urgent attention so that the transportation of beef to Dining Halls can happen more efficiently, while still guaranteeing sound food handling practice. Storage and delivery logistics will require a centralized organization structure to ensure that all of the discrete parts can fall into place, which would most likely need to take the form of a logistical point person who can keep track of all the steps in the supply chain and oversee that beef is being handled safely and efficiently, and that that farmers have access to processing facilities and transportation needed to provide animals for purchase.



Map of USDA Certified Slaughterhouses. "Meat, Poultry and Egg Inspection Directory" *USDA*. 2017. Edited by Quincy Powers

Our Proposals

Starting Small

Williams Dining needs time to incorporate local beef purchases into their budget since it is different from conventional beef procurement. Farmers also need time to scale up, since no single farm can meet all of Williams' needs. Specifically, farmers need time for the animals to increase herd sizes or syphon off a portion of their animal for Williams, in order for the markets to be profitable. Therefore, transitioning to local beef would require a staggered timeline to meet both Dining Services' and farmers' needs. By forecasting for incremental implementation, we give all parties involved enough time to negotiate how to make their link in the chain feasible, responsible, and sustainable.

Ground beef should be our main focus considering that it is the cut with the highest percentage of yield. Overtime, the goal is to expand beyond ground beef since we have many other cuts that are acquired from conventional distributors. We also believe that it would be helpful to evaluate and compare our beef procurement relative to Ginsberg's to understand the cost-benefit analysis between local beef and traditional beef procurement. If local beef is feasible in the long-term, we should be able to expand onto other cuts to improve our level of sustainability and community engagement.

Timeline for Scaling Up

Williams will not be able to immediately take on the cost of transitioning to fully local beef purchasing. Due to inflation, budget cutbacks associated with the ongoing COVID-19 pandemic, and other factors, the ability to increase the cost of purchasing is not currently feasible. Furthermore, as previously mentioned, no single local farm will be able to meet Williams' demand.

Local beef and potentially dairy farmers will need time to scale up and determine if a relationship with Williams is in their best interest. Solely sourcing ground beef locally could potentially cost a hundred thousand dollars annually and requires between 25 to 35 cows. A drastic increase in budget like this would be difficult to justify, both to the administration and to Dining Services, which has other priorities such as labor shortages and rising prices due to supply chain failures. Rather a tiered, staggered approach to purchasing local beef should be used. Spreading out an increase in beef purchases over a few years to reach a reasonable goal will allow time for all parties to familiarize themselves with the process, allocate resources, and troubleshoot as problems arise.

Through our discussions with local farmers and Williams Dining Services, as well as additional background research, we have created a three-phase approach. Phase 1 would be a pilot program where the College and Dining Services partner directly with individual farms in the area to source beef for special events on campus. The budget for these events does not come from Dining Services, is much more flexible, and the logistical implications for singular events with individual suppliers requires significantly less work than structuring an entire procurement system. Phase 2 will be the process of scaling up farms, budgets, and negotiating contracts with all parties involved. Lastly, Phase 3 will be the actual procurement and serving of beef at Williams' dining halls. The various steps are much more complex and involved, yet they will give all the parties involved the chance to adjust operations, plans, and budgeting as necessary.

Phase 1 - Pilot Program (2023)

Sourcing local ground beef local producers for special events (approximately 2,000 lbs.)

The primary goals of the pilot program is to introduce the Williams community to local beef and begin the process of building relationships between farmers and Dining Services. The program will allow Dining Services and farmers to experiment with different logistical frameworks for sourcing the local beef and give them the chance to see how things work in real life scenarios. This stage is essential to making the following stages work, as no party involved is prepared to purchase or supply all of Williams' beef needs locally, especially given the logistical challenges we have outlined.

During the pilot program, Dining Services will identify several special events throughout the year that could serve as venues to showcase local beef suppliers by purchasing ground beef and hamburger patties directly from their operations. Whether Dining Services purchases directly from the farms' inventory or purchases animals is based on each farm's needs and what Dining Services' capabilities are. From there, Dining Services will either store beef in on-campus or off-site freezers, potentially with Ginsberg's or at a farm store that has adequate freezer space. From there, transportation with a refrigerated truck will be managed by Dining Services, given that few farms have these capabilities.

