2. Specific Aims

Of the more than 9 million foodborne illnesses each year, fresh produce is estimated to account for 46% of illnesses, 38% of hospitalizations, and 6% of deaths (Scallan et al. 2011b, Painter et al., 2013). As efforts to increase consumption of fresh fruits and vegetables have increased, so have outbreaks (Sivapalasingam et al. 2004, Doyle and Erickson 2008). Although food processing industry practices have long been regulated under the Food, Drug, and Cosmetics Act (FDCA), agricultural product food safety has not been federally regulated. Non-binding recommendations for preventing on-farm contamination of produce crops, known as Good Agricultural Practices (GAPs), were issued in 1998 by the U.S. Food and Drug Administration (FDA). Despite this, as well as private sector mitigations, incidents of foodborne illness have continued. In response, the U.S. Congress passed the Food Safety Modernization Act (FSMA) of 2011 [P.L. 111-353], which, in part, directs the FDA to develop and enforce safety standards for growers of fresh produce that is typically consumed without any further cooking or processing, and FDA regulated processed foods.

The diverse regional demographic of the Northeast necessitates training that differs from the overall national needs for education and technical support, e.g. small and diversified producers and processors, short agricultural seasons, and large regional demand for locally produced food. In addition, the scale, diversity, and dynamic growth among produce farms (Keough 2015), small and medium-sized processors (Reference USA 2015) and food hubs (NGFN 2015) in the Northeast pose specific challenges to researchers and educators. Yet, the current practice of food safety educational programming is highly segmented among states in the region. This results in duplication of effort, sub-optimal program quality and perception of inconsistency among stakeholders. There is a *critical need* to build an infrastructure that streamlines outreach efforts to promote and enhance adoption of best food safety management practices to improve food safety in the Northeast Region.

This proposal outlines a regional **Northeast Center to Advance Food Safety (NECAFS)** that will consolidate food safety education efforts in a collaborative and consistent manner. The *long-term goal* of NECAFS is to provide a sustainable, comprehensive food safety training, education and technical assistance program that assists small and mid-sized food producers and processors with FSMA compliance. Our *overall objective* is to build the regional network infrastructure necessary to support a national food safety system that increases the understanding and adoption of established food safety standards, guidance, and protocols for those affected by FSMA. Our *target audience* will include owners and operators of small and medium-sized produce farms, beginning farmers, socially disadvantaged farmers, small processors, or small fresh fruit and vegetable merchant wholesalers in the Northeast region. The *proposal team* is led by a collaborative group of co-investigators who provide disciplinary (produce, process and infrastructure) and geographic diversity. We are uniquely positioned to successfully develop NECAFS and to improve food safety in the region. We will achieve these goals by pursuing the following **objectives**:

- **Establish Foundational Structure** – This objective captures the Development and Implementation components of the project including Early-Stage Center Structure, Outreach, Recruitment and Training Plan, Center Strategic Plan Development & Development of a Communication Plan.
- **Build Capacity, Competency and Collaboration** – We will recruit and develop the regional "network" by leveraging the collective expertise of University partners and FDA to provide comprehensive information and educational events on topics related to FSMA regulations.
- **Develop Curricula and Deliver Educational Programs** – We will connect regulatory development and compliance requirements with science-based research and educational programs through cooperative activities between NECAFS partners, FDA, and Northeast state departments of agriculture.
- **Evaluate and Assess Progress and Impact** – Our guiding principle is to Make a Positive Impact: To Participants, To Trainers, & To Science. We will ensure this by implementing an overall evaluation plan.
- **Sustain Good Work** – We prioritize achieving sustainability and will use the developed network structure to seek future external funds in support of collaborative educational programs and research initiatives.

NECAFS aims to improve food safety in the Northeast through the collaborative development of outreach and education efforts. Specifically, NECAFS will **collaborate** to provide comprehensive information and educational events on topics related to FSMA regulations; **educate** our target audience, connecting regulatory development and compliance requirements with research and educational programs; We will **aggregate** information (i.e., one-stop shopping) for all stakeholders; and we will **innovate**, working collectively with stakeholders to prioritize issues, and facilitate research to address these issues in the Northeast U.S.

3. Research Strategy

Significance

Food safety knowledge and practice are critical needs in our food system and the scale and diversity farms and processors in the Northeast poses specific challenges to researchers and educators in the region. The region includes 23,008 produce farms (Keough 2015), 6,072 small and medium- sized processors (Reference USA 2015) and 79 food hubs (NGFN 2015). Food production is increasing in the Northeast region, as evidenced by an 84% growth in the number of vegetable farms in the past 10 years (USDA NASS 2012), and 4.9% growth in food processing businesses over the past 9 years (ReferenceUSA 2015). Food hubs, "businesses or organizations that actively manage the aggregation, distribution and marketing of source-identified food products," are an emerging stakeholder sub-group in the food industry, with 62% indicating their enterprise was started within the 5 years prior to 2013 (Farbman, et al 2013). Increases in scale, economy, and intensity are shifting the production paradigm in the region and forcing consideration of new production models among small and medium-sized producers. There are increasing numbers of specialty food processors, many of which seek to capitalize on new demands for locally derived foods by adding value to their farm commodity products. Unfortunately, alongside this trend, are increases in foodborne illness among consumers.

The Centers for Disease Control and Prevention (CDC) estimate that each year approximately 48 million people acquire a foodborne illness in the United States of which 128,000 are hospitalized, and 3,000 die (Scallan et al. 2011a). As efforts toward raising consumption of fresh fruits and vegetables have increased, outbreaks linked to produce have also risen (Sivapalasingam et al. 2004, Doyle and Erickson 2008). Of the more than 9 million foodborne illnesses that can be traced back to known pathogens each year, fresh produce is estimated to account for 46% of illnesses, 38% of hospitalizations, and 6% of deaths (Scallan et al. 2011b, Painter et al., 2013). Beyond the suffering of those afflicted, the economic impact of foodborne illness, in terms of medical care, lost wages, and associated costs, is significant. Foodborne pathogens impose over $15.5 billion (2013 dollars) in economic burden on the U.S. public each year (Hoffman et al 2015). U.S population demographics are shifting and as a result, more individuals are entering high-risk populations for foodborne illness; young children, older adults, pregnant women, and those receiving medical treatments that reduce the ability of their immune systems to respond to consumption of pathogens. Food safety challenges are likely to continue to arise with changes in consumer demand for new food products, and new food production and processing methods, as wells as recurring multistate outbreaks, emergence of previously unknown pathogens and toxins, and issues related to antibiotic resistance.

Even if producers and consumers are not directly involved in a produce-associated foodborne illness outbreak, it impacts the production, marketing, and sales of fresh produce as well as consumption rates (Arnade et al 2010). Since the consumption of fresh produce has so many positive effects on health (e.g. maintaining a healthy weight, reduction in cancer risks, reduction in heart disease risks), it is critical to both individual health and the health of the nation that fresh produce be safe, available and affordable (Bhupathiraju et al 2013, American Cancer Society 2014). Reduction in the volume of produce grown may limit its availability and increase the purchase price, resulting in decreased consumption and health benefits associated with including fruits and vegetables as a major part of the diet. Ensuring growers have the tools to make safe, sustainable, and economical food safety decisions will aid in keeping fresh produce available and affordable in local communities as well as the food system at large.

Food processing industry practices have long been regulated under the Food, Drug, and Cosmetics Act (FDCA), which includes Good Manufacturing Practices for safe and sanitary production of foods. On the processing side of food production, government regulations have mandated food safety risk management approaches for certain foods, such as Hazard Analysis Critical Control Point (HACCP) implementation for seafood, juice, meat and poultry and filed scheduled processes for canned food products. Yet incidents of

foodborne illness continue to exist. Historically, agricultural product food safety has not been federally regulated. Several researchers have confirmed the need for innovative educational programs for processors and confirmed Extension's role in development and delivery (Pivarnik et al 2007, Syrko and Kaylegian 2015). In an effort to become more responsive and less reactive, new food safety standards are being mandated across the food system, from farm to fork. Non-binding recommendations for preventing on-farm contamination of produce crops, known as Good Agricultural Practices (GAPs), were issued in 1998 by the U.S. Food and Drug Administration (FDA) (US FDA 1998). GAPs include control measures for reducing risks related to worker health and hygiene practices.

Despite voluntary adoption of GAPs and continuing private sector efforts to prevent costly produce recalls and outbreaks, outbreaks have continued to occur. Through the Draft Qualitative Assessment of Risk to Public Health from On-Farm Contamination of Produce, the FDA has attempted to identify where the point of contamination is likely to occur including growing, harvesting, manufacturing, processing, packing, holding, or transportation. Of the total reported outbreaks and illnesses associated with FDA-regulated foods that occurred between 1996 and 2010, produce accounted for 23.3% and 42.3%, respectively (USFDA 2013). Both domestic produce and imported produce were identified as vehicles in these outbreaks. Approximately 131 produce-related reported outbreaks occurred, resulting in 14,132 outbreak related illnesses, 1,360 hospitalizations and 27 deaths. These outbreaks were associated with approximately 20 different fresh produce commodities (D'lima and Vierk 2011).

