



NORTH AMHERST COMMUNITY FARM FINAL SCHEMATIC DESIGN



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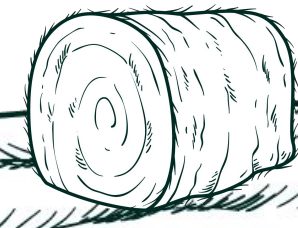
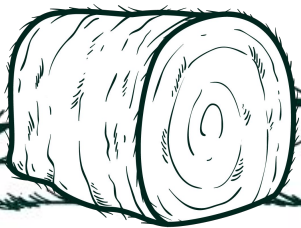
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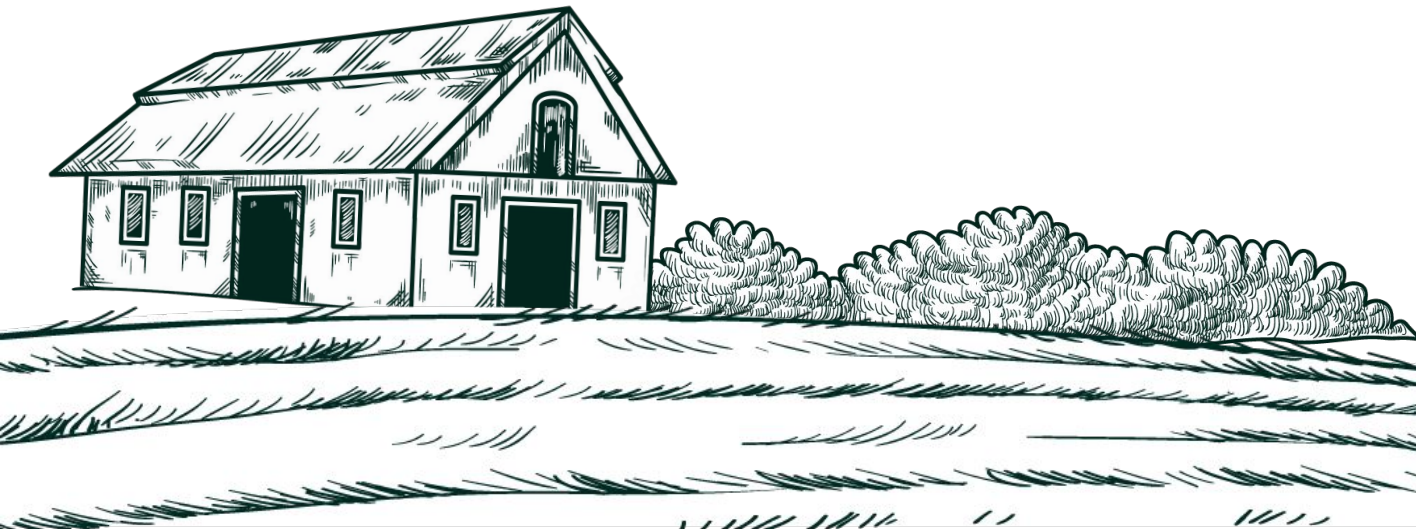
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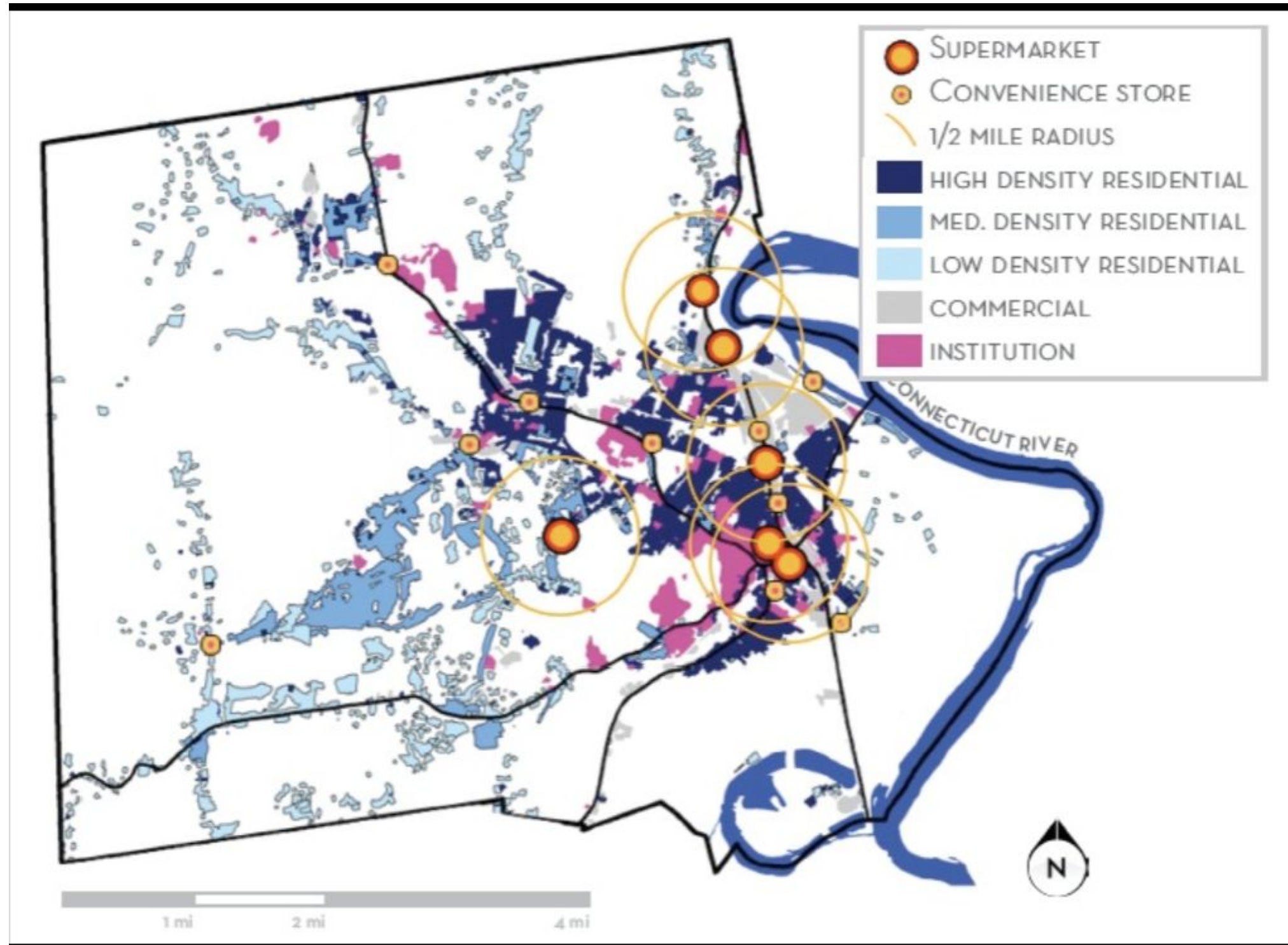
01

CONTEXT



FOOD ACCESS

The town of Amherst is a food desert, largely due to the student population from UMass. It is a low income area, and while there are places nearby for food there are limited options in Amherst itself, especially considering the dense population.





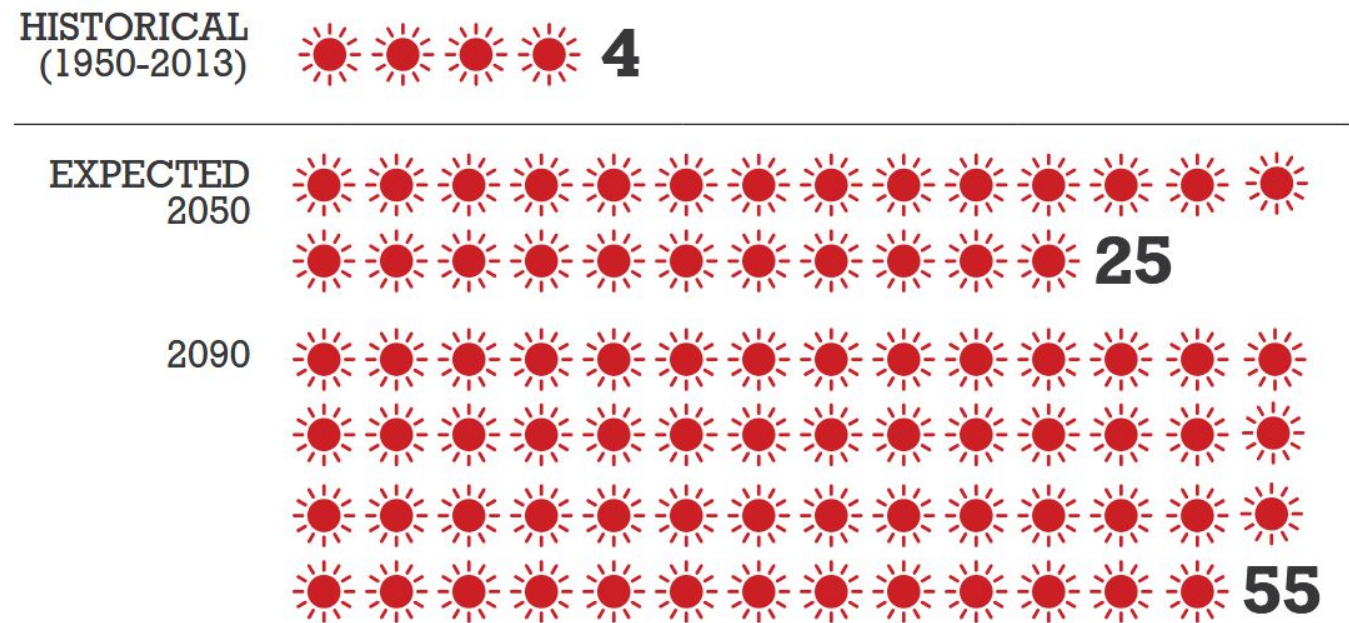
LAND ACCESS FOR YOUNGER FARMERS

- The average age of a Massachusetts farmer is 58.7 years
- Finding affordable farmland is the #1 problem for young farmers identified by the National Young Farmers Coalition

