

# Southern Minnesota's Strategic Opportunities

CENTER FOR REGIONAL  
COMPETITIVENESS



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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?



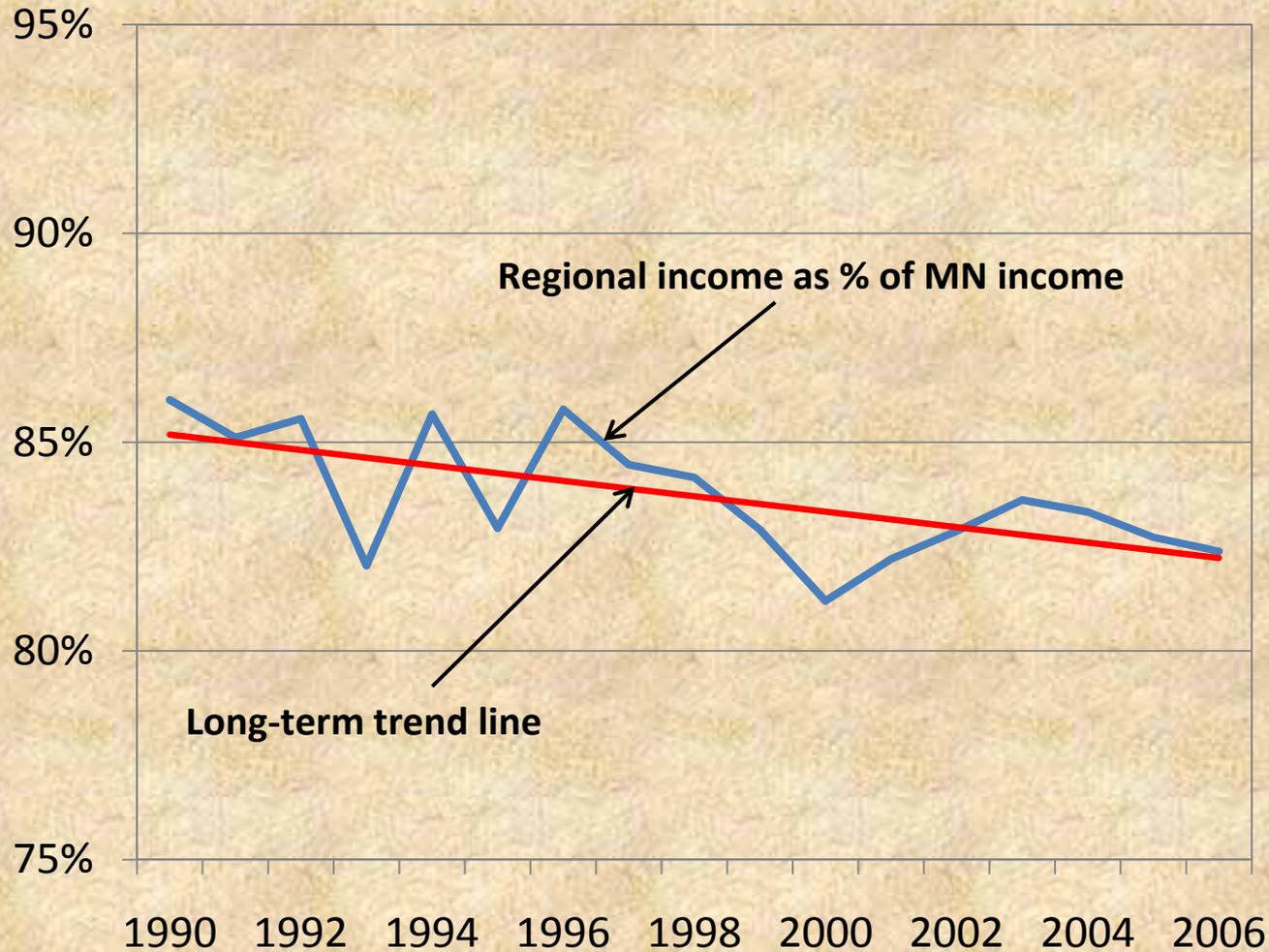
### 3. What partnerships are critical to success?



- 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.*

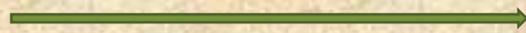


# How to identify the best opportunities?

## Three approaches to “best.”

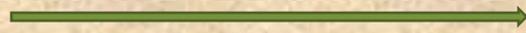


- What does the regional economy specialize in now?



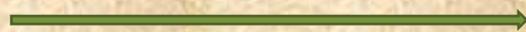
*Structural Analysis*

- 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.**



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

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

# ...And many beams.

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

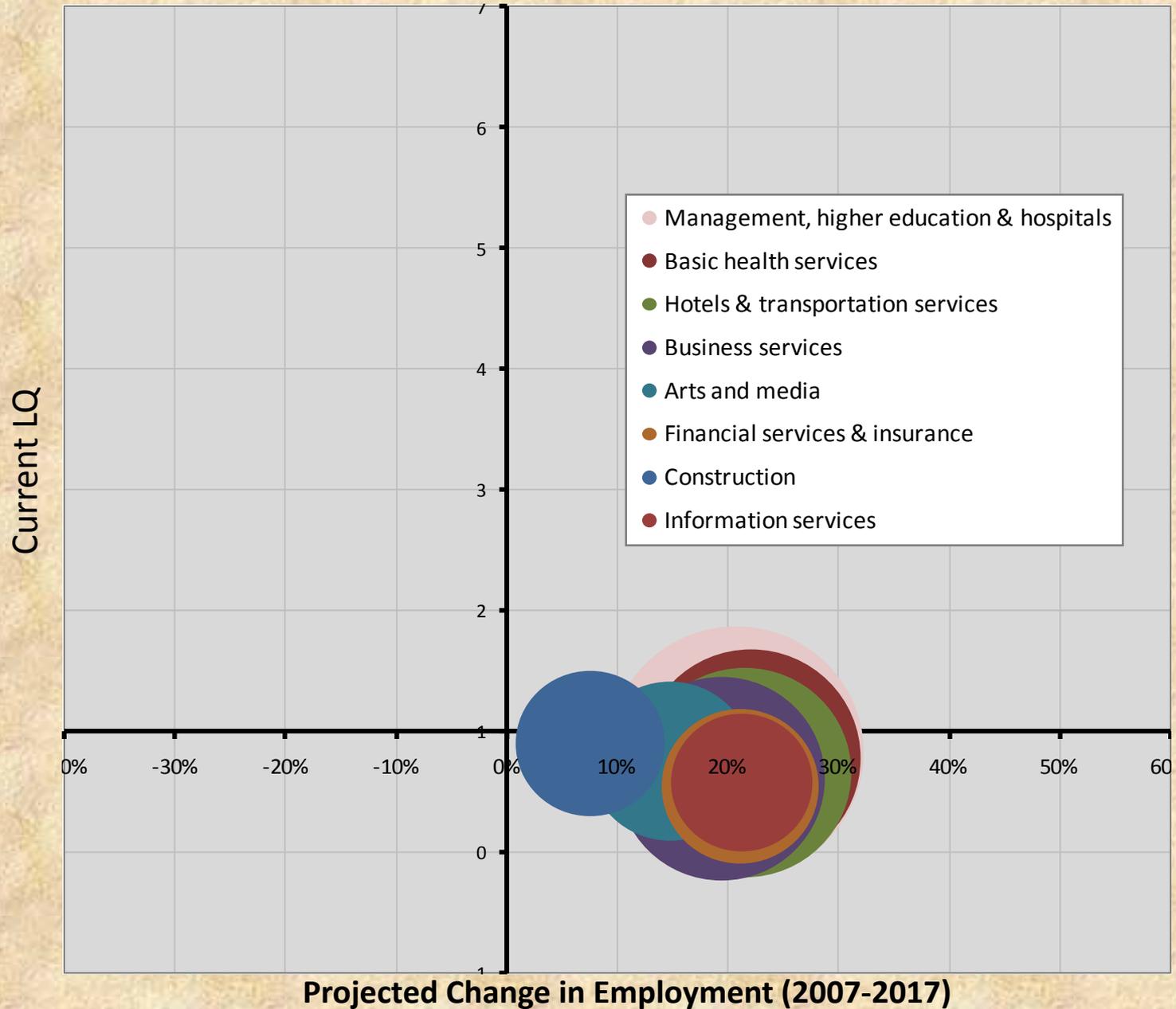


Industry	2007 Jobs	Surplus Jobs	Specialization Index
<b>All Other Outpatient Care Centers</b>	19,346	<b>18,353</b>	1948
Commercial Lithographic Printing	7,540	6,492	719
<b>General Medical and Surgical Hospitals</b>	22,673	6,298	138
<b>Animal (ex. Poultry) Slaughtering</b>	6,652	6,125	1262
<b>Residential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