In response, the U.S. Congress passed the Food Safety Modernization Act (FSMA) of 2011 [P.L. 111-353], which, in part, directs the Food and Drug Administration (FDA) to develop and enforce farm food standards for growers of fresh produce that is typically consumed without any further cooking or processing. A landmark piece of legislation, FSMA aims to ensure the production of safe foods, yet the region's growers and processors are in need of science-based, consensus-driven, and consistently clear technical assistance to aid in their compliance with this new set of rules. The owners and operators of small and medium-sized produce farms, beginning farmers, socially disadvantaged farmers, small processors, or small fresh fruit and vegetable merchant wholesalers are eager to better understand the impact of the final FSMA rules on their operations.

Food safety has always been a critical issue, but with the finalization of "Standards for the Growing, Harvesting, Packing, and Holding Produce for Human Consumption" (i.e. Produce Safety Rule) and "Current Good Manufacturing Practice and Hazard Analysis and Risk-Based Preventive Controls for Human Food" (i.e. Preventative Controls Rule), growers and processors will be facing increasing challenges to meet new regulatory requirements. Education of small and medium-sized farms and processors is a critical step toward compliance with FSMA whether or not they are actually required by law to be compliant. Many will face market pressure for compliance. Even those not subject to the rule, may have to abide by FSMA's mandates because of buyer requirements to meet those standards (Tobin et al 2011).

The Northeast region imposes specific challenges in regard to food safety education because the region has very diverse growers and processors, spanning the spectrum from very small farms to large, international processing companies. The needs of these groups are just as diverse. Many produce growers have not experienced the same type of market pressure to implement food safety practices that growers in other regions have. A regional challenge is providing the expertise needed for training, but also the research expertise needed to develop economically viable and readily implementable solutions to regional problems.

Because existing food safety educational efforts in the region are fragmented, educators included in the proposal team are currently all serving as generalists, despite having deep, specialized backgrounds and skills. There are also existing programs that are not optimizing their impact. This begs for multi-state collaboration to improve the practice of food safety training and the scientific knowledge it is based on.

Improving the Practice of Food Safety Training

We will develop a shared, consensus-driven, scientific-based curricula, educational programming and associated outreach materials to support improved fundamental understanding of food safety and FSMA compliance among the target audience. This contribution will be significant because it will increase fundamental shared understanding among the trainers and the audience, and lead to documented changes in behavior, resulting in sustained and improved food safety practices. We also anticipate that the center's structure and activities will lead to improved identification of research questions and collaborative, multi-disciplinary teaming to address those questions.

Internally competitive grant-making in support of innovative, regionally specific, yet consensus-based educational programming will lead to improved educational outputs, and ultimately more significant impact measured through rigorous evaluation methods.

There is very strong interest in increased collaboration among educators in the region. Initial results from a preliminary needs assessment support this work and will be expanded in the first 6 months of NECAFS' development and will remain a part of a continuous improvement mechanism within the center.

Improving Scientific Knowledge Among Trainers and Educational Cohort

One way this proposed project will improve scientific knowledge and technical capability will be through development of trainers capable of delivering the Produce Safety Alliance (PSA) curriculum, the Food Safety Preventive Controls Alliance (FSPCA) curriculum, or both. Funds from the project will be used to support Extension educators attending PSA and FSPCA "train the trainer" courses to increase training capacity in the Northeast. This will allow growers and processors to be trained to meet regulatory requirements.

Additionally, through increased, facilitated collaboration and team-based educational delivery, the participant network will improve their own scientific inquiry surrounding basic and applied research in fundamentals of food safety and also in Extension educational practices.

Innovation

NECAFs will provide an opportunity to explore and implement several key innovations with relevance to food safety.

Multi-State, Integrated Collaboration - The current practice of food safety educational programming is highly segmented among states in the Northeast region. This results in duplication of effort, sub-optimal program quality and perception of inconsistency among stakeholders. Prior to submission of this proposal, we conducted a preliminary survey of project team members to assess issues of importance to them. The results obtained from 29 respondents revealed that there was a strong interest in increased collaboration within the region. Project team members seek “cohesion,” “closer collaboration,” “shared training design,” “networking,” “sharing of educational materials,” and “coordinated projects and proposals.” Thus there is a clear need and desire for improved interstate collaboration among food safety educators in the Northeast region. This proposal outlines a structure for a center that will consolidate food safety outreach and education efforts in a collaborative and consistent manner through strong network facilitation, peer review, consensus-driven curricula and resource sharing. We will follow models of non-national, multi-cultural collaboration first identified by Hofstede and consolidated with updates by the proposal PI (Hofstede 1980, Callahan, 2003). The project will use current theory on non-national cultural diversity among high-performing teams to maximize the benefit of the collaboration to a diverse group within the Northeast region. This will also be helpful in supporting integration of regional efforts with nationally coordinated efforts.

Consulting from Afar - Coordinating delivery of materials to stakeholders over a wide geographic area will require innovative approaches. The project will investigate a pilot program for developing an outreach/education component that utilizes streaming video conferencing such as FaceTime, Skype, GoToMeeting or other platforms for virtual delivery of specialists to the field in support of the local extension educators and consultants who assist members of our target audience. Recent work with processors has illustrated the need and desire for multiple educational delivery methods including internet-based courses (Pivarnik et al 2007). Others have documented the need to develop materials with focused information for dairy processors, regional workshops, newsletters, and webinars that can be accessed by processors as their schedule permits (Syrko et al 2015).

Quantified Food Safety Risk for Benchmarking and Improvement - Several project partners have expressed interest in developing improved models and methods for quantification of food safety risk. This would lead to improved evaluation and measurement of impact from the programming proposed. This project will explore the use of quantified food safety risk assessment at the enterprise level to evaluate changes in knowledge and skills as a result of educational intervention. We would seek external funding to support this.

Approach

Introduction

NECAFS will be a Northeast regional center that consolidates food safety outreach and education efforts in a collaborative and consistent manner with a long-term goal of providing a sustainable, comprehensive food safety training, education and technical assistance program that assists small and mid-sized food producers and processors with FSMA compliance. The short-term goal of this proposal is to build the regional NECAFS network infrastructure necessary to support a national food safety training, education, extension, outreach, and technical assistance system that increases the understanding and adoption of established food safety standards, guidance, and protocols for those affected by the Food Safety Modernization Act (FSMA).

This proposal is the result of early collaboration among 5 proposal leads, 25 collaborating university and Extension educators and 32 industry and government stakeholders reflecting the diversity of the region. The map in Figure 2 shows the geographic distribution of collaborators from the region. Figure 3 shows the current makeup of the group according to their affiliation.

To meet the goals of this project, we have identified five primary objectives:

1. Establish Foundational Structure
2. Build Capacity, Competency and Collaboration
3. Develop Curricula and Deliver Educational Programs
4. Evaluate and Assess Progress and Impact
5. Sustain Good Work

These project objectives are further explained in the following sections and are summarized in Logic Model Plan form in Figure 1.

Project Objective	Participants	Activity	Results	Outcomes	Impact
Establish Foundational Structure	Executive Team, Center Administrator, Steering Team, Advisory Committee, National Coordination Center	Early Stage Center Structure	Early network connectivity and leadership.	The region benefits from early project coordination and a collaborative network that facilitates sharing and co-development.	Food Safety Improvement
		Development and Implementation of the Center	Intentional and relevant operational structure.		
		Outreach, Recruitment and Training Plan	Clear plan to support diverse and inclusive network and educational cohort.		
		Center Strategic Plan Development	Clear long-term plan to support predictable operations.		
		Communication Plan	Frequent and consistent messaging and updates to the network and educational cohort.		
		Consolidated Clearinghouse of Project Resources	Central respository for project related information and outputs.		
Build Capacity, Competency and Collaboration	Center Administrator, Executive Team, Steering Team, Network	Network and Center Development	Strong, sustained infrastucture to support operations.	The competency of regional food safety educators is improved and lasting collaborative connections are forged.	
		Train the Trainers	Develop individual educator competency in disciplinary udpates.		
		Foster Diverse Community Partnership	Realistic and relevant regional representation in project.		
		Trainer Recruitment	Diverse and inclusive educational network.		
		Participant Recruitment	Diverse and inclusive educational cohort.		
		Promote National Integration	Partnership leading to consistent and informed common curricula with regional specificity.		
Develop Curricula and Delivery Educational Programs	Education Project Teams, Educational Cohort, Center Administrator, Steering Team, Special Topic Teams,	Educational Curricula Development	Consistent, relevant and informed common curricula with regional specificity.	Food safety curricula are developed and lead to expanded educational programs that support knowledge development in the educational	
		Educational Programming Activities	Improved knowledge of food safety principles and practices among producers and processors.		
Evaluate and Assess Progress and Impact	Executive Team, Steering Team, Advisory Committee, National Coordination Center	Measure Participant Impact	Demonstrated application of new knowledge among educational cohort.	New knowledge is applied by educators and practicioners in meaningful and measurable ways.	
		Measure Trainer Impact	Demonstrated improvement of educational competency among network.		
		Demonstrate Benefit to Science and Public Health	Demonstrated improvement in regional food safety.		
Sustain Good Work	Executive Team, External Funders, The Network	Funding Opportunity Identification	Relevant and likely funding sources are known.	The momentum gained during the 3 year project period is sustained with external funds resulting from	
		Securing External Funds	External funding complements FDA NECAFS funding.		

