Southern Minnesota’s Strategic Opportunities

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Southern Minnesota’s Strategic Opportunities

Outline

Strategic Opportunities

Innovation Capacity

Partnerships for Action
1. What are Southern Minnesota’s best economic opportunities?

- Three approaches to “best.”
- Six strategic opportunities:
  1. Manufacturing
  2. Health care
  3. Food and agriculture
  4. Renewable energy
  5. Bioscience
  6. High technology
2. **What is Southern Minnesota’s capacity to innovate?**

- What features define the Region’s innovation system?
- What is the current level of entrepreneurial activity in the Region?
- What are possible hurdles to more innovation & start-ups?
3. **What partnerships are critical to success?**

- What is the existing network of partnerships?
- Which partnerships link to each new opportunity?
- How to fortify collaboration for action?
Why now?

Per capita incomes in the Region are sliding relative to the state.
How to identify the best opportunities?

Three approaches to “best.”

• What does the regional economy specialize in now?
  
  Structural Analysis

• What clusters give the Region a competitive edge?
  
  Cluster Analysis

• What distinct assets could fuel new growth?
  
  Roundtable Synthesis
**A Region with Three Pillars...**

Farming, Manufacturing, and Health Care are dominant economic pillars.

<table>
<thead>
<tr>
<th>Sector</th>
<th>2007 Jobs</th>
<th>Surplus Jobs</th>
<th>Specialization Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm Employment</td>
<td>47,462</td>
<td><strong>37,982</strong></td>
<td>501</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>87,306</td>
<td><strong>42,246</strong></td>
<td>194</td>
</tr>
<tr>
<td>Health Care and Social Assistance</td>
<td>93,740</td>
<td><strong>39,359</strong></td>
<td>172</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>58,418</td>
<td>6,296</td>
<td>112</td>
</tr>
<tr>
<td>Other Services (except Public Administration)</td>
<td>20,476</td>
<td>2,432</td>
<td>113</td>
</tr>
<tr>
<td>Educational Services</td>
<td>10,737</td>
<td>888</td>
<td>109</td>
</tr>
</tbody>
</table>

*Surplus = Actual – Expected (based on Region’s population & national benchmarks)*
...And many beams.

Health, food, high tech, and specialty manufacturing are all visible.

<table>
<thead>
<tr>
<th>Industry</th>
<th>2007 Jobs</th>
<th>Surplus Jobs</th>
<th>Specialization Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Other Outpatient Care Centers</td>
<td>19,346</td>
<td><strong>18,353</strong></td>
<td>1948</td>
</tr>
<tr>
<td>Commercial Lithographic Printing</td>
<td>7,540</td>
<td>6,492</td>
<td>719</td>
</tr>
<tr>
<td>General Medical and Surgical Hospitals</td>
<td>22,673</td>
<td>6,298</td>
<td>138</td>
</tr>
<tr>
<td>Animal (ex. Poultry) Slaughtering</td>
<td>6,652</td>
<td>6,125</td>
<td>1262</td>
</tr>
<tr>
<td>Residential Mental Retardation Facilities</td>
<td>7,314</td>
<td>5,940</td>
<td>532</td>
</tr>
<tr>
<td>Other Computer Peripheral Equipment Manufacturing</td>
<td>5,067</td>
<td>4,896</td>
<td>2960</td>
</tr>
<tr>
<td>Vocational Rehabilitation Services</td>
<td>5,326</td>
<td>4,208</td>
<td>477</td>
</tr>
<tr>
<td>Computer Storage Device Manufacturing</td>
<td>3,142</td>
<td>3,077</td>
<td>4799</td>
</tr>
<tr>
<td>Poultry Processing</td>
<td>3,582</td>
<td>2,800</td>
<td>458</td>
</tr>
<tr>
<td>Colleges, Universities, and Professional Schools</td>
<td>7,078</td>
<td>2,007</td>
<td>140</td>
</tr>
<tr>
<td>Glass Product Manufacturing</td>
<td>1,914</td>
<td>1,728</td>
<td>1028</td>
</tr>
<tr>
<td>Coated and Laminated Paper Manufacturing</td>
<td>1,606</td>
<td>1,497</td>
<td>1474</td>
</tr>
<tr>
<td>Casino Hotels</td>
<td>2,506</td>
<td>1,274</td>
<td>203</td>
</tr>
<tr>
<td>Motor Vehicle Body Manufacturing</td>
<td>1,372</td>
<td>1,215</td>
<td>873</td>
</tr>
<tr>
<td>Direct Property and Casualty Insurance Carriers</td>
<td>2,807</td>
<td>1,063</td>
<td>161</td>
</tr>
</tbody>
</table>

*Surplus = Actual – Expected (based on Region’s population & national benchmarks)*
Industry Clusters in Southern Minnesota

More competitive strength

Size of bubble indicates employment size

Clusters in which the Region has an edge.