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

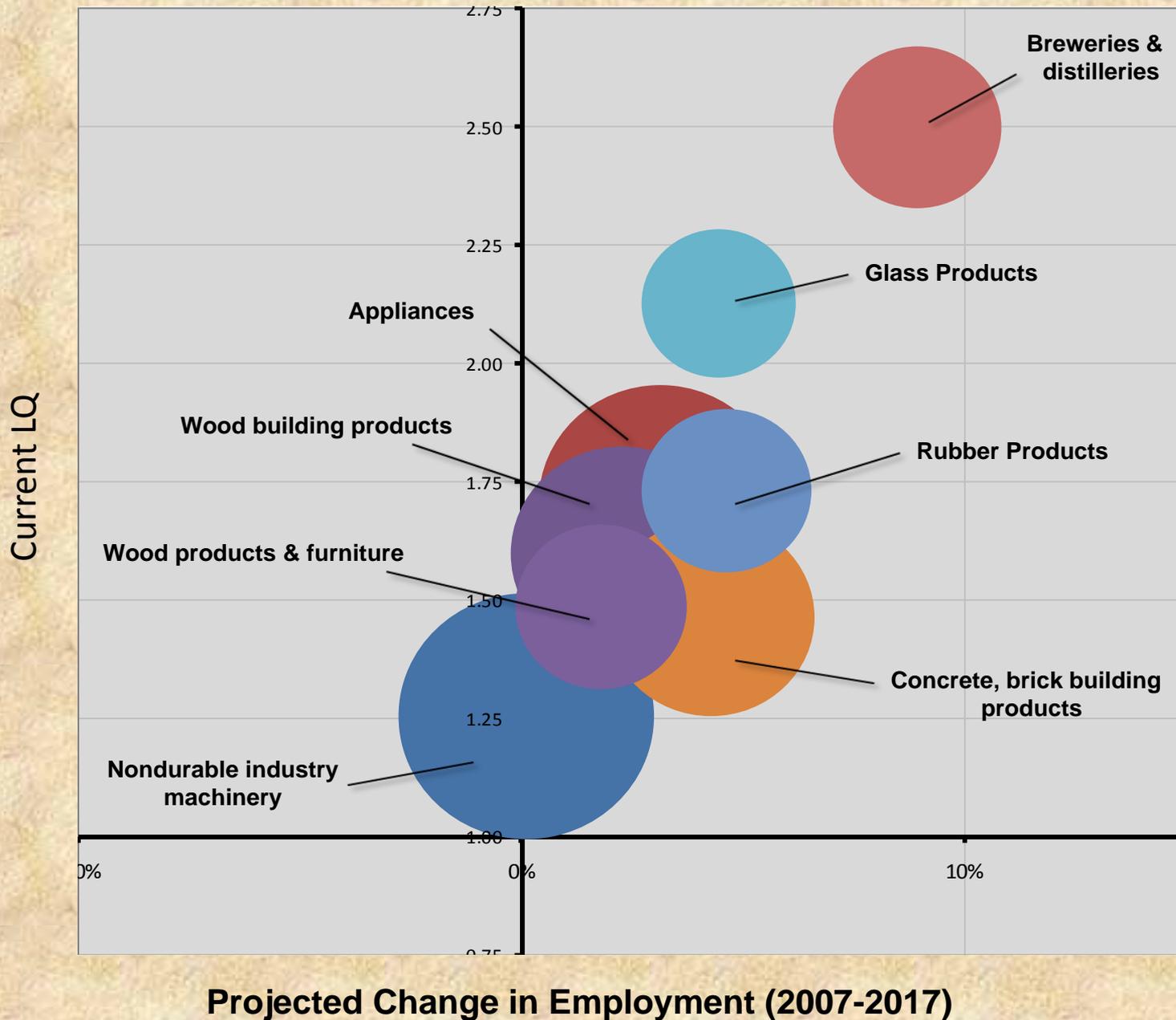


# 8 Largest Clusters





# Growing Clusters in which the Region has an edge.



# Roundtable Findings



- **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.*

# Roundtable Findings



- **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**



# Manufacturing



- **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).**

# Manufacturing

*How to craft a  
manufacturing  
strategy for the Region?*

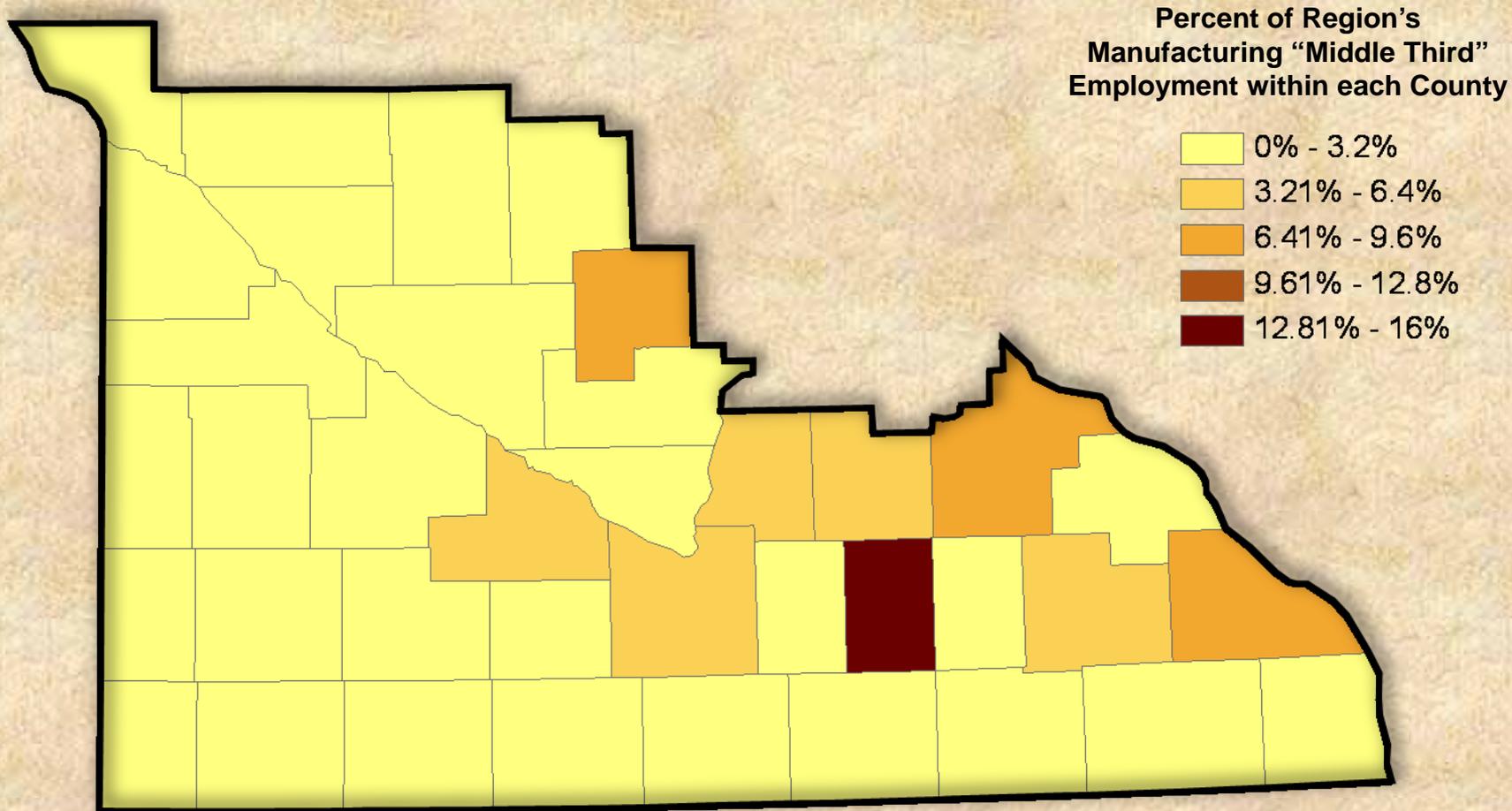


- **Put food processing in a consolidated Food & Ag strategy.**
- **Separate out high tech—a world unto itself.**
- **Identify mfg industries that meet two criteria:**
  1. **Part of competitive, growing clusters.**
  2. **Pay wages greater than the Region average earnings per worker.**

# 24 Industries: A Starting Point for the Region's Mfg Strategy

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

# Manufacturing “Middle Third” Job Distribution Across the Region



# 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.**

# Health Care



- **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.**

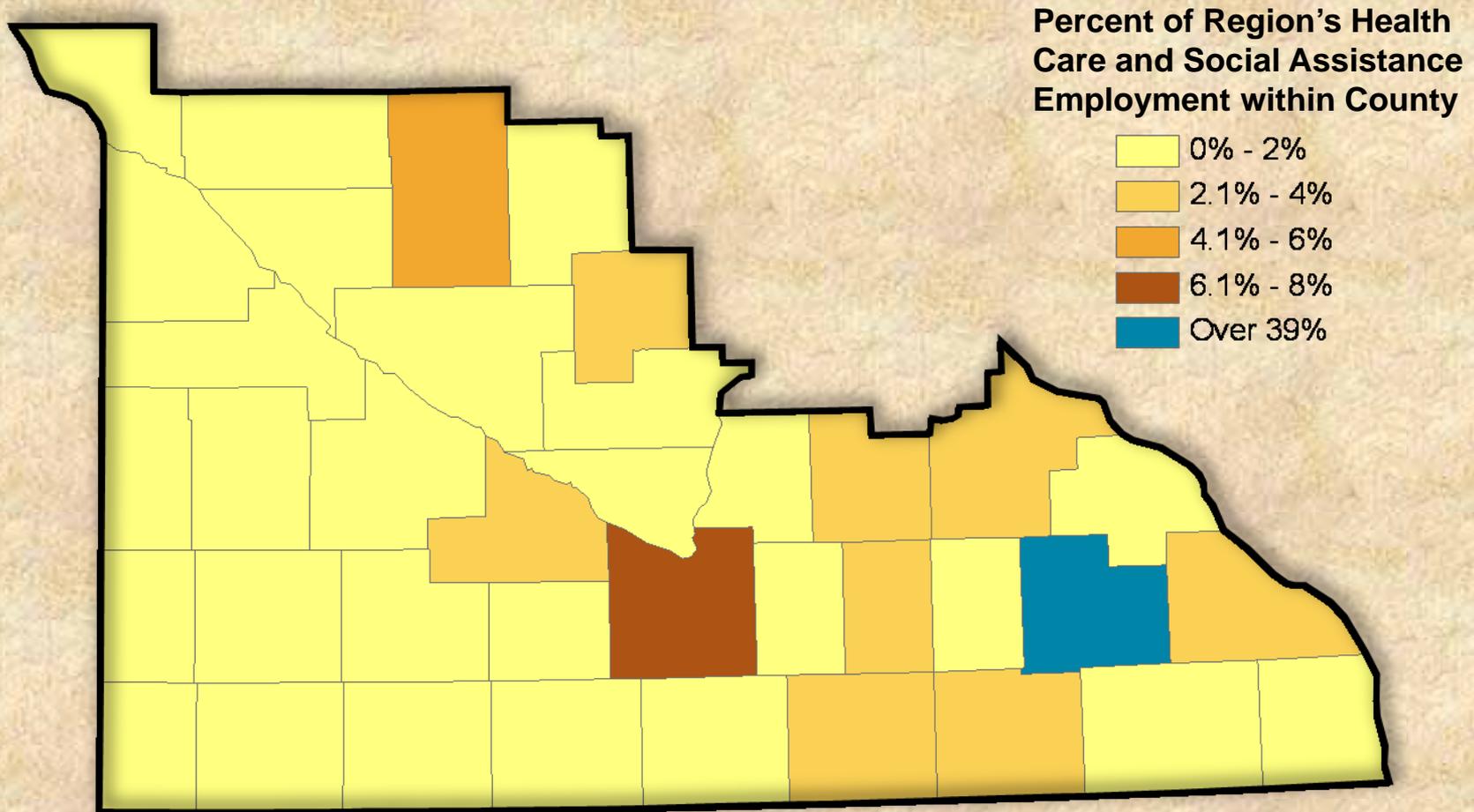
**Huge potential market in the Twin Cities and beyond.**