Figure 1 - NECAFS Logic Model Plan illustrating project progress as a result of objective driven activities and participation.

Figure 2 - The Northeast Region: CT, DE, DC, MA, MD, ME, NH, NJ, NY, PA, RI, VT, WV. Numbers on map represent early project team representation from each state.

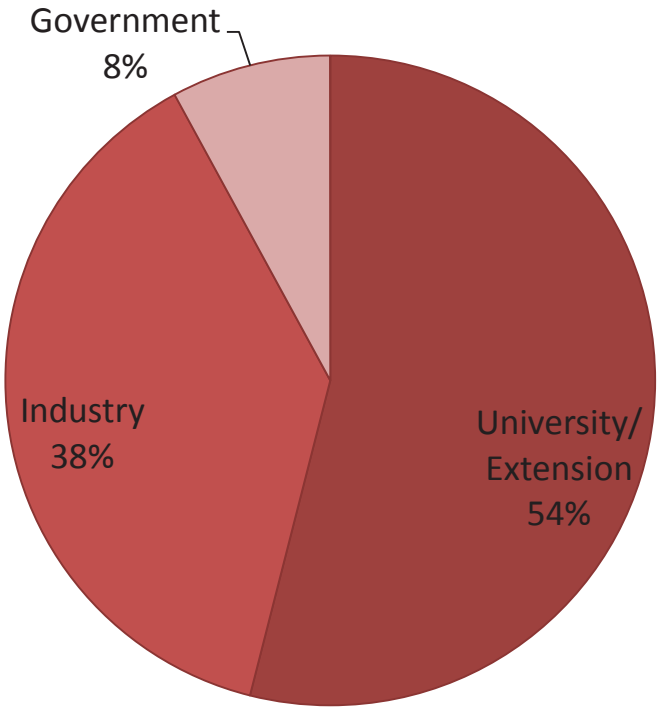

Figure 3 - Summary of project support affiliation.

Before looking too far “ahead”, it is sometimes helpful to look “around.” As the proposal team initiated the discussion and planning of this project we were keen to reach out to other regional centers to understand how they have functioned and what they feel were keys to their success and also to reach out to our regional partners to assess early stage needs.

Applying Lessons Learned by Other Regional Centers

Two other regional centers have been reviewed to gather lessons learned regarding their structure and operation to accelerate functional development of NECAFS. Specifically, leaders of both the Northeast Center for Integrated Pest Management (NE-IPM) and the USDA Northeast Sustainable Agriculture Research and Education (NE-SARE) organizations have been interviewed to assess their reflective perspectives on the function of their organizations.

In the case of both NE-IPM and NE-SARE, funding levels are higher than the anticipated award for proposed NECAFS ($1 million per year for NE-IPM and $5 million per year for NE-SARE). This level of funding supports an administrative and operational staff structure that is larger and more specialized than NECAFS will afford in the early years. Both NE-IPM and NE-SARE point to the importance of having strong staff who can provide day to day continuity and progress on activities in support of volunteer advisory boards, technical committees and steering teams. A key finding of the organizations is that volunteers should not be responsible for following up on action items. They should be allowed to participate in input and listening sessions and even review meetings with as little burden as possible. This encourages stakeholder involvement in critical processes such as sub-award proposal review. This supports our prioritization of recruiting and hiring a Center Administrator early in the process and seeking sustaining funds to support staff development. Another lesson learned is the importance of engagement through physical presence. This supports our prioritization of travel in support of collaboration within the network. Both representatives indicate that the greatest value of their time is to engage directly and in person with partners and stakeholders. Finally, a “grass roots” advisory board structure composed of farmers is credited by NE-SARE with maintaining that organization’s close ties to the region and improved knowledge of critical research and educational needs. This supports our prioritization of early and wide stakeholder engagement to help define and develop NECAFS into a meaningful and sustainable center and network.

In summary, the key lessons learned from these organizations that influence our proposed approach are

1. Hire dedicated administrative staff person to provide continuity and central responsibility for operations,
2. Encourage grass-roots stakeholder engagement by making it easy for them,
3. Use competitive sub-awards to encourage higher quality activities and outputs, and
4. Prioritize travel in support of in-person meetings and exchange.

This review of lessons learned by other regional centers was helpful to confirm assumptions among the proposal team, but also helped to emphasize some project aspects for early focus.

Preliminary Guiding Data from Regional Partners

An initial survey of the group participating in this proposal development revealed that there is strong interest in increased collaboration within the region. This very preliminary feedback has been used to help design the conceptual structure and methods used in the project. The diversity of interests and expertise among project members surveyed is illustrated by Figure 4 which summarizes the sectors of the food system served by the group.

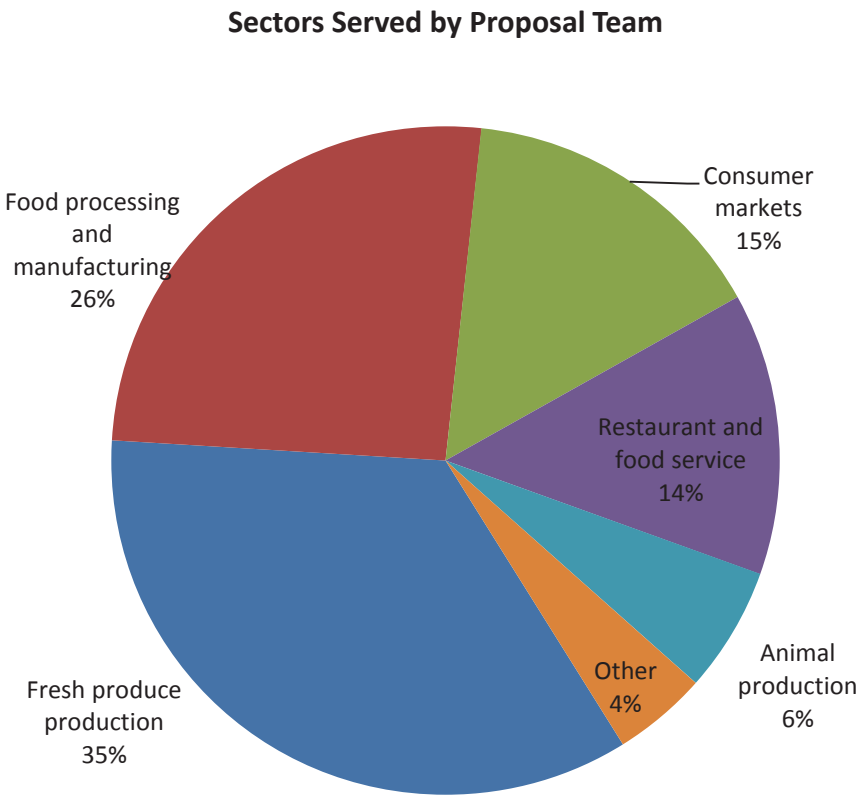

Figure 4 - Sectors served by project team. The members of the project team provide a wide range of services to a broad set of relevant audiences.

When asked to choose 5 preferred outcomes from a regional center the 29 project member respondents identified the following as key interests;

- Cohesive and streamlined approach to FSMA training (34%)
- Increased funding in support of program delivery (34%)
- Increased and closer collaboration within the region. Fewer obstacles to cross-border programming / support from regional directors. (31%)
- Opportunities to design shared, hands-on training activities (28%)
- Networking opportunities with others who do the same type of wok to gain ability to better target client referrals through-out the region. (21%)
- An efficient and easy to use system (e.g. website) for coordinate sharing of research-based resources, materials and knowledge. (21%)
- Coordinated project and proposal writing within the region. (21%)
- Opportunities for professional development of trainers. (21%)

Food safety encompasses a wide range of specific topics. Respondents were asked to assess what resources were lacking in the region that would be important in helping the target audiences with FSMA compliance. Each respondent was allotted 5 votes. The resources that respondents identified as lacking most significantly included;

- Guidance on washing and packing infrastructure (lines, tanks, water handling). Infrastructure guidance specific to renovated spaces (not purpose built, e.g. old barns). Expertise in sanitary design. (55%)
- Water quality management (irrigation, wash, discharge) (55%)
- Hands-on workshops about getting ready for FSMA and on-farm sanitation. (48%)
- One-on-one assistance / consultations. (38%)

- Capacity of expertise (staff and time) to deliver regularly scheduled safety programming (GAPS, HACCP, FSMA). (34%)
- Tracking (data logging, lot tracking, record keeping) (31%)
- Validation services for small processors, especially acidified foods process development. (34%)

This early review of network needs is helpful in outlining both the objectives above and the methods below that will be used to achieve project them. The resounding message from the group was that increased collaboration resulting in a common training approach with shared resources is desired. The specific topic feedback offers early insight into potential special projects that may be required to effectively tailor the national curriculum to the region's needs.

The next section describes the necessary early stage structural development and implementation of the center.

