BUSINESS CLIMATE FOR MAINE'S ENVIRONMENTAL AND ENERGY TECHNOLOGY SECTOR

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1. INTRODUCTION

The environmental and energy technology industry is a growing sector of the U.S. economy. On-going studies of the industry by the *Environmental Business Journal* (2005) indicate that environmental and energy technology firms generated $244.9 billion in sales during 2004, and the sector is expected to experience a 3.4 percent average annual growth rate over the next three years. Additionally, industry sales output grew by 44 percent during the 1990s, from $148.8 billion in 1990 to $214.2 billion in 2000 (EBI, 2005). These impressive growth figures may have contributed to the inclusion of the environmental and energy technology sector as a targeted industry by the Maine Department of Economic and Community Development in '*A Science and Technology Action Plan for Maine 2005'* and by the Maine Science and Technology Foundation's '*Maine's Science and Technology Action Plan 2001*'.

A companion report of this current work, entitled "Economic Profile of the Environmental and Energy Technology Sector in Maine," found that the environmental and energy technology industry of Maine generated $574.1 million in annual sales and employed 5,268 full and part-time workers. Including multiplier effects, the environmental and energy technology industry contributed $882.7 million in output to the Maine economy in 2005 and supported 9,650 jobs (Gabe and Noblet, 2006).

This report presents findings from a survey effort concentrated on business climate issues pertaining to Maine's environmental and energy technology sector. The Environmental and Energy Technology (E2 Tech) Council of Maine commissioned the survey, with support from the Maine Technology Institute's Cluster Enhancement Award.

The survey, conducted during the summer of 2006, collected information on the factors believed to affect the business climate for Maine's environmental and energy technology sector, including availability of external investment, skilled workforce, collaboration among firms and in-state partners. Information on state characteristics (e.g., taxes, state/local government support, location relative to key inputs) that may impact growth potential was also captured on the survey.

2. SURVEY METHODOLOGY

The environmental and energy technology sector is a diverse industry, made up of firms and organizations engaged in activities ranging from environmental consulting services to air pollution control instrument manufacturing. Unlike other industry sectors, the environmental and energy technology sector cannot be distinguished by an identifiable output (e.g. the automotive industry), or production process (e.g., the biotechnology industry's use of living organisms) (Allen and Gabe, 2003). For the purposes of this study, we utilizes the definition of the environmental and energy technology industry set forth by Environmental Business International (EBI) and used by the E2Tech Council of Maine. The sector is characterized by fourteen segments of business activity, which are divided into three broad categories: environmental services, environmental equipment and environmental and energy resources, per Table 1. These segments are not classifications of environmental problems in a media sense, such as air pollution or water or solid waste, rather they focus on an establishment's revenue source. For example, fees paid for environmental services, such as consulting, generate environmental service revenues.

Two separate sources of information were used to obtain names and addresses of companies involved in Maine's environmental and energy technology sector. The first source was a list provided by the E2Tech Council, comprised of 270 contacts, including members or other affiliated entities. The second source was a mailing list purchased from the North American Industrial Classification (NAICS) Association, based on NAICS codes. Work by Burns and Flaming (2006) informed the classification of environmental and energy technology businesses with respect to NAICS categorization. The companion economic profile report provides a detailed discussion of the NAICS codes corresponding to the environmental and energy technology sector segments (Gabe and Noblet, 2006).

Survey Implementation

The survey instrument was developed in close cooperation with the E2Tech Council of Maine. Questions were based on previous industrial sector studies by Statistics Canada (2000) and the Environmental Business Journal (2001). The survey sample contained a total of 660 entities believed to represent the 688 firms that comprise the environmental and energy technology industry in Maine. The survey instrument was administered during the summer of 2006 (contained in the appendix). After the initial mailing of surveys, a reminder postcard and a replacement survey were sent to non-respondents. Ninety-three records were removed from the analysis in cases where entities were found not to be members of the environmental and energy technology sector, or the surveys were undeliverable due to invalid addresses. We received 135 completed surveys

for a response rate of 23.6 percent. Of the respondents, 48 percent are E2Tech affiliates, while 51 percent are not affiliated with E2Tech[1] (Table 2).