# Elder Care



- **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

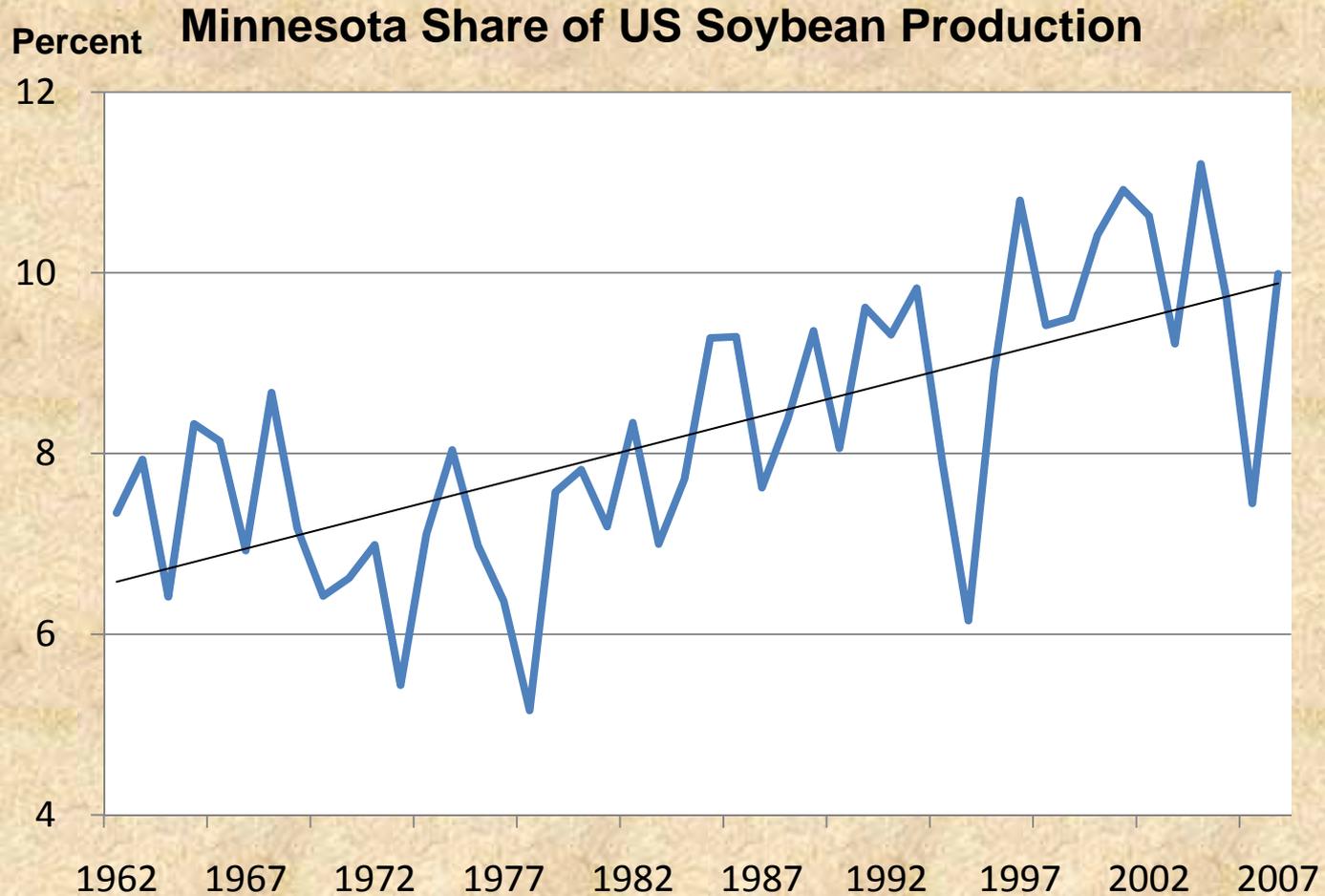


# Food & Agriculture



- **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

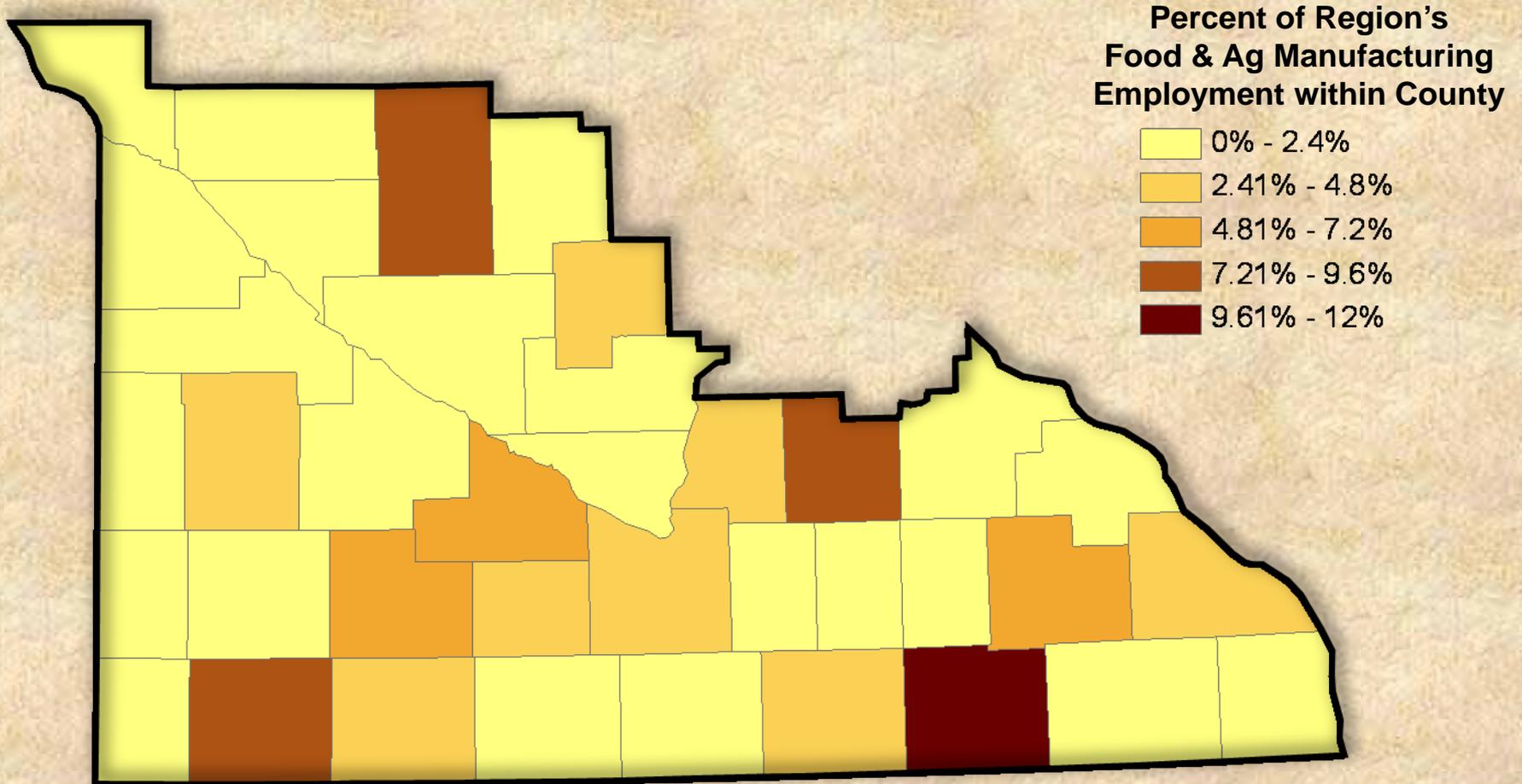


- **A strong economic sector in the Region.**
- **But leaders are concerned:**

**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



# 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**

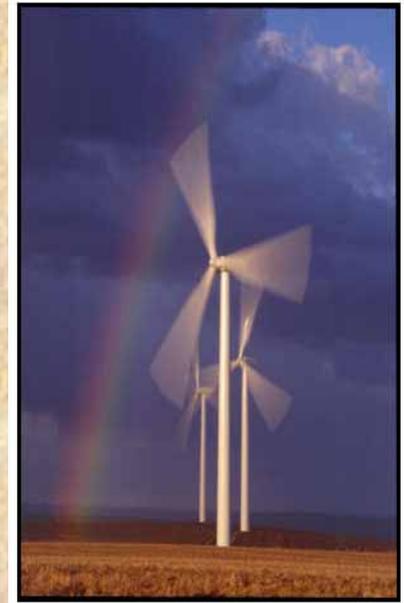
**Signs of local foods emerging, but not coordinated and no regional “brand.”**