CLIMATE CHANGE

- Regenerative farming techniques (cover crops are highly recommended)
- Perennials must be resistant to unexpected temperature fluctuations

Number of Days Per Year Over 90°F - Inland Areas

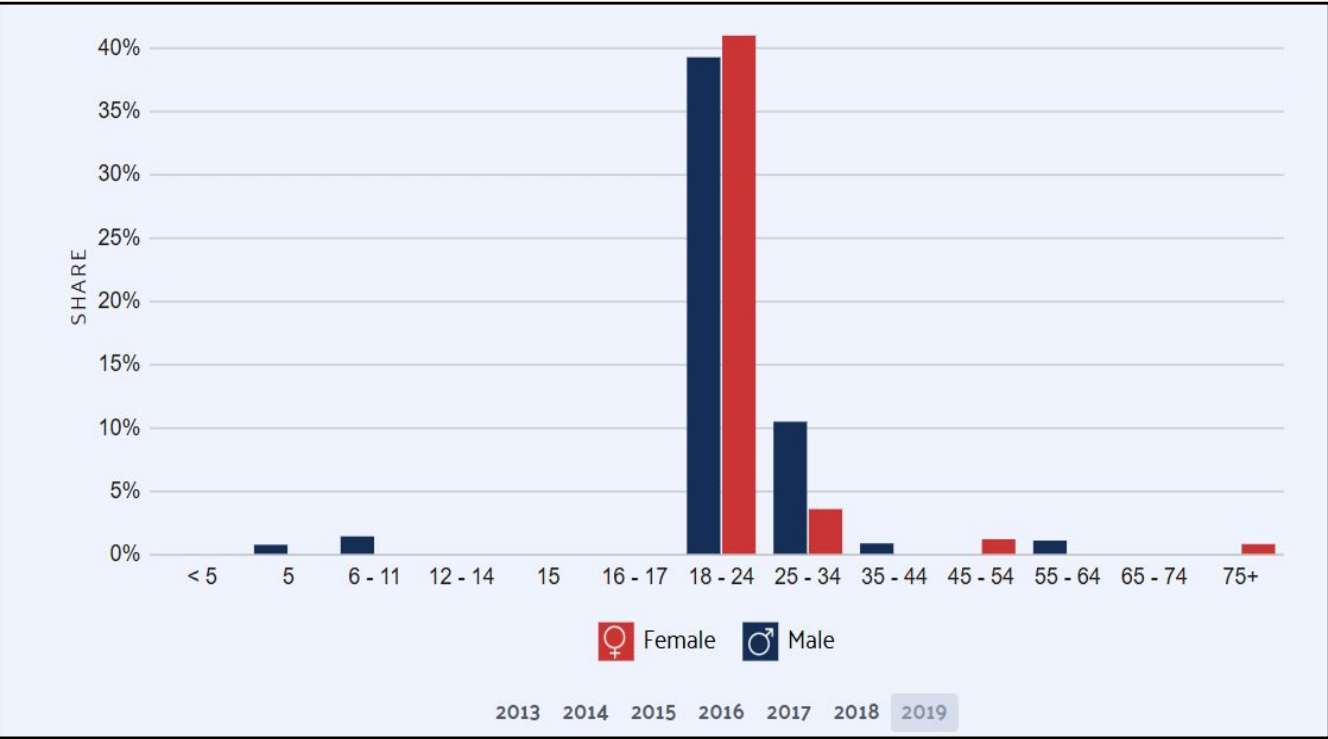


Projections shown above are for inland areas. Coastal areas would see between 25 and 30 percent fewer days per year with temperatures above 90°F.



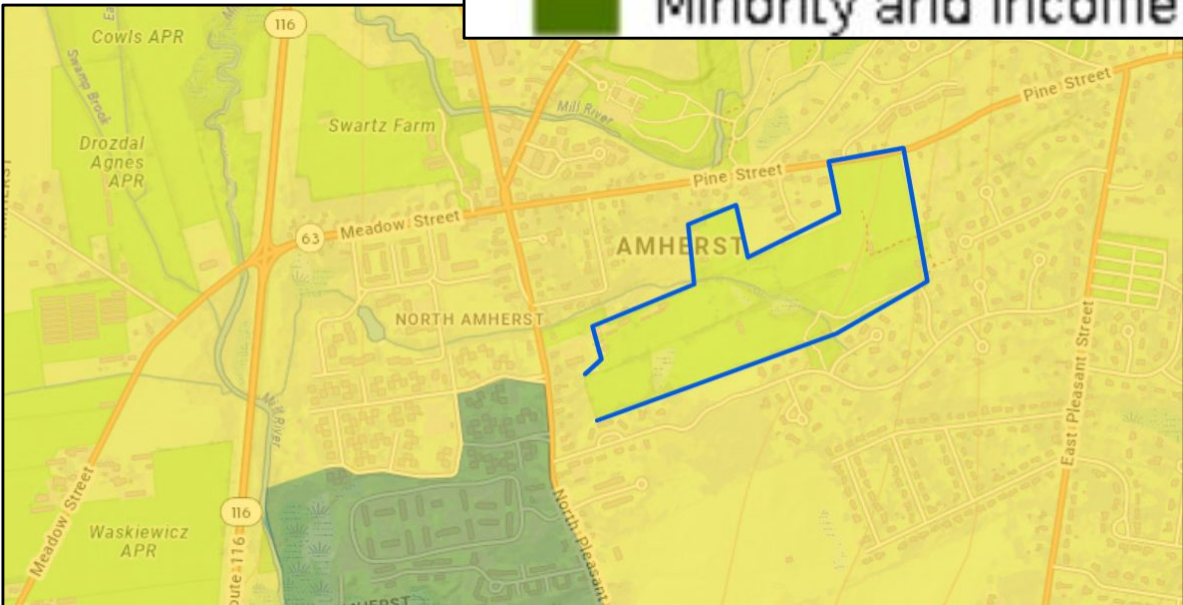
NORTH AMHERST HAS A SIGNIFICANT LOW-INCOME/MINORITY POPULATION

NACF is located within a Minority (>40%) environmental justice zone and within walking distance from a Minority (>25%) and Income (<150% state median household) zone



37.2% - 1.81k out of 4.86k residents - are below the poverty line

- Minority
- Income
- English Isolation
- Minority and Income

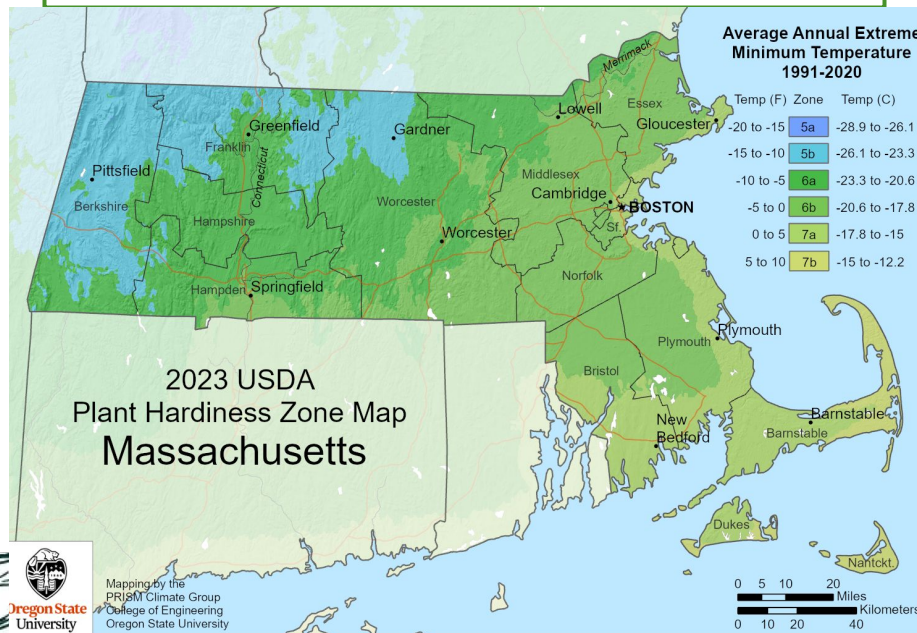


PLANT HARDINESS ZONE

5b and 6a
 (-15°F to -10°F) and (-10°F to -5°F)