Identified events have outside funding, which will not put the strain of purchasing on Dining Services. Additionally, events during the summer have fewer attendees, and therefore require less beef (approximately 250 pounds per event), and there will be more freezer space available given the reduced operations of Dining Services. Events during the academic year will require double the amount of beef, and the possibility of storing the beef at Williams is limited unless the College is able to expand its freezer storage capacity.

Some of these potential events are alumni reunions, First Days, Move-In Night, Convocation, and Parents Weekend. Being able to begin the pilot program as soon as possible is important to ensuring farmers have the business to begin scaling up. Events like these should additionally not be singular, but rather continuing. Sourcing local beef for special events can help build relationships, provide continued practice for organizing logistics, and input capital into our partner farms. Ideally, farmers would be invited to these events, allowing students, alumni, faculty, and staff the opportunity to meet them and talk about their operations, further rallying community support for the project.

Phase 2 - Contracts and Scaling Up (1-3 years)

The primary goal of Phase 2 will be the gradual scaling up of Williams Dining's local beef purchasing capabilities in conjunction with the scaling up of local farmers' operations. This process requires a significant amount of time and thought and will have effects on contract negotiations and ongoing partnership developments. The scaling up phase will allow Williams Dining to have the time to work through budget complications and make various infrastructural and logistical adjustments to accommodate the local beef supply. Some of the adjustments on the Dining Services side that can be taken into consideration during this phase of the process include increasing Williams' freezer storage capacity, locating a person or company who can reliably take care of packaged beef transportation in refrigerated trucks, transitioning some purchasing commitments away from Ginsberg's while still maintaining that important business relationship, and continuing to host pilot program events. There will also need to be conversations between Dining Services and possible distribution partners during this phase, which will include negotiations on pricing, frequency of deliveries, and auditing processes for farm and slaughter

operations. Overall, from an administrative standpoint, we hope to have beef on Williams students' plates by fiscal year 2024, which will be the summer of 2025. This means farmers will know by FY 2024 how much beef Williams will initially purchase in 2025, allowing two years for animals to be raised to slaughter weight for the Williams College market.

On the farm side of things, these built-in years for ongoing conversations and development of operations will allow for contracts and pricing to be negotiated in a way that meets farm operations where they are at, and accommodates the concerns of inflation and labor shortage that Dining Services has to account for in budgeting. This time will also be useful for implementing any operational changes that farms need up-front investments into, which might include increasing animal transportation capacity by investing in new trailer and corral systems, scaling back dairy production to increase beef cattle availability (if applicable), securing slaughter dates at processing facilities nearby, and figuring out what is needed to make whole animal selling profitable for each operation. This step may also include working through the logistics of fitting cow-calf operations into the supply chain; if cow-calf farmers are willing and able to participate in the revamped Williams local beef supply chain, the years between FY 2022 and FY 2025 will be very important in negotiating which local operations can raise feeders to slaughter weight so that all possible interested cattle farmers are included in the supply chain.

On both sides of the equation, this will give ample time for contracts to be negotiated and re-negotiated such that as everyone involved learns more about what it will actually look like to put Williams local beef procurement into action, and so adjustments can be made throughout the process as necessary until farms reach a system that will be feasible, sustainable, and scalable overtime. Throughout this deliberately patient and thoughtful process, Dining Services will have the opportunity to build solid relationships with local producers, a necessary foundation for

rebuilding trust and ensuring every member of the partnership is heard, accounted for, and can reap benefits of the whole system.