**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.**

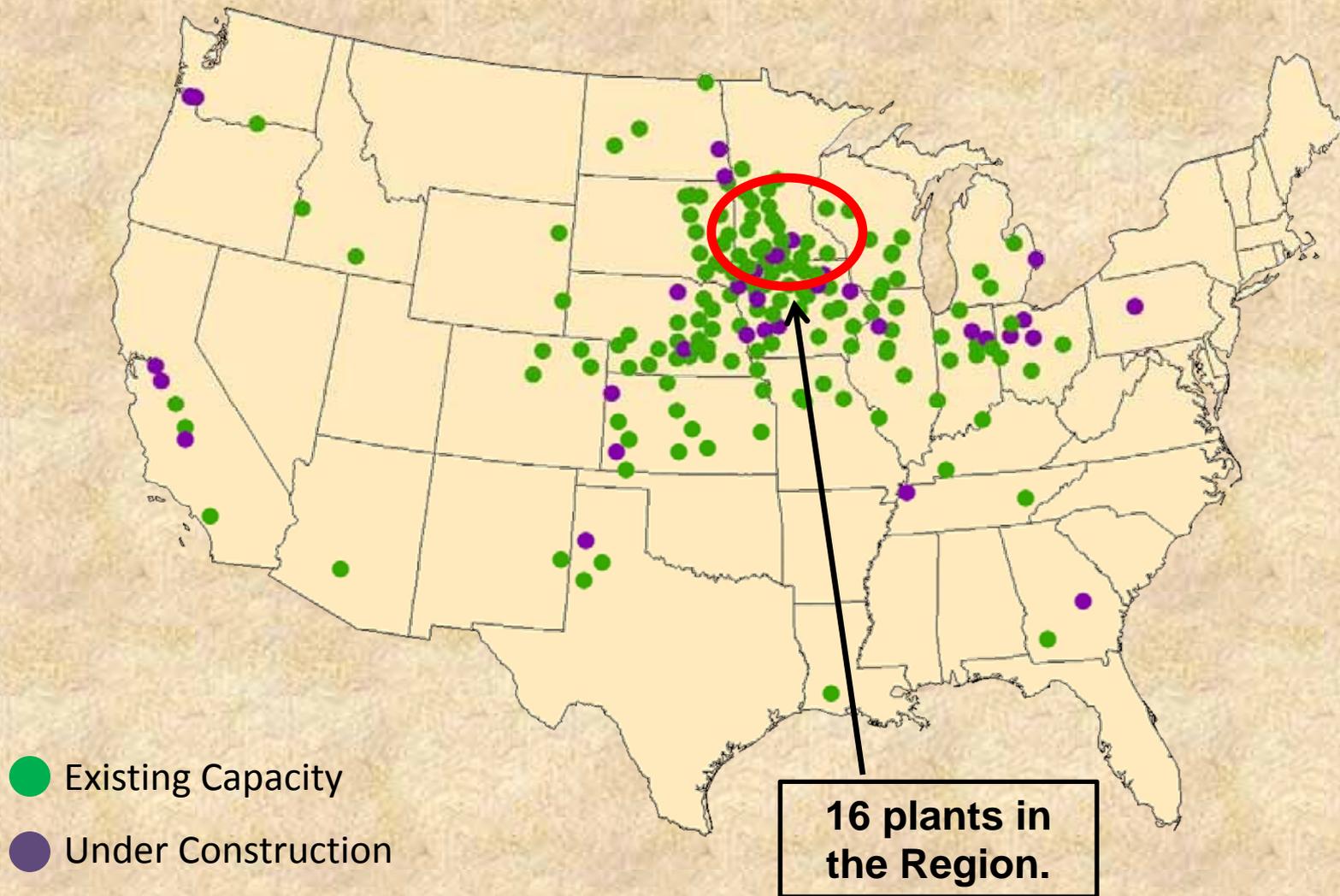


**Big footprint in corn ethanol, with deep expertise & capital.**

**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.



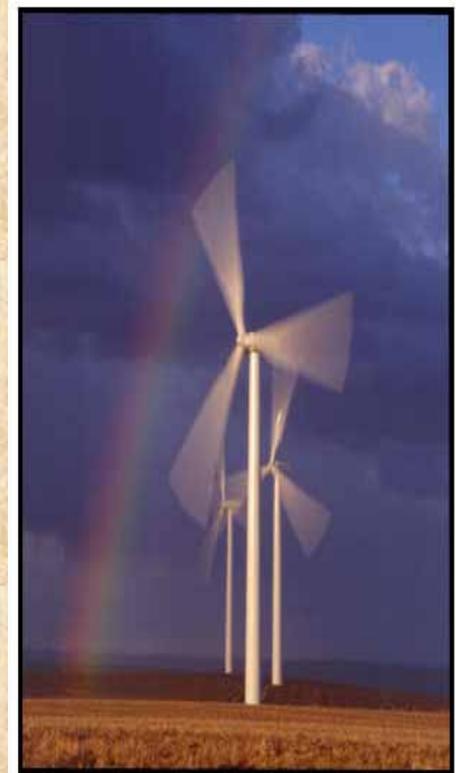
# Reaping the wind will take a lot of coordination to pull off.

**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

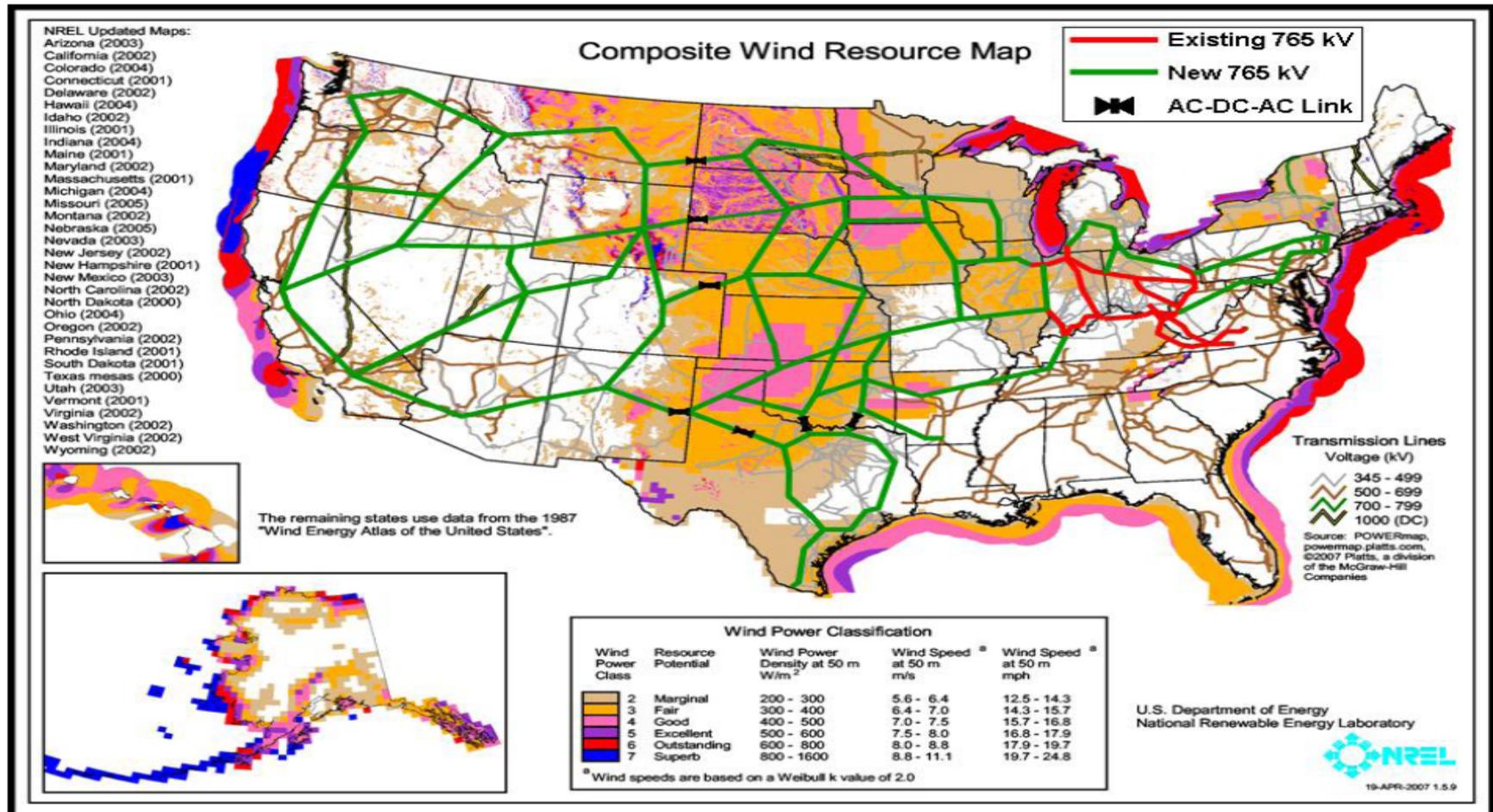


Exhibit 1: Conceptual 765 kV backbone system for wind resource integration (edited by AEP).

Source: AEP and NREL.

# Bioscience

**The Region has  
powerful bioscience  
assets.**



**World-class agricultural prowess.**



**World-class medical research & practice.**

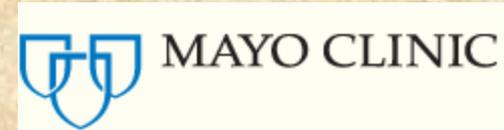


**World-class life science research.**



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?*



THE HORMEL INSTITUTE  
UNIVERSITY OF MINNESOTA

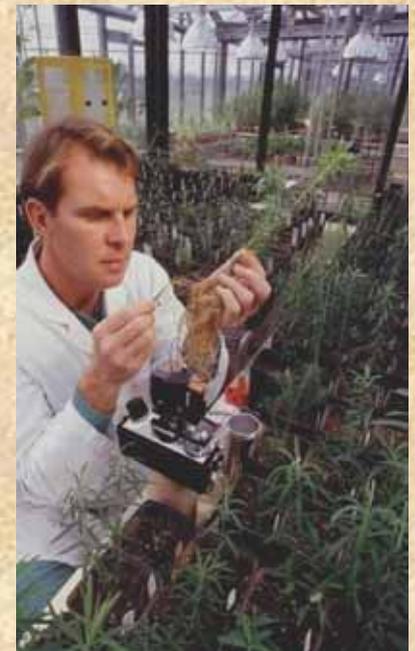
# “Pharmaceuticals” & A New Bio-Economy: *A Potentially Enormous Value Proposition.*

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.