Objective 1 – Establish Foundational Structure

Development and Implementation of the Center

Early-Stage Center Structure

The project team recognizes the importance of early progress in the development of long-term impact within the proposed project. This necessitates a balance between definition of the center's structure in support of this proposal and an intentional, facilitated and consensus-driven development approach once funding is available to fully support the planning activity. We have proposed a structure and operational plan in this proposal that is the product of several large group teleconferences over the past six months and other smaller group meetings over the past two years. This proposed structure is centered around the early leadership of the co-directors and represents the emerging consensus at this time and lessons learned from other regional networks. We acknowledge that more in-depth review and discussion, especially following the publication of the final rules may inform revision of this plan. We also prioritize the early recruitment and hiring of a Center Administrator to ensure continuity and focused operational execution of the plan. Outreach and recruitment will lead to new project team members as we seek to fully build the requisite steering and advisory teams. We believe the structure is flexible enough to allow for this anticipated change while still delivering focused efforts to meet the needs of our stakeholders.

NECAFS will be structured as outlined in Figure 5. The proposal team will provide early leadership and serve as the initial Executive Team to initiate the development of the center and associated network. The components of the center's structure and our approach to project management are explained more fully in the Key Personnel and Management section.

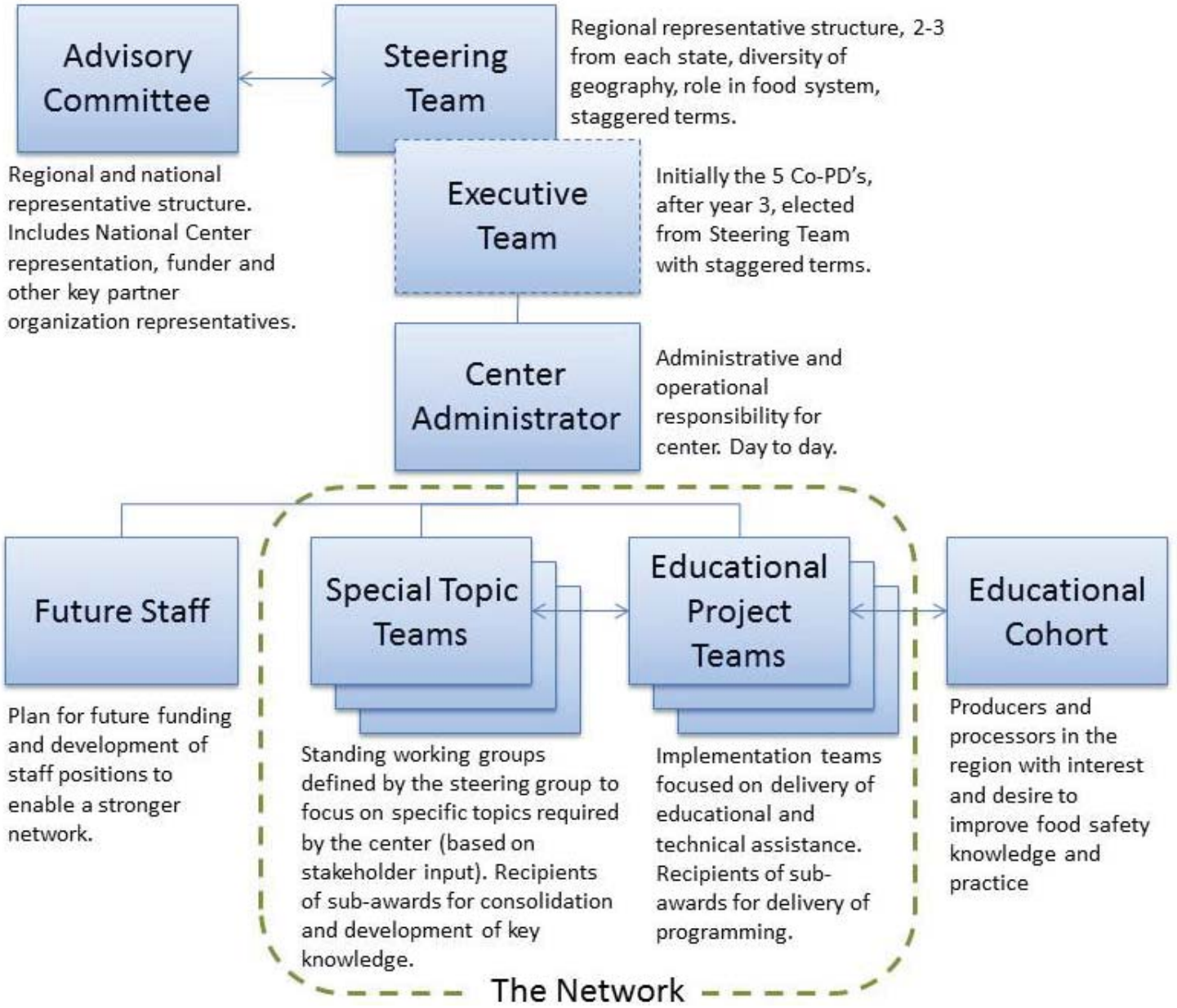

Figure 5 – NECAFS Organizational Structure

Outreach, Recruitment and Training Plan

The project team is well-positioned to engage and recruit additional project team members for educational programming. This group is composed largely of Extension personnel with a long organizational history of outreach and demonstrated educational efficacy (e.g. Figure 6 through Figure 9). Based on recent survey work of growers' perceptions of food safety training, Extension is seen as a preferred mechanism for educational delivery. Growers indicated that the lead in education "should be Cooperative Extension, the organization through which growers most prefer to learn about on-farm food safety." Growers indicated that they "rely on Cooperative Extension for information because they perceive it to be a credible and non-biased source." For example, one grower said: "I tend to put more weight on the info and recommendations from the Extension service because it is more tried and true and is research, rather than just being off the cuff by someone trying to sell you something" (Bagdonis 2015). Furthermore, we are poised to ensure the build-out of a functional structure for NECAFS that ensures near-term traction and demonstrated, stakeholder-relevant success as well as promoting a longterm view toward sustained operation following the project period of the current proposal.

As demonstrated in the attached letters of support, this team represents several existing networks with a track record of participant engagement and cooperation. NECAFS' role in recruitment will be as a hub for other existing networks; fostering collaboration and sharing of best practices, recent findings and collaboratively developed, peer-reviewed educational programming.

Training will continue to be provided locally within the region through existing and trusted local educational providers and programs that are already successful. NECAFS will, however, offer an improved management system for the collaborative development of educational materials, methods and evaluation tools in support of local providers. We plan to disburse 14% of the project funds for local delivery of regionally developed educational programming through a competitive grant-making process. This approach will support the development of science-based, consensus driven materials that are delivered locally and evaluated using consistent methods and metrics.

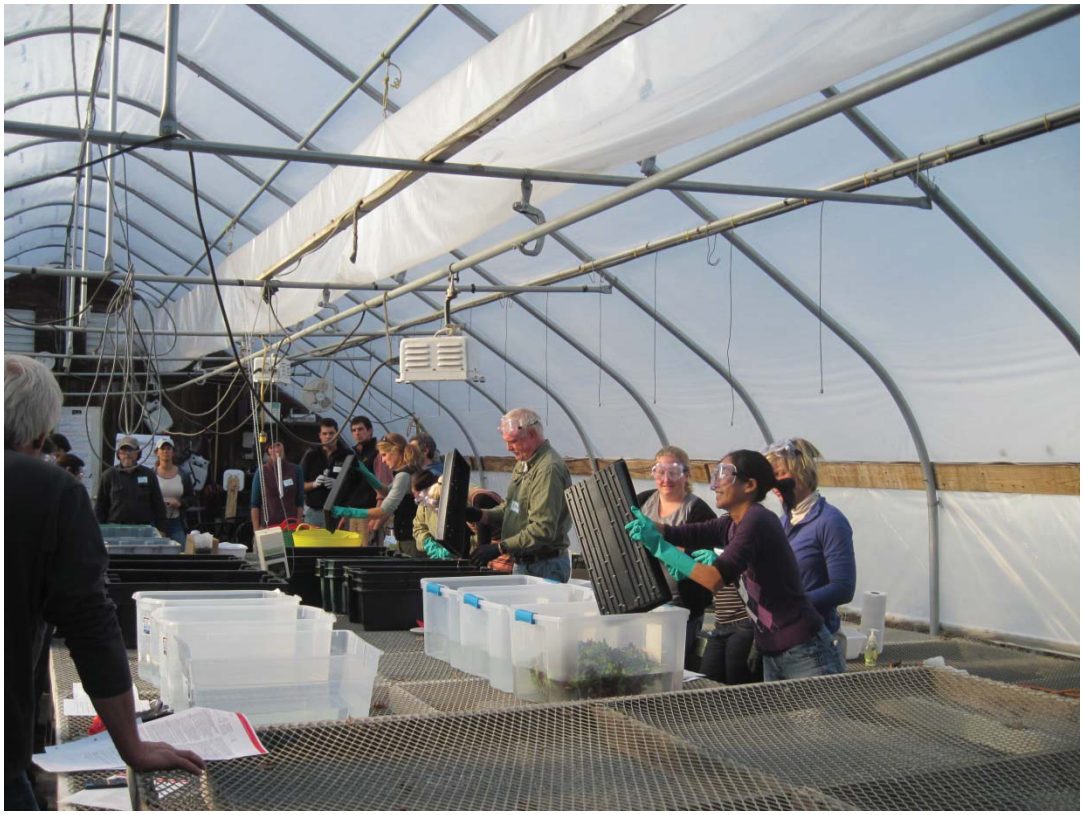

Figure 6 - A UVM Extension hands-on workshop, "Demystifying Sanitizers", focused on best practices for using sanitizers to treat produce wash water.

