

What Business Wants: Growing Green Jobs in Minneapolis Saint Paul

Prepared by Civic Source with Assistance from
Dowell Stute and Associates

for the BlueGreen Alliance
and the Minneapolis Saint Paul Mayors' Green
Manufacturing Initiative



BLUEGREEN
A L L I A N C E

What Business Wants*: Growing Green Jobs in Minneapolis Saint Paul

Assessment Report for Phase II Mayors' Green Manufacturing Initiative

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****This title could easily have been “What Green Business Wants,” but the authors selected this version specifically because one of our key findings is that green businesses have the same needs and perspectives as other businesses.***

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Executive Summary

“In what was billed as the first-ever hard count of ‘clean-energy economy’ jobs, businesses and investments, a study released Wednesday found that jobs at companies like Lumificient in Minnesota’s clean-energy sector grew six times as fast as jobs overall in the state in the past decade. The study by Pew Charitable Trusts found that such jobs grew 11.9 percent from 1998 to 2007, while jobs overall in that same period in the state grew by 1.9 percent.”

Star Tribune, June 10, 2009

The promise of green jobs is real and there are strategic opportunities for the Minneapolis Saint Paul region to grow and attract more than its fair share of these jobs by building on our existing strengths, creating a climate that fosters innovation and supporting collaboration across sectors to leverage entrepreneurship, research and development and creative use of resources.

Civic Source and Dowell Stute and Associates were asked to assess the potential for generating employment and economic activity in the green economy. To do so, we conducted interviews and focus groups with business leaders, owners and managers of companies that provide green goods and services and with those who are not part of the green economy. We also did extensive analysis of data and other research from multiple sources to help understand the dynamics impacting the potential job growth from green economy firms.

While attracting firms from outside the region is possible, the cities should recognize that the tax climate in Minnesota is a major challenge that is not entirely overcome by our other assets, such as a highly skilled and educated workforce, enhanced quality of life and numerous large companies in the area. “Growing our own” green economy firms and helping those firms be successful while maintaining their headquarters here is a significant priority for economic development. Economic development and associated marketing efforts should be focused on enhancing Minneapolis Saint Paul’s reputation as being hospitable to growing companies, supporting entrepreneurship and valuing innovation.

A cautionary tale: Not every city is going to become a global center for green jobs. Austin, Texas, for example, hasn’t been able to create a green manufacturing sector. Austin is a city that did everything right: invested in research, created an investment environment, paid rebates to people if they used locally-produced products, developed technology parks and clean-tech incubators. Despite having all the necessary ingredients, they haven’t attracted significant new jobs and new green economy firms. Toledo, Ohio, has succeeded. Building on its legacy of a strong glass industry and manufacturing base, Toledo has become a hotbed of solar manufacturing. This report examines Toledo’s success and the implications for growing green jobs in Minneapolis Saint Paul. We know that there is intense competition for these jobs and our goal must be to build a solid, realistic strategy based on our region’s unique competitive assets.

The message from business is clear: Minnesota and Minneapolis and Saint Paul have done many things “right” in terms of policies that have helped drive demand and thus grow certain sectors. And we have a huge competitive strength because of the presence of 19 Fortune 500 companies and a couple dozen other large firms who are leaders in various market segments.

However, other states and regions are gaining on us. A report from the Blue Green Alliance conducted by the Renewable Energy Policy Project (How to Revitalize America's Middle Class with the Clean Energy Economy, June 15, 2009) suggests that Minnesota will not be among the top ten potential renewable manufacturing job states or the top five job growers in wind manufacturing, PV manufacturing, geothermal manufacturing or biomass manufacturing unless the state pays special attention to growing those industries. Other states have stronger manufacturing infrastructures from which to launch renewable manufacturing initiatives. Minnesota, however, enjoys close proximity to one of the country's major wind markets.

Another primary factor impacting the forecast for Minneapolis Saint Paul to grow green jobs is recognition that these sectors — wind, solar, green chemistry, building products, transportation, etc. — are all very much emerging, rather than mature, markets. As such, they are disorganized, frequently competitive, sometimes collaborative and relying on market forces to shake out sustainable innovations and successful firms over time. This means it is difficult to identify precisely which technologies and sectors have the greatest potential for job growth in our region.

Based on these conditions, we heard from businesses a wide variety of recommendations for how Minneapolis Saint Paul can support the growth of the green economy. We also compared the experience of other regions, and based on this analysis, have developed eight recommendations for Minneapolis Saint Paul:

1. *Create a climate for growth and innovation*
2. *Provide support and connections through networks, communications*
3. *Develop policies and programs to reduce friction in the green marketplace*
4. *Develop policies and programs to drive demand for green products and services*
5. *Retention, retention, retention*
6. *Engage in attraction based on current strengths*
7. *Market the assets, create buzz and educate consumers*
8. *Ensure a pipeline of skilled workers*

Introduction

Building on a substantial base of research and market analysis prepared as part of Phase I and Phase II of the Mayors' Green Manufacturing Initiative, Civic Source, with the assistance of Dowell Stute and Associates, assessed the "potential for market and job growth in the Metro area in the areas of green chemistry, waste reclamation and solar and wind technologies."¹ We also identified specific niches where Saint Paul and Minneapolis can effectively compete within these sectors and identified the tools and resources that will be needed in order to attract and grow jobs in these areas. The intent is that this report will help lay a foundation for the marketing program.

Critical to the success of the Mayors' Green Manufacturing Initiative is strong support and buy-in from the business community. Green sector business leaders and the broader business community must have confidence in this effort and be willing to actively assist in the work of growing green jobs. Therefore, our approach to this project was to utilize our knowledge of and experience with the private sector to validate the earlier research findings and ground the future marketing program in the real world. In addition, we based our work on recognized economic development principles and models, including the work of Michael Porter and others who have studied how clusters develop.

"Our analysis of the world's most successful clusters shows that they have first established themselves as world-class players in an emerging specialty before expanding. This focus allows locations to concentrate limited resources, such as labor and capital, on developing competence and credibility. When successful, the result of these first two steps is the emergence of what we call an "innovation hot spring:" a small and fast-growing hub that relies on a small number of companies to establish itself as a relevant world player in a narrow sector. While a hub's initial success can often be fueled by relying primarily on local talent, the importance of attracting, developing and retaining a vibrant base of world-class talent increases as clusters mature and grow in complexity."

Clusters: Building an Innovation Nation, André Andonian, Christoph Loos, and Luiz Pires. McKinsey Quarterly, February 2009.

This approach, built on research, tested in the business world and reflecting the competitive position of Minneapolis Saint Paul today in the green economy, recognizes that there is significant opportunity for the region to grow green jobs. At the same time, competition for those jobs is fierce, well-funded, organized and aggressive. Prudent and strategic use of our collective assets will be required as virtually all mid-size and larger cities, states and nations are also competing to attract and grow jobs in the green economy. According to a May 2009 report from Living Cities, a collaboration of 21 of the world's largest foundations and financial institutions, only one in six of the 40 largest cities in the U.S. say sustainability **is not** one of their top five problems.

"Rather than follow a wave — as in the case of biotech — cities need to identify what are the right sectors for them. For many old industrial cities, cleaner, more advanced manufacturing will build on past prowess."

¹ Scope of Services Contract February 2009

Health and Environmental Funders network August 2007 article on “Integrating Green Chemistry and Safer Materials into Regional Economics and Workforce Development Strategies” by Julia Parzen.

“The reality for Austin (Texas) is that cities and states are entering into a competitive frenzy to attract renewable-energy companies, and the price keeps going up. While nearly every locality can shift to renewable energy and gain installation jobs, every state and city cannot be a national production and design center. Texas and Austin were early movers in promoting solar energy. However, neighboring New Mexico and Colorado as well as other states have started aggressively courting renewable-energy companies with attractive incentives packages, and industry happily plays off one against another. “

“Cities on the Front Lines,” Joan Fitzgerald, The American Prospect, April 2009.

In addition to intense competition for green jobs, we also caution that more and more studies suggest that a sizeable portion of the green job economy will be re-training ... existing jobs done differently. Installing energy-efficient building products, making green consumer products, even manufacturing products from recycled materials, are all existing jobs that through innovation are now contributing to reductions in greenhouse gas emissions. So, while we do suggest strategies to help attract new jobs and strategies to help new companies, and therefore new jobs emerge, we also believe that cities will benefit from recognizing a tremendous amount of economic activity already occurs when “old jobs” become green.

“The vast majority of jobs created through a green economy are in the same areas of employment that people already work in today. Constructing wind farms creates jobs for sheet metal workers, machinists, and truck drives, along with wind forecasters and engineers. Increasing the energy efficiency of buildings through retrofitting requires roofers, insulators and building inspectors. The largest number of green jobs will be in occupations that require an apprenticeship, professional certificate or one to two years of postsecondary education.”

Research Brief, John J. Heldrich Center for Workforce Development, February 2009.

We also heed the concern of some business leaders that cities must be careful not to promote one set of companies at the expense of other perfectly viable companies. “Recognize that some green jobs will put non-green workers out of work,” said a business leader. In addition, some policies, such as Minnesota’s renewable energy mandates, increase costs for existing companies, pushing some to consider down-sizing or relocating to areas where energy costs are less.

Finally, the impact of the 2009 American Recovery and Reinvestment Act on the region’s green economy is still being sorted out. And, Congress is likely to pass another landmark piece of legislation, the American Clean Energy and Security Act, later this year. Both of these massive federal initiatives will have dramatic impact over time on Minneapolis Saint Paul’s green economy.

Against this backdrop of global competition for green jobs, a young and immature market and Minneapolis Saint Paul’s strengths and weaknesses, we suggest eight key strategies that we believe, based on what we heard from businesses, will support and expand the green economy in our region.

Background and Methodology

This report utilized the research in Phase I of the Mayor's Green Manufacturing Initiative, as well as new research prepared for Phase II on waste reclamation, green chemistry, analysis of a database of potential component manufacturers in five sectors and surveys of existing green companies conducted as part of a market analysis.

In addition, we reviewed work done by other cities, states and regions, economic development organizations and trade groups.

To bridge the research and the real-world, we conducted nearly 50 interviews with business owners and managers and four focus groups with a total of 25 participants. We also reviewed our findings with an Executive Roundtable of 10 opinion leaders in the business community. The interviews were to validate the data and provide additional context for recommended strategies. In addition to interviewing senior management of green firms, we also talked with other business leaders in order to get their perspective on our competitive strengths, weaknesses, opportunities, etc.

The Pew Charitable Trust released a report on June 10, 2009, noting that jobs in the clean energy sector have generated significantly more jobs than the overall economy. Tracey Grose, vice president of research and strategic development at Collaborative Economics responded that, "The most important message is the green economy is diverse. It spans almost the entire economy. There are green activities in nearly every sector," as well as in every state.