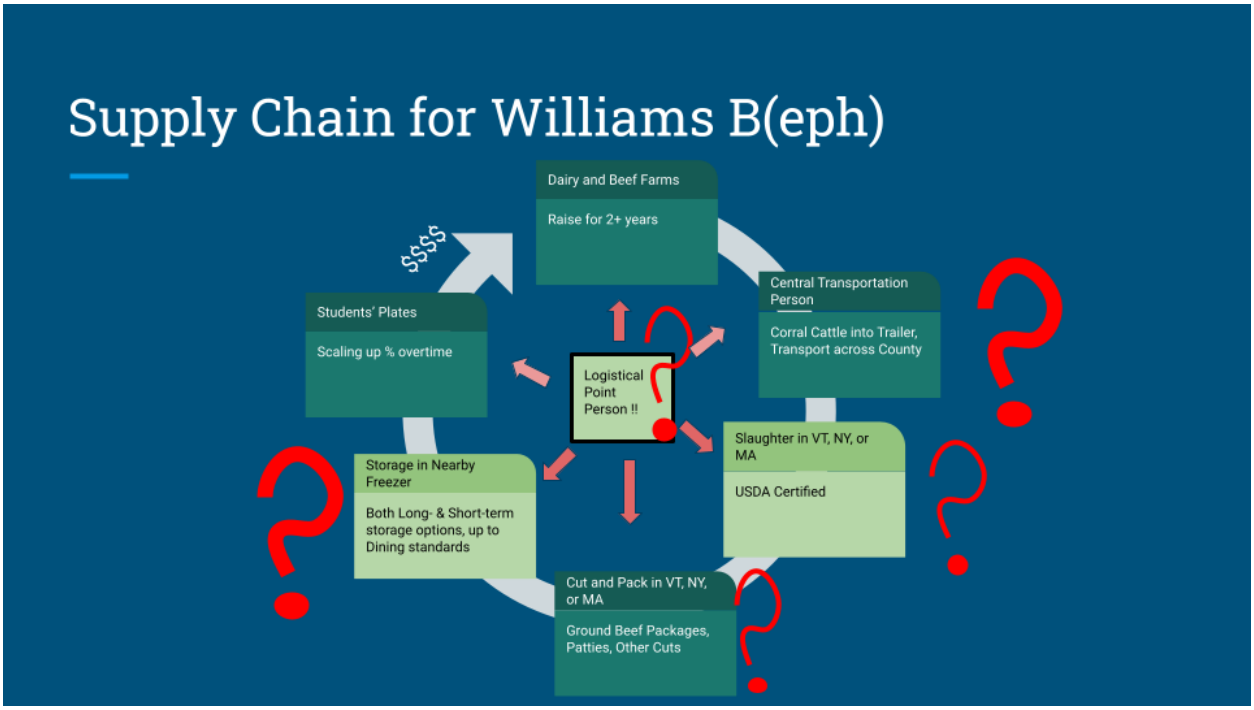
Phase 3 - Reaching Our Goal (Year 4 Onwards)

The goal for Williams starting out will be to purchase 50% of ground beef from local sources. This is a significant portion of Williams' beef purchasing and is an attainable goal for the next few years. Phasing the process over three years will give Dining Services the opportunity to review the partnerships with distributors that have been a part of the local beef purchasing project. It will also give local producers the time to increase their production, since each cow takes two to two and a half years to raise to slaughter weight.

By convening yearly with farmers, Dining Services can ensure few disruptions will occur in the dining halls. On the other hand, the farmer will have the opportunity to evaluate their contract with Williams Dining to ensure that they are able to continue supplying. These meetings will be especially important in Phase 3 so Dining Services can gather feedback from students and evaluate the economic trade-offs. During this period, farmers would be able to connect with the students to see how their beef is faring in the dining halls, allowing all stakeholders to share feedback and to foster a relationship between students and their food.

While reaching 50% of ground beef purchasing would be a massive step in the right direction, it still accounts for only about a quarter of Williams' beef purchasing. Increasing beyond this goal is highly desirable given the potential positive environmental and economic impacts associated with sourcing all beef locally. Student feedback would allow us to better understand dining needs and incorporate student feedback into the long-term agenda.

Supply Chain Proposal



Above, we have a proposed supply chain for local Williams beef procurement. Starting with the dairy and beef farms, farmers will have to raise their cows for at least two years. The central transportation person or group will have to corral cattle into the trailer and transport them to slaughter at a USDA-certified slaughterhouse in VT, NY, or MA. Depending on the slaughterhouse, the beef may have to be transferred to a cut-and-pack facility in VT, NY, or MA to be packaged into ground beef, patties, and other cuts. Once the processing is complete, the packages will have to be stored at a nearby freezer for long-term or short-term storage, depending on the dining standards. Eventually, the beef will land on the students' plates, allowing the cycle to continue, increasing revenue for local farms and their ability to scale up. Eventually, this extrapolated process will allow Williams College to wean itself off non-local beef.