- Management, higher education & hospitals
- Basic health services
- Hotels & transportation services
- Business services
- Arts and media
- Financial services & insurance
- Construction
- Information services
- Packaged food products
- Computer & electronic equipment
- Feed products
- Nondurable industry machinery
- Appliances
- Machine tools
- Wood building products
- Construction machinery & distribution equipment
- Concrete, brick building products
- Metalworking & fabricated metal products
- Wood products & furniture
- Dairy products
- Rubber products
- Breweries & distilleries
- Glass products
- Paper
- Leather products
- Grain milling


Employment expected to grow
Growing Clusters in which the Region has an edge.

- Breweries & distilleries
- Glass Products
- Rubber Products
- Concrete, brick building products
- Wood products & furniture
- Wood building products
- Appliances
- Nondurable industry machinery
- Current LQ

• Ag, manufacturing, health care are pillars, but there are questions about the future:

  Continued consolidation in farms yields outmigration.
  Mfg is so diverse that an overriding strategy is difficult.
  How to leverage high-quality health care more effectively?

• Many new markets excite regional leaders, but they are all in early stages:

  Renewable energy.
  Bioscience.
  Tourism & specialty foods.
The Region boasts high-octane innovation engines, but is not harnessing all the economic power these can provide (Mayo, The Hormel Institute, UM, MNSCU).

*How to use innovation to fuel new businesses?*

Seizing new opportunities will take more concerted partnership, but collaboration is already deeply embedded in the Region.

*New collaborations to seize innovation especially prized.*
Six Strategic Opportunities

1. Manufacturing
2. Health care
3. Food and agriculture
4. Renewable energy
5. Bioscience
6. High technology
• Employs 1 in 5 workers in the Region (87,000 jobs).
• Has three key segments: food & ag, high-tech, and a “middle third.”
• The middle third ranges widely—top 50 industries employ 32,500 workers in the Region (726 firms).
How to craft a manufacturing strategy for the Region?

- Put food processing in a consolidated Food & Ag strategy.
- Separate out high tech—a world unto itself.
- Identify mfg industries that meet two criteria:
  1. Part of competitive, growing clusters.
  2. Pay wages greater than the Region average earnings per worker.
## 24 Industries: A Starting Point for the Region’s Mfg Strategy