3. FIRM CHARACTERISTICS

Firms in the environmental and energy technology sector have been in operation an average of twelve years. One-third of firms were formed after 2000, and just under one-half are less than ten years old. One-quarter of firms in the industry have been in business for more than twenty years. The survey results indicate that 47 percent of firms are privately owned corporations, while 37 percent are partnership entities. The remaining composition of firm ownership includes publicly-owned corporations and non-profit organizations. A strong majority of environmental and energy technology entities are single establishment firms (80 percent), while 8.9 percent are branch plants of a multi-establishment firm and the remaining businesses are headquarters of a multi-establishment firm (3.7 percent), part of a multi-national corporation (3.7 percent) or of another organizational structure, such as a chapter of a national non-profit organization.

To obtain information on the activities of firms in the environmental and energy technology sector, respondents were asked to select the primary activity of their firm from the following options: 1) research and development, 2) making a product, 3) providing a service, 4) producing, transmitting or selling energy, 5) retaining or distributing environmental products or 6) retaining or distributing energy products. A majority of the environmental and energy technology firms in Maine are primarily service providers (66.3 percent). Nine-percent of firms listed research and development

[1] The E2Tech Council membership status of one respondent was not determined

as the company's primary activity, while eight percent indicated they are involved in making products. Additionally, 4.9 percent of firms retail or distribute energy products, 4.3 percent retail or distribute environmental products and 1.8 percent produce, transmit or sell energy. Six-percent of respondents indicated that their primary activity was not listed and provided an additional activity, including environmental or energy education and scientific modeling.

Firms were also asked to select the segment of the industry that best described their operations, from those listed in Table 1. The strength of Maine's environmental and energy technology sector appears to lie in Environmental Services, as 52.9 percent of firms are engaged in these operations. Environmental and Energy Resource firms comprise 18.8 percent of Maine's industry, while 5.9 percent of the survey respondents are Environmental Equipment businesses.

To further investigate the involvement of Maine firms in the energy sector, firms were also asked to indicate the energy areas that they were currently involved in, or expected to be involved with in 2015. Fifty-five percent of firms indicated that they are currently involved in the energy sector. Twelve percent of these firms are currently involved in traditional energy areas, such as natural gas and oil, while 88 percent are currently involved in non-traditional sectors such as energy efficiency, solar energy systems, biomass energy systems, wind energy, tidal energy, geothermal energy or hydrogen fuel cells. In comparison, five percent of firms currently involved in the energy sector expect to be involved in traditional energy areas in 2015, while 95 percent indicate

they will be involved in non-traditional energy sectors, indicating a potential shift towards non-traditional energy sectors.

4. CLIENTELE

Environmental and energy technology firms serve a wide-range of clientele. Firms indicated that they performed work for both public and private sector clients extending from agricultural establishments to residential employers to construction firms (Table 3).

Maine's environmental and energy technology sector's clientele are located within Maine and out-of state. Firms indicated that an average of 65.6 percent of their sales were to in-state customers. Of interest, over one-third of firms (36.6 percent) indicated that all of their sales were to Maine firms. Survey results also show that an average of 27.4 percent of sales were to out-of-state clients, and 3.6 percent to international clients.

In addition to serving primarily Maine based clients, environmental and energy technology firms are also making many of their purchases in Maine. Firms indicated that, on average, 69.0 percent of their purchases were from in-state firms, 28.8 percent from out-of-state firms and 1.7 percent from firms outside the United States. Moreover, as environmental and energy technology businesses work to serve their existing clientele, they are also working to attract new clients. Seventy-five percent of firms indicated they had undertaken at least one action (e.g., direct mail to current and/or potential customers) to attract additional clients and promote their firm in the past year.

5. INVESTMENT and GROWTH

Growth

Growth in environmental and energy technology firms was captured by a number of indicators in the survey instrument, including facilities expansion and equipment purchase and projected revenue increases. Over one-quarter of firms indicated they have experienced an increase in revenue of more than 10 percent in the last year. Table 4 reflects the expectations of firms with respect to growth indicators over the next three years.

With respect to facility expansion, firms in the environmental and energy technology sector have already expanded their facilities, and expect to continue this trend. Table 4 shows that 23.4 percent of firms have expanded their facilities in the last twelve months, with a majority of firms reporting that they expanded their facilities by less than 2,500 square feet. Of those reporting expansion, 6.9 percent expanded their facilities by more than 10,000 square feet last year. Additionally, firms anticipate expanding in the next 12 months as well. Of these firms, a majority expect to expand by less than 2,500 feet, however 16.7 percent reported they would expand their facilities between 2,500 and 10,000 square feet. Survey results also show that firms will continue this investment in their facilities, as 25.6 percent of survey respondents indicated they expect to expand their facilities during the next 3 years; 11 percent of whom anticipate expanding by more than 10,000 square feet during this time period. Of interest, expansion of facilities is not uniform across sectors. Of the respondents who indicated

they intended to expand their facilities, 47 percent are in the Environmental Services Sector, while only 3.5 percent of expanding firms are environmental equipment firms.