Principles and Observations

One of the many principles that underline this assessment is that green businesses, whether in green chemistry, renewable energy, waste reclamation or other sectors, generally have the same needs and perspectives as other businesses. They want a fair and transparent regulatory environment that enables them to sell their products. They want access to capital that could include, but doesn't require, public subsidy. And, they want good workers and to do business in a place with a high quality of life and good business climate. In other words, they want what most businesses want.

"Green is not a religion it's just business. Most in the manufacturing world are already green as they have had to reduce energy costs and have implemented lean manufacturing which is green, already."

Bill Blazar, Senior Vice President, Minnesota Chamber of Commerce

"Right now 'green' is more a marketing buzzword than an industry. I'm about as excited to participate in the creation of a wind turbine as I am to help with the creation of a new consumer product or a new defense project. They are all good business opportunities."

Steve Wise, Cass Screw Machine Products

"Green needs to deliver on the bottom line first and foremost."

Alice Wheelwright, Vice President, Global Market & Segment Initiatives, Ecolab

Dan Carr, CEO of The Collaborative, summed it up this way: “Green or not green, government doesn’t create jobs. Government should keep out of the way. Government’s role is education, amenities, infrastructure. The best strategy is to grow existing companies.”

Another key principle that emerged during our research is that in many instances in the green economy, the private sector is ahead of government. Businesses have adopted energy conservation practices, not because of government mandates, but because it saves money. Businesses have developed new green products, not because of policy, but in response to market trends. Businesses are also ahead of regulation, with many of those we spoke with citing concerns about inadequate or ill-conceived local and state regulations impacting their cost structures.

Alex Cirillo, Vice President of Community Affairs at 3M, a member of The Itasca Project and Chair of the Bio-Business Alliance of Minnesota, notes that 3M’s commitment to “greening” their processes began in 1975, but was entirely driven by their own business needs rather than regulation. Today, companies are keenly aware of the impact of reducing energy costs on their bottom line, as Bob Riesselman, President of Midwest Region for Sebesta Blomberg, a national engineering firm said, “managing energy is managing cost and most investments in energy conservation have a 3-5 year payback, so it makes sense to do it.”

“Donaldson Company used Six Sigma in 2007 to reduce utility expenses and as a result expects to save 15 percent of energy costs. We see more opportunities in other plants and processes as well.”

Steve Zeller, Global Real Estate, Donaldson Company

Tim Goodman’s report on Municipal Solid Waste Reclamation Trends noted that, “The private sector has been at the forefront of advancing recycling through financial investments, market development and collection/processing of recyclables.”

In the Minneapolis Saint Paul region, businesses are also frequently ahead of trade associations as well. Many trade and business groups are in the early stages of developing programs and initiatives to support companies in the green sector.

Other observations about the green economy in Minneapolis Saint Paul are that this is very much an emerging and disorganized market. Companies are coming in and out at a fast pace. The barriers to entry in some categories, such as solar energy installation, are relatively low, and the green economy is filled with very disparate sectors. Renewable energy has little in common with waste reclamation or green chemistry. Green building products may use green chemistry, but the market segments share little else. Because it is an emerging market, there is a lack of credible information on the scale and stability of firms in the market. NAICS codes provide some information, but miss some suppliers. For example, a long-time Minneapolis area metal machining company, Checker Machine, has found success making frames for wind blades, but doesn’t appear in a NAICS list of Minnesota-based companies that could manufacture wind components.

Another challenge with tracking this sector are that many surveys are self-reporting, while other information sources, such as Dun & Bradstreet and Reference USA are not consistent. Larger firms are reluctant or unable to segment green jobs from other jobs. And, not only do firms compete with one another, but technologies compete with one another, for example solar competes with wind.

And, there is a lack of information about the “net” impact of the growth of green jobs, as little research has been done to examine what happens to traditional industries that are negatively impacted by higher energy costs, additional regulation, etc.

Therefore, our belief is that Minneapolis Saint Paul must be cautious in categorizing firms and sub-sectors. Rather than targeting specific sectors — the “winners” (and therefore losers) — focus this work more generally on strategies that support a wide range of firms engaged in the green economy but pay special attention to our existing strengths and clusters. Minnesota is a global leader in chemistry, both because of the University of Minnesota and because we are home to several leading chemistry firms that do both research and development here and manufacture here. Much like in the medical device sector, leveraging these assets to both grow our own firms and attract new firms is key. Creating a climate for growth where talented people engaged in the green economy want to learn, live, innovate and produce is the foundation for success.

We heard strongly from business that the most important role the cities can play is to provide leadership and long-term commitment. Successful initiatives require political leadership from the Mayors and active business engagement if they are to succeed. That said, we also heard from businesses that in order for this effort to have impact, be credible and, most important, be sustainable, much of the work the cities can do should be institutionalized in an entity outside of government. There is a fear that pursuing growth of the green economy is another “flavor of the day” with elected officials and that support for this sector will erode over time as leadership changes and other opportunities come along. Therefore, we endorse the work of the Minnesota Environmental Initiative to develop a sustainable partnership that exists with — but not as part of — government going forward.

“The cities should focus on programs that create a thousand small wins (in green job creation) vs. one big one. That is what is sustainable and realistic.”

Lois Quam, President, Tysvar and former Managing Partner, Piper
Jaffray Clean Tech

A final observation involves a sector not part of Phase II of the Mayor’s Green Manufacturing Initiative. Our interviews and research strongly suggest that water is an area where our region has a global market presence and high potential to grow employment. Minnesota is a center of water technology with globally-recognized firms such as Pentair, FilmTec, GE Water & Process Technologies (formerly Osmonics), Lemna and others with more than \$3 billion in sales. With water becoming “the next oil,” many around the world are focusing on water technology to deal with emerging scarcity of water, water treatment and water efficiency. Like green chemistry, the presence of these leading companies in our region has already established Minneapolis Saint Paul as a center of innovation and magnet for talent for this sector.

Strengths and Weaknesses of Minneapolis Saint Paul Region

An essential step in creating a climate to grow the green economy is identifying the region's strengths and weaknesses. We utilized a framework based on Michael Porter's (*The Competitive Advantage of Nations*) model of cluster analysis, which identifies four primary conditions or regional characteristics that are needed to support the development of an economically-competitive cluster.

1. **Demand conditions** – strength of local and export demand. Strong local demand helps an industry become more competitive as suppliers can get to know customers and their needs easily, and the high standards set by local customers force suppliers to produce better products that can be exported outside the region. In addition, other economic development research points to demand from outside the region as important to growth as industries that sell their goods and services in competition with firms outside the state tend to have higher productivity rates, and therefore contribute significantly to a region's prosperity.

Minnesota's leadership and support of renewable energy going back over a decade has helped create an active market of established firms and start-ups in this sector, including bio-fuels, wind and solar energy. Minnesota's "25 x 25" requirement is one of the most aggressive Renewable Portfolio Standards in the nation. New policies at the state and local level and federal stimulus funding, including the Solar Cities program and new funds for both residential and commercial energy efficiency and renewable energy investments, are also leading to increased demand for those sectors.

Mark Lofthus, Business Development Director at the Minnesota Department of Employment and Economic Development, commented, "Energy policy at the state level is a major driver of demand and driver of investment. Companies appreciate the steps Minnesota has taken so far, but other states are doing more."

In 2005 and 2006, Xcel Energy was the fifth largest power utility in the nation and the largest provider of wind-powered energy in the United States, achieved almost exclusively through contracts with independent wind-farm developers. Xcel Energy also committed to 30 percent renewable energy in its portfolio by 2020, with a stated goal of 3,000 megawatts of wind energy. Achieving its 2020 goal would require the addition of at least 100 wind turbines annually, based on current technology.

While Minnesota's historic leadership in wind energy production is acknowledged, the assessment of our future prospects is a bit less enthusiastic from some in the industry. Brent Bergland, Construction Executive, Renewable Energy at Mortenson Construction said, "Minnesota's wind policies are reasonably good, but not as competitive as some others. We cannot be complacent."

The recent announcement of new incentives and policies to support solar energy installations are positive and seen as helping grow that sector.

Minnesota's leadership in working with its utilities to incent and promote energy efficiency for residential and commercial buildings is also recognized as a positive factor in driving demand for new technologies and investment in efficiency efforts. According to many businesses we interviewed, Minnesota is well ahead of most other states on requiring

significant (annual energy savings equal to 1.5 percent of sales) through conservation improvement programs.

The cities of Minneapolis and Saint Paul are both actively engaged in a variety of other strategies to drive demand, including adopting green procurement policies, establishing programs to increase energy efficiency of public buildings and buildings receiving city assistance, embracing the Energy Innovation Corridor along the Central Corridor, among other efforts.

Our history of environmental awareness has resulted in high levels of consumer awareness that also drives demand.

In terms of green chemistry, consumer demand is having a significant impact on the consumer products side of the industry, especially in cleaning and personal care products, according to a recent study by EnviroMedia for Green Seal. While only 2 percent of people think using green personal care products will most benefit the environment, 31 percent of people surveyed did use green personal care products. The numbers are even higher for green cleaning products, where only 4 percent of people think switching to green cleaning products will have a significant effect on the environment, but 58 percent of those surveyed purchased green cleaning products.

2. **Factor conditions** – costs, infrastructure, resources and scientific and technical knowledge in the region, which are often measured by rankings of research institutions, patent activity, capital formation activity and business climate measures.

Cost

Historically, Minneapolis Saint Paul and Minnesota have succeeded and competed based on the strength of the workforce, labor productivity rates, high quality of life, innovation climate and support of entrepreneurship. We are also recognized as having a strong infrastructure and skilled expertise in both management of companies and scientific and technical knowledge. However, we frequently rate lower on cost, primarily on tax structure and energy costs. This is a continuing concern from an attraction standpoint, as Minnesota doesn't make the cut if companies evaluate potential locations initially on business costs.

"Industries seeking plant locations naturally seek lower-cost locations — it's going to be extremely unlikely that any sensible manufacturing company will seek a new location in larger cities like Minneapolis, Pittsburgh or Cleveland because of anticipated higher costs, plus more uncertain quality of some public services in areas like law enforcement, education and health. It's more likely that such companies will go to smaller urban areas like Fargo or St. Cloud or to counties on the fringe of the metro area."

Fred Zimmerman, Emeritus Professor, University of St. Thomas Professor of Engineering and Management

Infrastructure

Another key competitive asset we possess is the presence of 19 *Fortune* 500 companies and other large firms. The presence of these large firms helps to attract talent and creates recognition that despite some higher costs, businesses can be successful here. As Alex Cirillo, Vice President of Community Affairs at 3M notes, this big company base is what distinguishes Minnesota from the Dakotas and Iowa.

Dan Carr, president of The Collaborative, who has watched the clean-tech sector for several years, added that, “For years, Minnesota has had more per capita Fortune 500 headquarters than anywhere else in the country. We’ve seen an ebb and flow in these big companies, but overall, these large corporate talent magnets have provided a huge plus to our innovation economy. In addition, the variety of industries the big companies represent has had a fertilizing impact on our state’s innovation economy, spinning off start-up companies, budding entrepreneurs and seasoned investors.”