The proposed supply chain has several logistical problems due to oversimplification. First, we do not have an appointed logistical point of contact to facilitate the supply chain, making the

process very disjointed. Second, transportation trailers may be an issue due to the high upfront costs. Third, the distance between the farms and the slaughterhouse/pack-and-cut facilities could be a barrier for the transportation person or group since these are large shipments. Fourth, we need to ensure that the whole cow is used - even the cuts that Dining Services does not use. Fifth, the storage freezers are extremely expensive and would have to be grounded either on-campus or on a local farm. Currently, Dining receives three shipments per week, so the sixth problem is whether we can maintain that schedule without accruing additional miles. The seventh problem is the ability to follow Williams' sustainability plans, considering that freezers are carbon intensive. These are all issues that will have to be addressed in order for this supply chain model to be successful.

Potential Partnerships

In order to facilitate our proposed supply chain for Williams local beef procurement, Dining Services will have to work closely with partners who are responsible for the intermediary steps in the food service chain, namely the aforementioned processing, distribution, transportation, and storage. The following is a list of potential partnerships that we have identified who would be involved in our local beef supply chain. These are entities we have learned about or connected with throughout our research process who might be able to join the project of supplying Williams Dining with local beef. This list is not comprehensive, since there are many different models and existing organizations who might be able to become stakeholders in this process. Over the coming years of slow and deliberate scaling up of the Williams local beef supply chain, more partners might emerge as worthwhile connections to build.

1. Partnering with the existing structure of Tory Hill Dining, LLC

As an organization started by the Hotchkiss School Dining Director Mike Webster to facilitate local food procurement, Tory Hill Dining already has built their own system for institutional local beef sourcing. The company is dedicated to supporting local agricultural economies and regenerative farming practices by investing in whole animal purchasing and paying farmers hanging weight to help farms scale up overtime. The model that Tory Hill uses for whole animal purchasing gives farmers time to scale up while maintaining market stability by selling to various entities outside of the educational institutions as well. The most notable aspects of Tory Hill's model include their three-tiered system for product sourcing that ensures resilient markets, the yearly negotiation of prices and contracts to meet farmers where they are at and offer consistently better-than-auction prices for whole animals, and their existing relationships with slaughter, processing, storage, and transportation facilities.

Even though Tory Hill is located in Lakeville, CT, the company has relationships with processing facilities in MA and remote freezer storage sites in NY, CT, and MA, so their facilities would still be able to accommodate Williams Dining Services' needs for local food that does not travel far. This said, the Tory Hill model keeps carbon miles from transportation down so low by delivery only once per month, and the negotiation of wholesale pricing with current Dining budget might pose further complications (https://www.toryhilldining.com/health-wellness).

2. *Renegotiating beef procurement with Ginsberg's to use them strictly for storage and transportation instead of sourcing and supply*

Currently, Dining Services gets beef deliveries three times a week from Ginsberg's Foods, who sources from various operations across the country. A major aspect of this project entails greatly scaling back the amount of beef purchased through these corporate channels, but Dining Services benefits from having a secure and positive relationship with Ginsberg's. A potential remedy would be to incorporate Ginsberg's into the local beef supply chain. This incorporation could take several different forms, depending on the other entities involved in sourcing, but one of the ways that Ginsberg's could be useful in this process would be to use them as primary storage and transportation partner.

As long as Williams does not have adequate freezer storage to accommodate all the purchased beef, Dining will continue receiving deliveries at a frequency of three times a week, which might not work with other supply chain partners. For example, if partnering with Tory Hill, deliveries could only happen once per month, but this frequency would not work for Williams. In this case, Ginsberg's could enter the supply chain by receiving the Williams beef deliveries from Tory Hill once per month, storing them in a Ginsberg's freezer, and then delivering that stored beef to Williams three times per week. Williams Dining would incur upcharges by inserting Ginsberg's as a mid-chain operator, but this would require much less renegotiation of current Dining logistical practices, which could end up being a practical solution. In any case, contracts and pricing will still have to be negotiated with Ginsberg's in order to ensure equity and feasibility along the supply chain.