Firms are also investing in new equipment. Forty-two percent of respondents indicated that they purchased new equipment in the last 12 months, with 15 percent of these firms purchased equipment valued at between $100,0000 and $500,000. Per Table 4, firms anticipate continued investment in new equipment during the next year as well, where eleven percent of respondents indicated that they anticipate investing more than $100,000 in the next year on new equipment. Of the firms who anticipate purchasing new equipment, 48 percent are environmental service providers, 21 percent are environmental and energy resource firms, 5 percent are environmental equipment providers and 27 percent fall outside of the three traditional sectors.

Environmental and energy technology firms are also employing business strategies that suggest confidence in potential growth of the industry. Twenty-one percent of firms launched a new service or released a new product in the past 12 months. Figure 1 shows the planned strategies of environmental and energy technology firms over the next three years, which indicates that firms anticipate further growth of their services, products and research and development activities.

Investment

Sources of funding that support the growth of Maine's environmental and energy technology firms are also important to identify, as only 12 percent of respondents stated that they received external investment capital, with a majority of firms receiving investments under $100,000. In comparison, 48 percent of firms surveyed reported

investing firm resources on research and development in the past year, with a majority of internal investment under $25,000. Both external and internal investments differ by the size of the firm (Table 5).

Firms were also asked to identify sources of funding, from an assortment of private, state and federal programs available to Maine business (Table 6). Twenty-two percent of firms had received assistance from these sources, while 8.9 percent had sought, but not received, funding from one of these sources. However, many firms were unaware of the programs listed (Table 6). For ten of the eleven programs, the percent of firms unaware of the program exceeded those seeking and receiving assistance. The exception to this is the Maine Technology Institute's Grant Program. These results suggest a need may exist for promotion of programs available to environmental and energy technology firms.

6. COLLABORATION AND COOPERATION

Environmental and energy technology firms report working with a variety of collaborators to form partnerships, or develop new products and markets. A list of Maine-based potential collaborators was provided in the survey instrument ranging from the Maine Technology Institute to the Department of Economic and Community Development and the Manufacturer Extension Program.[2] The most common relationship reported with these Maine-based institutions was the formation of a partnership, where 40 percent of respondents indicated they had formed a partnership with one of the listed

[2] In addition to the entities listed in Figure 3, the following Maine-based institutions were also included in the survey instrument: Maine Community College System, Department of Economic and Community Development, Maine International Trade Center, Maine Department of Conservation, Maine Patent Program, Technology Development Center and Maine Manufacturing Extension Partnership.

entities. Twenty-seven percent of firms reported engaging in product development with at least one of the Maine institutions, while 18.5 percent reported establishing a new market. Figure 2 indicates the five most common collaborators cited from the list of Maine institutions with whom environmental and energy technology firms may establish partnerships, or develop a new product or market.

The interaction among firms is an additional important contributor to the strength of an industry cluster, as firms share knowledge and workers, and sometimes collaborate on purchases. Table 7 outlines the collaborative activities among environmental and energy technology firms. Results indicate that firms in this sector are more likely to have a relationship with another Maine business than with firms outside of Maine, Maine colleges/universities or non-profits. The results indicate that firms rely on other Maine businesses for sub-contract relationships (41 percent), to share equipment or personnel (22 percent), and share technical information (16 percent). Some of the Maine-based contact occurs close to home, as 27 percent of firms indicate they have engaged in cooperative activities with a business in the same town. The most common relationship with businesses in the same town is the sharing of technical information. The most common interactions with out-of-state firms are shared technical information and sub-contracting arrangements.

The most common cooperative activities, as shown on the far-right column of Table 7 is the sharing of technical information (46 percent), engaging in a sub-contract arrangements (44 percent) or sharing of equipment or personnel (31 percent). Results

indicate that firms are most likely to engage in a coordinated R&D, or marketing effort with other Maine firms.

The partnerships described in Table 7 may have the potential to evolve into common business strategies such as a technology transfer, formation of a joint venture, merging with another establishment or acquiring another establishment. The most common business strategy over the next three years cited by survey respondents is the formation of a joint venture with a Maine business (20.0 percent), while 17.0 percent indicated they planned to form a joint venture with a non-Maine business. Acquiring another business was an additional business strategy indicated by respondents, where firms plan to acquire businesses both inside and outside of Maine. Respondents indicated that a larger percent of environmental and energy technology firms plan on acquiring another business (6.7 percent) than merging with another business (3.7 percent). In both cases, the acquisition or merger is equally likely to occur with a Maine business than an out-of-state business.

