



# **LABOR SHED ANALYSIS, 2010**

for the

# BOONE & WINNEBAGO COUNTIES (IL) AREA

FINAL VERSION: APRIL 2011





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PREPARED BY:



Final Version: April, 2011

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#### INTRODUCTION

The Boone & Winnebago Workforce Investment Board, Inc. contracted with Foote Consulting Group, LLC (FCG) to undertake a Labor Shed Analysis to support proactive recruitment and training activities. The study is designed to help the reader to better understand regional workforce issues in the Boone & Winnebago Counties Area from site selection, relocation, business retention/expansion, and workforce training perspectives. The FCG Team included Research & Polling, Inc (RPI), a reputable survey company from Albuquerque, NM.

It is quite clear from our recent site selection work that labor force issues, particularly availability of skilled labor, training of the workforce, and relocation of key employees, are becoming increasingly more important. We designed this study so that it provides the most important labor force site selection information possible. In essence, we are providing you with information that you can give directly to a company seeking a location in the Boone & Winnebago Counties Area.

It is also clear from our recent site selection work that workers are choosing to commute shorter distances if jobs are available. This may be due to rising gas prices, and a desire to enjoy more family and recreational time. A Boone County economic development official recently confirmed that the commuting patterns of Chrysler's 2<sup>nd</sup> shift (2009 data) generally mirror the labor shed map used in this report (see page 6).

Generally, workers may commute over 60 miles or more for higher paying jobs, however, they will not do this for long. They will choose to change jobs for one closer to home once it becomes available or move closer to their existing job. The wage paid will directly dictate the commuting distance, and employers will seek to find the best skills at the lowest wage possible.

A "real life" site selection and business retention oriented labor analysis must go far beyond a demographic review. Statistical information is helpful, but barely scratches the surface of the workforce issues that companies are really facing today.

Therefore, we incorporated a proven methodology that we use for our site selection projects. It relies on current resident survey data and the expert opinions of area employers. From these we have developed detailed recommendations designed to help you develop successful work force and economic development solutions.

The objectives of this study are to:

- Understand skills, education, and commuting patterns of area workers
- Understand local employer's viewpoints and needs regarding the existing work force, including availability, quality, costs, and training needs
- Determine ways to better attract/retain businesses that can utilize this important labor information and to train their employees.

#### RESIDENT SURVEY

#### **Introduction**

The FCG Team conducted a random telephone survey of Boone & Winnebago Counties Area residents in October 2010. The survey was designed to gather information that identifies components of the workforce that are unemployed, underemployed, or available for work if the appropriate job were attainable. This information was then analyzed in order to determine how locating and expanding companies could best utilize it and how it could best be utilized in workforce training planning.

Any site selector and /or company viewing this information will feel comfortable that they are looking at key data regarding the key labor shed. They will feel that they have all the data needed to make good decisions regarding site selection and training.

#### The Survey

Our survey partner, Research and Polling, Inc. (RPI), conducted the telephone survey into households from 10/18/10 to 11/5/10. Working residents (18 and over) were interviewed using a random sampling method.

The survey produced a statistically valid 302 completions for the study area. A sample size at a 95% confidence level provides a maximum margin of error of approximately 5.6%. In theory, in 95 out of 100 cases, the results based on this sample will differ by no more than 5.6 percentage points in either direction from what would have been obtained by interviewing all adult residents in the study area.

#### Defining the Labor Shed

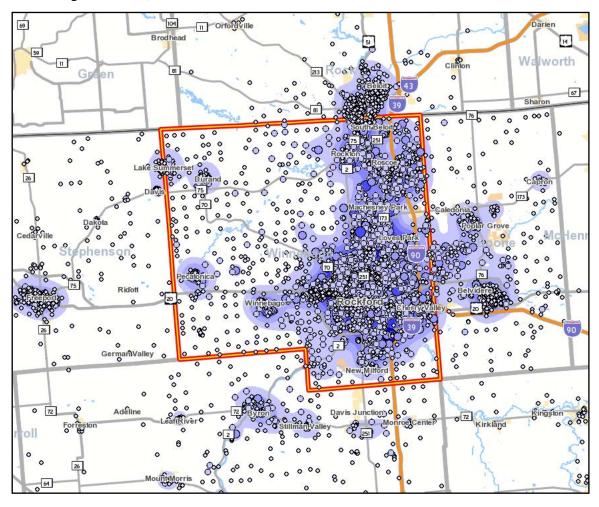
FCG reviewed the labor shed information defined in the 2007 analysis and found that it was too large. Local employers told us that 84% of their workers live within 15 miles of work. It is unrealistic to present a vast, multi-county labor shed to a prospect looking to locate or expand. If the prospect is a high wage payer then they will certainly draw talent for a much larger geographic area. However, the average wage payer will be skeptical that they will be able to draw talent much beyond an average radius of, say, 20 miles one-way.

Remember, prospects will strive to find the best skills at the lowest wage. If they find that the right skill/wage mix is available within a reasonable commute radius (20 miles) of the

<sup>&</sup>lt;sup>1</sup> Copy found in the Appendix.

new plant or office, then they will be most comfortable with the new location. If they must draw skills from a distance greater than this radius then their comfort level will decline because they know that they will lose some of these "long commuters" to other jobs closer to their homes.

Therefore, surveying was done within an approximate 15-20 mile radius of Rockford based on population density (map below generally depicts the labor shed of Boone & Winnebago Counties).



Select results were extrapolated from survey responses based on recent population and employment estimates. The estimated adult population used in the analysis area was 292,000; the estimated number of employed workers was 123,078; the total workforce was 148,898<sup>2</sup>; and the total unemployed was 25,820 (14.8%).

 $<sup>^2</sup>$  Source: U.S. Census Bureau, On TheMap Application and LEHD Origin-Destination Employment Statistics,  $2008\,$ 

The survey (see Appendix) collected the following information from respondents:

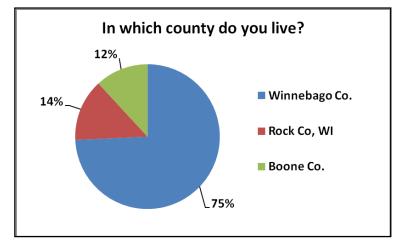
- Employment status
- Employment location
- Occupational background and skills
- Commuter patterns
- Willingness and interest in changing jobs
- Willingness and interest in reentering the workforce, if not employed.

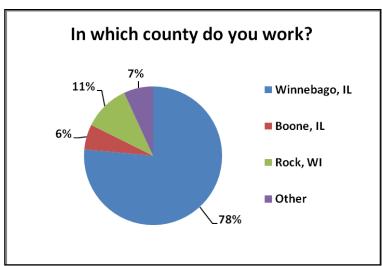
#### **Survey Respondent Profile**

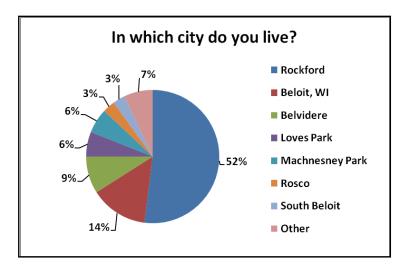
Survey respondent data is depicted in this section.

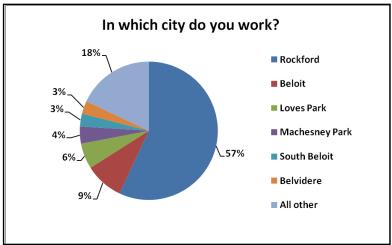
#### Live/Work

- Approximately 91% work in the same counties in which they live.
- Approximately 82% work in the same cities in which they live.

