COMMUNITY & AGRICULTURE RESILIENCE AUDIT TOOL (CARAT) FOR NANTUCKET

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Community Agriculture Resilience Audit Tool (CARAT) for Nantucket

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Abstract

Sustainable Nantucket has been tasked with carrying out a food system assessment of Nantucket using the Community & Agriculture Resilience Audit Tool (CARAT). Our project's goal was to assist Sustainable Nantucket in preparing to implement this tool. Through interviews with CARAT developers, CARAT users, and island stakeholders, we identified effective CARAT implementation strategies and a core group of stakeholders with relevant food system expertise. These interviews revealed the need for more collaboration among island organizations, farmers' hesitance toward food policy, and limitations in connecting with Nantucket's diverse community. We recommend Sustainable Nantucket adjust CARAT to improve clarity and efficacy and prioritize input from relevant stakeholders in the implementation process.

Executive Summary

Nantucket's once-strong agroecosystem supported its whaling industry in the 1800s with over 100 farms on the island. Today, the number of farms on Nantucket is less than 20, which when paired with high food production costs makes access to fresh and nutritious island-grown produce challenging for many. To help address this problem and promote greater agricultural resilience on the island, Sustainable Nantucket, a non-profit founded in 2000 has partnered with the Marion Institute to conduct a community food assessment (CFA).

The goal of this project was to assist Sustainable Nantucket in preparing to implement the Community & Agriculture Resilience Audit Tool (CARAT) assessment for Nantucket. To achieve this goal, we:

1. Clarified the data needs and entry protocols of the CARAT assessment model.
2. Identified current and best practices used by other communities to implement the CARAT assessment.
3. Determined how different community stakeholders might contribute data, expertise, and resources to the CARAT assessment effort.
4. Provided recommendations to Sustainable Nantucket on key stakeholders and the suitability of the CARAT assessment on Nantucket.

To complete these objectives, the team reviewed the data needs of CARAT's seven themes and 101 indicators by interviewing a CARAT developer about the motivations behind the tool's design. Additionally, we conducted interviews with 21 representatives of different organizations across the island to gauge community expertise on the topics explored by CARAT. This includes representatives from island farms, nonprofits, and community investment organizations. We also interviewed representatives from two other pilot CARAT communities to learn about effective data collection and scoring strategies from their implementation of the tool.

Discussion & Recommendations:

Through our research, we identified a core group of stakeholders whom we recommend Sustainable Nantucket collaborate with in CARAT data collection and scoring. Additionally, we recommend a strategy to Sustainable Nantucket for approaching the assessment. Recommendations to the North American Food Systems Network (NAFSN), the developers of CARAT, include changes to the tool's indicators and scoring system.

5.1 We recommend that Sustainable Nantucket collaborate with a core group of stakeholders to implement CARAT data collection and scoring.

A diverse core group of island stakeholders would include Matt Haffenreffer, Chuck Larson, John Bartlett, Aidan Feeney, Vincent Murphy, Rita Higgins, Jerico Mele, Cormac Collier, Anne Dougherty, Brooke Mohr, and Rachael Freeman. These stakeholders have different individual and organizational perspectives on farming and food systems on Nantucket, including the role of Town offices, conservation groups, and other nonprofits. These individuals have indicated an interest and willingness to participate in the CARAT data collection and scoring phases alongside Sustainable Nantucket. This diverse group will also establish connections between individuals and

organizations that may not normally interact, helping to build a more reliant and connected community.

5.2 We recommend that Sustainable Nantucket adopt a "two convention" approach for CARAT data collection and scoring.

Communities that have completed all three phases of CARAT have used a "two convention" strategy to effectively assess their local food systems. The strategy involves an initial meeting with the core group of stakeholders where they answer as many of the indicator questions as possible. The core group of stakeholders should spend significant time in the first meeting to determine the proper order for the indicator questions and their wording applicability. For indicators that cannot be scored initially, small subgroups of core group members should confer with various other community stakeholders to learn more about policies, practices, and programs within a local context. With these new insights, the core group comes together once more to finalize the scores on each CARAT indicator. Following this method will ensure a range of community figures inform data collection on the island.

5.3 We recommend that the core group of stakeholders adapt CARAT indicators to better reflect Nantucket's food system.

Grouping similar or related CARAT indicators from across the seven themes will make data collection and scoring more intuitive. CARAT's indicators emphasize policies and programs developed by local food policy councils, which are pragmatically inappropriate for Nantucket which has no active food policy council. Therefore, the core group should make any necessary adjustments to indicator wording to better suit Nantucket's community, such as deemphasizing policy councils in indicator questions. When completing the CARAT assessment, individuals need to have a clear understanding of what each indicator means.

5.4 We recommend that NAFSN adapt the structure of CARAT indicators to make the tool more intuitive.

We found specific indicators that ask about similar policies, practices, and programs are grouped far apart in CARAT. We recommend that the indicators of CARAT be rearranged in a more intuitive order that clusters similar indicators together. Additionally, we found that the phrasing of the indicator questions leaves too much room for interpretation among stakeholders. CARAT has a glossary explaining what these specialized terms mean, though it is not immediately accessible from within the webpage for scoring CARAT indicators. We recommend that the NAFSN integrate glossary entries directly into the phrasing of the CARAT indicators. This could be accomplished using hyperlinks or a mouse-hover feature on the CARAT indicator scoring webpage.

5.5 We recommend that the NAFSN adapt the scoring system of CARAT to reflect the impact, not merely the presence, of policies, practices, and programs.

Many of the CARAT indicators ask merely if a particular policy, practice, or program exists. The indicators do not ask if the policies, practices, or programs are widely adopted or effective. We recommend that the NAFSN include an additional

scoring column that measures the usage and impact that a policy, practice, or program has on a community. Additionally, we recommend that the NAFSN standardize CARAT's scoring system. First-time users of CARAT may not pragmatically understand the three different stages of policy implementation laid out by the scores. Including concrete examples of these stages of policy implemented in other communities as a reference alongside the scoring guidelines may aid in user understanding and create more thorough assessments.

5.6 We recommend that the Town of Nantucket consider reformulating the makeup of the Agricultural Commission and its mission.

Currently, the members of Nantucket's Agricultural Commission have limited farming and food system expertise. We recommend that the Agricultural Commission fill upcoming vacancies with members who have relevant food supply chain experience. This includes potential members with farming, food processing, food distribution and restaurant experience. Furthermore, we recommend the Town consider broadening the Agricultural Commission's mission to encompass wider aspects of the food system on Nantucket. When determining how to connect with the larger food system on Nantucket, the Agricultural Commission may wish to model its board after a diverse group of food system actors, similar to the recommended core group of stakeholders that may assist Sustainable Nantucket with CARAT.

By implementing the CARAT assessment, Sustainable Nantucket will reveal the gaps in the island's food system and its resilience, taking note of what areas need further investment. Having this knowledge would enable Sustainable Nantucket and other nonprofit organizations to apply for grants and secure funding to establish new programs to fill the gaps. Additionally, the interviews we have conducted with island organizations have created new connections for Sustainable Nantucket, which will help them enhance cohesion and collaboration among the various organizations.

ACKnowledgments

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1.0 Introduction

Nantucket's once-strong agroecosystem supported its whaling industry in the 1800s with over 100 farms on the island. Today, the number of farms on Nantucket is less than 20, which when paired with high food production costs makes access to fresh and nutritious island-grown produce challenging for many. To help address this problem and promote greater agricultural resilience on the island, Sustainable Nantucket, a non-profit founded in 2000, is partnering with the Marion Institute to conduct a community food assessment (CFA). CFAs are tools used to evaluate "a broad range of community food issues and assets" to "inform change" and "make [a] community more food secure" (Freedgood et al., 2011).

The Marion Institute is a Massachusetts non-profit that promotes community health, environmental equity, food education, food medicine, and other food initiatives (The Marion Institute, n.d.). The Marion Institute conducted previous CFAs to assist their Southcoast Food Policy Council in local food system planning. Such data-driven CFAs, however, are limited in how they assess the influence of local policies and practices on community food systems. Under the guidance of the North American Food Systems Network (NAFSN), the Marion Institute is promoting the implementation of a new CFA, the Community & Agriculture Resilience Audit Tool (CARAT), in six southeastern Massachusetts counties (Nantucket, Dukes, Bristol, Plymouth, Barnstable, and Norfolk). CARAT has been designed to deliver practical solutions by focusing more on local policies and practices than previous CFAs that emphasize the collection of quantitative data on land use, sales, and production volumes (Freedgood et al., 2011).

Sustainable Nantucket is leading the CARAT assessment effort for Nantucket County. The goal of this project was to assist Sustainable Nantucket in preparing to implement the Community & Agriculture Resilience Audit Tool for Nantucket. To achieve this goal, we followed four objectives:

1. Clarify the data needs and entry protocols of the CARAT assessment model.
2. Determine how different community stakeholders might contribute data, expertise, and resources to the CARAT assessment effort.
3. Identify current and best practices used by other communities to implement the CARAT assessment.
4. Provide recommendations to Sustainable Nantucket on key stakeholders and the suitability of the CARAT assessment on Nantucket.

In the background section, we discuss agricultural trends in Massachusetts, approaches to the assessment of agricultural resiliency, including the development of CARAT, the Marion Institute, and Sustainable Nantucket's role in implementing CARAT on Nantucket. In the methods section we discuss how we implemented the objectives. Finally, we discuss our research findings and recommendations for Sustainable Nantucket, NAFSN and the Nantucket Agricultural Commission.

2.0 Background

Agriculture in Massachusetts has evolved substantially since production volumes peaked in the 1940s, adopting more space intensive and value-dense practices (Weisse, 2022). Farmers markets and community-supported agriculture (CSA) have become more popular with the

burgeoning locavore movement and are helping to make the Massachusetts' agricultural system more resilient as it continues to consolidate after its agro-economic peak.

2.1 Agricultural Trends in Massachusetts

Before European colonization, Massachusetts was overwhelmingly forested. By the 1850s, however, Massachusetts had reduced its forest land to 30% of its original area to meet New England's growing needs for fuel, wood, charcoal, lumber, paper, and furniture. After the Civil War, however, farmers began to move to the Midwest to seek out more fertile soil, dooming much of the Massachusetts farmland to abandonment (Weisse, 2022).

2.1.1 Changing Patterns of Agriculture in Massachusetts

The westward expansion of America's agriculture provided cheap grains to the eastern states, enabling farmers in Massachusetts to "specialize" in more valuable goods (such as dairy, vegetables, and fruit) that require less land. As a result, the total farmed area declined, but the number of farms declined less steeply (Figure 2.1). The value of production remained high, however. Farming in Massachusetts reached its economic peak "both in pounds and in dollars" nearly a century later in the 1940s due to increased production demands from World War II (Weisse, 2022). Less farmland, more farmers, and greater economic output indicate that farming in Massachusetts had successfully adapted to more space-dense and value-dense agricultural practices contrary to the simplistic notion of agricultural decline since the 1850s.

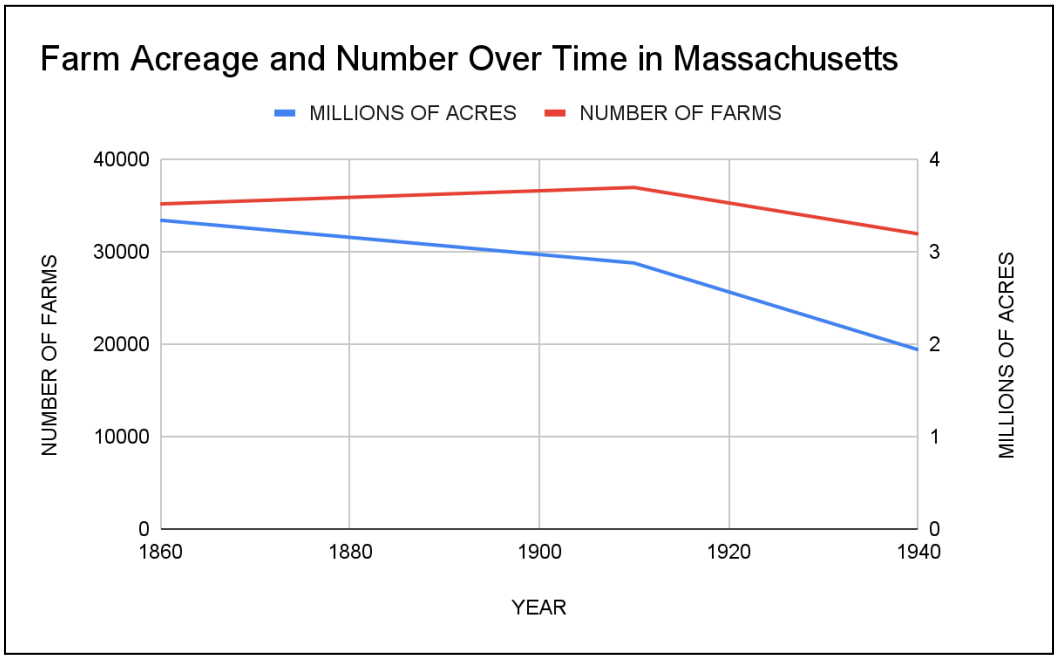

Figure 2.1: Farmland acreage and number in Massachusetts from 1860 to 1940. See Appendix A for more information on the USDA Census of Agriculture data shown.

The trend towards "small parcel agriculture" in Massachusetts farming has continued in recent years, encouraged by market forces and regulation (see Appendix B), as illustrated in Figure 2.2. Although the peak of Massachusetts agriculture has passed, local legislation along with USDA Census of Agriculture data reveal that Massachusetts farming has not just seen a decline, but a consolidation as the industry continues to shrink.

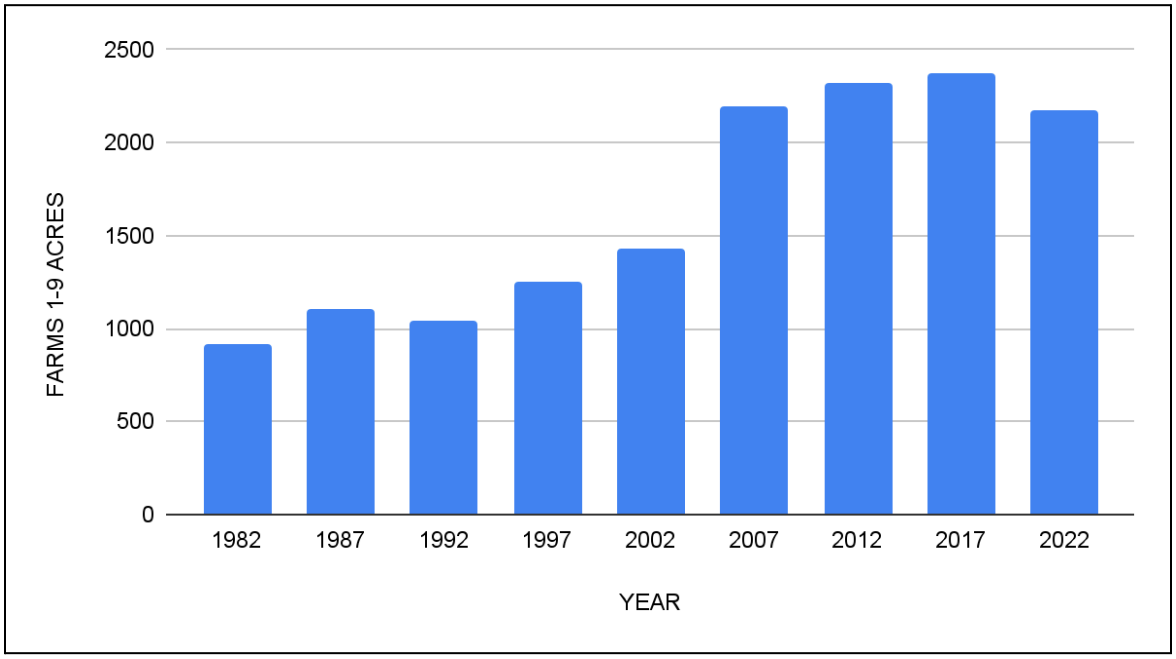

Figure 2.2: USDA Census of Agriculture data on farms less than 10 acres in size from 1982-2022.