<table>
<thead>
<tr>
<th>Cluster</th>
<th>Industry</th>
<th>2007 Jobs</th>
<th>Earnings Per Worker</th>
<th>Projected US Growth '07 to '17</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nondurable Industry Machinery</strong></td>
<td>Motor and Generator Mfg.</td>
<td>1,189</td>
<td>$69,407</td>
<td>-23.1%</td>
</tr>
<tr>
<td></td>
<td>Scale and Balance, (ex. Laboratory), Mfg.</td>
<td>446</td>
<td>$42,647</td>
<td>-18.9%</td>
</tr>
<tr>
<td></td>
<td>Food Product Machinery Mfg.</td>
<td>334</td>
<td>$95,019</td>
<td>-8.5%</td>
</tr>
<tr>
<td><strong>Appliances</strong></td>
<td>Current-Carrying Wiring Device Mfg.</td>
<td>1,069</td>
<td>$61,914</td>
<td>-23.0%</td>
</tr>
<tr>
<td></td>
<td>Heating Equipment, Ex. Warm Air Furnaces</td>
<td>682</td>
<td>$53,405</td>
<td>9.3%</td>
</tr>
<tr>
<td></td>
<td>AC, Refrigeration, and Forced Air Heating</td>
<td>638</td>
<td>$64,146</td>
<td>5.9%</td>
</tr>
<tr>
<td><strong>Wood Building Products</strong></td>
<td>Prefabricated Wood Building Mfg.</td>
<td>313</td>
<td>$28,500</td>
<td>15.4%</td>
</tr>
<tr>
<td></td>
<td>Truss Mfg.</td>
<td>264</td>
<td>$34,779</td>
<td>30.6%</td>
</tr>
<tr>
<td></td>
<td>Wood Window and Door Mfg.</td>
<td>261</td>
<td>$49,865</td>
<td>17.1%</td>
</tr>
<tr>
<td><strong>Concrete, brick building Products</strong></td>
<td>Ready-Mix Concrete Mfg.</td>
<td>692</td>
<td>$49,494</td>
<td>6.4%</td>
</tr>
<tr>
<td></td>
<td>Cut Stone and Stone Product Mfg.</td>
<td>203</td>
<td>$37,542</td>
<td>33.6%</td>
</tr>
<tr>
<td></td>
<td>Concrete Block and Brick Mfg.</td>
<td>201</td>
<td>$53,826</td>
<td>14.9%</td>
</tr>
<tr>
<td><strong>Rubber Products</strong></td>
<td>All Other Miscellaneous Mfg.</td>
<td>883</td>
<td>$42,845</td>
<td>11.6%</td>
</tr>
<tr>
<td></td>
<td>Sporting and Athletic goods Mfg.</td>
<td>808</td>
<td>$42,006</td>
<td>-17.5%</td>
</tr>
<tr>
<td></td>
<td>Gasket, Packing and Sealing Device Mfg.</td>
<td>209</td>
<td>$63,046</td>
<td>3.5%</td>
</tr>
<tr>
<td><strong>Wood Products &amp; Furniture</strong></td>
<td>Wood Kitchen Cabinet and Countertop Mfg.</td>
<td>1,179</td>
<td>$32,178</td>
<td>14.5%</td>
</tr>
<tr>
<td></td>
<td>Institutional Furniture Mfg.</td>
<td>818</td>
<td>$48,506</td>
<td>0.8%</td>
</tr>
<tr>
<td></td>
<td>Wood Office Furniture Mfg.</td>
<td>491</td>
<td>$37,071</td>
<td>-0.2%</td>
</tr>
<tr>
<td><strong>Breweries &amp; Distilleries</strong></td>
<td>Fruit and Vegetable Canning</td>
<td>2,613</td>
<td>$41,058</td>
<td>-4.1%</td>
</tr>
<tr>
<td></td>
<td>Breweries</td>
<td>164</td>
<td>$42,661</td>
<td>-4.8%</td>
</tr>
<tr>
<td></td>
<td>Soft Drink Mfg.</td>
<td>283</td>
<td>$50,054</td>
<td>1.4%</td>
</tr>
<tr>
<td><strong>Glass Productions</strong></td>
<td>Glass Product Mfg. Made of Purchased Glass</td>
<td>2,008</td>
<td>$53,486</td>
<td>6.9%</td>
</tr>
<tr>
<td></td>
<td>Metal Coating and Non-Precious Engraving</td>
<td>461</td>
<td>$35,448</td>
<td>12.7%</td>
</tr>
<tr>
<td></td>
<td>Electroplating, Anodizing, and Coloring Metal</td>
<td>156</td>
<td>$27,522</td>
<td>-17.5%</td>
</tr>
</tbody>
</table>
Manufacturing “Middle Third” Job Distribution Across the Region

Percent of Region’s Manufacturing “Middle Third” Employment within each County

- 0% - 3.2%
- 3.21% - 6.4%
- 6.41% - 9.6%
- 9.61% - 12.8%
- 12.81% - 16%
Health Care

- Employs more than 1 in 5 workers (94,000).
- Cluster analysis suggests this sector is about “par” with the nation, but fails to capture the quality differential.
- Innovation measures for Rochester, for instance, rank very high in the nation.
How to leverage this key asset beyond its direct effect on employment?

One option:

Elder care linked to the Region’s high quality hospitals and research organizations.

Huge potential market in the Twin Cities and beyond.
• Region has twin assets: high quality health care + a deeply embedded culture that honors & cares for the elderly.

• The greatest generation & baby boomers represent a huge growth market.

• Further investments in health care excellence could yield twin dividends, but will need closer ties between health care organizations and the elder care industry.
Health Care and Social Assistance Employment Across the Region

Percent of Region’s Health Care and Social Assistance Employment within County:
- 0% - 2%
- 2.1% - 4%
- 4.1% - 6%
- 6.1% - 8%
- Over 39%
• A bounty of production + strong food cluster.

• Entrepreneurial spirit—in many ways the Region is “coop central.”

• Two concerns:

  Productivity means consolidation, spurring more youth exodus.

  Food processing jobs pay wages below the Region average, which does not raise the income bar.

  No easy answer to either.
The Region owns a strong edge in growing farm commodities

source: USDA, NASS Oil Crops Outlook
Two Concerns

• A strong economic sector in the Region.

• But leaders are concerned:
  
  Productivity means consolidation, spurring more youth exodus.

  Food processing jobs pay wages below the Region average, which does not raise the income bar.
Food & Ag Job Distribution Across the Region

Percent of Region’s Food & Ag Manufacturing Employment within County:
- 0% - 2.4%
- 2.41% - 4.8%
- 4.81% - 7.2%
- 7.21% - 9.6%
- 9.61% - 12%
Two new directions

• Tap into growing demand for local & designer foods.