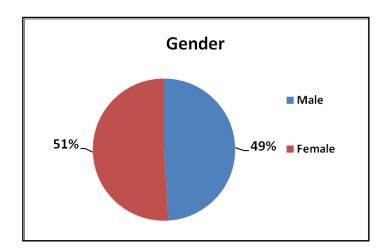


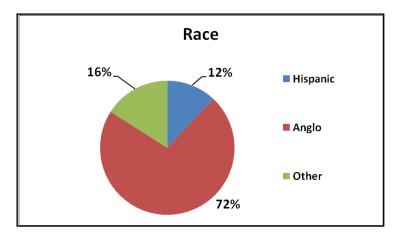


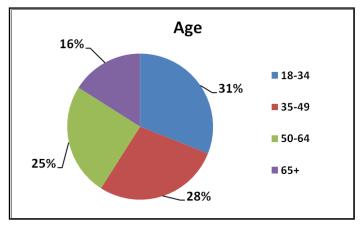




#### Gender/Race/Age

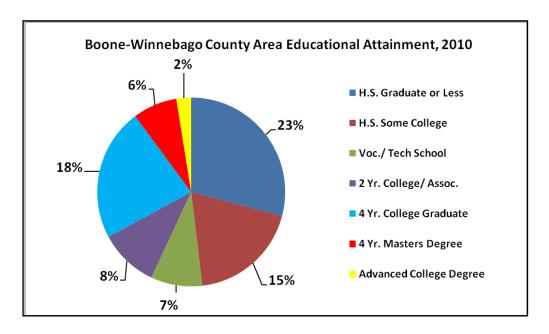






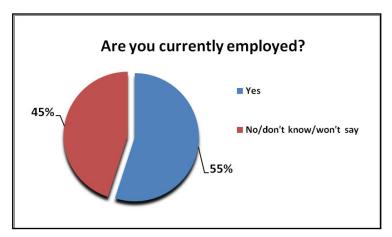
#### **Educational Attainment**

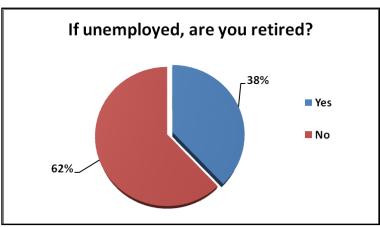
• 26% of the adult population living in the study area has a 4-year college degree, master's degree or advanced degree. This compares to the U.S. average of 37.6% (2008<sup>3</sup>)



#### **Employment**

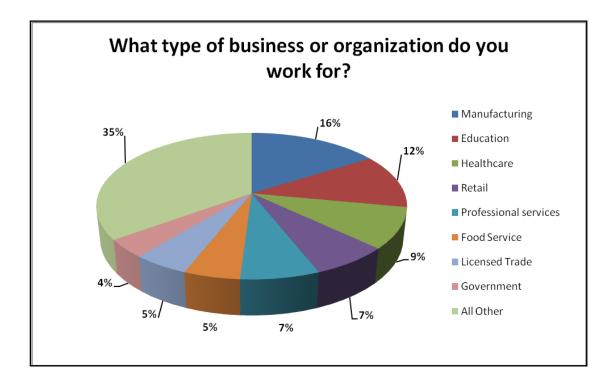
• 55% are currently employed and 38% of the unemployed are retired.



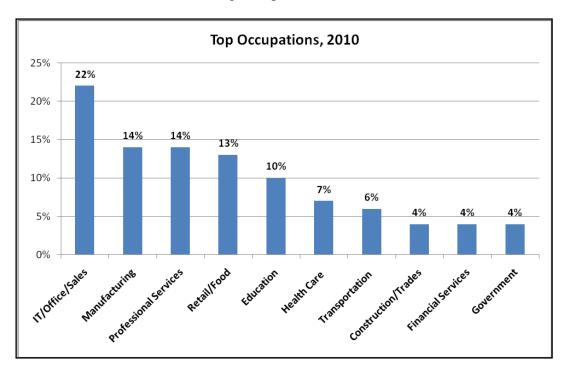


<sup>&</sup>lt;sup>3</sup> U.S. Census Bureau, 2008

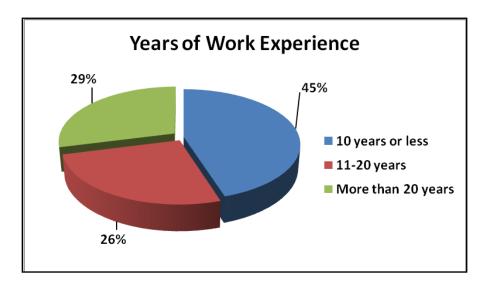
• Referring to the question, "what <u>type</u> of business/organization do you work for?", 16% work for manufacturing companies, the largest single sector, potentially over 19,600 workers.



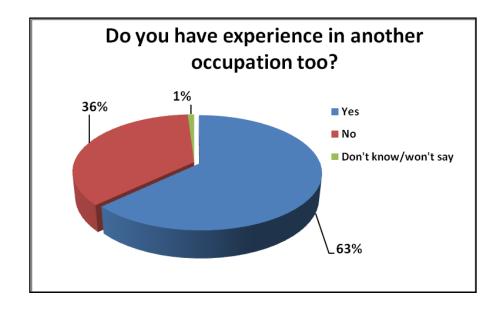
• Referring to the question, "what is your occupation?", top occupations include IT/office/sales, manufacturing, and professional services.

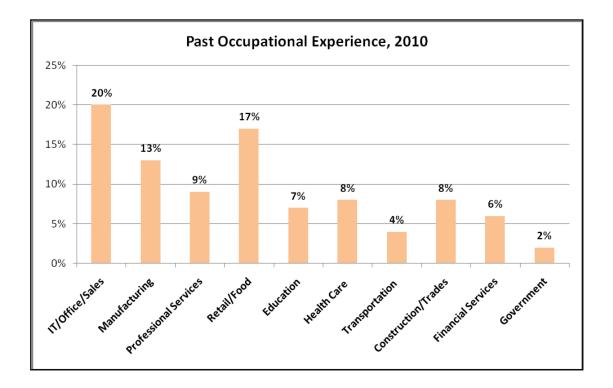


- Approximate occupations:
  - o IT/Office/Sales 27,100
  - Manufacturing 17,200 (including over 2,900 machinists; almost 1,500 tool & die makers; almost 1,500 assemblers; over 2,200 truck drivers; and almost 1,500 forklift operators)
  - o Professional Services 17,200
  - o Retail/Food 16,000
- 55% have 11 or more years on the job



• The vast majority (63%) have other work experience of which to draw off too.



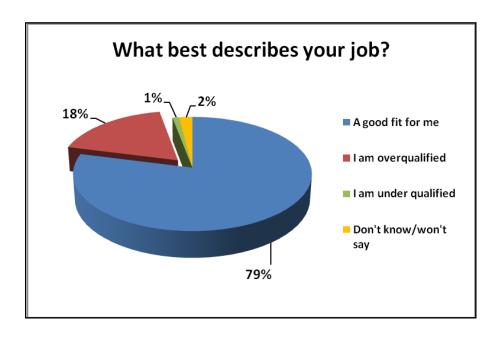


#### Potential Available Workforce in the Boone & Winnebago Counties Area

The potential available workforce (including underemployed) consists of those 18 years of age and older that are willing to change jobs and those unemployed (including retirees) that are seeking employment and are willing to re-enter the workforce.

In order to better validate the underemployment situation, we first directly asked respondents about their current jobs.

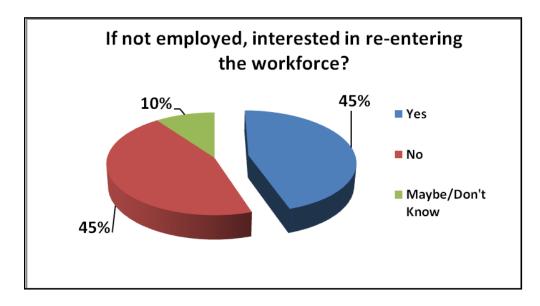
• 18% felt that they were overqualified for their jobs, potentially 22,150 underemployed workers.



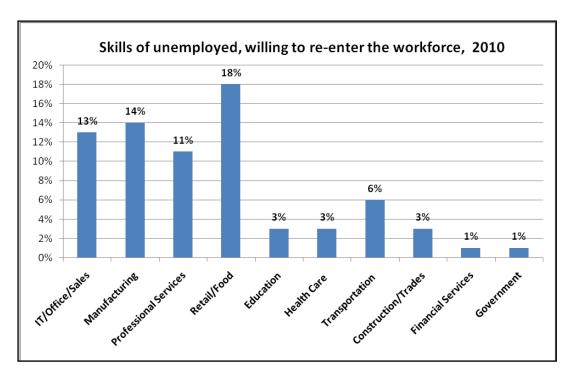
This was interesting and appeared to be a sizable number, however, further research told us that the available workforce was potentially much larger than this.