2.1.2 Massachusetts Agricultural and Local Food Movements

Massachusetts has experienced an agricultural revival in recent years through the growth of local food movements. A "locavore" is described as someone who purchases and consumes food grown within 100 miles of their current location (de Bres et al. 2016). The locavore movement emphasizes economic and environmental vitality, which aligns with initiatives such as Community Supported Agriculture (CSA), in which consumers purchase a farm "share" and farmers markets where consumers buy directly from producers.

Farmers markets have always served as a social hub for consumers and local producers. However, the interpersonal connection is not their only benefit; they also provide economic benefits to the community (Diekmann et al., 2020). Farmers markets allow for the shortening of the supply chain which in turn enables producers to sell their goods for retail value rather than lower wholesale price (Warsaw et al., 2021). As shown below in Figure 2.3, the USDA tracked the number of farmers markets across the US in 1994. The trend has been gradually rising, and as of 2019, approximately 9,000 markets are currently operating.

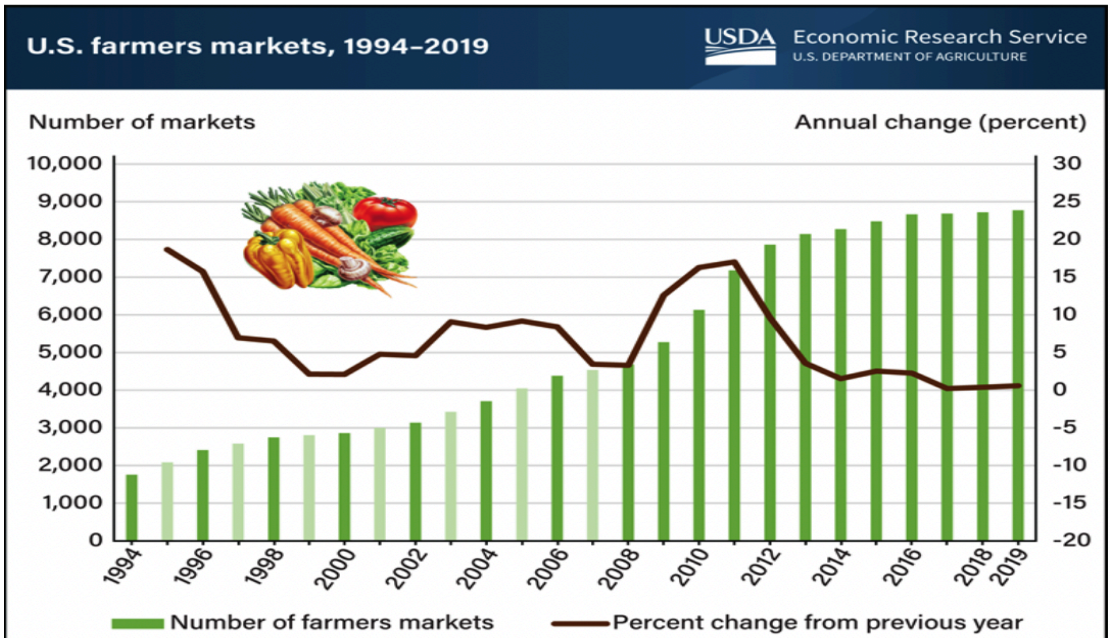

Figure 2.3: USDA data representing the number of Farmers markets in the United States (1994-2019)

Community-supported agriculture (CSA) and farmer's markets link local consumers to the farms around them. CSA members pay an upfront cost that entitles them to a share of the farm's output and receive regular deliveries once harvest season has begun. Although farms are limited in what they can produce due to the changing seasons in Massachusetts, they sometimes offer customizable options to fit each household's needs (Kerkhof, 2024). For example, the Many Hands Organic Farm located in Worcester, MA, offers customers the choice between three different size options as well as a Summer or Fall harvest package (*CSA Share Options – Many Hands Organic Farm*, 2023).

Practices like community-supported agriculture and farmer's markets serve a vital role in strengthening a local food system, but producers must earn enough to sustain their livelihoods. A study on CSA farmers in the Connecticut River Valley of Massachusetts demonstrates how slim their profit margins can be. CSA farmers in this region earn a net farm income of $12,044, with the farmer taking in around $24,540 annually. While these figures may seem quite low, the USDA claims that these Connecticut farmers earn 377% more than the national average for farmers (Paul, 2018). This draws attention to the fact that expanding CSAs is difficult economically because farmers bring in relatively little income.

2.2 Agricultural Resilience: Concerns and Assessment

Local food systems that incorporate farmers markets, CSAs, and other innovative agricultural approaches are more "nimble and innovative in ways that larger ones [are not]," as they can supply fresh produce to communities without the need for large-scale distribution (Massachusetts Food System Collaborative, 2020, p.2). The growing number of local food stands and CSAs make Massachusetts more agriculturally resilient and able to withstand the impact of forces and events beyond the state's control (Tay et al., 2024).

2.2.1 Agriculture Resilience

The Massachusetts Food System Collaborative defines a resilient food system as "one that is flexible, adaptable, and able to withstand crises and disruptions without collapse or significant permanent damage to sustainability and equity" (Massachusetts Food System Collaborative, 2020, p.2). Food systems are subject to regional, political, and economic events. The community's agricultural resilience describes how well producers, consumers, and distributors adapt to these events. The majority of Massachusetts food comes from "corporate producers" outside of the state who sell at lower prices, prioritizing "economic efficiency" over resilient in-state food system infrastructure (Massachusetts Food System Collaborative, 2020, p.1). The COVID-19 pandemic tested Massachusetts' agricultural resilience as large food distributors faced challenges with transport and stocking grocery store shelves with food grown out of state. This suggests that a strong local food infrastructure supports a resilient food system.

Food resilience also characterizes how well a community's food system may *adapt* to change, not just withstand it. The COVID-19 pandemic led to many developments strengthening Massachusetts food resiliency, such as the rapid development of home-delivery services for groceries. New local food access points and food stores served as "safe food access points" for Supplemental Nutrition Assistance Program (SNAP) recipients (Sharpe, 2021). It is concerning, however, that so many vulnerabilities such as the lack of home delivery and food access points had existed in the Massachusetts food system before the pandemic, only to be revealed during times of crisis (The Marion Institute, 2021). After withstanding COVID-19, Massachusetts still faces high food insecurity rates, high cost of living, and limited profitability of local farming (Greater Boston Food Bank, 2024). Consequently, groups such as the Greater Boston Food Bank remain concerned about the state's agricultural resiliency (Greater Boston Food Bank, 2024).

2.2.2 Food Assessment Tools

Concerns surrounding agricultural resilience have led to the development and application of a variety of food system assessment tools. Community food assessments (CFAs) include broad foodshed assessments, where "foodshed" refers to "a framework to connect communities with the agricultural land base needed to produce food to support them" (Freedgood et al., 2011). CFAs can also be used as planning tools to map out assets and plan how they may be better used by a community (Pothukuchi, 2004). Many traditional CFAs, specifically those focusing on local/regional food systems, comprehensive food systems, community food security, community food asset mapping, food deserts, food land inventory, local food economy, and food industry, draw from qualitative sources to evaluate a community's food system (Freedgood et al., 2011). These qualitative sources include the USDA Census of Agriculture data, including social, economic, demographic, and health data (Freedgood et al., 2011).

Traditional CFAs, however, lack a thorough assessment of a community's agricultural policies and practices which can dictate a community's food system resilience. Resilience concerns have resurfaced due to the global food system disruptions caused by the COVID-19 pandemic (Béné, 2020). Because existing food system assessment methods predate issues like the pandemic and do not focus on agricultural policy, they are not fully equipped with the considerations that a modern approach should have. An assessment method that bridges the gaps in traditional CFAs could address these new resilience concerns.

2.2.3 Community & Agriculture Resilience Audit Tool

Food policy groups in some communities are advocating ways to promote more resilient food systems, but lack simple and comprehensive assessment tools. The North American Food Systems Network (NAFSN) developed the Community & Agriculture Resilience Audit Tool (CARAT) in 2021 to meet this demand. NAFSN defines resilience as "a measure of the sustained ability of a community to utilize available resources to respond to, withstand, and recover from adverse situations" (North American Food Systems Network, 2023). CARAT, which was designed by a panel of food policy and CFA experts, assesses a community through 101 indicators under seven core themes: (1) Natural Resource Management, Use, Conservation, and Preservation of Ecosystems and Farmland, (2) Community Health and Well-being, (3) Community Self-Reliance in Food, (4) Distributed and Democratic Leadership, (5) Focus on Local Farmers, Food Processors, and Food Distributors, (6) Food Sovereignty, and (7) Place-Based Economics. These themes represent the elements of a community that contribute to food system resilience, which the developers determined through a literature review (Campbell et al., 2022). Table 2.1 describes the focus of each theme.

Table 2.1: Foci of the seven core themes in the CARAT Assessment (CARAT, n.d.)

#	**Theme**	**Focus**
1	Natural Resource Management, Use, Conservation, and Preservation of Ecosystems and Farmland	● Protect farmland ● Facilitate land access ● Establish climate action plans ● Promote soil, land, and water conservation
2	Community Health and Well-Being	● Create educational programs ● Provide better access to nutritious, affordable, and culturally appropriate foods
3	Community Self-Resilience in Food	● Enhance the community's control of its food system to lessen the need for external/unpredictable supply chains
4	Distributed and Democratic Leadership	● Engage all stakeholders in decisions, particularly those who have been historically marginalized
5	Focus on Local Farmers, Food Processors, and Food Distributors	● Expand opportunities for local farmers, ranchers, and other food producers ● Develop infrastructure for food marketing channels
6	Food Sovereignty	● Ensure the food system is equitable, accessible, and inclusive
7	Place-Based Economics	● Implement policies and programs to enhance local resource ownership ● Educate a skilled and capable labor force

The CARAT indicators are influenced by the cultural context underpinning its development. The tool was developed in Indiana, which is part of America's Industrial Belt. As its name suggests, this belt is an agricultural region historically focused on productive capitalism and the industrialization of farming (Popper, 2013). CARAT's indicators reflect this industrial focus, as they tend to be geared more towards policies and practices pertaining to large-scale, centralized food systems. Table 2.2 lists illustrative examples of indicators that are used to assess community performance on those themes. Each indicator is rated on a scale of 0-3 based on the level of the development of the associated policies, programs, and practices.

Table 2.2: Sample indicators for the seven core themes in the CARAT Assessment (CARAT, n.d.)

#	**Theme**	**Indicators**
1	Natural Resource Management, Use, Conservation, and Preservation of Ecosystems and Farmland	● We have policies, practices, or programs that protect farmland from nonfarm development ● We have policies, practices, or programs that support water quality, water conservation, and watershed management
2	Community Health and Well-Being	● We have policies, practices, or programs that regularly monitor public health indicators to assess food system-related community health ● We have policies, practices, or programs that subsidize sliding-scale CSA subscriptions to increase accessibility
3	Community Self-Resilience in Food	● We have policies, practices, or programs that educate and enable people to hunt, fish, and forage for food ● We have policies, practices, or programs that offer minimal barriers to starting new food production enterprises
4	Distributed and Democratic Leadership	● We have policies, practices, or programs that help create and grow formal agricultural cooperatives that sell local food in local markets ● We have policies, practices, or programs that encourage reuse innovations for food packaging

#	Theme	Indicators
5	Focus on Local Farmers, Food Processors, and Food Distributors	● We have a program that connects farmers to markets for surplus food and imperfect produce ● We have policies, practices, or programs that direct resources to train aspiring BIPOC farmers and food producers
6	Food Sovereignty	● We have policies, practices, or programs that address the social determinants of health and root causes of inequities in the food system for historically disadvantaged community members.
7	Place-Based Economics	● We have local zoning, licensing, and/or permitting ordinances that allow farm stands. ● We have policies, practices, or programs that provide financial support and/or resource commitments devoted to developing local/regional food packing and processing infrastructure.

2.3 The Marion Institute

The CARAT assessment has been a recent focus of the Marion Institute, a non-profit "concerned with elevating health, food, and environmental equity" (The Marion Institute, n.d.). To accomplish this mission, the Marion Institute conducted past CFAs in southeastern Massachusetts counties for the benefit of the Southcoast Food Policy Council, a core Marion Institute program interested in strengthening regional food systems, improving community health, and mitigating food insecurity (The Marion Institute, n.d.).

In 2021, the Marion Institute assessed the food systems in three southeastern Massachusetts counties: Bristol, Norfolk, and Plymouth (The Marion Institute, 2021). The goal of the Marion Institute's assessment was to provide an up-to-date outlook on the region's food system assets to inform their Southcoast Food Policy Council on policy recommendations. Their assessment, while not utilizing any specific assessment tools, relied on data from community surveys, stakeholder interviews, the USDA census of agriculture, and other public data and reports (The Marion Institute, 2021).

The most notable findings of their assessment pertain to food production/harvesting and food insecurity. As for food production, both the total number of farms and total land in farms in the three counties decreased by approximately 8% since 2012. As for food insecurity, the proportion of the population facing food insecurity averaged 7.3% between the three counties and 8.1% when looking at children alone. Figure 2.4 summarizes these results and provides specific numbers.