  Twin Cities a huge market:
  3.2 m people
  1.2 m households
  $67,200 median income per household

  Signs of local foods emerging, but not coordinated and no regional “brand.”
  Offers real synergies with efforts to boost tourism.

• Push hard into bioscience (a separate strategy, but strong links)
Renewable Energy

The Region has abundant renewable energy assets.

Big footprint in corn ethanol, with deep expertise & capital.

Some of the best wind patterns in the nation.

Huge capacity for biomass production in cellulosic ethanol.
Big ethanol presence, but the future is more uncertain.

Source: Renewable Fuels Association

16 plants in the Region.
Reaping the wind will take a lot of coordination to pull off.

**SW MN has some of the best wind potential in the nation.**

- The Region has the potential to add several hundred thousand MW of generating capacity.

It is relatively easy to transmit the power to Minneapolis, St. Paul metro, which has a high proportion of “green” consumers.

With additional lines, could consider supplying as far away as Chicago.
New Transmission Lines are Critical

Exhibit 1: Conceptual 765 kV backbone system for wind resource integration (edited by AEP).

Source: AEP and NREL.
Bioscience

The Region has powerful bioscience assets.

World-class agricultural prowess.

World-class medical research & practice.

World-class life science research.
Currently, each eyes the global market more than the economic potential within the Region.

How can these combine in a new bio-economy for the Region?
Proteins are the heart of the pharmaceutical industry.

- But the fermentation process to produce them is expensive ($800,000 to $1m per kilogram) and capacity-constrained.

Many of the same proteins can now be extracted from plants—at huge potential savings and virtually unlimited capacity.

- Cost savings estimated at between 10X and 100X, depending on the protein and the “yield.”
Bio-business Industry Assets

**Red:** Human & Animal Health

**Green:** Agri-Bio Tech

**Black:** Life Science R & D

**Figure 4.** Biobusiness Technology Industries (Map of NAICS-based categories)
Bio-Business Job Distribution Across Region (Black)

Percent of Region’s Black Category Bio-Business Employment within County

- 0% - 3.4%
- 3.41% - 6.8%
- 6.81% - 10.2%
- 10.21% - 13.6%
- 13.61% - 17%
Bio-Business Job Distribution Across Region (Red, Green, & Black)

Percent of Region’s Black, Green, & Red Bio-Business Employment within County:
- 0% - 4%
- 4.1% - 8%
- 8.1% - 12%
- 12.1% - 16%
- 16.1% - 20%
• US Bureau of Labor Statistics classifies 46 industries as high-tech based on proportion of scientists, engineers, & technicians.

• Based on this definition, the Region boasts almost 38,000 jobs in these industries.

• Computer and electronic equipment is a competitive cluster, though jobs are declining, and this trend is projected to continue.
1. How best to exploit the high tech synergies within and across industries?

   *Bioscience is a perfect example. IBM (Rochester) supplying the supercomputer Hormel Institute needs for world-class cancer research.*

2. How best to exploit synergies between higher education institutions and high tech industries?

   *U of M program in Rochester aimed at doing just this, but there appears to be potential for more such initiatives across the Region.*
High Tech Job Distribution
Across the Region

Percent of Region’s
High-Tech Employment
Located within County

- 0% - 2%
- 2.1% - 4%
- 4.1% - 6%
- 6.1% - 8%
- 8.1% - 10%
2. **What is Southern Minnesota’s capacity to innovate?**

- What features define the Region’s innovation system?
- What is the current level of entrepreneurial activity in the Region?
- What are possible hurdles to more innovation & start-ups?
A Region with many innovation engines... But is it capturing all that power?

Leaders point to many powerful engines, such as Mayo, The Hormel Institute, U of M, MNSCU, and private R & D.

But even in Rochester, there are questions about harnessing more of this power.
How competitive is the Region’s innovation engine?

An innovation index with 4 components

1. Human capital
2. Economic dynamics (business starts)
3. Productivity (patents)
4. Economic well-being (wages)
Innovation

Composite of Innovation Components
(100 = US Average)

- Blue: 50.1 - 70
- Gray: 70.1 - 90
- Light Yellow: 90.1 - 110
- Orange: 110.1 - 130
- Dark Orange: 130.1 - 150
Percentage of Self-Proprietors in Non-Farm Industries

Percentage by County
- 0% - 11%
- 11.1% - 22%
- 22.1% - 33%
- 33.1% - 44%
- 44.1% - 55%
The Region has a lot of wealth, but much of it is in the form of farmland.

How to “re-cycle” more of the wealth in regional equity funds that can fuel new businesses?

