

# Plan of Work

## Rhode Island Agricultural Experiment Station and Cooperative Extension

Federal Fiscal Years  
2000 to 2004

(7/22/99)

# Plan of Work: Rhode Island Agricultural Experiment Station and Cooperative Extension

## **Authority:**

This Plan responds to the Agricultural Research, Extension, and Education Reform Act of 1998 (AREERA), Public Law 105-185. It follows "Proposed Guidelines for State Plans of Work for the Agricultural Research and Extension Formula Funds," (Federal Register, Vol. 64, No. 74, April 19, 1999, p. 19242 – 19248) ( hereafter, "Guidelines").

## **A. General Requirements:**

### **1. Planning Option:**

This Plan is a single integrated plan for the **Rhode Island Agricultural Experiment Station** (RI AES; hereafter, "the Station") and **for Rhode Island Cooperative Extension** (RI CE; hereafter, "Extension"), administrative units of the University of Rhode Island.

The Director of RI AES and the Director of RI CE report to the Vice-Provost for Marine and Environmental Affairs. Currently, Patrick Logan is Director of both RI AES and RI CE. Scientists from any academic unit of the University may be affiliated with AES or CE through approved projects. Projects are organized under Programs, which are described herein.

This Plan is based on recent and on-going strategic planning conducted by the Station Director and Extension interim Directors. This planning included statements of principles linking AES research to CE outreach, and on the mutually agreed upon programs outlined below.

**2. Period Covered:** Oct. 1, 1999 to Sept. 30, 2004.

### **3. Projected Resources:**

This Plan projects human resources for RI AES over the 5-years covered to be annually 10.1 scientist years (participating University faculty), 5 technical years, and 1 professional years, with an FY1999 baseline of \$1.2M federal agricultural research formula funds and \$1.2M required matching funds.

This Plan projects human resources for RI CE over the 5-years covered to be annually X scientist years (participating University faculty), Y technical years (research associates?), and Z professional years, with an FY1999 baseline of \$X federal agricultural research formula funds and \$Y required matching funds.

These resources are distributed over Planned Programs, below.

**4. Submission Date:** Due July 15, 1999

### **5. Certification:**

(copy to be signed pending CSREES final approval)

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## B. Components

### B.1. Planned Programs:

This Plan includes seven program areas, which respond to the five national goals established in the CSREES and REE strategic plans, reported here in the required matrix format, with programs 1 - 7 as follows:

Goal 1	Goal 2	Goal 3	Goal 4	Goal 5
Prog. 1,2	Prog. 3,4	Prog. 5	Prog. 6	Prog. 7

### Goal 1: An agricultural system that is highly competitive in the global economy.

#### Program 1: Landscape horticulture

1. **Issues to be addressed:** For agriculture to remain competitive in a global economy, much is required beyond the ability of the system to produce adequate supplies at affordable prices. The public must accept that agricultural products and the systems that produce them are both safe. Agricultural production systems must be seen to respect the finite capacities of the land—to conserve soil, liquid fossil fuels, non-renewable minerals and ores, and water—and to do no harm to other species of animals and fish. Farming systems are expected not to pollute the environment. Before global production of food reaches planetary carrying capacities in the next century, agriculture must change to less energy-and-material-dependent plants and animals, and to thermodynamically conservative management practices.

RI AES research on integrated agroecosystem management promotes economically profitable and socially desirable local agriculture and aquaculture that is environmentally benign. Our integrated pest management (IPM) programs, for example, seek ways to minimize the need for pesticides through promotion of resistant plant varieties, biological controls, and cultural alternatives to pesticides. We emphasize the green industries of Rhode Island (turf grasses and ornamental horticulture) because of their relative importance to the agricultural economy locally.. We maintain a capability to respond to emerging problems in pest and disease management on the State's wide variety of crops. We seek to better understand the market potential of products that result from identifiably more benign forms of agriculture.

(Note: Our integrated pest management programs are closely related to Goal 4. They are included here because we are attempting to influence what is *produced* locally, and how it is produced.)

#### 1. **Performance goals:**

1. Increased sales and expanded markets for select Rhode Island horticultural products designed for reduced requirements for nutrients, water, pesticides, and labor.
2. Reduction in pest-induced damage to horticultural or forest plants.

#### **Output Indicators:**

1. Development and acceptance of improved grasses and ornamental plants for local and expanded markets.
2. Identification of gene functions for select traits on select crop species.
3. Release of biological control agents benefiting landscape horticulture and silviculture (see also, Goal 4).

### **Outcome Indicators:**

1. Increased diversity and marketability of Rhode Island-grown turf and ornamental plants.
2. Improvement of plant genomes through introductions of select genes and propagation of whole transgenic plants.
3. Reduction in damage caused by pests, or reduction in costs of control, for select horticultural plant and trees.
4. Reduction in needs for water, nutrients, or labor for select ornamental plants and grasses (see also, Goal 4).

### **3. Key program components:**

1. Plant improvement of turf grasses and forages through functional genomics and transgenics.
2. Integrated pest management for arthropods, using insects and insect pathogens as control agents; classical biological control of alien pests using introduced natural enemies.
3. Enhanced cultural practices to minimize water, fertilizer, or energy inputs or to reduce pollution from farming.
4. Market analysis through retail and wholesale sales studies.

### **4. Internal and external linkages:**

**Internal:** AES research in landscape horticulture is linked to CE through joint faculty appointments and through collaborative projects.

#### Academic Departments:

- Plant Sciences,
- Natural Resources Science,
- Environmental and Natural Resource Economics,
- Fisheries, Animal, and Veterinary Sciences

**External:** The Station and Extension maintain collaborative research and demonstration projects relating to horticulture and silviculture.

#### Government Agencies:

- the U.S. Forest Service (biocontrol of hemlock woolly adelgid),
  - the National Parks Service (lyme disease epidemiology, national park habitat and community conservation studies), and
  - We participate in regional efforts to establish APHIS-approved natural enemies for control of exotic insect pests (e.g., Lily leaf beetle, hemlock woolly adelgid) and invasive weeds (e.g., purple loose-strife, *Phragmites australis*).
  - Local governments (purple loose-strife management at the City of Providence's Roger Williams Zoo wetlands area).

#### Universities:

- the University of Massachusetts (apple integrated pest management, biological control of lily leaf beetle, others),
  - the Connecticut AES (monitoring and management of lyme and other diseases vectored by ticks, biting insects, or rodents), and
  - Rutgers University (floral supplements for enhancing biocontrol of birch leaf miner, hemlock adelgid).

#### Private Sector:

- We are developing joint research and teaching / training facilities in conjunction with private industries, and with the support of Rhode Island state economic development funds (e.g., AgriBioTech for collaborations on plant transgenics in forages and grasses).
- **Target audiences:** We have active partnerships with agricultural producers of turfgrass and ornamental plants, formally through regular contacts with the RI Nursery and Landscape Architecture Association. We also target consumers through educational outreach programs designed to promote acceptance of local products.
- **Program duration:** Up to 5 years, with continuing updating of methods and refinements of methods.
- **Allocated resources (\$1,000's):**

	<b>FY2000</b>	<b>FY2001</b>	<b>FY2002</b>	<b>FY2003</b>	<b>FY2004</b>
AES SY	5.6				
AES \$'s	\$777				
CE FTE					
<u>CE \$'s</u>					
<b>Total FTE's</b>					
<b>Total \$'s</b>					

- **Education and outreach programs already underway:**
  - IPM programs for commercial growers and homeowners.
  - Master Gardners Program, Plant Hotline, Web-based Fact Sheets, RI Greenshare (see descriptions under Goal 4, below).

## **Program 2. Aquaculture and Fishing.**

1. **Issue to be addressed:** We seek ways to ameliorate depletion of wild fish stocks native to the Narragansett Bay and near-shore ocean waters through technological changes in methods to capture fish and through appropriate development of a nascent aquacultural industry.
2. **Performance goals:**
  1. Reduction in fish bycatch in capture fisheries.
  2. Increased production, sales, and markets for fish and shellfish produced in Bay-pen and closed systems.