Figure 7 - A Mock Audit conducted by Cornell University with NY Department of Agriculture and Markets auditors to prepare growers for 3rd party audits.

Figure 8 - Produce Safety Alliance (PSA) Train-the-Trainer event held in Harrisburg, Pennsylvania. Forty-nine individuals from California (3), Florida (1), Illinois (1), Indiana (1), Kentucky (1), Louisiana (1), Maryland (5), Missouri (1), Nebraska (1), New Hampshire (2),

Figure 9 - UMass Extension processing workshop being delivered at a food hub in Massachusetts.

Center Strategic Plan Development

A critical early need for NECAFS is to more fully articulate a long-term strategy for fiscal sustenance and continued stakeholder relevance. The three-year funding this proposal seeks under the current FDA opportunity is viewed as a start toward building this center. However, our project team realizes the need for leverage of this funding to grow a lasting and relevant regional center. Funding is not the only potential limitation; we need to ensure we remain relevant to stakeholders, regional producers, processors and ourselves. The initiation of a focused and agile strategic planning process early (first 3 months) and with regular review opportunities over the performance period will ensure NECAFS remains regionally and nationally relevant while also remaining fiscally and operational sustained.

Communication Plan

Stakeholder and project team engagement will depend greatly on regular, meaningful communication of plans, activities, and progress associated with NECAFS. In the interest of cost control we will rely significantly on electronic communication and teleconferences for project execution. For public-facing communications we will establish a web-presence to include a resource clearinghouse, events calendar, multi-contributor blog, social media integration and a monthly eNewsletter. Development of the eNewsletter distribution list will be accomplished by establishing several categorized LISTERVE's and inviting subscription from allied and associated LISTSERVE's, project team email lists and eXtension Communities of Practice. In recognition of the fact that our region includes "plain communities" (e.g. Amish, Mennonite) print publication and mailing of the same newsletter content are planned. In accordance with existing Extension practice we will also plan for publication and or in-class translation of certain materials to languages other than English if that need arises (e.g. New American Farmer participants, individuals requiring accommodations). We will seek opportunities for mass media coverage of educational events (e.g. hands on workshops), major center achievements (e.g. securing a large external award) and examples of participant specific achievements (e.g. adoption of innovative practices).

Consolidated Clearinghouse of Project Resources

The project will leverage a WordPress-based website development and content management system (CMS). This system is currently free for use at the University of Vermont, is easy to use, allows multiple lead user/authors and will be rapidly deployable for both frequent communication needs and housing of shared resources. The project PI is familiar with the platform and is capable of training others in its use.

With the foundational structure established early in the project, objective-oriented activities will be enabled as described in the next section.

Objective 2 - Build Collaborative Capacity and Competency

The current practice of food safety educational programming is highly segmented among states in the Northeast region. This results in duplication of effort, sub-optimal program quality and perception of inconsistency among stakeholders. This proposal outlines a structure for a center that will consolidate food safety outreach and education efforts in a collaborative and consistent manner through strong network facilitation, peer review, consensus-driven curricula and resource sharing.

Network and Center Development

Establish a Northeast regional center that serves to connect educators, producers, processors and other stakeholders with an interest in and a need for improved food safety education. The development of NECAFS infrastructure is fundamental to the success of all other objectives. At the heart of our proposal is a central, collaborative structure and its development will be our priority in the first year. Successful programs within each state will be identified in order to build the network from a position of strength and prevent duplication of efforts

Train the Trainers

Support 39 network educators over 3 years in obtaining certification in one or more national training programs. We will facilitate development of trainers capable of delivering the Produce Safety Alliance (PSA) curriculum and/or the Food Safety Preventive Controls Alliance (FSPCA) curriculum. Funds from the project will be used to support Extension educators attending PSA and FSPCA train the trainer courses to increase training capacity in the Northeast. This objective is a critical near-term need and is prioritized in the first year.

Foster Diverse Community Partnership

Establish diverse membership among the Executive Team, Steering Team, Advisory Committees and Project Teams using metrics of geography, discipline and specialty. Partnerships have already been formed among several key participants (e.g. PSU and Cornell joint delivery of Produce Safety trainings and UVM, Cornell, UMass, URI and UConn collaborations in the Northeast Postharvest Research and Extension Service Hub (NE-PHRESH)). The regional center will extend invitations to others for participation on the steering team and in delivery of trainings. We propose involvement of not only university and Extension personnel but also state departments of agriculture and food, farm and grower trade associations, food hubs, local / institutional / regional food initiatives, etc. Our letters of support indicate support from a wider platform of stakeholders. Support for our wider network will help to ensure that we have a strong outreach community to reach all targeted stakeholders. We intend to advance recruitment using the following sub-objectives.

Trainer Recruitment

Engage at least 39 food safety educators and associated organizations in the Northeast region in the sustained and direct implementation of the planned center and its activities. The project intends to reach all public and private sector educators and consultants working in the area of food safety in some way. We anticipate a continuum of involvement among this group ranging from “listening” to “leading” and intend for our structure to accommodate this diversity. Progress toward this outcome will be measured using communication data, rosters of participation on committees, and meeting attendance. An important metric in this objective is diversity of participation, e.g. geographic, sector (production / processing), discipline and role)

Participant Recruitment

Reach at least 10,000 producers and 3,000 processors in the region with consistent and meaningful communication leading to participation in the center and its activities. This project intends to reach all producers and processors among the target audience in the region in some way. There will be varying levels of engagement and learning (see next objective), but this objective is intended to establish “reach” and contact to establish a wider participant network. A guiding principle in this objective is diversity of participants, e.g. small and medium as well as larger sized farms and processing enterprises, crop and product diversity, organic and sustainable producers as well as conventional producers. We believe the foundation of NECAFS being a network of Extension and associated partners will enable recruitment and effective program delivery to this widely diverse cross section of the region’s food system.

Promote National Integration

Establish strong and regular connections with both the National Coordination Center, other Regional Centers and federal stakeholders to ensure integration and coordination of effort. The regional center will communicate and coordinate with the national center and other national stakeholders, e.g. federal agencies. This will provide a conduit for communicating regionally specific needs and successes as well as findings from other regions and nationally which could have relevance to our region.

Objective 3 - Develop and Deliver Educational Programs

A key component of this project is the educational programming enabled by the development of the regional center. We have structured our approach with two components; curricula development and educational programming.

Educational Curricula

Facilitate the development and delivery of food safety educational programs that are informed by and aligned with the national curricula yet are tailored for regional and local audiences. We anticipate these materials will fall into two broad groups defined by the two main rules being finalized under FSMA; produce safety and preventative controls. The NECAFs project team will have balanced representation of specialists in both areas and this structure will inform the development of the first two Topic Teams.

Support creation of research-based knowledge in support of educational curricula. Focused, competitive sub-awards will support "Special Project Teams" in pursuit of specific research topics that support the regional development and delivery of the national curricula. Topics are expected to emerge from stakeholder interview, trainings and steering team meetings, and the network has already identified some early needs via survey responses.

Educational Programming Activities

Deliver 30 in-person educational workshops reaching 3,000 participants throughout the region in the 3 year period. Support for this activity will be provided through competitive grant-making and the delivery will use a shared curriculum tailored for local delivery but built upon common national core concepts.

Deliver 36 abbreviated, focused webinars (1 per month, over 3 years) reaching 2,000 participants with focused topics that are part of the core curriculum. These webinars are intended to provide an alternative delivery method and schedule for participants that otherwise cannot attend an in-person workshop. The webinars will also be recorded for reference at any future time, forming an archive of sustained learning.

Objective 4 - Evaluation and Assessment

The proposal team believes strongly that measurement of outcomes and eventual impact is critical to lasting influence of the work and the sustainability of the center. As such, we have integrated evaluation and assessment into our approach with a focus on measured impact. We plan for rigorous evaluation of programming delivered through the center to provide necessary feedback for further refinement and improved delivery as outlined below.

Measure Participant Impact

Advance food safety understanding among 7,000 producers and 2100 processors over 3 years. This will be achieved through tailored delivery of a shared, consensus-driven, scientific based curricula, educational programming and associated outreach materials to support improved fundamental understanding of food safety and FSMA compliance among the target audience.

Demonstrate measured improvement in food safety practices at 2,100 producers and 600 processors over 3 years. This will be achieved through the educational programming noted above, direct consult education as required and using direct participant interview and survey methods to document changes in systems and operational behavior.

