Introduction

The Northeast Center for Food Entrepreneurship (NECFE) is a collaborative effort between Cornell Univ. and the Univ. of Vermont, which expanded the activities of the New York State Food Venture Center at Cornell Univ., the Center for Food Science at the Univ. of Vermont, and the Vermont Food Venture Center. NECFE is funded by the Fund for Rural America/Cooperative State Reserach, Education, and Extension Service (CSREES)/U.S. Department of Agriculture (USDA) and the collaborating Universities. NECFE provides technical assistance and educational services to beginning and established businesses in the food industry to support and sustain businesses, primarily in rural areas, and to promote sustainable economic development of rural communities in the United States.

Importance of entrepreneurship in rural America

Many researchers recognize that entrepreneurship is an important economic development strategy in rural America (Seymour 2001; Reagan 2002; Dabson and others 2003; Macke 2003). Many rural communities are faced with the challenges of low population size and density, geographic isolation, and a loss of youth as they leave rural areas to pursue education or other career interests and do not return. These communities are typically characterized by a poorly educated and low-skilled workforce, weak entrepreneurial culture, and racial inequality. Furthermore, public policy at the federal and state levels tends to focus on large-scale agri-business interests, leaving little organized constituency to assist and advocate for rural entrepreneurs (Seymour 2001; Dabson and others 2003). Macke (2003) states that most rural communities have limited economic development programs and policies and few focus on business retention, expansion, and the establishment of new business through entrepreneur education. Macke notes that assisting local entrepreneurs is crucial as they leverage local resources, improve availability and quality of local products, and build local networks. Reagan (2002) furthers this notion by stating that rural entrepreneurs create jobs, raise incomes and generate wealth, improve the quality of life and well being of community citizens, and assist their communities to participate in the economy.

Current strategies and programs to assist food entrepreneurs in the United States

Dabson and others (2002) conducted a study to map entrepreneurial activity and to gather information on institutions, programs, and activities that support this area in rural America. The study concluded that 4 factors are necessary to enliven the entrepreneurial spirit in rural America: activities driven by community-identified needs; regionally oriented to provide sufficient scale, resources, and expertise; entrepreneur-focused; and continuously learning through evaluation to make changes based on lessons learned. This NECFE project model, developed at the end of a 5-y grant based on the original center concept, embodies these 4 principles. Furthermore,
Dabson and others identified 2 essential elements to promote an entrepreneurial climate for success. These elements include having “anchor institutions,” such as universities and other groups through partnership, and an atmosphere in which all entrepreneurs are welcome to receive services, regardless of client characteristics or motivation for their business. The final NECFE project model, created after project evaluation, also includes these 2 critical elements.

Extension specialists throughout the United States help food industry entrepreneurs to develop their business and marketing and sales plans, and assist with legal and regulatory compliances (Holcomb and Muske 2000). In addition, there are collaborative programs similar to NECFE in several areas of the United States that provide a “1-stop” service for food businesses. The Food Processing Center at the Univ. of Nebraska-Lincoln provides a 2-phase program in which clients participate in a 1-day introductory course, followed by fee-based individual technical assistance services to assist entrepreneurs in launching their businesses (Burney 2001). The Food Innovation Research and Extension Center at Rutgers offers business, market, and product process development, as well as food safety and regulatory compliance assistance through specialists and Univ. partners (Brennan 2003). The Food Innovation Center at Oregon State Univ. offers 1-stop access to business and technical assistance for food producers, processors, marketers, and entrepreneurs. It operates through a partnership between Oregon State Univ. and the Oregon Dept. of Agriculture (FIC 2004).

Northeast Center for Food Entrepreneurship Services

NECFE provides technical assistance and education to entrepreneurs in the food industry to support and sustain rural businesses and promote sustainable economic development in these rural communities. Some clients who seek NECFE services are already established in the food industry and are looking to improve and refine their product through continuing education. Other clients are in the start-up phase and need technical assistance and education to determine product feasibility and to comply with federal and state regulations for commercial production and retail sale. NECFE primarily serves the Northeast region, with the majority of clients originating from New York, Vermont, Massachusetts, and Connecticut. Other states primarily served include Maine, New Hampshire, Rhode Island, and Pennsylvania. However, services have also been provided to those throughout the United States and abroad. Workshops have also been conducted in English and Spanish. Services are focused primarily on agriculturally based businesses in rural communities, although food businesses in suburban and urban areas are supported as well. NECFE provides educational materials, workshops, direct assistance, and referrals to appropriate organizations in the following areas:

- Business development and entrepreneurship training
- Strategies and tools for marketing
- Product process development
- Product safety evaluation
- Guidance in local, state, and federal regulatory compliance
- Linkages to business assistance and potential financing sources
- Referrals to local suppliers and service providers
(Cranwell and others 2004; Padilla-Zakour 2004)

General consultation is provided free of charge, but there is a fee charged for specialized services (currently $50 per hour) and for attendance to workshops, seminars, and courses, to recover part of the operating expenses.