### **Output Indicators:**

1. Instructional materials on gear design and methods for bycatch reduction.
2. RI state management plan for American lobster.
3. Demonstration of advanced recirculating technology for closed aquacultural systems.
4. Identification of market potential for fish captured through methods that reduce mortality to non-target species.

### **Outcome Indicators:**

1. Reduction in negative environmental impacts from fishing and aquaculture.
2. Acceptance of gear designs to reduce bycatch; progress toward reduction in measured mortality rates of non-targeted marine catches, including undersized lobsters, sea turtles, and marine mammals.
3. Increased market share for fish / shellfish labeled to indicated benign capture methods.

3. **Key program components:**

1. Enhanced cultural practices to reduce pollution from aquaculture.
2. Production of educational materials to promote bycatch reduction.
3. Market analysis through retail and wholesale sales studies, with emphasis on market value of environmentally benign capture and production technologies.

4. **Internal and external linkages:**

**Internal.** Station research in fishing and aquaculture is linked to CE through joint faculty appointments and through collaborative projects.

Departments:

- Fisheries, Animal, and Veterinary Science
- Environmental and Natural Resource Economics

**External.**

- Sea Grant and the National Marine Fisheries Service.
  - All northeastern universities through the Northeast Regional Aquaculture Center.

5. **Target audiences:** We work with aquaculturists through the Ocean State Aquaculture Association. All RI aquacultural enterprises are small scale, independent operations. We also target consumers through educational outreach programs designed to promote local products.

6. **Program duration:** Up to 5 years.

7. **Allocated resources:**

<b>Current</b>	<b>FY2000</b>	<b>FY2001</b>	<b>FY2002</b>	<b>FY2003</b>	<b>FY2004</b>
AES SY	0.5				
AES \$'s	\$107				
CE FTE					
<u>CE \$'s</u>					
<b>Total FTE's</b>					
<b>Total \$'s</b>					
<b>Current</b>	<b>FY2000</b>	<b>FY2001</b>	<b>FY2002</b>	<b>FY2003</b>	<b>FY2004</b>

8. **Education and outreach programs already underway:**

- NRAC Aquaculture Extension

- Offshore Cetacean and Mid-Atlantic Take-Reduction Teams (CE, National Marine Fisheries Service, environmental groups, industry groups).

## **Goal 2: A safe and secure food and fiber system.**

### **Program 3: Health and Wellbeing of Fish and Animals**

1. **Issues to be addressed:** People whose diet includes protein from fish and domestic animals want those animals to be healthy and for them to be raised under humane conditions. When good management practice (e.g., castration to calm behavior, penning to make best use of time and space, high density aquaculture) creates animal stress, we seek techniques to minimize pain and discomfort, and to reduce the risk of stress-related diseases.

Our studies of animal husbandry practices seek new techniques to reduce physiological or behavioral stress. Similar biological reactions to stress in farm animals and in cultured fish provide a unifying theme to our animal and fish research programs. Station scientists have learned a great deal about the physiological (e.g., changes in blood chemistry) and behavioral reactions to stressors, in both domestic sheep and goats, and in cultured salmon.

We have a special interest in expanding our ability to diagnose and to respond to stress-related diseases associated with cultured fish and shellfish, which we see as a need common to north-Atlantic aquaculturalists (land-based) and mariculturists (salt waters). We place increasing emphasis on use of biotechnology for disease recognition, for vaccine development, and for genetic enhancements of cultured species.

Finally, we have a great deal of strength in research and outreach on vector-borne diseases, including national leadership in monitoring tick-borne pathogens (e.g., *Ixodes scapularis* carrying Lyme disease) and on biological control of ticks on deer and cattle.

2. **Performance goals:**

1. Reduction in observable physiologic and behavioral responses to standard animal management practices.
2. Reduction in stress related diseases of cultured fish and shellfish.
3. Reduction of tick and mosquito borne epizootics.

**Output Indicators:**

1. Identification of physiological and behavioral indicators of stress, and stress-induced proteins and their associated genes.
2. Understanding of relationship between cultural stress factors and disease.
3. Identification of genes related to stress reaction and mitigation of stress effects through transgenic stock enhancement of aquacultured species.
4. Development of improved diagnostic tools for diseases of fish and shellfish.
5. Development of entomopathogenic biological controls for ticks on deer and cattle, and patented application methods.

**Outcome Indicators:**

1. Industry adaptation of less stressful management practices for animal husbandry.
2. Reduction in mortality due to osmotic shock in salmonid release programs.
3. Reduced incidence of disease in cultured stocks of shellfish and fish.
6. Faster diagnosis of infected wild and penned stocks (e.g., Bay oysters) and faster screening of stocks to estimate likelihood of infection (e.g., *Vibrio parahaemolytica*).



7. Measured reduction in tick and tick-borne disease incidence attributable to area-wide use of entomopathogens applied to deer or cattle.

3. **Key program components:**

- Physiological and behavioral analysis of stress reactions in domestic animals to standard animal management practices.
- Physiologic and endocrinologic analysis of stress response mechanisms in salmon to heat and osmotic shock; analysis of functional proteins involved in induced reactions and responsible genes
- Biotechnological methods for disease agent identification.
- Laboratory for invertebrate pathology.

4. **Internal and external linkages:**

**Internal.** Station research in fish and animal health and wellbeing is linked to CE through joint faculty appointments and through collaborative projects.

Departments:

- Fisheries, Animal, and Veterinary Science
- Plant Sciences
- Natural Resources Science
- Graduate School of Oceanography

**External.**

- National Sea Grant Program
  - National Institutes of Health
  - National Marine Fisheries Service (CMER, Saltonstall-Kennedy)
  - Northeast Regional Aquaculture Center.

- **Target audiences:** Small scale, independent aquaculturalists and fishers. Government resource managers. Independent animal producers.

6. **Program duration:** Up to 5 years, with decreasing emphasis on capture fisheries and increasing emphasis on aquacultural enterprises.

7. **Allocated resources:**

<b>Current</b>	<b>FY2000</b>	<b>FY2001</b>	<b>FY2002</b>	<b>FY2003</b>	<b>FY2004</b>
AES SY	3.6				
AES \$'s	\$332				
CE FTE					
<u>CE \$'s</u>					
<b>Total FTE's</b>					
<b>Total \$'s</b>					
<b>Current</b>	<b>FY2000</b>	<b>FY2001</b>	<b>FY2002</b>	<b>FY2003</b>	<b>FY2004</b>

8. **Education and outreach programs already underway:** Collaborations with the New England Fishery Management Council Habitat Committee on issues related to sustainable fisheries and codes of conduct for fisheries management. Collaboration with RI Department of Environmental Management to assess stocks of lobsters (tagging program). Ad hoc presentations and annual state Aquaculture Association conference; miscellaneous presentations to aquaculturalists; miscellaneous presentations to small animal producers.

#### **Program 4: Food Safety**

1. **Issue to be addressed:** There is a need for broad awareness of food safety information throughout a diverse Rhode Island community of food producers and food handlers. There is a need for specific training to carry out the provisions of the USDA Food Safety and Inspection Service programs in Hazard Analysis Critical Control Points (HACCP), particularly in local seafood industry, meat and poultry processors, and in a diverse array of pick-your-own and independent farm retail operations.

2. **Performance goals:**

1. Reduction in food-borne diseases caused by consumer ignorance.
2. Reduction in food hazards caused by food producers or processors.

**Output Indicators:**

1. Educational programs on current technology to reduce food-borne diseases, for consumers, food industry workers.

**Outcome Indicators:**

1. Increased food safety knowledge among graduates of food safety education programs.
2. Meat, poultry, and seafood processors will increase their food safety knowledge.
3. Fruit and vegetable growers will increase understanding of principles of good agricultural practices.