These anchor firms are an essential ingredient for growth in the regional economy, as a recent study from The Brookings Institution on the growth of high-tech clusters found.

“The three second-tier high-tech centers emerged as a result of the growth of anchor firms — firms that employ a significant number of talented employees, are engaged in innovation, have strong market connections inside and outside the metropolitan area, often dominate or play a strong role in their product markets and have spinoff companies. Anchor firms have other characteristics that make them especially likely to influence metropolitan high-tech growth. These firms are leaders in their specific markets. As a result, they are able to invest in research and development. They play an important role in the local economy, supporting much of a metropolitan area’s employment and income and, directly or indirectly, creating business opportunities for locally-based small- and medium-sized firms. Consequently, their growth and decline can have large, impacts on the economies of their host metropolitan areas.”

Bootstrapping High-Tech: Evidence from Three Emerging High Technology Metropolitan Areas, Heike Mayer. The Brookings Institution, June 25, 2009.

The University of Minnesota has increasingly recognized the need to organize its resources around green initiatives and has invested in creating centers of excellence across a broad array of fields, including The Initiative for Renewable Energy and the Environment, Center for Transportation Studies, Minnesota’s Institute on the Environment, new Center for Sustainable Polymers, etc.

“The U’s Center for Sustainable Building Products helped us develop a tool to demonstrate the economic and carbon footprint benefits of a new product. They are a great asset and more people need to know about them (CSBR).”

Focus Group Participant (Large green chemistry company).

Importantly, the University of Minnesota’s strength in materials science, a key enabling technology, stands out and is a competitive asset. The University’s chemical engineering program ranks among the top three public research universities in the nation.

“Universities with top programs in cutting-edge renewable energy research are proving to be a strong lure for manufacturing startups in the Great Lakes region ... The Mechanical and Materials Engineering Department at Queens, which specializes in solar cell research, was a major lure in Everbrite Solar’s decision to locate in Kingston.”

Site Net Dispatch, May 28, 2009.

However, several interviewees expressed concern either generally or specifically about the University of Minnesota’s ability to continue to attract high-level talent and ability to produce engineers given significant budget issues the institution faces. US News and World Report ranks Minnesota 23rd in graduate engineering schools and 34th in biological sciences. The

2009 US News and World Report does not rank the University of Minnesota in the Top 20 US Universities for Environmental/Environmental Health.

“The environment that enabled food and medical device industries to flourish is no longer as favorable. One reason is that the public, private, and academic sectors have drifted apart at a time when partnerships are critical.”

Destination 2025 Roadmap: Recommendations to Grow Minnesota’s Life Science Industry

A major deficiency that was noted by interviewees was that the region lacks a strong, central economic development entity. “There appears to be no concierge for the region who helps a company with real estate, incentives, workforce, like other regions have,” commented Alex Cirillo, Vice President of Community Affairs at 3M.

Issues with transmission capacity and supply chains pose a challenge in Minnesota in the wind sector according to Brent Bergland, Construction Executive, Renewable Energy Groups at Mortenson Construction. Mortenson has a 35 percent market share in wind turbine construction in the U.S. He also noted that he would expect most wind component manufacturing to occur closer to where the growth markets are, primarily in the west and southwest, partially due to the higher energy costs in Minnesota.

Resources

“This industry is waiting for leadership. The tax incentives and stimulus money is not a sustainable funding source.”

Focus Group Participant (solar sector).

In terms of resources, especially capital, our ability to compete and grow this cluster is challenged. Venture funding in the region has historically been limited, though some high-potential companies such as Segetis and Draths have attracted investment from a leading clean-tech venture fund, Khosla Ventures. The 2009 Global Venture Capital Survey by Deloitte Touche Tohmatsu (New York, NY) and the National Venture Capital Association (NVCA) reported that of more than 700 VC firms surveyed worldwide, 63 percent expect to increase their investments over the next three years. Technology advances, growing consumer demand for alternative sources of energy and the ambitious plans of governments worldwide to invest in clean technologies have made this sector a key focus for the venture community. Whether these investors will find their way to Minneapolis Saint Paul is unknown. Perhaps the biggest strength we have when it comes to capital formation is the presence of Doug Cameron, Managing Director and Chief Science Advisor of Piper Jaffray, who is almost single-handedly marketing Minnesota clean tech companies to investors from outside the region.

“The regions that have excelled at biotechnology development are not those with the greatest research resources. They are the ones with research resources, capital, and entrepreneurs. Venture capital is as important as research.”

Brookings Institution, February 2009.

The role of the state in leading and supporting green economy jobs is a concern to business. Most major expansions in the U.S. include significant financial incentives from the host state as well as local subsidies. When it comes to large scale financial resources

provided by government, Minnesota (and by extension the cities of Minneapolis and Saint Paul), have traditionally lacked significant subsidies. As one CEO of a mid-sized company stated, “it simply isn’t in our DNA to offer millions of dollars to attract a plant here and whether you agree or not, major plant relocations or expansions are mostly driven by the level of incentive offered.” The defeat of the Green JobZ program and the Angel Tax Credit proposal during the 2009 legislative session hamper the region’s ability to attract and retain green businesses.

Jim Stoppert, President and Chief Executive Officer of Segetis, noted in a Star Tribune article March 29, 2009: “When you think about what Minnesota has going for it, it has quality of life, it has an industrious workforce, it has resources at the University that are available (we started out at a U-owned incubator). But what it doesn’t have is government incentives, be that grants, loans, programs to incentivize companies like ours to build major manufacturing facilities here.”

“Whether you agree or disagree, early-stage and growing companies need capital and so money talks,” said Alex Cirillo, Vice President of Community Affairs at 3M. “If the cities are serious about capturing business, they have to pay to play,” he added.

In addition to incentives, the state of Minnesota’s limited marketing and economic development advocacy resources are also a weakness. Creating a strong presence at the major international trade shows, such as the American Wind Energy Association annual conference, is good, but other states are far more aggressive at promoting themselves. “Iowa has someone on the ground in Europe calling on all the energy companies,” stated Brent Bergland, Construction Executive at Mortenson Construction. One consultant working with a wind turbine manufacturer reported that while “Minnesota was still trying to find the right person to talk to this company, North Dakota had emailed all the relevant documents to me and offered to fly me up the next day to have lunch with the Governor.”

“We worked with a small systems company (for wind) where we could have brought them here. We were competitive in what our company could supply them, priced well, and they liked Minnesota. But the state of Ohio gave this company \$1.8 million to build a plant there. We never had a chance.”

Dave Fiedler, President, COO, Checker Machine

“It would be great if Minnesota could do some things to keep itself in the running ... I think that having a very responsive government that is very proactive, and not so passive, would be helpful, because some other states are very proactive.”

Doug Cameron, Managing Director and Chief Science Advisor of
Piper Jaffray

3. Related and supporting industries – especially those providing for local sourcing of products and services.

There are significant differences in the density and expertise of related and supporting industries across the green economy sectors. Some sectors, such as green chemistry, benefit from an active and robust general chemical market in the region.

The regional supply chain in wind and solar manufacturing are in early stages, but the region is fortunate to have a long history of precision manufacturing and machining expertise important to both sectors.

In the wind sector, Brent Bergland from Mortenson Construction sees Minnesota as having a strong competitive advantage because of the legal, financial and engineering expertise located here. “Some of the best engineering for the wind industry is done in Minnesota,” he stated.

The establishment of the Minnesota Green Enterprise Assistance program at the Minnesota Department of Employment and Economic Development authorized in the 2009 Legislative Session will help ease the flow of information and coordinate multiple agencies to expedite delivery of grants, licenses, permits and other state authorizations and approvals for green economy projects.

“The culture that is being created around biomaterials innovations is quite exciting. Reminds me of the old days in the medical device industry. That became a cluster and we have the makings of that in the new renewable materials sector. Startups around Cargill and Nature Works for example.”

Dale Wahlstrom, BioBusiness Alliance of Minnesota (Star Tribune, March 2009).

Katrina Mitchell’s June 2009 report, *The Green Chemistry Landscape in Minneapolis Saint Paul*, also identifies important supporting-industry strengths, stating, “Over time, these firms have demanded specialized services and have created many spin-offs, growing the number of supportive and related industries in the area.” She specifically cites the effect of consumer products companies in the cleaning and personal care sectors as being attracted to and supportive of cutting edge advertising, marketing, packaging and retail firms in the region.

4. Firm strategy and rivalry – cooperative and competitive relationships among firms in the cluster.

There are a number of small associations and groups that have formed to facilitate communications between firms, but these are primarily small and informal. Many early stage or smaller firms indicated it was still difficult to find joint venture partners and suppliers, etc. Larger firms, or more established companies, do tend to know one another, have access to suppliers and exchange information frequently.

What Do Our Strengths and Weaknesses Tell Us About Growing Green Jobs?

Of the four primary regional characteristics that Porter identifies as necessary to support a competitive cluster (demand conditions, factor conditions, related and supporting industries and firm strategy and rivalry), Minneapolis Saint Paul does fairly well across all four categories. Existing policies and practices at the local and state level are helping create and grow a local market for many of the green sectors we have evaluated through the Mayors’ Green Manufacturing Initiative. Our factor conditions, including business infrastructure, R&D capacity and talent are generally competitive, if not at the top nationally. Business cost issues are a concern, but those costs have not prevented growth in other sectors. We have a good base of supporting industries and we have growing connections within certain sectors, especially those built on traditional industries, such as green chemistry.

Based on this and on reviews of various rankings and other research, Minneapolis Saint Paul is generally considered in the top-third, but not among the top few when it comes to having a global reputation as a center for green economy expansion. Portland, Chicago and San Francisco are perceived as being “ahead” of Minneapolis Saint Paul in green economy

initiatives. But, as noted earlier, virtually every metropolitan area has identified green jobs as part of their economic development strategy. Cities like Toledo, which rarely make any ratings of “green cities,” are actually having significant success in green manufacturing employment. This contrasts with Austin, Texas, for example, which frequently makes “green cities” lists, but has not had much success in attracting new green jobs.

Minneapolis Saint Paul must be smart like Toledo. We are not Portland and we can’t offer the same incentives as Michigan or Pennsylvania, but we can compete on a set of unique assets:

- No other community of our size has 19 Fortune 500 companies
- We have an international reputation for having a skilled, educated and highly productive workforce
- We have established, globally-competitive and recognized companies in green chemistry, wind turbine construction, green building products, bio-fuels, and water and water-process technologies
- We have emerging companies that are attracting investment in solar, green chemistry and bio-fuels and materials

Targeting which technologies and sectors to focus Minneapolis Saint Paul’s efforts on is problematic. There remains within the businesses too much disagreement and uncertainty over which sectors will prosper in the long-term and over which sectors we will be a major player in.

For example, many in the wind industry believe that Minnesota will never attract large-scale turbine manufacturing facilities. We may add turbine component manufacturing to some degree. Some even suggest that solar has greater potential in the marketplace.