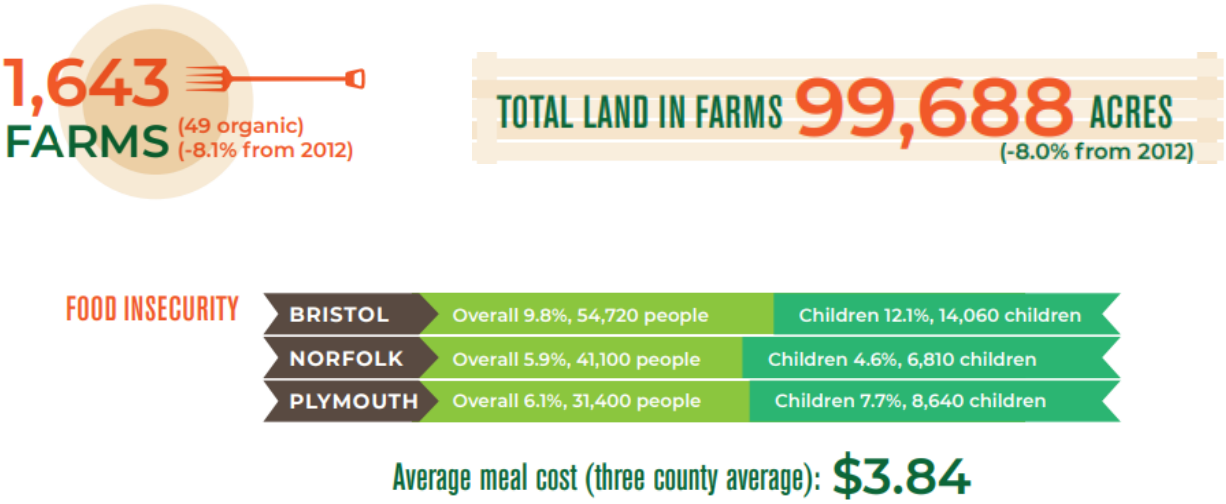

Figure 2.4: Food production and insecurity insights in Bristol, Norfolk, and Plymouth

The Marion Institute plans to expand its knowledge of food systems in southeastern Massachusetts by carrying out another assessment. This assessment, however, will include three more counties: Barnstable, Dukes, and Nantucket. Additionally, it will adopt CARAT as the primary tool for assessing resiliency instead of drawing broadly on census and stakeholder data to produce insights. Barnstable, Dukes, and Nantucket were included in the expanded assessment because the food systems of the counties are closely intertwined. The driving force behind the adoption of CARAT is its ability to look at some of the more intangible, yet important, influences on food system resilience (i.e., policy), increase direct community engagement in data collection, and provide baseline measures for strategic decision-making (R. Higgins, personal communication, September 19, 2024).

2.4 Sustainable Nantucket and the CARAT Assessment

Sustainable Nantucket, a nonprofit organization founded in 2000, has agreed to lead the CARAT assessment for Nantucket County because of its long-term interest in food system policy. Sustainable Nantucket's mission is "[to] cultivate a Sustainable Nantucket island community by supporting local agriculture, food producers, and makers" (About Us - Sustainable Nantucket, n.d). To achieve this mission, Sustainable Nantucket operates various programs that support local food sustainability (see the organizational overview in Appendix C).

One of the key tasks in this project was to identify organizations on Nantucket with expertise in the seven themes outlined by the CARAT assessment. Food sustainability and resilience are critical issues for Nantucket, especially due to the consolidation and reduction of Massachusetts' agriculture industry. As an island, Nantucket faces additional challenges, as most food and supplies must be imported. Nantucket has faced a 19% decrease in its number of farms from 2017 to 2022, which exacerbates the need to import the majority of its food from the mainland. Concerns about food resiliency are compounded by the fact that Massachusetts already imports much of its food from the Midwest (Jironvil et al., 2017; United States Department of Agriculture, 2024).

Nantucket's food insecurity, which affects around 40% of children on Nantucket, is a product of the island's high cost of living and limited agricultural production (Graziadei, 2022).

Addressing the island's lack of food system resiliency may require long-term solutions involving policy changes, improved practices, and strategic planning. We were on-island to complete the 'pre-assessment phase' of the CARAT assessment, which consisted of interviewing local stakeholders. Through the team's efforts of conducting interviews and finishing the pre-assessment, Sustainable Nantucket will likely use CARAT to assess their local food system with a core group of stakeholders. These insights will help shape a comprehensive plan to enhance local food sustainability.

3.0 Methodology

The goal of this project was to assist Sustainable Nantucket in preparing to implement the Community & Agriculture Resilience Audit Tool (CARAT) assessment for Nantucket. To achieve this goal, we completed the following objectives (shown in Figure 3.1).

1. Clarify the data needs and entry protocols of the CARAT assessment model.
2. Determine how different community stakeholders might contribute data, expertise, and resources to the CARAT assessment effort.
3. Identify current and best practices used by other communities to implement the CARAT assessment.
4. Provide recommendations to Sustainable Nantucket on key stakeholders and the suitability of the CARAT assessment on Nantucket.

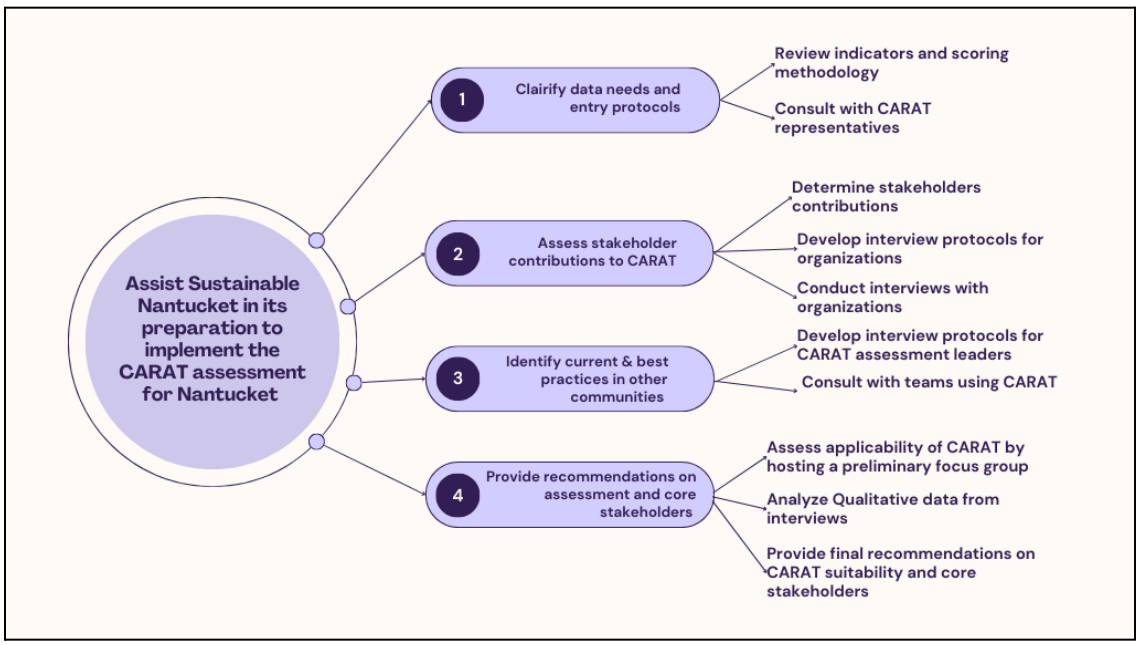

Figure 3.1: Goals, objectives, and associated tasks

Understanding CARAT required us to review the data needs of the tool's 7 themes and 101 indicators, and interview Kim Hines, a CARAT developer, about the motivations behind the tool's design. To help prepare Sustainable Nantucket for its implementation of CARAT, we researched the nature and purpose of organizations on-island whose missions align with the

CARAT themes. We conducted an additional 21 interviews with Nantucket organization representatives who were knowledgeable about topics explored by CARAT. We interviewed two more representatives from Bristol County and the Hilltowns in Massachusetts to learn about effective data collection and scoring strategies from their implementations of CARAT. Figure 3.1 shows the relationship between project tasks and objectives.

3.1 Clarify Data Needs and Entry Protocols

We reviewed the seven themes, 101 indicators, and the scoring system of the CARAT and attended an online workshop on using CARAT hosted by the North American Food Systems Network (NAFSN). This workshop provided us with additional information about the development of the tool and its applicability to different types of communities. Additionally, we consulted Kim Hines, a CARAT representative from the NAFSN, to learn more about how to implement CARAT, what communities have already started implementation, and what lessons they have learned so far during implementation. Through the interview, we learned that four of the other southeastern Massachusetts counties are behind Nantucket in implementing their assessment process, so Kim Hines referred us to the Hilltowns, a community in western Massachusetts that has already completed an assessment using CARAT. The NAFSN interview questions can be found in Appendix D.

3.2 Determine Nantucket Community Stakeholders

We conducted 21 interviews and discussions with representatives of Nantucket organizations (Table 3.1). Based on our background research and conversations with Sustainable Nantucket, we understood that we needed to solicit information from a wide array of Town government offices and local non-profits. We wanted to understand multiple perspectives on topics explored by CARAT themes such as farming, community health, food distribution, conservation, and more. From these interviews, we learned which community stakeholders could best contribute their knowledge of specific themes to the CARAT assessment. This information was important to the project because Sustainable Nantucket did not have the necessary knowledge to independently rate all 101 indicators across seven CARAT themes.

Table 3.1: 21 Interviews with Nantucket organizations and representatives

#	**Interviewee**	**Organization**	**Interview Date**
1	Aidan Feeney	Fog Town Farm	10/24/2024
2	John Bartlett	Bartlett’s Ocean View Farm	10/24/2024
3	Abby Slosek	Moors End Farm	10/24/2024
4	Jerico Mele	Town of Nantucket (Human Services)	10/30/2024
5	Matt Haffenreffer	Process First	10/30/2024
6	Ruth Pitts	Nantucket Food Pantry	11/1/2024

#	Interviewee	Organization	Interview Date
7	Rachael Freeman	Nantucket Land Bank	11/4/2024
8	Karen Macumber	The Hive Community Kitchen	11/4/2024
9	Chris Sleeper	Pip & Anchor, Nantucket Resource Partnership	11/6/2024
10	Cormac Collier	Nantucket Conservation Foundation	11/7/2024
11	Vincent Murphy	Town of Nantucket (Division of Climate and Resiliency)	11/7/2024
12	Anne Dougherty & Cecil Barron Jensen	Remain	11/7/2024
13	Brooke Mohr	Nantucket Select Board, Nantucket Resource Partnership	11/8/2024
14	Brian Lenane	Nantucket Community School, Nantucket Resource Partnership	11/8/2024
15	Alice Townsend	Health Imperatives	11/12/2024
16	Dan Southey	Washashore Farm	11/14/2024
17	Meg Browers	Nantucket Resource Partnership	11/14/2024
18	Sunny Daily	Community Foundation for Nantucket	11/15/2024
19	Chuck Larson	Town of Nantucket (Town Administration)	11/18/2024
20	Nick Larrabee & Tom Larrabee	My Grandfather's Farm	11/19/2024
21	Pauline Proch	Our House	11/21/2024

We modeled the interview questions around the CARAT indicators. Based on our background research, we tailored our questions to match the organization's role in implementing specific policies, practices, and programs pertinent to the CARAT assessment (shown below in Figure 3.2). Additionally, we ensured that our questions were relevant to the interviewees by consulting with Sustainable Nantucket staff about the nature of the organizations and by reviewing interview scripts internally as a team. We also adjusted the interview questions based on the expertise and interests of the interviewee and according to what we learned in other interviews (see Appendices E-J for the tailored interview scripts for island organizations).

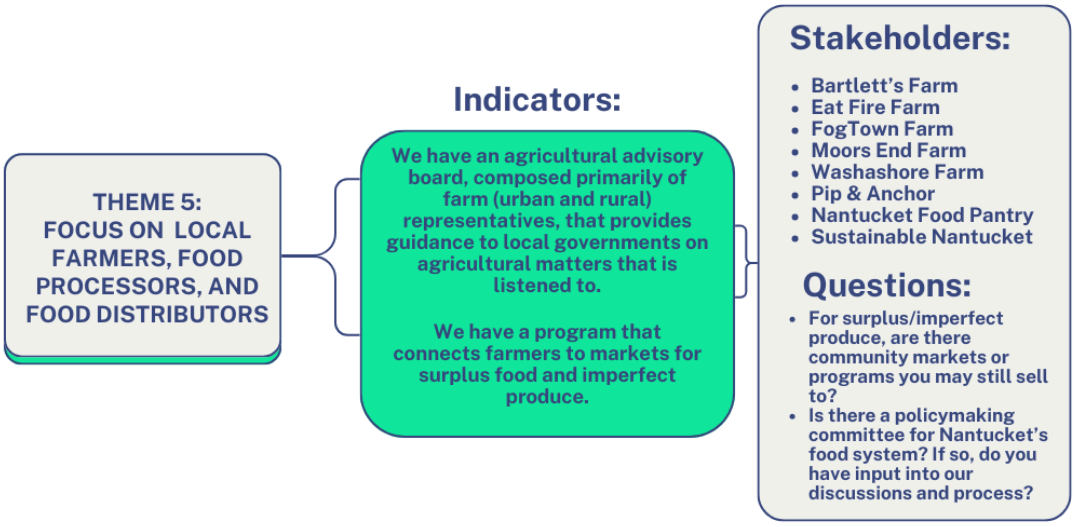

Figure 3.2: Sample indicators, and questions pertaining to Theme Five of the assessment

We conducted these interviews in person where possible (or remotely, if necessary) at a time and location determined by the interviewee. At the start of each interview, the team explained the nature of our project (see Appendix K). We closed each interview by asking for additional recommendations for potential organizations or individuals to interview, thus developing a referral or "snowball" sample. When possible, Posie Constable or Ella Potenza from Sustainable Nantucket were present in all meetings to provide additional clarifications and context for us and the interviewees, as needed. They also felt it was important for them to hear the complete conversation since they will be engaging with each interviewee further during the application of the CARAT assessment.

3.3 Identify Current & Best Practices in Place

We conducted interviews with CARAT team leads who had completed the assessment as well as those who are in the last phase of CARAT implementation. Due to time and travel constraints, these meetings took place virtually on Zoom. We began these interviews by introducing ourselves and our project and soliciting consent from the participants to record and quote using the preamble script in Appendix K. These meetings aided the team in understanding effective strategies as well as common issues they have encountered in implementing CARAT.

Rita Higgins, who serves as Director of Food Access and Innovation at the Marion Institute has overseen the CARAT implementation in Bristol County, which is nearing an end in Spring 2025. The experiences of Bristol County served as a vital source of information for the team on best practices when implementing the CARAT assessment. On the recommendation of the Marion Institute and North American Food Systems Network, we interviewed a representative Hunt Chase from the Hilltown CDC in Hampshire County. Hilltown CDC completed CARAT recently after a three-month process.

The interview scripts for CARAT project leads are in Appendix L. Following the interviews, the team organized the materials to identify common threads and areas of consensus or dissensus. This information then assisted us in our final goal of providing Sustainable Nantucket with detailed recommendations of best practices when implementing the CARAT assessment.

3.4 Provide Recommendations on Assessments and Core Stakeholders

To hone our final recommendations on CARAT and core stakeholders, we conducted a focus group on November 20th which included Rita Higgins, Matt Haffenreffer, and Ruth Pitts, who were knowledgeable about the topics in Theme 5 of CARAT (i.e., "Focus on Local Farmers, Food Processors, and Food Distributors"). The focus group aimed to identify challenges or limitations that could arise from indicators when applying CARAT to Nantucket's community. To accomplish this, we presented a sample of CARAT indicators from Theme 5 and invited feedback on each question's suitability, wording, and quality to facilitate discussion about CARAT. We encouraged focus group stakeholders to note specific points in Theme 5 that were confusing to follow, driving our recommendations on the structure and organization of CARAT itself. See Appendix M for the questions we asked during the focus group. From these interviews, we analyzed all the notes from each session to draw preliminary findings, as discussed in the next section, which included any indicators that were missing essential information or island expertise.