In the 1st 5 y of operation, NECFE responded to 4231 inquiries for assistance on marketing food products and worked with 600 entrepreneurs on safety evaluations of 2200 specialty products and processes for commercial production. The NECFE laboratory analyzed 2363 samples of food prototypes to address their safety and technical feasibility. NECFE staff also provided assistance to 542 entrepreneurs on business planning advice, marketing, resource referrals, and business strategies. The center conducted 76 workshops and conferences in the northeast covering topics relevant to specialty foods’ production with 2367 attendees.

NECFE model at inception

The goal of NECFE was to set up a “1-stop-shopping” program in which the entrepreneur would be able to obtain prompt assistance from experts in the field, with the ultimate goal of developing a center model that would better fulfill the needs of food entrepreneurs using an effective management system. Based on Cornell’s and Vermont’s previous experiences and expertise regarding the production and marketing of food products by entrepreneurs, a comprehensive approach was developed to effectively support entrepreneurial efforts (Table 1). In addition, key positions were identified to fulfill the Center’s mission: Center Director, Associate Director, Process Authority, Market Specialist, Technical Support, and Administrative Support. The coordination of efforts was based on the use of shared databases to track client information and assistance needed and provided. The information on the databases was used to produce reports and to facilitate the follow-up evaluation of clients’ progress and effectiveness of the assistance provided by NECFE. A 13-member Advisory Council was established representing peers, communities of interest, private organizations, food industry, federal agencies with vested interest, state entities from across the region, client communities, and other stakeholders.

NECFE Evaluation and Model Improvement Methodology

The Center for Rural Studies (CRS) at the Univ. of Vermont (UVM) evaluated the NECFE grant with a focus on project process and outcomes. The evaluation was designed to determine the accomplishments of the NECFE project as well as how to improve the Center model based on lessons learned through the course of the grant so that other institutions and agencies may offer similar Center-based services. Process evaluation activities included annual staff focus groups and Advisory Council meetings, and client interviews. Outcome evaluation was collected through client follow-up surveys, workshop evaluation surveys, and in-depth case study interviews. Evaluation instruments were developed based on previous work conducted by the authors in the area of entrepreneurship development and standard evaluation methodology (Rossi and others 1999; Posavac and Carey 2002; Cranwell and Kolodinsky 2003, 2004). Univariate and bivariate analyses of quantitative data were performed with the Statistical Package for the Social Sciences (SPSS) 12.0.1 (Cohen and Lea 2004). Qualitative data were analyzed by searching for common themes with Microsoft Excel (Caudle 2004). Through continuous mid-course corrections based on staff, client, and Advisory Council feedback, the NECFE model presented in the study was developed based on the model at inception.

Staff and advisory council meetings

Process evaluation was collected through staff focus groups and Advisory Council meetings that were held annually (Goldenkoff 2000; Krueger and Carey 2000). Questions asked at the staff focus groups centered on project management, marketing, recruitment and enrollment strategies, client assessment, training, technical assistance and support, important aspects of the NECFE center model, and collaboration with project partners. This information was collected to document how the NECFE project was carried out, provide a forum for staff to share stories and lessons learned, and determine ways to improve services. At annual Advisory Council meetings, evaluation data collected from that year were presented, and the Council was asked to provide feedback and their perspective on important aspects of the NECFE model.
lessons learned, and ways to improve the model.

Client surveys

Two client follow-up surveys were conducted during the grant to complete a cross-sectional analysis of clients at 2 distinct points in time (Frankfort-Nachmias and Nachmias 2000). The 1st survey was conducted between November 2002 and June 2003. A total of 1285 people were called (all clients who received services from 2000 to 2002), and 299 surveys were completed for a response rate of 23%. The results based on a group of this size have a margin of error of ±5% with a confidence interval of 95%. The 2nd survey was conducted from March to September 2004. A total of 2352 people were called (clients who received services from 2002 to 2004 and those not able to be reached during the 2002 survey), and 241 surveys were completed for a response rate of 10%. The results based on a group of this size have a margin of error of ±6% with a confidence interval of 95%. The 299 clients interviewed at the 1st survey were also followed up during the 2nd survey to determine whether they were still using NECFE services and changes in their business. A total of 57 clients were able to be reached for a response rate of 19%