3. **Key program components:**

1. HACCP training for Seafood, Meat, and Poultry processors.
  2. Use of “train the trainer” concepts.
  3. Emphasis on current technology.

4. **Internal and external linkages:**

**Internal:** Station research in food safety is linked to CE through joint faculty appointments and through collaborative projects.

Departments:

4. Food Science and Nutrition,
5. Fisheries, Animal, and Veterinary Science,
6. Community Planning

Other:

- R.I. Sea Grant Program,
- University dining services, and residential life and student health services,
- RI Center for Commercial Agriculture,
- Cooperative Extension Education Center

**External:**

Government Agencies:

- RI Dept. of Health
- RI Dept. of Corrections
- RI Dept. of Education
- RI Dept. of Environmental Management (Division of Agriculture)

Universities:

- Johnson & Wales University
- Roger Williams University

Private Sector:

- RI Seafood Council
- RI Food Dealers Association
- RI Hospitality and Tourism Association
- RI Hospital
- RI Head Start
- RI Farm Bureau
- RI Community Foodbank and member agencies

5. **Target audiences:**

Food industry and food service workers and managers, food processors (meat/poultry and seafood). Consumers. School-aged children and their caregivers, teachers. Master Gardener volunteers.

- **Program duration:** Five years.

7. **Allocated resources:**

<b>Current</b>	<b>FY2000</b>	<b>FY2001</b>	<b>FY2002</b>	<b>FY2003</b>	<b>FY2004</b>
AES SY	0.3				
AES \$'s	\$87				
CE FTE	1.6				
<u>CE \$'s</u>	<u>\$125</u>				
<b>Total FTE's</b>					
<b>Total \$'s</b>					

8. **Education and outreach programs already underway:**

- Food Safety Policy for Schools. Provides food safety education in schools; focuses on food being prepared in and brought into schools as part of the curriculum.
- HACCP Training for Seafood, Meat and Poultry Processors. Training sessions for food process workers on compliance with FDA and USDA regulations.
- Food Safety Education Curriculum for Health Educators. Curriculum for RI Health Educators for implementation in FY2000.

- Food Safety Manager Certification/Recertification Courses and Instructor Training. Certification/Recertification courses under URI Continuing Education to ensure compliance with state regulations. An Instructor course will cover the new National Environmental Health Association Food Safety Professional Credential examination. Courses will be based on requirements of RI Department of Health. Also includes resource support for course instructors, foodservice managers and FCS and Culinary Arts teachers.
- Food Safety Education for Consumers. Programs focusing on school-age children and their caregivers and on college-age consumers. A CD-ROM, using existing “Detective Mike Robe” curriculums will be developed and distributed to RI 4-5<sup>th</sup> grade teachers. An educational program targeting students at URI and Roger Williams University will be developed and implemented.
- RI Food Safety Coalition and related activities. The coalition will meet quarterly to share issues and implement programs. Major emphasis will be on an annual conference which targets the state’s food safety professionals.
- Good Agricultural Practices (GAP). Work with the RI Center for Commercial Agriculture, RI Department of Environmental Management, and RI Farm Bureau to develop an educational program (HACCP) for RI fruit and vegetable growers.

### **Goal 3: A healthy, well-nourished population.**

#### **Program 5: Nutrition**

1. **Issue to be addressed:** Nutritional dietary factors are associated with 4 of the 10 leading causes of death in RI—cardiovascular disease, cancer, stroke, and diabetes. Dietary factors are also associated with osteoporosis, which affects > 40,000 Rhode Islanders. The annual, estimated medical care cost of osteoporotic fractures alone is \$58 million in Rhode Island.

The prevalence of overweight in children and adults is increasing in RI. In 1996, 28.5% of RI adults were overweight. The establishment of healthy diets and exercise habits needs to start in early childhood and be maintained throughout adulthood.

Many RI households struggle to maintain adequate diets. In 1997, 35,400 Rhode Islanders regularly went hungry, one of every 30 households. Over 90,000 Rhode Islanders received food stamps in 1997. There is a need among these households for information on maximizing nutritional value of food dollars.

2. **Performance Goals:**
  1. Reduced health risk through improved diet and exercise habits for targeted populations (children, young adults, elderly).
  2. Ensure the security of food through promotion campaigns and coalitions.

#### **Output Indicators:**

1. More effective delivery systems, (traditional and interactive media) for transferring nutrition information.
2. Research results on mass transit targeting of food stamp recipients.
3. Formation of Food Security Coalition

#### **Outcome Indicators:**

1. Reduction in health risk factors among Rhode Islanders.
2. Increased access to food for Rhode Islanders.
3. Statewide Mass Transit/Public Library Nutrition Education Campaign.

3. **Key Program Components:**

1. Weekly newspaper and web articles on health risk factors and behavior.
2. Directory of Nutrition Internet Resources for RI children.
3. Food Stamp Nutrition Education Campaign using RI public transportation and Providence Public Library system.
4. Focus on increasing consumption of fruits and vegetables, fibre, and calcium.
5. Creation of a Food Security Coalition of health professionals, anti-hunger advocates, and agricultural leaders.

4. **Internal and External Linkages:**

**Internal:**

Departments:

- Food Science and Nutrition

Other:

- Expanded Food and Nutrition Education Program (Cooperative Extensions, EFNEP)

**External:**

Government Agencies:

- City of Providence Public Library
  - RI Dept. of Transportation
  - RI Dept. of Human Services
  - RI Dept. of Education
  - RI Dept. of Health
  - RI Dept. of Environmental Management

Private Sector:

- RI Council of Churches
  - Southside Community Land Trust
  - Kids First
  - RI Farm Bureau
  - Providence Journal
  - WSNE Radio
  - Local Community Food Pantries.

5. **Target Audience:**

Readership of the Providence Journal/Food Section; listeners of WSNE radio (ages 22-40); Rhode Island residents with internet access, school age children, teachers and librarians, participants in Providence Public Library low

literacy workshops, riders of Rhode Island public transportation, all Rhode Islanders who are food insecure.

6. **Program Duration:** Up to 5 years.  
 The Health Promotion/Mass Transit/Providence Public Library Program will continue through 2001. The health risk reduction /nutrition initiative will last 5 years.

7. **Allocated Resources:**

<b>Current</b>	<b>FY2000</b>	<b>FY2001</b>	<b>FY2002</b>	<b>FY2003</b>	<b>FY2004</b>
AES SY	1.0				
AES \$'s	\$111				
CE FTE					
<u>CE \$'s</u>					
<b>Total FTE's</b>					
<b>Total \$'s</b>					

8. **Education and outreach programs already underway:**

**Goal 4: Greater harmony between agriculture and the environment.**

**Program 6: Natural Resources**

1. **Issue to be addressed:** Coastal southern New England has a high density of people on a landscape that is richly forested and blessed by an abundance of high-quality ground water. Just as RI AES and CE are concerned with wise use of agricultural lands to assure future productivity (Goal 1, above), so too are we concerned with stewardship over coastal forested ecosystems. We seek biological and ecological understanding of diverse natural communities, which we then help society use as a basis for wise management of human activities that affect these ecosystems.

We study the diverse natural communities of Rhode Island, providing a scientific basis for management of forests, woodlands, and open spaces. Individual research projects focus on migratory birds and birds in sensitive habitats, on reptile and amphibian ecology in vernal pools, on local rare or endangered insect species, and on the genetics of mammal populations that are affected by human encroachment on habitats. We are also interested in the role of filter-feeding bivalves (clams, scallops, oysters) as agents of water-quality enhancement in estuaries.

RI AES scientists also study the mosaic of soil and groundwater that affect the overlying natural communities. These studies include basic research on the mechanisms of nutrient cycling in forest and agricultural systems, including studies of the roles of soil microbes and nematodes, and long-term studies of the dynamics of carbon and nitrogen partitioning.

