

BUSINESS CLIMATE FOR MAINE'S CLEAN TECHNOLOGY SECTOR¹

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1. BACKGROUND AND ECONOMIC IMPACT

Clean technology is an emerging sector of the U.S. and Maine economies, made up of firms and organizations engaged in activities ranging from environmental education and compliance to renewable energy production and distribution. Unlike other industries, clean technology 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 utilize a definition of "clean technology" developed by Catherine Renault of Policy Innovation Works, LLC, and used by the Maine Environmental and Energy Technology Council (E2Tech): *Clean Technology encompasses the production of a diverse range of value-added products, services, and processes with an environmental purpose or benefit.* We recognize that this definition excludes some segments (e.g., organic agriculture/sustainable forestry) that are included in other work regarding clean technology.

A 2011 study by The Brookings Institution counted 2.7 million U.S. workers in the clean economy, with an annual employment growth rate of 3.4 percent between 2003 and 2010. Table 1 presents information on the annual economic impact of Maine's clean technology sector. Figures for direct employment (12,212 jobs) and labor income (\$445.2 million in wages and salaries) are from The Brookings Institution (2011) study. The direct output and multiplier effects were estimated using an economic impact model (IMPLAN) of the Maine economy.

The IMPLAN model is an input-output framework that traces the flows of expenditures and income through the Maine economy with a complex system of accounts

that are uniquely tailored to the state.² Underlying these accounts is information regarding transactions occurring among industries located in Maine, the spending patterns of households, and transactions occurring between the state and the rest of the world. Some of the data sources used to develop the IMPLAN model and tailor it to the Maine economy include *County Business Patterns* of the U.S. Census Bureau, Regional Economic Information System (REIS) data and input-output accounts from the U.S. Bureau of Economic Analysis, and ES-202 statistics from the U.S. Bureau of Labor Statistics.

Results of the analysis presented in Table 1 show that, including multiplier effects, Maine's clean technology sector has an annual statewide economic impact of an estimated \$2.3 billion in output, 20,401 full- and part-time jobs, and \$689.0 million in labor income. The output multiplier of 1.66, defined as the ratio of total output (\$2.3 billion) to direct output (\$1.4 billion), suggests that every \$1.00 of revenue in the sector supports a total of \$1.66 in statewide economic activity; that is, the "initial" \$1.00 in revenue plus an additional \$0.66. The employment multiplier of 1.67, calculated as the ratio of total (20,401 jobs) to direct (12,212 jobs) employment, suggests that the economic activity associated with each person directly employed in the clean technology sector supports a total of 1.67 Maine jobs; that is, the person working in a clean technology business or organization, and an additional 0.67 full- or part-time jobs elsewhere in the state.

² Version 3.0 of the IMPLAN model has information on 440 sectors of the economy.

Table 1. Annual Economic Impact of Maine’s Clean Technology Sector, 2010

	Direct Impact	Multiplier Effects	Total Impact
Output	\$1,397,905,193	\$928,578,069	\$2,326,483,262
Employment	12,212	8,189	20,401
Labor Income	\$445,249,520	\$243,707,092	\$688,956,612

Notes. Direct employment and labor income (i.e., annual wages) figures are from The Brookings Institution (2011). Direct output and multiplier effects are estimated using an economic impact model (IMPLAN) of the Maine economy.

2. SURVEY OF CLEAN TECHNOLOGY ORGANIZATIONS

To obtain an understanding of the opportunities and challenges faced by companies and other organizations in Maine’s Clean Technology sector, a survey was administered during the winter of 2012-2013. The survey collected information on the factors believed to affect the business climate for this sector, including availability of external investment, skilled workforce, collaboration among firms and in-state partners.

Two separate sources of information were used to acquire the names and addresses of organizations involved in Maine’s clean technology sector. The first source was a list provided by the E2Tech Council, comprised of 397 contacts, including members or other affiliated entities. The second source was a mailing list of 353 entities purchased from the North American Industrial Classification (NAICS) Association. The NAICS Association list contains organizations that are included in a group of industrial categories (SIC codes) that are closely linked to clean technology. Work by Catherine Renault of Innovation Policy Works, LLC (2013), the Brookings Institute (2011) and

Gittell & Stillwagon (2011) informed the classification of clean technology businesses with respect to SIC categorization.