Average First Frost:
 Sept. 28 - Oct. 20

Average Last Frost:
 April 23 - May 19



Massachusetts Hardiness Zones - USDA

CLIMATE

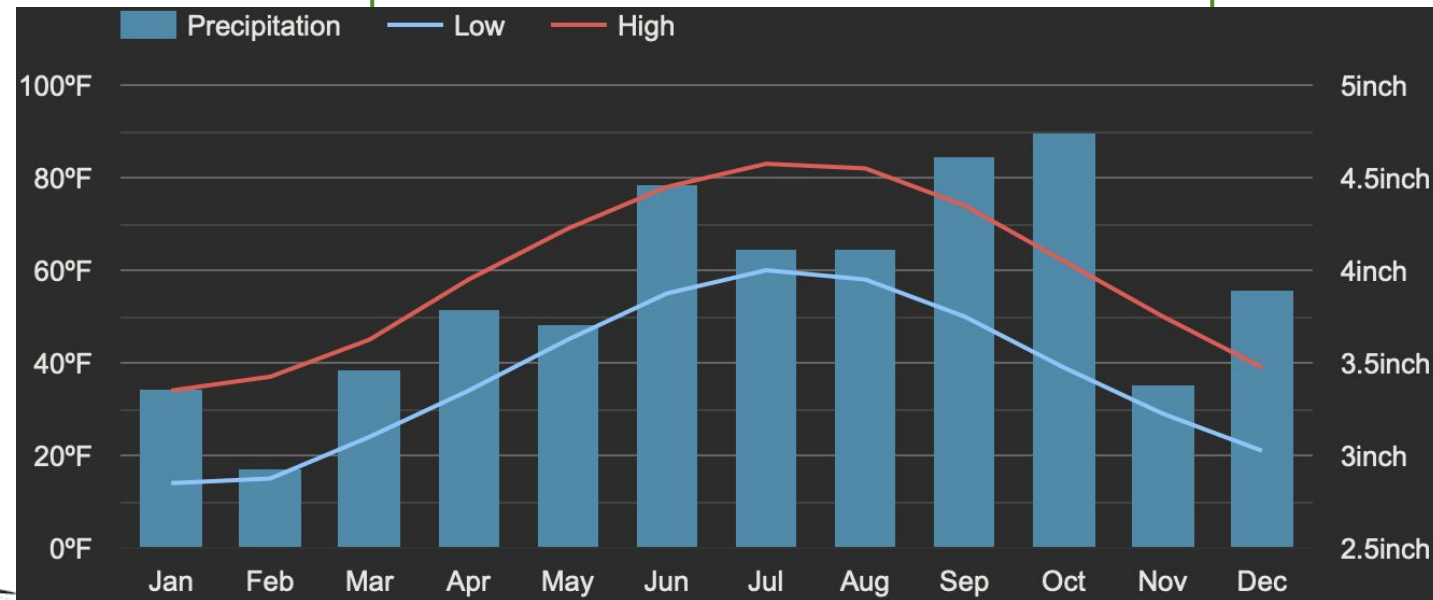
Annual High Temperature: 59°F

Annual Low Temperature: 37°F

Average Temperature: 48°F

Average Annual Rainfall: 46.6in.

Average Annual Snowfall: 37in.



Amherst Climate Graph - USClimatedata

SITE HISTORY

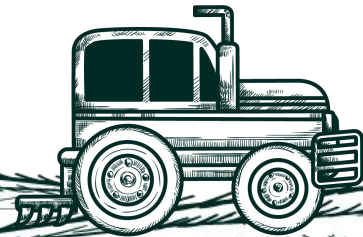


North Amherst Community Farm:
This land has been farmed since the eighteenth century, and continues to be used for farming today. The property came into possession of the NACF in 2005, for the purpose of preservation of the farm lands. It is believed that the farmhouse on site (pictured left) is the oldest farmhouse in Amherst, still standing.



The Farmhouse ~1980

Land Acknowledgement:
The North Amherst Community Farm (NACF) currently resides on the stolen home lands of the Nipmuc, Pocumtuc, and Nonotuck tribes. Before the genocide of indigenous people, the land was cared for and respected. There is every intention to continue to honor this land and the people who came before to care for it.



EXISTING CONDITIONS

Plants growing in the greenhouses and hoop houses already.

Cleaning up trash around the farm.

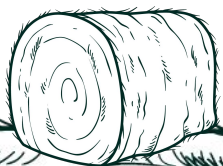
Infrastructure: barns, house, CSA building, greenhouses, hoop houses, fridges and freezers.

Lots of land to work with.

Playground areas for kids.

Has an event space.

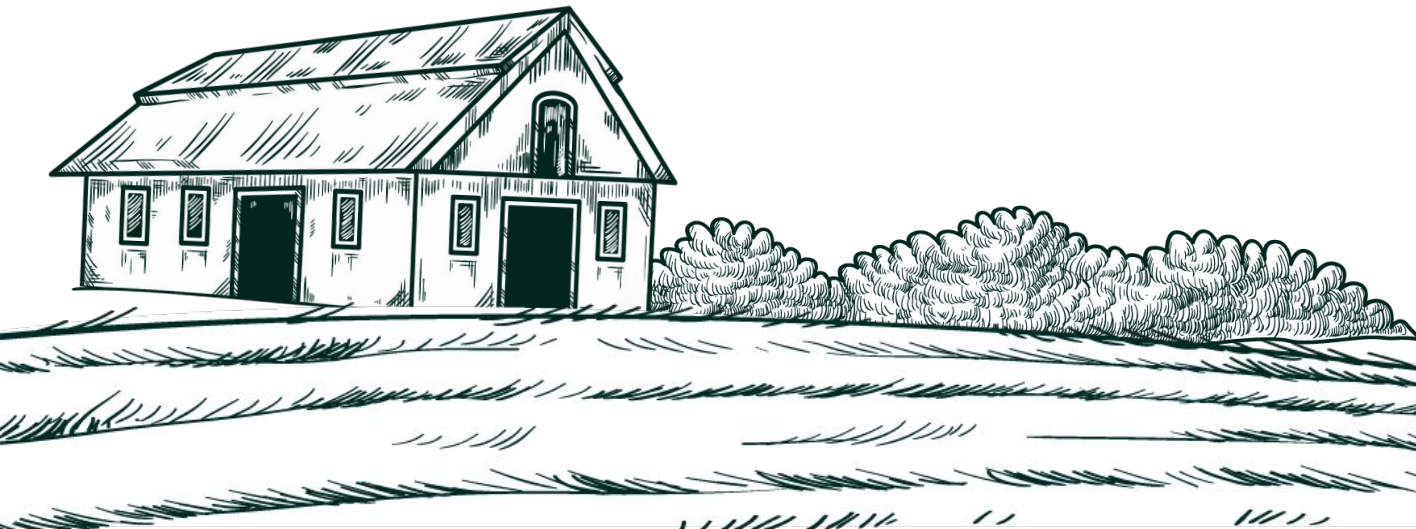
By co-housing and around a community.





02

GOALS + OBJECTIVES



GOALS + OBJECTIVES



GOAL: NACF IS A WELCOMING SPACE FOR COMMUNITY MEMBERS

OBJECTIVES:

- THE COMMUNITY FEELS INVITED TO EXPLORE THE NACF THROUGH CLEARLY DESIGNATED PATHS AND AESTHETICALLY PLEASING SPACES THAT ENCOURAGE DISCOVERY.
- THE NACF HOSTS VIBRANT, FREQUENT, AND ACCESSIBLE COMMUNITY EVENTS.



GOALS: NACF IS FINANCIALLY STABLE

OBJECTIVES:

- NACF HAS A STRONG DONOR BASE AND PRACTICES COST-NEUTRAL FARMING OPERATIONS.



GOAL: NACF IMPROVES THE LOCAL ECOSYSTEM

OBJECTIVES:

- NACF WILL BUILD UPON A RELATIONSHIP WITH THE LAND THROUGH EDUCATION PERSONALLY AND WITHIN THE COMMUNITY
-

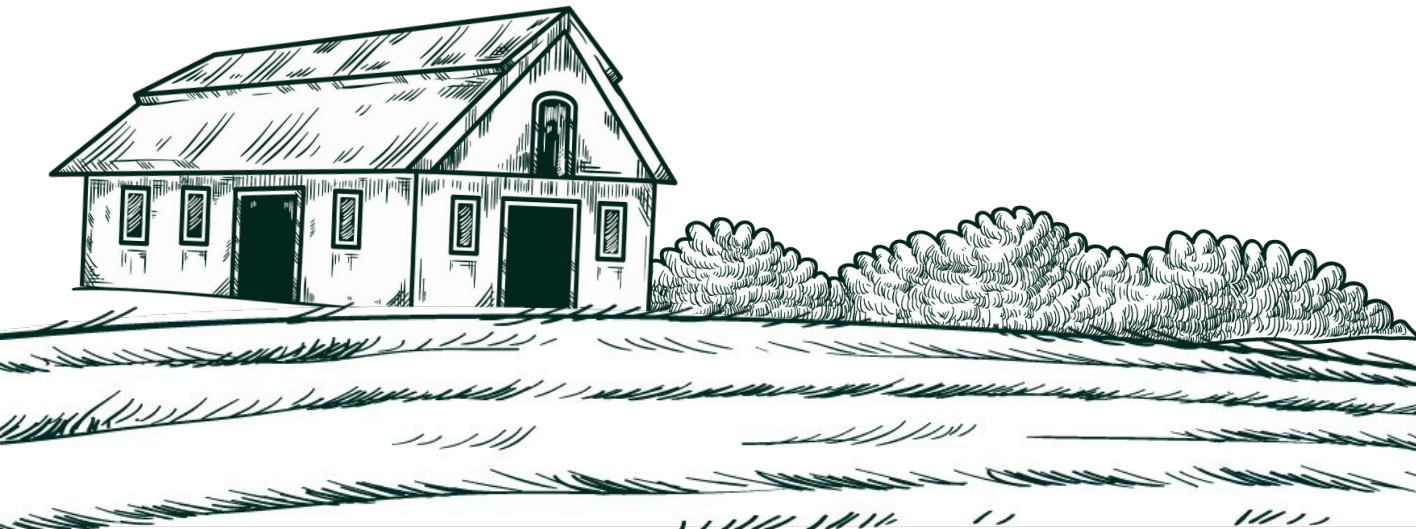




SITE ANALYSIS

03

SUMMARY



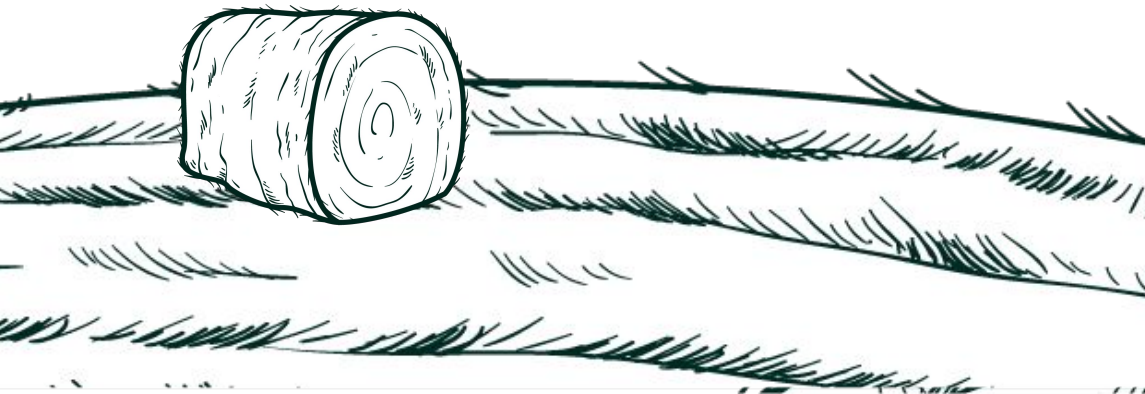
STRENGTHS

- ★ Location
 - Central in the cohousing, near a large and vibrant community
- ★ Land
 - Good agricultural soil, nearby natural water supply, lots of hours of full sunlight.
- ★ Community
 - Volunteers
 - Financial support through potential strong donor base
- ★ Water & Spigots
 - Great for a consistent water supply for any and all areas of the farm.
- ★ Infrastructure
 - Greenhouse clusters, hoop houses, barns, farm store are all already functional and important buildings to build upon and have as a resource.



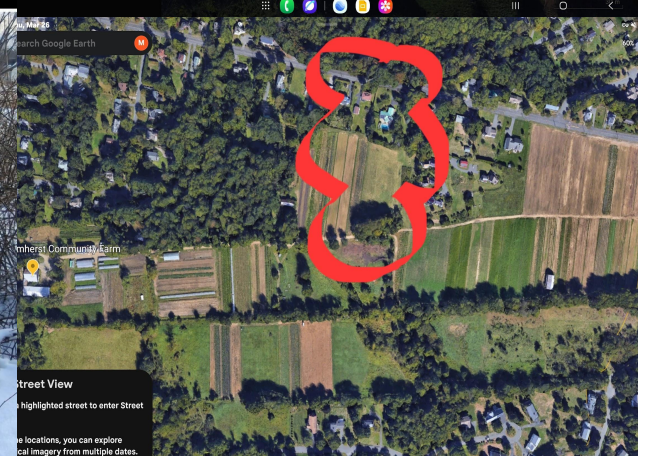
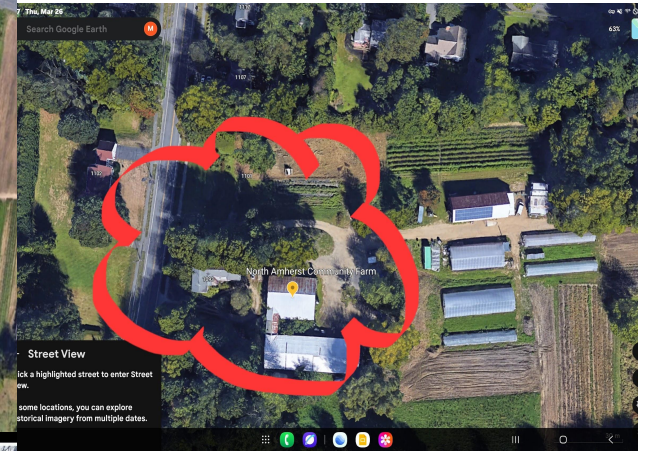
WEAKNESSES

- ★ Walkways and stream are close together → muddy conditions
- ★ Cleanup needed throughout the farm
- ★ Invasive species present
- ★ Debt has accumulated
- ★ Many community members are unaware of the farm, therefore more outreach is needed.



OPPORTUNITIES

- ★ Wildlife Corridor
- ★ Forest Garden
- ★ Childrens play area
- ★ Pick your own
- ★ Orchards
- ★ Gazebo/Pavilion
- ★ Rain Garden
- ★ Floral Plot





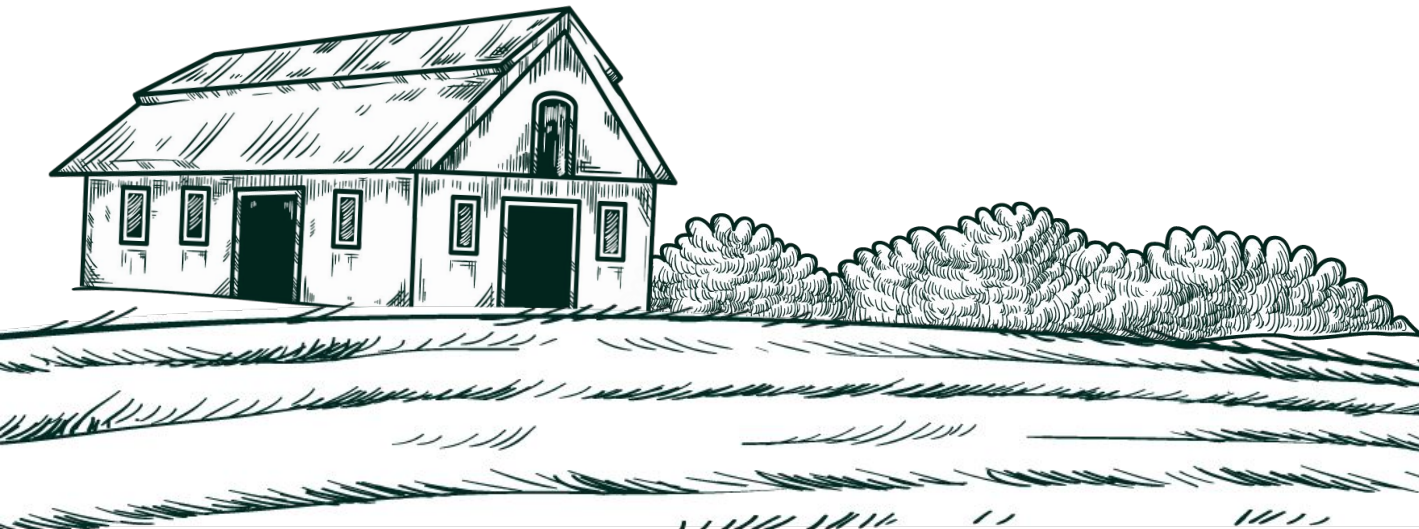
THREATS

- ★ Climate change
- ★ Soil degradation
- ★ Pest and disease outbreaks
- ★ Economic pressure
- ★ High maintenance
 - Costs associated with creating/maintaining high traffic areas
 - Funding and grants
 - Infrastructure limitations