Rural Rhode Island is subject to intense pressure from suburban development. RI AES and CE together focus on the identification, protection and restoration of locally valuable habitats and drinking water supplies. We inform the public and decision-makers on methods to minimize environmental damage from human activities.

## **2. Performance goals:**

1. Expand knowledge base on hydrology and wildlife biology (birds, mammals, amphibians, and insects) of coastal forested ecosystems and estuaries. Develop methods for public policy formulation for stewardship of local natural resources, based on valuation methods and economic analysis.
2. Deliver education programs on local environments to improve community-based management of water resources and critical habitats. Reduce nitrogen or phosphorus loading, and other pollution risks. Target adaptation of on site specific best management practices needed to address locally-identified resource protection issues.
3. Maintain and strengthen partnerships with federal, state, local, public and private organizations for more effective and sustained solutions to long-term watershed and critical habitat issues through community-based education.

## **Output Indicators**

1. Statewide and community-based educational materials and workshops that increase constituent knowledge on management options to protect, restore, or improve the quality of local watersheds and critical habitats (e.g., wetlands, vernal pools, forest patch community and population dynamics).
2. The use of computerized and web-based spatial data by town officials that enhance environmental decision-making for priority resource areas.
3. Trained citizen volunteers and local officials, who collect, understand and can access scientifically valid data on local waters and critical habitats and a full range of residential pollution prevention techniques.
4. Enhanced knowledge of local officials, state agency regulators, septic system designers and installers, homeowners, and other groups to identify and apply appropriate on-site wastewater technologies to reduce pollution.
5. Improved capacity of local officials, homeowners, and other watershed stakeholders to identify riparian stream buffer location and functions, evaluate impacts to these areas, and select appropriate buffer management and restoration practices.
6. Build new and lasting relationships among local watershed stakeholders and public and private experts for improved effectiveness in managing local resources.
7. Target at least 20% of our output activities to under-served communities.

## **Outcome Indicators:**

1. Characterization of local water resources and identification of critical natural habitats.
2. Use of URI Watershed Watch, RI Natural History Survey, and RI AES studies by decision-makers to target resource protection efforts.
3. Land and water management issues identified by local groups and consensus reached on common goals, priorities, or actions to be taken.
4. Expanded use of geographic information systems in environmental decision making

5. Local watershed management actions (e.g. changes in existing planning documents, standards, ordinances, best-management and site review practices).
6. Actions taken by town officials and other stakeholders to educate residents on local resource values, and impacts of land use activities.
7. Special efforts will be made to assess outcomes in under-served communities.
8. Best management practices adopted by individuals participating in Home\*A\*Syst.
9. Wastewater best management practices adopted as a result of On-site Wastewater Training center education. These include new technologies used in Rhode Island, number of adopted community-based wastewater management plans and standards, local financial assistance programs established for septic system repair or upgrading, number of septic systems inspected, maintained and repaired and increases in site-specific assessment of septic system constraints.
10. Riparian buffer management practices adopted by towns, stream corridor residents, and other watershed stakeholders, and number or acreage of new development proposals using creative design techniques to protect stream riparian areas.
11. Participation by State agencies and other resource professionals in CE community-based education programs.
12. Partnerships and committees formed among town officials and other local stakeholders to share information, review policies, resolve conflicts, or to otherwise address land use/resource management issues.
13. Participation in interagency meetings to coordinate activities, work plans developed with agency partner input, and partnerships formed or strengthened among federal, state, and local partners.
14. Collaborative pollution prevention or watershed management activities sparked by coordination among federal, state, or local partners, including resources leveraged, co-sponsored activities, and joint activities initiated.

### 3. **Key program components:**

- **Research on biogeochemistry, vernal pool and forest ecology, coastal land use valuation methodology, plant and animal community and population dynamics.**
- **URI On-Site Wastewater Training Center**

This Center was established on campus in 1994 as a Northeast demonstration and training center for alternative septic system technologies, one of eight U.S. regional centers. The Center provides training on septic system design, operation, and maintenance to protect and restore local water quality. It works with state and federal agencies, municipalities, and over 40 private contractors. It features 19 innovative full scale systems constructed above ground for hands-on learning, each system based upon technologies known to minimize nutrient and/or microbial loading to ground and surface waters.

- **URI Watershed Watch scientist-led volunteer water quality monitoring**

This is RI's largest scientist-led volunteer water quality monitoring program. It uses 250 trained volunteers, investing 12,500 hours each year on over 100 streams, ponds, and estuaries, providing 90% of the State's lake water quality data. The goal is to promote citizen participation in water quality protection, to educate the public about water quality issues, and to monitor surface water quality continually both to determine current conditions and to detect trends. Watershed Watch has over 30 local sponsors, including one third of RI towns, that provide



annual volunteer training and technical support, laboratory analysis, an EPA certified QA/QC program, data analysis, and reporting.

- **RI Home\*A\*Syst Residential Pollution Prevention Program**

Home\*A\*Syst promotes action to protect water quality through voluntary residential pollution prevention. The program trains residents to assess domestic environmental risks and take actions to correct problems. This program covers private well protection, septic system maintenance, wetland buffer landscaping, and other pollution prevention topics.

- **Municipal Watershed Management Training**

This program helps officials identify and control local water quality within a watershed context. It provides computer generated maps and other information on pollution risks from land use activities, emphasizing non-point best management practice pollution-control options and protection strategies tailored to community needs. Our joint programs—conducted with the RI Department of Administration Division of Planning, Office of Municipal Affairs—provide the *only source* of regular watershed training for volunteer board members and are the primary source of education on nonpoint pollution controls.

- **Critical Habitats Program**

Critical Habitats provides training, database development and internet access for local officials and citizens to use spatial analyses to protect critical local environments. The program is the major source of geographic information systems training in RI. It offers semi-annual courses in ARCVIEW (a desktop computerized mapping and information system) to local and state officials. The program also provides training in use of global positioning systems for resource management.

4. **Internal and external linkages:** CE educational programs are integrated with the AES research through faculty collaborations and through joint projects of graduate and undergraduate students.

**Internal:**

Departments:

- Natural Resources Management
  - Environmental and Natural Resource Economics
  - Plant Sciences

Other:

- CE Water Quality Program
  - CE Rural Resources Education Act Program
  - CE Greenshare Program

**External:**

Government Agencies:

- U.S. Environmental Protection Agency Region I
- U.S. Department of the Interior
- U.S. Geological Survey
- USDA Fund for Rural America (through 2001)

- RI Dept. of Environmental Management (Division of Agriculture)
- RI Dept. of Administration, Office of Municipal Affairs
- RI Dept. of Health
- RI Dept. of Transportation
- RI Coastal Resources Management Council
- Miscellaneous RI town planning offices

Universities:

- Consortium of Institutes for Decentralized Wastewater Treatment

The Consortium has 22 member institutions from the U.S. and Canada, each with faculty or staff engaged in onsite wastewater treatment research, teaching and/or outreach. It also has a large advisory board of private sector and regulatory onsite wastewater practitioners. Its mission is to develop and improve onsite wastewater undergraduate and graduate curriculum, coordinate research activities and priorities, and develop outreach materials for practitioner training. Consortium members interact on wastewater demonstration projects, technology performance reviews, regulatory code revisions, publication co-authorship, and research project assistance.

Private Sector:

- RI Natural History Survey
- Audubon Society of Rhode Island
- Save the Bay (RI)
- Environment Council of Rhode Island

5. **Target audiences:** Local (town government planning offices, etc.) decision-makers and the public. We work with state, federal and local governmental organizations, citizen groups and the private sector.

6. **Program duration:** Up to 5 years, with continuations.