The primary relationship that firms have with Maine universities and non-profits is the sharing of technical information. Some firms also expect to be involved with technology transfers from Maine universities, and universities located outside the state. Six-percent of businesses indicate they expect technology transfers from Maine universities, while only 3.7 percent expect a similar relationship with an out-of-state university. The theme of collaboration is also evident in the open-ended questions included in the survey, and will be discussed again in a later section of this report.

7. BUSINESS CLIMATE

Environmental and energy firms were also asked to comment on Maine's business climate. Establishments were asked to indicate those factors that are relevant to profitability or growth potential. If the factor was deemed relevant, firms were then asked to comment on whether the factor was a positive or negative influence, where "1" indicated very negative, and "7" indicated very positive. The value of "4" is considered neutral. Neutral, negative and positive factors are categorized in Figure 3.

The average ratings may be an imprecise measurement as factors may have wide variation in responses. Statistical analysis was used to determine those factors whose average ratings were significantly more or less than 4.0. Factors that have an average rating significantly less than 4.0 are deemed 'negative growth factors' in Figure 3. Those factors with ratings significantly greater than 4.0, at the 10% significance level, are deemed 'positive growth factors'. 'Neutral growth factors' are those factors whose average rating is not statistically different from 4.0. The average rating provided for each factor is summarized in Figure 4. As evident in this figure, financing business climate factors are relevant to less than one-quarter of the environmental and energy technology firms. These results are consistent with earlier findings regarding low external investment in environmental and energy technology firms. The factors that appear most relevant to the environmental and energy technology sector are Maine's quality of life (81 percent), health care costs (78 percent), utility costs (75 percent) and taxes (75 percent). The effect of business costs on firm viability is also evident in responses to the open-ended questions discussed in a later section.

Financing Issues

As previously noted, less than one-quarter of respondents reported that access to in-state venture capital, debt financing and angel capital have an impact on the growth potential of their establishment. Access to in-state capital received an average rating of 3.8; while accessibility of in-state debt financing received a 4.4 and access to in-state Angel capital received a 3.9. State sponsored government funding for R&D was a factor for 29 percent of environmental and energy technology firms, and received a rating of 4.0. However, none of the financing factors received an average rating that was statistically different from 4.0.

Business Costs and Regulations

Establishments were asked to rate ten factors associated with the cost of doing business. As previously noted, many of these factors were relevant to more than 70 percent of firms, and were also frequently cited in responses to the open-ended questions. Respondents generally perceived business costs and regulations as significant negative factors, where only state environmental regulations received a neutral rating. Health care costs, the factor with the widest impact in this category, received an average rating of 2.0, the lowest rating of all the business factors. Other low ratings were assigned to state sales and income taxes (2.2), municipal personal property tax (2.3), workers compensation (2.4) and utility costs (2.6).

Location Issues

The desirability of doing business in Maine varies dependant upon where the establishment is located. This category of factors is aimed at capturing firm perceptions regarding the area where they are located, including factors relevant to their business and more general factors such as the quality of local schools or other public services. Three of the factors associated with location were considered relevant by more than 60 percent of environmental and energy technology firms. Location relative to consumers received a neutral rating of 4.0, availability of qualified employees received a negative rating of 3.4 and interaction with other businesses was rated a neutral 4.3. Location relative to suppliers was viewed a negative growth factor, with an average rating of 3.4, although this factor only impacted 39 percent of firms. Of interest, the quality of local schools received a positive rating of 4.7, the second highest rated factor. The third highest rated factor was availability of business services (4.6). Local infrastructure also received a positive rating of 4.5.

Other Business Climate Factors

This category includes factors aimed at capturing a firm's perception of support for the industry from policy makers and the public. Seventy percent of firms felt that the views of Maine government officials impacted their business, and that these views were negative growth factors. Support of local policymakers impacted 66 percent of firms, although this support was perceived to be a neutral growth factor. Firms perceived that state and local tax incentives were negative growth factors. While 74 percent of firms indicated that public perception of the industry impacted their business, the average rating of 4.1 was neutral. Another neutral growth factor was the strength of state industry

associations, although 57 percent of firms felt that these associations impacted their business. Finally, the highest rated positive growth factor was Maine's quality of life, which received an average rating of 5.9. Eighty-one percent of firms indicated that Maine's quality of life impacted the growth potential of their business.