Rain Funds already on the ground.

Community Development Venture Funds are another option.

Community Foundations are another (NE provides a great example.)
3. **What partnerships are critical to success?**

- What is the existing network of partnerships?
- Which partnerships link to each new opportunity?
- How to fortify collaboration for action?
3. What partnerships are critical to success?

Project Partners? & Other Regional Organizations?

Strategic Opportunities

Manufacturing  Food & Ag  Health care
Renewable Energy  High-tech  Bioscience
Key partnerships in Bioscience

Area Chambers of Commerce Networks
The BioBusiness Alliance of Minnesota
USDA
The Hormel Institute, IBM and Mayo Collaboration on Genomics
I-90 Coalition
Minnesota Partnership for Biotechnology
Project Lead the Way
Minnesota Farm Bureau
Minnesota Farmers Union
Minnesota Soybean growers Association
Minnesota Corn Growers Association
New bioscience partnerships will help create the synergies needed to seize the potential.

Potential Partners

- Mayo, The Hormel Institute, & Univ. of MN
- Farm groups
- Commodity groups
- State regulatory groups
- Rural development groups
- Entrepreneurial support groups
- Regionally based venture capital groups.
- Consumer organizations
- Environmental organizations

Issues to address

- Which pipeline proteins could be grown in plants?
- Which crops in Southern MN?
- What are the production protocols?
- What is the business ownership structure to maximize the win for everyone?
Key partnerships in Manufacturing

Area Chambers of Commerce Networks
The BioBusiness Alliance of Minnesota
Enterprise Minnesota
I-90 Coalition
Minnesota Center for Engineering and Manufacturing Excellence
Minnesota Job Skills Partnership Initiatives
Perkins K-12 and Post Secondary Partnerships
Project Lead the Way
Winona Composites Consortium
Key partnerships in Food & Ag

- Association of Minnesota Counties
- The BioBusiness Alliance of Minnesota
- USDA
- I-90 Coalition
- Minnesota Farm Bureau
- Minnesota Farmers Union
- Minnesota Soybean growers Association
- Minnesota Corn Growers Association
Key partnerships in Health care

Area Chambers of Commerce Networks
Association of Minnesota Counties
The BioBusiness Alliance of Minnesota
FIRST Grants across southern Minnesota
HealthForce Minnesota in Winona
I-90 Coalition
Joint Power Boards
Minnesota Job Skills Partnership Initiatives
Minnesota Partnership for Biotechnology
Perkins K-12 and Post Secondary Partnerships
Key partnerships in Renewable Energy

Area Chambers of Commerce Networks
Association of Minnesota Counties
The BioBusiness Alliance of Minnesota
Clean Energy Resource Teams (CERTS)
Enterprise Minnesota
USDA
FIRST Grants across southern Minnesota
Green Partnerships at Winona State University
I-90 Coalition
International Renewable Energy Technology Institute (IRETI) at MSU
Minnesota Job Skills Partnerships Initiatives
Minnesota Renewable Energy Marketplace
Perkins K-12 and Post Secondary Partnerships
Project Lead the Way
Rural Energy Board
Rural Energy Development Initiative (REDI) of the Southwest and Southern Minnesota Initiative Foundations
## Key partnerships in High-tech

<table>
<thead>
<tr>
<th>Partnership</th>
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</thead>
<tbody>
<tr>
<td>Area Chambers of Commerce Networks</td>
</tr>
<tr>
<td>The BioBusiness Alliance of Minnesota</td>
</tr>
<tr>
<td>Clean Energy Resource Teams (CERTS)</td>
</tr>
<tr>
<td>Enterprise Minnesota</td>
</tr>
<tr>
<td>The Hormel Institute, IBM and Mayo Collaboration on Genomics</td>
</tr>
<tr>
<td>I-90 Coalition</td>
</tr>
<tr>
<td>International Renewable Energy Technology Institute (IRETI) at MSU</td>
</tr>
<tr>
<td>Project Lead the Way</td>
</tr>
<tr>
<td>Minnesota Partnership for Biotechnology</td>
</tr>
</tbody>
</table>
New partnerships also will help harness the wind within the Region.

### Partners to convene
- Farm groups
- Utilities
- Local zoning authorities
- State regulatory groups
- MISO (5 Govs in sync!)
- Regionally based venture capital groups.
- Consumer organizations
- Environmental organizations

### Issues to address
- How to standardize & coordinate local siting?
- What new transmission lines and where—and how to ensure local access to the grid?
- Who pays for the lines?
- How to ensure reliable supplies with uncertain winds?
- How to coordinate investment across the “bigger” region?