• **Allocated resources:**

<b>Current</b>	<b>FY2000</b>	<b>FY2001</b>	<b>FY2002</b>	<b>FY2003</b>	<b>FY2004</b>
AES SY	3.8				
AES \$'s	\$794				
CE FTE					
CE \$'s					
<b>Total FTE's</b>					
<b>Total \$'s</b>					

8. **Education and outreach programs already underway:**

The URI Onsite Wastewater Training Center  
 URI Watershed Watch  
 URI Home-A-Syst  
 URI Municipal Watershed Management Program  
 URI Critical Habitats Program  
 (See descriptions under Key Program Components, above)

## **Goal 5: Enhanced economic opportunity and quality of life for Americans.**

### **Program 7: Sustainable and Nurturing Communities**

#### **1. Issues to be addressed:**

The concept of sustainability applies both to agroecosystems and to communities. Both require knowledge for wise stewardship. RI AES and CE are engaged in studies of community social organization and economic well being. Sustainable communities live within their natural environments. They require physical planning to integrate industrial and recreational activities with residences and natural surroundings. They also require social planning, with special attention for young people who may be at risk due to stresses from within the community (poverty, crime, broken families, early pregnancies, etc.).

RI AES and CE programs blend ecological and social sciences in their focus on human communities. Current AES studies emphasize policies for economic development in suburbs and of factors that affect family-run businesses. CE programs in youth at risk and community leadership are aimed at dealing with a complex array of sources of community distress, marked in part as follows:

- The number of children in poverty is increasing in all RI cities and towns.
- Family structures are stressed by poverty, creating weakened environments for child rearing.
- There is limited access to social programs for youth and families, and links between service providers and families are weak.
- Parents need skills to teach their children limits and how to avoid violence.
  - Too many youth and adults lack financial literacy; family debt levels are rising, with increasing defaults on credit cards and mortgages; many families have inadequate savings and no retirement funds.

#### **• Performance goals:**

1. Increase the number of individuals, families, and community organizations trained with skills necessary to cope with fiscally and socially stressful environments.
2. Assist rural and suburban communities to formulate policies and programs to promote local economic development, to manage housing and growth, and to revitalize stressed neighborhoods.

#### **Output Indicators:**

- Number of youth participants and adult volunteers involved in 4-H programs.
- Research on factors affecting the quality of child care and training of child care providers to increase competency to deal with emotional development of teenagers, aggression in children, and racial and cultural diversity.
- Educational programs for special needs children
- Educational programs on lead poisoning from paint.
- Training programs in parenting skills for parents and child care providers.
- Programs to link parents with community resources benefiting children at risk.
- Training programs in financial management for youth, and women in marital transitions.
  - Understanding of economic development policies in successful suburban communities.

- Guidelines for community economic development policy makers.

**Outcome Indicators:**

- 4-H participants will learn leadership skills (e.g., public speaking, project leadership).
  - More effective parental methods for discipline
  - Better use of family time as a result of parental skills training.
  - Establishment of community boards to deal with at-risk youth.
  - Reduction in community violence.
  - Health promotion programs in stressed communities.
  - Improved individual financial planning behaviors.
  - Implementation of successful economic development programs by local communities.

3. **Key program components:**

- 4-H Youth and Volunteer Leadership Development
- Development of training programs for Child Care Providers
- Parenting and Family Life Education
- Children, Youth, and Families at Risk
- Family Financial Management
- Family-run Businesses
- Community Economic Development Policy
- Community Housing Policy

4. **Internal and external linkages:**

**Internal:**

Departments:

- Community Planning
  - Natural Resources Science
  - Environmental and natural Resource Economics
  - Child Development Center

**External:**

Universities:

Cornell

Other:

- RI Dept. of Education
  - Miscellaneous after-school child care groups in select RI communities.

5. **Target audiences:**

- Youth participants in 4-H (~1,800 now), and adult volunteers.
- Day care, after-school care, and center-based child care providers.
- Youth and parents in families in stressful communities.
- Women experiencing transient financial difficulties due to death of spouse or divorce.
- RI townships with inadequate professional planning staff.

6. **Program duration:** Five years, ongoing.

7. **Allocated resources:**

<b>Current</b>	<b>FY2000</b>	<b>FY2001</b>	<b>FY2002</b>	<b>FY2003</b>	<b>FY2004</b>
AES SY	1.5				
AES \$'s	\$138				
CE FTE					
<u>CE \$'s</u>					
<b>Total FTE's</b>					
<b>Total \$'s</b>					

• **Education and outreach programs already underway:** Six of the key program components (3, above) are underway.

- 4-H Youth and Volunteer Leadership Development
- Development of training programs for Child Care Providers
- Parenting and Family Life Education
- Children, Youth, and Families at Risk
- Family Financial Management
- Community Housing Policy

## **B.2. Stakeholder Input Process**

This section responds to section 102 (c) of AREERA, outlined in section B.2. of the Guidelines. It follows “Stakeholder Input Requirements for Recipients of Agricultural Research, Education, and Extension Formula Funds” (Federal Register, Vol. 64, No. 71, April 14, 1999, p. 18534 – 18536) (hereafter, “Stakeholder Requirements”).

RI AES and CE incorporate stakeholder input in the design and implementation of the programs outlined above and the individual research projects and outreach activities that they comprise. We believe that feedback is a critical hallmark of any quality organization and that stakeholder input is a key component of feedback. During the 5 years of this Plan, we will more-tightly focus existing stakeholder input processes in extension while broadening slightly those used to inform research.

**Caveates:** Rhode Island has many unique attributes that should be kept in mind in assessing stakeholder input.

- Its ~1 million people live in an area that is smaller than, for example, 13 of New York’s largest counties.
- High population density coincides with high density of forested or wooded lands
- RI’s 5 counties do not have working county governments; instead, 39 townships and villages have a variety of town-focused councils and managers.
- The state has a diversity of agriculture similar to other states, but most often represented by a handful of individuals (a dozen potato farmers, nine sweet corn growers, etc.).

- Per capita income is significantly lower than neighboring states and the general economy of the state is poor (despite having a relatively high percentage of very rich people).
- The state has not had a legacy of strong support for its public university, nor for its land grant (or sea grant, or urban grant) mission.
- The state is demographically old, and made up of heterogeneous ethnic groups (Italian, Portuguese, Irish, with new populations of Hispanic Americans and Southeast Asians).
- State (and University) match for both AES and CE has been historically among the lowest in the Nation.

The ability of RI AES and CE to meet myriad needs for agricultural, environmental, and social research and outreach is challenged both by its unusual demographics and economics, and by unusually constrained resources.

Resources available to RI AES and CE are in general significantly lower per capita than in all other states, although we are taking steps to improve this by working directly with the RI Board of Governors for Higher Education. The University President, Robert Carothers, has asked for a Board-level discussion of the land grant missions of the University (as well as its sea grant and urban grant missions) and the relation of funding to the ability of the University to conduct programs under those missions. This call for discussion was the President's highest University-wide management priority for the coming year, FY2000.

**Major Stakeholder Groups.** Given our resource constraints, the Station and Extension must choose carefully among many worthy competing priorities as we develop major programs and the projects under them. We clearly can not address very many of the large number of needs for research or outreach. Given this, we must also carefully structure our stakeholder processes to simultaneously receive fair and open input, but without creating a false sense that we will be able to respond to all of the needs and demands that we hear. We believe this to be more of an issue in Rhode Island than in any other state.

Accordingly, we receive and must respond to input from a diverse array of stakeholder groups, from which advice we then determine our priorities. In general, this array represents the following groups:

- University Board of Governors, University Administration, and faculty steering committees representing the primary producers of research and outreach, University faculty and staff.
- An external Marine and Environmental Advisory Council, who provide an overview of the needs of governments, industries, and communities to the products of research and outreach.
- State and federal government agencies.
- Agricultural and aquacultural producer groups.
- Community governments and publicly funded social organizations.
- Public non-profit environmental groups.
- Industrial constituents.
- We have also recognized the need to seek feedback on the value of our programs from the **general citizenry**, whose tax dollars fund our public research and outreach agendas. We have applied a novel assessment strategy to gain an understanding of the perspectives of this diverse group, which we outline below.