3. Higley Hill, Southshire Meats, and the Southern Vermont Regenerative Food Network

Similar in mission to Tory Hill Dining, the Southern Vermont Regenerative Food Network (SVRFN) is an organization dedicated to supporting and bolstering the regenerative agricultural economy across the entire Northeast region. SVRFN's commitments to Regenerative Agriculture, Renewable Energy, and Electric Vehicles foreground their approach to investing in farm economies and sustainable food systems, so we have identified them as an important potential partner to connect with (Philipp, 2020). One of the most attractive aspects of SVRFN's work is their partnership with and commitment to expanding slaughterhouse infrastructure in the Southern Vermont region, which, as we have noted, has a significant dearth of slaughter and processing facilities. In accordance with their proposed plan to open four slaughterhouses in this region, the organization is behind the recent opening of Higley Hill Processing, a USDA-certified facility in Wilmington, VT, which is the first new slaughterhouse opened in this region in many years (Our Projects, 2020). Higley Hill could be a potential facility to look to partner with, as they are relatively close by, USDA-certified, committed through the SVRFN to projects like Williams' goal of investing in local regenerative agriculture, and small enough in size that they could work with small family farms without running into problems of volume.

Additionally, the SVRFN has established Southshire Meats, which is a company dedicated to sourcing and distributing "Natural Animals Raised on Regenerative Pastures" (Southshire Meats, 2021). Southshire Meats works to partner with farms to help small operations thrive in a regenerative model and revitalize cattle farming hubs of the Northeast with sustainably focused practices. Notably, the whole of SVRFN has outside investors in their projects who could potentially make it easier for the organization to absorb some of the

additional costs incurred in sourcing local beef from small family operations. This organization would be a very useful one for Williams Dining to consider connecting with, since they are still growing and looking for institutional partners to work with in providing consistently large markets for regional farms.

4. Appointing Justin Jennings as logistical point-person

Justin Jennings, who works with the Galushas at Fairfields Farm, might be able to act as the central point of contact for organizing supply chain logistics, as he has the ability to transport large numbers of animals to slaughter at once, in addition to having existing strong relationships to several slaughter facilities, including Hilltown in Canaan, NY and Eagle Bridge in Eagle Bridge, NY. Having a point-person such as Justin to manage cattle transportation would be a very effective way to shift the burden of transportation off of each individual farmer, and it would streamline several aspects of the supply process. What would need to be negotiated further is how to ensure that this logistical coordinator is fairly compensated.

5. State and federal grants, programs, and financial resources

The following is a list of loans and grants for local farms that could enable farmers to purchase land, livestock, equipment, feed, seed, and supplies necessary to maintain their farm operations and renovate their infrastructure to accommodate scaling up. In rural areas, loans and grants can be useful for reviving farming industries, allowing for stable employment, and encouraging economic development, better food access, and productive land use. By backing

rural farms in the Berkshires, state and federal programs can forge a relationship that will result in positive externalities on the local, state, and national levels.

In a conversation with Ashley Randle, the Deputy Commissioner of the Massachusetts Department of Agriculture, we identified these programs that local farmers can apply for in the expansion of their sustainable beef operations. Something else to consider when looking at these program options is a partnership in grant writing, which could itself take several different forms. In addition to farmers writing their own grant proposals, it could be useful for Williams to think about ways in which students can help out in grant writing, which would offload some of that burden from farmers as well as encourage more students to get involved in the food sourcing processes that they only get to see from the consumer side on a daily basis.