Measure Trainer Impact

The educators on the project team will develop increased understanding and educational competency through the activities and infrastructure of the center. The project will support professional development (e.g. train the trainer), network collaboration (e.g. topic teams, multi-state project teams for educational delivery) and stakeholder informed research initiatives all in support of increased technical competency among the group.

Benefit to Science and Public Health

The project and center will lead to generation of knowledge in response to stakeholder and practitioner input as well as new research questions. Although the center's development will be primarily focused on supporting delivery of a national food safety training and technical assistance program, we believe it will lead to an enriched research discourse among the project team and that collaborative educational program development will highlight recurring themes and needs for research-based knowledge.

Objective 5 - Achieve Sustainability

The center will identify and secure sustained funding to enable operation beyond the three-year development period supported by the current proposal. This will likely take the form of industry support, research and extension grants and foundational gifts. The responsibility for this development effort will be shared, but will rest primarily on the center administrator to foster and support integrated and collaborative project proposals among the project team. We proposed starting this effort in the first year and supporting it with sustained effort to ensure follow-on support after the project period. Potential sources for this external funding include USDA SARE Professional Development or Research and Education Programs, USDA NIFA Specialty Crop Research Initiative, Specialty Crop Block Grants (individual and multi-state), USDA NIFA Rural Health and Safety Education and others.

Methods and Proposed Project Activities

Stakeholder Identification and Involvement Methods

The proposing team has already initiated stakeholder identification through the process of developing the proposal. We have demonstrated support from a wide range of regional stakeholders who value the project and proposed center for its ability to deliver critical food safety related programming evidenced in the attached letters of support. We will continue to expand this stakeholder network as part of our first year efforts, in particular. Regular review of network membership and active recruitment is planned to ensure NECAFS is listening to relevant stakeholders and hearing their concerns and needs. At the same time, we are sensitive to the demands on time of most stakeholders and plan to utilize minimally invasive methods for participation such as direct interview, brief and targeted surveys and co-scheduling of "listening sessions" with regular industry meetings. We view NECAFS as a "network of networks" and will rely on existing partnerships and associations to assist in stakeholder engagement efforts.

Since the project network is already actively engaged with regional stakeholders, the engagement component of NECAFS will be to coordinate among these existing activities. As noted in the Communications Plan, tailored communications will be critical to engagement of varied and specific stakeholders. Additionally, we plan to include stakeholders on the Advisory Board and will seek

diverse representation on that group to both adequately reflect the varied perspectives in the region, and provide a direct connection to the peer groups that are so important to adoption of change. We will specifically seek “thought leaders” to serve on the advisory board since they represent both early adoption opportunity and strong peers from which others will learn effectively.

An important part of the center will be for stakeholder and advisory team members to meet regularly in person. We propose to organize and host food safety conferences (annual meetings) during each of the 3 years of this project. In-person meetings will be important for providing a common understanding of the structure and functions of the center, providing updates on FSMA regulations, establishing priorities and project teams, and assuring that communication channels remain open. Representatives from the National training center, FDA, and USDA will be among those invited. In order to keep costs as low as possible, we will select a central location that is reasonably accessible to all participants and we will explore the feasibility of webcasting the event to the extent possible.

Evaluation Plan, Data Collection and Analysis

Project performance data will include network participation data (who is engaged), educational programming data (who is developing knowledge) and outcome/impact measurement data (what happened as a result) all in alignment with our objectives above. These data will be maintained centrally by the Center Administrator. The proposal team envisions the development in the first year of a common evaluation construct for all educational programming under the auspices of NECAFS to facilitate comparisons and temporal trend assessment. High level summary data documenting progress toward key objectives will be made publically available via the NECAFS website and will be updated quarterly.

The data will generally be anonymized with the exception of any specific case study and testimonial outputs when publication is allowed for by express consent of the enterprise. We believe peer to peer instruction, even via case study and testimony, is an important tool in support of operator education and adoption of change.

Sub-award Disbursement Plan

The distribution of sub-awards will be made through a competitive grant process with two primary request for proposal (RFP) areas

(1) educational programming and
(2) special projects in support of educational goals.

These sub-awards account for 14% of the overall project budget and the disbursement is expected to be roughly equal between the two RFP areas.

Educational Programming Grants

There is a clear need for sub-award disbursement in support of direct educational programming for the target audience. These internal awards will support workshops throughout the region that will leverage the national core curriculum developed in collaboration with the National Coordination Center.

Special Project Grants in Support of Educational Programming

The proposal team has also identified a likely need for special projects that support the tailored delivery of the national core curriculum. These projects may be focused on tailoring the curriculum to a very specific audience group (e.g. small farms, new farmers, diversified processors, refugee

farmers, plain communities, socially disadvantaged groups) or may be focused on short-term, focused research or extension activity aimed at developing regional clarity to new food safety rules.

In both RFP areas the review criteria will favor:

- clear regional specificity that indicates tailored, relevant and compelling content
- innovative delivery methods with strong evaluation connectivity and demonstrated impact
- multi-state and transdisciplinary collaboration within the regional center

RFP's will be communicated across the region to announce to sub-grant opportunities. Submissions will be evaluated by a sub-committee of the Steering Team. Submissions will be evaluated against the core criteria and established rubric to determine funding distribution.

Feasibility and Limitations

While the proposal team feels we have provided careful and thorough attention to matters critical to project success it is possible that some challenges may arise. We have made an attempt to itemize these potential limitations and identify mitigations for each.

Slow or Poor Network Development – It is possible that administrative recruitment is slower than planned or financial disbursement takes longer than expected. These two factors could slow the development and implementation of the early stage center and network. In the case of Center Administration recruitment is slow, the Project Director and Co-Directors will assume the responsibility of early development and facilitation. In the case of slow financial disbursement an advance award will be established through the University of Vermont to enable early progress.

Lack of Diversity and Reach in Target Audience – Reaching diverse and busy food system audiences is a known risk among the Extension personnel involved in preparing this proposal. We plan to address this risk with early, active engagement along many avenues and interacting with other, non-traditional networks to further expand our reach. Furthermore, we anticipate schedule challenges that may prevent active involvement by the target audience in formal workshops and plan to provide flexible, internet-based training options and direct consultation support as required.

Key Personnel and Project Management

Key Personnel and Roles

Executive Team

The Leadership of NECAFS will primarily with the Executive Team. The Executive team will be a 5 person subset of the Steering Team providing more frequent decision making as needed for administrative matters. Initially the Executive Team will be made up of the *Project Directors* (PD's). A goal of membership in the Executive Team is to provide geographic and disciplinary representation that ensure relevance to the region. More detail on each of the team members is provided in the attached BioSketches.

Christopher W. Callahan (The University of Vermont, Agricultural Engineering) – Project Director – Infrastructure Specialist. Chris will provide primary leadership on the project and will be ultimately responsible for project management and delivery. The award will be managed through the University of Vermont (UVM) and the Center Administrator will be an employee of UVM and report to Chris. Chris will facilitate early stage development and implementation work as well as initial network development and facilitation which is likely to occur in parallel with the search, recruitment and hiring of the Center Administrator. He brings a combination of business management, organizational behavior in multi-

cultural teams and food safety systems engineering capability to the team including industry experience. Chris will also likely provide educational delivery in areas of infrastructure and technology improvements related to food safety.

Co-Directors will all support the Project Director with a common scope of work;

- Initial steering of the center's structure, organization, policy and processes
- Recruitment and hiring of a center administrator
- Participation in steering team teleconferences
- Provide initial review and decision making related to competitive disbursement of sub-awards for programming specific activities throughout the region.
- Support of the growth of the center toward sustainability
    - development of dedicated steering and advisory groups for the center
    - support the development of follow-up funding structures (cost recovery) and proposals to sustaining grant opportunities as necessary
- Provide feedback and review on project reports to funder

Elizabeth A. Bihn (Cornell University) – Co-Director - Produce Safety Specialist. Elizabeth will provide supportive leadership and contribute to early collective planning processes. She brings fruit and vegetable microbial safety research and training expertise to the Executive team. Her background is in providing educational and technical support to fruit and vegetable grower, packers, farm workers, Extension educators, and regulatory personnel nationwide. Her main interest in this project is ensuring fruit and vegetable growers and processors have access to education and training opportunities by supporting Extension programs in the Northeast U.S.

Amanda J. Kinchla (The University of Massachusetts, Food Science) – Co-Director– Process Safety Specialist. Amanda will provide supportive leadership and contribute to early collective planning processes. She brings expertise in food safety and product development to the team. Her 15 years of industry experience has helped to build translatable application to her role in Extension at UMass. Through her leadership, Amanda has provided educational and technical support to small and medium sized farms, small to large processors and new food entrepreneurs. Since she works with a diverse community of stakeholders, her main interest in this project is to ensure that there is an appropriate infrastructure that provides adequate technical support for all contributors to the food system.

Luke F. LaBorde (Pennsylvania State University) – Co-Director- Produce and Process Safety Specialist. Luke will provide supportive leadership and contribute to early collective planning processes. He brings both produce and processing food safety expertise to the Executive team. His background is in providing educational and technical support to small and medium sized farms and food processors in Pennsylvania. The Food Safety Modernization Act presents new resource challenges for Extension educators as they seek out the many growers and processors affected by produce safety and preventive control regulations. His main interest in this project is therefore to partner with other states in an effort to more efficiently deliver much needed food safety training and technical support.