4.0 Findings

This section discusses findings from our interviews with Community Agriculture & Resilience Audit Tool (CARAT) developers, CARAT project leads in other communities, and local stakeholders on Nantucket. Our findings from these interviews are organized into five common themes: (1) approaches to CARAT's implementation, (2) cohesion and collaboration amongst stakeholders in Nantucket's food system, (3) farmers' hesitance about food policy, (4) limitations in connecting with Nantucket's community, and (5) the applicability of CARAT to Nantucket. Based on these findings, we provide recommendations to Sustainable Nantucket, the North American Food Systems Network (NAFSN), and the Nantucket Agricultural Commission.

4.1 Approaches to CARAT's Implementation

Through our interviews with CARAT users and a CARAT developer, we learned about the strengths and limitations of CARAT and strategies to enhance implementation of the tool. As suggested by Kim Hines, a representative from the North American Food Systems Network (NAFSN) that developed CARAT, it is best to implement a CARAT assessment in three phases. The first phase is *preparation*, which is the phase we worked on with Sustainable Nantucket. In the preparatory phase, individuals will gauge the community knowledge, determining which stakeholders have expertise on particular CARAT themes. The second and third phases are *data collection* and *scoring*, which go together during implementation. These phases involve collecting the information from the stakeholders identified in the preparation phase and scoring the indicators accordingly.

Two Massachusetts communities using CARAT recommended implementing the data collection and scoring phases through two 'conventions' or meetings of stakeholders. The Hilltowns, a collection of towns in western Massachusetts that completed a CARAT assessment in 2024, and Bristol County, a southeastern Massachusetts community that is close to completing a CARAT assessment, both adhered to this approach. Following this strategy, a core group of individuals with broad knowledge of the community's food system was identified. In both communities, the core group comprised members of the local food policy council. Local food policy councils consist of stakeholders from different food sectors that address sustainability and equity gaps in a local food system by developing and promoting municipal policies and recommendations ((Massachusetts Food System Collaborative, n.d.). Initially, this group convened to review the CARAT indicators, scoring the ones they could and noting the ones for which they did not have the expertise. Following their first convention, core group members consulted community stakeholders to gather the necessary data for scoring the indicators for which they lacked information. Finally, the core group in each community reconvened to fill in the scoring gaps left from the first convention. Figure 4.1 illustrates a timeline of the "two convention" strategy.

The advantage of this strategy is its ability to avoid convening large groups of stakeholders and making them sift through indicators for which they may have no expertise. Instead, a core group acts as an intermediary that reviews the indicators, then "assigns" indicators to stakeholders who have the relevant expertise, compartmentalizing the data collection process. This strategy, however, is not set in stone as the "best" approach to conduct a CARAT assessment. Since CARAT is a relatively new assessment tool, very few other communities have had time to complete their implementation. CARAT is also a flexible tool so it is possible that, as more communities begin to use CARAT, different strategies will emerge which may vary in effectiveness depending on the characteristics of the community being evaluated.

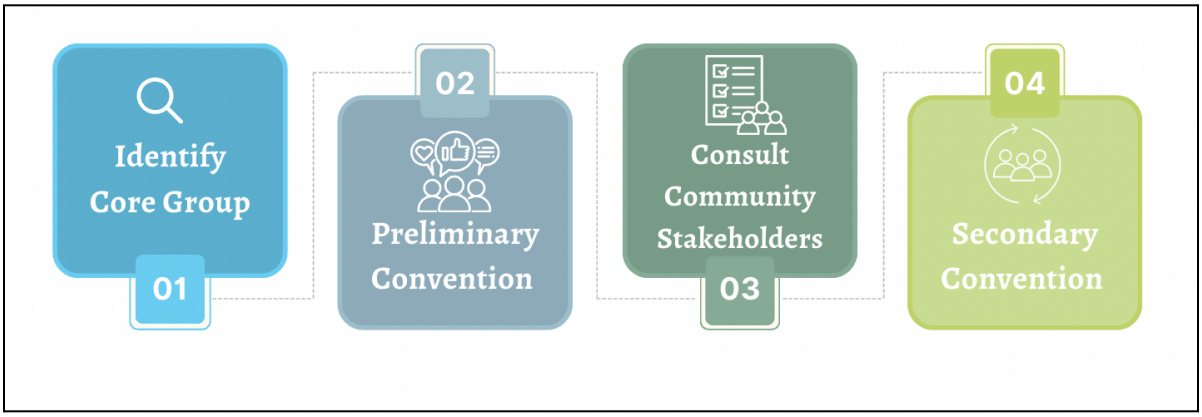

Figure 4.1: "Two Convention" Strategy Timeline

The process for scoring the CARAT indicators is not as rigid as the guidance might suggest. Kim Hines at NAFSN, Hunt Chase, a CARAT assessment leader from the Hilltowns, and Rita Higgins, a CARAT assessment leader from Bristol County, indicated that the assessment tool leaves considerable leeway to adapt the choice of indicators and the scoring approach. In particular, they noted that the CARAT was developed in the Midwest and was

designed to assess large-scale, agro-industrial food systems. The tool can and should be adapted, however, to fit the specific conditions and needs of different types of communities. These adaptations can include dropping any indicators that do not apply to a community or modifying their wording to better reflect the needs and resources of a community. Other communities that have used CARAT made similar adaptations, as they found indicators that "didn't necessarily apply to [their] region" (H. Chase, personal communication, November 13, 2024). Nantucket, having a unique, small-scale island food system, will need to make these sorts of adaptations.

In addition to its rigor and flexibility, a major advantage of a CARAT assessment is its ability to bring stakeholders together. While the Hilltowns found the scoring process useful for identifying gaps in their food system policies and applying for grants to address them, Ms. Hines, Mr. Hunt, and Ms. Higgins emphasized that the conversations sparked between community stakeholders about the food system are perhaps CARAT's most important outcome. Discussing local policies and practices within a community can help to identify areas of consensus and disagreement. Developing community consensus and cohesion among stakeholders is crucial because recognizing a problem is the first step in addressing it (R. Higgins & K. Hines, personal communication, October 24, 2024).

4.2 Cohesion and Collaboration Amongst Stakeholders

Unlike other Massachusetts communities implementing CARAT, such as the Hilltowns and Bristol County, there is no active "food policy council" on Nantucket as assumed in the CARAT model. Food policy councils typically comprise members in a community who have a "curated background in food" (R. Higgins, personal communication, November 19, 2024) and "advocate for local food producers, consumers, and community leaders who seek policy and systems that strengthen [a] food system" (Marion Institute, n.d.). Nantucket does not have a food policy council, but it does have an agricultural commission. Unfortunately, the Nantucket Agricultural Commission does not have enough members with extensive experience in Nantucket's agricultural practices and has not successfully promoted any agricultural policies since the Right to Farm (Chapter 140) bylaw was adopted by the town in 2016 (M. Haffenreffer et al., personal communication, November 20, 2024).

Without an active food policy council, many of the programs that comprise Nantucket's food system are enacted in an ad hoc fashion by nonprofit organizations. For example, Nourishing Nantucket is a food box program funded by grants and privately alongside its fiscal partner, the Nantucket Resource Partnership (NRP), and run through Pip & Anchor, a marketplace sourcing fresh food and goods from local sellers. Nourishing Nantucket provides 80 food boxes per week through pickup and delivery to food-insecure households and has a waitlist of over 100 families, yet cannot address this waitlist until the program receives additional funding (C. Sleeper, personal communication, November 6, 2024). Similarly, Sustainable Nantucket runs the Grow Box program, which is also a food box program supplying fresh and local produce to food-insecure households. The produce is grown as a part of a gardening education program with Nantucket Public Schools (M. Browers, personal communication, November 14, 2024). These programs have the same target recipients (Figure 4.2), revealing how multiple nonprofit organizations have redundancies in planning nearly identical programs for the same households due to the ad hoc nature of Nantucket's food system programs.

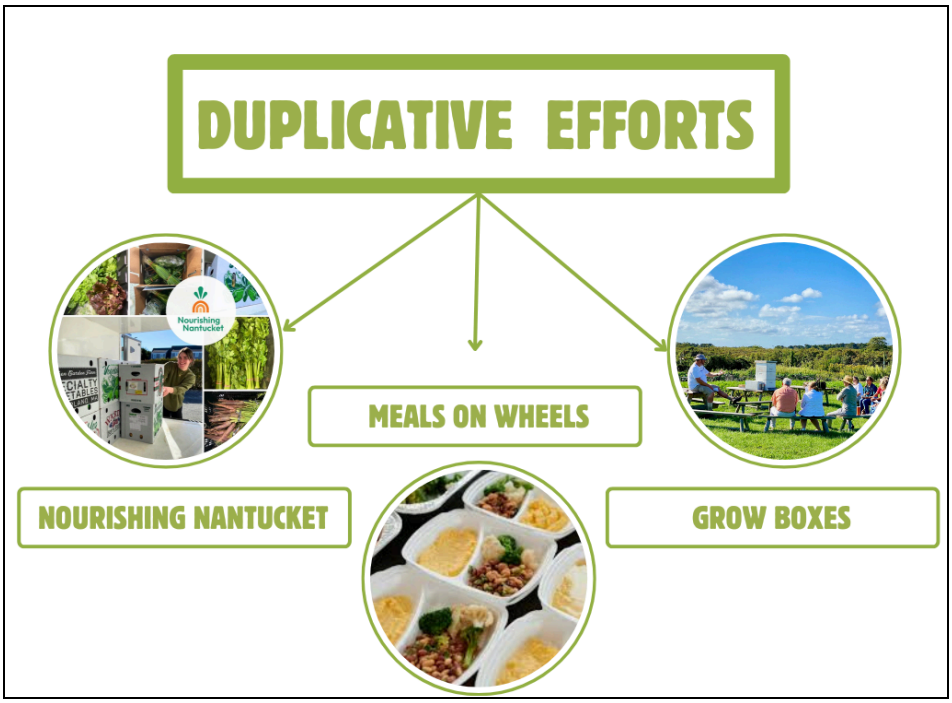

Figure 4.2: Duplicative efforts among organizations in Nantucket

Redundancy is problematic because it leads to inefficiencies in the total effort spent organizing programs like Nourishing Nantucket and Grow Boxes (see Figure 4.2). A representative of one nonprofit organization who wished to remain anonymous commented that the "the hardest part of being a nonprofit is dealing with logistics" such as fundraising and organizing resources . Redundancies in programs like Nourishing Nantucket and Grow Boxes mean that multiple nonprofits must independently put in significant effort to organize these program logistics. This issue extends beyond Nourishing Nantucket and Grow Boxes, as programs such as Meals on Wheels may end up serving the same families. The anonymous respondent also acknowledged this overlap by describing how a family served by Meals on Wheels could "free a spot on the Nourishing Nantucket waitlist." This reveals how collaborative food system planning may be able to serve a larger number of food-insecure households by minimizing program overlap. Collaborative food system programs would alleviate this program overlap along with the logistical burden from individual nonprofit organizations.

Being a remote island, Nantucket is at the "end of a lot of supply chains," leading to empty Stop & Shop store shelves when ferries do not run (V. Murphy, personal communication, November 7, 2024). The 2019 Hazard Mitigation Plan addresses these kinds of disruptions in relation to natural events such as hurricanes and winter storms, but did not solicit input from farmers, food distributors, and other local food supply chain actors (C. Larson, personal communication, November 18, 2024). The Hazard Mitigation Plan is currently being updated in Fall 2024, and the Town is seeking input and recommendations from food system stakeholders (C. Larson, personal communication, November 18, 2024). Although this will be an advancement for resilient food system planning, the lack of collaboration between Town officials and food supply chain actors (including businesses like Stop & Shop) has left Nantucket largely unprepared for the impact that harbor shutdowns and other unforeseen events have on the food system.

From our interviews, the threat of harbor shutdowns is a common concern among Town officials and other food system organizations. Recent cyber-attacks on Stop & Shop's supply chain infrastructure emptied island supermarket shelves, revealing how short-term resilience is difficult for Nantucket to address given its position at the end of supply chains (V. Murphy, personal communication, November 7, 2024). Unfortunately, there is little collaboration that exists between Stop & Shop and Town officials. Chuck Larson, the Town's Special Programs Manager, established the idea of a secondary shelf-stable food storage warehouse in 2020 and applied for a grant from Massachusetts Municipal Vulnerability Preparedness (MVP) to strengthen Nantucket's supply chain resilience. Mr. Larson collaborated with Vincent Murphy, the Town's Sustainability Programs Manager, on the secondary storage warehouse idea, though the MVP grant application ultimately did not succeed and they have not found a way to advance it since. Mr. Larson commented that Stop & Shop tracks its own food warehousing and transport through its supply chain, communicating shipment quantities and details with the Steamship Authority, although this information remains private (C. Larson, personal communication, November 18, 2024). Although Mr. Larson and Mr. Murphy collaborated on this idea, there is a disconnect of supply chain information between Town officials and private businesses such as Stop & Shop. The lack of communication suggests the difficulty in assessing supply challenges on Nantucket, such as food warehousing, at the Town level. CARAT's ability to generate discussion among stakeholders may facilitate collective conversation among the Town and Stop & Shop, taking ideas such as the secondary storage warehouse from discussion into a more official planning phase.

Planning inefficiencies caused by program redundancy, lack of input from food supply chain actors into community emergency planning, and the "siloed" nature of ideas for community resiliency planning reveal an overall lack of collaboration and cohesion in Nantucket's food system. The anonymous nonprofit representative commented that a food policy council might help to remedy these issues by providing a vehicle for nonprofits to coordinate resources and logistical planning in consort with Town officials to better take programs and community plans from discussion into implementation. A Nantucket food policy council, however, may not necessarily be the solution to promote collaboration amongst island stakeholders due to apprehension among Nantucket farmers about the value of a food policy council and their willingness to participate in policy making.

4.3 Farmer's Hesitance toward Food Policy

On Nantucket, the efforts to foster greater collaboration among farmers, non-profits, local businesses, and policymakers have met many challenges. Concerns about centralization of authority and apprehension about restrictive policies or regulations continue to hinder broader engagement among food system stakeholders.

In farming, time is a precious resource. Delays and setbacks can cause a ripple effect impacting production. With many responsibilities and emphasis on "day-to-day" practices, farmers often do not have time to engage with broader community-wide policy discussions or decisions like the implementation of CARAT (A. Feeney, personal communication, October 24, 2024). CARAT indicators focus on policies and practices created by a centralized regulatory body, such as a local food policy council, but Nantucket farmers are leery of such centralized control. Some policies passed by the Massachusetts food policy council have aimed to support farmers and increase locally grown food, prioritizing practical solutions over bureaucratic

hurdles(*Massachusetts Food Policy Council*, 2021). However, farmers indicated that additional regulations would feel more burdensome than beneficial to their daily operations. Local farmers believe that the addition of more policies, such as ones focusing on renewable energy for farm vehicles, environmental sustainability, or other areas would have little practical benefit for routine operations. For example, some farmers have chosen to not pursue "organic certification" of their farming practices because of the burdensome requirements. Although these farms are not formally certified as 'organic,' they often use practices that are "more sustainable and suited to local conditions" rather than those proposed by the United States Department of Agriculture (A. Slosek, personal communication, October 24, 2024; D. Southey, personal communication, November 14, 2024)

Hesitance to engage with larger food system initiatives, such as CARAT, is also partly influenced by Nantucket's unique ecosystem. There are only 17 farms on Nantucket, and 13 are less than 50 acres (Figure 4.3). Due to high costs of production and slim profit margins, Nantucket farmers are driven to diversify their activities and specialize in high-value products such as seasonal goods, Christmas trees, or wine and cheese (A. Slosek, personal communication, October 24, 2024). All farming practices are heavily dictated by the island's climate and geography rather than through generic policy. Nantucket's soils, maritime climate, and discrete "microclimates" shape the types of crops that can be grown and the approaches used, such as "cover cropping and the installation of windbreaks" (A. Feeney, personal communication, October 24, 2024). Their farming techniques tend to be ad hoc, driven by necessity and need to adapt to local conditions rather than by conforming to broader policy, and they often see little benefit in policies that do not align with the realities of their work.