The surveys were administered at CRS, UVM using Computer-Aided Telephone Interviewing (CATI) software. Trained interviewers conducted the survey during daytime and evening hours, and up to 10 attempts were made on each telephone number. The survey comprised 8 sections: (1) services received and satisfaction, (2) business characteristics, development, and growth, (3) products and sales, (4) business assets and income, (5) job creation, (6) skills gained, (7) community impact, and (8) client demographics. Examples of questions asked are presented in Table 2. The survey instrument was developed by CRS in collaboration with NECFE staff based on models of previous surveys conducted by CRS in the area of entrepreneurship (Cranwell and Kolodinsky

<table>
<thead>
<tr>
<th>Functional component</th>
<th>Research and Development</th>
<th>Outreach and education (Publications, workshops, seminars, distance learning, web site)</th>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business and product process development assistance</td>
<td>Product concept validation Marketing analysis and pricing Marketing research</td>
<td>Entrepreneurship Business development, management, analysis finance, marketing Legal issues and requirements</td>
<td>Referral services: business assistance Break-even Design concepts Prototype specifications Sensory evaluation Test marketing design</td>
</tr>
<tr>
<td>Product safety</td>
<td>Food safety science and technology</td>
<td>Safe food processing workshops HACCP training Food safety regulations Hands-on training Good manufacturing practices Sanitation standard operating procedures Better process control schools</td>
<td>Safety design alternatives Process authority Microbial, chemical physical analysis/ referral</td>
</tr>
<tr>
<td>Process/product technology transfer</td>
<td>Production scale-up Product evaluation</td>
<td>Technology updates Hands-on training Better process control school Basic food processing training</td>
<td>Test production facilities Licensing and patenting Counseling assistance Certification and training</td>
</tr>
<tr>
<td>Product commercialization</td>
<td>Market strategy (local, regional, int'l.) Distribution</td>
<td>Regulations Labeling Marketing and trade policy Advertising</td>
<td>Shell-life analysis Referral service: Co-packers Labeling Nutritional analysis Suppliers Distributors</td>
</tr>
</tbody>
</table>

Table 1—Original matrix of expected business and technical assistance to be offered by the Northeast Center for Food Entrepreneurship

Table 2—Examples of questions from the Northeast Center for Food Entrepreneurship (NECFE) client follow-up surveys

Have you received direct assistance from NECFE staff, such as technical and business support or lab analysis, to address a specific problem related to your food business in the past year?
On a scale of 1 to 5 with 1 being very satisfied and 5 being very dissatisfied, how satisfied are you with the direct assistance you received?
What type of products do you produce? How many of these types products did NECFE assist you in developing?
Because you started working with NECFE, did or have you improved your product safety? On a scale from 0 to 10, where 0 means not at all helpful and 10 means extremely helpful, to what degree has NECFE helped you to improve your product safety?
Approximately what was the total annual sales of the business in 2003 or the last year it was open?
What, if any, new and improved skills and/or knowledge have you gained because of NECFE services you have received?
Because you started working with NECFE, did or have you gained greater access to information about food processing?
On a scale from 0 to 10, where 0 means not at all helpful and 10 means extremely helpful, to what degree did NECFE help you to have greater access to information about food processing?
What NECFE services were most helpful to you and your business?
Do you have any suggestions on ways NECFE may improve their services?
Are there other services that you would like NECFE to offer?
Workshop evaluation
A standardized workshop evaluation form was developed by CRS, with assistance of project staff. This evaluation form was presented at the completion of NECFE workshops. Completion of the evaluation form was highly encouraged; however, it was optional for participants. Six sections of the workshop evaluation included (1) why clients took the workshop and business characteristics, (2) satisfaction and usefulness of workshop and presenters, (3) areas most helpful in workshop topics and skills and knowledge gained, (4) plans for using workshop skills gained, (5) ways to improve workshop, and (6) client demographics. A total of 489 workshop evaluation forms were completed.

In-depth client interviews
In-depth interviews were conducted with 9 NECFE clients to gather qualitative information on how NECFE services assisted their businesses. Clients were selected based on their on-going or significant relationship they had with NECFE to start or improve their business or products. Clients were initially contacted by the primary NECFE staff with whom they worked to invite them to participate in the interview. Trained interviewers completed up to 10 attempts on each number, calling at a variety of times throughout the day. Clients represented the major states served by NECFE: 2 were from Vermont, 2 from New York, 2 from Massachusetts, 2 from Connecticut, and 1 from Maine.