Christopher S. Walsh (University of Maryland) – Co-Director - Produce Safety Specialist. Chris will provide supportive leadership and contribute to early collective planning processes. He brings many years of work on produce safety and quality and GAPs education to the Executive team. Chris' background is in fruit and vegetable crops production and postproduction handling. He recognized the need to improve and implement food safety programs following a series of fresh fruit-associated outbreaks in the 1990s. He is particularly interested in providing training to small and mid-sized farmers, with a particular interest in those who market directly to consumers. His primary interests in

this project are participating in the development of the regional network of educators, and participating in the electronic outreach components of this proposal.

Center Administrator

The Center Administrator will provide operational continuity and contact for the center and its associated network. This will be a 1.0 FTE position specifically filled for this project through a search, recruitment and selection process. Filling this position is a priority in the first 6 months of Year 1.

The person will be an employee of UVM and will report to Chris Callahan. The position and project will benefit from organization support from UVM (e.g. financial and administrative, office space, telecommunications, etc.)

Key job requirements will include network facilitation, financial administration, management and organization of programming materials, operational delivery and performance to steering team strategic plan.

Responsibilities and Duties will include:

- Serves as the primary administrator for NECAFS under the direction of the Executive Team.
- Plans, organizes, administers and directs the activities of the center to ensure that objectives are attained, strategic and work plans created and fulfilled, and members' needs met.
- Provides administrative support to the Executive Team and other center teams as required.
- Maintains effective internal and external relationships and communications.
- Ensures that the Executive Team is kept fully informed of the operations and accomplishments of the center.
- Executes all assigned decisions of the Executive Team and other center teams.
- In conjunction with the Executive Team, directs and coordinates all approved programs, projects, and activities of the center.
- Ensures all activities of the center are documented and communicated to various audiences as appropriate.
- Works to positively position and promote the center and sponsors.
- Assists in fundraising efforts, including grant writing, as necessary.
- Helps build and maintain relationships with stakeholder groups and other organizations.
- Serves as a center spokesperson in meetings as appropriate.
- Oversees the creation, support, and functions of external stakeholder advisory committees.
- Is responsible for updating and maintaining the center website.
- Maintains membership lists and listserves.
- Is responsible for planning, communicating and administering all center meetings.
- Maintains official minutes of committee meetings and documents action items and status.

Steering Team

Initial strategic direction, sustained evaluation of regional relevance and assessment of performance will be provided by the Steering Team. This larger group will include 2 to 3 representatives from each state in the region with a total of 30 members. This group will provide strategic planning input and oversight of the center. It will include diverse representation (by state, role, scale, etc.) with a target of 1-2 university representatives and one additional industry or government representative from each state. Funding is reserved for one annual in-person meeting of this group, but regular teleconferences will be held to provide sustained communication.

Roles of the steering team include:

- Establish a final structure and plan to facilitate coordination.
- Identify overall food safety goals, objectives, and organizational priorities and synergies.
- Define issues and activities of the center through the development of an annual Work Plan and designate resource to address priority areas.
- Monitor overall progress and identify/address barriers to success.
- Develop a uniform training evaluation tool for reporting stakeholder satisfaction, gains in knowledge and skills, and intent to implement changes that minimize risks on farms or processing operations.
- Appoint members to Topic and Project Teams, providing guidance and direction to the teams.
- Advocate the center within their state and program areas.
- Identify stakeholders and develop a formal industry feedback process.

Advisory Committee

Consists of individuals representing various industry groups and agency representatives with expertise and interest in program content. The Executive Team in coordination with the Steering Team will invite individuals to serve, based on areas of expertise and relevance to NECAFS.

The Advisory Committee will:

- Provide industry-based insight on the needs of industry and activities of the center.
- Help to identify priority issues and desired outcomes.
- Monitor and evaluate outcomes of working groups for relevance and impact on stakeholder issues.
- Assist with identification of potential external funding opportunities for sustained operation of NECAFS.

The Network

The researchers and educators associated with NECAFS will make up “The Network”. In reality all participants in NECAFS work (Steering Team, Advisory Committee, Educational Cohort) also belong to the network, but direct execution of center work will rest primarily with the sub-groups that make up the Special Topic Teams and Educational Project Teams. The development of this proposal and the NECAFS structure presented in it is the result of early collaboration among this network. Over 30 collaborators, representing all states in the region, have offered input and support and are likely to participate on these sub-teams and seek competitive grant support vis sub-awards from this project.

Special Topic Teams:

These teams will include groups of collaborators focused around clearly distinct, important and sustained areas of inquiry. They will provide a basis of consensus-driven curricula development based on depth of knowledge in key areas. “Special topics” will emerge within the first year, but are likely to include: produce safety rule, preventative controls rule, infrastructure, pedagogy, and evaluation. Some of the specific topics collected with the pre-proposal survey tool could also develop into special topics.

Educational Project Teams:

Implement the coordinated curricular work of NECAFS and the National Coordination Center through internally competitive grant making processes in support of educational programming. They will develop tailored curricula based on core national curricula and deliver educational programs approved for funding.

Special Topic Teams and Educational Project Teams will report activities and evaluation data from each state/project in accordance with a common evaluation construct.

Project Timeline

The final Preventative Controls rule was released on August 30, 2015 and the final Produce Safety Rule will not be released until October 31, 2015. The compliance schedule for produce growers allows a phase-in period of 2 to 4 years for small and medium sized operations, with an additional 2 years for meeting agricultural water requirements. Very small-sized processing establishments with less than $1,000,000 in annual sales will have 3 years to comply. Small businesses with less than 500 employees will have 2 years. Therefore, our approach is to create a center structure that is flexible and responsive to regulatory requirements as they become available and are needed by our external stakeholders. For these reasons, instead of including subcontracts within the proposal for projects conducted by individual universities, we propose in Year 1 to hire an administrative project director to manage the center (proposed duties and responsibilities are provided below), create a steering committee to oversee NECAFS, and develop an advisory committee to provide guidance to the steering committee. Our first task will be to complete an inventory of individuals who offer educational programs, provide technical assistance, and/or who have expertise and interest in pre-harvest, post-harvest, and processing food safety in the Northeast. This process has already begun during the proposal development period.

The project will be implemented over a three year performance period. Key milestones and activities are noted below with more a detailed activity timeline provided in the Gantt Chart in Figure 6.

Key Project Milestones

On-Going, from start

- National Coordination center Engaged and Core Curricula Developed

Year 1

Quarter 1

- Communications Infrastructure Established
- Center Administrator Hired
- Steering Team and Advisory Committee Filled
- Full Stakeholder Inventory Complete
- Full Audience / Cohort Inventory Complete

Quarter 2

- Project Kick Off (1st Annual Meeting)
- Strategic Plan Drafted
- Detailed Operational Plan Drafted
- Trainer the Trainers Round 1 Complete

Quarter 3

- Sub-awards Round 1 Disbursed

Quarter 4

- Trainer the Trainers Round 2 Complete
- Educational Programs Round 1 Delivered
- Education and Trainer Evaluation Round 1 Complete
- Annual Report to Funders 1 Complete
- First External Funding Support of Educational Programs Secured
- First External Funding Support of Research Secured

Year 2

Quarter 1

- Full Stakeholder Inventory Revision 1 Complete

- Full Audience / Cohort Inventory Revision 1 Complete
- Center Evaluation – Progress and Relevance Round 1 Complete
- Operating Plan Review / Revision Complete

Quarter 2

- Sub-awards Round 2 Disbursed
- 2nd Annual Meeting
- Holistic Project Educational Evaluation and Assessment Complete

Quarter 3

- Educational Programs Round 2 Delivered

Quarter 4

- Educational Programs Round 2 Delivered
- Trainer the Trainers Round 3 Complete
- Education and Trainer Evaluation Round 2 Complete
- Annual Report to Funders 2 Complete
- Second External Funding Support of Educational Programs Secured
- Second External Funding Support of Research Secured
- Sub-awards Round 3 Disbursed

Year 3

Quarter 1

- Full Stakeholder Inventory Revision 2 Complete
- Full Audience / Cohort Inventory Revision 2 Complete
- Center Evaluation – Progress and Relevance Round 2 Complete
- Operating Plan Review / Revision Complete

Quarter 2

- Educational Programs Round 3 Delivered
- Holistic Project Educational Evaluation and Assessment Complete

Quarter 3

- Educational Programs Round 3 Delivered

Quarter 4

- Education and Trainer Evaluation Round 3 Complete
- 3rd Annual Meeting
- Annual Report to Funders 3 Complete
- Third External Funding Support of Educational Programs Secured
- Third External Funding Support of Research Secured
- Holistic Project Educational Evaluation and Assessment Complete