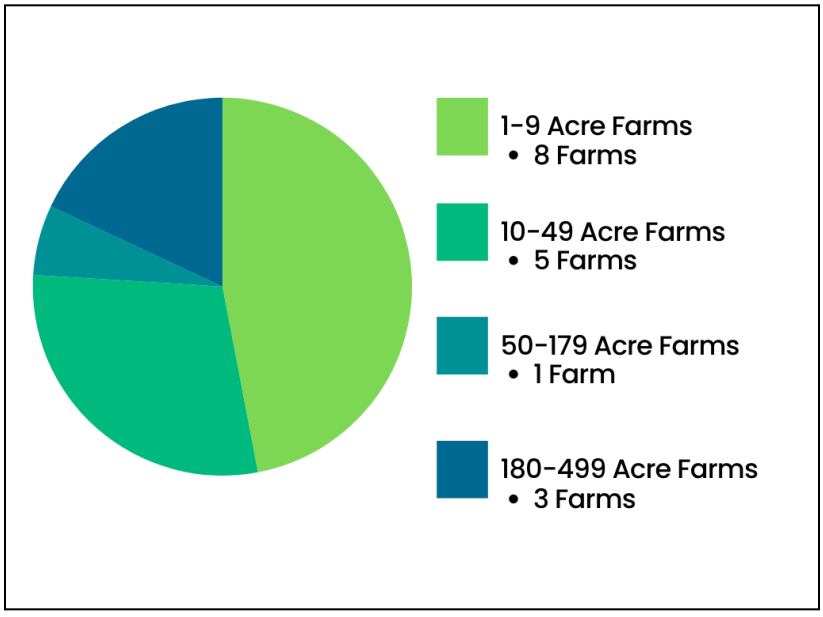

Figure 4.3: Number of Farms by Acreage in Nantucket (U.S. Census Bureau, 2022)

The disconnect between local farming practices and broader food system initiatives, like CARAT, reflects a larger pattern of challenges in fostering community-wide collaboration on Nantucket. These limitations, amplified by the island's unique population dynamics and socioeconomic challenges, make broader agricultural engagement across Nantucket's food system complex.

4.4 Limitations in Connecting with Nantucket's Community

Nantucket is unique among CARAT pilot communities, as an island and a popular summer tourist destination. The population increases dramatically in the summer, and the peak season population has gradually increased over the past 15 years (Figure 4.4).

It is surprisingly difficult to estimate the summer population given the ebb and flow of short and long-term visitors. It is also surprisingly difficult to estimate the year-round population and census data are considered notoriously inaccurate and regularly challenged by the Town. Census inaccuracies arise from the seasonal workforce and significant undocumented population on Nantucket which may result in an undercount as large as 25% for the year-round population (J. Mele, personal communication, October 30, 2024). Undocumented people on Nantucket are often paid in cash to avoid filing taxes and reporting their incomes. Absent such official filings, however, they are not able to apply for food benefits such as SNAP and HIP. The Town regularly challenges the census estimates because these data determine eligibility for federal funds, such as block grants to the state.

There is limited direct support for marginalized and BIPOC (Black, Indigenous, and People of Color) communities on Nantucket. For instance, programs designed to support new farmers are not specifically tailored to BIPOC farmers. While multiple farms on the island mentor new and aspiring farmers, these programs are generally open to everyone, not exclusively minorities. Even though there are no food-related support systems specifically for BIPOC community members, community stakeholders are open and willing to establish such programs if demand increases.

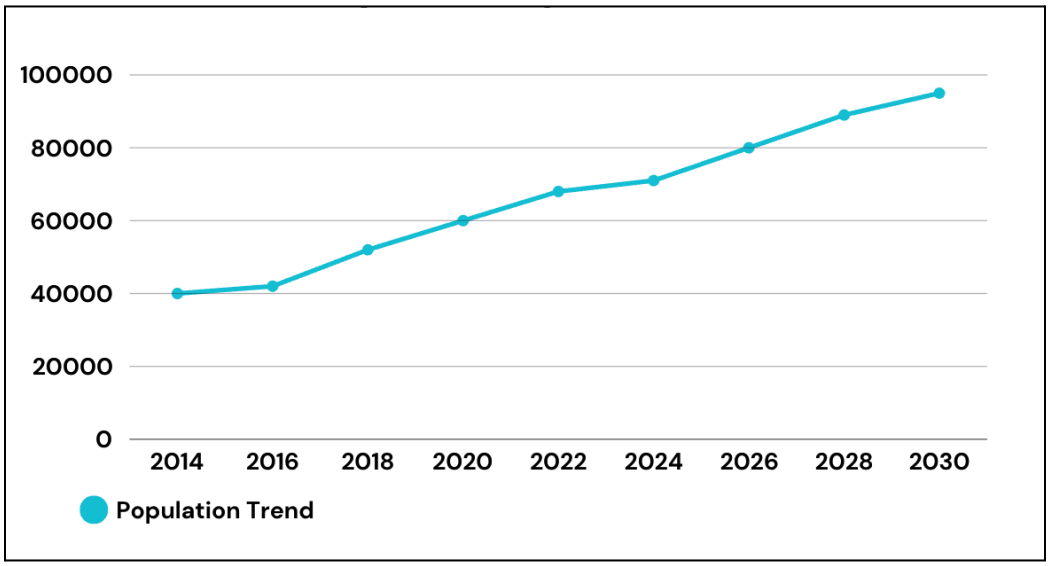

Figure 4.4: The Increasing Population on Nantucket During Peak Season (Graziadei, 2022)

Food insecurity affects more people than the team initially expected on Nantucket, largely driven by the island's high cost of living. Housing is expensive, leaving many residents with limited financial flexibility to afford necessities, including food. Compounding this issue, there are only two major grocery stores on the island, which restricts access to affordable options and further exacerbates the problem. Nantucket's reliance on food imports adds another layer of complexity; transportation costs contribute to significantly higher grocery prices compared to the

mainland. This geographic isolation also creates a unique vulnerability, as the island's dependence on ferries makes its food supply susceptible to disruptions from severe weather, mechanical issues, or other emergencies. These challenges disproportionately affect low-income residents and minorities, who already face barriers to access and affordability. Individuals with more wealth tend to have a better-stocked pantry than others and Stop & Shop only has enough fresh produce to sustain the island for a couple of days. This means that low-income households could be more susceptible to a lack of food in the event of an emergency (V. Murphy, personal communication, November 7, 2024). The situation underscores the need for better policies and planning to address food insecurity, not only through expanded local support systems but also by ensuring the island is better prepared for emergencies that could disrupt its food supply chain.

Our interview approach may have missed potential stakeholders, limiting community input on CARAT. Due to the time that the team was on the island (October to December), there was likely section bias. Certain individuals or organizations may have not come to mind, if they were off-island or inactive for the season.

The isolated nature of agriculture on Nantucket, with only a few organizations actively collaborating, may have led to overlaps in referrals and inadvertently excluded representatives outside of established networks. These structural limitations in our referral interview approach could have narrowed the range of perspectives we gathered. Conducting interviews during the off-season, combined with these protocol challenges, likely impacted the depth of our findings. Addressing these gaps in future efforts could help ensure a more comprehensive understanding of the stakeholders and food system resilience issues on Nantucket.

4.5 CARAT's Applicability on Nantucket

The challenges associated with connecting to Nantucket's community make it necessary to address the applicability of an assessment tool like CARAT on Nantucket. To understand CARAT's applicability on Nantucket, we hosted a focus group of food supply chain actors to discuss scoring Theme 5: Focus on Local Farmers, Food Processors, and Food Distributors. The group consisted of Matt Haffenreffer from Process First, Ruth Pitts from the Nantucket Food Pantry, Rita Higgins from the Marion Institute, and Ella Potenza from Sustainable Nantucket.

Focus group participants emphasized that the ordering and wording of CARAT's indicators were confusing. For example, Theme 5 opens by assessing the input of local farmers on "community planning" in indicator 61. Indicator 68 addresses the same issue, though amongst "historically marginalized farmers." Between indicators 61 and 68 are indicators centered around agricultural advisory boards, BIPOC farmers, food business accelerators, and cooperative extension staff. Indicators that are thematically linked, such as indicators 61 and 68 (see Figure 4.5), are placed far apart, making the scoring process somewhat disconnected. Additionally, the ambiguous wording of indicators in Theme 5 caused misunderstanding amongst focus group participants. For example, participants made it clear that terms like "community planning" and "processor" would need to be further defined in a community discussion (M. Haffenreffer et al., personal communication, November 20, 2024). Thus, the order and wording of the indicator questions caused participants to get caught up in extraneous details.

In addition to indicator order and wording, collaborators noted that the scoring system of CARAT does not fully capture the scope of Nantucket's food system policies, practices, and programs. CARAT scores determine whether a single policy, practice, or program exists in a community that meets specific indicator criteria. This focus purely on the *existence* of a policy, practice, or program, however, does not measure their relevance, usage, or impact in a

community. This leads to confusion among CARAT scores, as "sometimes [particular policies] may be a 3, but in practice [they are] really a 2" (M. Haffenreffer et al., personal communication, November 20, 2024). For example, Hazard Mitigation Plan development involves Town hearings for community input, including from farmers, in theory, though typically nobody attends. Although one outcome of CARAT is to identify gaps in a community's food system, CARAT scoring cannot measure these shortcomings because it is not set up to ask for evaluation or review, merely the existence of policy.

CARAT's scoring system also lacks standardized examples of how the policies, practices, and programs described by indicators should manifest themselves in various types of communities. More specifically, focus group participants indicated that they were unsure of how a CARAT score of zero to three would pertain to a policy, practice, or program in Nantucket as opposed to other communities. Participants also noted the scoring system's inability to address particular critical aspects of food system resilience. CARAT indicators score the funding and level of implementation for policies, practices, and programs, but do not account for the diversity of a program's funding. Many food system programs on Nantucket are well funded through a single donor, like Remain, and would earn an indicator score of three with CARAT's current scoring system. This is problematic, however, as having a single donor puts food policy programs at greater risk of losing all funding should the donor stop funding these programs. The diversity of a food system program's funding—something that is not measured by CARAT—still significantly contributes to overall food system resilience. This, along with CARAT's priority of measuring the existence of programs rather than their community impact and usage, reveals the tool's shortcomings in assessing the nuances of food system resilience.

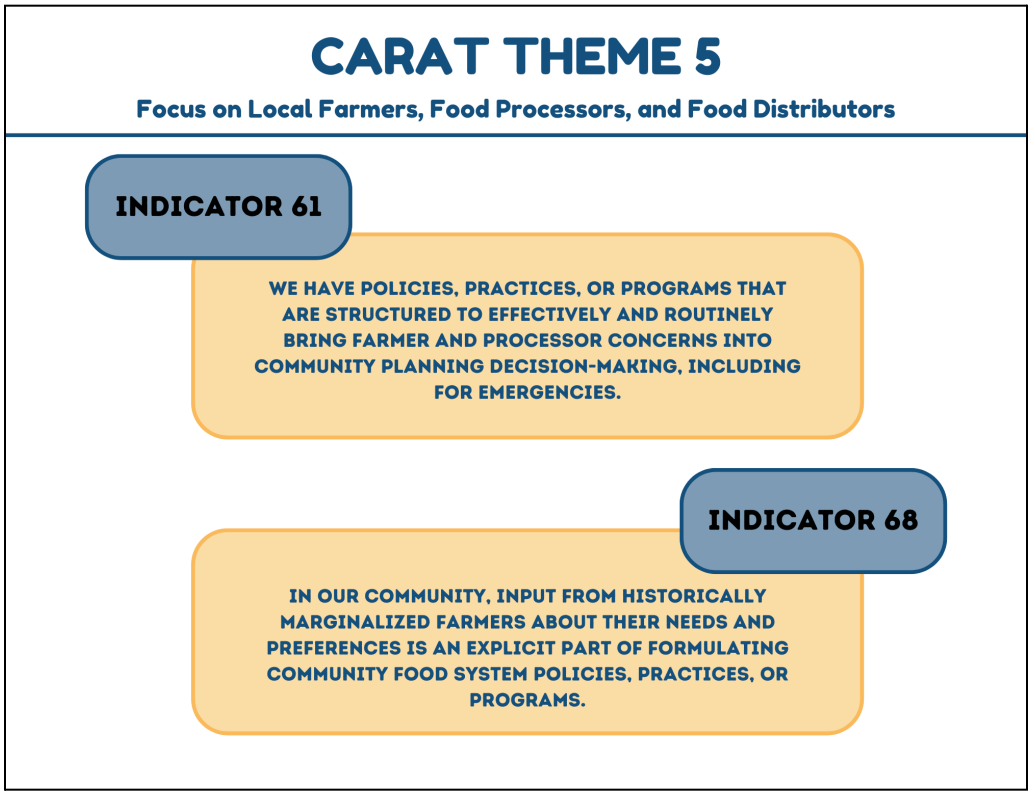

Figure 4.5: CARAT indicator questions: 61 and 68

5.0 Discussion & Recommendations

Through our research, we have identified a core group of stakeholders who we recommend that Sustainable Nantucket collaborate with in CARAT data collection and scoring. Additionally, we found that the "two convention" strategy has been effective in other Massachusetts communities using CARAT. We have also identified challenges that arise with collaboration among island organizations, connecting with Nantucket's community, and with the applicability of CARAT to Nantucket. Based on these findings, we believe CARAT will be able to identify gaps in Nantucket's existing food system policies, practices, and programs to justify further investment of effort by Sustainable Nantucket. To accomplish this effectively, we make several specific recommendations for Sustainable Nantucket to consider before it moves forward with the CARAT assessment. Additionally, we recommend that the North American Food Systems Network (NAFSN) should consider refining CARAT further to better accommodate communities with very different types of food systems.

5.1 We recommend that Sustainable Nantucket collaborate with a core group of stakeholders to implement CARAT data collection and scoring.

We recommend that Sustainable Nantucket assemble a diverse group of core island stakeholders to collaborate with in completing the CARAT assessment. This core group of island stakeholders would include Matt Haffenreffer, Chuck Larson, John Bartlett, Aidan Feeney, Vincent Murphy, Rita Higgins, Jerico Mele, Cormac Collier, Anne Dougherty, Brooke Mohr, and Rachael Freeman. These stakeholders have different individual and organizational perspectives on farming and food systems on Nantucket, including the role of Town offices, conservation groups, and other nonprofits. These individuals have indicated an interest and willingness to participate in the CARAT data collection and scoring phases alongside Sustainable Nantucket. This diverse group will also establish connections between individuals and organizations that may not normally interact, helping to build a more reliant and connected community.