8. OPEN-ENDED QUESTIONS

The survey also included several open-ended questions that allowed the environmental and energy technology firms to comment on the strengths and weaknesses of doing business in Maine. These questions also provided the opportunity for firms to comment on the types of policy changes that may impact their viability. The responses to these open-ended questions reinforce themes revealed throughout the survey analysis. When asked to indicate the factors that led to locating and maintaining a business in Maine, 26 percent of respondents cited Maine's quality of life. An additional 30 percent indicated that the primary founder was either a Maine native (17 percent) or living in Maine at the time of business opening (13 percent). Twelve percent of respondents to this question cited factors surrounding the industry as the reason for locating in Maine, including growth potential (3.8 percent) and Maine's natural resources (6.4 percent). The business climate was cited by 15.4 percent of firms including their customer base (7.1 percent) and professional relationships (5.8 percent).

Operating costs were cited as the primary drawback to operating a business in Maine. While high taxes were frequently cited (22 percent), the distance and accessibility to major markets, including the transportation cost, was also mentioned by 19.9 percent of the survey respondents. Other costs of operation, including energy costs,

health insurance for workers and labor costs were also identified as drawbacks (15.2 percent). Perceptions of Maine's business climate, and lack of support from state government were also frequently cited drawbacks. When asked to indicate what actions state policy makers could take to enhance the competitiveness of Maine's environmental and energy technology sector, the responses were again concentrated on operating costs. Of the 107 firms who answered this question, 34.6 percent identified lowering operation costs as important actions that could be taken. This included 20.6 percent of respondents who indicated that lower taxes would increase competitiveness, 10.3 percent citing lower insurance costs and 3.7 percent calling for public transportation improvements. The second most common submission for improving the competitiveness of environmental and energy technology businesses centered on legislative support for business growth and innovation with particular emphases on support for renewable energy, and support of small and micro businesses. Finally, respondents believed that policy makers need to utilize in-state businesses to perform contract work for the state in lieu of out-sourcing to out-of-state contractors.

The theme of collaboration was also evident in the open-ended questions included in the survey. Respondents were asked to provide an example of how collaboration with another entity had benefited their business or organization. Of the seventy-one respondents who answered this question, 23.9 percent indicated that they had submitted a joint proposal with another firm. Collaboration with the Maine Technology Institute and/ or the Environmental and Energy Technology Council of Maine was also cited by 15.5 percent of respondents. Eleven percent of respondents had collaborated or participated in

a contract relationship with a state agency (including the University of Maine System). Sharing of knowledge, space or personnel with another entity provided other examples of collaboration between firms as did sub-contract relationships and development of new project/market.

9. SUMMARY AND CONCLUSIONS

The Maine environmental and energy technology industry is comprised of approximately 688 businesses. These firms and organizations operate in fields as diverse as environmental consulting services, air pollution control instrument manufacturing, and retailing energy conservation supplies. The range of activities encompassed in the industry may be a contributing factor to some of the survey findings, such as the diversity of the client base and collaboration among firms.

The variety of clients served by the environmental and energy technology industry may enable firms within the industry, who differ in their specialization, to partner or share resources without proprietary concerns. Well over one-half (60 percent) of the survey respondents had engaged in a cooperative activity with another Maine entity in the past year. Survey results indicate that environmental and energy technology firms are more likely to partner with a Maine entity, particularly when engaging in research and development or marketing efforts. Forming a joint venture with another Maine based business was a commonly reported business strategy. The theme of collaboration was evident throughout the survey results, and may suggest that the environmental and energy industry is poised to benefit from additional cluster activities such as knowledge spillovers, or technology transfers.

Survey results also indicate that members of the environmental and energy technology industry perceive potential growth opportunities in the industry. Firms report past investments in facilities, equipment and new products/services as well as plan to continue these investments over the next three years. Forty-seven percent of firms anticipate launching a new service in the next three years, while 24 percent plan to release a new product in the next three years. An additional sign of confidence was the current, and anticipated, revenue increases expressed by participants. Over one-quarter of firms had experienced a revenue increase greater than 10 percent in the past year, while 44 percent of the firms expect to see revenue increase greater than 10 percent in the next 12 months. However, environmental and energy technology firms are receiving little external investment to finance these growth activities. Only 12 percent of firms reported receiving external investments, where a majority of firms received less than $100,000.

