THE ECONOMY HAS CHANGED AND SO MUST WE
ECONOMIC RECOVERY
HOW IS THIS ONE NOT LIKE THE OTHER ONES

Real GDP Growth Sixteen Quarters into Recovery

<table>
<thead>
<tr>
<th>Year</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1949</td>
<td>27.5%</td>
</tr>
<tr>
<td>1954</td>
<td>10.2%</td>
</tr>
<tr>
<td>1958</td>
<td>21.5%</td>
</tr>
<tr>
<td>1960</td>
<td>25.1%</td>
</tr>
<tr>
<td>1970</td>
<td>14.6%</td>
</tr>
<tr>
<td>1975</td>
<td>16.8%</td>
</tr>
<tr>
<td>1980</td>
<td>21.2%</td>
</tr>
<tr>
<td>1982</td>
<td>24.1%</td>
</tr>
<tr>
<td>1991</td>
<td>5.9%</td>
</tr>
<tr>
<td>2001</td>
<td>2.7%</td>
</tr>
<tr>
<td>2009</td>
<td>9.2%</td>
</tr>
</tbody>
</table>

March 6, 2014
EDUCATION CONSIDERATIONS in the NEW ECONOMY
JOBS RECOVERY
HOW IS THIS ONE NOT LIKE THE OTHER ONES

Percent Job Losses in Post WWII Recessions, aligned at maximum job losses

Current Employment Recession

Dotted line ex-Census Hiring

http://www.calculatedriskblog.com/
RECESSION COMPARISONS
LAGGING ACROSS ALL INDICATORS

<table>
<thead>
<tr>
<th>Component</th>
<th>2007 Recession</th>
<th>Average '60 - '01</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td>5.3</td>
<td>19.4</td>
</tr>
<tr>
<td>Consumption</td>
<td>6.3</td>
<td>21.4</td>
</tr>
<tr>
<td>Investment</td>
<td>0.5</td>
<td>26.7</td>
</tr>
<tr>
<td>Exports</td>
<td>15.1</td>
<td>27.5</td>
</tr>
<tr>
<td>Imports</td>
<td>3.1</td>
<td>38.3</td>
</tr>
<tr>
<td>Government</td>
<td>-1.7</td>
<td>14.1</td>
</tr>
</tbody>
</table>
WHAT'S TAKING SO LONG
REAL EARNINGS ARE FLAT

Wisconsin Real Average Annual Wage

<table>
<thead>
<tr>
<th>$28,000</th>
<th>$30,000</th>
<th>$32,000</th>
<th>$34,000</th>
<th>$36,000</th>
<th>$38,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>2003</td>
<td>2004</td>
<td>2005</td>
<td>2006</td>
<td>2007</td>
</tr>
<tr>
<td>2008</td>
<td>2009</td>
<td>2010</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
INTEREST INCOME
TAKE HIT WITH LOW INTEREST RATES

Personal Interest Income

Billions

<table>
<thead>
<tr>
<th>$1,500</th>
<th>$1,400</th>
<th>$1,300</th>
<th>$1,200</th>
<th>$1,100</th>
<th>$1,000</th>
<th>$900</th>
<th>$800</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec 07</td>
<td>Mar 08</td>
<td>Jun 08</td>
<td>Sep 08</td>
<td>Dec 08</td>
<td>Mar 09</td>
<td>Jun 09</td>
<td>Sep 09</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$800</td>
<td>$900</td>
<td>$1,000</td>
<td>$1,000</td>
</tr>
</tbody>
</table>
HOME EQUITY WAS USED FOR CONSUMPTION
NOW PART OF DELEVERAGING

Mortgage Equity Withdrawal as a Percent of Disposable Personal Income (NSA)

- Recession
- Calculated (Flow of Funds, Single Family Investment)
- Kennedy Greenspan MEW (data ended 2008)

http://www.calculatedriskblog.com/
REVOLVING CREDIT WAS USED FOR CONSUMPTION
NOW PART OF DELEVERAGING

Source: Federal Reserve Board of Governors
NO SAVINGS – WAS USED FOR CONSUMPTION
NOW PART OF DELEVERAGING

Personal Savings, Billions of Dollars

[Graph showing personal savings from 2000 to 2011 with a significant increase post-2006 and a decline in 2008-2009 followed by a recovery in 2010-2011]
It is difficult to increase consumption when you:

1. have stagnant income,
2. are losing wealth,
3. paying down debt,
4. increasing savings,
5. and are paying more for food and gas.
CORPORATE PROFITS AT NEW RECORDS
MOSTLY DUE TO COST CUTTING
MANAGING RISK
WHERE IS THE INCENTIVE TO EXPAND

Still, with the economy this uncertain, we won't be hiring anyone until we see the employment numbers improve.
CORPORATE PROFITS
BUILDING CASH HOARD

Change In Investment From 2007 4th Qtr

Billions of 2005 $
INVESTMENT GROWTH
IS IN PRODUCTIVITY, NOT EXPANSION

Source: BEA, OEA
LOOKING FORWARD
PRIMARY INDICATORS ARE CLOSE

The 21st Century
Percent Off All-Time Highs, Recession in Gray

<table>
<thead>
<tr>
<th>Year</th>
<th>Nonfarm Employment</th>
<th>Real Retail Sales</th>
<th>Industrial Production</th>
<th>Real Personal Income Less Transfer Payments</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>0.0%</td>
<td>-0.1%</td>
<td>-2.2%</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>-0.9%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td>-2.2%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td>-4.5%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>-6.8%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>-8.1%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>-9.4%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>-10.7%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>-12.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>-13.3%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>-14.6%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>-15.9%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>-17.2%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>-18.5%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>-19.8%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>-21.1%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Personal income through November, all others through December
REAL ESTATE EQUITY
GETTING A NICE REBOUND

Households and nonprofit organizations; real estate at market value, Level (HNOREMQ027S)
Source: Board of Governors of the Federal Reserve System

Shaded areas indicate US recessions.
2013 research.stlouisfed.org
SECURITIES’ APPRECIATION
IS GETTING US BACK OVER THE HUMP

Households and nonprofit organizations; total liabilities and net worth (IMA), Level (HNOTLNQ027S)
Source: Board of Governors of the Federal Reserve System

Shaded areas indicate US recessions.
2013 research.stlouisfed.org
STATE AND LOCAL SPENDING
ON A NEW TRAJECTORY

State & Local Government Current Expenditures (SLEXPND)
Source: U.S. Department of Commerce: Bureau of Economic Analysis

(Billions of Dollars)

2,400
2,300
2,200
2,100
2,000
1,900
1,800
1,700
1,600

2003 2005 2007 2009 2011 2013 2015

Shaded areas indicate US recessions.
2013 research.stlouisfed.org
AUTO SALES CONTINUE TO SURPRISE

Domestic Motor Vehicle Sales

- Total Sales
- Pd. Trucks

millions of units, SAAR

% share trucks

updated 1/3/14
NEW HOME SALES ARE ENCOURAGING
REAL ESTATE INVESTMENT
WELL BELOW AVERAGE

Residential Investment as Percent of GDP

http://www.calculatedriskblog.com/
Wisconsin jobs continue to increase

Source: CES, BLS, OEA
WISCONSIN JOBS INCREASE
BUT AT DIFFERENT RATES

Source: CES, BLS, OEA
Wisconsin: QCEW Total Employment Change in the Last Three Recessions
(QCEW data seasonally adjusted using the U.S. Census X12 program)

Estimated breach: July 2015
ECONOMIC STATUS
SUMMARY

• This is a New Economy indeed
• Recession was broad and deep
• Recovery has been hampered by:
  • lack of confidence,
  • higher risk,
  • slow job recovery, and
  • hence, slow demand response
• Outlook is positive but subdued
• U.S. is global economic driver once again
So, what will be the biggest socio-economic policy challenge in the next 20 years?
ELDERLY NUMBERS WILL SWELL
WIDEN THE SIDEWALKS WILL YA !?
OR PERHAPS
THE MORE INTERGENERATIONAL VERSION
QUANTITY
WISCONSIN’S WORKFORCE GROWTH BECOMES FLAT

Wisconsin Population and Labor Force

Source: Bureau of Labor Statistics, OEA
QUALITY
"The days are over when you could walk into a paper mill with a high school diploma and run one of the machines."

– Patrick Schillinger, former Wisconsin Paper Council President,

*Center will teach paper-industry technology,*

TURN YOU LOOSE ON THIS BABY
I DON’T THINK SO
CHANGES IN WORKFORCE SKILL REQUIREMENTS
OVER THE LAST FIFTY YEAR

Then

Now

Unskilled
60%

Skilled
20%

Professional
20%

Unskilled
12%

Professional
20%

Skilled
68%

WorkKeys and the National Career Readiness Certificate are registered trademarks of ACT, Inc.
WHAT’S MISSING IN THIS PICTURE
TECHNOLOGICAL SUBSTITUTE
“Today in most fields I know, the struggle is about creativity and innovation. There is no script.”