Survey Implementation

The survey instrument was developed in cooperation with Innovation Policy Works, LLC and the Cluster Innovation Program Project 144 Steering Committee. Questions were based on previous studies by Noblet and Gabe (2006), Gabe and Noblet (2006), which had examined the environmental and energy technology sector in Maine. The survey sample contained a total of 730³ entities believed to represent firms that comprise the clean technology sector in Maine. The survey instrument (contained in the appendix) was administered by mixed-mode during the winter of 2013. Respondents from whom a valid email address was available were invited to participate in an online version of the survey, administered using the software Qualtrics. Entities who received a hardcopy version of the survey through the mail were also given the URL in the event they preferred to complete the survey online. After the initial mailing of surveys, a reminder email or replacement survey were sent to non-respondents. Due to the anonymous nature of the online survey, we are unable to report the number of responses garnered exclusively from the E2Tech provided list versus the SIC based purchased list.

In addition, we recognize that the emerging nature of the clean technology sector means that not all appropriate entities may have been invited to participate in the study. To mitigate any bias, and to ensure the survey was representative of as many facets of the sector as possible, survey participants were also able to invite appropriate colleagues at other clean technology entities (who may not have received an initial invitation) to

³ The two lists were checked for overlap. Twenty entities were found to be on both lists, and thus the total combined list does not match the sum of the individual lists.

complete the survey. A forum on the clean technology sector was hosted on March 13, 2013 by the E2Tech Council of Maine. Those in attendance who represented previously uninvited (or previously invited but not yet responding) entities were invited to participate in the survey. Overall, we received 189 completed surveys; however, not all respondents chose to answer all questions.

3. FIRM CHARACTERISTICS

Firms in Maine's clean technology sector are relatively young; forty-six percent of these entities were established after 2000, and sixty percent 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 46 percent of firms are privately owned corporations, while 30 percent are partnership entities. Interestingly, eleven percent of respondents were non-profit entities. A majority of clean technology respondents are single establishment firms (sixty-eight percent), while fourteen percent are headquarters of a multi-establishment firm (eight percent are an office of a multi-establishment firm) and the remaining businesses are part of a multi-national corporation (5 percent) or of another organizational structure (4 percent), such as a trade association.

To obtain information on the activities of firms in the clean technology sector, respondents were asked to select the primary segment (and secondary segments) of the industry that best described their operations, from the definition of clean technology developed during the course of Cluster Initiative Program Project 144⁴. The sector is characterized by segments of business activity, which are divided into five broad categories for this study: Renewable Energy, Energy Efficiency, Transportation and

⁴ The Cluster Initiative Program is funded by Maine Technology Institute.

Alternative Fuels, Advanced Materials (biobased) and Environmental Services (Table 2). The strengths of Maine's clean technology sector lie in Renewable Energy, with forty-seven percent of firms engaged in this area, and in Environmental Services, which thirty-four percent of respondents indicated as their primary sector. Sixteen percent of respondents indicated that Energy Efficiency was their primary sector, with the remaining businesses in Transportation and Alternative Fuels (3 percent) and Advanced Materials (biobased) (1 percent).

Table 2. Overview of the Clean Technology Sector, Percent of Respondents in each Sector (by primary area and secondary area)

Category	Segments	Primary Sector	Secondary Sector
Renewable Energy	Biofuels	47%	34%
	Biomass		
	Geothermal		
	Hydrokinetics		
	Solar		
	Wind		
Energy Efficiency	Energy Efficiency	16%	25%
	Lighting		
	Smart Buildings		
	Smart Grid		
Transportation and Alternative Fuels	Batteries	3%	11%
	Materials		
	Vehicles		
Advanced materials (biobased)	Bio-Based Plastics	1%	7%
	Green Chemistry		
	Nano-materials		
Environmental Services	Environmental Protection, Pollution Prevention Environmental Remediation Recycling and Waste management, treatment Education and Compliance	34%	38%

4. EMPLOYMENT, INVESTMENT AND GROWTH

Employment

Given the diversity of activity within the clean technology sector, employment in the sector is also diverse, ranging from organizations that reported “zero” full time employees (5 percent of respondents) to over 100 full time employees (5 percent of respondents); however the firms in this sector predominately employ five or fewer full time employees (64 percent of respondents reported five or fewer full time workers in 2013; median employment of 3 employees). Seventy-seven percent of respondents indicated that they employ five or fewer part time workers currently (median of 2 part time workers). Part time worker employment has increased from 2008 levels (median of ½ a part time worker, 90 percent reported employing five or fewer workers) and is expected to stay steady through 2020 (median of 2 part time workers, 78 percent of respondents anticipate employing five or fewer part time workers).