First, we asked about interest from the unemployed (or retired) about returning to work:

• 45% of those not working are interested in re-entering the workforce, potentially over 11,600 future workers.

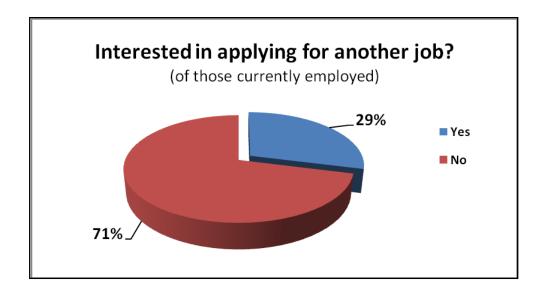


• And these 11,600 not working but interested in re-entering the workforce have good skills to share as well.



Next, we asked about interest in seeking a new job:

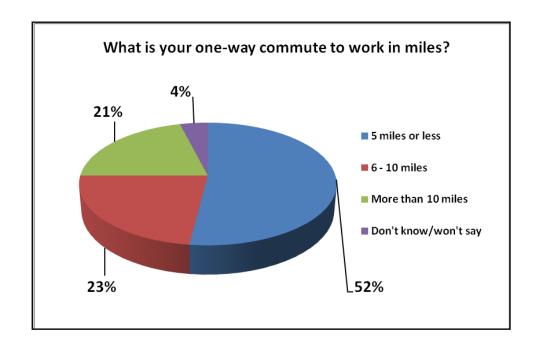
• 29% of current workers indicated a willingness to change jobs for the right opportunity, potentially <u>35,693</u> workers.



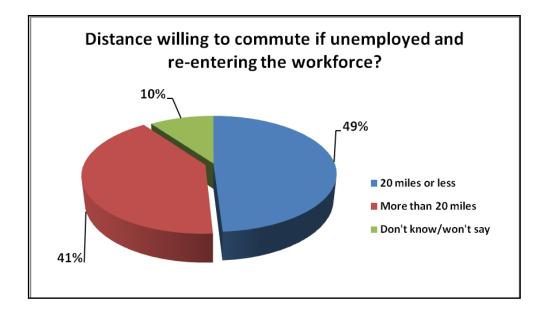
• This adds up to a total potential <u>available</u> workforce of 47,293.

#### **Commuting**

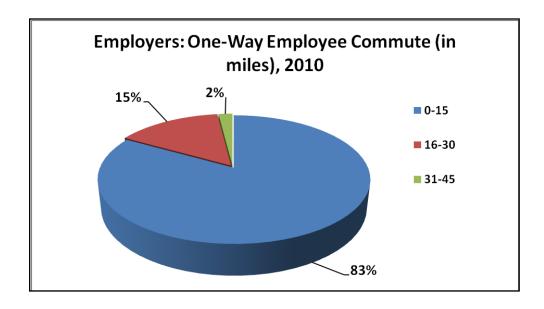
- The vast majority (75%) live 10 miles or less from work
- This is consistent with what employers told us 84% of their workers live within 15 miles of work.



• However, the unemployed seeking to re-enter the workforce would commute much further for a job.



• Employers (from our interviews) told us that 84% of their employees live with 15 miles of work.



Local Residents Commuting More Than 10 Miles (One-Way)

Potentially over 24,600 local residents commute more than 10 miles (one-way) to work. Based on past experience, <u>many of these would choose to take comparable jobs closer to home if such jobs were available.</u>

#### Occupation numbers include:

- IT/Office/Sales 5,400
- Manufacturing 3,400
- Professional Services 3,400
- Retail/Food 3,200

#### **Resident Survey Conclusions**

The following are the important conclusions drawn:

- The potential <u>available</u> workforce is large: 47,293. Strong numbers exist in manufacturing, IT/office/sales, and professional services.
- The available workforce is "closely packed" within a 15-20 mile radius of Rockford.
- This is a very robust manufacturing workforce (over 17,000) with many skilled workers.
- This workforce is experienced; 55% have more than 10 years on the job.
- Although the current unemployment rate is high (14.8%), a large number of the unemployed with good skills are anxious to return to work. This pool would commute longer to take a job as well.
- The survey told us, and employers confirm, most workers do not commute too far and live close to work. 75% of study area workers commute 10 miles or less to/from work one-way. This tells us that "job hopping" will likely not be a problem.
- Potentially over 24,600 local residents commute more than 10 miles (one-way) to work. Based on past experience, many of these would choose to take a comparable job closer to home if one were available.

#### **BOONE & WINNEBAGO COUNTIES AREA EMPLOYER ANALYSIS**

#### Introduction

The next objective of the study is to understand needs of employers in and around Boone & Winnebago Counties as they relate to the workforce. FCG conducted over 35 face-to-

face interviews with employers and educators/trainers in September, 2010 in order to determine these needs (see Appendix for list). The objective of these interviews was to determine hiring trends; labor availability and quality; current salary/wages for select positions; and training needs. A copy of the interview instrument is found in the Appendix.

In determining labor availability and quality, we used the identical methodology that we use in our site selection work. It is through one-on-one interviews with local employers that we are able to determine the labor situation in the area, now.

From these interview results, we created the *FCG Index*, which measures labor availability and quality on a one-to-ten point scale (1=very poor, 5=average, and 10=excellent). We use the same index in all our labor market analysis nation-wide and this gives a true "apples-to-apples" comparison of different communities. Generally, scores of 3-to-4 are below average, 5-to-6 are average; 6-to-7 above average; 7-to-8 are good, 8-to-9 are very good, and 9-to-10 are excellent. The index measures:

- Availability tied closely to the level of skills needed and wages offered
- Labor quality characteristics include:
  - o Turnover
  - o Absenteeism
  - o Attitudes on-the-job
  - o Trainability employees response to training
  - o Basic skills math, English, grammar, blue print reading, etc. of applicants
  - o Communications Employer/employee and employee/employee on-the-job
  - o Alcohol/drugs Perceived situation
  - o Productivity Employer's measure.

Next, we identified existing salary/wages from our national wage resource<sup>4</sup> for select target industry positions. We selected median wages with one-year experience.

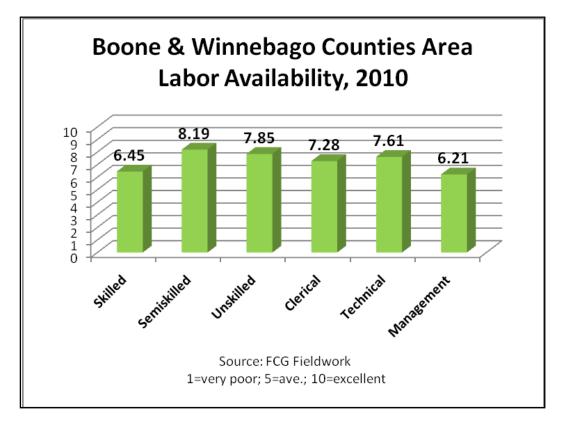
FCG made comparisons with 2005 data taken from the Carter-Burgess target industry analysis for the Rockford area. Deane Foote directed this study using the same methodologies that are described here.

#### **Labor Availability**

The ability to attract the right skills is critical to the success of any project. Skilled workers are essential for high-end manufacturing and service-oriented projects.

• Labor availability in the Boone & Winnebago Counties area market is currently rated "good" (7.25 overall)

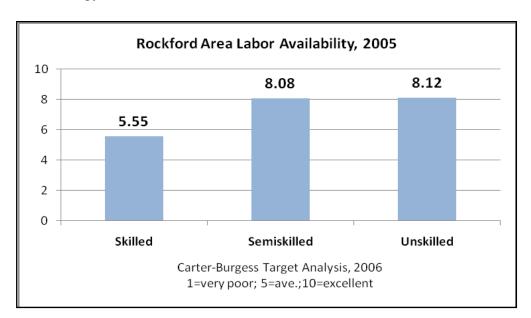
<sup>&</sup>lt;sup>4</sup> Economics Research Institute (ERI), 2010.