Program	**Description**
Food Security Infrastructure Grant Program	The Food Security Infrastructure Grant Program aims to ensure that individuals and families in Massachusetts will have equitable access to locally produced food. The program also aims to ensure that local food producers are connected to a resilient food system to mitigate supply chain disruptions.
Agricultural Energy Grant Program	The ENER funds agricultural energy projects to improve energy efficiency and the adoption of alternative energy by MA farms. This fund maximizes the environmental and economic benefits of sustainable energy technologies.
Agricultural Environmental Enhancement Program (AEEP)	AEEP is a reimbursement grant program that funds agricultural conservation practices that reduce or prevent negative impacts to natural resources, while maintaining sustainability and productivity of the farming operation. Funded practices could encompass efficient water use, air quality impacts, or other conservation or environmental goals.
Agricultural Preservation Restriction (APR) Program	APR preserves agricultural land to keep productive farmland soil from being exploited by development companies. APR pays farmland owners the difference between “fair market value” and the “agricultural value” of their farms in exchange for a permanent deed restriction on the land.
Agricultural Climate Resiliency & Efficiencies (ACRE) Program	ACRE is a reimbursement grant program that funds materials and labor for practices that address the agricultural sector’s vulnerabilities to climate change and economic changes, and other goals in the MA Local Action Food Plan. Practices include the protection of the environment, ensuring food safety, improving soil health, protecting water resources, increasing energy efficiency, and or promoting renewable energy.

Stewardship Assistance and Restoration on APRs (SARA)	SARA resolves stewardship issues resulting from restoring active commercial farming on land protected through the Department's Agricultural Preservation Restriction Program (APR). Funds may be used for materials and contracted labor or equipment rental costs to clear or reclaim inactive fields that are out of production. Examples include clearing vegetation, pulling rocks or stumps, cutting back grown in field edges, or reseeding.
Farm Viability Enhancement Program (FVEP)	FVEP provides business planning and technical assistance to farms to increase farm viability, such as expansion, marketing, and/or sustainability. Eligible uses include capital projects like building or repairing barns, farm stands or other buildings, modernizing equipment, or improving food processing capacity.

Conclusions, Succession, and Final Thoughts

In sum, our report has detailed a wide array of potential advantages of sourcing beef from local farms, from localizing the supply chain to revitalize the agricultural economy, to investing in the preservation and protection of agricultural lands, to minimizing the carbon footprint of food purchasing, to strengthening relationships to local farmers. Considering the rich agricultural history of the Berkshires and the possible impact that Williams can have on its surrounding community, this project demonstrates a vital action that the College can take in following through with its commitments to sustainability and equity through strategic planning. In order for the research that our team did this semester to have lasting effects, we must figure out ways for the project of local beef purchasing to come to life in the next several years. Not only is it important to follow through on the relationships we began building between Dining Services and our local farmers, but it will behoove Williams to rethink current food purchasing practices as the plans for Climate Action and Strategic Sustainability continue to develop and take on new iterations.

Above, we suggest several potential partnerships with existing organizations and people in the Northern Berkshire and Southern Vermont regions, but we would also like to nod to potential

avenues for future student involvement in transitioning to more local beef purchasing; it is important to us that the work and relationships that began to take shape this semester can last beyond our tenure as Williams undergrads!

One of the ways that this project might persist and grow is to create new positions within existing College organizations for students to help out with. For example, we might suggest a Zilkha Center internship that is responsible for helping to make sure that farmers' needs are being met, and that scaling up is occurring at a reasonable pace. Alternatively, local beef sourcing might be a point of interest for the Williams Environment Council. Williams Recovery of All Possible Surplus (WRAPS) might also take an interest in tracking the impact that this project might have on minimizing beef waste. It could also be beneficial to look towards ways to publicize the local purchasing and increase student knowledge and involvement by setting up farm volunteer days for students to visit the local cattle operations and help out with day-to-day operations, offering a PE class centered around cattle work (such as the Farm Fun PE class of previous years, in which students helped out with vegetable harvesting on Peace Valley Farm), offering Outing Club trips to visit farms, or designing periodic educational events for raising campus awareness of the sustainability and social equity impacts of sourcing food locally. Dining Services could also think about ways to incorporate this educational component into its dining hall programming, such as naming local beef burgers something like "Williamstown Burgers" on menus or writing and distributing informational pamphlets that detail the different aspects of the local supply chain and how they impact our surrounding community. These are only a few of the many possibilities for involving the Williams community in the project of local beef sourcing, and we hope that more avenues for involvement and improvement will emerge overtime as relationships between farmers, supply chain partners, and Dining Services grow stronger.