– Robert B. Shapiro, former CEO & Chairman, Monsanto Corporation
WORKPLACE REQUIREMENTS

CHANGES IN SKILLS USED AT WORK*

* Based on the Dictionary of Occupational Titles

Source: Autor, Levy and Murnane, 2003

Source: K-12 Education and Economic Summit presentation by Alan B. Krueger, Princeton University
Who is in demand?
### MOST JOB OPENINGS IN WISCONSIN

#### PROJECTIONS BY OCCUPATION

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Replacement</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cashiers</td>
<td>1,900</td>
<td>32,110</td>
</tr>
<tr>
<td>Food preparation and serving</td>
<td>15,360</td>
<td>17,140</td>
</tr>
<tr>
<td>Retail salespersons</td>
<td>8,350</td>
<td>22,300</td>
</tr>
<tr>
<td>Waiters and waitresses</td>
<td>8,580</td>
<td>21,640</td>
</tr>
<tr>
<td>Registered nurses</td>
<td>13,780</td>
<td>10,450</td>
</tr>
<tr>
<td>Customer service</td>
<td>7,760</td>
<td>14,180</td>
</tr>
<tr>
<td>Office clerks, general</td>
<td>9,290</td>
<td>12,420</td>
</tr>
<tr>
<td>Material movers</td>
<td>5,410</td>
<td>15,280</td>
</tr>
<tr>
<td>Truck drivers</td>
<td>9,490</td>
<td>9,040</td>
</tr>
<tr>
<td>Bartenders</td>
<td>5,180</td>
<td>9,770</td>
</tr>
<tr>
<td>Personal and home care aides</td>
<td>11,470</td>
<td>2,470</td>
</tr>
<tr>
<td>Janitors and cleaners</td>
<td>4,470</td>
<td>8,910</td>
</tr>
<tr>
<td>Sales representatives</td>
<td>3,250</td>
<td>8,030</td>
</tr>
<tr>
<td>Nursing aides and attendants</td>
<td>6,290</td>
<td>4,900</td>
</tr>
<tr>
<td>Elementary school teachers</td>
<td>2,720</td>
<td>7,010</td>
</tr>
</tbody>
</table>

*Job Openings includes both turnover and new jobs that are created.*
MOST JOB OPENINGS
POSTED ON JOB CENTER OF WISCONSIN

Job Center of Wisconsin Openings

- Customer Service Representatives
- Production Workers, All Other
- Personal Care Aides
- Registered Nurses
- Food Preparation and Serving Workers
- Retail Salespersons
- First-Line Supervisors, Food Workers
- Nursing Assistants
- Truck Drivers
- Janitors and Cleaners
- First-Line Supervisors, Retail Workers
- Material Movers
- Stock Clerks
- Assemblers and Fabricators
- Telemarketers
- Tax Preparers
- Tellers
- Packers and Packagers
- Welders
- First-Line Supervisors, Production Workers
### MOST OFTEN HEARD POSITION CHALLENGES

<table>
<thead>
<tr>
<th>Occupation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy truck drivers</td>
</tr>
<tr>
<td>Welders</td>
</tr>
<tr>
<td>Customer service representatives</td>
</tr>
<tr>
<td>CNC machine operators</td>
</tr>
<tr>
<td>Maintenance workers, machinery</td>
</tr>
<tr>
<td>Nursing aides</td>
</tr>
<tr>
<td>Registered nurses</td>
</tr>
<tr>
<td>Mechanical engineers</td>
</tr>
<tr>
<td>Food preparation and serving workers</td>
</tr>
</tbody>
</table>
### FIVE
**MAKE ALL THREE LISTS**