The occupations of employees and their educational attainment are additional areas of interest for the clean technology sector. We requested information about employment in the occupations of computer programming/information technology, engineers, managers, policy affairs, public relations, sales, scientists and technicians. Eighty-three respondents were willing to indicate the single occupation where they expected to add the greatest number of workers; of these respondents, 25 percent indicated anticipated greatest employment growth for engineers, and 25 percent for technicians. Eighty-six respondents shared the level of education in which they anticipate greatest employment growth. Thirty-one percent of these firms indicated

perceived future need for employees with 2-year degrees or high school diplomas, while 15 percent indicated anticipated greatest growth for employees with Master’s degrees.

Growth

Growth in the clean technology sector was captured by a number of indicators in the survey instrument, including facilities expansion and equipment purchase and projected revenue increases. Almost half of firms indicated they have experienced an increase in revenue of more than 10 percent in the last year. Table 3 reflects the expectations of firms with respect to growth indicators over the next three years.

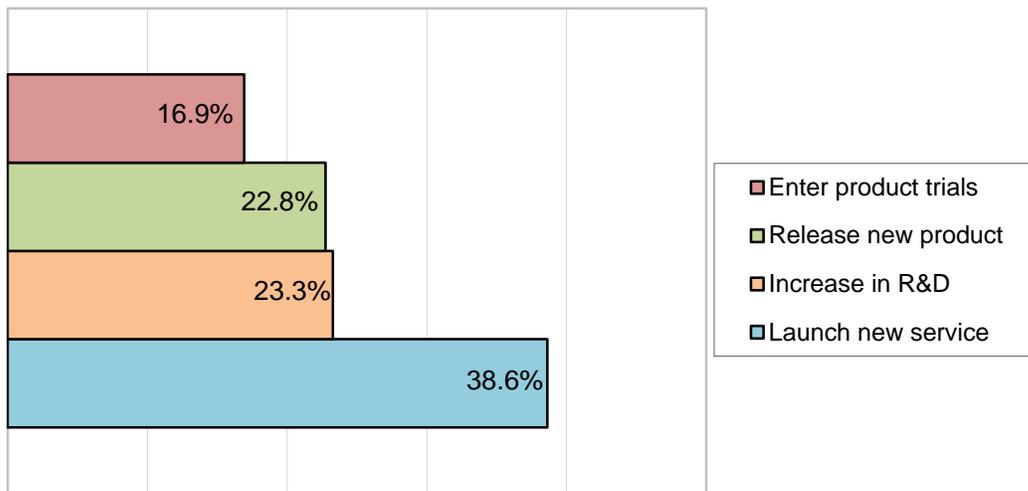
With respect to facility expansion, firms in the clean technology sector have already expanded their facilities, and expect to continue this trend. Table 3 shows firms who expanded their facilities in the last twelve months; a majority of these firms expanded their facilities by less than 2,500 square feet. Survey results also show that firms will continue this investment in their facilities, as more than half of survey respondents indicated they expect to expand their facilities during the next 3 years

Table 3. Growth Indicators

	Last 12 months	Next 12 months	3 years
	-----%-----		
Expand Facilities	14.8	27.8	57.4
Purchase New Equipment	8.7	27.5	63.8
Increase Revenue more than 10%	43.3	69.2	69.0

Clean technology firms are also employing business strategies that suggest confidence in potential growth of the industry. Firms plan to invest in new equipment, particularly in the next three years. Of the firms who anticipate purchasing new equipment, renewable energy firms are more likely to state that equipment purchases will be made in the next 3 years; while environmental service firms are more likely to report they will not be purchasing equipment. Additionally, 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 clean technology firms over the next three years, which indicates that firms anticipate further growth of their services, products and research and development activities.

Figure 1. Planned Strategies of Maine Clean Technology Firms



Investment

Sources of funding that support the growth of Maine's clean technology firms are also important to identify, as 69 percent of respondents indicated they did not receive any investment capital in 2012. Of those who received funding, there is great variety in the amount: 9 percent indicated the amount was less than \$25 thousand while 5 percent indicated external investments of greater than \$10 million. In comparison to the low external funding reported, 40 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.