04

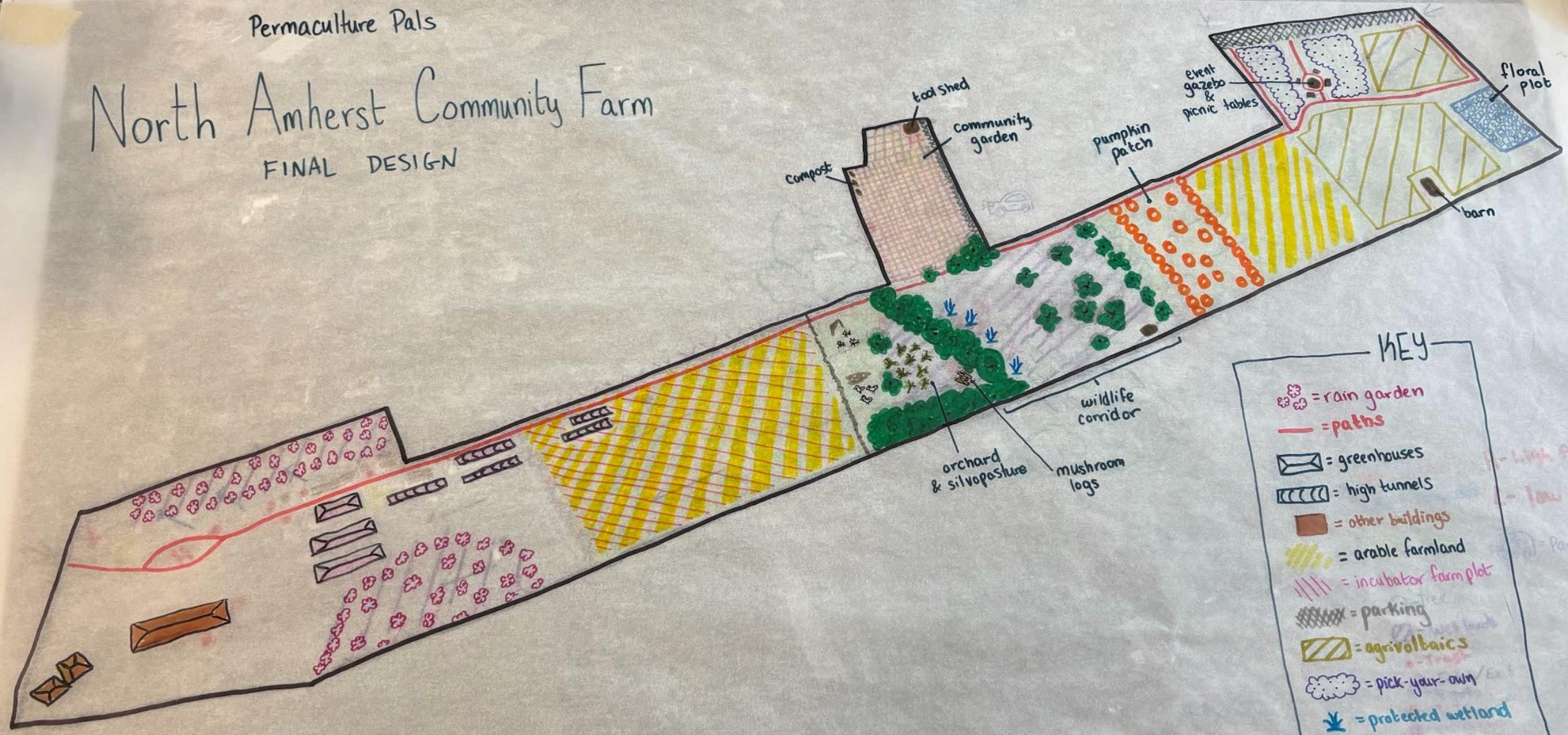
DESIGN CONCEPT



Permaculture Pals

North Amherst Community Farm

FINAL DESIGN



KEY

- = rain garden
- = paths
- = greenhouses
- = high tunnels
- = other buildings
- = arable farmland
- = incubator farm plot
- = parking
- = agrivoltaics
- = pick-your-own
- = protected wetland

700ft =

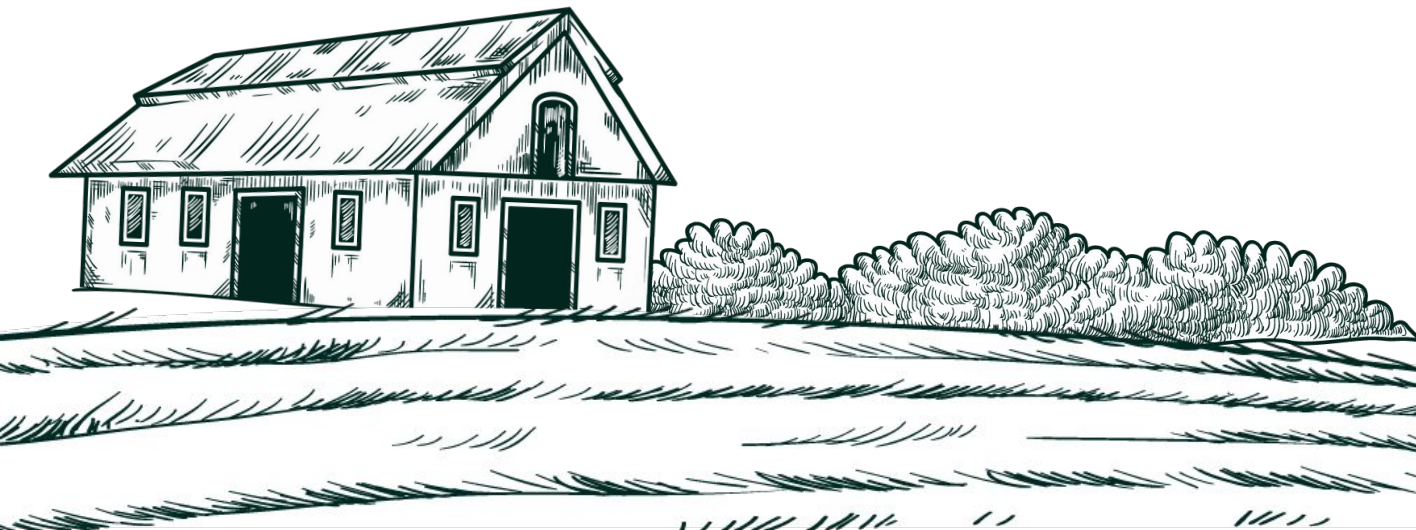
Google Earth





05

DESIGN DETAILS



PHASE DESIGN

Years From Now	Steps to take
1-5 years	<ul style="list-style-type: none">● Hire an administrative employee and a farm manager● Start a social media account to inform community members about the farm● Undergo soil testing through the UMass Extension Program to learn what plants are best to plant in the production areas● Break up compacted soil to improve growing conditions● Begin creating an agrivolatics plan and fill out <u>pre-determination application</u> (if getting funding from Mass Smart 3.0 Program)● Start the pumpkin patch by planting 3,000 traditional jack o'lantern pumpkins● Plant the orchard trees, bushes, pollinator gardens, and purchase bee hives● Establish the cut flowers patch and pick your own area● Purchase chickens and goats● Find a incubator farmer● Rent out the community garden plots
5-10 years	<ul style="list-style-type: none">● Provide farm employees with free housing at the farm house● Review the agrivolatics plan with Mary Kraus (UMass Extension) - mlkraus@umass.edu● Continue operating cut flower patch, pumpkin patch, and pick your own area● Have incubator farmer begin farming their plot of land● Plant rain gardens and focus on improving wildlife corridor (remove invasives, plant native plants)
10-15 years	<ul style="list-style-type: none">● Install solar panels for agrivolatics, experiment to find best uses (grazing for animals, shade tolerant plants, ect)● Build community event space
100 years	<p>All areas of the farm are being actively used. Community members visit the farm to go to frequent events. The farm is a hub for community engagement and participation.</p>

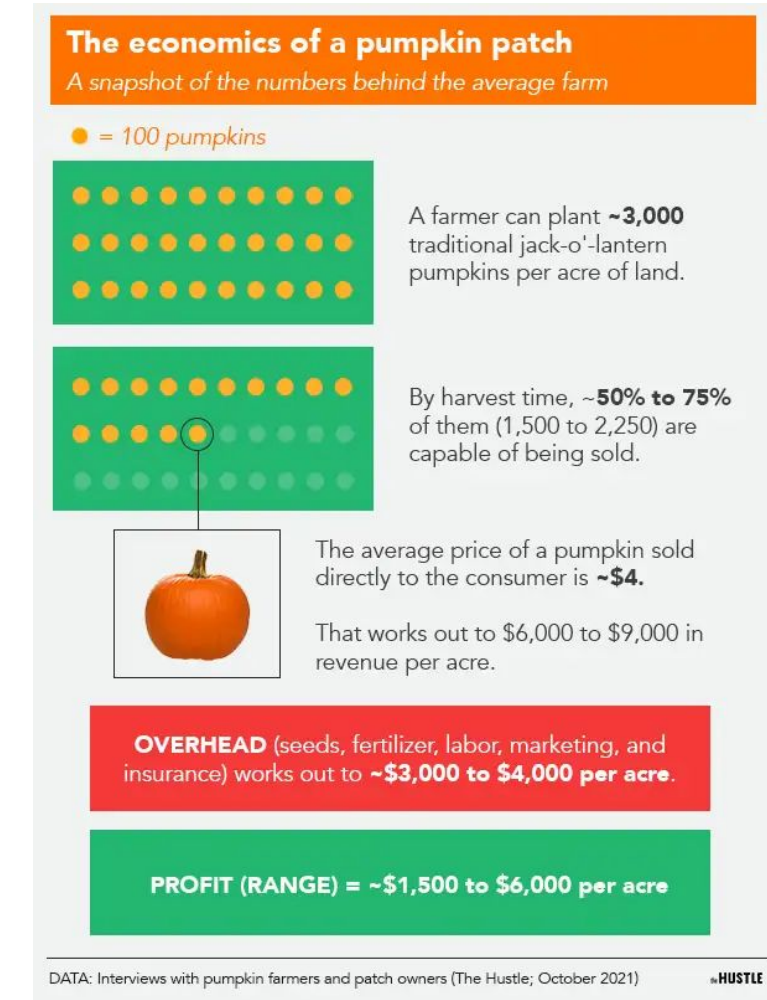
PYO PUMPKIN PATCH

Why?

- Nearby college students and families with young children might be very interested in picking their own pumpkins near halloween
- It could create a tradition that keeps people coming back to the farm year after year

Financial/logistics

- Start with 1 acre of land dedicated to PYO pumpkins
- [Start by planting 3,000 traditional jack-o-lantern pumpkins \(most recognizable to customers\)](#)
- Try to get local schools to come on field trips for kids to pick pumpkins



AGRIVOLATICS - USING SOLAR PANELS COMBINED WITH AGRICULTURE



What can you do beneath solar panels?