Environmental and energy technology firms report that the cost of doing business in the state is harmful to their growth. More than 70 percent of firms reported that state sales/income taxes, health care costs and utility costs were relevant to their business. Additionally, statistical analysis indicates that each of these factors is perceived by environmental and energy technology firms to have a significant, negative impact on their ability to grow. Other factors that were considered relevant to the firms that have a negative impact include (but are not limited to) local property taxes, labor costs, worker's compensation costs and location relative to key materials/supplies. Four factors were identified as having a significant positive affect on environmental and energy technology

firms' ability to grow: availability of business services, quality of local schools, local infrastructure and public services, and Maine's quality of life.

Based on the survey results and analysis presented in this report, the following recommendations are offered as a means to support the environmental and energy technology industry in Maine. First, the state should widely promote state and private-funding programs available to environmental and energy technology firms. As noted in Table 6 of the report, a small percentage of firms have used, or are aware, of funding mechanisms. Aside from the Maine Technology Institute (MTI), the percentage of firms unaware of governmental programs exceeds the firms who have sought or received assistance. Second, collaboration with Maine institutions such as the University System, and state agencies should be expanded to promote growth and potential technology transfers. As seen in Figure 2, less than one-quarter of firms have a relationship with the University of Maine System or pertinent state agencies such as the Department of Environmental Protection and the Department of Transportation. Promotion of the relevant support programs for environmental and energy technology firms could be administered through these state agencies, and other agencies administering support programs, as well as the E2 Tech Council of Maine.

Third, given the diversity of the industry, and the variety of clients served, efforts to build connections among environmental and energy technology firms, and between these firms and potential markets may be beneficial to the industry. A role may exist for relevant state agencies and the E2Tech Council to assist firms in learning of opportunities to work collaboratively in pursuing new markets. The E2Tech Council may also be able

to assist firms by facilitating further intra-industry collaboration, which may yield shared personnel or equipment, and potential contract arrangements or pursuit of new markets.

Fourth, the environmental and energy technology firms strongly, and repeatedly, indicated that the cost of doing business in Maine was detrimental to their growth potential. Further analysis on the effect of high costs of doing business in Maine, across industries, may be warranted. Firms also indicated that legislative support for small and micro-businesses would have a positive influence on the industry particularly given the composition of the industry, in which 52 percent of firms employed two or fewer workers.

TABLE 1. Overview of the Environmental and Energy Technology Industry

Industry Segment	Description
Environmental Services	
Environmental Testing & Analytical Services	Provide testing of "environmental samples" (soil, water, air and some biological tissues)
Water Treatment Works	Management and operation of wastewater treatment plants
Solid Waste Management	Collection, processing and disposal of solid waste
Hazardous Waste Management	Manage on-going hazardous waste streams, medical waste, nuclear waste handling
Remediation/Industrial Services	Physical cleanup of contaminated sites, buildings and environmental cleaning of operating facilities
Environmental Consulting & Engineering	Engineering, consulting, design, assessment, permitting, project management, O&M, monitoring, etc.
Environmental Equipment	
Water Equipment & Chemicals	Provide equipment, supplies and maintenance in the delivery and treatment of water
Instrument Manufacturing	Produce instrumentation for the analysis of environmental samples
Air Pollution Control Equipment	Produce equipment and technology to control air pollution

Waste Management Equipment	Equipment for handling, storing or transporting solid, liquid or hazardous waste; includes information systems

TABLE 1. Continued

Industry Segment	Description
Process & Prevention Technology	Equipment and technology for in-process (rather than end-of-pipe) pollution prevention and treatment
Environmental Resources	
Water Utilities	Selling water to end users
Resource Recovery	Selling materials recovered and converted from industrial by-products or post-consumer waste
Environmental Energy Sources	Selling power and systems in solar, wind, geothermal, small-scale hydro, energy efficiency and DSM

Source: Environmental Business International, Inc.