“The things we are trying to achieve — redefining the boundaries of our business and creating distributive generation — will play an increasing role in the future. We chose solar because it offers the greatest promise of significant cost reduction over the next decade. It has a distributed generation to it. Solar connected to the grid is one model. And it is in stark contrast with wind. Wind will never become a distributed generation source. In the new century, distributive generation will emerge as the way that electricity is generated, stored and used. Learning to operate intermittent sources of supply and integrate them into your system is a skill set that we have to develop.”

Jim Rogers, CEO, Duke Energy, Site Selection Energy Report, June 2009.

“Solar won’t see wind’s rapid deployment of systems and build-up of profitable manufacturing facilities until the cost of solar-produced electricity becomes competitive with grid-supplied power.”

Solar Energy and the Disproportionate Importance of Incentives, Don Schjeldahl and Margaret Grissom, Site Selection Energy Report, June 2009.

There are those who say we actually do have potential to be a center of fuel cells and batteries because we have strength in automation, design, controls and sensors. Green building products is a strong sector already with many new product advances emerging in Minnesota, and our leadership in green personal care and cleaning products is well understood.

Further, significant opportunities exist in component manufacturing for various green sectors. Smart Minneapolis and Saint Paul-based companies are trying to figure out how they can become part of the supply chain. Even so, determining which companies and which sub-sectors

to focus on is challenging as companies are innovating all the time to address market opportunities. Keeping up on all these segments would require significant marketing resources. For example, Minnesota Wire & Cable is developing a “smart wire” to help improve efficiency of wind turbines. Yet, they don’t appear in any of the NAICS database of potential component manufacturers in the region because the product they are developing hasn’t existed until now and they would essentially be a supplier to a controller manufacturer versus a direct supplier to a wind company.

In addition, the unintended consequences of some initiatives focused on growing the green economy (such as increased energy costs) could hurt existing businesses and result in job losses.

The common denominator we have found is that most of our innovation and high-growth potential firms and sectors have been built on a foundation of talent and capital provided by the region’s traditional manufacturing base, especially our large companies. Therefore, we suggest that marketing and economic development strategies focus on supporting the green economy in general, leveraging our legacy of large manufacturing (especially in green chemistry, water and machining), rather than the highly subjective strategy of identifying “winners.”

Recommendations

The following recommendations are based on extensive analysis of what we heard from businesses, as well as the analysis of Minneapolis Saint Paul’s strategic position in key sectors of the green economy and our competitive strengths and weaknesses as described above. In addition, we reviewed strategies that have worked (and not worked) in other regions. These recommendations reflect approaches that use both “carrots” (e.g., incentives, public procurement) and “sticks” (e.g., regulations) to build the market for innovative, environmentally-preferable goods, services and technologies.

1. Create a climate for growth and innovation
2. Provide support and connections through networks, communications
3. Develop policies and programs to reduce friction in the green marketplace
4. Develop policies and programs to drive demand for green products and services
5. Retention, retention, retention
6. Engage in attraction based on current strengths
7. Market the assets, create buzz and educate consumers
8. Ensure a pipeline of skilled workers

1. Create a climate for growth and innovation

The economic development strategy of “growing your own” is especially apt in the green economy. Therefore, developing programs and messaging that the Minneapolis Saint Paul region is conducive to growth and embraces innovation is a key strategy.

“Part of it is being seen as being friendly to business and entrepreneurship. That’s not just a matter of ‘here is \$5000.’ It is a matter of boosterism. It is a matter of calling up (businesses). It’s a matter of getting together. It’s a matter of not being booed by the legislative body. And it’s a matter of not having an anti-success culture. I think there is a little bit of that here and I think that works against us.”

Vance Opperman, CEO, Key Investments ([Star Tribune](#), June 14, 2009).

Creating a culture of innovation requires building intentional interfaces between people and institutions. Cities can play a leadership role in this by convening cross-sector initiatives around the green economy. A Minneapolis Saint Paul Green Partnership of leading entrepreneurs, academics, investors and companies, working together to accelerate the development of clean-technology startups could provide resources, education and support for clean-tech entrepreneurs.

Providing access to and linkages with the research and development resources of the University of Minnesota and other educational institutions is viewed by businesses as a missing link in the region’s green sector. Working with the University to open up opportunities for entrepreneurs and others to build relationships, exchange knowledge and ultimately create commercially viable innovations is an initiative appreciated by businesses.

“Due to a connection at the U of M, I was able to get a marketing class to partner with my business and develop a business plan, conduct research, etc. Other startups should have an opportunity like this as well.”

Focus Group Participant.

In addition, encouraging the University of Minnesota and MnSCU institutions to expand their programs by developing wind engineering, construction management for wind and solar energy and management for renewable energy companies, etc., is important to creating a community of expertise that helps attract companies.

CASE STUDY: In order to showcase Los Angeles’ commitment to building a clean-tech cluster, the City is soliciting clean-tech companies and sustainable manufacturers to locate in a 20-acre Clean Tech Manufacturing Center. The City is offering significant economic incentives to companies who require 40,000-400,000 square feet and companies can either lease space or build their own facilities. Los Angeles envisions this will be the anchor of a Clean-Tech Corridor.

“There needs to be a one-stop shop either at the city or state level that is focused only on green issues for small businesses and consumers. This could also help the government identify needs more clearly — they could create a local database. Something like “311” for Green.”

Focus Group Participant (renewable energy sector).

The Cities can also support green entrepreneurs by marketing existing programs, both through the public sector and through organizations like SCORE, SBDC, University of St.

Thomas, and NDC, etc. To ensure that these small business resources can effectively assist green entrepreneurs, the cities should provide access to education and training for city staff who are on the frontlines helping entrepreneurs.

“Universities deliver innovations with commercial potential, but not as often as entrepreneurs. Small and new businesses are likely to play a large role in the green chemistry transformation. These businesses represent 1/2 the economy and 2/3 of all innovations, including a flood of innovations benefiting the environment. The subset of these businesses that David Birch refers to as gazelles — fast growing businesses — create the bulk of new jobs. Accelerating development of small business enterprises based on green chemistry and safer materials is an area of opportunity.”

Brookings Institution, February 2009.

Since access to capital is the fuel which runs small business, both start-ups and first-stage companies, the cities should look for ways to help attract capital to the green sector. Various financing mechanisms could be adapted and packaged to focus on this sector and special programs to finance R&D for commercialization of actual products once technology is developed should be explored. The cities can provide leadership in state initiatives as well, advocating for an Angel Tax Credit and Green JobZ (more about these in the policy discussion).

“National Wind offers investment opportunities to the locals where wind farms are being built first, but would also like to offer opportunities to Twin Cities investors — interstate offerings, relationship building. It would be great to have some sort of an Angel Network for Green Investors.”

Katie Clark, National Wind.

CASE STUDY: Toledo Regional Growth Partnership. Historically, the Toledo Regional Growth Partnership followed an attraction, retention and marketing-based approach to economic development typical of such organizations. It is now focused on innovation. The RGP offers business assistance to start-up companies seeking to develop their technology and obtain venture-capital funding for commercialization. The goal is to accelerate the time from conception to production. The partnership also started northwestern Ohio's only venture-capital fund for high-tech and renewable-energy companies. In the last year and a half, RGP has launched 40 companies, with a total of 90 alternative-energy, advanced-manufacturing and biotech companies in the pipeline.

Another initiative to demonstrate and build a climate for growth and innovation that the cities could develop would be a Clean Tech Open annual business plan competition in sectors where we have significant activity (Renewable Energy; Energy Efficiency; Smart Power; Water & Waste; Transportation; Green Chemistry; and Green Building). In San Jose, a similar competition provides winners with a "Startup-in-a-Box" package worth \$100,000 in cash and services, donated by high-profile sponsors. Packages include: cash, office space, legal services, accounting, insurance, public relations, recruiting, software and other business essentials. Large companies could provide the funding to support this as well as technical expertise as part of the "start-up" process.

2. Provide support and connections through networks, communications

While ultimately we believe, and business supports, the concept of utilizing an existing non-government entity or creating a new partnership to support green economic development in the region, Minneapolis and Saint Paul can and should play significant leadership roles, and use their “bully-pulpit” now, to provide support to the emerging green economy. Critical to the growth of successful sectors is a strong network of support organizations, peer groups, linkages with research institutions and communications.

In Katrina Mitchell’s report on the green chemistry sector, she noted that local firm BioForce needs help developing a supply chain for greater and more consistent access to inputs. Their market is ready for expansion and they have the space to expand their manufacturing if they had access to consistent inputs. Helping create networks and enhance communication in the green economy is a strategy to help companies like BioForce.

This is especially important for companies new to the market that don’t have entre into circles of expertise. For Caldrea, because their management came from large firms like Target, they were able to tap into the metro area’s highly skilled advertising and marketing industry and into the base of contract chemical manufacturers in the area who could produce high-quality, bio-based personal and home care products, according to Mitchell. MyCore Industries also benefitted from deep connections throughout the state.

Minneapolis and Saint Paul should pursue efforts to provide support networks, including:

- Working with existing organizations (for example, Capital City Partnership, Minnesota Business Partnership) to create a program to have big companies mentor small companies and use this in marketing outside the region to attract small firms.
- Form a Clean Technology Advisory Council (CTAC) to position the region as a global leader in the development, creation and use of clean technology, focusing on attracting and retaining clean-technology businesses to Minneapolis Saint Paul and creating jobs in this emerging sector. This model of convening a group of industry giants to advise on the development of nascent industries has a proven track record within the biotech and digital media sectors.
- Convene Intellectual Exchange Groups: These groups are initiated by interested individuals or groups within the green community, and participants might be drawn from universities, the business community or other constituencies. The focus of Intellectual Exchange Groups can be related to research or education.
- Launch Facebook for Twin Cities Scientists: The power of connecting researchers who have common interests and work in the same region is an important support mechanism. In Georgia, a group created [iResearch](#), what could be thought of simplistically as a ‘Facebook for Georgia Scientists.’ Like Facebook, it lists the researchers’ profiles and interests, but from a scientific perspective. It contains a database of their publications, patents and grants, and goes a step further and creates a graphical representation of their top interests. It allows scientists to connect their research and to better understand their regional green technology ‘ecosystem.’

“Thank you for facilitating the focus group meeting yesterday. Being so new into the industry, it is extremely valuable to my company to begin building

relationships with other businesses, trade organizations and city officials that will promote growth for everyone in this industry. It was very encouraging for me to hear the information the other business owners shared. Even though we are at the beginning of this endeavor to grow a green economy, and there is a lot of work to do, the fact that we are all willing to work together for a common goal is exciting. Thanks again!"

David O'Brien, President, HG Windpower.

"Thank you so much for hosting the event yesterday! I believe that conversations like [the one] you initiated can go a long way toward furthering the best our state has to offer. I would welcome continued conversations. Many thanks for your advocacy on behalf of renewable energy businesses in Minnesota!"

Rebecca Lundberg, Powerfully Green.