(UMass Agrivoltatics Guide)

- sheep and poultry have been shown to do well grazing underneath of solar panels
- shade tolerant crops do best - greens (ex kale) + brassicas (ex broccoli)

How to fund an agrivoltatics project

- grants + loans (UMass - Solar and Renewable Energy on Farms)

- Programs: USDA REAP or Massachusetts SMART 3.0 Program

REQUIREMENT	SPECIFICATION
Panel Height	Minimum 8 feet from ground to lowest panel edge for fixed tilt panels, minimum 10 feet at horizontal position for tracking panels.
Shading Limit	No more than 50% sunlight reduction during growing season hours
Maximum DC Capacity	7,500 kW DC (no more than twice the AC capacity)
Agricultural Requirement	Continuous production for 20-year program term

Growing Season Hours: 9 AM-6 PM (April-September); 10 AM-5 PM (March and October).

Requirements for dual use solar panels if getting funding from Massachusetts SMART 3.0 Program

WILDLIFE AREA & RAIN GARDENS



Shiitake mushrooms insulating hardwood logs (like oak) with shiitake spawn by putting them into a $\frac{5}{8}$ inch plug, sealing them in beeswax and allowing them to colonize in a shaded moist area under trees covered in a tarp to keep humidity. Stack logs in a 'log cabin stacking' style allowing airflow. Keep logs moist aiming for 1 inch of rain or watering per week (like soaking them in a water trough. Then allowing them to sit for 8-18 months for the spawn to fully colonize the wood. Slugs will appear so a warning. Encourage fruiting soak the logs in cold water 6-24 hours (up to 3 days on spring/fall) harvesting 7-10 days later when they open by twisting them off. Logs can be forced to fruit every 6-8 weeks in warm weather.

Rain Gardens will have red osier dogwood, bee balm, swamp azalea.

Highbush blueberry, elderberry, switchgrass, bluestem along the stream.



ORCHARD & FARM ANIMALS

Orchard:

Chestnuts and pawpaws 10-20 ft between rows 12'-15'

Having bee hives around the edges of the orchard

Pollinator gardens milkweed, echinacea, bee balm, goldenrod, asters, lavender, dill, yarrow, queen anne's lace, parsley, tany

Farm Animals:

Golden Comets give the best eggs annually, often laying 250-320+ eggs.

Brahmas are friendly roosters. They need high-quality feed.

The goats will need high quality hay. Both need clean water.

Logistics:

Having a coop for the chickens, a run-in shed for the goats. A basket to collect eggs, to then wash & sell them. While reusing cartons from customers.

Feed in two areas one by the goats and one by the chickens as well as having water for each. Allowing them to graze and go into the orchard when pleasing, having a fence with a gate on the side closest to the incubator farm.



EVENT SPACE



COMMUNITY GARDEN

Our plan for the event space, located accessible near parking and surrounded by pick-your-own perennial fruits and vegetables, is a **gazebo/band shell structure ringed by picnic tables**.

The gazebo cost would vary widely depending on if the purchase is a pre built structure, a DIY kit, or a larger custom installation. Likely, the cost of lumber and concrete alone (without labor) will be over \$10K, which may make it outside of the NACF budget unless specific grant money can be sourced.

The community garden plots in our plan exist in a 215ft x 450 ft space, leaving room for about **219** 20x20ft plots.

The infrastructure requirements are a tool shed stocked with basic garden tools and a 3 bin compost. Ideally, a section of raised beds would be added in an ADA accessible section. This could be added after raising money over several initial seasons. In addition, a volunteer or employee will be needed to answer emails, organize the online payment portal, and ensure that plots are maintained each year.

According to Grow Food Northampton, plots of this size cost about \$40 each year to maintain (not counting initial installation costs). Based on price points from nearby town gardens, the plots should be priced at an annual fee of about **\$120 for residents**.

CUT FLOWERS



WHY CUT FLOWERS?

Cut flower production is a very large market, and much can be done with it, this however is up to the discretion of the farmer. Options for potential sales channels could be selling per stem wholesale or straight to florists, selling bouquets at local farmers markets or the farm store, event work, or even a how to make a floral arrangement educational class where community members could come and be taught how to make a balanced bouquet. There are many options for what could be done, as well as many value added products with dried florals for a year round profit.

LOGISTICS

A floral farming plot does not need to take up a lot of space, nor does it need a lot of maintenance throughout the growing season. It is recommended to have 1-2 farmers working on the plot. This could look like 7 different rows, 15-20 ft each, that would be 2 ft wide with 2 ft walking rows between. This would allow for four cut flower rows, two rows of foliage, and one row of perennials and pollinator plants to use in design and attract towards the other flowers. At a very maximum size this total space would be around 520 sqft.





INCUBATOR FARMING

Incubator farming is in very simple terms, when someone wants to farm but does not have land, they can then rent land from a farm, and farm whatever they want on it within their lease parameters. If NACF were to try incubator farming they would make a profit off of having someone pay to use their land, and would benefit from having the soil not sit untouched, it is better to have the soil be in production and use.

The process can be very similar to renting out a home or apartment, the landlord will have lease requirements that could be specified before hand, this will ensure that you will still have control over your land even when someone else is occupying it.



BUSINESS PLAN PARTS 1+2

Business Proposal: Operational & Program Expansion

North Amherst Community Farm (Amherst, MA)

1. Executive Summary

This proposal outlines a structured operational plan to strengthen and expand North Amherst Community Farm through the addition of two key full-time roles:

Farm Manager (Operations)

Administrative & Events Coordinator (Programs & Outreach)

By combining efficient farm management with revenue-generating programs and community engagement, this plan aims to create a financially sustainable, education-driven farm model that supports both production and community impact.

2. Objectives

Improve farm productivity and operational efficiency

Expand community engagement through events and education

Establish consistent administrative systems (payroll, scheduling, compliance)

Increase revenue through programs, workshops, and events

Build a long-term sustainable model for staffing and growth

BUSINESS PLAN PARTS 3+4

3. Organizational Structure

Position 1: Farm Manager (Full-Time)

Responsibilities:

Oversee daily farm operations (planting, harvesting, maintenance)

Manage volunteers, students, and farm workers

Plan seasonal crop production

Maintain equipment and infrastructure

Coordinate with administration on supply and scheduling

Salary Range:

\$50,000 – \$60,000 annually

Position 2: Administrative & Events Coordinator (Full-Time)

Responsibilities:

Plan and execute farm events (workshops, farm-to-table dinners, community events)

Manage social media and marketing

Handle payroll, scheduling, and administrative systems

Oversee community garden and incubator farm program logistics

Coordinate vendors, partnerships, and event operations

Coordinate vendors, partnerships, and event operations

Salary Range:

\$50,000 – \$65,000 annually

4. Financial Overview

Annual Staffing Costs

Position

Salary Range

Farm Manager

\$50,000 – \$60,000

Admin & Events Coordinator

\$50,000 – \$65,000

Total

\$100,000 – \$125,000

5. Revenue Strategy

To support staffing and ensure sustainability, the farm will expand into revenue-generating programming:

Event-Based Revenue

Cut Flowers

Seasonal festivals (harvest, planting, etc.)

Workshops (soil health, composting, permaculture)