- o All sectors are in the "good-to-very good" range, except skilled and management, which were rated "above average"
- o Positions that are easy to fill today (rated 8 and up) include:
  - Cement Finishers
  - Clerical
  - CNC Machinists (skilled; if in a higher pay range)
  - Customer Service Representatives (unskilled)
  - Electricians
  - Laborers
  - Line Cleaners
  - Line Operators (chemical)
  - Machine Operators
  - Maintenance Mechanics
  - Material Technicians
  - Mechanical Assemblers
  - Parts Assemblers (auto)
  - Process Technicians
  - Production Workers
  - RNs (fine now, but shortage may return by 2015)
  - Tool & Die (workers with transferable skills)
  - Truck Drivers
  - Warehouse workers

- o Tough positions to fill today (rated below 5) include:
  - A&P Mechanics
  - Customer Service Representatives (experienced)
  - Doctors (select; i.e. pediatric surgeons)
  - Header Operators (skilled)
  - Insurance Managers
  - International Sales
  - Machinists (if in a lower pay range)
  - Nurse Practitioners
  - Pharmacists
  - Physical Therapists
  - Programmable Logic Controllers (PLC) (skilled)
  - Radiologists
  - Reporters (experienced)
  - Tool and Die Specialists (skilled).

The 2005 Carter-Burgess target industry analysis measured labor availability using the same methodology.



Sample employer quotes regarding availability:

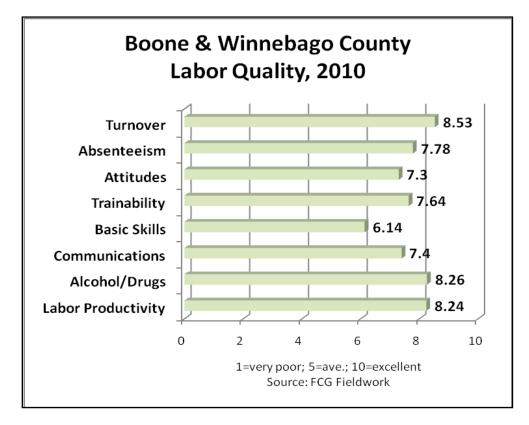
- "Don't overlook the great work ethic and labor pool here!"
- "Highly experienced management and supervisors."
- "It takes only 10-12 applicants per new hire."
- "Regular RN shortages have stopped temporarily; see return in 2015 to 2020; we can't hire all the available candidates; schools are full."

- "Rockford has a comfortable and affordable living environment, but the perception of the public schools and the high unemployment rate impact our ability to recruit."
- "Rockford has a great skill base and a great work ethic and even has diversity!"
- "Skills are here for manufacturing!"
- "The greatest strength in the area is availability, but we do have to do a substantial amount of screening and there are problems with people's credit."
- "The school system is definitely a problem for us when we are recruiting. The area takes time to move forward."
- "This is a manufacturing town with a culture of parts and assembly; therefore it is hard for people to adjust to the service industry."
- "We are recruiting hard and heavy in Rockford and the pool is great!"
- "Workforce is here with the ability to customize."

#### **Labor Quality**

The ability to find quality workers is critical. Expanding and locating companies generally seek communities with above average to good quality workers.

- Boone & Winnebago Counties area market labor quality is rated "good" (7.66 overall)
  - o All factors were rated "good" or "very good", except basic skills.





The 2005 Carter-Burgess target industry analysis measured labor availability using the same methodology.

Here is what employers told us about quality:

• "Attitudes are a concern; as economy improves we may lose some of our best."

1-very poor; 5=ave.;10=excellent Source: Carter-Burgess Target Analysis, 2006

7.38

7.43

8

8.52

10

• "Attitudes are improving!"

Communications

**Labor Productivity** 

Alcohol/Drugs

- "Attitudes? Most are just happy to have a job now!"
- "Basic skills are high here...many older workers have gone back to school to brush up."
- "Communications are good here, but we encourage diversity (5 languages spoken in the plant)."
- "Don't overlook the great work ethic and labor pool here!"

2

- "Good team here!"
- "It is a great place to do business, airport is great, and it is a central location with great employees and definitely many educational opportunities."
- "No issues with drugs or alcohol."
- "Nothing has changed with the profile of today's applicant, but employers want to have more diversity, but the qualified candidates diverse potential employees are hard to find."
- "Once people get here they like it, relocation isn't bad, because you are near Chicago and Milwaukee, so when people get here they should get involved in the community."
- "Our plant rates high versus others around the country...best workers are here!"
- "People in the Rockford area know how to work."
- "Productivity is incredible!"

- "Public education is poor...not a good track record."
- "Rock Valley College is very responsive!"
- "Rockford has a great skill base, a great work ethic and even has diversity."
- "Soft skills are lacking...attitudes and motivation."
- "The biggest problem for us is the lack of high end cultural diversity in the area which does not allow us to attract the engineers/technicians and managers with a diverse background."
- "Turnover? Amazing! Productivity? Better and better! (94% on-time delivery)"
- "Union attitudes are hard to change."
- "We are not finding the right matches from many applicants...a percentage don't really want to work."
- "We are working with the Workforce Connection, Disability Works, and other agencies in Rockford and they are all great."
- "We have been very successful in working with Rock Valley College and attracting individuals who may be dislocated and are changing careers."

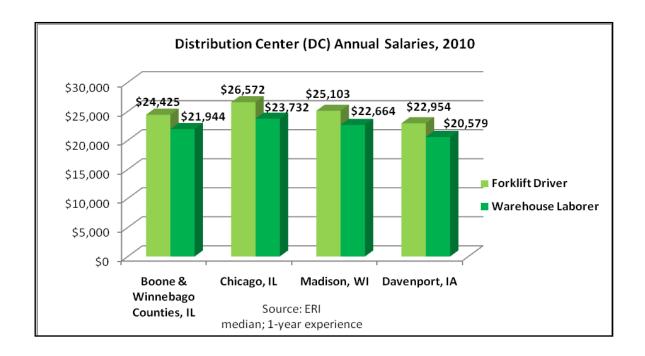
#### **Labor Costs**

Wage rates and salaries are the single most important labor factor in site selection, both affecting the availability of good quality workers in a marketplace and affecting a company's competitive position. Up to 80% of the annual operating costs of a project can be labor.

FCG benchmarked the Rockford market wages against: Chicago IL; Davenport, IA; and Madison, WI. Select positions in each of your region's target sectors are listed below. Salary data comes from Economics Research Institute (ERI; 2<sup>nd</sup> Quarter, 2010). All salaries listed are median level with one-year experience. We have found this to be the most reliable source of comparative wage/salary data, and we use in all of our site selection projects.

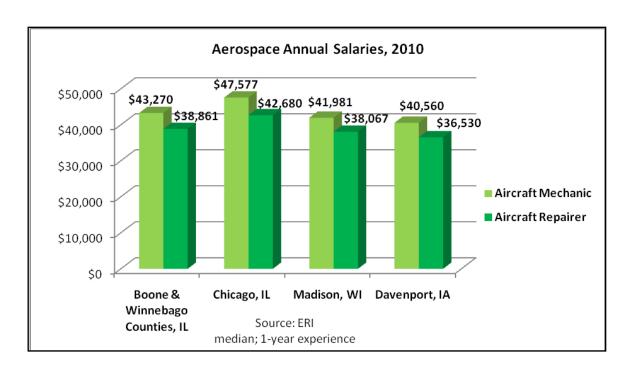
#### Logistics/Distribution Centers (DC)

• Boone & Winnebago Counties DC wages/salaries are below Chicago and Madison, but higher than Davenport. *Please see chart on next page*.



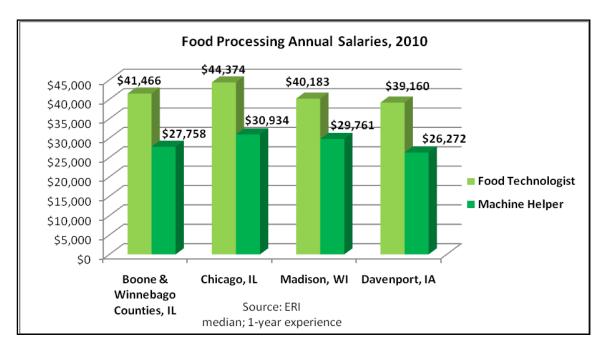
#### Aerospace Production

• Boone & Winnebago Counties aerospace wages/salaries are below Chicago, but higher than Madison and Davenport.