CASE STUDY: The U.S. Department of Energy's National Renewable Energy Laboratory (NREL) recently selected 33 Colorado community leaders to participate in its 2009 Executive Energy Leadership program (Energy Execs). The leadership program is focused on educating business and government leaders about clean energy solutions that can boost the local economy. The six-month leadership program gives executives from Colorado-based businesses, government entities, universities and economic development and non-profit organizations an in-depth look at solar and wind power, biofuels and transportation and energy-efficient building technologies. Briefings by technology experts, research laboratory tours and visits to field applications are part of the monthly classroom experience.

- **Communications/Information Portal:** A regional Web site devoted to the green economy and including the new directory is viewed by business as highly important. One business owner said, "As a manufacturer, I want to go to one spot with lots of details — I can't spend an evening looking at a bunch of different sites." Currently, information on activities in the sector, access to resources and information on regulatory issues, standards, procurement and government programs (including stimulus funding programs) is fragmented, difficult to find and navigate and sometimes inconsistent.
- **Workshops and Conferences:** In the near term especially, businesses are hungry for information about how cities and the state will deploy federal stimulus funds. Plans by the City of Saint Paul to host workshops for businesses to help them understand how the City is using stimulus funds and how businesses can become vendors and participate is a good example of the type of outreach cities can do. Organizations such as the Metropolitan Economic Development Association (MEDA) and geographically-based or ethnically-focused business associations can help convene such workshops and help small businesses benefit from government spending on energy efficiency. The Minnesota Environmental Initiative recently hosted "Providing a Path to Energy Efficiency" to help businesses understand the opportunities and incentives to investing in energy efficiency, which sold out and which generally attracted larger companies. Similar educational programs for small- and mid-size companies could be developed utilizing other partners like the Chambers of Commerce.

"Be creative about how to get business to take advantage of these (federal stimulus) programs because it comes from government and business doesn't listen to government. Partner with the Chambers and associations."

Lois Quam, President, Tysvar.

- Continue the “Greening Your Business Expo,” (City of Minneapolis and Minneapolis Regional Chamber) which was viewed as extremely beneficial by participants, and encourage participation by large companies as well so that connections between big and small companies can occur.
- Market and expand the Phillips Eco-Enterprise Center: More well-known outside of Minneapolis Saint Paul, the Green Institute and Eco-Enterprise Center is a great model and should be heavily promoted as education and conference space, showcase product development and encourage environmental innovation for both residents and businesses. A high-profile location in each downtown would be ideal, or a site along the Central Corridor.

3. Develop policies and programs to reduce friction in the green marketplace

The regulatory environment around many parts of the green economy is evolving as the technology evolves and so is challenging and costly for businesses to track and influence. Segetis, a green chemistry firm, reported that they spend significant time and money in Washington D.C. working with regulators because so much of what Segetis does is beyond the expertise of policymakers. From their perspective, one of the most beneficial efforts the cities could do would be to advocate for the feds to establish a green chemistry framework, instead of having states develop their own.

While much of the regulation and policy impacting this sector is established at the federal or state level, businesses did see opportunities for local policies that would help reduce friction and enable them to operate more efficiently and increase the adoption of certain technologies

- Common Building Code: High priority among wind, solar and green building firms is the concept of creating common building codes across the region. While a statewide code would be ideal, they recognize that starting with even a common code for Minneapolis and Saint Paul would be of benefit. If this code could be expanded to surrounding communities in the region, they would like that as well.

“Costs for business to even review all the different codes [are] a deterrent [to developing new products]. Statewide regulations for residential and commercial construction would help.”

Dave Fiedler, President/COO, Checker Machine.

- Streamlined Permitting: Streamlined permitting for energy-efficiency and renewable-energy investments is strongly encouraged by green businesses.
- Priority permit review for all new and renovated buildings that qualify for the LEED Gold rating or equivalent would also be helpful.

“The bottom line we want to communicate is the need to review and update the City’s ordinances for wind turbines and solar systems, which would include a simplified permit process for businesses and home owners. Many federal

programs have a limited timeline to take advantage of the Alternative Energy Stimulus Program.”

David Ault, Private Energy Systems, Inc.

“The city procurement process is really intense and very difficult — it is just too much for a small business to tackle.”

Dennis Werneke, President, American Chemical.

Other regulatory concerns that businesses expressed were similar to non-green businesses in that, as the green economy grows, more focus will shift to how to take advantage of that growth through policies that protect special interests. For example, a small solar company referenced attempts to require licensed workers to do parts of solar installation that may not require a licensed professional. If that provision becomes a requirement, it will possibly drive up costs and limit employment for non-certified lesser-trained workers who previously did tasks such as unpack solar modules and carry them to the roof.

4. Develop policies and programs to drive demand for green products and services

“Focus not just on capital but ask, where else can the government help? The government should be a partner and a customer — incent others to support us. Minnesota is not known for being business friendly, nor is it known for being in the green products area. Portland and Chicago are very green cities.”

Focus Group Participant.

In general, policies designed with a long-term goal in mind give businesses the signal they need for wide-scale investment in green energy and technologies. For example, federal tax incentives for the production of wind energy have been extended several times, but this uncertainty contributes to a “boom-bust cycle of development” for the wind industry. Strong, visible and consistent commitment to policies that support investment in green technologies is important to the industry.

We heard clearly from businesses that one of the most important things Minneapolis Saint Paul can do to support the green economy is to lead by example. The cities must become leaders in managing their operations in a sustainable manner. The cities must continue to demonstrate commitment to ‘green thinking’ for their own policies and operations which will demonstrate the value attached to sustainability. Fostering integration of innovative sustainability approaches into the cities’ own processes, structure and operations will be viewed as a lens for business opportunity and a strong signal for companies to locate in the region.

“Chicago has an environment czar... we don’t see that kind of leadership here,” said one Focus Group Participant. “The cities need to push the market from the policy side.”

Cities and states are increasingly recognizing the importance of consumption-driven economic development by adopting three types of green policies: green standards and regulations for energy use, green building incentives and environmentally preferable purchasing.

Procurement and Incentives

Green standards and regulations that stimulate production are typically goals to green the way goods and services are produced by spurring renewable energy use or greater energy efficiency.

Examples include the adoption of renewable energy portfolio targets, and green building regulations — from mandating LEED standards in government buildings to setting these standards for all large development, to recycling standards to reduce waste from construction and demolition. In order to use such regulations to grow local business, however, cities need to pair them with preference-purchasing clauses or marketing programs (such as green certification programs) for local businesses.

For the most part, these policies are easier to implement than policies related to production. These policies may or may not help grow local businesses, depending on how mandates are framed (e.g., whether local purchasing standards accompany them). However, they still play an important role by raising awareness of the environment and thus indirectly helping to build the market for green goods and services. They also create economic development by helping develop new expertise, for instance in green building operations or energy use evaluations.

A more substantial impact on spending patterns is likely to come from green building financing programs, such as the model Berkeley First Sustainable Energy Financing District, which will reimburse homeowners for solar installation costs, to be paid back at a fixed rate via property taxes. All of these programs help build a critical mass of clean energy support services, which in turn helps build local clusters and reduce dependence on imports. Though they may not have a direct impact on local quality of life, they can help the cities “green” their image and thus market the region more effectively.

Both Minneapolis and Saint Paul are recognized as having made significant commitment to these efforts. Many businesses are aware that the cities have enacted and are pursuing green procurement policies or Environmentally Preferable Purchasing (EPP) programs, as well as offering several programs to incent and support energy efficiency, installation of renewable energy technologies and green building practices. The Solar Cities program is an excellent model, efforts by the cities to improve energy efficiency in public buildings and programs funded through federal stimulus funds like the CDBGR are all important in elevating green products and practices and in actually providing a market for these products. Quick adoption of Sustainable Building Policies for projects receiving financial assistance from the cities will also help spur demand and help educate the broader community. Continually promoting and developing program of these types helps send a message to existing firms and the broader community that the cities support the green economy and help create demand for green products.

Strengthening EPP efforts to include stronger incentives to purchase locally was suggested by some businesses as a strategy the cities could use to support local businesses. They also would like the cities to advocate with other public-sector agencies to adopt EPP and local vendor preference programs (Metropolitan Council, counties, schools, etc.)

“Our company web traffic is from Denver, Portland and Boston — those communities give incentives for being green to consumers. There are none here. We want to stay in

Minnesota, but what can you do if you get more customers and more money in other states. We have to help the consumer afford to be green.”

Focus Group Participant.

Cities as Partners

Two immediate steps are to create a Web site and organize municipal workshops on Green Procurement and methods for stimulating environmental innovation within the City's operations, including a trade fair to demonstrate new and emerging environmental products and services to municipalities and the business community.

The cities might also make their waste streams available for companies to develop and test innovative technologies and processes. Explore the opportunity to establish commercial scale test facilities near transfer stations and other waste operations.

Tim Goodman's report also suggested developing “paint take back” programs as a way to stimulate new uses for that material.

And, the cities could serve as labs for new technologies and new ways of working together to stimulate demand and showcase sustainable products and practices. For example, Stephen Mastey, CEO of Landscape Architecture, Inc., is working with the City of Saint Paul's Public Works and Parks and Recreation Departments to jointly address a road-design issue and storm water retention issue by creating a rain garden on park property instead of installing storm catch basins. He estimates that this one project could result in a \$400,000 savings.

Consumption Policies

Germany's encouragement of renewable energy development since the early 1990s has produced a culture in the country of 82 million people that has helped propel it to world leadership status. A 1990 renewable energy feed-in law, which requires electricity grid operators to pay a premium price for power generated by independent renewable energy operators, has helped expedite development in wind and solar projects

Gainesville, Florida, recently followed Germany's lead and the Gainesville Regional Utilities approved a solar photovoltaic (PV) feed-in tariff, the first of its kind in the U.S. The many proponents of the renewable energy incentive — from local residents hoping to install systems to international photovoltaic manufacturers — are projecting the policy will stimulate millions of dollars in private investment in solar energy.

The City of Cincinnati offers property tax abatements for residential and commercial buildings constructed or renovated to meet LEED certification standards.

In Washington, King County provides financial grants and free technical assistance to new construction and major renovation commercial building projects LEED certification. Private, nonprofit, and public projects are eligible to apply for grant awards based on the level of certification achieved. Eligible projects can receive a grant in the amount of \$20,000 for achieving a certification level of LEED Silver, \$25,000 for LEED Gold, or \$30,000 for LEED Platinum.

Cities are also exploring using Sales and Use Tax Rebates for solar photovoltaic (PV) and solar water heating installations (established by the City of Boulder in 2006).

Green Standards and Certifications

Businesses in several green sectors also discussed having a regional or statewide standard or certification for “green companies” that would provide consumers with a credible, unbiased source to know if the product or service was actually green. “Green-washing has become so common, customers don’t know what to believe anymore,” said Ryan Lee Anderson, president of MyCore Industries. The Minnesota Green Star program is gaining recognition in the residential construction market, and LEED is now widely understood in the commercial and residential markets, but similar recognizable standards are lacking in other sectors.

Though ambitious for the cities to undertake, businesses suggested developing a standard or certification program that utilizes graduate students and other expertise from the University of Minnesota to vet the products and services.