Firms were also asked to identify sources of funding, from an assortment of private, state and federal programs available to Maine business (Table 4). Forty-seven percent of firms had received assistance from these sources; however, some firms were unaware of the programs listed. Firms reported the highest percent of sought and received funds from the Maine Technology Institute's Grant Program. These results suggest not only a potential need for promotion of programs available to clean technology firms but perhaps also assistance with grant writing for these firms.

Table 4. Programs for Clean Technology Firms

	Sought or Received Assistance	Unaware of the Program
	-----%	
Maine Technology Institute (MTI) funds	27	11
Private Foundation	13	7
Small Business Innovation Research Program	12	10
Research Expense Credit	0	16
Regional Economic Development Program	3	12
Tax increment-financing	5	9
Bus. Equip. Property Tax Reimbursement	7	8
Research & development sales tax exemption	4	12
FAME	11	8
Small Enterprise Growth Fund	3	12
Small Business Administration	9	7

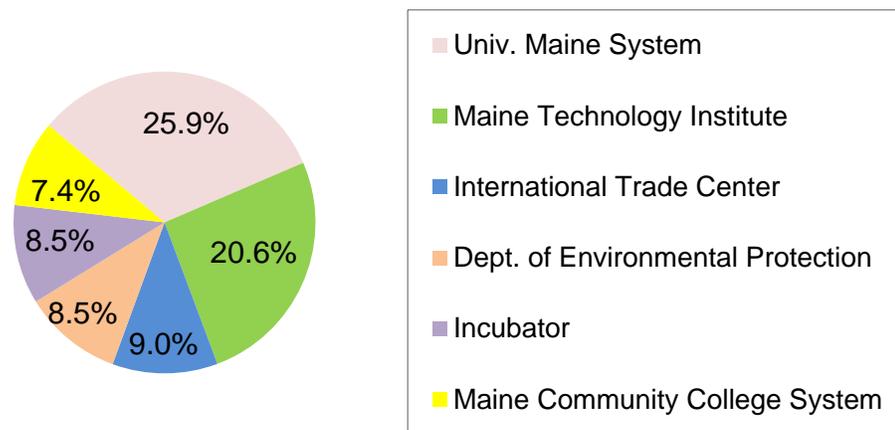
5. COLLABORATION AND COOPERATION

Clean 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 International Trade Center and Technology Development Centers (Incubators).⁵ The most common relationship reported with these Maine-based

⁵ In addition to the entities listed in Figure 2, the following Maine-based institutions were also included in the survey instrument, but were not included in this report due to space considerations and low response: Maine Department of Economic and Community Development, Maine Department of Conservation, Maine Department of Transportation, Maine Patent Program, and New England Clean Energy.

institutions was the formation of a partnership, where forty-two percent of respondents indicated they had formed a partnership with one of the listed entities. Thirty-six percent of firms reported engaging in product development with at least one of the Maine institutions, while 22 percent reported establishing a new market. Figure 2 indicates the six most common collaborators cited from the list of Maine institutions with whom clean technology firms may establish partnerships, or develop a new product or market.

Figure 2. Collaboration with Maine Institutions



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 5 outlines the collaborative activities among clean technology firms. Results indicate that firms in this sector may be more likely to have a relationship with another Maine business than with firms outside of Maine, Maine colleges/universities or non-profits for many cooperative activities. The results indicate that firms rely on other

Maine businesses, including those in the same town, for sub-contract relationships (35 percent), to share technical information (26 percent), to share equipment or personnel (22 percent), and to coordinate marketing efforts (15 percent). The most common relationship with businesses in the same town is establishment of a sub-contract arrangement. Firms establish relationships with out-of-state firms in sub-contract arrangements (21 percent), to share technical information (19 percent), coordinate marketing efforts (14 percent) and establish partnerships (12 percent).

The partnerships described in Table 5 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 either with a Maine business (22 percent) or a non-Maine business (44 percent). Ten-percent of firms indicate a plan in the next 1-3 years of acquiring another establishment located outside of Maine, and 8 percent anticipate acquiring a Maine-based firm.

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 universities located outside the state. Thirteen-percent of businesses indicate they expect technology transfers from Maine universities in the next 1-3 years, while 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, which will be discussed in a later section of this report.