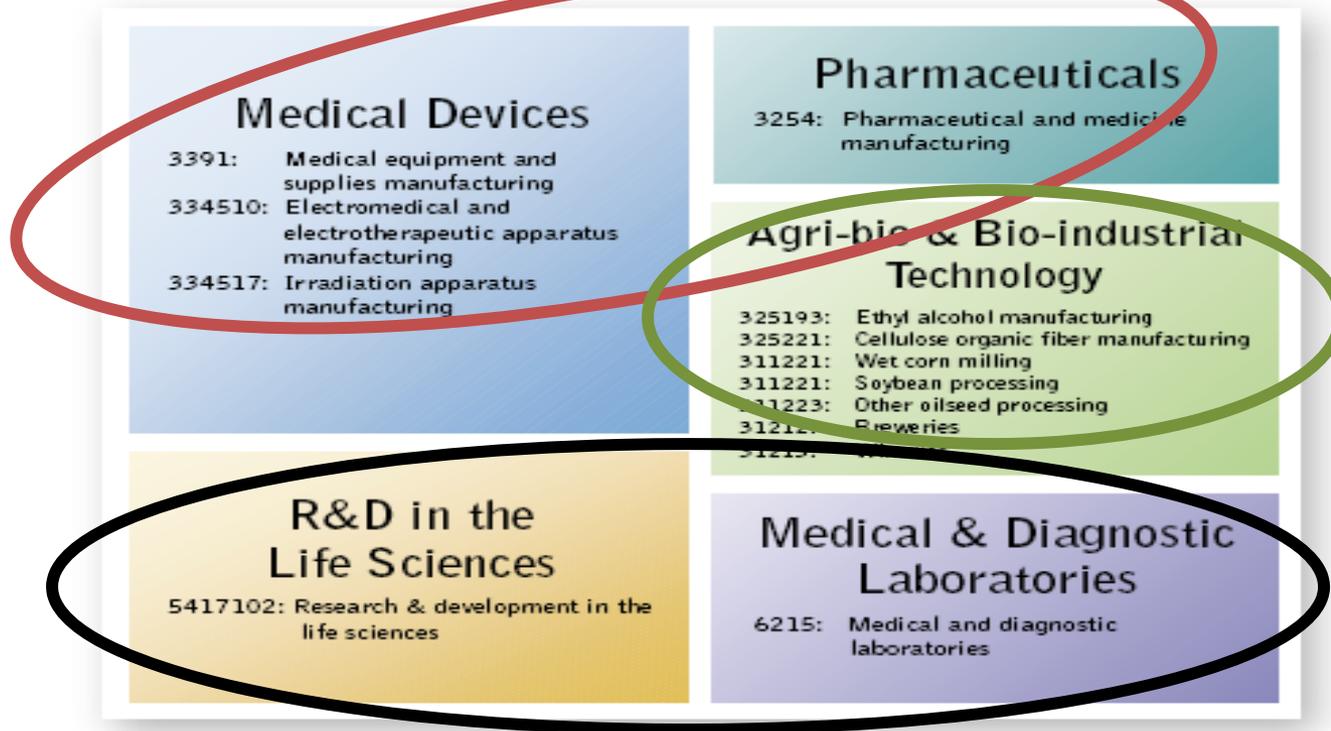
- Cost savings estimated at between 10X and 100X, depending on the protein and the “yield.”



# Bio-business Industry Assets

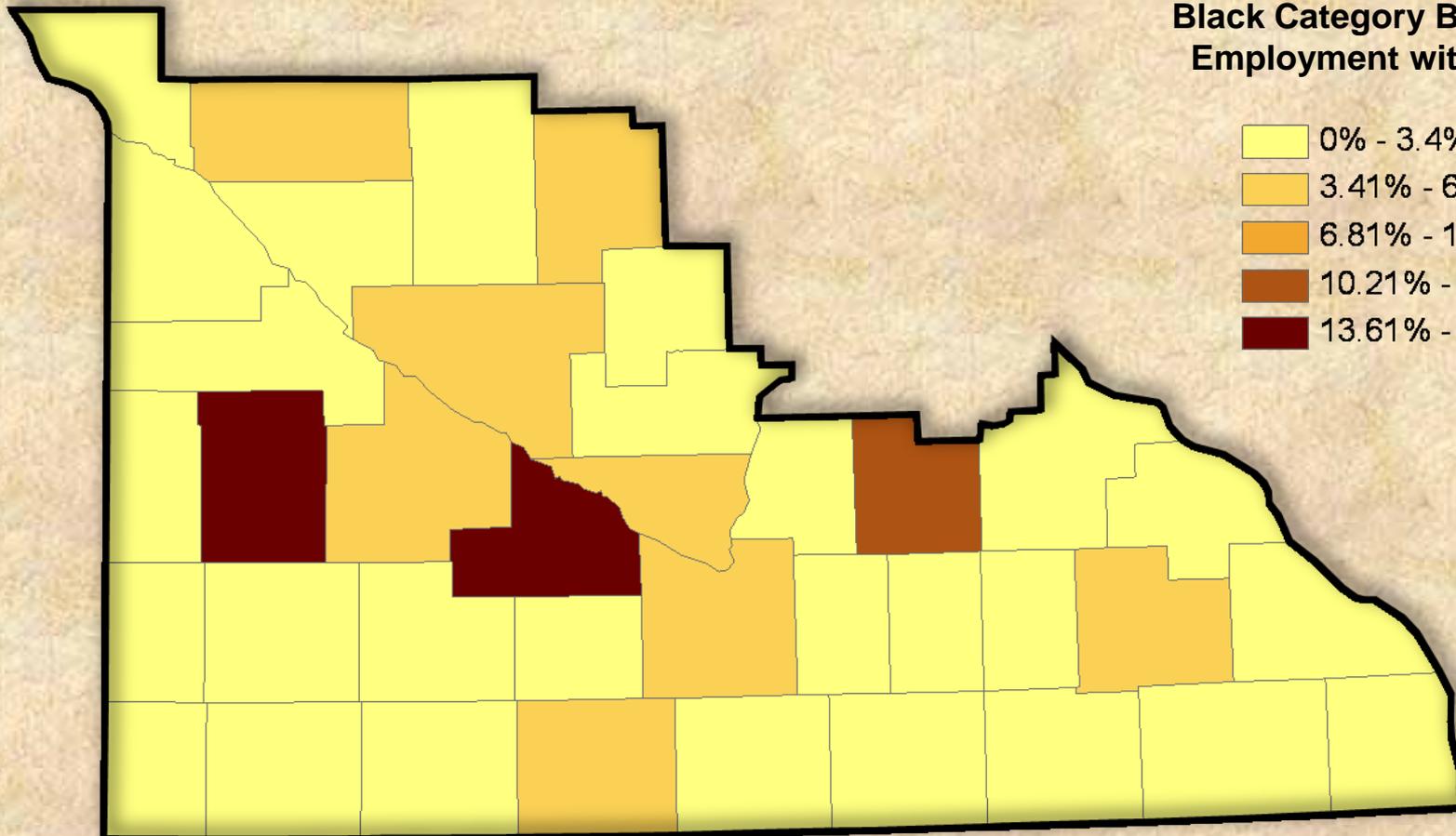
**Red:** Human & Animal Health  
**Green:** Agri-Bio Tech  
**Black:** Life Science R & D

**Figure 4.** Biobusiness Technology Industries (Map of NAICS-based categories)



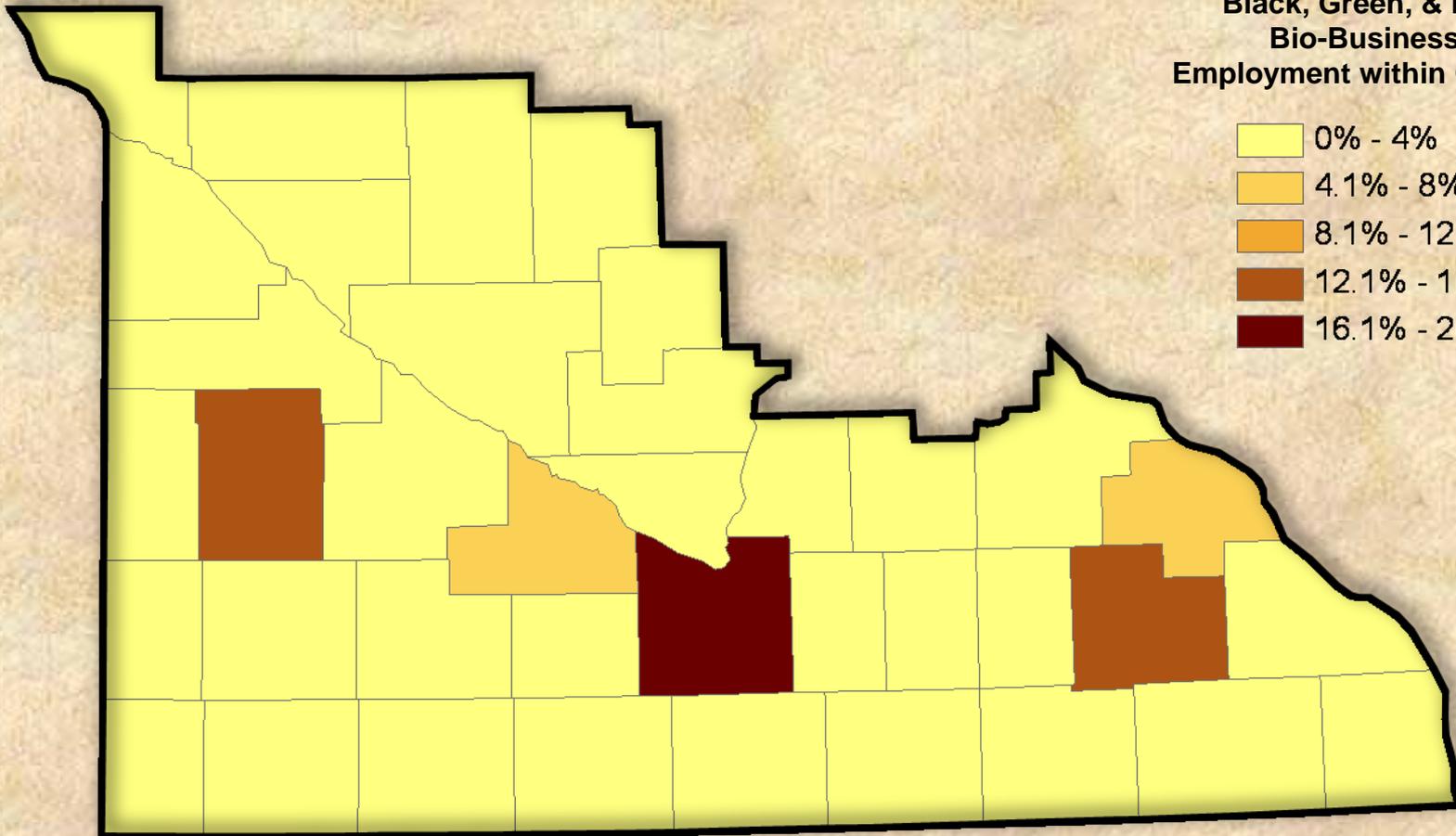
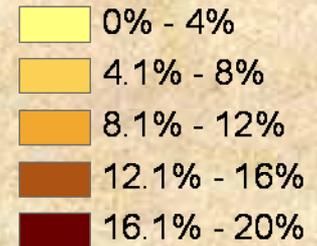
# Bio-Business Job Distribution Across Region (Black)