As a powerful and resourced institution, we believe that Williams College has a responsibility to support its local agricultural community, and buying local beef is one of the ways that this impact can be felt strongly and persistently. There are ways to support the futures of farms in the Berkshires, and Williams can play a major role in preventing the further loss of agricultural lands, family businesses, and thriving economies by taking steps toward building these relationships and making these consistent markets possible. In buying local beef, Williams Dining Services supports protecting agricultural land, minimizing carbon footprint from food transport, building relationships with local farmers, investing in the regional regenerative farming economy, retaining social and economic diversity within the rapidly gentrifying Berkshire County, improving student Dining Experiences, and connecting students to the foods that fuel them.

Evaluation Matrices

Matrix 1: Logistical Alternatives

The alternative solutions we have identified are as follows: partner with Mike Webster at Tory Hill to meet all farms where they are at and use the Tory Hill three-tiered model to help each farm scale up, form a co-op of all local farms we have connected with (without formal centralized business structure, but organizing a central logistical point person instead), form a small co-op of a subset of farms we have connected with – either the four farms that we spoke to first (Sweetbrook, Hilltop, Cricket Creek, and Hemlock Farms) or the four biggest farms in the region (Ioka Valley, Hilltop, Chenail, and Fairfield Farms) –, sign a contract with one farm to buy from them, sign multiple contracts with two or three individual farms, and lastly, change nothing about Williams beef purchasing practices. We then chose to evaluate each alternative based on the following metrics, and assigned each option a numerical value for each: Environmental Impact (in

terms of how much agricultural land will be conserved and beneficial to the soils and how much carbon will be reduced via transportation of local producers vs. distant feedlots), Social Equity (how much each option would contribute to the survival of our local farms), Economic Impact (the degree to which Williams providing a market would impact the farms' long-term viability), Cost to College (which factors in the price of the beef, as well as the adjacent costs of the various other processes involved in the pipeline between farm and table), Opinion (broken down into opinions of Williams College administration, our client Temesgen Araya, and the farms involved or not involved), Initial Infrastructural Logistics (how easy or difficult it would be to begin sourcing some amount of beef as soon as possible), Long-Term Sustainability (how well each alternative would hold up under changing administrative circumstances or time passing), 100% Implementation Feasibility (how possible it would be to meet 100% of Williams Dining's beef needs), and Benefit to Williams College (both environmentally and politically).

Adding up the values for each cell therefore demonstrated a conglomerate assessment of how viable each alternative is in terms of meeting the needs of our client, benefitting the local agriculture industry, and being able to survive and scale up in the long-term. Based on these totals, we found that partnering with Mike Webster at Tory Hill would be the most favorable alternative overall, with forming some version of a co-op of all farms or a smaller co-op of a subset of farms being also highly favorable. Additionally, the evaluation demonstrated that changing nothing about current purchasing practices would be the least favorable outcome and signing one or multiple smaller scale purchasing contracts with individual farms would be similarly unfavorable with respect to our overall project goals and our client's needs

Matrix 1: Logistical Alternatives

	Environmental Impact (Land Use vs. Carbon)	Social Equity	Economic Impact	Cost to College	Opinion (College Admin/Client/Farm)	Initial Infrastructural Logistics	Long-Term Sustainability	100% Implementation Feasibility	Benefit to Williams	Total (lowest possible is 10)
Tory Hill	1	1	1	4	2/2/2	2	2	1	1	19
Co-op of All Farms	1	1	1	5	3/3/3	5	3	2	1	28
Small Co-op 1 (Sweetbrook, Cricket Creek, Hemlock, Hilltop)	2	2	2	3	2/3/4	4	3	4	3	32
Small Co-op 2 (Ioka, Hilltop, Chenail, Fairfield)	2	3	3	2.5	2/3/4	3	2.5	4	3	32
Individual Farm	4	4.5	4	1	1/3/5	2	4	5	2	35.5
Individual Farm, 2-3 contracts	3.5	4	3.5	1.5	3/3/4	3	4	4.5	3	36
No Change	5	5	5	1	2.5/5/5	1	1.5	n/a	5	36+ (or 41, if we give a 5 to the n/a)