TABLE 2. Survey Sample and Respondents

	Original Sample	Removed[a]	Final Sample	Respondents
E2Tech Council	219	14	205	65
Non-Council	441	79	362	69
Total	660	93	567	135[b]

[a] Records were removed if: a) survey participants contacted us and indicated that the survey did not apply to their establishment, b) survey mailing were returned by the postal service as undeliverable or c) researchers determined that an establishment was not a member of the environmental and energy technology sector

[b] The E2Tech Council membership status of one respondent was not determined

TABLE 3. Clients served by Maine's Environmental and Energy Technology Firms

Public Sector Clients	**61.5%**
Municipal Governments	51.2
County Governments	12.4
State Governments	38.0
Federal Government(s)	19.8
Other	4.13
Private Sector Clients	***87.4%***
Agriculture, Forestry, Fisheries	26.5
Utilities	33.9
Mining	5.0
Construction	38.0
Manufacturing (select from below)	
Computer and Electronic Manufacturing	10.7
Pulp and Paper Processing	19.8
Food Processing	14.9
Other Manufacturing (not included above)	33.1
Transportation and Warehousing	19.8
Wholesale or Retail Establishments	26.5
Finance, Law and Insurance	30.0
Real Estate (e.g. Development, Property Management, etc.)	38.0
Waste Management Facilities/Remediation Firms	23.0
Healthcare Facilities	19.0
Non-Profit Organizations	33.9
Residential	34.7
Other	14.8

TABLE 4. Growth Indicators

	Last 12 months	Next 12 months	3 years
	----------%----------		
Expand Facilities	23.4	18.8	25.60
Purchase New Equipment	41.9	32.5	37.20
Increase Revenue more than 10%	27.4	44.4	32.60

TABLE 5. Internal and External Investment by firm size

	Own investment on R&D	External Investment Received
	----------%----------	
1-4 employees	46.9	8.0
5 to 9 employees	35.0	21.1
10 or more employees	65.2	22.7

TABLE 6. Programs for Environmental and Energy Technology

	Sought or Received Assistance	Unaware of the Program
	----------%----------	
Maine Technology Institute (MTI) funds	17	16
Private Foundation	7	12
Small Business Innovation Research Program	3	12
Research Expense Credit	2	19
Regional Economic Development Program	2	14
Tax increment-financing	3	14
Bus. Equip. Property Tax Reimbursement	7	14
Research & development sales tax exemption	2	16
FAME	2	12
Small Enterprise Growth Fund	-	16
Small Business Administration	4	9

TABLE 7. Partnerships of Maine Environmental and Energy Technology Firms

Cooperative Activity	Business in same town	Other business in Maine	Business outside of Maine	Maine university or college	Maine non-profit organization	**TOTAL***
	----------%----------					
Joint R&D…….	2	13	8	3	4	**17**
Submitted Joint Research Proposal…….	2	10	7	4	4	**18**
Coordinated marketing…...	4	19	13	0	2	**27**
Shared equipment or personnel…….	11	22	9	1	4	**31**
Coordinated supply purchase…….	2	5	1	0	1	**8**
Shared technical information…….	16	37	23	7	10	**46**
Established a new market...	2	10	7	1	1	**13**
Shared facilities and space..	7	8	1	1	1	**19**
Launched a new service or product……	3	5	5	1	1	**10**
Established a partnership…	3	13	7	0	6	**18**
Established a sub-contract arrangement	13	41	25	1	4	**44**
TOTAL	**27**	**60**	**34**	**13**	**16**	

* As businesses may be involved in multiple partnerships and activities, the individual percentages provided in the table may exceed the totals provided in the far right-hand side column and last row.