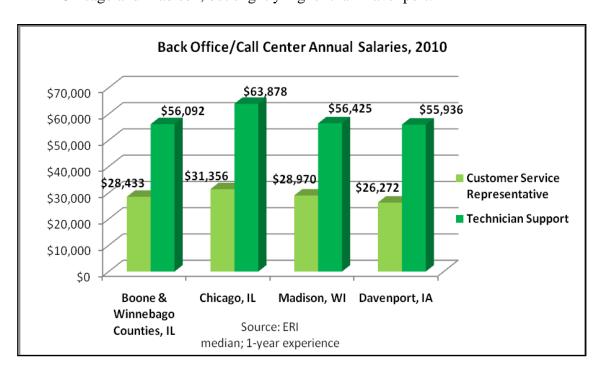
#### Food Processing

• Boone & Winnebago Counties food wages/salaries are below Chicago, but higher than Madison (except machine helper, which is lower) and Davenport.



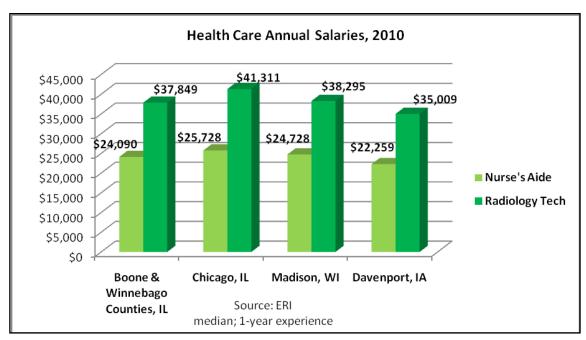
#### **Customer Service Centers**

• Boone & Winnebago Counties back office/call center wages/salaries are below Chicago and Madison, but slightly higher than Davenport.



#### Health Care

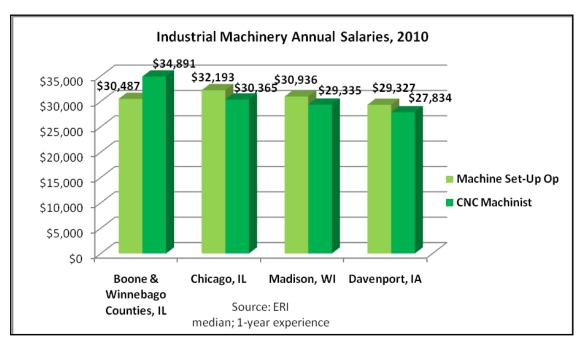
• Boone & Winnebago Counties health care wages/salaries are below Chicago and Madison, but higher than Davenport.



#### **Industrial Machine Manufacturing**

(Salaries below may also apply to the following targets: metals, green/alternative energy, transportation equipment, or rail-related manufacturing.)

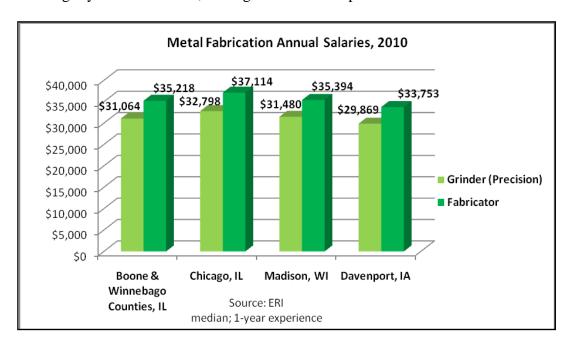
 Boone & Winnebago Counties industrial machinery wages/salaries are generally below Chicago and Madison (but CNC Machinist was higher), and higher than Davenport.



#### Metal Fabrication

(Salaries below may also apply to the following targets: industrial machine, green/alternative energy, transportation equipment, or rail-related manufacturing).

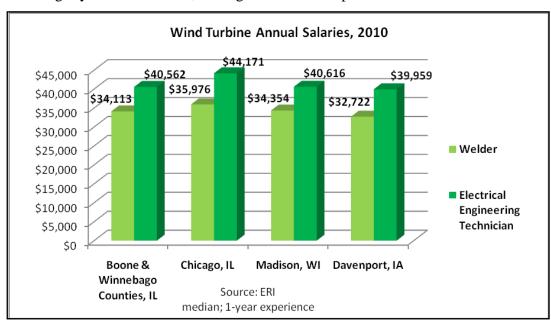
• Boone & Winnebago Counties metal fab wages/salaries are below Chicago, slightly below Madison, but higher than Davenport.



#### Green Industries and Alternative Energy

(Salaries below may also apply to the following targets: industrial machine, metals, transportation equipment, or rail-related manufacturing).

• Boone & Winnebago Counties wind turbine wages/salaries are below Chicago, slightly below Madison, but higher than Davenport.



A list of renewable energy occupations (with required education) is found in the appendix.

#### Fringe Benefits

We asked each employer to what percent of wage their fringe benefit package worked out. The average was 27.84%; this is slightly above the U.S. average of 25%<sup>5</sup>.

#### **Secondary and Higher Education**

Today's students are tomorrow's workforce. Educational aspects of a community are critically important in hiring, relocating, and retaining employees. The following are our "site selector's viewpoint" items that would be of most interest to our clients based on the institutions that we interviewed:

#### **Secondary and Elementary Education**

- Rockford Public Schools District has a newly adopted strategic plan "Visualize 2015", a five-year roadmap well written and easy to read for all residents.
- The strategic plan calls for a number of new initiatives in Rockford including expanding alternative education, establishing a K-12 school focused on creative and performing arts, and establishing a three-tiered model of school support for both academic and behavioral needs.
- Other key programs/projects that will be important to the private sector include providing students with career development counseling that will help them understand the relationship between personal qualities, education, training, and the world of work.
- The Rockford Public Schools District's strategic plan also includes a major emphasis on pre-K programs that even directs parents on a birth-to-five program, social-emotional development, and early literacy.
- The "Aces" program has drawn positive attention because it takes youth that might become dropouts and gives them ½ day of work and ½ day of school.
- The Boone County schools have a major investment in Tech Prep with over 250 enrolled at the Belvidere High School in an articulation agreement with Rock Valley College.
- Belvidere High School has implemented the "Running Start" program which enables youth, at the end of their 10<sup>th</sup> grade year to enroll in a full-time dual credit

<sup>&</sup>lt;sup>5</sup> FCG national fieldwork.

- college ready program. There are currently 100 kids enrolled in the program at Belvidere High School.
- 28% of the students at Belvidere attend four-year college and 60% attend 2- or 4-year programs.
- There do not appear to be any career academies/charter schools in Boone or Winnebago Counties.
- The Comprehensive Community Solutions, Inc. (Youth Build) is an excellent program especially designed to assist youth who have been adjudicated, however, the program can only allow 80 and the demand is for perhaps 400 students. Youth Build engages students to build homes and improve life skills as well as assist with graduation.
- The GEM (Golden Eagle Mentoring) program is a major plus for Woodward and other industries because it enables high school student graduates to be machinists and work part time at Woodward.

#### **Higher Education**

- Rock Valley College is a highly thought of institution by almost all employers in the two county area, and especially by manufacturers that depend heavily on RVC for training and finding new employees who are either in school or graduating.
- Rock Valley manages the Tech Works program
  - o "Fast Track Metals" classes NIMS (We recommended this in 2005 and it was set up 2-3 years ago).
- Recent Rock Valley customized training needs include:
  - o Word/Access/Excel
  - o Cultural training India/Pakistan
  - o Fluid power training
  - o Leadership/supervisor training
    - Communications
    - Moving young leaders up the ladder
  - o 6 Sigma/Green Belt
  - Truck Driver
    - Over the road 4 week program
    - "Best qualified drivers in area come out of Rock Valley program."
    - Will add "skid-pad" for ice training
- Rockford Career College's mission is personalized individual education and career academy type programs.