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



# Bio-Business Job Distribution Across Region (Red, Green, & Black)

Percent of Region's  
Black, Green, & Red  
Bio-Business  
Employment within County



# High Technology



- **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.**

# High Technology

## Two issues for the future.



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.*



## 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.



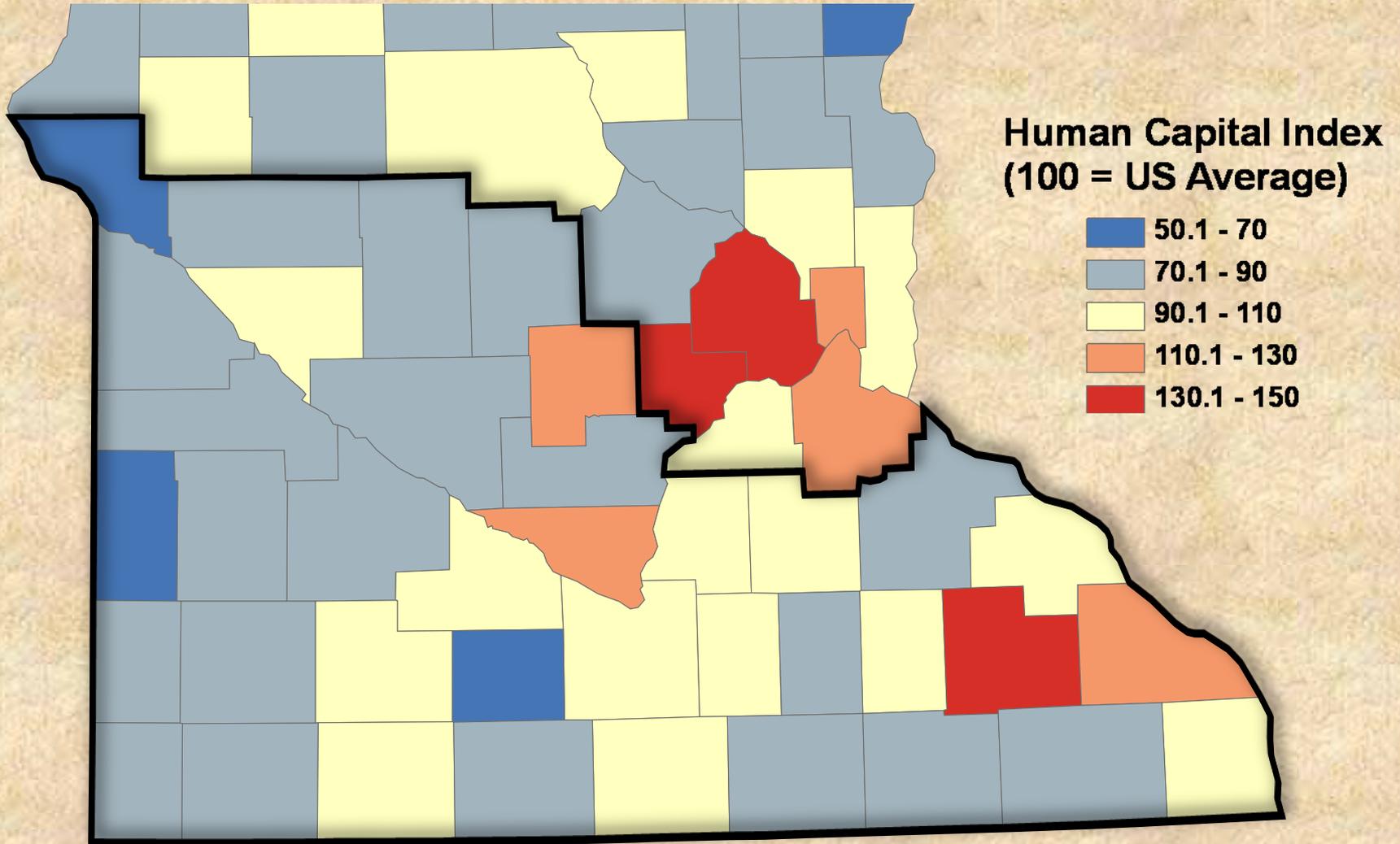
# How competitive is the Region's innovation engine?