Mushroom incubators

Petting Zoo

Children's education programs

Program Revenue

Community garden plot fees

Incubator farm participation fees

Educational partnerships with local schools and UMass

Estimated Revenue Potential

Events: \$30,000 – \$60,000 annually

Programs: \$20,000 – \$40,000 annually

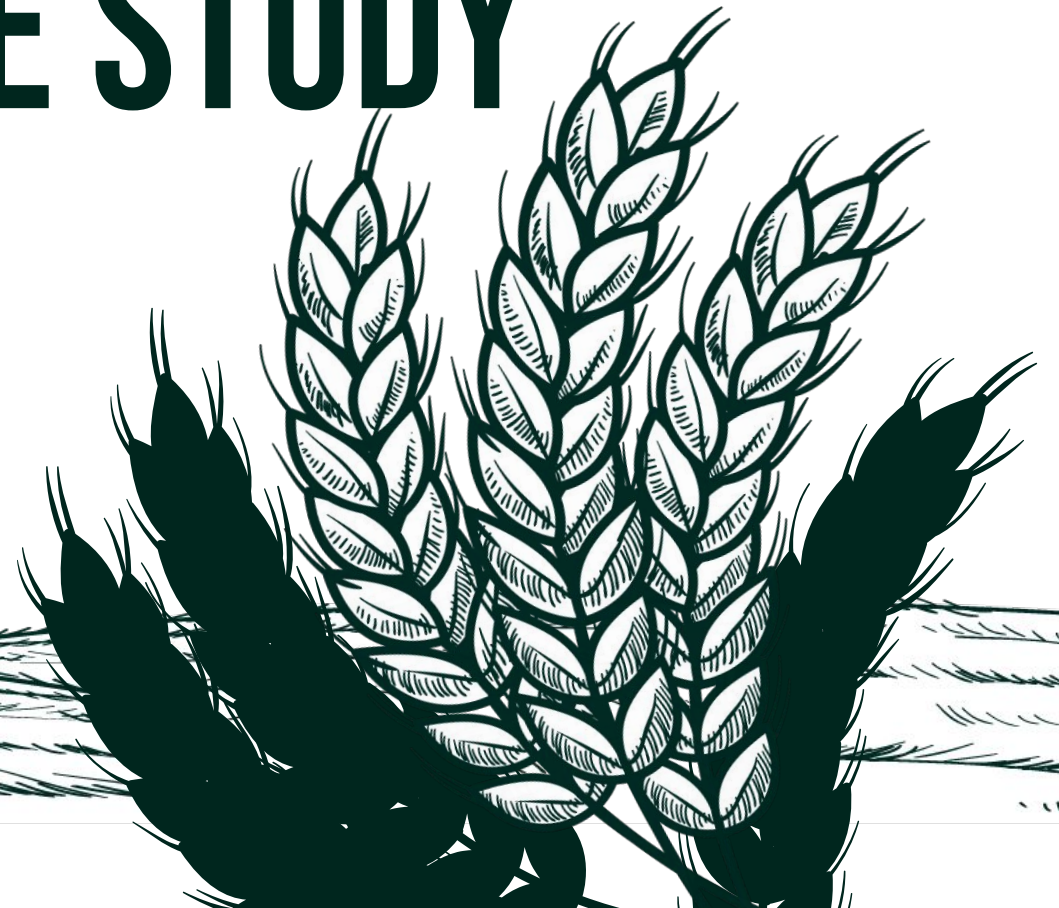
Grants & donations: Variable



JUST ROOTS

CASE STUDY

06





GREENFIELD, MASSACHUSETTS

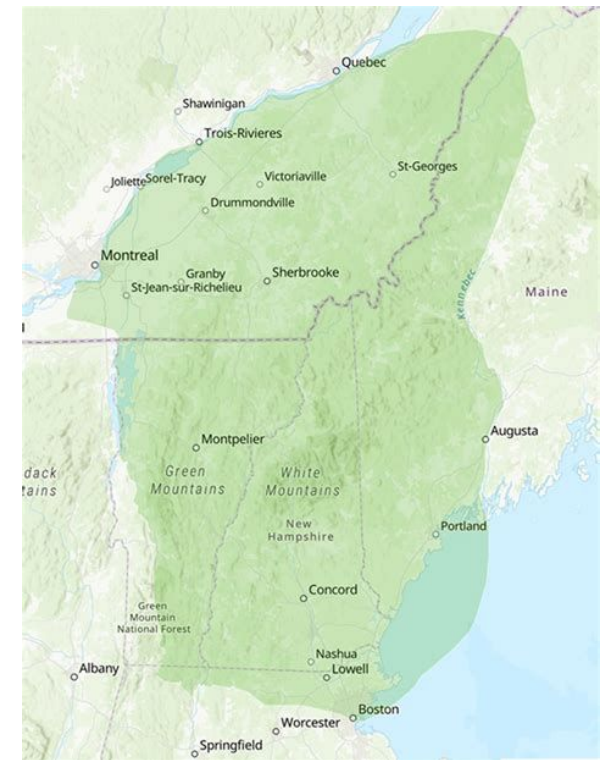
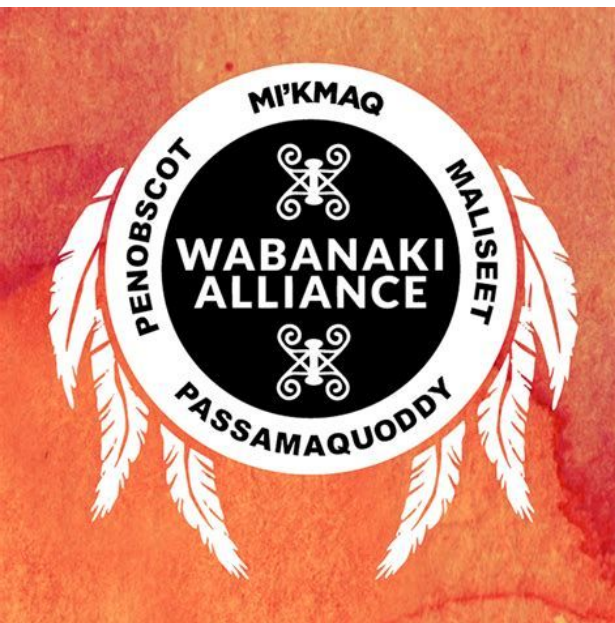
FRANKLIN COUNTY



The organization developed and operates one of the largest SNAP-enrolled, low-income Community Supported Agriculture (CSA) farm share programs in Massachusetts

LAND ACKNOWLEDGEMENT

Just Roots Farm currently resides on the stolen land of the N'Dakina and Wabanaki tribes. They are currently working to have a stronger connection to the land and the local indigenous people who reside in the area to have a more respectful and meaningful relationship with the land, community, and all living things.



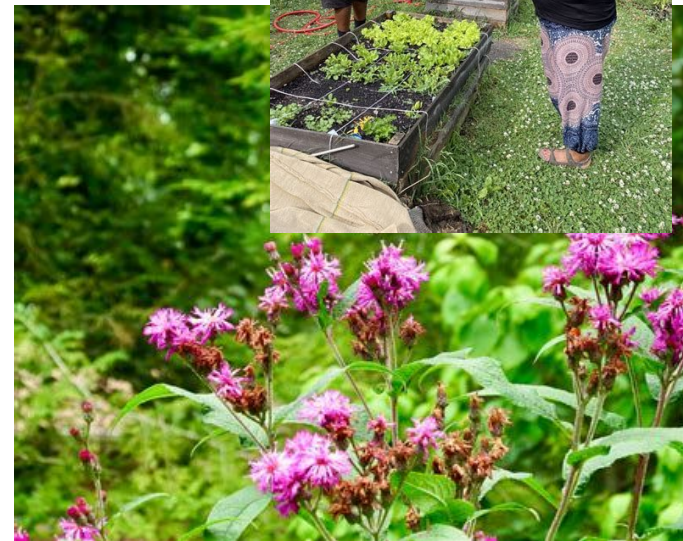
VISION, MISSION, GUIDING PRINCIPLES

Vision: To “envision a world in which our food systems are equitable, resilient, sustainable and inclusive of small farms, local businesses and people who are racially and economically diverse, healthy, thriving and empowered.”

Mission: “Create equitable access to healthy local food in Western Massachusetts, and work toward just, vibrant, and sustainable farm and food systems everywhere.”

Guiding Principles:

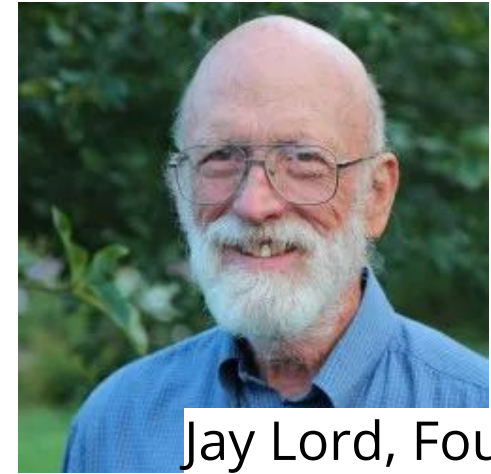
- ★ Building a diverse, inclusive community that’s accessible
- ★ Looking for local solutions to local problems
- ★ Native health and biodiversity while staying sustainable
- ★ Fostering collaborative local and hands-on education
- ★ Security & resiliency of local food systems



GOVERNANCE, STAFF, STATUS



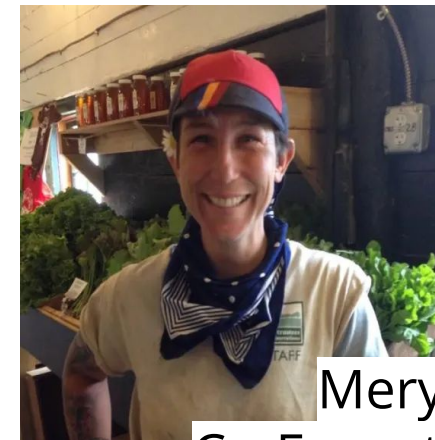
- ★ Just Roots is a 501(c)(3) nonprofit
- ★ The land is owned by the city of Greenfield
- ★ Founder Jay Lord stumbled into the just-started community organization while looking for land to farm, and led the organization for the next ten years after
- ★ 7-member Board of Directors
- ★ 9-member team includes
 - Community Care Manager & Coordinator
 - Community Engagement Coordinator
 - Program Manager & a Delivery Driver
 - two Co-executive directors (pictures shown)
 - Farm Manager & Farm Coordinator