The role of each of these stakeholder groups is outlined more fully in what follows.

## **University Stakeholder Input:**

The University of Rhode Island is the source of faculty and staff who conduct AES research and CE outreach. There is a traditional strong link between AES research and graduate education, typical of all research universities. The University is conscientiously attempting to strengthen undergraduate access to research, and the Station is actively engaged in this effort through a formal University Partnership for the Coastal Environment. The potential educational value of outreach programs has yet to be realized by the University, and integration of students (both graduate and undergraduate) will become a more important subject of consideration for RI CE in the near future.

University stakeholders include individual faculty, who have very traditional methods of letting AES and CE administration know of their priorities (i.e., direct contact and contact through department chairs and college deans).

The University has organized its research and academic programs under four **focus groups**, to receive special emphasis for resource allocation (funds, positions):

- **Marine and the Environment**
- **Health**
- **Children, Families and Communities**
- **Enterprise and Advanced Technology.**

The primary emphasis of AES and CE is highly congruent with the Marine and Environment (included agriculture, aquaculture, community design). We also have strong alliances with the Health Initiative (Vector-borne diseases, food science and nutrition, environmental pathogens) and Children, Families, and Communities (see goal 5, above). We plan for greater integration with the Enterprise and Advanced Technology focus as we develop interacting Centers of Excellence funded by the State for **biotechnology** and for **sensors and surface (thin-film) technology** (e.g., the joint development of bio-sensitive microchips to detect environmental pollutants, toxins from pathogens, etc.).

Each of these focus groups has **internal steering committees** that advise on major initiatives of the group, on faculty hires, and on academic curricula and related research agendas. The Marine and Environment committee, for example, has endorsed two major initiatives, the **Coastal Institute** (subject of a major on-going USDA-supported building initiative) and a new **Environmental Biotechnology Initiative**. Both are highly important to the Station and CE.

The **Coastal Institute**, for example, provides a major forum for the interaction of biological and social scientists interested in public policy for the management of coastal (terrestrial and near-ocean) resources. A new building, the Coastal Institute Main Campus Building, now under construction with an opening date in ~ 16 months, features an economic policy simulation laboratory which will provide critical research and outreach capabilities for our resource economics faculty and outreach staff.

Another example, the Board-of-Governors-approved **Environmental Biotechnology Initiative** is now driving a campaign for a year 2000 state bond issue for a major biotech building, the most significant state investment in University research capacity in over 30 years. The Initiative has spurred interest in partnerships with new biotechnology companies, including AgriBioTech, one of the fastest growing R&D companies dealing with forages and grasses. The state has engaged in this partnership by awarding a \$2.1M 9-year economic development grant for a Center of Excellence in Plant Biotechnology. This type of investment is critical to the future ability of the Station to conduct essential genomics and transgenics work on plants and

animals (goal 1, above), and to provide a new level of training facilities with significant applications for sophisticated CE programs.

Thus, the University administration, the Board of Governors, and faculty representatives from the major research foci of the University provide stakeholder input to a significant degree. The Station and CE place high priority on responding to these groups, who in the end determine our levels of state and University support, our faculty hires, our staff, and our facilities.

### **External University Oversight:**

In addition to internal University stakeholder input (above), RI AES and CE receive advice from an external **Marine and Environment Advisory Council**, the principal external council for the Vice Provost for Marine and Environment (to whom the Directors of AES and CE report). This group is selected based on recommendations to the Vice-Provost, with the approval of the President. It represents major government, industry, and citizen groups through a panel of distinguished academic and private sector leaders. The Council meets twice annually, focusing on overall developments within the University (presented by the President and the Provost), and on particular educational, research, or outreach initiatives brought forward by the Vice Provost. The Council serves as an extraordinary conduit between the Marine and Environment Focus and the University administration, state government, and important components of the private sector. For example, the support of the Council was critical in gaining early acceptance of both the Coastal Institute and the Environmental Biotechnology Initiatives, each of which is highly significant to current programmatic directions in RI AES and CE (see University Stakeholder Input above).

### **Other External Stakeholders:**

**State and federal government agencies.** Lack of county government mechanisms to deliver agricultural support services (as would be typical in, say, most Midwestern counties) is not a critical issue in Rhode Island. Rather, the state and various federal offices link directly to farmers

State. The principal state agency stakeholder is the Department of Environmental Management, which has a separate Division of Agriculture. The Director of DEM and the Chief of the Agriculture Division (as well as heads for fisheries, coastal management, etc.) all have direct links to several Station and Extension faculty and staff. Thus, stakeholder input from DEM is informal and highly efficient. The most important effort that can be made to strengthen ties between RI AES and CE and the DEM will be to re-establish regular contact with the Directors of each, something that existed previously but that has been disrupted by sequential turnovers in all of the Directors positions. Reestablishing these direct ties will be a goal of a Strategic Plan for the Office(s) of the Director (AES and CE), to be developed this fall (1999) and reported on in the first annual report next year. Assisting the Director in this task will be a newly appointed Associate Director for Marine and Environmental Outreach, recently established.

Other state agencies interact with AES and CE on several projects. CE youth initiatives, for example, typically involve state Departments of Education, Health, Corrections, or Human Services, often supplemented by direct agency grants. Assisting the Director in the task of identifying any necessary improvements beyond the current direct agency / faculty links will be a soon-to-be appointed Associate Director for Child, Family, and Community Outreach.



Federal. The Station and Extension interact with various federal partners through informal individual working relations and through formal arrangements established as grants or memoranda of understanding. We have established formal on-campus liaisons (involving long-term commitments of agency personnel) with NOAA (National Marine Fisheries, Cooperative Marine Education and Research) and Interior (Parks Service). We have recurrent collaborations with EPA through the Region I office and the Narragansett laboratory. We regularly collaborate with the Natural Resource Conservation Service on agronomic or water quality programs. We believe that these liaisons provide adequate stakeholder input from these agencies and that these are the most critical stakeholders.

**Producer (commodity) groups:**

Rhode Island farmers and fishers are historically highly independent, self-sufficient operators, proud of this “Yankee” tradition. Given relatively low numbers of farmers within any given commodity, there are few formal commodity groups. RI Farm Bureau provides a general organization with national links but it has developed a protectionist political agenda that discourages many farmers from active participation.

We have established regular exchanges with the Rhode Island Nursery and Landscape Association, which has a large annual meeting and biannual meetings of a research and outreach executive committee. Given the size of the industry, there are myriad direct contacts between University faculty (both research and outreach) and industry representatives. RINLA members have made a major contribution of time and materials to a formal garden demonstrating sustainable plantings (see [WWW.RIAES.ORG](http://WWW.RIAES.ORG) for a virtual reality tour of this garden). Through our Winter School and GreenShare programs, we provide annual educational and re-certification programs for growers, creating an excellent forum for exchange of information from this vital stakeholder group.

Aquaculture—a younger, less-well organized industry—needs help organizing a stakeholder group. The Ocean State Aquaculture Association and other organizations for open water fishers, clam rakers, etc., have established an annual two-day conference (the next will be the 4<sup>th</sup>) that provides one forum for stakeholder input or listening sessions. We also receive input through the biennial industry summit run by the Northeast Regional Aquaculture Center, a lively exchange of industry perspectives on priorities, attended by RI industry and academic representatives (the RI AES Director is a member of the NRAC Advisory Board and its Executive Committee).