<table>
<thead>
<tr>
<th>Make all three lists</th>
<th>Total Openings</th>
<th>Typical Entry Education</th>
<th>Median Wage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food preparation</td>
<td>32,500</td>
<td>&lt; high school</td>
<td>$17,910</td>
</tr>
<tr>
<td>Customer service</td>
<td>21,940</td>
<td>H.S. diploma</td>
<td>$31,430</td>
</tr>
<tr>
<td>Registered nurses</td>
<td>24,230</td>
<td>AD/BS</td>
<td>$62,860</td>
</tr>
<tr>
<td>Heavy truck drivers</td>
<td>18,530</td>
<td>H.S. diploma</td>
<td>$38,300</td>
</tr>
<tr>
<td>Health care aides</td>
<td>11,200</td>
<td>Postsecondary</td>
<td>$25,020</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Make two lists</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Welders</td>
<td>4,850</td>
<td>H.S. diploma</td>
<td>$37,980</td>
</tr>
<tr>
<td>Material Movers</td>
<td>38,900</td>
<td>H.S. diploma</td>
<td>$23,590</td>
</tr>
<tr>
<td>Retail sales</td>
<td>69,030</td>
<td>&lt; high school</td>
<td>$20,570</td>
</tr>
</tbody>
</table>
ESSENTIAL SKILLS
IN TODAY’S WORKPLACE

Numbers are based on analysis of 18,000 jobs profiled from 2006 to 2010 in the ACT JobPro database.

WorkKeys and the National Career Readiness Certificate are registered trademarks of ACT, Inc.
ECONOMIC GROWTH BY EDUCATIONAL ATTAINMENT

Educational Attainment v. GDP Growth

y = 7.9082x + 25.585

Educational Attainment

0% 10% 20% 30% 40% 50% 60% 70%

Percent GDP Growth
ECONOMIC GROWTH
GAINS NOT EQUAL

GDP

Billions (2005 $)

Minnesota
Wisconsin

IF WISCONSIN’S AVERAGE INCOME EQUALED MINNESOTA’S

<table>
<thead>
<tr>
<th></th>
<th>($ Billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income</td>
<td>$ 21.0</td>
</tr>
<tr>
<td>Income Tax @ 6.0% marginal rate</td>
<td>$ 1.26</td>
</tr>
<tr>
<td>Income, Sales, &amp; Property Tax</td>
<td>$ 2.46</td>
</tr>
</tbody>
</table>
ECONOMIC RECOVERY
PER CAP GAINS HAVE VARIED

Per Cap GDP Growth

- United States
- Illinois
- Michigan
- Minnesota
- Ohio
- Wisconsin
TOMORROW’S JOBS WILL REQUIRE INCREASED SKILLS

**Tomorrow's Demand**
- 48%
- 11%
- 41%

**Today's Supply**
- 64%
- 10%
- 26%

Shift to higher skills

Source: ACS for Today’s skills; Moody’s Analytics for Tomorrow’s Demand
PROJECTED JOB OPENINGS (2010-20)
BY ENTRY LEVEL EDUCATION

Source: WI DWD OEA Projections, BLS Projections
WHY SKILLS ARE IMPORTANT
NEW ECONOMY
CHANGED CONSTRUCT

Old Economy
- Raw Materials
- Cost Race to Bottom
- Workers Chased Jobs
- Quality of Life was luck of the draw

New Economy
- Brain Power
- Value-Added Products
- Businesses Chase Talent
- QoL attracts talent
Workforce development and economic development are interrelated and interdependent.

\[ Ed = ED \]
EDUCATION AND EARNINGS
MORE TALENT, INCREASINGLY MORE PAY

Wisconsin Earnings and Taxes by Education Attainment*

- Masters+
- Bachelors
- Associates
- Some College
- HS
- Less than HS

* Single filer tax rate

EDUCATION CONSIDERATIONS in the NEW ECONOMY

March 6, 2014
EDUCATION AND EMPLOYMENT
STEADIER WORK

Unemployment Rate x Highest Educational Attainment
Ages 25+ - United States - Seasonally Adjusted

Source: U.S. Bureau of Labor Statistics
TALENT PLAYS MORE OF A ROLE IN INCOME DUE TO TWO GAINS: NUMBERS AND EARNINGS

Aggregate Real Income by Education Year: 1992

- Less HS: 17.9%
- HS: 11.1%
- Some: 11.6%
- AA: 5.2%
- BA: 36.2%
- Grad: 11.7%

1992
Only 35% of income was generated by college graduates

Aggregate Real Income by Education Year: 2007

- Less HS: 4.5%
- HS: 28.2%
- Some: 14.8%
- AA: 24.9%
- BA: 11.7%
- Grad: 15.8%

2007
Over 52% of income was generated by college graduates
AGGREGATE REAL INCOME GROWTH FLATTENS WITH WORKFORCE AND SOURCE