Outcome Evaluation Results
The CRS at the Univ. of Vermont conducted the NECFE evaluation, with both process and outcome components. Outcome evaluation results were consistent throughout all data collected over the course of the 5-y grant. Thus, the results demonstrate that NECFE exemplifies a successful model food entrepreneurship assistance and education center. Major outcomes of the NECFE model are discussed subsequently.

Business growth
Figure 1 shows that 48% (223) of NECFE clients surveyed reported business growth because they started working with NECFE; 28% (131) experienced small growth, such as from planning to start-up or a stable business that is now in the process of expansion; 13% (59) experienced medium growth in their business, such as from start-up to a stable business; and 7% (33) experienced large growth in their business, such as from start-up to expanded.

Business retention and job creation
One third (96) of NECFE clients surveyed started their business while working with NECFE, and 2/3 (198) came to NECFE with an established business; 96% (198) of businesses surveyed that were in business at the time of their intake with NECFE (n = 207) remained in business at the time of the survey. Regarding farm-based businesses, 97% (86) of those open at intake (n = 89) were retained, and 100% (96) of businesses that started while working with NECFE were retained.

More than half of NECFE clients surveyed (54%, 160) created employment in addition to their own job. A total of 809 part-time jobs were created by NECFE clients paying an average of $8.15 per hour for an average of 16 h per week. Nineteen percent of the part time jobs (157) were created by businesses started while working with NECFE. A total of 1061 full-time jobs were created by NECFE clients paying $12.80 per hour for an average of 43 h per week. Eleven percent of full time jobs (117) were created by businesses started while working with NECFE.

Table 3 presents the estimated number of new and existing businesses (owner jobs) created and supported by NECFE as well as jobs created by those businesses. To generate the estimated number of owner jobs, the evaluators applied the confidence interval of 95% for a finite population (3637 persons called) to the percentage of businesses created and retained from the survey to determine the number of businesses created and retained from a population of 2462 NECFE clients who made a product inquiry between January 2000 and December 2004 (this figure is used as opposed to all inquiries as they have had more substantial contact with NECFE than those who made a general inquiry). Using the assumption of the percentage of businesses created and re-

Figure 1—Growth in client business from initial contact with Northeast Center for Food Entrepreneurship (NECFE) to time of survey (n = 470)
tained from the current population (2462), the evaluators applied the confidence interval of 95% to estimate the number of businesses that would have created jobs out of 2462. The number of full-time equivalent (FTE) jobs created and supported by NECFE services was estimated using the following 2 assumptions based on the survey results: (1) the percentage of new (27%, 43) and existing (73%, 117) businesses that created other employment and (2) the average number of FTE jobs created by new (4 FTE/new business) and existing (12 FTE/established business) businesses.

Upper and lower limits of each estimate are presented because of the use of the 95% confidence interval.

### Product development and improvement

Clients surveyed were asked if their business experienced improvements in various areas because they started working with NECFE (data collected from 2004 survey respondents only). They were then asked to rate how helpful NECFE was in the achievement from 0 to 10, with 0 being not at all helpful and 10 being extremely helpful. Table 4 presents the percentage of clients who reported the improvement and the average and median ratings of the degree NECFE assisted in the improvement. Overall, almost half of clients (45%) with products indicated having improvement in their product safety with most reporting that NECFE was extremely helpful in improving product safety (average of 8). NECFE was also helpful in assisting clients add product lines.

### NECFE assistance in expanding client access to services

Clients surveyed in 2004 were also asked how NECFE services assisted them to improve their access to information about food processing and food processing technology and to expand their business network. Table 5 shows the results reflecting the positive effect that NECFE had on clients.

### Income changes

Respondents were asked to indicate whether their household income change because of their business. Three quarters (74%, 160) reported that their household income had increased (38%) or had stayed the same (36%) because of their business, whereas 1/4 (26%, 56) saw a decrease. The average dollar amounts corresponding to income change are shown in Table 6.

### Business revenue

Client sales from the previous year (2001 and 2003) reported during both survey periods ranged from $82 to $10 million dollars, with an average of $346000 and median of $280000. Overall, aggregate client sales reported were $51551285 (n = 149). Figure 2 shows client sales broken down into 10 categories. Over half (53%, 79) indicated that they did not have any sales in the previous year; 42% (63) reported that they did not know their sales; and 13% (20) refused to provide a response. Looking at the categorized sales, 23% (18) reported their sales to be in the range of $5001 to $20000. The next highest category was the range of $10000 to $600000 (38%). Six percent (5) of clients reported sales earnings in the $1 million dollar category, with sales ranging from 2.5 to 10 million dollars.

