V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Sustainable Energy

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
111	Conservation and Efficient Use of Water	8%			
112	Watershed Protection and Management	9%			
123	Management and Sustainability of Forest Resources	15%			
125	Agroforestry	14%			
133	Pollution Prevention and Mitigation	8%			
136	Conservation of Biological Diversity	5%			
402	Engineering Systems and Equipment	9%			
403	Waste Disposal, Recycling, and Reuse	9%			
404	Instrumentation and Control Systems	4%			
605	Natural Resource and Environmental Economics	11%			
608	Community Resource Planning and Development	8%			
	Total	100%			

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	1.5	0.0	0.0	0.0
Actual Paid Professional	0.4	0.0	0.0	0.0
Actual Volunteer	54.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
12950	0	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
47668	0	0	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
5292	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

¨ Farm Energy Activities (Direct; Club, Conference, Program, Consultation, Scholarship, or Training)
¨ Farm Energy Activities (Indirect; Applied Research, Media, Internet, Publication, Resulting from Training)
¨ General Sustainable Energy Activities (Direct; Club, Conference, Program, Consultation, Scholarship, or Training)
¨ General Sustainable Energy Activities (Indirect; Applied Research, Media, Internet, Publication, Resulting from Training)
¨ Home Energy Conservation (Direct; Club, Conference, Program, Consultation, Scholarship, or Training)
¨ Home Energy Conservation (Indirect; Applied Research, Media, Internet, Publication, Resulting from Training)

2. Brief description of the target audience

¨ Agricultural Producers (Adult)
¨ General Public (Adult)

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	689	542	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year:	2012
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Direct; Club, Conference, Program, Consultation, Scholarship, or Training

Year	Actual
2012	44

Output #2

Output Measure

- Indirect; Applied Research, Media, Internet, Publication, Resulting from Training

Year	Actual
2012	13

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Obtain an energy audit or conduct a self audit
2	Implement techniques to reduce energy consumption
3	Evaluate alternative sources of energy and act
4	Convert to non-fossil-based energy fuels
5	Decide not to convert to/install an inefficient new source of energy (example: installing a wind turbine in a poor location)
6	Research and evaluate novel energy production methods, and act accordingly
7	Make a decision to install or not install a novel energy production method
8	Reduce carbon footprint
9	Adopt sustainable living practices
10	Adopt appropriate strategies based on research-based information
11	Demonstrate practices that improve efficiency, reduce inputs, or increase profitability

Outcome #1

1. Outcome Measures

Obtain an energy audit or conduct a self audit

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	50

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
403	Waste Disposal, Recycling, and Reuse

Outcome #2

1. Outcome Measures

Implement techniques to reduce energy consumption

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	15

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
133	Pollution Prevention and Mitigation
403	Waste Disposal, Recycling, and Reuse
605	Natural Resource and Environmental Economics

Outcome #3

1. Outcome Measures

Evaluate alternative sources of energy and act

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	150

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Tidal Energy: Many of the roughly 7,000 residents in the nine towns around Cobscook Bay in Washington County, Maine rely on the bay to make a living. As traditional enterprises have declined, new ideas?all promising economic prosperity?have come along. New development projects within an environment as complex as Cobscook Bay requires abundant local knowledge, input, and buy-in as well as broad and extensive scientific expertise.

What has been done
A $10 million matching grant from Department of Energy to Ocean Renewable Power Company (ORPC) funded the first developmental phase of the Cobscook Bay Tidal Energy Project. Through our locally based staff, UMaine Extension and Maine Sea Grant played a vital role in the permitting process by connecting the developer to scientific expertise within UMaine and the state, and with local fisheries and technicians to understand the impacts of in-stream tidal generation on marine life and complete required environmental studies. We also facilitated a transparent community process that helped all stakeholders understand the social, economic, and environmental impacts of the project.

Results
In September 2012, ORPC's Cobscook Bay Tidal Energy Project marked the first time that power from any ocean energy project, including offshore wind, wave and tidal, was delivered to the grid in the United States. During the development, construction, and installation period of the overall project, 2011 ? 2016, forecasters predict 125 full-time equivalent jobs in Maine which will generate $8.1 million in earnings, with a multiplier effect of $22 million in local spending. During the operating period, predictions are for 19 new full-time equivalent jobs annually, translating to $700,000 in annual earnings, with a multiplier effect of $1.1 million in local spending.

4. Associated Knowledge Areas

KA Code	Knowledge Area
402	Engineering Systems and Equipment
608	Community Resource Planning and Development

Outcome #4

1. Outcome Measures

Convert to non-fossil-based energy fuels

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	140

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
402	Engineering Systems and Equipment
403	Waste Disposal, Recycling, and Reuse
605	Natural Resource and Environmental Economics

Outcome #5

1. Outcome Measures

Decide not to convert to/install an inefficient new source of energy (example: installing a wind turbine in a poor location)

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Research and evaluate novel energy production methods, and act accordingly

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual

2012	143

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
402	Engineering Systems and Equipment

Outcome #7

1. Outcome Measures

Make a decision to install or not install a novel energy production method

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	157

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
402	Engineering Systems and Equipment

Outcome #8

1. Outcome Measures

Reduce carbon footprint

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	166

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
123	Management and Sustainability of Forest Resources
125	Agroforestry
133	Pollution Prevention and Mitigation
136	Conservation of Biological Diversity
403	Waste Disposal, Recycling, and Reuse
605	Natural Resource and Environmental Economics

Outcome #9

1. **Outcome Measures**

Adopt sustainable living practices

2. **Associated Institution Types**

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	351

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
123	Management and Sustainability of Forest Resources
133	Pollution Prevention and Mitigation
136	Conservation of Biological Diversity
403	Waste Disposal, Recycling, and Reuse
608	Community Resource Planning and Development

Outcome #10

1. **Outcome Measures**

Adopt appropriate strategies based on research-based information

2. **Associated Institution Types**

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	8130

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
123	Management and Sustainability of Forest Resources
125	Agroforestry
133	Pollution Prevention and Mitigation
136	Conservation of Biological Diversity
402	Engineering Systems and Equipment
403	Waste Disposal, Recycling, and Reuse
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development

Outcome #11

1. Outcome Measures

Demonstrate practices that improve efficiency, reduce inputs, or increase profitability

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1718

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
123	Management and Sustainability of Forest Resources
125	Agroforestry
133	Pollution Prevention and Mitigation
136	Conservation of Biological Diversity
402	Engineering Systems and Equipment
403	Waste Disposal, Recycling, and Reuse
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Programmatic Challenges
- Other (Climate Change)

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Evaluation initiatives measured behavioral changes related to energy practices that contribute to sustainability. Methods included:

- Interviews
- Case Studies
- Observations

Key Items of Evaluation