5.2 We recommend that Sustainable Nantucket adopt a "two convention" approach for CARAT data collection and scoring.

We recommend Sustainable Nantucket follow the "two convention" approach as they move into the data collection and scoring phases of the CARAT Assessment. Communities that have completed all three phases of CARAT have used a "two convention" strategy to effectively assess their local food systems. The strategy involves an initial meeting with the core group of stakeholders where they answer as many of the indicator questions as possible. The core group of stakeholders should spend significant time in the first meeting to determine the proper order for the indicator questions and their wording applicability. For indicators that cannot be scored initially, small subgroups of core group members should confer with various other community stakeholders to learn more about policies, practices, and programs within a local context. With these new insights, the core group comes together once more to finalize the scores on each CARAT indicator. Following this method will ensure a range of community figures inform data collection on the island.

5.3 We recommend that the core group of stakeholders adapt CARAT indicators to better reflect Nantucket's food system.

We recommend that the core group of stakeholders working with Sustainable Nantucket adapt the ordering and wording of the CARAT indicators so that they are more suitable to Nantucket's food system. Grouping similar or related CARAT indicators from across the seven themes will make data collection and scoring more intuitive. CARAT's indicators emphasize policies and programs developed by local food policy councils, which are pragmatically inappropriate for Nantucket which has no active food policy council. Therefore, the core group should make any necessary adjustments to indicator wording to better suit Nantucket's community, such as deemphasizing policy councils in indicator questions. When completing the CARAT assessment, individuals need to have a clear understanding of what each indicator means.

5.4 We recommend that NAFSN adapt the structure of CARAT indicators to make the tool more intuitive.

We recommend that the NAFSN adapt the ordering and wording of the CARAT indicators to facilitate the scoring process. We found specific indicators that ask about similar policies, practices, and programs are grouped far apart in CARAT. We recommend that the indicators of CARAT be rearranged in a more intuitive order that clusters similar indicators together. Additionally, we found that the phrasing of the indicator questions leaves too much room for interpretation among stakeholders. CARAT has a glossary explaining what these specialized terms mean, though it is not immediately accessible from within the webpage for scoring CARAT indicators. We recommend that the NAFSN integrate glossary entries directly into the phrasing of the CARAT indicators. This could be accomplished using hyperlinks or a mouse-hover feature on the CARAT indicator scoring webpage.

5.5 We recommend that the NAFSN adapt the scoring system of CARAT to reflect the impact, not merely the presence, of policies, practices, and programs.

We recommend that the NAFSN amend the CARAT scoring system to account for the usage and impact of policies, practices, and programs, not just their existence on paper. Many of the CARAT indicators ask merely if a particular policy, practice, or program exists. The indicators do not ask if the policies, practices, or programs are widely adopted or effective. We recommend that the NAFSN include an additional scoring column that measures the usage and impact that a policy, practice, or program has on a community. Additionally, we recommend that the NAFSN standardize CARAT's scoring system. First-time users of CARAT may not pragmatically understand the three different stages of policy implementation laid out by the scores. Including concrete examples of these stages of policy implemented in other communities as a reference alongside the scoring guidelines may aid in user understanding and create more thorough assessments.

5.6 We recommend that the Town of Nantucket consider reformulating the makeup of the Agricultural Commission and its mission.

Currently, the members of Nantucket's Agricultural Commission have limited farming and food system expertise. We recommend that the Agricultural Commission fill upcoming vacancies with members who have relevant food supply chain experience. This includes potential members with farming, food processing, food distribution and restaurant experience. Furthermore, we recommend the Town consider broadening the Agricultural Commission's mission to encompass wider aspects of the food system on Nantucket. When determining how to connect with the larger food system on Nantucket, the Agricultural Commission may wish to model its board after a diverse group of food system actors, similar to the recommended core group of stakeholders that may assist Sustainable Nantucket with CARAT.

6.0 Conclusion

These recommendations, developed in the preparation phase of CARAT, will assist Sustainable Nantucket in implementing the data collection and scoring phases. A core group of stakeholders will collaborate with Sustainable Nantucket to carry out these additional phases with community expertise. By completing the CARAT assessment, the overall resiliency score will numerically represent the strengths and shortcomings of Nantucket's food system in seven key themes. Similar to the Massachusetts Hilltowns, Sustainable Nantucket can utilize this overall score to apply for grants so it may further fund policies, practices, and programs that strengthen Nantucket's food system resilience. Furthermore, a core group of stakeholders will establish a platform for Town officials, nonprofit representatives, and other food system supply chain actors to communicate and coordinate their efforts, enhancing the collaboration and cohesion in Nantucket's food system. By recognizing gaps in Nantucket's food system identified with the CARAT assessment, this core group of stakeholders will be able to take the initial steps in developing cohesive food system policies, practices, and programs to make Nantucket's remote island community more resilient.

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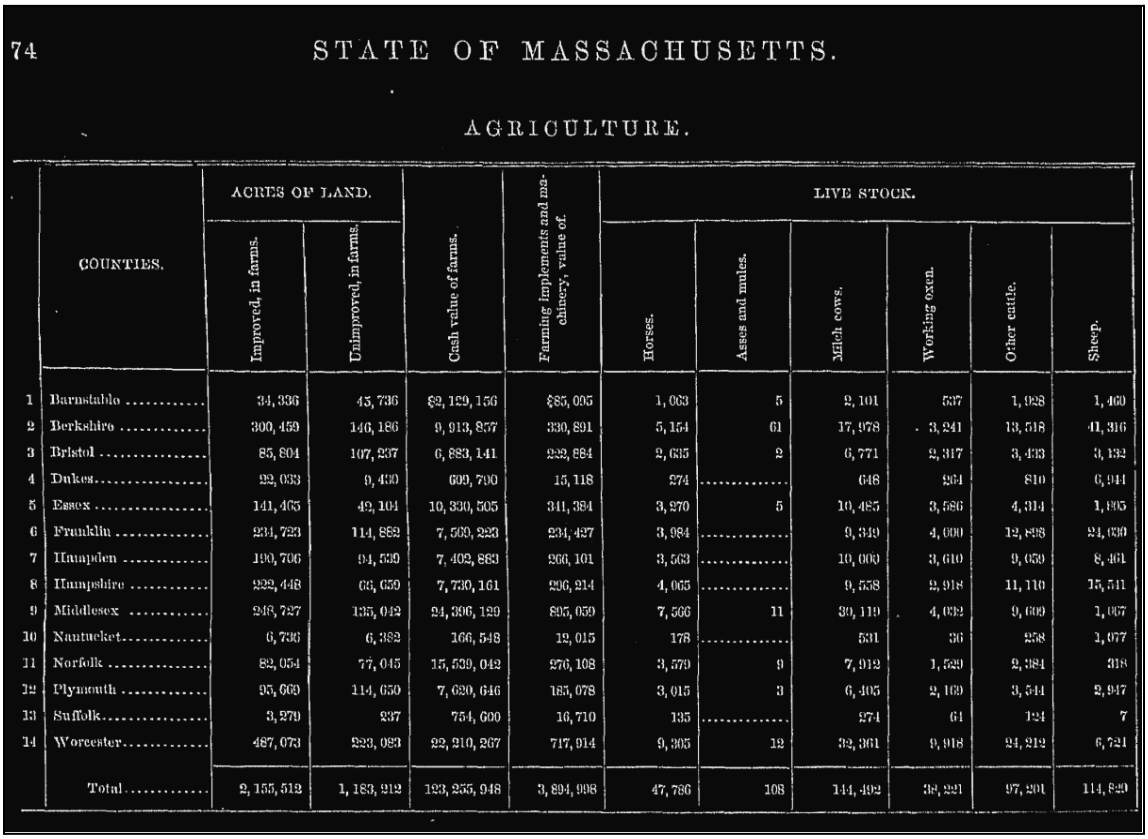
Appendix A: 1860 Massachusetts Census of Agriculture



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AGRICULTURE.

	COUNTIES.	ACRES OF LAND.		Cash value of farms.	Farming implements and machinery, value of.	LIVE STOCK.					
		Improved, in farms.	Unimproved, in farms.			Horses.	Asses and mules.	Milch cows.	Working oxen.	Other cattle.	Sheep.
1	Barnstable	34,336	45,736	$2,129,156	$85,095	1,063	5	2,101	537	1,928	1,460
2	Berkshire	300,459	146,186	9,913,857	330,891	5,154	61	17,978	3,241	13,518	41,316
3	Bristol	85,804	107,237	6,883,141	232,884	2,635	2	6,771	2,317	3,433	3,132
4	Dukes	22,033	9,430	609,700	15,118	274	.....	648	264	810	6,944
5	Essex	141,465	42,104	10,330,505	341,384	3,270	5	10,485	3,586	4,314	1,895
6	Franklin	234,723	114,862	7,560,223	234,427	3,984	.....	9,349	4,000	12,898	24,030
7	Hampden	190,706	94,530	7,402,883	266,101	3,563	.....	10,000	3,610	9,059	8,461
8	Hampshire	222,448	66,659	7,730,161	296,214	4,065	.....	9,538	2,918	11,110	15,511
9	Middlesex	248,727	135,042	24,396,129	895,059	7,566	11	30,119	4,032	9,009	1,057
10	Nantucket	6,736	6,382	166,548	12,015	178	.....	531	36	258	1,077
11	Norfolk	82,054	77,045	15,539,042	276,108	3,579	9	7,912	1,529	2,384	318
12	Plymouth	95,669	114,650	7,620,646	185,078	3,015	3	6,405	2,109	3,544	2,947
13	Suffolk	3,279	237	754,600	16,710	135	.....	274	61	124	7
14	Worcester	487,073	223,089	22,210,267	717,914	9,305	12	32,361	9,918	24,212	6,721
	Total	2,155,512	1,183,212	123,255,948	3,894,998	47,786	108	144,492	38,221	97,201	114,820

Figure A1: 1860 USDA Census of Agriculture data collected for Massachusetts. This figure represents a fraction of the data collected per state as a part of the census.

As seen in Figure A1, the 1860 USDA Census of Agriculture reported a total of 3.338 million acres of farmland in Massachusetts, of which there were 35,136 farms (USDA 1860). This represents the peak of farmland acreage in Massachusetts, as the decline can be seen in Figure 2.1 with the 1910 USDA Census of Agriculture reporting 2.875 million acres of farmland with 36,917 farms (USDA, 1910). Massachusetts' agriculture industry experienced economic growth long after its decline in farmland acreage had begun, reaching its economic peak "both in pounds and in dollars" nearly a century later in the 1940s due to increased production demands from World War II (Weisse, 2022). The 1940 USDA Census of Agriculture reports a net income of $68,449,320 (not adjusted for inflation) with a much smaller 1.937 million acres of farmland, as seen in Figure 2.1 (USDA, 1940).

Appendix B: Influences of the Zoning Act on Agriculture

In recent years, the trend in Massachusetts farming has continued through the prominence of "small parcel agriculture." Section 3 of the Zoning Act, passed by the Commonwealth of Massachusetts in 1975, reads that "parcels of land five acres or more" may be regulated by the Commonwealth of Massachusetts, encouraging new farmers to farm on small parcels. Regulations under the Zoning Act include Natural Resource Protection Zoning (NRPZ), where water supplies, watersheds, and fertile land may be protected by the state from being developed (Association to Preserve Cape Cod, 2020). This leads "aspiring farmers" to rent smaller parcels of land due to larger parcels being protected by NRPZ (Massachusetts Food System Collaborative, 2021). Figure 2.2 displays the increase in small-parcel farming in recent years as reported by the USDA Census of Agriculture.

Appendix C: Sponsor Description

Founded in 2000, Sustainable Nantucket is a nonprofit organization whose mission is "to cultivate a Sustainable Nantucket island community by supporting local agriculture, food producers, and makers" (About Us - Sustainable Nantucket, n.d). Sustainable Nantucket promotes "education, advocacy, training, and partnerships" with "local food producers, schools, restaurants, and other community stakeholders" (About Us - Sustainable Nantucket, n.d.). Sustainable Nantucket strives to help the farming industry flourish.

In 2015, the Nantucket Land Bank agreed to lease a 7+ acre piece of land, formerly Mount Vernon Farm, at 168 Hummock Pond Road. This parcel is home to the Walter F. Ballinger Mentor Farmer Program, which includes a partnership between Sustainable Nantucket and five local growers, (Fog Town Farm, Washashore Farm, Eat Fire Farm, Peace + Bliss Farm, and TT's Hobbies). The growers educate each other and host workshops to teach farming techniques, such as proper seed starting, to new growers (Upcoming Events + Workshops, n.d.). In 2020, Sustainable Nantucket installed a farmstand on the property, as shown in Figure C1, with funding from Remain and the Community Preservation Committee (Walter F. Ballinger Mentor Farmer Program, n.d.). The farmstand allows growers to sell their goods and also serves as a venue for public education.

Figure C1: Walter F. Ballinger Mentor Farmer Program Farmstand (EAT FIRE FARM, n.d.)

Sustainable Nantucket's education endeavors also include its Farm to School (F2S) Program. The Farm to School Program teaches students in the classroom about "eating fresh fruits and vegetables and the joys of growing [one's] own food." The Farm to School program partners with Nantucket Public Schools, where the Joyce N. Fruman Youth Garden hosts school programs for students and an annual summer camp in association with the Nantucket Boys and Girls Club (Guidestar, n.d.). Nantucket Public School uses produce from the Joyce N. Fruman Youth Garden, Bartlett's Farm, and Moors End Farm in school lunches as a part of the Harvest of the Month initiative from the Farm to School program, where "teachers [will also] receive educational material related to the featured crop" (Farm to School Program, 2021).

Sustainable Nantucket created the NantucketGrown brand in 2011 to "[encourage] consumption of locally grown food" by "[providing] instantly recognizable branding" to indicate that food was "grown, processed, and distributed on Nantucket" (Keep it NantucketGrown, n.d.). Sustainable Nantucket encourages restaurants, retailers, clubs, and chefs to adopt and display the NantucketGrown brand logo, and also promotes NantucketGrown food festivals. During NantucketGrown food festivals, Sustainable Nantucket aims to put environmentally conscious food alternatives onto the menus of restaurants across the island. The NantucketGrown food festival has had such positive reception, that additional days were added to the festival to meet demand in prior years. In 2016 alone, six hundred people attended twenty-three events over three days. Additionally, in July 2024, there was another successful festival called Farm Fresh Feast (Farm Fresh Feast, n.d.). Festival Goers are locally sourced, environmentally friendly food such as invasive green crab, which protects Nantucket's eelgrass habitats and generates revenue for local fishermen. NantucketGrown as the program extends to the "Be a Local Hero" brand of Community Involved in Sustaining Agriculture (also known as CISA). Other communities have developed similar styles, for example, the "Island Grown" brand on Martha's Vineyard (Emery, 2017).