Smaller, independent and part-time farmers are represented by a non-profit RI Center for Commercial Agriculture, which was originally established through CE leadership but now runs a largely independent program with some fiscal support through USDA-SARE, via the Station. Ties between RICCA and the University could be stronger and the CE Director is seeking ways to accomplish this in the coming year. Without county government structures, and with township governments being too small to support a traditional county agent infrastructure (3 CE “district” offices closed in the 1980’s), RICCA provides a potential network to link RI’s many smaller operators to relevant faculty and staff.

Other commodity groups include:

- RI Christmas Tree Growers Association
- RI Fruit Growers Association
- RI Golf Course Superintendents Association

**Community governments and publicly funded social organizations.**

There are myriad local groups that provide stakeholder input for AES and CE programs. Many are independent. Others are affiliated with town governments or state agencies. Most input from these groups is direct and regular. Because we are awash in such input, we have not elected to pursue a formal statewide “town meeting” approach wherein all who care to be heard can be heard in an open listening session or series of sessions, although this would be a traditional local approach. We believe that this level of access is already in place through existing individual contacts and that there are adequate mechanisms to translate heard needs into new programs. (*See, however, AES/CE State Advisory Council, below*)

Community groups and sources of information now used in setting AES or CE priorities include the following:

- Rhode Island Food Coalition
- Consumer Survey - “Test Your Food Safety IQ”
- Practitioners Survey – State approved instructors of food safety
- Participant Survey – HACCP Training Courses
- Participant evaluation results – Annual conference, training courses
- URI Departments
  - ✓ (Academic departments listed under Program descriptions, above)
  - ✓ Dining Services
  - ✓ Health Services
  - ✓ Residential Life
  - ✓ RI Sea Grant
- } RI Center for Commercial Agriculture
- } RI Seafood Council
- } RI Food Dealers Association
- RI Hospitality and Tourism Association
- RI Hospital
- RI Association of Family and Consumer Sciences
- Head Start
- New England Dairy and Food Council
- RI Community Foodbank
- Kids First-Team Nutrition
- Team Nutrition
- RI State Council of Churches
- Local Community Food Pantries
- Southside Community Land Trust
  - Sustainable Landscape Advisory Board
- RI Chapter, American Society of Landscape Architects
- URI CE Master Gardener Association
  - RI Partners for Resource Protection
- RI Grow Smart Education Subcommittee
- RI Chapter of the American Planning Committee
- State 4-H Program Advisory Committee
- Eastern R.I. CE Board of Directors
- NRI Cooperative Extension Board of Directors
- 4-H Program Planning Committees

- Community Advisory Boards
  - Alan Shawn Feinstein, URI Providence Center
  - Foster Old Home Days Committee
- CHILDSPAN
- Consumer Credit Counseling Service
- National Endowment for Financial Education
- Retired Senior Volunteer Program
- Narragansett Indian Tribe
- East Bay Educational Collaborative
- Rhode Island 4-H Club Foundation
- Civic planning departments
- State Rural Development Committee

**Public non-profit environmental groups.** For a small state, there is no shortage of sources of good advice on the environment. Groups that serve as advisors for current AES or CE projects include

- RI Dept. of Health Source Water Assessment Committee
- RI Natural History Survey
- Natural Resource Conservation Service
- Rhode Island Builders Association
- Soil Scientists of Southern New England
- Rhode Island Independent Contractors Association
- RI Chapter of the American Water Works Association
  - Water Resources Board
- RI Chapter of Nature Conservancy
- Audubon Society of RI
- Local land trusts (e.g., Town of South Kingstown Heritage Trust)
- Save the Bay
  
- Environment Council of Rhode Island.
- Other Water Quality Inputs
  - ✓ Project specific focus groups
  - ✓ Watershed councils
  - ✓ Project specific committees of town officials
  - ✓ Soil Conservation Districts
  - ✓ Citizen groups
  - ✓ Project specific Steering Committees

### **New Approaches to Stakeholder Input:**

**AES/CE State Advisory Council.** We reiterate that we feel that we have a plethora of stakeholder input and adequate means to use it to establish programmatic priorities. Nevertheless, we are creating a new AES/CE State Advisory Council, based on a 1997 CE Strategic Plan. The establishment of the Council is underway and will be in place FY2000. Membership of the Council will be balanced in proportion to AES and CE program emphases and will include representation from major stakeholder groups. We will place particular

emphasis to include members who are capable of representing otherwise underrepresented populations. The Council will meet annually, or more often as needed, at the discretion of the Director. Its first agenda will be to review the adequacy of stakeholder listening mechanisms outlined here and to advise the Director(s) as to whether changes are warranted.

**Environmental Groups.** To facilitate listening with these groups, and to assist the Director in establishing and reviewing AES and CE priorities, we have elected to engage the services of the Director of the Rhode Island Natural History Survey to establish formal listening sessions with RI environmental groups. The Survey was created in 1995 by a coalition of natural historians from major Rhode Island universities and private sector groups, including the University of Rhode Island, Roger Williams University, Brown University, and Providence College. It has held an annual Conference each year since 1995, providing an exchange of scientific papers on topics of local interest. The Survey supports publication of papers and monographs on flora and fauna of southern New England. Through its Executive Director, who has an office in the CE Center on campus, it has become an effective unifying force for an unusually large community of natural historians, many of whom are also members of the above societies. We have engaged the Survey Executive Director to establish formal systematic listening sessions with these groups, to be reported to the AES and CE Director(s).

**New Technologies.** In a world transformed by the internet, we have decided to place much greater priority on development of a two-way web presence. An initial effort to establish a CE page was begun in 1997, but has not received needed updating for several months. In January, AES hired a full-time media guru who is now producing an exciting AES web presence ([www.riaes.org](http://www.riaes.org)). The purpose of the effort is to produce an interactive educational forum to promote public awareness of AES and CE programs in Rhode Island. We have established a basic framework and are building content. A first major project, for example, is a virtual reality tour of an on-campus demonstration garden (nearly complete, with expected release on [riaes.org](http://riaes.org) by August 1). This is a research driven (Northeast Sustainable Agricultural Research and Education grant), outreach oriented collaboration with the Nursery and Landscape Association that exhibits locally grown plants selected for low maintenance requirements (we have not needed a pesticide on this 2+ acre garden in 3 years, for example). We believe that this project illustrates the successful integration of research and outreach for the public good. A second major project will be completed this fall: it will feature research and outreach on tick-borne diseases and newly patented methods to control ticks on both deer and cattle.

A third, long-term web project will be to develop interactive on-line survey capacities for the department of Environmental and Natural Resource Economics, in conjunction with the development of an Economic Policy Simulation Laboratory being built into our new Coastal Institute Building (a prototype laboratory has been developed with AES support). We believe that an extension of such a capacity will allow us to create a virtual on-line town meeting as an open forum for feedback on AES and CE programs (see next).

(Note: We are aware that there are significant lag times in the acquisition of computers and internet access among traditionally underrepresented populations. The RI Hispanic and Asian communities in particular are held back by economics and by the dominance of English-only materials. This in itself needs to be the object of study and potential program focus.)

**New Analytic Approaches.** From exchanges with other states, stakeholder input processes, driven by GPRA and AREERA, appear to be following two paths. One is to formalize exchanges with existing groups of stakeholders (above). The other is to hold open sessions at

state or county levels for simple public presentation of individual perspectives (the town-meeting approach).