Table 5. Partnerships of Clean Technology Firms

Cooperative Activity	Business in same town	Other business in Maine	Business outside of Maine	Maine university or college	Maine non-profit organization
	-----%-----				
Joint R&D.....	3	5	10	6	2
Submitted Joint Research Proposal.....	2	8	10	10	4
Coordinated marketing.....	4	12	14	2	5
Shared equipment or personnel.....	7	15	8	7	2
Coordinated supply purchase.....	2	5	3	0	1
Shared technical information.....	7	19	19	13	6
Established a new market...	2	5	7	2	1
Shared facilities and space.....	5	9	4	3	2
Launched a new service or product.....	2	6	8	3	1
Established a partnership.....	1	8	12	4	3
Established a sub-contract arrangement.....	11	24	21	7	4

Note. 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.

6. BUSINESS CLIMATE

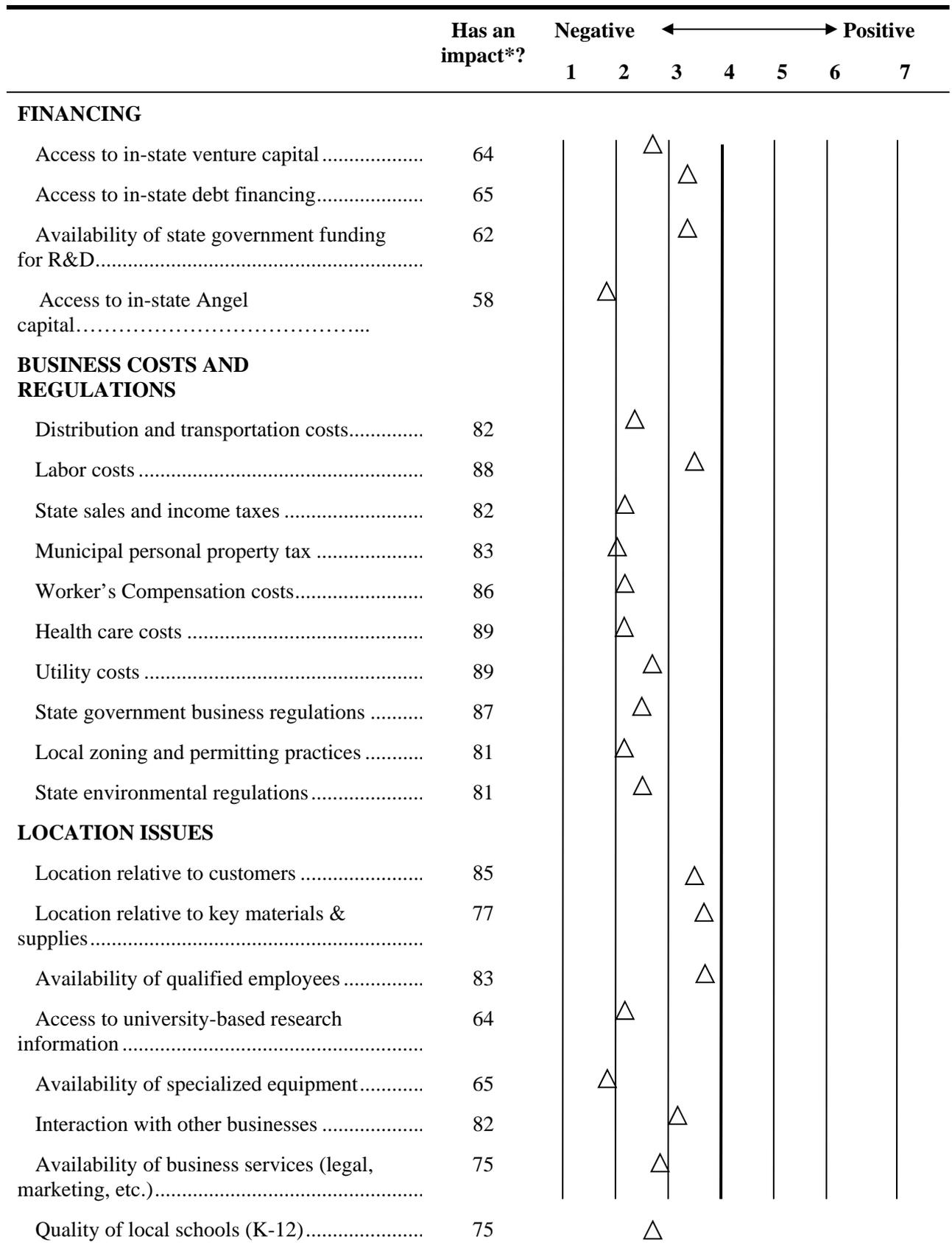
Clean Technology firms were asked to comment on elements of Maine's business climate. Establishments were asked to indicate those factors that are relevant to profitability or growth potential. If the factor was deemed relevant, firms were then asked to comment on whether the factor was a positive or negative influence, where "1" indicated very negative, and "7" indicated very positive; many factors were deemed relevant to the clean technology sector by respondents per Figure 3.