Figure C2: Sustainable Nantuckets Farmers + Artisans Market

In 2006, Sustainable Nantucket launched the Farmers and Artisans Market "to raise the profile of existing farms" and "allow new growers to sell retail" (Spindrift, 2017). It provides a weekly space for farmers and artisans to sell locally sourced produce and goods to the Nantucket community. The market is sponsored by the Market Advisory Committee, which is appointed by Sustainable Nantucket (Farmers + Artisans Market, n.d.). This event brings the community together through music and conversation and supports the trade of agriculture and local entrepreneurism on the island on Saturdays from late May to mid-October (Guidestar, n.d.). The market is shown in Figure C2.

As a small non-profit, Sustainable Nantucket has just four employees and 14 trustees (Guidestar, n.d.). Elizabeth Davies and Randy Hudson serve as co-chairs on the board, Lynell Vollans is the treasurer and Arthur Reade serves as the board's clerk (ProPublica, n.d.). Posie Constable works as the managing director for Sustainable Nantucket as a whole, LeeAnne Richard works as an Office Manager & Development Manager. Ella Potenza and Cat Steckback respectively serve as the managers for the Farm to School program and the Farmers + Artisans Market program (The Team, n.d.). Sustainable Nantucket has been quite successful in raising funds and revenues have grown from around 200,000 in 2010 to about 700,000 in 2023 (Figure C3). Over the same period, expenses rose from 200,000 to 468,000. From 2018 to 2022 the organization raised $2,005,675 through charitable contributions.

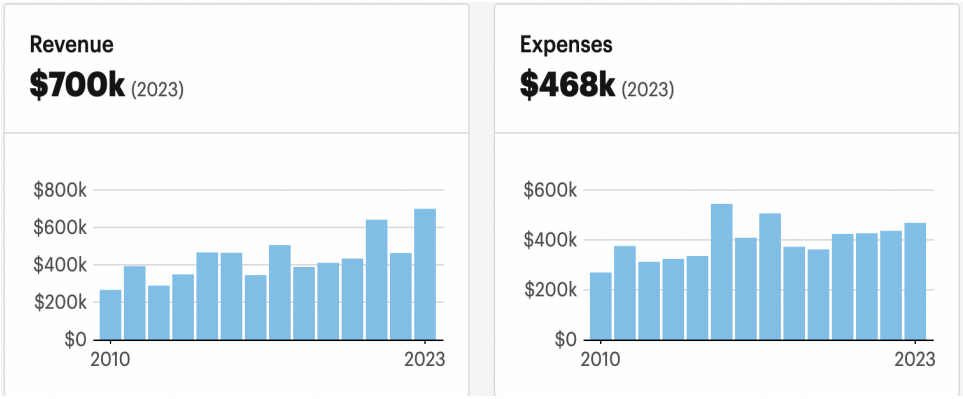

Figure C3: Sustainable Nantucket's Revenue, Expenses, and Assets reported in their 2023 990 Tax Report

Recently, the Marion Institute, a nonprofit organization concerned with "[elevating] health, food, and environmental equity," has kickstarted an initiative to develop a regional food assessment system in Southeastern Massachusetts (Marion Institute, n.d.). Six counties, including Barnstable, Bristol, Dukes, Nantucket, Norfolk, and Plymouth are participating in this initiative, and Sustainable Nantucket plans to serve as Nantucket's leading body in their participation. The food system assessment will employ the Community & Agriculture Resilience Audit Tool (CARAT), which utilizes 101 different indicators following seven core themes to "measure the resources within a food system." The themes are as follows: Natural Resource Management, Use, Conservation, and Preservation of Ecosystems and Farmland, Community Health and Well-being, Community Self-Reliance in Food, Distributed and Democratic Leadership, Focus on Local Farmers, Food Processors, and Food Distributors, Food Sovereignty, and Place-Based Economics (CARAT, n.d.). Sustainable Nantucket does not have expertise and data in all of these themes, and has asked our team to assist in the effort to identify and collect data from the pertinent stakeholders on island.

Appendix D: Interview Questions for CARAT Developers

Interview Topics

I. Introductions + Pre-Interview Context Preamble
II. Nature and purpose of CARAT
III. What advice would you offer to communities using CARAT to assess their food system?
IV. Which communities are farthest along in implementing an assessment with CARAT?
V. What feedback have you received so far from communities using CARAT, if any?
VI. Different stakeholders may interpret the indicators and scoring system of CARAT differently. How would you recommend maintaining consistency when scoring the indicators across stakeholders?
VII. What advice would you offer communities reusing CARAT to more easily update/revise future assessments?
VIII. Could you connect us with CARAT team leads from participating Southeastern Massachusetts counties?

Appendix E: Interview Questions for Island Farmers

We interviewed Fog Town Farm, Bartlett's Farm, Moors End Farm, Washashore Farm, and My Grandfather's Farm. Farmer interview scripts contained three discussion topics: farming practices, support and mentorship, and community. The specific interview questions for these five farms were similar and adhered to the three topic format. As such, the farmer interview questions below have been generalized unless otherwise noted.

Topic 1: Farming Practices

I. What does _____ Farm grow? Is there any livestock on the property? If so, are they free to graze or fed using concentrated animal feeding operations?
II. Does _____ Farm work to protect its soil quality? Are there crop rotation or crop diversification efforts that promote this?
III. How does _____ Farm manage its natural resources and food waste? Is there a composting program to keep food waste out of landfills?
IV. Would you be open to adopting renewable energy usage on the farm?
V. Are you restricted in what types of fertilizers you can use on the farm? Is there a policy to enforce this?

Topic 2: Farming Support & Mentorship

I. Do new and aspiring farmers come to you for advice on farming?
II. Do you direct aspiring farmers to resources to obtain farming equipment?
III. Does your farm financially assist aspiring farmers on Nantucket?

Topic 3: Fog Town Farm in the Community

I. Are there any programs for _____ Farm to sell food to the local school system, restaurants, or hospitals?
II. For surplus/imperfect produce, are there community markets or programs you may still sell to?
III. Is there a policymaking committee for Nantucket's food system? If so, do you have input into their discussions and process?
IV. You have many positions within island organizations, what has your experience been with those? Within these organizations, are there any initiatives to support agricultural and nutritional education for locals? (Question for John Bartlett)
V. Would you be open to having a food and agriculture policy-making committee on Nantucket? (Question for Dan Southey, Nick Larrabee, and Tom Larrabee)

Appendix F: Interview Questions for Town of Nantucket Representatives

From the Town of Nantucket, we interviewed Jerico Mele (Human Services), Vincent Murphy (Division of Climate and Resiliency), and Chuck Larson (Town Administration). Since these three individuals were involved in different Town departments, the specific questions were tailored to match the interviewee's expertise.

Jerico Mele (Human Services)

Topic 1: About the Town of Nantucket's Human Services

I. The goal of the Human Services division is to connect residents with aid through its three subdivisions pertaining to disabled residents, senior residents, and veterans. What, specifically, are some of the ways in which these subdivisions assist residents?
II. Are there any plans to expand into more subdivisions to cover more demographics that may be disadvantaged?

Topic 2: Public Health and Education

I. Does the town monitor the health indicators of island residents? If so, how is it done (i.e., surveys) and how are they used to inform decision-making?
    A. Does the town track data relating to the social determinants of health?
II. Do the town or any other organizations provide educational opportunities for community members to build their leadership skills and contributions to the community?
    A. Do local food business owners frequently mentor aspiring ones?
    B. Are there specialized opportunities like these for socially disadvantaged groups?

Topic 3: Equitability

I. How does your organization, or others, address food inequities and barriers for certain groups on Nantucket? What steps are taken to correct these inequities, if any?
    A. Have disadvantaged groups themselves gotten to voice their thoughts on addressing the inequities and contribute to solutions?
II. Do any nonprofit or government organizations on the island invest in BIPOC-owned/operated farms/food businesses via grants or loans? Are they assisted in any other ways?
III. Does the town have any other explicit programs or set goals to assist BIPOC residents?

Topic 4: Emergency/Disaster Planning

I. Does the town have any plans for addressing food availability in the event of a disaster/emergency? If so…
    A. Do they include specific recommendations for household members, food retailers, nonprofits, etc.?

B. Are details about plans widely shared among government organizations, non-government organizations, and members of the public alike?
C. Do a full, diverse range of stakeholders contribute to the planning?

Vincent Murphy (Division of Climate and Resiliency)

Topic 1: Farmland Usage, Conservation, and Sustainability

I. Does the Town of Nantucket make any efforts to support land conservation, such as protecting farmland from nonfarm development, preserving coastal wetlands, and other ecologically vulnerable areas?
II. Do commercial fishers and seafood producers follow environmental sustainability standards in their fisheries?
III. Does Nantucket have a significant amount of unplanted-arable land? Of this land, would you be open to seeing it used by new and aspiring farmers?

Topic 2: Planning of Sustainability Programs

I. In light of heavy reliance on the mainland for imported goods, would you say that the town of Nantucket understands the challenges facing the local food system and its infrastructure (production, transportation, and distribution)?
II. In the planning and oversight for Nantucket's sustainability programs, do you communicate with local farmers, food markets, distributors, and other food system organizations to receive input on new policies?
III. Would you like to see the adoption of policies encouraging reuse innovations for food packaging such as biodegradable packaging?

Topic 3: Food System Structure

I. Are there any Town-level policies or programs that invest in local food distribution infrastructure?
II. Much of Nantucket's food system and agricultural programs are implemented by nonprofits or other private organizations and businesses. Where would you say the Town of Nantucket fits into this decentralized structure? How does it promote sustainable programs to other island organizations?

Chuck Larson (Town Administration)

Topic 1: Special Project Areas

I. Could you tell us about your role as Special Projects Manager for the Town Administration, what types of projects do you typically work on?
II. Beyond the focus on coastal resilience, does community resilience planning account for the resilience of Nantucket's food system?

Topic 2: Resilience on Nantucket

I. Coastal erosion threatens native vegetation in riparian areas and coastal wetlands. How does the Town of Nantucket incentivize preserving or restoring coastal wetlands through policy or programs?

II. In light of heavy reliance on the mainland for imported goods, would you say that the town of Nantucket understands the challenges facing the local food system and its infrastructure (production, transportation, and distribution)?

III. Natural hazards such as flooding and strong storms present a significant threat to the island's food system. When developing the Hazard Mitigation Plan, do you seek input from farmers, food distributors, and other food supply-chain actors?

Appendix G: Interview Questions for Nantucket Resource Partnership Representatives

Nantucket Resource Partnership is a nonprofit organization whose mission is to create an efficient and sustainable food security system by promoting collaboration between island organizations. From Nantucket Resource Partnership (NRP), we interviewed Meg Browers (Director of Development & Operations), Brian Lenane (Treasurer), and Brooke Mohr (President). These individuals all have additional areas of expertise: Mrs. Browers has been a K-12 Teacher for 10 years, Mr. Lenane is the Nantucket Community School coordinator of adult education, and Mrs. Mohr chairs the Nantucket Select Board. The first discussion topic in each interview was tailored to each interviewee's additional area of expertise. The following two discussion topics, "equitability and food insecurity" and "community and funding," were included in all three NRP interviews.

Topic 1 (Meg Browers): Youth Education

I. Are there educational opportunities or incentives offered by Nantucket Public Schools that teach nutrition, cooking, and food sustainability to youth?
II. Are there programs that provide or subsidize fresh, local, and nutritious food in school lunches for students?
III. Is the Nantucket Public Schools Council aware of the full food security risks that impact its students? If so, how does the school system assess and work to minimize food security risks?

Topic 1 (Brian Lenane): Community Education

I. Does the Community School have any programs in place for providing nutrition, cooking, or other food-related education to both youth and adults?
II. Does the Community School have leadership education programs for adults?
    A. Do they make special efforts to connect socially disadvantaged groups with these programs? If not, would they be open to doing so in the future?

Topic 1 (Brooke Mohr): Select Board

I. As a member of the Select Board, how do you ensure that public meetings remain accessible to all residents, especially those with limited access to technology or who may face other barriers to participating virtually?
II. How does the town incorporate expertise in food systems, agriculture, and gardening into local policies?
III. Does the community ensure input from food system leaders—such as farmers, gardeners, and food access groups—when developing comprehensive plans?
IV. How do local zoning, licensing, and permitting ordinances support sustainable practices, such as:
    A. **Backyard Poultry**: Are there regulations in place that allow residents to raise poultry in their backyards?

B. **Farm Stands**: How do ordinances facilitate the operation of farm stands for local food distribution?
C. **Household Composting**: Are there provisions that permit and encourage composting at the household level?
D. **Vegetable Gardens**: Do zoning laws allow for replacing lawns with vegetable gardens, and how are these practices supported?

Topic 2: Equitability and Food Insecurity

I. NRP currently has its Food First program in place and funds Pip & Anchor's Nourishing Nantucket program. Does NRP have any plans to expand these programs or implement new programs to address Nantucket's food insecurity?
II. Other than food insecurity, does NRP try to address other sorts of inequities and barriers in the food system (e.g., injustices faced by workers in food businesses)? If not, would they be open to doing so?
III. In NRP's Food First and Pip & Anchor's Nourishing Nantucket programs, are special efforts made to support BIPOC residents facing food insecurity issues?
IV. Does NRP make efforts to invest in BIPOC-owned and -operated ventures in the food business?

Topic 3: Community and Funding

I. NRP is a nonprofit organization that aims to facilitate collaboration in programs addressing food insecurity through increased coordination. In what ways do you think Nantucket's food system would benefit from this centralization?
II. Does NRP provide financial support to new food system businesses (farmers, distributors, and marketplaces)?
III. Does NRP collaborate with local food supply-chain actors to secure funding for its food insecurity projects?

Appendix H: Interview Questions for Food Distributors and Vendors

We interviewed Matt Haffenreffer (Process First), Ruth Pitts (Nantucket Food Pantry), Karen Macumber (The Hive Community Kitchen), and Chris Sleeper (Pip & Anchor). Process First is a data and technology consulting firm focused on projects relating to community health, food, and environment. Nantucket Food Pantry is the local food pantry that partners Nantucket Food, Fuel, and Rental Assistance. The Hive Community Kitchen is a new shared-use food production facility that aims to provide the community with affordable year-round access to commercial kitchens. Pip & Anchor is a local food marketplace that sources its goods from local sellers. These four organizations are involved in the distribution and sale of food on Nantucket, and have different areas of expertise. As such, the specific questions were tailored to match the interviewee's expertise.

Matt Haffenreffer (Process First)

Topic 1: About Process First

I. When did Process First start? How did it get involved with Nantucket?
II. Regarding the Process First methodology diagram, how does process first "inform" and "de-risk" production via data analytics?
    A. Creating a digital "Food Hub Tool"
    B. Using analytics to determine smarter purchases on the consumer end
III. What kinds of data are used for these methods, and what type of collection processes do they entail?
IV. As a for-profit business, how do you think a company can integrate social responsibility into a business model without sacrificing financial success?

Topic 2: Nantucket Community Food Project

I. When did the Nantucket Community Food Project begin?
II. What is Process First's Goal or Vision with the Food System on Nantucket?
III. From your perspective what are the greatest faults within the Food system currently?
IV. What is your relationship with the local schools, restaurants, and hospitals?
V. Are there any programs focused on nutrition education within the community, and how do they fit into the overall mission of the food project?
VI. How have, or will you measure the impact of the Nantucket Community Food Project on local food insecurity?