We are exploring a novel third approach. In 1998, RI AES conducted a survey of randomly selected RI voters “for the ambitious goal of identifying the economic benefits that Rhode Island AES provides to the state’s public.” The survey was designed over six months, in conjunction with ten focus groups. It asked for input on 18 broad research topics across a spectrum of social and natural sciences. It used the contingent choice method of contingent valuation (Adamosicz et al., 1998. *Am. J. of Ag. Econ.* 80, 64-75). The survey provided background on the AES and asked respondents their view on the importance (i.e., merit) of research to serve existing and new businesses, local communities, or to balance conservation with economic uses of environmental resources. It asked respondents to consider the allocation of scientist-months across research topics within five different topic-groups (roughly corresponding to the 5 CSREES goal framework). This part of the survey required respondents to read brief descriptions of numerous research activities with AES and to consider them in relation to their personal preferences for resource allocations. Finally, the survey presented four alternative AES programs with pre-defined allocation of effort across the five research topic-groups, and a required cost (i.e., state tax dollars). Respondents were offered a chance to eliminate the AES, to decrease, maintain at current levels, or increase the current effort (i.e., to elect to increase their own taxes). The survey produced 590 responses from 1211 randomly selected registered voters. Rural residents comprised 39% of the sample (they are 11% of the RI population), suburban residents another 34% (they are 26% of the population), and urban residents the remainder. Among the many conclusions drawn by the survey’s authors (S. Swallow and M. Mazzotta, Dept. of Environmental and Natural Resource Economics) was a parametric estimate of taxpayer willingness to pay (through state taxes) for *existing* levels of RI AES research at a per capita rate that is far above what is now being supported by state government. The RI Director believes that many AES local supporters, and many Directors in other states, will find this approach to be very useful. A formal presentation of the survey is being made at a national meeting this August with submission for publication early this fall. We will share this survey nationally as soon as possible after submission.

### B.3. Program Review Process

**a. Merit Review.** Stakeholder input leads to the establishment of AES and CE priority *programs*, as outlined above. The following processes are then used to select from proposed *projects* which will be supported by the Station or Extension.

The Station and Extension Director(s) use the internal counsel of advisors (the Vice-Provost for Marine and Environmental Affairs, Academic Deans and their Associates, Academic Department Chairs, and two Associate Directors for Extension) to establish annual funding priorities for *projects*. The Station and Extension issue annual request for proposals, stating funding limits and current program priorities. Station projects, and where relevant Extension projects as well, are subject to an initial screening by the Director to establish relevancy to current program objectives. (Note: The Director reserves the option of providing limited support for capacity-building projects (i.e., preliminary research studies of limited duration) intended to explore potential new program directions.)

Project merit depends on goodness of fit to program priorities, and on peer review. In addition, the Director judges projects on three general criteria:

- Is the project an appropriate match to strengths of our faculty, staff, and facilities (see also, peer review questions, below)?

- Is the project's level of sophistication worthy of a major university?
- Is the project best conducted by the University (i.e., AES or CE), or is another agent of government or the private sector more suitable?

Projects judged to merit support are also weighed against the record of the project author in previous efforts ("what were the outcomes?") and in efforts to secure external funding through established granting agencies in government or private foundations. That is, priority is given to proposals to enhance research or outreach capacity or to provide continuity for Station or Extension projects largely supported by competitive funding.

Finally, projects that are multi-state (where the reasons for multi-state collaboration are sound), integrated (research-based with clear relation to public good outcomes appropriate for outreach), and team oriented (multi-disciplinary, as appropriate) will also be given priority. The implementation of this new orientation to "the multi's" will begin with FY2000 funding, in response to AREERA.

Projects that are approved under the above merit review will be informed simply that they have passed merit review. Those that are rejected on merit will be given a written explanation from the Director, with (when appropriate) suggestions for modification for resubmission.

**b. Peer Review of Research.** RI AES has in place a process that conforms to proposed "Guidelines for Peer and Merit Reviews" drafted by the Farm Bill Implementation Task Force as Appendix 2 to a Report to ESCOP, July 1999 (attached). That is, we employ internal or external reviewers, assigned by the Station Director, to evaluate the scientific and technical soundness of proposed research. Specifically, we ask a minimum of three reviewers to assess each proposed project and to respond to six questions:

1. Does the proposal hold promise of making a significant contribution to science, technology, or human well-being sufficient to warrant the proposed investment of time and effort?
  2. Does the proposal demonstrate adequate familiarity with the work of previous and contemporary investigators working in closely related areas?
  3. Are the objectives clear?
  4. Is the approach to the investigation, outlined in methods, clear and appropriate to meet the objectives?
  5. Is the principal investigator(s) and specified members of the research team qualified to conduct the research?
- Are the facilities and equipment (existing or proposed, as described in the proposal) of the Rhode Island Agricultural Experiment Station adequate for the PI to perform the proposed research?

Reviewers comments are normally made available to the proposal principal investigator except in unusual circumstances. Reviewers are also asked for any additional comments that they deem relevant.

**c. Reporting Requirements.** (see above).

## **B.4. Multistate Research and Extension Activities**

**a. Hatch Multistate Research.** RI AES is actively monitoring and participating in Northeast Regional efforts to develop a comprehensive multistate research framework. That is, at present we adopt by reference the "Coordinated Multi-state Research Framework" (draft at <http://www.agnr.umd.edu/users/NERA/workshop/RPAFramework.html>), which we assume reviewers of this Plan are recognizing and deeming appropriate as fulfilling AREERA requirements at this time.

In addition, the RI AES Director is representing New England AES Directors in a study of new means to coordinate regional collaborations within the six New England states. This study was requested by the six New England deans of agriculture and natural resources and is to be completed (with recommendations to the deans and AES directors) this fall. The purpose of a sub-regional coordination is to identify any particular needs that may be more effectively addressed through New England Stations. For example, in a 1997 study of regional research priorities (rated on need and potential to address the need), interest in aquaculture varied significantly across the region and there was equal variance in perceptions of state's abilities to accomplish anything of significance; however, the New England states share a common perspective that this is a significant need and that we can accomplish something.

**b. Smith-Lever Multistate Extension.** RI CE is committed to meeting required levels of expenditures for multistate extension activities supported by 3(b)(1) and (c) funds. We believe that we can achieve the 25% level through greater integration of outreach with multistate research (above) and through on-going regional (NEED) and sub-regional (i.e., New England CE Directors) coordination. We also see an opportunity to expand multistate activities related to aquaculture through more effective use of the Northeast Regional Aquaculture Center's extension efforts.

RI CE needs to complete a more comprehensive analysis of existing and potential multistate collaborations, including logical integration with multistate research. For example, we believe there are significant opportunities in areas such as analysis of nutritional risk for the elderly (subject of a multistate research project), which can be coordinated with an on-going RI outreach effort being conducted in conjunction with Connecticut. RI CE is just ending a series of interim Directors, with some discontinuities in leadership. The new Director will attempt to complete a review of this topic by mid September, and to thereby complete this Plan.

**c. Reporting Requirements.** (see above).

## **B.5. Integrated Research and Extension Activities.**

RI AES and CE are committed to meeting required levels of expenditures for integrated activities. In FY1998, over 20% of AES and CE projects were conducted by individuals with split academic appointments (i.e., both AES and CE), reflecting harmony between their Station and Extension activities. We believe that we can encourage significant additional integration and that we will be able to meet or exceed the required 25% during FY2000.

In developing this Plan, we have deliberately projected a single set of seven integrated programs, each based on principles written into both CE and AES strategic plans. That is, we hold that research (including, to a certain extent, basic research) should produce an outcome within the program area that meets an identifiable public good that can be addressed through Extension. We also hold that outreach should be based on University research, rooted in the Station.

Since 1995, CE and AES have been administered separately under different Vice-Provosts. A further sign of commitment to integration is that as of 1999 (official announcement pending), CE and AES will be administered under a single Vice-Provost and, for the next two years at least, by a single Director. The charge to the Director (from the Provost) it is to effect broadly integrated program, with broad participation from across the University, integrating AES and CE activities, and enhancing their relation to academic programs through increased access to students (both graduate and undergraduate) to AES research and CE outreach.

In submitting this Plan, the new Director asks CSREES to extend until mid-September any additional level of detail or documentation regarding the 25% level. We are not at this time

requesting help from CSREES for this purpose, which we believe we can document by ourselves. We do, however, expect further guidance from CSREES Funds Management as to the details of acceptable accounting procedures necessary to satisfy formal audits of the multistate and integrated project requirements.