“There are great federal standards and we are just waiting/hoping that the cities adopt them. Some [places] are moving much faster than Minneapolis Saint Paul, like in California. This makes standards inconsistent. Every state and city is doing it differently, so it makes it difficult and expensive to go after different business markets.”

Brian Tockman, Business Development Manager, Segetis.

State Policy and Leadership

While these consumption-driven strategies help grow various markets and generate interest and enhance our reputation, when it comes to attraction of new businesses to the region, state policy is generally most important in driving demand and attracting interest from business. Roby Roberts, Vestas’ senior vice president of external relations stated that Colorado was appealing to Vestas because of its proximity to markets, good transportation access, its well-trained work force and government policies supportive of wind energy development. The major factor against Minnesota as an expansion site was higher taxes and energy costs.

Recent proposals to create Green JobZ zones that would include Minneapolis and Saint Paul, as well as a state Angel Tax Credit, are viewed by businesses as important ingredients in the region’s attractiveness to the green sector. By supporting and working to secure these tools, Minneapolis and Saint Paul would be viewed as being supportive of the sector.

Leveraging the Big Companies

Additionally, Minneapolis Saint Paul should look for ways to leverage the region’s existing big companies to foster this culture of innovation.

“There is a lack of corporate sponsors/partnerships. If Fortune 500 companies were all participating in renewable energy, it would set a great example. Smaller companies could use products made by larger companies and this could create a conduit for partnerships.”

Focus Group Participant.

Incentivize existing big companies to build/upgrade their manufacturing plants to be green and to green their processes will not only provide a good result, but those large companies making those investments will help drive demand and create jobs.

New regulations and higher standards in coming years will drive existing large companies to go even further in their efforts to reduce waste, green their processes, conserve energy, etc. The Cities can take advantage of this and begin planning for this now by asking existing big companies where could they add employees doing green work and have state/cities help provide the training to get people ready for those jobs. Most likely it will be in areas like energy audits, Life Cycle Analysis, etc.

5. Retention, Retention, Retention

“Innovative companies will find innovative ways to leave the state if we are not competitive.”

Participant in May 2009 Clean-Tech: The Convergence of Energy, Agriculture and Renewables, sponsored by The Collaborative.

To grow the green economy in Minneapolis Saint Paul, a strong focus on retention of existing businesses is needed. Evidence shows that retention of two categories of firms represents the greatest source of potential job growth: existing green companies, especially high-potential growth companies (“Gazelles” in the language of economic development); and, existing companies interested in developing green products and services.

Retention also attracts firms. Cities with satisfied existing firms are much more likely to realize growth from them, and to attract new businesses as well.

“It would be cheaper for us to do business if we moved 30 miles to the east. Wisconsin wants us. Milwaukee would love to have us... they see it (green sector) as the next .com.”

Focus Group Participant.

“Gazelles” are where most of the job growth in the small business sector comes from. The myth is that small businesses account for 90 percent of job creation. True, but it is really just 3-5 percent of small businesses that do that. The bottom line is that size doesn’t matter — it’s the rate of growth, driven generally by innovation, which matters.

High-growth potential green firms in technology and knowledge-intensive endeavors are vulnerable to relocation away from the region because they often rely on outside capital. This capital is frequently located elsewhere and the pull to be near investors is strong. Many of these high-growth firms are often reliant on key researchers who may or may not be located here. In addition, firms such as these can be attracted away by bigger markets for their products and more incentives to help with capital formation.

Developing a formal program to intentionally reach-out and communicate with these firms is one strategy. Whether the cities develop their own retention-visit program or work in partnership with area Chambers of Commerce, an evolving list of “Gazelles” should be maintained and worked to help ensure these valuable firms receive the information and support they need to remain in the region.

Among the high-growth potential firms that should be part of a retention program are:

- BioCEE (biocatalytic systems for production of fuels and chemicals for water and gas treatment)
- BioForce (green chemicals and cleaning)
- Ecologic Analytics (smart grid technology)
- Lemna (wastewater treatment)
- Segetis (bio-based materials)
- Westwood Renewables (solar)

A parallel retention strategy involves working with existing companies that would like to participate as suppliers or would like to develop products and services for the green economy. This strategy builds on the region's existing strengths in areas such as precision manufacturing and chemistry to grow jobs and depends on the ability of these existing firms to capture these markets.

A January 2009 survey of members of the Minnesota Precision Manufacturing Association (MPMA) found that more than 70 percent of their members saw opportunity for growth as suppliers in the green economy. In follow up, few members had investigated supplier opportunities or indicated that they had the knowledge or internal capacity to pursue these markets.

Steve Wise, president of Cass Screw Machine Products, stated that his company's sales were down 50 percent over 2008 and he would welcome the opportunity to work in wind or another sector, but "I don't know where to start... I really like that you are asking the question and would like the opportunity to learn if we could be a supplier, but we don't have those relationships. Where is the business in wind, who are the players, how do I get to them?"

For example, a wind turbine has some 8,000 components ranging from towers and blades to gearboxes, generators, castings, ball bearings and electronic components. But the race for manufacturing of components is a worldwide competition. In 2008, the American Wind Energy Association estimated that nearly 50 percent of the components were made in the U.S. as more companies began to open and operate facilities in the U.S. market. Several Minneapolis Saint Paul businesses are actively engaged as suppliers to wind turbine manufacturers and many more are seeking entry to this market.

Some are cautious, however, of the role of government. One mid-size manufacturer noted that they are pursuing some opportunities in wind, "but that is not the only source of opportunity and while green is what we are, it is not a strategic marketing area. It is too volatile, often relying on government subsidies that could be gone long before the investment has paid off."

George Sterzinger, Executive Director of the Renewable Energy Policy Project, has estimated that every megawatt of a typical wind turbine installed creates 4.85 full-time equivalent jobs to manufacture, install, and maintain the project. About 70 percent of the total labor required for a typical wind turbine is in the manufacturing. For solar, the manufacturing requires about 75 percent of the total labor. However, much of this manufacturing is currently done overseas, according to Sterzinger. He advocates that cities

and regions promote manufacturing supply chains by helping existing industries retool or add capacity to manufacture renewable components.

“Typically, development agencies assemble a package of incentives to lure renewable manufacturers to the state. States should go beyond that practice in several respects — by getting directly involved in the development process. Manufacturers of components are intimately aware of critical problems — such as the need to reduce the weight of the turbine components, make blades lighter, make generator transmissions more durable and make solar-energy inverters, which convert direct-current solar electricity to alternating-current solar electricity, last longer. The list of problems is endless, and the flip side of that is the potential for improvement is endless. Federal research and development support can link the national research community, in particular the national energy labs, with the manufacturing community. This linked research and development, through to the commercialization phase, will not only assure that the domestic renewable industry is world-class, but will also help drive down the cost of renewable energy.”

George Sterzinger, Executive Director, Renewable Energy Policy Project.

CASE STUDY: Toledo has the nation's largest thin-film solar panel manufacturer and expects to add 100 new high-tech and advanced-manufacturing start-ups by 2010. **The secret is Toledo's capacity to build on a traditional source of manufacturing strength — glass technology and manufacturing. With one-third of its manufacturing jobs lost since 2000, Toledo hopes to retool its glass industry to produce thin-film solar panels.** Solar energy isn't new to Toledo. The University of Toledo's Wright Center for Photovoltaic Innovation and Commercialization has been around for 25 years. What is new is an influx of funds from the state in 2007. Hoping to stem the tide of 200,000 manufacturing jobs lost since 2000, the Ohio Department of Development invested \$18.6 million in university solar-energy research centers, about half of which went to the University of Toledo. With an additional \$30 million in contributions from federal agencies and industrial partners, the university was able to dramatically advance its research and solar-energy-incubator activities. The center's alternative-energy incubator has spun off seven solar-energy start-ups.

Minneapolis Saint Paul can support existing firms by helping them connect with original equipment manufacturers (OEMs) of wind turbines, solar technology and green chemical products.

Saint Paul-based Minnesota Wire & Cable, a long-time maker of products for the medical device and defense industry, saw an opportunity to develop a “smart” wire technology that would help reduce maintenance costs in wind turbines and has applied for Department of Energy grants to further develop this product. “We need access to key groups at the University of Minnesota, introductions to contractors and additional money to share the development costs. Can the cities help us? We also need a letter of support from Senator Klobuchar. Can you help?” said Janise Verruso, Strategic Business Development at Minnesota Wire & Cable.

According to Mark Lofthus, Business Development Director with the Minnesota Department of Employment and Economic Development (DEED), Minnesota officials have met with nine turbine manufacturers. When asked what it would take to make them build a plant in Minnesota, every manufacturer gave the same reply: “Do you have a supply chain?” That is a critical question because wind turbine manufacturers typically are not vertically integrated.

Instead, because they assemble components purchased from suppliers of sub-assemblies, much of the multimillion-dollar cost of a wind turbine ultimately goes into the pockets of suppliers and their workers — a major opportunity for Minnesota manufacturers.

Developing a supply-chain infrastructure is part art as well as science, as the experience of Checker Machine demonstrates. Checker is a 34-year-old metal machining company now in New Hope that identified wind component manufacturing as a potential market. Through a contact at the Saint Paul Port Authority, they were introduced to Suzlon, a blade manufacturer in Pipestone, and now make metal fixtures that support the blades. The company now is building relationships and having opportunities to bid on other components. However, their initial work making the fixtures would not be considered part of the supply chain for wind in Minnesota and they don't show up on many lists of component manufacturers.

Educating existing manufacturers about supply chain opportunities is a role the cities can play in partnership with trade associations, entities such as the Minnesota State Colleges and Universities Center for Engineering and Manufacturing Excellence and others. Some trade groups, such as the Minnesota Precision Manufacturing Association (MPMA), Minnesota High Tech Association and the Minnesota Chapter of the Green Building Council, have offered programs on supply chain opportunities to their members. Other groups, such as the Minnesota Chapter of the American Foundry Society, are interested, but lack the organizational capacity and access to expertise. Utilizing the database of potential suppliers in biomass, geothermal, wind and solar provided to Phase II of The Mayors' Green Manufacturing Initiative by the Renewable Energy Policy Project (Appendix D), the cities can partner with trade groups and sponsor supply-chain conferences to educate companies about the opportunities.

6. Engage in attraction based on current strengths

More than 15,000 economic development organizations compete for the estimated 1,500 major expansions and relocations in the U.S. in any given year, according to a report by the Upjohn Institute of Employment Research in 2007 on Local Economic Development Policies. Therefore, Minneapolis Saint Paul must be prudent and realistic in business recruitment efforts, relying not on mass marketing but instead targeting industries with the greatest potential for job creation based on the region's existing intellectual, workforce and synergistic strengths.

Dale Wahlstrom of the BioBusiness Alliance states that recruitment efforts need to be intensified. If he had his way, Minnesota would be dispatching ambassadors to other research hubs on a mission to poach ideas and small companies. "The state should leverage its strong infrastructure in this area [renewables and green chemistry] to sell companies on locating here."