### Business impact on rural economic development

Survey respondents were asked to indicate what impact, if any, their business has had on rural economic development in their local community. Five major themes emerged from these data: Support local economy 47% Food security 22% Developed food and agricultural industry 11% Community development 11% Preserve agriculture 9%.

### Process Outcome Results

One of the goals of the NECFE grant was to determine an effective center model based on lessons learned from the NECFE project.

Interviews and focus groups with NECFE staff and Advisory Council members and feedback from clients during surveys, workshop evaluations, and interviews led to the determination of 5 essential components of the NECFE program model center. These components of the new NECFE model include: (1) multi-institutional and regional collaboration, (2) expertise, (3) facilities and resources, (4) services, and (5) evaluation of the center. Each component of the model builds on the proceeding and on each other, resulting in a complete center. Each component of the model is discussed in detail subsequently. The model is depicted in...
1. Multi-institutional and regional collaboration

The 1st essential component of a model center is to have a multi-institutional collaboration. The NECFE project is based on a multi-institutional model, which combines the resources offered by 2 universities as the core educational and service facilities, as well as resources from a successful kitchen incubator service. NECFE staff believe that this multi-institutional model is imperative for long-term success for several reasons. The university affiliations provide the scientific knowledge and credibility to assist food entrepreneurs, particularly related to food safety and compliance with federal regulations. Concomitantly, the kitchen incubator site provides satisfactory facility, in terms of safety, sanitation, and necessary equipment for hands-on learning and for product research and development. The multi-institutional model should include a regional collaboration to effectively reach the service area and should include project partners and the Advisory Board. Overall, coordination and communication through specific personnel, time, and technology are essential to making the entire collaborative work.

Regional collaboration. In addition to being a multi-institutional model, the NECFE project is a regional collaboration with 2 main university-based sites and ancillary project partners that serve the Northeast and connect entrepreneurs to regional and local resources. For the regional concept to function properly, the NECFE project staff recommend that each state within a center’s service region be represented by a group of professionals who are supported by the main centers. NECFE clients surveyed consistently asked that workshops and services be held in more locally accessible places for their participation and attendance. Furthermore, at least 1 of the main partners should have the expertise and experience of an established facility, to assist their start-up partners in establishing their facility and services. Collaboration with partners at a regional level is important for meeting client needs as it serves to: provide a seamless network of services for clients; provide a large resource pool for different issues and questions; provide multiple points of entry for entrepreneurs to the resources offered; enable the development of various materials and publications for education; connect entrepreneurs, state and federal regulatory agencies, and agencies involved with economic development; and refer clients to local support services and programs in their local area.

Project partners and advisory council. To effectively serve clients as a multi-institutional and regional model, the core sites should establish project partners that are located in each state that is represented by the region served. Specific project partners include, but are not limited to outside consultants, food processing authorities, investment groups, local service providers, and state officials and agencies.

Furthermore, the center should have an appointed Advisory Council made up of individuals with a variety of expertise and background from the geographic region served. The NECFE Advisory Council, with its broad representation from the food industry, academia, private organizations, and state and federal agencies and stakeholders, was instrumental on the success of the center. The Advisory Council provides oversight of the center and lends to project improvement and cohesion.

Coordination and communication. Collaboration across many institutions, including project partners and Advisory Council members, and over a broad geographic region requires personnel to coordinate services and staff to effectively and efficiently serve the region. The Director and Associate Directors of the collaboration enable the center to bridge geographical and territorial boundaries and to bring services and programs to individuals from all states served. Collaboration also requires communication among all personnel at a regular and frequent basis. Communication among staff occurred at the group and individual level through electronic mail, telephone conversations, face-to-face meetings, and videoconference meetings. Furthermore, a center should meet annually with staff and the Advisory Council to review accomplishments and services and to determine project adjustments based on lessons learned in the center operations. In addition to the annual meeting, center staff should meet at least every 2 y to review skill sets and expertise, to recommend additional training to ensure quality service, and to determine whether there is a need to update services based on client demand.

2. Expertise

The 2nd essential component is to have the appropriate expertise from project partners and other collaborators across the region to operate the center. A common theme emerged in the 9
case study interviews conducted of NECFE clients as all interviewees praised the knowledge, expertise, and helpfulness of NECFE staff. All clients interviewed remarked that staff expertise and support was a major strength of NECFE. Furthermore, 87% (434) of clients surveyed agreed or strongly agreed that NECFE services provide the information and assistance that they needed.