Jay Lord, Founder



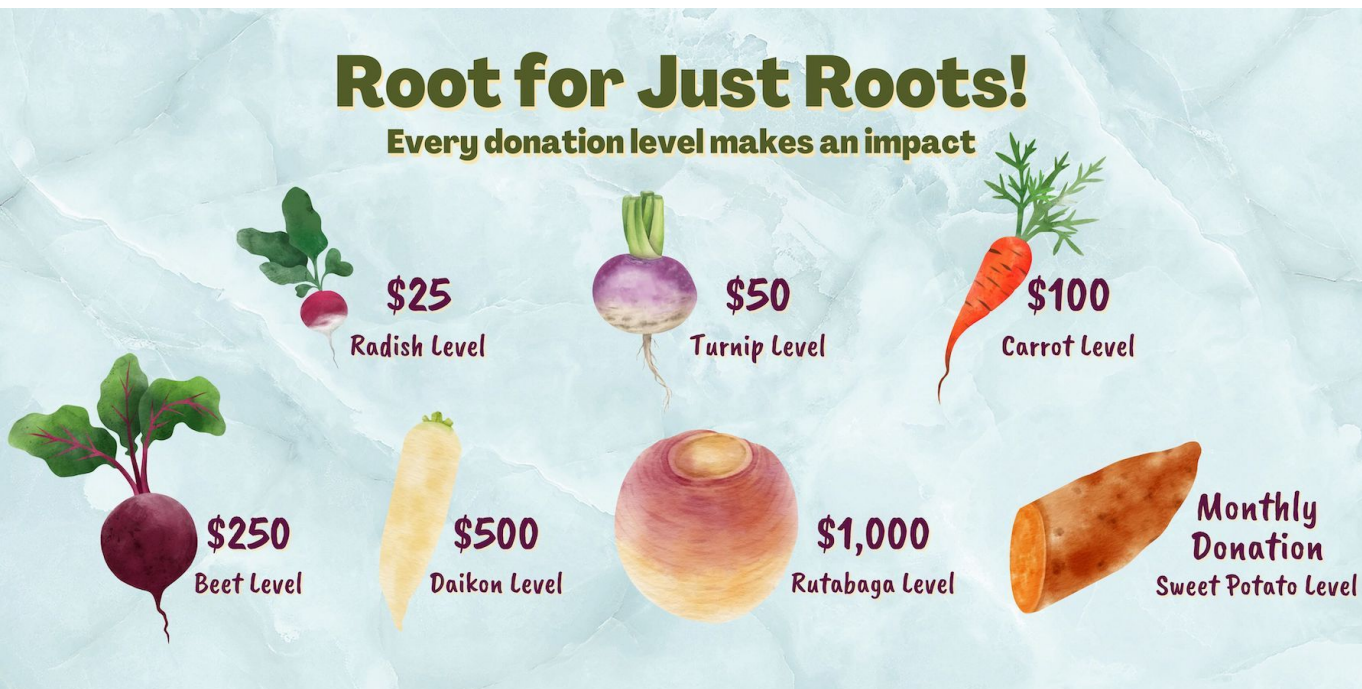
Joshua Faller, Co-Executive Director



Meryl LaTronica,
Co-Executive Director

FUNDING

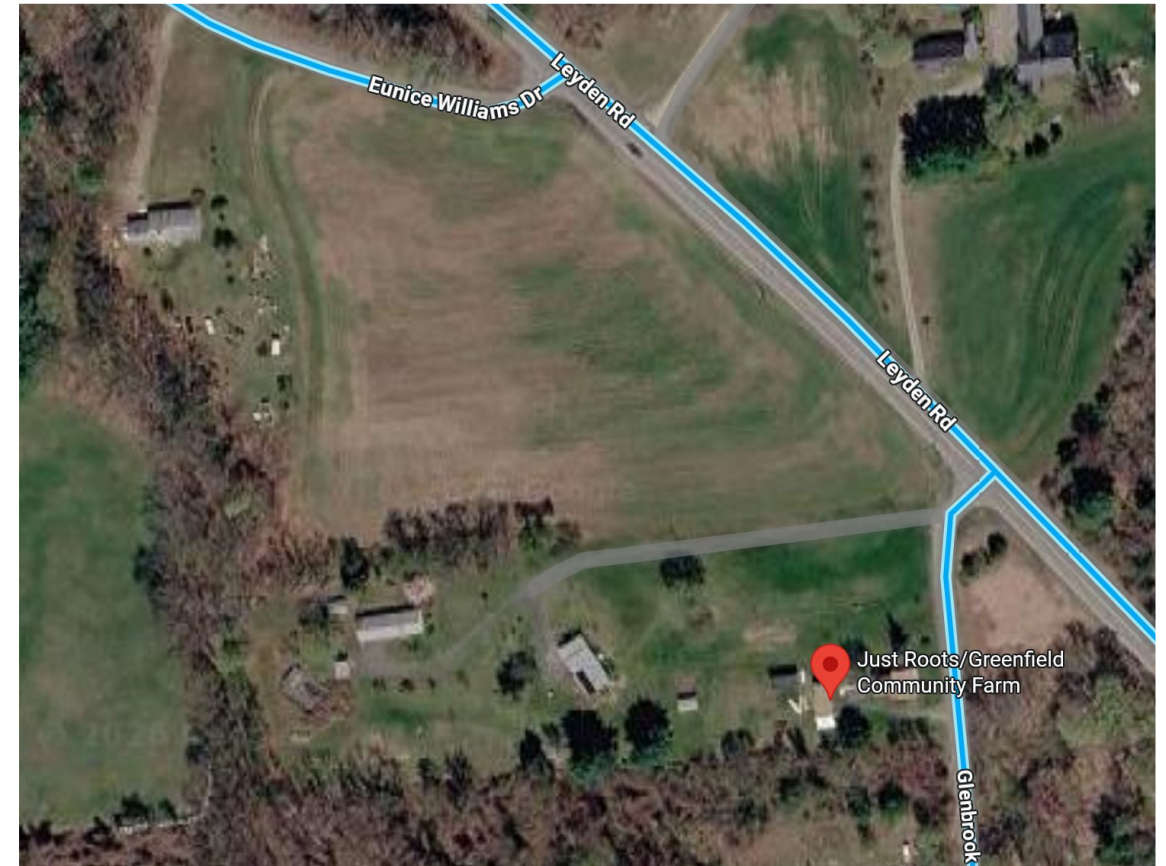
- ★ One third of CSA shares are paid for using SNAP funds
- ★ Wide donation base and support
 - Healthcare partners
 - Organizational Funding
 - In-kind donors
 - Community donations



LAND ORGANIZATION BY THE NUMBERS



- ★ 7 acres of fruits and vegetables providing 600+ CSA shares
- ★ Greenfield Community Garden with 67 plots managed by different members of the community
- ★ Connected with other community gardens in Great Falls, Northampton, and Orange

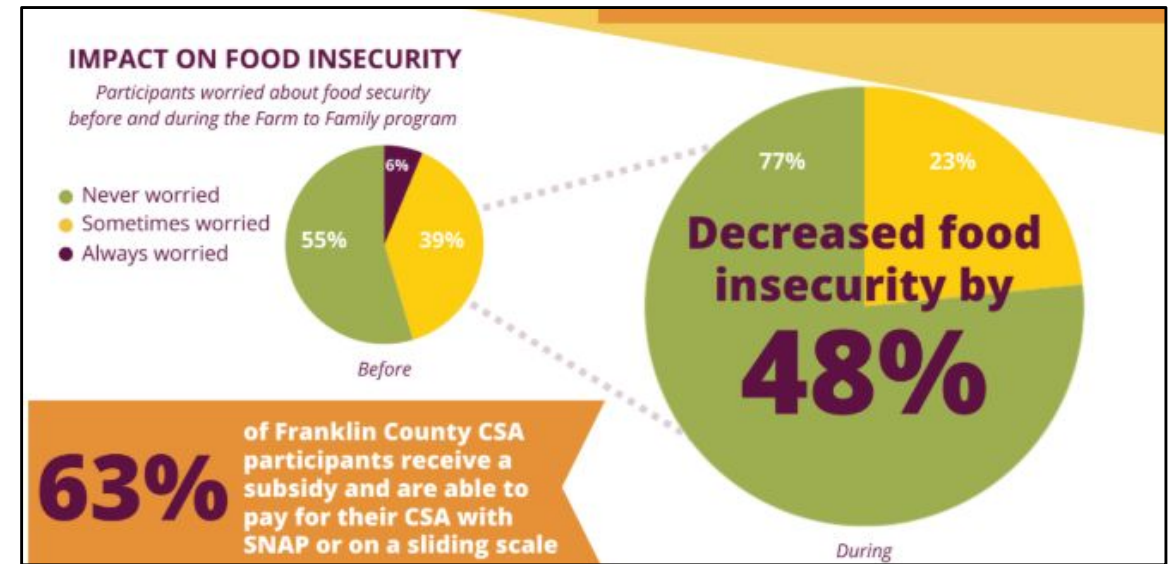


PERMACULTURE ETHICS

People Care - Farm to Family Program - People can be referred to the farm by their healthcare provider to receive food deliveries + cookware sent to their house.

Earth Care - The Pollinator Project - creating a nursery of pollinator friendly plants, adding native trees and shrubs along solar panel fence line

Fair share - There are options to pay using SNAP/HIP, a reduced price sliding scale, and full price providing fair access to food for all community members.



RELATION TO NACF: MULTIPLE USES OF THE LAND

Companies - Just Roots provides land to Blue Crow Botanicals, The Compost Co-operative, and Sage Farm

Medicinal - The People's Medicine Project - growing medicinal herbs, making medicines, educating the community

Community Garden - 67 garden plots, community tool shed, pergola with picnic tables for shade

CSA - annual vegetables

Pick you own - flowers, beans, cherry tomatoes, husk cherries, peas



KEY TAKEAWAYS FOR NACF

Addressing food insecurity

- Use a sliding scale for farm produce
- Offer pick-your-own fields with familiar and easy to cook produce
- Create a surplus exchange program to share free food with community members
- Partner with local healthcare providers (University Health Services, ect) to refer people to the farm
- Donate extra produce to Amherst Survival Center



Sharing the land with others

- See if local Amherst businesses could use some of the farmland
- Offer a medicinal plants garden
- Have community garden plots



Thank You!

Permaculture Design and Practice
STOCKSCH 286, Stockbridge School of
Agriculture Spring 2026