St. Olaf College in Northfield recently opened Regents Hall, a new science and mathematics building with a focus on green chemistry, one of the first colleges in the country to specifically emphasize the field in its curriculum. "The middle of the Midwest is where we have the renewable resources like forestry and agriculture," said Segetis co-founder Olga Selifonova. "If you want to play in renewable materials, this is the place. We could be a capital of bio-based businesses. There are no barriers except investment dollars."

“Generating electricity from wind is a proven technology. Investments now taking place in the wind value chain are in response to strong demand and production capacity constraints. Acting like a mature industry, location-selection decisions are predictably driven by cost and risk factors. Incentives play the traditional role of luring producers to states and communities that lie within the company’s favorable geographic region. Among the states at present with the best incentives for wind manufacturing are Colorado, Arkansas, Iowa, Michigan and Kansas.”

Solar Energy and the Disproportionate Importance of Incentives, Don Schjeldahl and Margaret Grissom, Site Selection Energy Report, June 2009.

Still, attracting new businesses is hard work and usually requires a toolbox of incentives and resources in order to be competitive. Most often, packages for attracting significant employment centers involve state funds as well as local incentives. With Minnesota’s history of limited corporate subsidies, creativity and effective promotion of the assets cities do have will be required.

“The key to effective energy policy locally and regionally is communication. For the Industrial Asset Management Council specifically, it’s communication and collaboration between communities and corporations. Economic developers’ edge over their counterparts used to involve an inventory of shovel-ready sites or the right mix of incentives. Now, it’s the ability to help companies achieve their sustainability objectives and the ability to go after the right industries — the ones that fit the community’s environmental wish list, not trample it.”

Solar Energy and the Disproportionate Importance of Incentives, Don Schjeldahl and Margaret Grissom, Site Selection Energy Report, June 2009.

Re-branding existing tools and revising existing financing programs to incorporate green jobs is one strategy cities can employ. Typical “money for jobs” programs that can be targeted toward green sectors (Saint Paul’s Strategic Investment Fund, New Markets Tax Credit programs, below-market financing programs, SAC/WAC exemptions, for example) help strengthen our competitive position. Other typical incentives, such as Tax Increment Financing, workforce training grants, tax abatement, etc., can also be packaged, targeted and marketed toward green job creation.

‘Likewise, incentives will be ineffective unless they include clawback provisions that require companies to pay back subsidies if they relocate or fail to meet performance standards in job creation or other indicators. Moreover, since business expansions are far more common than relocations, subsidies are best targeted at existing and startup businesses.’

Greg Leroy, The Great American Jobs Scam (San Francisco: Berrett-Koehler Publishers, 2005).

Developing new tools to attract green businesses should also be initiated. For example, Minneapolis Saint Paul could invite and engage a network of local and regional double bottom-line investment organizations (social venture funds, foundations) to help identify, screen and invest in green companies in the region and to provide seed-capital for companies looking to locate here.

CASE STUDY: The Targeted Jobs Incentive Fund (TJIF) provides financial incentives for select industries, including Solar Thermal and Photovoltaic Manufacturing, Installation and Repair Companies, wishing to relocate or expand within Miami-Dade County. To be eligible, companies relocating to Miami-Dade County must create at least 10 new jobs, and expanding companies must create either at least five new jobs or at least 10 percent of the company's work force at the time of application, whichever is greater. Miami-Dade County will provide a qualifying company up to \$9,000 per new job in TJIF incentives as follows:

- Up to \$3,000 for each new job
- Up to \$1,500 bonus for each new job if the company is located in a Designated Priority Area.
- Up to \$1,500 bonus for companies that operate their businesses out of buildings or facilities that qualify as “green construction” and/or that incorporates alternative energy systems. Specifically, a company can receive a bonus of up to \$1,000 if the company operates its business out of a building or facility which qualifies as “green construction” and is LEED certified
- An additional bonus of up to \$500 if the company operates its business in a building or facility which incorporates solar thermal, photovoltaic, fuel cell and/or co-generating energy generation
- Up to \$1,500 bonus, if the company is in the business of Solar Thermal and Photovoltaic Manufacturing or Installation.

Specific green sectors beyond green building products, transportation, renewable energy, green chemistry and waste reclamation that appear to have potential for Minneapolis Saint Paul to attract firms include:

- Support services: “Become a mecca for supporting industries, marketing, legal, patent, professional services,” states 3M’s Alex Cirillo. “There is an opportunity in the wind sector for Minnesota to provide engineering expertise that could be deployed across the country,” added Mortenson’s Brent Bergland.
- Water quality and conservation: “Water employs more people in the region than wind and probably will for a long time based on industry trends,” according to Dan Carr, CEO of The Collaborative. “The cities should shine a light on companies that are growing jobs now. Look at Pentair...good story of their job growth in MN in the past five years.” In addition to Pentair, GE (formerly Osmonics, the region is home to high-growth potential start-ups such as Recovery Engineering, Aeration Industries, Lemna and others, many of whom started because of the intellectual capital of the larger firms and strong R&D community in water.

“Minnesota can think of itself as the Silicon Valley of water. One of the largest uses of water is in the production of energy. If we can manage water more efficiently, we can reduce energy costs.”

Jack Dempsey, President, Filtration Global Business Unit, Pentair.

7. Market the assets, create buzz, educate consumers

Create Buzz About Minneapolis Saint Paul Efforts

To establish a globally-recognized green industry sector, Minneapolis Saint Paul must develop a plan and mechanisms to actively profile and showcase the region as a 'happening' place around the development of new and emerging green businesses, as well as the continued growth and sustainability of established businesses. This marketing needs to happen domestically as well as internationally.

"Minneapolis Saint Paul has a lot going on in green, but we haven't packaged it and promoted it like Portland has or Chicago."

Focus Group Participant.

Public recognition of achievements in green business is also important in encouraging other businesses to participate in the activities as well as provide additional marketing and promotion for the green initiative. It creates a "buzz" around the Green MSP idea and as more people hear about it, the more that they will become believers and advocates for the cause.

This buzz helps sell the region. Portland's track record and reputation for being a green community helped it bring new investment and new job. Roby Roberts, Vestas' senior vice president of external relations stated, "It's a livability issue in the Portland area. People want to live here. The government supports the environment here, and there is a critical mass of utilities and developers in the Portland area. The region attracts bright, young people who are interested in clean energy."

Minneapolis Saint Paul has a solid green track record, but lags in having a national and international reputation. External marketing to build the region's image both locally and elsewhere is needed. Ideas to consider include:

- Develop consumer market prospectus to demonstrate local demand for green products and services to attract new companies;
- Create a Minneapolis Saint Paul carbon footprint or a "dashboard" that will not only measure the region's baseline energy consumption and carbon emissions, but track personal and business performance over time;
- Prepare marketing materials to profile the sector and build international awareness;
- Communicate the existing incentive programs to business through a green marketing package;
- Have one web portal that contains all information related to the green economy initiative including promotional material and business success stories;
- Organize informal discussions with external organizations and businesses across the region that represent various economic, social and environmental interests to ensure that they are acting as a coordinated marketing engine;
- Attract a Flagship event that highlights the region such as a clean-tech venture forum or large "green" conference;
- Develop a coordinated marketing plan with other cities within the region to leverage the advantages of all cities without cannibalizing potential opportunities;
- Seek speaking engagements to highlight initiatives, leading companies and star researchers.
- Use testimonials of people and companies to tell our story, for example, engineers who moved here, didn't like their first job, but stayed because of quality of life and lots of opportunities for other companies.

- Leverage our big company base and use their presence in marketing, for example, “We have 19 of the best companies in the world here; come join us and you can be successful too.”

“Despite the disappointing results in solar-energy manufacturing, Austin, Texas Mayor Wynn seeks to keep Austin competitive in several green technologies. He notes that Austin has consistently been cited by Forbes as one of the nation’s top metropolitan economies and consistently is in the top 10 of various green-city lists. He hopes to capitalize on the indirect benefits of being perceived as a national leader in the climate change movement and to keep the momentum going with the city’s involvement in research on peak load management, renewables, water conservation and other green technologies.”

“Cities on the Front Lines,” Joan Fitzgerald. The American Prospect, April 2009.

Provide Consumer Education to Create Local Demand

Though Minneapolis Saint Paul is recognized as having a long tradition of pro-environment, progressive policies and strong awareness and recognition of environmental issues, businesses believe that additional consumer education is critical to driving additional demand to green products and services.

Katrina Mitchell’s study of green chemistry trends found that “the primary barrier to consumer-led growth in green chemistry is lack of information. Recent studies show that consumers are optimistic about green efforts, such as recycling, but have little or no clear information about the products they use on a regular basis.” This report goes on to say that the lack of available information affects industrial consumers as well.

The renovation of commercial buildings in the United States to improve energy efficiency will more than triple from current levels to \$6.6 billion by 2013, and will total \$400 billion over the coming years, according to a recent report by Pike Research (Boulder, CO). The report said that the American Recovery and Reinvestment Act of 2009 (ARRA) will provide a major boost for energy-efficiency retrofits in federal buildings, but that the U.S. commercial building stock presents a potentially much larger market, amounting to 70 billion square feet of space. “High-performance green-building space experiences lower vacancy rates and commands a premium price, compared to conventional space,” says Clint Wheelock, Pike Research’s managing director. “Because of this, commercial building owners are adopting green retrofits as a market differentiator. The favorable retrofit business model will fuel steady momentum until most commercial building space has been retrofitted for energy efficiency.” Minneapolis Saint Paul should pursue efforts such as the Energy Innovation Corridor along the Central Corridor LRT line to help educate the commercial building sector and help increase demand for retrofits and investment in renewable energy.

Tim Goodman’s Municipal Solid Waste Reclamation Trends report also suggests that consumer education on recycling and development of incentives for recycling can also generate demand. That report states, “The RecycleBank program has the potential for increasing participation rates in residential curbside programs as people are provided with a participation incentive with monetary value. This type of program also has the potential for bringing many non-recyclers into the recycling fold.”

Consumer education to businesses to promote recycling and waste reduction should also be part of the effort. Borrowing from the success of the Minnesota Chamber of Commerce’s

Waste Wise program that helps businesses save money through waste reduction, resource conservation and energy efficiency, the Cities could partner with regional chambers to educate businesses on these issues. These efforts could also educate businesses on the evolving Resource Management strategy described in Tim Goodman's report that provides incentives for contractors and rewards them for achieving mutually determined goals — shifting the contractors' profitability model from "haul/dispose more volume" to "minimize waste and recycle more materials."

8. Ensure a pipeline of skilled workers

"The vast majority of jobs created through a green economy are in the same areas of employment that people already work in today. Constructing wind farms creates jobs for sheet metal workers, machinists, and truck drives, along with wind forecasters and engineers. Increasing the energy efficiency of buildings through retrofitting requires roofers, insulators and building inspectors. The largest number of green jobs will be in occupations that require an apprenticeship, professional certificate, or one to two years of postsecondary education."