The NECFE team of professionals from New York and Vermont has expertise in all aspects of food entrepreneurship, specifically product process authorities, food product specialists, and business and marketing consultants. In addition, teaching, research, and extension programs are integrated to support the development and success of agricultural, value-added, food products produced by NECFE clients. Both NECFE workshop participants and clients surveyed identified the following as the most important skills they gained from services including: product safety and sanitation, labeling and packaging, processed foods, recipe development, and marketing and market research. Furthermore, NECFE staff and Advisory Council identified that it is crucial for a center to have a core group of experienced and knowledgeable professionals in the following specific areas.

A Process Authority is needed, who has the knowledge of food science issues in the areas of thermal processing for acid and acidified foods, refrigerated foods, fermented products, dried products, dairy, meat, and seafood products. A Lab/Pilot Plant Support specialist is needed to conduct necessary lab analysis and food processing for the research and development of clients’ products.

A Business and Marketing Coordinator is needed to assess needs and provide guidance and referrals in this area of business development.

Product Specific Specialists, such as meat, dairy, fruit, and vegetable product specialist, are needed to assist clients with specific product needs. A Workshop/Extension Coordinator is needed to coordinate and implement workshops and educational sessions, including inviting guest lecturers, securing facilities, registering clients, and preparing educational materials.

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An Administrative and Information Technology Support person is necessary to provide clients with their initial contact, assist in data collection and management, record keeping, and communications. This person should also be proficient with technology to maintain a client database and center web site.

A 3rd-party evaluator is required to develop and implement methodology and instruments to evaluate the center in reaching stated goals and to ensure center accountability.

3. Facilities and resources

The 3rd essential component is to have collaborating institutions and project partners with appropriate resources to provide the necessary facilities, equipment, and services to operate the center and therefore, to offer the assistance and educational programs needed to best serve entrepreneurs in the food industry. A university-based facility using the multi-institutional model is a crucial element to provide needed expertise and resources, such as office and meeting space, libraries, technology, laboratories, a test kitchen, a pilot plant, and a food processing facility. Project partners, such as an incubator or shared-use kitchen facility, also provide clients with the equipment needed for product research and development.

Other resources are also required for a model center. Adequate and sustainable funding over time is needed to fund center operations and sustain the project for continued services. A center should sustain funding through federal and/or state programs, as the fees charged to clients cover only part of the operating expenses. The funding is justified based on the success of the center in supporting new food business, job creation, entrepreneurs’ education, and increased food safety of specialty foods manufactured by entrepreneurs.

Technology is also needed, such as computers, servers, internet access, and software to develop and maintain databases that collect and track client and referral source information. The databases should be user-friendly and networked so all staff may easily access them and input the necessary information to track client progress. In addition, technology is needed to host a center web site. This web presence is crucial because it provides clients instant access to services, information, and resources. Furthermore, a regional collaboration requires videoconference capability so that staff may have regular and frequent communication with partners who are separated geographically. This technology is also used for workshops and seminars to reach wider audiences with minimum travel.

4. Services

The 4th essential component is to provide the necessary services, such as technical assistance, education, and referrals, to assist clients in business and food product development, once project partners and collaborators, located across a broad geographic region with

Figure 3—Essential components of the Northeast Center for Food Entrepreneurship (NECFE) model
specific expertise, facilities, and resources, are established. Based on the NECFE experience, a successful center needs to combine technical, business, academic, and “real world” expertise from the main sites and project partners, to build the depth and strength of services and educational programs offered. Technical assistance and education are at the heart of the NECFE center, forming the bulk of staff operation, and should be provided through various levels of client interaction, to meet a variety of needs. Ultimately, when communicating with clients, staff need to be clear about the center’s capabilities and refer clients out to other resources as appropriate. Main client services, which are discussed in detail subsequently, include 1-on-1 consultation and technical assistance, client education and mentoring (general and specific direct assistance to basic inquiries; distribution of educational materials; group learning environment through workshops and seminars), and referrals to external and local resources.

1-on-1 consultation and technical assistance. 1-on-1 consultation and technical assistance are important services for a model center to provide for assisting food entrepreneurs in developing and refining their product and business. Services offered should include, but are not limited to, business development and product process development, product safety and evaluation, marketing and commercialization, and support to other service providers.