Ruth Pitts (Nantucket Food Pantry):

Interview Topics

I. What is the history of the Nantucket Food Pantry? When did it start?

II. What type of relationship does the Nantucket Food Pantry have with local restaurants, schools, and hospitals?

III. Does the Nantucket Food Pantry have any plans to expand its outreach and programs?

IV. How does the Nantucket Food Pantry obtain its food? Does it partner with any local farms?

V. How does the Nantucket Food Pantry connect with underprivileged community members to provide meals and assistance?

VI. Are there any businesses or organizations on the island besides the Nantucket Food Pantry whose missions align with minimizing food insecurity?

VII. In the case of a community emergency or natural disaster, does the Nantucket Food Bank have any plans in place to facilitate food access for community members in the aftermath?

VIII. What type of social outreach platforms are used to connect with community members?

IX. How popular is the utilization of SNAP, WIC, and HIP on the island?

A. Does the Nantucket Food Pantry have an action plan to connect people with these types of programs?

<u>Karen Macumber (The Hive Community Kitchen)</u>

Interview Topics

I. Could you tell us more about the Hive's plan for sourcing sustainable packaging and how it will be used in production processes?

II. We saw that the Hive will have lockers for food pickup through an online ordering platform, as well as a vending machine for pre-packaged food. Could you tell us more about this service?
   A. From our understanding, the Hive is a for-profit organization. How will you generate income through your approach?

III. We learned that housing is very limited and scarce on Nantucket. Will the Hive utilize its space in any way to accommodate community members in search of housing?

IV. In terms of food waste management, how will the Hive facilitate proper disposal and or composting of organic matter?

V. What educational programs does the Hive plan to do in the future?
   A. Will these programs be used specifically for the users of the Hive facility or the general public?
   B. Is there an estimated time for when these programs may start?

VI. What limitations has the health department put in place for this kitchen?
   A. We heard something about how only two chefs can use each kitchen for a given period of time. Could you tell us more about this?

VII. In the event of an emergency or natural disaster, could the Hive kitchens be utilized for food preparation and emergency services?

VIII. Has your organization ever heard of the Healthy Food Financing Initiative put on by the USDA? If so, have any organization members looked into obtaining grants for further investments?
IX. Could you share a little more about your relationship with the Schmidt Foundation and their influence on the organization?
X. Finally, are there any other individuals or organizations you believe we should contact for further input on Nantuckets Food System?

Chris Sleeper (Pip & Anchor)

Topic 1: Pip & Anchor Business

I. Can you tell us about how Pip & Anchor was founded, as well as what recommendations you have for starting new food production enterprises?
II. Does Pip & Anchor have programs, mentorship opportunities, or financial assistance for people who are interested in the food industry?
III. Are there minimal barriers for local farmers selling their food to Pip & Anchor?
IV. Of Pip & Anchor's income, how much is from traditional sales versus the Pip Wine Club?
V. Remain funded Pip & Anchor's facilities. What has your relationship been with Remain? Have they been a strong source of funding to support the business?

Topic 2: Local Food

I. Does Pip & Anchor focus exclusively on local food grown on Nantucket, or are there any imported goods?
II. Is there any market for Pip & Anchor to purchase surplus or imperfect produce from farmers?
III. Is Pip & Anchor open to making special efforts to purchase from BIPOC-owned farms in the future?
IV. Of the 80 boxes of food that Pip & Anchor provides to food-insecure households weekly, would you be open to seeing this program expand to more households?

Topic 3: Nantucket Resource Partnership

I. As Food Systems and Development Advisor for NRP, what is your opinion on Nantucket's decentralized agricultural system?
II. Would you like to see a more centralized organization provide funding, resources, and programs to local farmers, processors, and distributors?
III. Where do you think the Nantucket food system's greatest strengths and weaknesses lie?
IV. Finally, are there any other individuals or organizations you believe we should contact for further input on Nantucket's food system?

Appendix I: Interview Questions for Land Management Organizations

To gauge land management and conservation expertise, we interviewed Rachael Freeman (Nantucket Land Bank) and Cormac Collier (Nantucket Conservation Foundation). The Nantucket Land Bank is a unique organization that is not directly associated with the Town of Nantucket, but funded by public tax dollars on property purchases. The Nantucket Conservation Foundation (NCF), however, is a nonprofit and is the single largest owner of land on Nantucket, with over 9000 acres under management. These interviews shared similar discussion topics to begin, but then had the third topic tailored to each organization's area of expertise. As such, the first two interview topics below have been generalized unless otherwise noted.

Topic 1: Land and Water Conservation Practices

I. Are there policies in place that protect viable farmland from non-farm development?
II. Does Nantucket have a significant amount of unplanted-arable land? Of this land, would you be open to seeing it used by new and aspiring farmers?
III. Does the _____ support programs to maintain water quality, water conservation, and manage watershed health?
IV. Nantucket faces a serious threat from coastal erosion. Does _____ have incentives to preserve or restore coastal wetlands?
V. In riparian areas (fertile areas bordering rivers, streams, and ponds), are there programs to maintain or restore natural vegetation?
VI. In your opinion, which types of properties are the most important to conserve and why? (NCF)

Topic 2: Agricultural Practices

I. The Nantucket Land Bank's mission is rooted in Conservation, Recreation, and Agriculture. Does the Nantucket Land Bank enforce programs to keep agricultural waste out of landfills and residential areas? (Nantucket Land Bank)
II. On its agricultural land, does the Nantucket Land Bank enforce soil protection practices such as cover cropping or crop rotation to preserve soil health? (Nantucket Land Bank)
III. Does NCF have policies or programs that support the adoption and preservation of windbreaks? (NCF)
IV. Agroforestry is the practice of intentionally planting trees to create mixed-use agricultural lands with other crops and livestock. Is this something that _____ would be interested in implementing within its agricultural lands?
V. Does the Nantucket Land Bank restrict the types of fertilizers or pesticides that farmers may use on agricultural land? (Nantucket Land Bank)
VI. Would you be open to seeing a greater adoption of renewable energy production on land managed by _____?
VII. Are there any zoning regulations that require food produced on Nantucket Land Bank-owned land to be distributed, processed, and consumed locally? (Nantucket Land Bank)

Topic 3 (Land Bank): Land Ownership

I. Does the Nantucket Land Bank support “land back” programs? These programs include offering benefits/incentives to indigenous peoples to own land as a form of land reparations.
II. Would you consider the Nantucket Land Bank to be an organization that enforces farmland development rights programs?
III. For new and aspiring farmers, what is the process to become a farmer on Nantucket Land Bank-owned farmland?
IV. Would you consider the Nantucket Land Bank to be a government-owned, privately-owned, or nonprofit organization?

Topic 3 (Nantucket Conservation Foundation): Animal Welfare

I. What does Nantucket Conservation Foundation do in terms of preserving animal welfare?
II. What types of policies and practices does Nantucket have in place for hunting, fishing, and foraging?
III. Finally, are there any other individuals or organizations you believe we should contact for further input on Nantuckets Food System?

Appendix J: Interview Questions for Nantucket Community Organizations

We interviewed Anne Dougherty (Remain), Cecil Barron Jensen (Remain), Alice Townsend (Health Imperatives), Sunny Daily (Community Foundation for Nantucket), and Pauline Proch (Our House). Remain, Helath Imperatives, the Community Foundation for Nantucket (CFN), and Our House are all organizations that support Nantucket's community through funding, grants, shelter, food, and health assistance. More specifically, Remain is a for-profit private organization that invests in Nantucket's environment, economy, community. Health Imperatives is a non-profit that provides health assistance to low-income individuals across Southeastern Massachusetts, including Nantucket. CFN is a non-profit supports the social, physical, cultural, and economic wellbeing of Nantucket through distribution of grant funding. Our House is a non-profit organization that gives young adults full meals and a safe environment for personal growth. These organizations serve Nantucket's community in different ways, so the interview questions below are specific to each interviewee.

Anne Dougherty and Cecil Barron Jensen (Remain)

Topic 1: About Remain Nantucket

I. Remain Nantucket's mission is rooted in supporting the environment, economy, and community. Which project areas does Remain invest in the most? How does Remain decide which project area to invest in?
II. Remain funds projects "inspired by a range of voices." What does Remain Nantucket do to ensure diversity in the organizations it supports? Does it direct resources to BIPOC-owned ventures?
III. In Remain's environmental efforts, do you work directly with island growers and other agricultural organizations? Is there any educational content behind this or just funding for projects?
IV. Nantucket, being an island community, has its agricultural system decentralized without a local food policy council. Would a local food policy council benefit the island's agriculture?

Topic 2: CARAT Assessment Indicators

I. Does the planning process of Remain's environmental projects include input from local farmers, food distributors, and processors?
II. Does Remain Nantucket provide assistance, either financial or through business mentorship, to new food business developments and operations?
III. Does Remain promote access to fresh, healthy food to food-insecure households through its investments?
IV. Remain Nantucket collects community data through the Nantucket Data Platform. Does this data report on unique challenges faced by the community (such as food insecurity), grouped by demographics, socioeconomics, and location?
V. Does Remain's planning committee have expertise in agricultural systems and practices?

Alice Townsend (Health Imperatives)

Interview Topics

I. Are health indicators of Nantucket residents monitored? If so, how is it done (i.e., surveys) and how are they used to inform decision-making?
   A. Does the town track data relating to the social determinants of health?

II. How can young mothers and other socially disadvantaged groups in Nantucket get involved in leadership and collaboration to support equity and inclusion in the community?

III. Aside from WIC and SNAP, what other food assistance programs are present on Nantucket? These might include programs to connect disadvantaged families with fresh food, produce delivery, cost-share incentives, public transportation to local food markets, etc.

IV. Are there resources or programs that provide nutrition education, cooking classes, and youth learning opportunities for young families and women in the community?

V. Are there any nutritional imperatives in place to promote access to local healthy foods through demonstrations, marketing, signage, or social media to encourage consumption?

VI. Finally, are there any other individuals or organizations you believe we should contact for further input on Nantucket's Food System?

Sunny Daily (Community Foundation for Nantucket)

Interview Topics

I. The Community Foundation’s mission is rooted in supporting the social, physical, cultural, and economic well-being of Nantucket. Which project areas does the CFN invest in the most? How does CFN decide which project area to invest in?

II. Other than financially assisting Nantucket Food, Fuel, and Rental Assistance, has the Nantucket Fund supported any other food system projects or operations?

III. In CFN’s efforts, do you work directly with island growers and other agricultural organizations? Is there any educational content behind this or just funding for projects?

IV. Does CFN promote access to fresh, healthy food to food-insecure households through its investments?

V. On top of financial assistance provided through the Nantucket Fund, does CFN offer any educational assistance, such as business mentorship, to new developments and operations?

VI. Are there any additional organizations or representatives you recommend we interview further in this effort?

Pauline Proch (Our House)

Interview Topics

I. Are there educational opportunities or incentives offered by Nantucket Public Schools or Our House that teach youth nutrition, cooking, and food sustainability?
II. Are there programs that provide or subsidize fresh, local, and nutritious food in meals for students?
III. Is the Nantucket School Committee aware of the full food security risks that impact its students? If so, how does the school system assess and work to minimize food security risks?
IV. Do Nantucket public schools or Our House work with farmers and food distributors to source local produce?
V. Was addressing food insecurity for teens a motivation behind the founding of Our House?
VI. How does Our House raise funds for its operation? Does it seek grant funding or have its own fundraising initiatives?
VII. Are there any additional organizations or representatives you recommend we interview further in this effort?

Appendix K: Pre-Interview Context

Preamble:

We are a group of students from Worcester Polytechnic Institute (WPI) conducting a research project in collaboration with Sustainable Nantucket. We are evaluating a new food system assessment tool called CARAT (Community Agriculture Resilience Audit Tool). The tool engages community members and officials to identify how to enhance the resiliency of the local food systems.

Thank you for taking 15-20 minutes to answer some questions regarding food systems and policy on Nantucket. Your participation in this interview is completely voluntary and you may stop at any point. We plan to take notes during our conversation and may wish to quote or paraphrase you in our final report. Would you be comfortable with being quoted by name, or position, or would you rather your responses were kept anonymous? We will, of course, allow you to review the materials we use from this interview before publication. We will also be happy to provide a completed copy of our report at the end of the project. Thank you again for your support in this research.

Do you have any questions before we begin the interview? If you have any concerns or questions after the interview, please contact us at gr-carat@wpi.edu or our faculty advisors, Dominic Golding (golding@wpi.edu) and Melissa Belz (mbelz@wpi.edu).

Appendix L: Interview Questions for CARAT Project Leads

We interviewed Hunt Chase, Director of Community Food Resilience for the Massachusetts Hilltowns Community Development Center, and Rita Higgins, Director of Food Access and Innovation for the Marion Institute. The Massachusetts Hilltowns have already completed their CARAT assessment, and Mrs. Higgins is nearing completion of her CARAT assessment in Bristol County Massachusetts. We asked both of these CARAT project leads similar questions, so the questions below have been generalized unless otherwise noted.

Interview Topics

I. How did you identify individuals and organizations to be involved in the assessment?
II. What strategies have you implemented to determine rankings for these indicators?
III. What strategies have you found to be ineffective?
IV. How did you operationalize the ranking system?
V. Which of the seven themes proved to be the most difficult?
VI. What kinds of steps do you think could be taken to interpret an indicator score into actionable policy? In other words, how did you transform the results of the CARAT assessment into the five-year plan? (Massachusetts Hilltowns)
VII. Have you carried out other food system assessments before CARAT?
    A. If so, what aspects of CARAT make it valuable compared to other methods?

Appendix M: Preliminary Focus Group Questions for Theme Five of CARAT

On November 20th, 2024, we held a focus group with Rita Higgins, Matt Haffenreffer, Ruth Pitts, and Ella Potenza. During the focus group we covered one section of theme five which focuses on local farmers, food processors, and food distributors. Below these indicators are detailed along the discussion questions asked after review.

CARAT Indicators 61 through 68

I. We have policies, practices, or programs that are structured to effectively and routinely bring farmer and processor concerns into community planning decision-making, including for emergencies.
II. We have policies, practices, or programs that direct resources to train aspiring BIPOC farmers and food producers.
III. We have an agricultural advisory board, composed primarily of farm (urban and rural) representatives, that provides guidance to local governments on agricultural matters that is listened to.
IV. We have local Cooperative Extension staff who effectively supply farmers and food makers with critical information about local food production, distribution, and marketing.
V. We have local industry representatives (current or retired) who provide formal mentorship to new business entrants in food business development and operations.
VI. We have food business accelerators or food technology programs that provide affordable support for retail product development to startup and small food-processing businesses.
VII. We have public agencies or nonprofit organizations in the community that individually or jointly conduct distribution programs to provide healthful, fresh food to food-insecure households.

Questions

I. Are the CARAT indicators clear in communicating what policies, practices, or programs they aim to evaluate?
II. Does the CARAT scoring system clearly address the status of policies, practices, or programs?
III. What limitations may arise from applying CARAT indicators to Nantucket?
IV. Are there any essential questions about Nantucket's farmers, food processors, and food distributors that CARAT did not address in theme 5?