*An innovation index with 4 components*

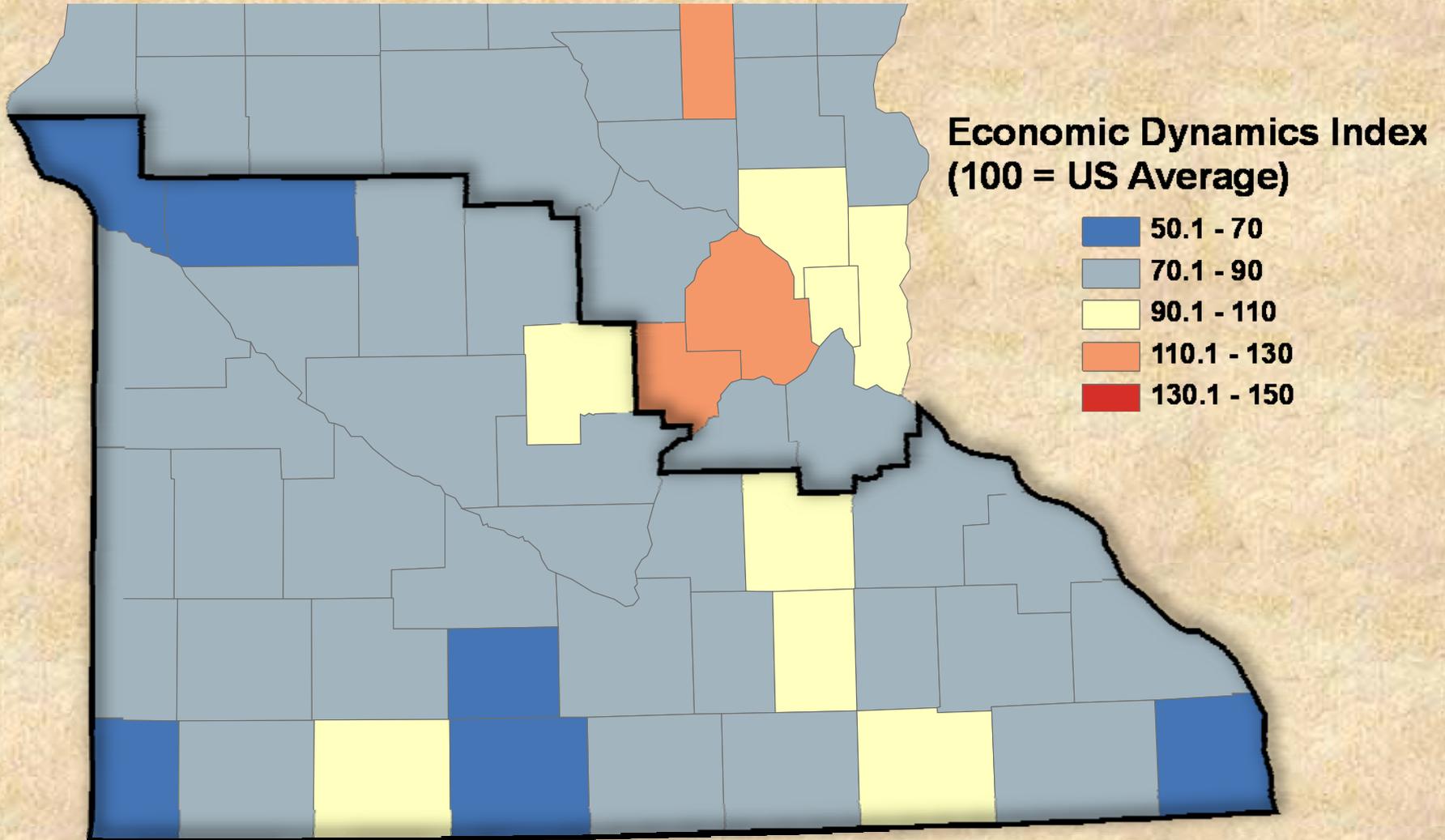


1. Human capital
2. Economic dynamics (business starts)
3. Productivity (patents)
4. Economic well-being (wages)

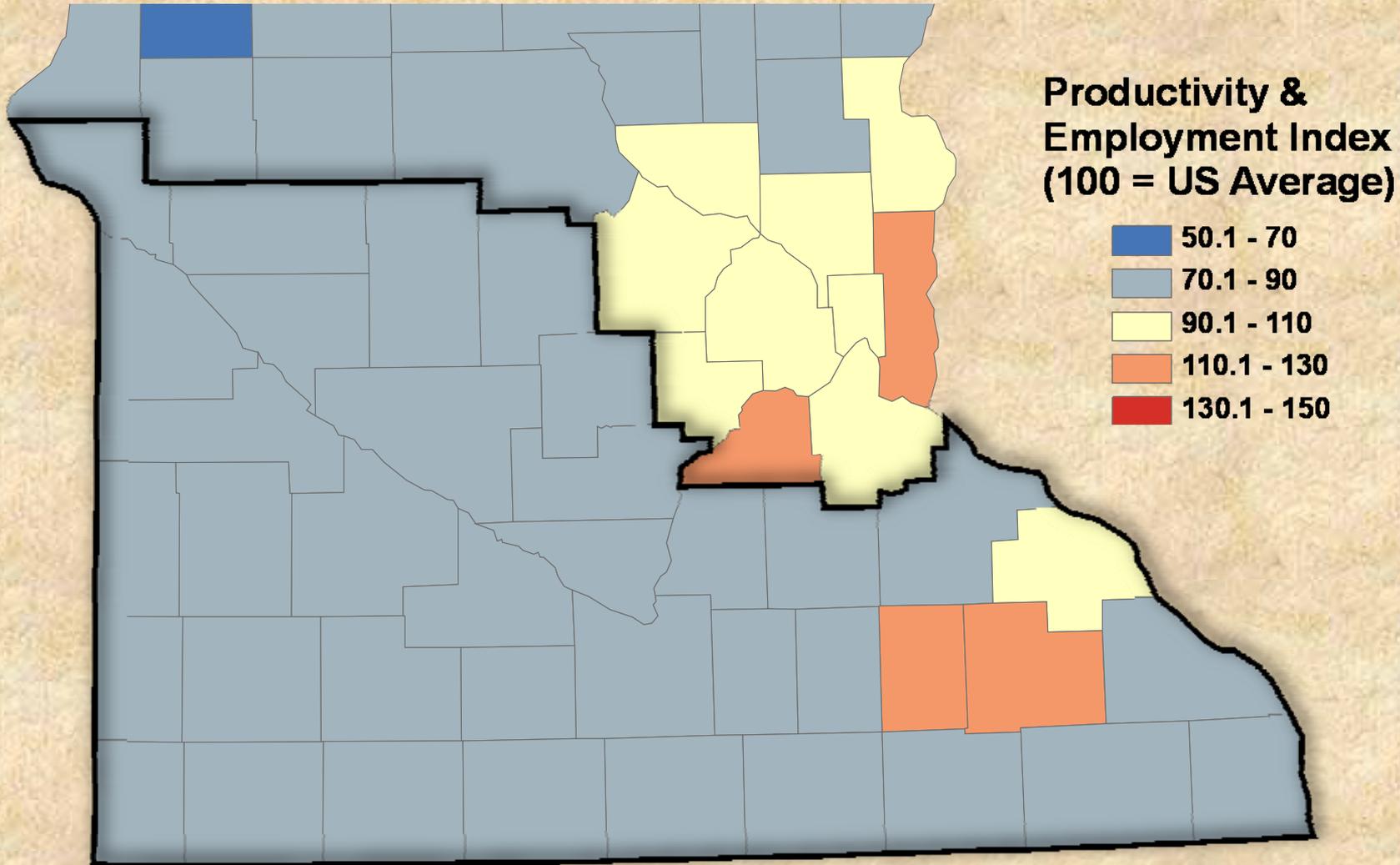
# Human Capital



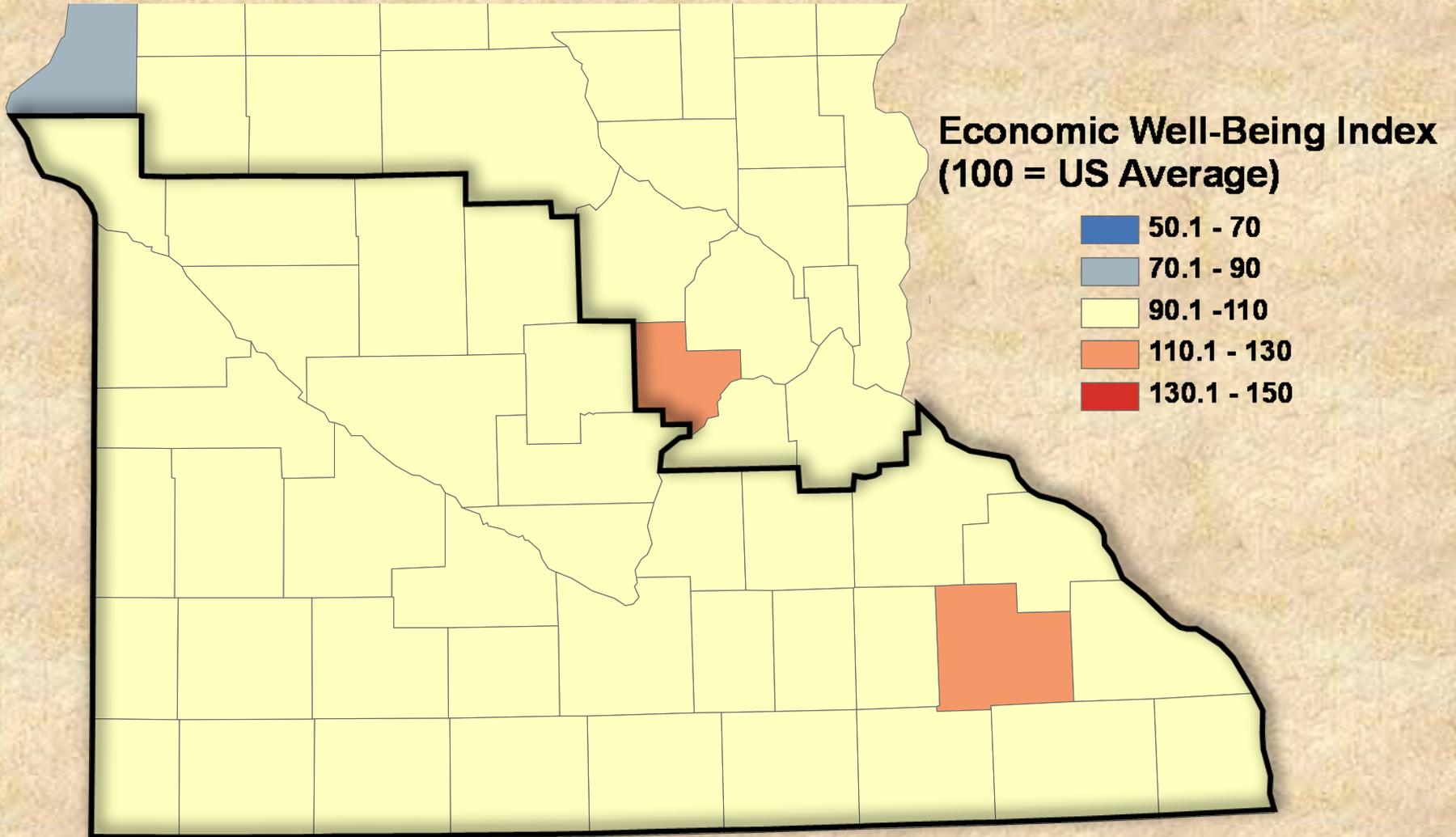
# Economic Dynamics (Business Starts)



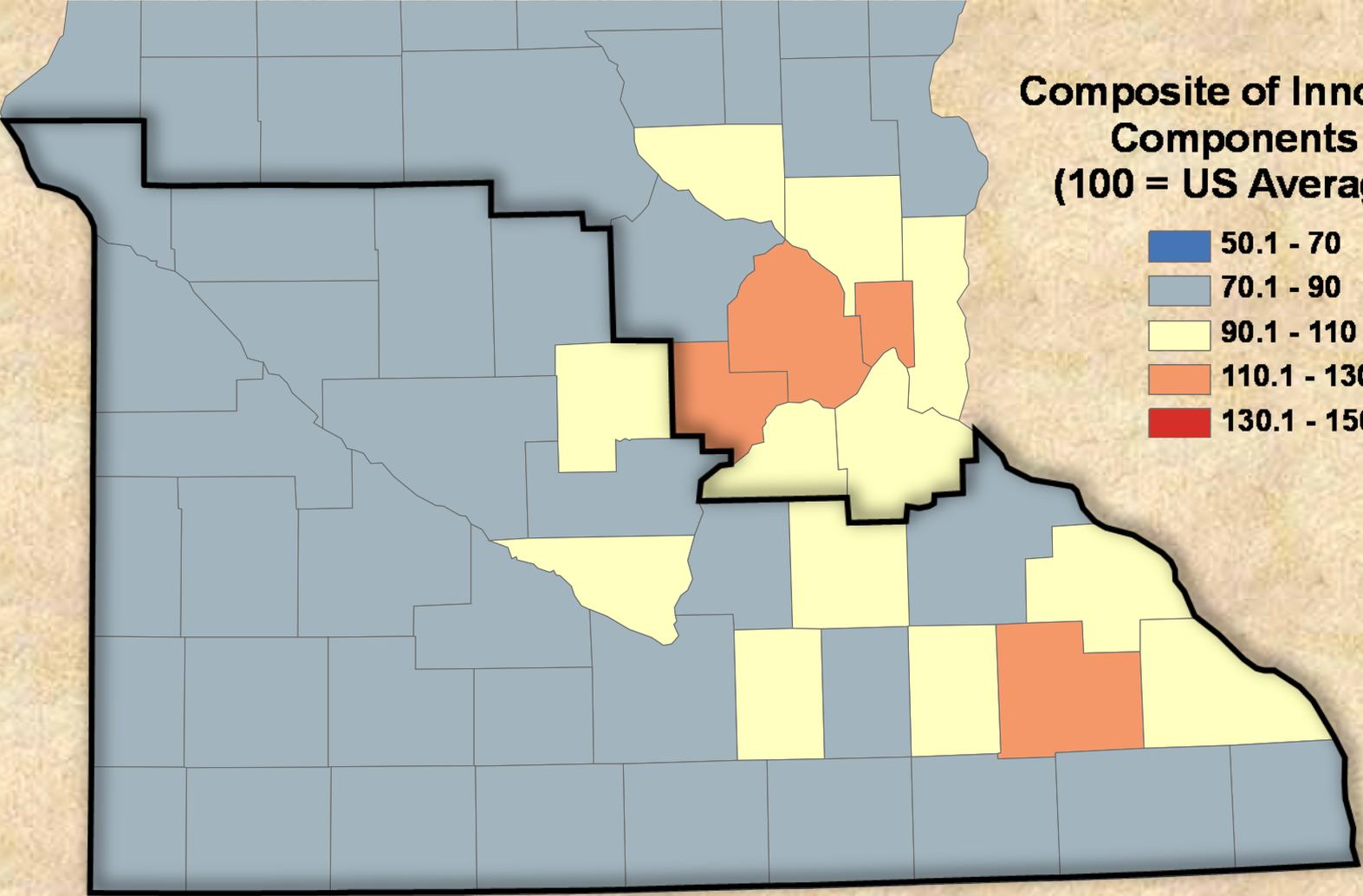
# Productivity (Patents)