Activity Category / Item	Year 1				Year 2				Year 3			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Capacity and Competency Development												
Establish Communications Infrastructure	X											
National Coordination Center Engagement	X	X	X	X	X	X	X	X	X	X	X	X
Full Stakeholder Inventory	X				X				X			
Full Target Audience / Cohort Inventory	X				X				X			
Steering and Advisory Team Recruitment	X				X				X			
Recruit and Hire Center Administrator	X	X										
Project Kickoff Meeting / First Annual Meeting		X										
Draft Strategic Plan	X	X										
Detailed Operational Plan	X	X										
Train Trainers (Round 1)		X										
Train Trainers (Round 2)				X								
Train Trainers (Round 3)								X				
Second Annual Meeting						X						
Third Annual Meeting											X	
Development and Delivery of Educational Programming												
National Curricular Engagement	X	X	X	X	X	X	X	X	X	X	X	X
Sub-Award Education Call #1		X										
Sub-Awards Education #1			X									
Education Program Delivery Round 1				X								
Sub-Award Education Call #2					X							
Sub-Awards Education #2						X						
Education Program Delivery Round 2							X	X				
Sub-Award Education Call #3								X				
Sub-Awards Education #3									X			
Education Program Delivery Round 3										X	X	
Evaluation & Assessment												
Center Evaluation and Assessment –Progress and Relevance 1					X							
Center Evaluation and Assessment –Progress and Relevance 2									X			
Education & Trainer Evaluation 1				X								
Education & Trainer Evaluation 2							X	X				
Education & Trainer Evaluation 3											X	X
Review & Revise Operational Plan					X				X			
Annual Reporting to Funders				X				X				X
Holistic Project Educational Evaluation and Assessment of Impact						X				X		X
Sustaining Activities												
Identify Potential Sources of Sustained Funding for Regional Educational Programming		X		X		X		X		X		X
Secure External Funding in Support of Educational Programming				X				X				X
Identify Collaborative Projects to Address Three (3) Key Research Questions	X		X		X		X		X		X	
Secure External Funding in Support of Center Originated Research Projects				X				X				X
Draft Sustained Funding Strategy					X							

Figure 10 – Gantt Chart - Project Timeline and Activity Summary

Summary Budget

The Northeast Center to Advance Food Safety (NECAFS)

1/1/2016-12/31/2018

	Year 1	Year 2	Year 3	Total	
Administration					
Center Adminstrator	$ 92,950	$ 95,739	$ 98,749	$ 287,437	
PI's Effort	$ 25,354	$ 26,085	$ 26,789	$ 78,228	
Business Support	$ 3,072	$ 3,164	$ 3,264	$ 9,500	
	$ 121,376	**$ 124,988**	**$ 128,801**	**$ 375,166**	39%
Program Delivery					
Train the Trainer	$ 49,000	$ 45,500	$ 42,000	$ 136,500	
Competitive Grants	$ 43,500	$ 46,800	$ 45,300	$ 135,600	
	$ 92,500	**$ 92,300**	**$ 87,300**	**$ 272,100**	29%
Network Facilitation	**$ 11,900**	**$ 7,400**	**$ 7,400**	**$ 26,700**	3%
Travel	**$ 47,204**	**$ 48,284**	**$ 49,397**	**$ 144,885**	15%
Total Direct	**$ 272,980**	**$ 272,972**	**$ 272,898**	**$ 818,851**	86%
Indirect	$ 43,677	$ 43,676	$ 43,664	$ 131,016	14%
Total Request	**$ 316,657**	**$ 316,648**	**$ 316,562**	**$ 949,867**	100%

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Letters of Support

Attached are letters from colleagues, industry stakeholders and government agencies expressing support for our proposal and intent to collaborate in our project. The number of letters and their source demonstrates diverse and wide regional support for the proposal. In summary, the letters of support represent 64 individuals / organizations from 13 states and the District of Columbia. Universities / institutions make up 54%, Industry 38% and Government 8%. The key markets segments represented include farms (58%) and processors (44%.) A summary list of letters follows.

Name	Affiliation	State	Role			Stakeholder Segment Served	
			Research & Extension	Industry	Gov't	Processors	Farms
Candace Bartholomew	UCONN: Extension, Pesticide	CT	X				X
Dennis D'Amico	UCONN: Extension, Dairy	CT	X			X	
Diane Hirsch	UCONN: Extension, Farm and Processing	CT	X			X	X
Kumar Venkitanarayanan	UCONN: Research	CT	X				
Nancy Bull	NEED/NERA Extension Directors	CT	X				
Frank Greene	Dept Consumer Protection: Div. Food & Standards	CT			X	X	
Steve Revicsky	Dept of Agriculture	CT			X	X	X
Sharon Feuer Gruber	The Food Works Group	DC		X		X	
Gordon Johnson	UDEL: Extension, Fruit & Vegetable	DE	X				X
Kalmia Kniel-Tolbert	UDEL: Research and Extension	DE	X			X	X
Sue Snider	UDEL: Extension	DE	X			X	X
Amanda Kinchla (Co-I)	UMass Amherst: Extension, Processing and Farming	MA	X			X	X
Lisa McKeag	UMass Amherst: Vegetable Extension, Farming	MA	X				X
Rich Bonanno	UMass Amherst: Vegetable Extension, Farming	MA	X				X
Brad Stevens	Food Hub: Commonwealth Kitchen (Processor)	MA		X		X	
Caroline Pam	Farm: The Kitchen Garden (Grower and Processor)	MA		X		X	X
Nico Lustig	Food Hub: Western MA Food Processing Center	MA		X		X	
Ryan Voiland	Farm: Red Fire Farm (Organic grower)	MA		X			X
John Lebeaux	Dept of Ag: Commissioner	MA			X	X	X
Christopher Walsh (Co-I)	University of Maryland: Extension, Farm	MD	X				X
David Martin	Department of Ag: Program Manager	MD	X				X
David Martin	University of Maryland: Extension, Farm	MD	X				X
Justine Beaulieu	Univeristy of Maryland: Extension, Farm	MD	X				X
Guy Moore	Farmer: MD Fruit & Vegetable Association	MD		X			X
Susan Butler	Farmer: Butler Orchards	MD		X			X
Deanna Baldwin	Dept of Ag: Program Manager	MD			X		X
Beth Caldor	UMaine: Extension, Processsing	ME	X			X	
Jason Bolton	UMaine: Extension, Processsing	ME	X			X	
Mark Hutton	UMaine: Extension, Farm	ME	X				X
Gerald Wojtala	IFPTI, National Coordination Center, Executive Director	MI		X		X	X
Catherine Violette	UNH: Extension, Farm and Processing	NH	X			X	X
Pooh Sprague	Farm: Edgewater Farm	NH		X			
Don Schaffner	Rutgers: Extension, Processing	NJ	X			X	
Meredith Melendez	Rutgers: Extension Farm	NJ	X				X
Wes Kline	Rutgers: Extension GAP	NJ	X				X
Douglas Fisher	Dept of Ag: Secretary	NJ			X	X	X
Olga Padilla-Zakour	Cornell: Processing	NY	X	X		X	
Betsy Bhin (Co-I)	Cornell: Farm and Processing	NY	X				X
Gretchen Wall	Produce Safety Alliance: Extension Associate	NY	X				X
Robert Hadad	Cornell: Farm	NY	X				X
Anne Ruflin	Farm: Northeast Organic Farming Association of NY	NY		X			X
James Allen	Farm: Apple Association	NY		X		X	X
Kelly Young	Farm Bureau: Deputy Director of Public Policy	NY		X			
Amy Ivy	Cornell: Veg. Specialist, Farm	NY					X
Karry Kaylegian	PennState: Extension, Processing, Dairy	PA	X			X	
Luke LaBorde (Co-I)	PennState: Extension, Farm and Processing	PA	X			X	X
Martin Bucknavage	PennState: Extension, Processing	PA	X			X	
Anne Karlen	Farm: Marketing Program	PA		X		X	X
Bennie Yoder	Farm: Secretary of Food Safety Education Team	PA		X			X
Jeffery Taylor	Farm: Organic Growers Co-Op	PA		X			X
Kim Tait	Processor: Small Processor	PA		X		X	
Margaret Fogarty	Food Hub: Keystone Development Center	PA		X		X	X
Russel Redding	Dept of Ag: Secretary	PA			X	X	X
Lori Pivarnik	URI: Extension, Processing and Farm	RI	X			X	X
Nicole Richard	URI: Extension, Processing and Farm	RI	X			X	X
Betsy Santarliasci	Food Hub: Hope & Main, Exec. Director (Processing)	RI		X		X	
Jesse Rye	Farm: Marketing Program Execitive Director	RI		X			X
Chris Callahan (PI)	UVM: Extension, Farm and Processing	VT	X			X	X
Ginger Nickerson	UVM: Extension, Farm	VT	X				X
Christa Alexander	Farm: President of the VT Vegetable and Berry Growers	VT		X			X
Chuck Ross	Dept of Ag: Secretary	VT		X			
Robin Morris	Food Hub: Mad River Food Hub	VT		X		X	
Roger Noonan	New England, Farmers Union, President	VT		X			X
Sara Waring	Food Hub: Center for an Ag Economy	VT		X		X	
Litha Sivanandan	West Virginia University: Extension, Farm and Processing	WV	X			X	X