- The Rockford Career College has approximately 750 students and has a large following with their paralegal and health career programs with a 70% female population. All programs have externship requirements.
- The average age of the career college is 27 with 71% placement in 2009 in the middle of a down economy.
- OSF Saint Anthony Medical Center offers a Bachelors in Nursing with 150 students in their undergraduate program. OSF Saint Anthony Medical Center also has a masters level program that they hope to grow to 50 students.
- Rasmussen College officials told us that employers want "people that are not lying down (active in community!)". Hot sectors for enrollments and placements include:
  - o IT
- Industrial design
- Multimedia 3D
- Design engineers
- Hosted IT Tech Fair What are employers looking for? Critical thinkers, self empowered, good business etiquette, socially interactive.
- o Business
- Health Care
  - Medical Assistants (MA) #1
  - Health Transcription ICDC coding
  - Medical Billing
  - No LPN demand now
- o Entrepreneurial studies.

#### **Employer Conclusions**

The following are the important conclusions drawn:

#### Prospects will find a very attractive climate for hiring, perhaps the best in 10 years.

- Traditionally difficult skills (such as tool and die workers, truck drivers, CNC machinists, and RNs) are surprisingly available.
- Some traditional trouble spots remain (such as radiologists, A&P mechanics, and pharmacists).
- Skilled and semi-skilled availability has improved since 2005; unskilled availability has declined slightly.
- The positive availability opinions of employers are consistent with the positive resident survey findings.

#### Prospects will find very favorable labor quality in Boone & Winnebago Counties.

- The "very good" ratings for turnover and productivity will impress prospective employers.
- Basic skills in many U.S. markets are below average, so 6.14 is quite acceptable.
- Quality scores are very similar to 2005. The one notable exception is that attitudes have declined, perhaps due to the recession.

Prospects may initially perceive Boone and Winnebago Counties as a higher wage location when competing for Midwest projects, but the facts show that costs are generally quite competitive.

- Davenport has a similar higher cost image, but is lower than Boone and Winnebago Counties pretty much across the board.
- Boone and Winnebago Counties wages are very competitive with Madison, an area with perceived lower costs.

Although it appears that Rockford Public Schools have improved, the opinions of area employers are still mostly negative. However, there are a number of very positive secondary education programs in place in the region that will peak a prospect's interest.

- The Rockford "Aces" program
- Belvidere High School "Running Start" program
- The Comprehensive Community Solutions, Inc. (Youth Build)
- The GEM (Golden Eagle Mentoring) program.

The Boone and Winnebago Counties area has some impressive higher education opportunities for employers, but Rock Valley College stands out as the most important economic development partner.

#### **Comparisons to 2007 Labor Shed Study**

Although it is difficult to make too many direct comparisons, the following are noteworthy:

- As stated earlier, the defined labor shed in this report is significantly smaller than the 2007 report, based on current, realistic commuting trends.
- The available workforce numbers found in this report (47,293) are only 73% of the 2007 report number (65,500). This is significant when viewing the much smaller labor shed. Conclusion: there are large numbers of available workers within a <u>reasonable</u> commute distance.

- Current average commute distances are less (75% 10 miles or less) than estimated in 2007 (55% 10 miles or less).
- Current skilled worker availability appears to be better than that in 2007.
- Current unskilled worker availability appears to be slightly better than that in 2007.

#### **RECOMMENDATIONS**

The following recommendations are designed to help the Workforce Investment Board and its partners to improve economic development and workforce goals for the future.

#### **Skill/Training Needs**

- Encourage the recruitment and training (and/or relocation) of new skilled workers where future needs exist (those "tough to fill" positions).
  - o A&P Mechanics
  - o Customer Service Representatives (experienced)
  - o Doctors (select; i.e. pediatric surgeons)
  - Header Operators (skilled)
  - o Insurance Managers
  - o International Sales
  - Machinists (skilled)
  - Nurse Practitioners
  - o Pharmacists
  - o Physical Therapists
  - o Programmable Logic Controllers (PLC) (skilled)
  - o Radiologists
  - o Reporters (experienced)
  - o Tool and Die Specialists (skilled)
- Help local employers and prospects to attract skills.
  - o Many employees will change jobs for the right opportunities.
  - o Many residents, including a large number of retirees, are ready to en-enter the workforce.
- Help get training/retraining program information to the many area workers looking to change jobs or re-enter the work place.
- Conduct future analysis into the skill needs of your target industries and plan for this training.

• Conduct future analysis into how current skills can best be transferred into new emerging skills such as those required in renewable energy. See renewable energy sector occupations table in the appendix.

#### **Education/Training**

- **Develop a Workforce/Education/Business Roundtable** which includes area School Superintendents, College Presidents, staffing agencies, and significant business leaders to address the many issues of the education and workforce system. Present this report to the Roundtable and other key committees and explore how this information can be incorporated into future workforce and marketing efforts.
- Rockford Public School District should begin emphasizing Tech Prep and other vocational technical programs oriented to developing students to prepare them for the Rockford area's strong manufacturing sector.
- In the future, Rockford Public School District should consider career academy programming or charter schools to enhance careers at an early age, especially those focusing on machining, tooling and engineering for the aerospace industry.
- Rockford Public Schools should implement a program similar to the "Running Start" program which enables youth, at the end of their 10<sup>th</sup> grade year to enroll in a full-time dual credit college ready program, which is implemented at Belvidere High School.
- Representatives from the educational sector should join the local SHRM so they can become informed about the concerns and issues of the private sector with the labor force. It is also suggested that high level administrators attend meetings and functions.
- The Comprehensive Community Solutions, Inc. (Youth Build) needs to be considered an alternative high school and if at all possible expanded. Area agencies should also consider finding funds to expand the Youth Build program.
- All workforce agencies and educational programs should jointly utilize Work Keys as a uniform assessment tool. Work Keys needs to become an integral part of the strategic plan of each school district.
- Build a public relations campaign for the Rockford Public Schools District Strategic Plan so that very parent, teacher, business owner and community leader are familiar with the goals and objectives of the plan.

#### Research/Marketing

- Get important data from this report into the hands of local companies and prospects.
- **Develop updated cost comparison reports for your top targets.** Each report would take a hypothetical project and compare costs and conditions in your area versus select competitors. Labor force/skills data from this report will be a valuable addition.
- Develop new marketing pieces that sell your competitive wages, very good labor availability and labor quality.
- Conduct an analysis to determine "wage thresholds" for key positions.
- Update this report at least every two years.

FCG is available to assist with any or all of these recommendations.

<sup>&</sup>lt;sup>6</sup> The "wage threshold" is the ideal wage for attracting and retaining employees. Offering below the threshold will result in poorer recruiting and loss of employment to better paying local companies. Offering above the threshold will result in excellent recruiting (including "pirating" from other local companies) and retention, but will be too costly to the company.

#### For More Information Regarding This Report, Please Contact:

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#### **Appendix**

#### Boone-Winnebago County Labor Shed Study Draft 8/29/10 N=300 Adult Residents in Labor Shed

Hello. My name is YOUR NAME from Research & Polling, Inc., a public opinion research company.

We're conducting a short survey among adults in your area and would like to ask you questions regarding your work experience and background. The survey has been commissioned by the Boone-Winnebago Workforce Investment Board and will take approximately 5 minutes to complete. All of your answers will be kept confidential. The information gathered will be used to further economic development efforts in your region. OK?

Α.	Com	ponent

- 1. Winnebago County
- 2. Rockford
- 2. Boone County
- Belvidere
- 1. Where do you live? (city and county and ZIP code)
- 2. Are you currently employed?
  - 1. Yes (CONTINUE)
  - 2. No/don't know/won't say (SKIP TO Q.25)
- 3. What type of business or organization do you currently work for? (DO NOT READ CATEGORIES) (TAKE UP TO 2 RESPONSES)

002.	Healthcare	009.	Retail
003.	Education	010.	Food service
004.	Government	011.	Professional services (legal, accounting,
005.	Manufacturing		real estate, etc.)
006.	Licensed trade (plumber, electrician,	012.	Not-For-Profit
000.	etc.)	013.	Hospitality
007.	Insurance	014.	Entertainment
500.	Don't know/won't say		
Other	(SPECIFY)		

008.