# Economic Well-Being (wages)



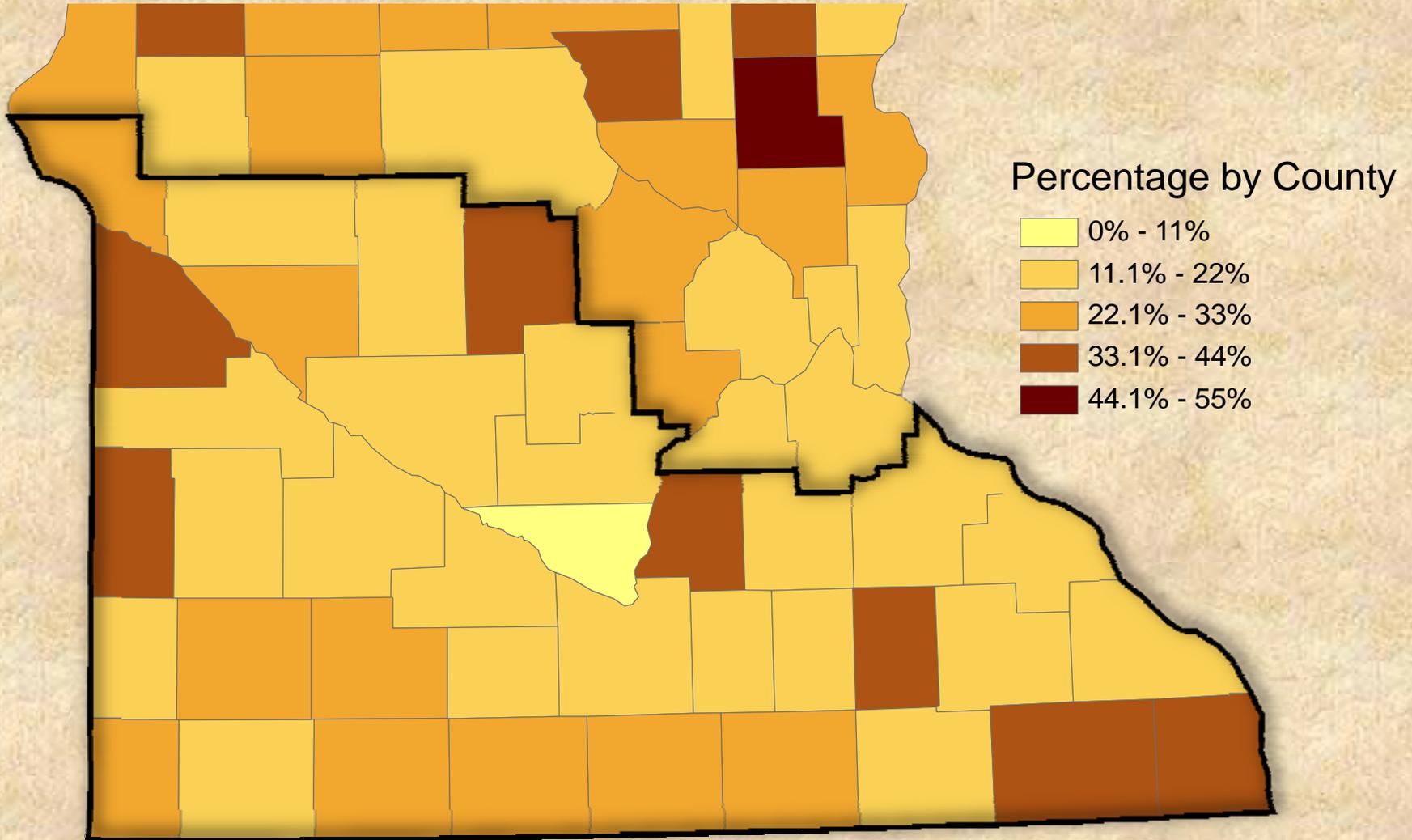
# Innovation



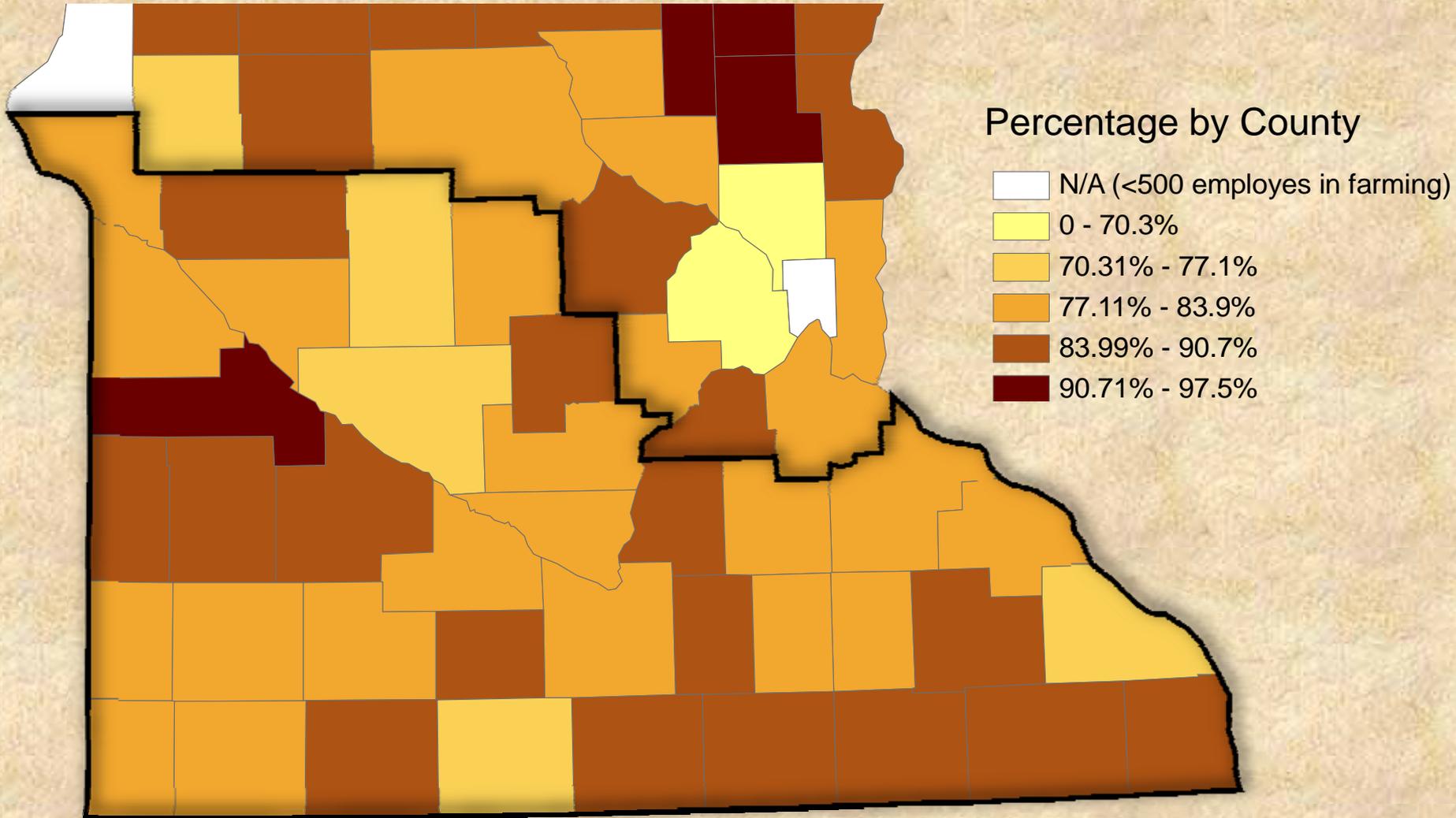
**Composite of Innovation Components  
(100 = US Average)**

- 50.1 - 70**
- 70.1 - 90**
- 90.1 - 110**
- 110.1 - 130**
- 130.1 - 150**

# Percentage of Self-Proprietors in Non-Farm Industries



# Percentage of Self-Proprietors in Farming



# A frequently cited concern: Equity Capital



**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*

Area Chambers of Commerce Networks

The BioBusiness Alliance of Minnesota

Clean Energy Resource Teams (CERTS)

Enterprise Minnesota

The Hormel Institute, IBM and Mayo Collaboration on Genomics

I-90 Coalition

International Renewable Energy Technology Institute (IRETI) at MSU

Project Lead the Way

Minnesota Partnership for Biotechnology

# 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?