Rating: 1-5, best to worst

Matrix 2 - Different Effects of Partnering with Each Farm

Based on our above matrix (Matrix 1- Logistical Alternative), we determined that in order to sufficiently assess each option available to us, there needed to be a closer look at each individual farm's capabilities in the broader schema of the project, so we designed a second matrix with which to evaluate each farm individual based on their different logistical circumstances. The results of this matrix are relevant to both the option of partnering with individual farms on an individual-contract level, but they are also overall relevant quantitative justifications for the impact that Williams Dining could have on partnering with each farm. Each farm we visited and spoke to is unique in their operation style, overall goals, plans for the future, interest in selling whole animals for beef, and ability to handle high volume beef purchasing, so the matrix is useful to us in analyzing by the numbers which operations would have the most mutual benefit with Williams.

The categories with which we chose to evaluate individual farms were similar to Matrix 1 in terms of content, but they varied slightly to ask more specific questions of each farm operation, considering the diversity of opinions and capabilities of each farm. The categories were as follows: Environmental Impact (in this case, the environmental benefits reaped by each farm's practices, also taking into account how much land they hold in agriculture), Social Equity (what the farms actually need, and whether partnering with Williams Dining could meet those needs), Economic Impact (how much having Williams as a market would impact the farm's long-term viability), Cost to College (same as Matrix 1 - price of beef and estimated price of investing in infrastructure for beef storage, transport, etc.), Logistics (up-front investments in the form of capital, infrastructure, labor, etc.- basically, how much each farm needs to change the current state of things in order to begin selling product to Williams), Interest in Whole Animal Selling (since the Tory Hill model of purchasing asks for farmers to sell whole animals, and that alternative came

out as most favorable in Matrix 1, it is important to take into account how likely each individual farm would be able/willing to sell their whole animals), Current Herd Size/Yield (by heads, broadly, but more specifically in terms of ground beef yield, since that is the initial goal we are looking to fulfill), Long-Term Sustainability (how solid of a plan for succession each farm has, or generally speaking, how likely each farm is to persist with the proposed model of purchasing), and 100% Implementation Feasibility (how likely each farm is to be able to scale up with the market provided by Williams Dining). Using the same quantitative assessment as above, we calculated a sum for each individual farm and determined that partnering with Hilltop or Sweetbrook farms would be the most viable in terms of impact on those operations and likelihood of meeting our client's needs, and that partnering with Fairfield Farm, Cricket Creek, or Hemlock Farm would be equally challenging and less impactful according to those farms' needs and impacts. This said, Fairfield would be significantly more favorable than Cricket Creek or Hemlock Farm because of the Galushas' interest in and capacity to scale up their beef operations. Knowing anecdotally (from interviews) that the Galusha's operation has strong interest and ability to partner with Williams Dining, it might end up being more logistically and practically feasible to partner with their operation first, even if the number on the matrix is slightly lower than Hilltop and Sweetbrook. We take these anecdotal discrepancies into account in our concluding analysis and suggestions, which have more room for holistic assessment than slightly looking quantitatively at the mechanism of the matrix. Overall, according to these values, partnering with the Chenail Brothers farm would be the most logistically challenging and least impactful, considering that the Chenail's has a stable market already and sells culls through a broker who handles logistics.

Matrix 2: Individual Farm Analysis

	Environmental Impact- Farm Practices	Social Equity- Farm Needs	Economic Impact (Impact of Providing Williamsas Market)	Cost to College/Dining Services	Opinion- Client/ Farmer	Logistics	Interest in Whole Animal Selling	Current Herd Size/ Yield	Long- Term Sustainability- Succession Plan	100% Implementation Feasibility- Possibility/ Size of Scaling-Up	Total
Hilltop	1	3	3	1	1/2	1	3	1	1	1	18
Sweetbrook	1	1	1	3	1/1	3	2	2	1	2	18
Cricket Creek	2	3	2	3	1/4	2	1	3	1	3	25
Hemlock	1	1	1	3	1/4	5	2	3	2	2	25
Fairfield	3	3	2	2	2/3	3.5	1	1	1	1	22.5
Chenail	3	3	4	2	2/5	3.5	1	1	1	4	29.5

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