The value of "4" is considered neutral. The average rating provided for each factor is summarized in Figure 3. However, 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'. 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.

Financing Issues

These factors were deemed less relevant by participants than other listed items; however all of the factors in this category were considered 'negative growth factors' by participants. Access to in-state venture capital received an average rating of 2.7; while accessibility of in-state debt financing received a 3.3 and availability of state government funding for R&D received a 3.2. The lowest ranked of all the factors listed was access to in-state Angel capital, with a rating of 1.7.

Figure 3. Ratings of Business-Climate Factors



Local infrastructure and public services.....	78	△	
OTHER			
State and local tax incentives	80	△	
Views of Maine government policymakers ...	89	△	△
Support of local (i.e., municipal/regional) policymakers	86		
Public perception of clean technology industry	86		△
Strength of state industry association(s).....	84	△	
Maine's quality of life	92		△

* Percent of respondents who indicated item was a factor in profitability or growth potential.

Business Costs and Regulations

Establishments were asked to rate ten factors associated with the cost of doing business. Many of these factors were relevant to more than 80 percent of firms, were frequently cited in responses to the open-ended questions and were all significant negative growth or profitability factors. Health care costs and utility costs, the factors with the widest impact in this category, received an average rating of 2.3 and 2.6 respectively. The highest rated business factor (i.e., closest to a “neutral factor,” but still rated as “negative”) was labor cost at an average rating of 3.3, and was indicated as an important factor by 88% of respondents.

Location Issues

This category of business climate elements 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 80 percent of firms. Location relative to consumers received a negative rating of 3.3, availability of qualified employees received a negative rating of 3.3 and interaction with other businesses was rated 3.2. Location relative to key materials and supplies was viewed as a negative growth factor, with an average rating of 3.4, impacting 77 percent of firms. Of interest, the lowest rated locational issue was access to specialized equipment at 1.9, the second lowest of all the business climate factors.

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. Eighty-nine percent of firms felt that the views of Maine government officials impacted their business, and that these views were negative growth factors (average rating of 2.4). Support of local policymakers impacted 86 percent of firms, and was also negative (rating of 3.1). While 86 percent of firms indicated that public perception of the industry impacted their business, the average rating of 3.7 was neutral. Finally, the highest rated and only positive growth factor was Maine's quality of life, which received an average rating of 5.0. Ninety-two percent of firms indicated that Maine's quality of life impacted the growth potential of their business.

7. OPEN-ENDED QUESTIONS

The survey also included several open-ended questions that allowed clean 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, the highest reported reason was Maine's quality of life; respondents also indicated that the primary founder was either a Maine native or living in Maine at the time of business opening. Respondents also commented on the quality of Maine's workforce in terms of work ethic, competence, and availability of excellent workers. The opportunities available to clean technology firms were also frequently cited; respondents noted the natural resources of

Maine as providing excellent business opportunities, particularly in renewable energy production and environmental services. Interestingly, a positive business climate was also cited by participants including professional relationships and support from specific entities including Efficiency Maine, Maine Technology Institute (MTI), The University of Maine and the Maine International Trade Center.

Participants shared that a pervasive perception exists that ‘nothing great can happen in Maine’. Respondents indicate that this negativity yields a lag in support for innovation, lack of investing (especially Angel Investors) or funding and inconsistent support from the State. Related, respondents noted that the geographic distance of Maine from some major markets is isolating, both from consumers as well as colleagues and the R&D or manufacturing centers for related industries. Additionally, participants noted that even within Maine, the in-state collaborations and technology transfer may be limited in part due to geographic separation.

Operating costs were also cited as a primary drawback to operating a business in Maine. As previously mentioned, the distance and accessibility to major markets, including the transportation cost, was prevalent in responses. Other costs of operation, including energy costs, health insurance for workers, taxes and labor costs were also identified as drawbacks. In addition, respondents noted that state regulations were often at odds with business interests. However, despite these drawbacks, when asked what would induce a firm to leave Maine, many firms re-affirmed that being a Maine-based firm was important to their identity. Others noted that if costs continued to rise, or if the negative business climate factors noted in Figure 3 continued, they would be forced to relocate outside of Maine.