FIGURE 1. Planned Strategies of Maine Environmental and Energy Technology Firms

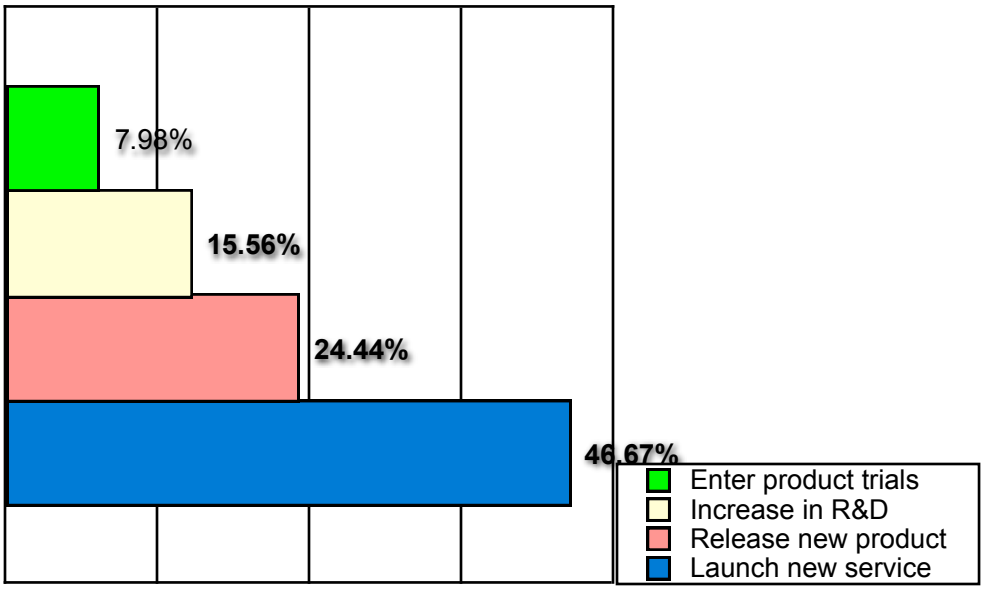

FIGURE 2. Collaboration with Maine Institutions

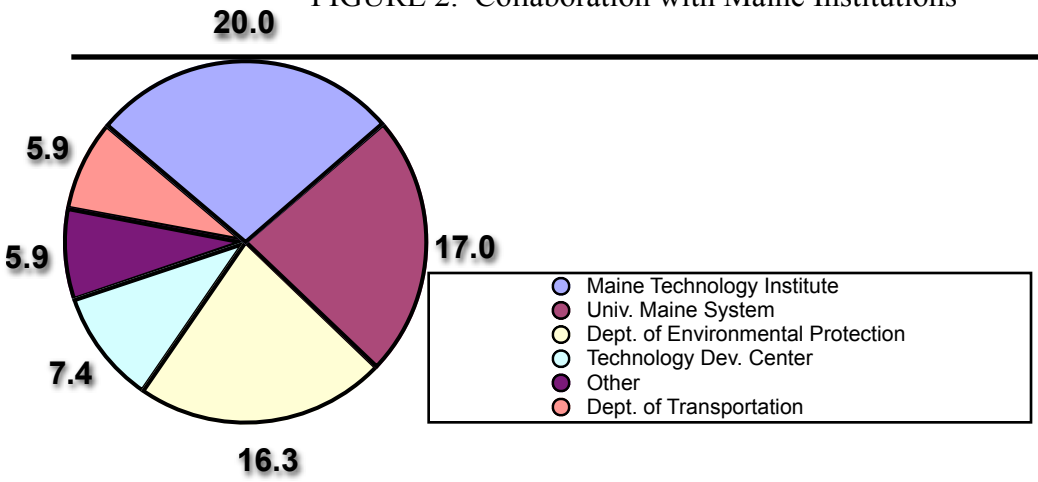

FIGURE 3. Business Climate for Maine's Environmental and Energy Technology Firms

Negative Growth Factors

Distribution and Transportation Costs
Labor Costs
State sales and income taxes
Municipal personal property tax
Worker's Compensation costs
Health care costs
Utility costs
State government business regulations
Local zoning and permitting practices
Location relative to key materials and supplies
Availability of qualified employees
State and local tax incentives
Views of Maine government policy makers

Neutral Growth Factors

Access to in-state venture capital
Access to in-state debt financing
Availability of state government funding for R&D
Access to in-state Angel capital
State environmental regulations
Location relative to customers
Access to university-based research information
Availability of specialized equipment
Interaction with other businesses
Support of local policymakers
Public perception of environmental and energy technology industry

Positive Growth Factors

Availability of business services
Quality of local schools
Local infrastructure and public services
Maine's Quality of life

FIGURE 4. Ratings of Business-Climate Factors

	Has an impact?	Negative 1	2	3	4	5	6	Positive 7
FINANCING								
Access to in-state venture capital	16							
Access to in-state debt financing	23							
Availability of state government funding for R&D	29							
Access to in-state Angel capital……..	16							
BUSINESS COSTS AND REGULATIONS								
Distribution and transportation costs	55							
Labor costs	60							
State sales and income taxes	74							
Municipal personal property tax	67							
Worker's Compensation costs	69							
Health care costs	79							
Utility costs	75							
State government business regulations	66							
Local zoning and permitting practices	53							
State environmental regulations	70							
LOCATION ISSUES								
Location relative to customers	61							
Location relative to key materials & supplies	39							
Availability of qualified employees	64							
Access to university-based research information	41							
Availability of specialized equipment	30							
Interaction with other businesses	62							
Availability of business services (legal, marketing, etc.)	56							

Quality of local schools (K-12)	47
Local infrastructure and public services	47
OTHER	
State and local tax incentives	49
Views of Maine government policymakers	70
Support of local (i.e., municipal/regional) policymakers	66
Public perception of environmental and energy industry	74
Strength of state industry association(s)	57
Maine's quality of life	81

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