Research Brief, John J. Heldrich, Center for Workforce Development, February 2009.

We begin this section of the report with the above quote because of its importance to assessing Minneapolis Saint Paul's position in the growing green jobs. While a growth industry of creating lists of green jobs has sprung up and attracts great interest, the region cannot lose sight of the fact that many green jobs are jobs that exist today but will be done differently going forward.

The other major observation we have regarding workforce development is **what we didn't hear** from businesses. With rare exception, most businesses have become so focused on today's economic challenges that they have forgotten previous challenges they had finding skilled workers. And, they have forgotten the long-term trends affecting Minnesota's workforce that indicate significant shortages in several key occupations important to the green sector in coming years. The attitude today is that there are plenty of workers if you have the work and so getting businesses to think long-term about their needs is difficult. That said, we did hear a few concerns that cities should address going forward.

Manufacturing, Science and Math Pipeline

First, a major challenge for the region going forward is a lack of young people going into manufacturing and science and technology. In the manufacturing sector, national and statewide research has demonstrated that the image of the manufacturing industry as a whole, and particularly the segment of the industry associated with metal-forming, is marked by outdated perceptions of the type of skills required, the work environment, wages and benefits, career advancement opportunities, availability of jobs, among other issues. Perceptions of careers in precision manufacturing are frequently based on old 20th century factory images of dark, loud and noisy workplaces where workers do repetitive tasks day after day for minimal wages. Compounding this perception is the myth that jobs in this industry have disappeared through the process of industrialization or have moved overseas. For the green economy to generate and sustain manufacturing jobs in the region, efforts must be made to change the image of manufacturing. The cities should support work being done by the Metro Alliance for Customized and Continuing Education (MACCE), DEED and the Metro Workforce Investment Board/Prosperity Partnership to address this.

Attracting more people to science and math is also critical to growing green jobs in Minneapolis Saint Paul. The cities should encourage and link efforts by public schools and trade associations such as The Minnesota High Technology Association, among others, to develop new programs to engage students in science and technology such as getSTEM, the Solar Car Challenge of MPMA and others.

Employee Retention

Green products and sustainability efforts are also proving to be a good employee attraction and retention tool, especially for larger companies. “Younger people in our company tend to be passionate about reducing greenhouse gas emissions and climate change and they are very interested in working on sustainability initiatives. It has been a great recruiting and retention tool for us,” said Alice Wheelwright, Vice President of Global Market and Segment Initiatives at Ecolab.

“Young people are already educated on the importance of renewable energy — how do we execute this passion into a business environment?”

Gerardo Ruiz, Founder, FreEner-g Solar.

Programs Emerging Amid Gaps and Fragmentation

Several initiatives are underway or being explored by various stakeholders in workforce development (MnSCU Center for Engineering and Manufacturing Excellence, Dunwoody, Hennepin-Technical College, Century College and Dakota Technical College have all created new programs for energy efficiency, component manufacturing, etc.). Century College is offering Energy Management and Systems Technology programs and a Solar Energy Technology Certificate. Dunwoody is offering energy auditor certification and LEED construction management, as well as exploring solar installation curriculum. Anoka Ramsey is offering environmental science programs, among others. These programs are critical if we are to meet the expected demand, even in the next two years, for qualified workers to implement various aspects of the federal stimulus funding. For example, in Dakota County alone, the County’s weatherization program for low-income households usually completes 85 homes. With the stimulus funding, they will have funds to do 560 homes next year. The same is true throughout the region, and workforce development stakeholders are marshalling resources and creating the programs to meet this demand.

“[The] city or state needs to help current contractors be educated about green techniques. There needs to be some sort of certification program. Contractors currently think they can just “slap on a solar panel” and no one has the expertise or talent to do it correctly and efficiently.”

Focus Group Participant.

Skills typically in demand:

Energy industries – Electrical engineering (generally related to renewable energy systems and energy efficiency), electrical systems monitoring, transmission network repair, financial analysis, technical management and silicon manufacturing engineering.

Green Building – Architectural design, real estate development, landscape architecture, building systems energy management, knowledge of sustainable building materials, on site water management and LEED certification.

Recycled Products – Engineering and materials science and knowledge of markets for recycled materials.

Stephen Hinton, of Hinton Human Capital has compiled a list 12 licenses and certifications that he thinks will be in demand as the green initiatives in the federal stimulus funds start to be implemented and as clean-tech investments increase. Below is his list.

1. LEED-AP (Leadership in Energy and Environmental Design)
2. PE (Professional Engineer)
3. PMP (Project Management Professional)
4. CCM (Certified Construction Manager)
5. CPE (Certified Professional Estimator)
6. CPEA (Certified Environmental Auditor)
7. PLS (Professional Surveyor)
8. CWO (Certified Water Treatment Plant Operator)
9. CISSP (Certified Information Systems Security Professional)
10. Electrician License
11. CIA/CPA (Certified Internal Auditor and Public Accountant)
12. PHR/CIR (Professional in Human Resources and Certified Internal Recruiter)

Based on a review of offerings available through the University and MnSCU, there appear to be gaps in training in some categories that are expected to require workers. For example, several categories on ISEEK (Minnesota's career, education and job resource) show no Minnesota colleges offering programs in environmental engineering. And even where programs exist, they are difficult to locate within the community and would benefit from being packaged and marketed as high-growth opportunities. The cities could play a convening role by holding a summit of local workforce training providers and educational institutions to align their green building training, resources and curriculum to meet employer demand for green building skills.

Conclusion

What green businesses want in order to grow and prosper in Minneapolis Saint Paul is parallel to what all businesses want and need: a supportive and clear regulatory environment; supports, and some incentives if possible, to fund growth; good workers with the skills they need at the time they need them; and an overall business climate and quality of life that enables them to succeed.

Minneapolis and Saint Paul can play an important role in helping green businesses be successful and there are significant opportunities to increase employment in the green economy in the region. At the same time, some of that increased employment will be the result of displacing existing jobs with green jobs. And, because the green economy is still in its infancy in the region, we don't yet know clearly where those jobs will be created. What we do know is that by listening to businesses we have an idea of eight areas of focus that could help existing firms

thrive and create an atmosphere that attracts new firms and new talent to fuel the green economy going forward.

“Our central finding on employment growth is that a combination of clean-energy investments — including building retrofits, public transportation and constructing a smart grid, as well as promoting renewable energy sources such as wind, solar and biomass power — will generate roughly three times more jobs than an equivalent amount of money spent on conventional fossil fuels.

Political Economy Research Institute, Center for American Progress.

The Economic Benefits of Investing in Clean Energy, June 2009.

Appendix A

Interviews Conducted

Mark Ahlstrom, President
Windlogics

Alex Altstatt, Vice President Business
Development
Western Spring Manufacturing

Dan Beese, President
High Tech Energy

Brent Bergland, Construction Executive,
Renewable Energy
Mortenson Construction

Bill Blazar, Vice President
Minnesota Chamber of Commerce

Dan Carr, CEO
The Collaborative

Alex Cirillo, Vice President
3M Company

Jack Dempsey, President, Filtration Global
Business Unit
Pentair

Julie Esch, Business Development Manager
Mortenson Construction

Bill Faulkner, Business Development
Director
CimaNanotech

Dave Fiedler, President
Checker Machine

Peter Gross, President
Aeromix Systems, Inc.

Todd Johnson, President
ISC Machine & Fabrication

Bob Klas, CEO
Tapemark

B Kyle, Vice President, Business
Development
Saint Paul Port Authority

Mel Koenig, President
Minnesota Chapter, American Foundry
Association

Mike Le Jeune, CEO
Fabcon

Jeremy Lenz, Vice President, Operations
BioBusiness Alliance of Minnesota

Mark Lofthus, Business Development
Manager
Minnesota Department of Employment and
Economic Development

John Marshall, Manager, Community &
Local Government Relations
Xcel Energy

Stephen Mastey, President
Landscape Architecture, Inc.

Jeffrey L. Metzger, President
Just Wind, LLC.

Paul Nelson
Shaw-Lundquist

Uri Neren, Principal
Generate Companies

Jaime Nolan, President
Minnesota Precision Manufacturers
Association

Craig Norman, CFO

Ecologic Analytics

Jon Olson, Supervisor, Hopkins Tech.
Center
Hennepin Technical College

Lynn Olson, Senior Chemist
Ecolab

Lois Quam, President
Tysvar

Mr. Clint K. Rowles,
Aerotek Commercial Staffing

Vince Ruane
BioBusiness Alliance
Retired, 3M

Rob Stewart, Business Development
Manager
Cargill

Joan Thompson, Executive Vice
President/CFO
Minnesota Wire and Cable

Janise Verruso, Strategic Business
Development
Minnesota Wire & Cable

Marc von Keitz, Founder
BioCee, Inc.

Troy Vincent, General Manager
Manufacturing Solutions of Minnesota Inc.

John Vruno, Founder
JJV Rubber

Bob Walsh, Partner
Walsh Bishop Architects

Luke Weisberg, Coordinator
Greater Metropolitan Workforce Council

Dan Whalen, Project Manager
Remmele Engineering

Alice Wheelwright, Vice President of Global
Market and Segment Initiatives
Ecolab

Steve Wise, President
Cass Screw Machine

Mike Woodley, Vice President of Business
Development
Broit Light

Alex Young, VP Development
MSP Commercial

Appendix B

Focus Group Participants

Ryan Anderson
Managing Director
MyCore Industries

Joel Cannon, CEO
Tenk Solar Inc.

John Carnahan
Vast Enterprises

Katie Clark
Director of Community Relations
National Wind

Snehal Desai
Business Vice President
Segetis

Megan Dobratz, Consultant
MyCore Industries

Michael Harvey
Synergized Solar, Inc.

Paul LaBerge
Green Building Strategy Manager
Apogee Enterprises, Inc

Rebecca Lundburg, President
Powerfully Green

Rachel Maloney, Founder
Natural Built Home

Mario Monesterio, Principal
Westwood Renewables

Mark Morrison, Vice President
Tennant Co.

Brent Mosher, CEO
Hitek Labs

Glenn Nelson, President
BioForce Services

Kievin Nyenhuis, Partner
Synergized Solar

David O'Brien, President
HG Windpower

Nancy Richmond, President
Ion Electric

Bill Richmond, Vice President
Ion Renewable

Ron Rorvick, Sales Manager
Bioforce Services

Gerardo Ruiz, Founder
FreEner-g

Brian Tockman, Business Development
Manager
Segetis

Steve Smith, President
Vast Enterprises

Andy Vander Woude, Principal
Vast Enterprises

Dennis Werneke, Founder and President
American Chemical

Executive Roundtable Participants

Cyndi Leshner, Retired
Xcel Energy

Bill Blazar, Senior Vice President
Minnesota Chamber of Commerce

Rick Beeson, President
Park Midway Bank
University of Minnesota Board of Regents

Scott Ross, President
Cue7 Consulting

Julie Esch, Business Development Manager
Mortenson Construction

Mark Andrew, President
Green Mark

Appendix C

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