Finance

<u>3A. C</u>	<u>:ITY</u>		
01.	Rockford	04.	
02.	Belvidere	05.	
03.	Beloit, WI	06.	
99.	Don't know/won't say		
Other	(SPECIFY)		
<u>3B.</u>	Zip Code		
01.		08.	
02.		09.	
03.		10.	
04.		11.	
05.		12.	
06.		13.	
07.			
99.	Don't know/won't say		
Other	(SPECIFY)		
How	many years have you worked for your cu	irrent employer?	
<b>How</b> 00.	many years have you worked for your cu Less than one year	ırrent employer?	
	Less than one year		
00. —— 99.	Less than one year (ENTER NUMBER OF YEARS, US	SE TWO DIGITS)	(TAKE ONE RESPONSE ON
00. —— 99. What	Less than one year (ENTER NUMBER OF YEARS, US Don't know/won't say	SE TWO DIGITS) READ CATEGORIES)	
00. —— 99. What	Less than one year  (ENTER NUMBER OF YEARS, US Don't know/won't say  is your current occupation? (DO NOT I	SE TWO DIGITS) READ CATEGORIES)	
<ul><li>00.</li><li>99.</li><li>What</li><li>NOTE</li></ul>	Less than one year  (ENTER NUMBER OF YEARS, US Don't know/won't say  is your current occupation? (DO NOT I	SE TWO DIGITS)  READ CATEGORIES)  Sb" and get very spec	ific information
00.  99.  What  NOTE  001.	Less than one year  (ENTER NUMBER OF YEARS, US Don't know/won't say  is your current occupation? (DO NOT I  ETO INTERVIEWER: Capture "primary jo  Accountant	READ CATEGORIES)  Sob" and get very spec  005.	ific information Office manager
00.  99.  What  NOTE 001. 002.	Less than one year  (ENTER NUMBER OF YEARS, US Don't know/won't say  is your current occupation? (DO NOT I  E TO INTERVIEWER: Capture "primary jo Accountant Administrative Assistant	READ CATEGORIES)  Sob" and get very spec  005. 006.	ific information Office manager Police officer
00.  99.  What  NOTE  001.  002.  003.	Less than one year  (ENTER NUMBER OF YEARS, US Don't know/won't say  is your current occupation? (DO NOT)  ETO INTERVIEWER: Capture "primary jo Accountant Administrative Assistant Banker	READ CATEGORIES)  Seb" and get very spec  005.  006.  007.  008.	ific information Office manager Police officer Retail clerk Teacher

7.	What are the most important skills or knowledge base associated with this occupation? ( <i>Probe</i> ) Anything else? ( <i>TAKE UP TO TWO VERBATIM RESPONSES</i> )						
	Resp	Response #1:					
	Resp	onse #2:					
	500.	Don't know/won't say					
8.	How	How many years of experience do you have in your current occupation?					
	00.	Less than one year					
		(ENTER NUMBER OF YEARS, USE TWO DIGITS)					
	99.	Don't know/won't say					
9.	1. G 2. l'i 3. l'i	!! How do you feel you fit this job based on your experience and education?  sood fit  m overqualified for job  m underqualified for job  on't know					
10.	Is yo	ur current job full-time or part time?					
	1.	Full-time					
	2.	Part-time					
	3.	Don't know/won't say					
11.	ls yo	ur current job year-round or seasonal?					
	1.	Year-round					
	2.	Seasonal					
	3.	Don't know/won't say					
12.	Are y	ou paid on an hourly or salary basis?					
	1.	Hourly					
	2.	Salary (annual)					
	3.	Don't know/won't say					

13.	What is your approximate <u>hourly or annual</u> wage or salary received from your current job? (if refused, remind them of confidentiality and that only aggregate data by occupation will be reported)							
	ENTE	R ONLY <u>ONE</u> CATEGORY BELOW						
	10A.	Hourly \$ • •						
	10B.	Annual \$,,,,,						
	10C.	Other \$ (SPECIFY TYPE)						
	99.	Don't know/won't say						
14.	How r	many miles do you currently drive or commute to this job, one way?						
	000.	Less than one mile						
		(ENTER NUMBER OF MILES, USE THREE DIGITS)						
	999.	Don't know/won't say						
15.	What	What is your average commute time to work, one way?						
	000.	Less than one minute						
		(ENTER NUMBER OF MINUTES, USE THREE DIGITS)						
	999.	Don't know/won't say						
16.	Even	Even though you are currently employed, do you have interest in applying for a different job?						
	1.	Yes						
	2.	No (SKIP TO Q.19)						
	3.	Don't know						
	4.	Won't say (SKIP TO Q.19)						
17.		What type of job/occupation are you primarily interested in applying for? (TAKE ONE VERBATIM RESPONSE ONLY)						
	NOTE	TO INTERVIEWER: Capture "primary job/occupation"						
	Respo	onse:						
	500.	Don't know/won't say						

ENTER ONLY <u>ONE</u> CATEGORY BELOW							
15A.	Hourly \$•						
15B.	Annual \$,						
15C.	Other #2	(SPECIFY TYPE)					
99.	Don't know/won't say						
What	is the maximum distance in mile	s you would be willing to travel for a new job, <u>one way</u> ?					
000.	Less than one mile						
	(ENTER NUMBER O	OF MILES, USE THREE DIGITS)					
999.	Don't know/won't say						
Do you have work experience in another occupation other than the one you are currently employed							
1.	Yes						
2.	No (SKIP TO Q.44)						
3.	Don't know/won't say (SKIP TO	Q.44)					
What	is that other occupation? (DO N	NOT READ CATEGORIES) (TAKE ONE RESPONSE ONLY)					
What	is that other occupation? (DO N	NOT READ CATEGORIES) (TAKE ONE RESPONSE ONLY)					
What NOTE CLAR	is that other occupation? (DO NETO INTERVIEWER: Capture "pri	NOT READ CATEGORIES) (TAKE ONE RESPONSE ONLY) imary job" and get very specific information t if more than one					
What NOTE CLAR 001.	is that other occupation? (DO NETO INTERVIEWER: Capture "printer in the image of th	NOT READ CATEGORIES) (TAKE ONE RESPONSE ONLY) imary job" and get very specific information t if more than one  005. Office manager					
What NOTE CLASS 001. 002.	is that other occupation? (DO NETO INTERVIEWER: Capture "printer IF NECESSARY: Most recent Accountant Administrative Assistant	NOT READ CATEGORIES) (TAKE ONE RESPONSE ONLY)  imary job" and get very specific information t if more than one  005. Office manager 006. Police officer					
What NOTE CLAS 001. 002. 003.	is that other occupation? (DO NETO INTERVIEWER: Capture "pri RIFY IF NECESSARY: Most recent Accountant Administrative Assistant Banker Fireman Manager/VP/President	imary job" and get very specific information t if more than one  005. Office manager 006. Police officer 007. Retail clerk					
What NOTE CLAF 001. 002. 003. 004.	is that other occupation? (DO NETO INTERVIEWER: Capture "pri RIFY IF NECESSARY: Most recent Accountant Administrative Assistant Banker Fireman Manager/VP/President	imary job" and get very specific information t if more than one  005. Office manager 006. Police officer 007. Retail clerk 008. Teacher					

else'	else? (TAKE UP TO TWO VERBATIM RESPONSES)						
Resp	Response #1:						
Resp	oonse #2:						
500.	Don't know/won't say						
How	many years has it been since the last time you worked?						
00.	Less than one year						
	(ENTER NUMBER OF YEARS, USE TWO DIGITS)						
97.	97 years or more						
98.	Never worked (SKIP TO Q.27)						
99.	Don't know/won't say						
Are y	Are you retired?						
1.	Yes						
2.	No						
4.	Don't know/won't say						
Are y	Are you interested in entering/re-entering the workforce in the next year?						
1.	Yes (SKIP TO Q.29)						
2.	Maybe (VOLUNTEERED) (SKIP TO Q.29)						
3.	No						
4.	Don't know/won't say						
Wha	What is the highest level of education that you have completed? (READ CATEGORIES)						
1.	Less than high school graduate (SKIP TO Q.48)						
2.	High school graduate (SKIP TO Q.48)						
3.	Some college (SKIP TO Q.48)						
4.	Vocational/tech school graduate (SKIP TO Q.48)						
5.	2 year college graduate/Associates (SKIP TO Q.48)						
6.	4 year college graduate/Bachelors (SKIP TO Q.48)						

7.