When asked to indicate what actions state policy makers could take to enhance the competitiveness of Maine's clean technology sector, the responses concentrated on regulation changes, operating costs and funding. A common submission for improving the competitiveness of clean technology firms by policy makers centered on legislative action including (a) support for a statewide renewable energy policy and/or increased support for energy efficiency, and (b) reaffirming commitment to funding opportunities for innovative and/or small businesses. Participants also recommended policy makers revisit regulations regarding licensing and permitting requirements for renewable energy production facilities and for environmental service providers to better support innovation. Respondents noted a need for reduced operating costs including lower tax rates and health insurance rates for small businesses.

Respondents also commented on the role that industry support entities could play for increased competitiveness in the clean technology sector. Respondents indicated that industry support entities could play a role in addressing the negative 'nothing great happens in Maine' perception previously mentioned. Industry groups can be engaged in advocating with a strong, consistent and collaborative voice. This can include marketing clean technology as a cluster and advocating for policy and infrastructure changes, including reaffirming existing funding commitments such as R&D bond funding, FAME Seed Tax Credit, and Efficiency Maine. Industry collaboratives may also be proactive in the creation of opportunities for Maine firms including greater efforts to connect Maine businesses with capital within and outside of Maine. Respondents suggested the formation of a 'Venture Capital Marketplace' where incubation and funding of new idea can occur but also make available post-seed funding opportunities.

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 had benefited their business or organization. Firms cited a number of industry collaborative and state/municipal agency collaborators including: Maine Technology Institute, Maine Center for Enterprise Development, Maine Wind Industry, Maine International Trade Center, Efficiency Maine, University of Maine, Maine Maritime and regional Chamber of Commerce. Relationships varied from contractual relationships to sharing of knowledge, space or personnel with another entity. Additionally, firms cited the need to collaborate on grant proposals and sub-contract relationships as well as development of new projects/markets.

8. SUMMARY AND CONCLUSIONS

The Maine clean technology sector includes firms and organizations operating in fields as diverse as environmental consulting services, renewable energy production, energy efficiency and retail sales of 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 primary sector, employment, investment and collaboration among firms and other organizations.

Survey results also indicate that, while members of the clean technology sector perceive potential growth opportunities in the industry, they are pessimistic about the current business climate. Evidence of growth reported by respondents includes investments in facilities, equipment and new products/services as well as plan to continue these investments over the next three years. An additional sign of confidence was the current, and anticipated, revenue increases expressed by participants. Forty-three percent

of firms had experienced a revenue increase greater than 10 percent in the past year while 69 percent of the firms expect to see revenue increase greater than 10 percent in the next 12 months and in the next three years.

Clean technology firms report that the cost of doing business in the state is harmful to their growth and profitability. More than 80 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 to have a significant, negative impact on their organization's economic viability. In contrast, only one business climate factor was identified as having a significant positive effect: 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 clean technology sector in Maine. First, a role may exist for industry support entities to widely, and jointly, promote the clean technology sector; proactively advocating, and creating opportunities for, sector members. Of importance, firms in the industry remain interested in funding opportunities; however as noted in Table 4, a small percentage of firms have used existing funding mechanisms. A role may exist for industry support entities to connect firms to existing, or new investment and funding opportunities or engage in collaborative opportunities in pursuit of new markets. The E2 Tech Council, and other support entities, may also be able to assist firms by facilitating further intra-industry collaboration, which may yield shared personnel or equipment, and potential contract arrangements in pursuit of these new markets. Second, while collaboration plays a key role in the sector, there remains room for enhanced interaction among clean technology entities. As seen in

Figure 2, a little over one-quarter of firms have a relationship with the University of Maine System and far more limited collaboration with pertinent industry participants such as the Department of Environmental Protection and the Maine International Trade Center. Promotion of support programs for clean technology firms could be administered through these entities, as well as the E2 Tech Council of Maine.

Third, the firms of Maine's Clean Technology sector 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/micro-businesses and innovators would have a positive influence on the industry particularly given the composition of the industry, in which 64 percent of firms employed five or fewer workers and sixty percent are less than 10 years old.

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