Business and product process development. This is the primary area of technical assistance that clients in the start-up and developmental planning phase of their business seek from NECFE. At initial contact, NECFE provides start-up clients with educational materials and information needed to assist them to evaluate the feasibility of their business and/or intended product. Business development assistance is also provided at this time, which may include a review of the client’s business plan, market viability, and referrals to various workshops and local business resources. Clients with an established business also contact NECFE for this type of assistance if they are interested in refining their product or expanding their product line.

Product safety and evaluation. Product safety and evaluation is a major component of technical assistance and education for a model center. NECFE assists all clients, regardless of business stage or size, with improving product safety to ensure regulatory compliance. NECFE educates clients in all aspects of food processing through workshops, the resource guide, fact sheets, the web site, and newsletter. NECFE also provides clients with individual consultations and technical assistance in food safety and processing with a focus on regulatory compliance. Main areas of assistance include the following: initial product technical feasibility, schedule process review, assistance with Food and Drug Administration (FDA) filing requirements, compliance with state regulations, site visits and facility evaluation for critical control points, and laboratory analysis, with a minimum of pH and water activity analyses. The center does not include sensory capabilities because they are not normally requested by start-up entrepreneurs and therefore it is not justifiable to have trained staff specialized in sensory, which is costly. The services are better offered through referrals to university sensory laboratories or consultants in the few occasions they are requested. Figure 4 shows the type of products that were evaluated by a Process Authority for safety and needed schedule process development and filing with regulatory agencies from 2000 to 2004.

Strategies and tools for product marketing and commercialization. Another major component of model center services is assistance in developing strategies and tools for product marketing and commercialization. NECFE business specialists provide these services through packaging and labeling recommendations, marketing and selling assistance, and product logistics and distribution. NECFE staff also connects entrepreneurs with possible funding sources to provide capital for product development and marketing.

Services to other service providers. NECFE has also provided technical assistance and training to other service providers and state agencies to increase the depth and effectiveness of their own agency offerings.

Client education and mentoring. Client education, an inherent part of technical assistance, is another important service for a model center to offer to entrepreneurs. NECFE provides clients with general and specific information through direct assistance to respond to inquiries. NECFE staff also developed a variety of edu-

![Figure 4](food-products-safety-evaluations-2000-2004.png)
cational resources, publications, and workshop curricula to serve clients based on their needs and specific inquiries.

**General and specific direct assistance.** NECFE clients connect to staff at Cornell Univ. or UVM via phone, e-mail, or fax with general and specific direct assistance requests. Based on the assistance needed and expertise required, staff will either respond directly or refer clients to other staff persons at Cornell or UVM, or other project partners or resources. Three quarters of clients surveyed (77%, 402) made a general inquiry to NECFE, and 88% (352) were satisfied or very satisfied with this service. More than half of clients surveyed (52%, 270) received direct assistance, and 93% (249) expressed high levels of satisfaction.

**Publications and educational material.** The most comprehensive of materials developed by NECFE staff is the resource guide, *Small Scale Food Entrepreneurship: A Technical Guide for Food Ventures* (NECFE 2002). This is a 108-page guide sent out to all clients upon their 1st contact with NECFE staff, which was developed in the 2nd yr of the NECFE grant. Since the inception of the grant, more 4500 copies of the guide have been printed and distributed. Of those clients who participated in the follow-up survey, 74% (350) reported receiving the guide, and 81% (270) reported that this guide was useful to very useful. This guide was developed with the expertise of NECFE staff, with the idea that individuals and businesses in the food industry could easily use and apply technical information to start their business or improving their business and/or product. Other widely distributed publications that are developed by staff expertise include 19 fact sheets (1-page informational sheets on a variety of Specialty Food Business issues such as “Steps to start a specialty food business in the Northeast,” “Science and technology of making preserves,” and “Yogurt production”) and 15 venture newsletters (a quarterly newsletter that discusses new technology and current issues in the food business industry, NECFE evaluation, and profiles of NECFE clients). The newsletters were distributed to more than 1800 interested parties, and complete archives are kept in the center’s web site.

**Group learning environment through workshops and seminars.** Hands-on training and skill development in a group-learning environment through workshops and seminars are other important parts of client education and critical services to be provided by a model center. For workshops to be the most effective, funding is needed to support workshop location, outside expertise, and materials. Since NECFE’s inception, the center conducted and sponsored 76 workshops reaching 2367 attendees. Topic areas covered through NECFE workshops include cheese making, marketing and selling skills, product development (for example, cheese, meat, sausage, pickles, jams and jellies), food safety, and sanitation, and good manufacturing practices. Of clients who completed the NECFE workshop evaluation survey, 97% (484) reported high satisfaction levels with the workshop and information presented. Clients reported that the most helpful aspects of the workshops were gaining a specific skill or knowledge (such as state regulations, recipe development, and safety and sanitation information), hands-on learning, networking and resources, learning from experts, and referrals.