Aggregate. Real Income

Source: 1992-2007 CPS (Wisconsin) & DOA Pop Projections
UNDER BASE CASE ASSUMPTIONS
PCI DECREASES STARTING IN 2020

Graph 1: Population vs Agg Real Income Change, 1995-2035

Source: Bureau of Labor Statistics, Bureau of the Census, OEA
WE GET A BOOST IN PERSONAL INCOME
FROM MORE EDUCATION AND TRAINING

Aggregate Real Income

Source: 1992-2007 CPS (Wisconsin) & DOA Pop Projections

March 6, 2014
THE INCOME BOOST ONLY DELAYS
THE PCI LOSS FOR A FEW YEARS

Graph 1: Population vs Agg Real Income Change,
1995-2035

Source: Bureau of Labor Statistics, Bureau of the Census, OEA
## TECHNOLOGY TRAINING PAYS
### HIGH-TECH WORKERS’ EARNINGS

<table>
<thead>
<tr>
<th>AVERAGE U.S. WAGE</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-Tech Sector</td>
<td>$83,344</td>
</tr>
<tr>
<td>Average Private Sector</td>
<td>$44,362</td>
</tr>
<tr>
<td>High-Tech Manufacturing</td>
<td>$85,854</td>
</tr>
<tr>
<td>High-Tech Services</td>
<td>$82,634</td>
</tr>
</tbody>
</table>

Tech Sector wage differential grew by 6 percentage points from 1998 – 2007, from 82% to 88%.

Source: TechAmerica Cyberstates 2009
Former Federal Reserve Chairman Alan Greenspan voiced his concern about a growing earnings gap between highly skilled and unskilled workers.

"It's a problem caused basically by our skill mix not keeping up with the technology that our capital stock requires," the Fed chairman said. . . .
### THE EARNINGS GAP HAS WIDENED
### CONSTANT OR REAL $ TERMS

<table>
<thead>
<tr>
<th>Education</th>
<th>Income (Dollars)</th>
<th>Difference (High School vs. Other Degree)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1984</td>
<td>2004</td>
</tr>
<tr>
<td>High School</td>
<td>$27,113</td>
<td>$30,581</td>
</tr>
<tr>
<td>Bachelors</td>
<td>$45,026</td>
<td>$55,081</td>
</tr>
<tr>
<td>Advanced</td>
<td>$58,921</td>
<td>$83,553</td>
</tr>
</tbody>
</table>

= 2006 Dollars - Table reflects earnings for workers age 18 and older

Source: US Census Bureau
MEDIAN FAMILY INCOME
BY EDUCATIONAL ATTAINMENT

Education = Earning Power

Source: Postsecondary Education Opportunity (using U.S. Census Bureau data)
A look at manufacturing wages and skills
• Manufacturing workers continue to have lesser talent

• But, manufacturing talent is increasing

• Manufacturing wages are NOT keeping pace across all talent

• But, manufacturing wages of talented is growing more rapidly within the sector
MANUFACTURING JOBS ARE ALSO MIGRATING UP THE SKILL SPECTRUM

2001-2007 Average Employment Growth Rate by Education Level

Source: ACS 2000-2007
ECONOMIC GROWTH
BY MANUFACTURING SHARE

GDP Growth v. % Mfg.

\[ y = -0.0175x + 0.5156 \]

Percent of Workforce in Mfg.
WHAT DOES A NEW ECONOMY MODEL LOOK LIKE?
NEW ECONOMIC MODEL
NORTHSTAR HIGH-GROWTH MODEL™

LOW CRIME RATES
GOOD SCHOOLS
RECREATION
HEALTH CARE

QUALITY OF LIFE

TECHNOLOGY ASSETS

BUSINESS/FINANCIAL ASSETS

HUMAN RESOURCES

CLUSTERS

RESEARCH PARKS & INCUBATORS
VENTURE CAPITAL

R & D
PATENTS
RESEARCH CENTERS

ENTREPRENEURS
SCIENTISTS
ENGINEERS

TELECOMMUNICATIONS
INFRASTRUCTURE
ENERGY SUPPLIES
DEVICES & TOOLS
BANDWIDTH
HIGH-GROWTH ECONOMIC MODEL
WHAT PIECES ARE YOU MISSING?
THE WORKFORCE IS THE CORNERSTONE FOR THE NEW ECONOMY