**Referral services.** Referral service is the final major component to the service aspect of a model center. A center needs to coordinate referrals and joint work with other service providers and project partners. Of those surveyed in the follow-up NECFE evaluation, 88% (179) reported being satisfied to very satisfied with referrals made. The top referral sources include other service providers, other consultants, ingredient or material suppliers, and co-packer and production. The center should maintain a list of service providers who offer essential and/or supplementary services not provided by the center:

- ingredient, packaging, nutritional and other labeling, equipment, graphic designers and other suppliers; product development/food chemistry services, sensory evaluation; shelf life testing and microbiological analysis; commercial laboratories; shared use kitchen facilities; specialized market research; co-packers; and suppliers/distributors.

**5. Evaluation and accountability**

The 5th essential component is to evaluate the center for accountability purposes and continuous improvement of services, based on specific criteria. CRS at the Univ. of Vermont conducted a process and outcome–based evaluation, through the use of staff and Advisory Council interviews and focus groups, workshop evaluations, follow-up interviews with clients, and in-depth interviews for client case studies. Outcome variables measured include the following: business establishment, growth, and retention; job creation and employee benefits; business financing; employment income, and owner benefits; sales and assets; skills, knowledge and attitude changes; services received and satisfaction; and client and business characteristics. Process evaluation focused on how services are carried out, ways to improve services, client referral process, partner collaboration and communication, project impact, and the essential components of a successful model center, based on the strengths and weaknesses of NECFE. Evaluation is a necessary component to ensure that a center is accountable to its funding sources and clients in meeting stated goals and determine impacts and outcomes, best practices, and areas for continuous improvement.

**Suggestions for improving NECFE services**

As part of the process evaluation and center accountability, the surveys asked clients to indicate ways to improve NECFE services. More than 2/3 (68%) of respondents indicated that they did not have any suggestions. The rest of the clients had multiple suggestions, with the most cited comments listed in Table 7. More offerings of local training courses was the number 1 suggestion.

**Conclusions**

NECFE is a collaborative food entrepreneur assistance and educational center between Cornell Univ. and the Univ. of Vermont, and partners with the Vermont Food Venture Center to serve the northeast region and beyond. NECFE uses a multi-institutional and regional collaboration approach, with specific expertise and necessary facilities and resources, to provide technical assistance and education for businesses in the food industry. The overall goals of the center are to support and sustain rural businesses and promote sustainable economic development of rural communities. Outcome evaluation of NECFE demonstrates that the NECFE

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**Table 7—Top suggestions to improve Northeast Center for Food Entrepreneurship (NECFE) services cited by 32% (91 of 285) of clients, with multiple suggestions per client**

<table>
<thead>
<tr>
<th>Suggestion</th>
<th>Nr of times mentioned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local access to classes/class timing</td>
<td>44</td>
</tr>
<tr>
<td>Advertise center services</td>
<td>16</td>
</tr>
<tr>
<td>More follow-through/follow-up</td>
<td>13</td>
</tr>
<tr>
<td>Directory of distributors, marketing, and other resources</td>
<td>10</td>
</tr>
<tr>
<td>Increase frequency of seminars</td>
<td>7</td>
</tr>
<tr>
<td>Improve marketing and sales information</td>
<td>5</td>
</tr>
<tr>
<td>Improve staff response time</td>
<td>4</td>
</tr>
<tr>
<td>Ensure person will answer phone calls/staff available for help</td>
<td>4</td>
</tr>
<tr>
<td>Improve web site</td>
<td>4</td>
</tr>
<tr>
<td>Be more specific about course content/level</td>
<td>4</td>
</tr>
<tr>
<td>More networking opportunities</td>
<td>4</td>
</tr>
<tr>
<td>Develop more community processing kitchens</td>
<td>4</td>
</tr>
</tbody>
</table>
model, with the 5 essential components, is successful in assisting business creation, growth, and retention, product development and improvement, business sales, job creation, and skill and knowledge development. Clients continue to report high satisfaction levels for all NECFE services. The 5 components include (1) multi-institutional and regional collaboration, (2) expertise, (3) facilities and resources, (4) services, and (5) evaluation, enable NECFE to provide clients with access to state-of-the-art food processing technology, information, and education.

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References