Masters degree (SKIP TO Q.48)

	8.	Advanced college degree (PhD, etc.) (SKIP TO Q.48)						
	9.	Won't say (DO <u>NOT</u> READ) (SKIP TO Q.48)						
27.	Are y	Are you interested in full-time or part-time employment?						
	1.	Full-time						
	2.	Part-time						
	3.	Either (VOLUNTEERED)						
	4.	Don't know/won't say						
28.	Are y	Are you currently looking or planning to look for employment within the next year?						
	1.	Yes						
	2.	No						
	3.	Don't know/won't say						
29.		type of job/occupation are you primarily interested in applying for? ( <i>Probe</i> ) Anything else? ( <i>TAKE</i> O TWO VERBATIM RESPONSES)						
	NOTE	NOTE TO INTERVIEWER: Capture "primary job/occupation"						
	Resp	Response:						
	-							
	500.	Don't know/won't say						
30.	What	Don't know/won't say  is the lowest hourly or annual wage or salary you would accept for a new job? (if refused, remind of confidentiality and that only aggregate data by occupation will be reported)						
30.	What them	is the lowest hourly or annual wage or salary you would accept for a new job? (if refused, remind						
30.	What them	is the lowest hourly or annual wage or salary you would accept for a new job? (if refused, remind of confidentiality and that only aggregate data by occupation will be reported)  R ONLY ONE CATEGORY BELOW						
30.	What them	is the lowest hourly or annual wage or salary you would accept for a new job? (if refused, remind of confidentiality and that only aggregate data by occupation will be reported)  R ONLY ONE CATEGORY BELOW  Hourly \$						
30.	What them ENTE	is the lowest hourly or annual wage or salary you would accept for a new job? (if refused, remind of confidentiality and that only aggregate data by occupation will be reported)  R ONLY ONE CATEGORY BELOW						
30.	What them ENTE	is the lowest hourly or annual wage or salary you would accept for a new job? (if refused, remind of confidentiality and that only aggregate data by occupation will be reported)  R ONLY ONE CATEGORY BELOW  Hourly \$						
30.	What them 10A. 10B. 10C. 99.	is the lowest hourly or annual wage or salary you would accept for a new job? (if refused, remind of confidentiality and that only aggregate data by occupation will be reported)  IR ONLY ONE CATEGORY BELOW  Hourly \$						
	What them 10A. 10B. 10C. 99.	is the lowest hourly or annual wage or salary you would accept for a new job? (if refused, remind of confidentiality and that only aggregate data by occupation will be reported)  IR ONLY ONE CATEGORY BELOW  Hourly \$						
	What them 10A. 10B. 10C. 99. What 000.	is the lowest hourly or annual wage or salary you would accept for a new job? (if refused, remind of confidentiality and that only aggregate data by occupation will be reported)  IR ONLY ONE CATEGORY BELOW  Hourly \$						

	NOTE TO INTERVIEWER: Capture "primary job" and get very specific information							
		•						
001.	Accountant	005.	Office manager					
002.	Administrative Assistant	006.	Police officer					
003.	Banker	007.	Retail clerk					
004.	Fireman	008.	Teacher					
009.	Manager/VP/President (SPECIFY area/occupation)							
500.	Don't know/won't say							
Other	(SPECIFY)							
<b>Respo</b> 500.	Don't know/won't say							
	many years of experience do you have in that	occupation?						
00.	Less than one year	occupations						
	(ENTER NUMBER OF YEARS, USE TW	O DIGITS)						
99.	Don't know/won't say	,						
	type of business or organization did you wor	k for in this occ	upation? (DO NOT READ					
	GORIES) (TAKE UP TO 2 RESPONSES)							
001.	GORIES) (TAKE UP TO 2 RESPONSES)	008.	Finance					
	Healthcare	008. 009.	Finance Retail					
002.								
001. 002. 003. 004.	Healthcare	009.	Retail Food service Professional services (legal, accounting					
002. 003.	Healthcare Education	009. 010. 011.	Retail Food service Professional services (legal, accounting real estate, etc.)					
002. 003. 004.	Healthcare Education Government Manufacturing Licensed trade (plumber, electrician,	009. 010. 011.	Retail Food service Professional services (legal, accounting real estate, etc.) Not-For-Profit					
002. 003. 004. 005.	Healthcare Education Government Manufacturing	009. 010. 011.	Retail Food service Professional services (legal, accounting real estate, etc.)					

	Don't know/won't say							
Other	(SPECIFY)							
Do you have experience in another occupation? If so, what is that occupation? (DO NOT REAL CATEGORIES) (TAKE ONE RESPONSE ONLY)								
NOTE TO INTERVIEWER: Capture "primary job" and get very specific information								
001.	Accountant	005.	Office manager					
002.	Administrative Assistant	006.	Police officer					
003.	Banker	007.	Retail clerk					
004.	Fireman	008.	Teacher					
009.	Manager/VP/President							
(SPE	CIFY area/occupation)							
499.	No, do not have experience in anoth	ner occupation (SKIP TO	Q.41)					
500.	Don't know/won't say							
Other	(SPECIFY)							
Resp	onse #2:							
<b>Resp</b>	Donse #2:  Don't know/won't say							
500.								
500.	Don't know/won't say							
500.	Don't know/won't say  many years of experience do you have  Less than one year							
500.	Don't know/won't say  many years of experience do you have  Less than one year	in that occupation?						

38.

What is the highest level of education that you have completed? (READ CATEGORIES)

2. 3. 4. 5.	Less than high school graduate (SKIP TO Q.48)  High school graduate (SKIP TO Q.48)  Some college (SKIP TO Q.48)  Vocational/tech school graduate  2 year college graduate/Associates
6.	4 year college graduate/Bachelors
7.	Masters degree
8. 9.	Advanced college degree (PhD, etc.) Won't say (DO NOT READ) (SKIP TO Q.48)
What was y	our primary area of study? (TAKE ONE VERBATIM RESPONSE ONL)
Response:	
500. Don	't know/won't say
What other RESPONSE	areas do you have education or formal training in? (TAKE UP TO 3 N
What other RESPONSE	areas do you have education or formal training in? (TAKE UP TO 3 V
What other RESPONSE	areas do you have education or formal training in? (TAKE UP TO 3 N
What other RESPONSE Response #	areas do you have education or formal training in? (TAKE UP TO 3 New States)

41.	Have you earned any special certifications? <i>IF YES, ASK)</i> Which special certifications have you earned? (TAKE UP TO 3 VERBATIM RESPONSES)					
	Respo	Response #1:				
	Respo	Response #2:				
	Respo	Response #3:				
	<b></b> 499.	No, h	No, have not earned any special certifications			
	500.	Don't	know/won't say			
42.	Into w	Into which age category do you fit? (READ CATEGORIES)				
		1.	18 to 34 years			
		2.	35 to 49 years			
		3.	50 to 64 years			
		4.	65 to 74 years			
		5.	75 years or older			
		6.	Won't say (DO <u>NOT</u> READ)			
43.	Do ye	ou con	sider yourself to be: (READ CATEGORIES)			
		1.	Hispanic			
		2.	Anglo/Caucasian			
		3.	Black/African-American			
		4.	Native American Indian			
		5.	Or of other descent?			
		6.	Won't say <i>(DO <u>NOT</u> READ)</i>			

### THIS CONCLUDES OUR SURVEY. THANK YOU FOR YOUR TIME. HAVE A GOOD DAY.

### **NOTE TO INTERVIEWER, WAS RESPONDENT:**

Male

1.

2.	Female
Respondent's P	Phone Number
Respondent's C	City
Respondent's C	County
Respondent's Z	ip Code
Interviewer Nan	ne
Interviewer Cod	le

## Boone & Winnebago Counties Labor Analysis - Employer Questionnaire

Company:	Cluster:				
Interviewee:	Title:				
Location:					
Phone:	Interview Date:				
Function of Company:					
Facility:					
Date Established Locally:	This Site:				
Present Size (sq ft). plant:	office:				
Last Expansion: Date:	sq.ft.				
Growth Plans: (Expansion	locally? Relocation?):				
Employment: Current Total:	% male % female % part	-time			
% Exempt (salaried):	% Nonexempt (hourly):				
Peak employment?	Year?				
# on layoff?	Length of layoff?				
Labor-Management Relationships					
Present Union:	Contract Date:				
Year organized or organiz	ing attempts (union, year, vote):				
Strikes (date, length, cause	e):				

Grievances (#/month):	Arbitrations (#/yr.)
Hours of Work	
Number of Shifts:	Shift Premiums:
Willingness to work overti	me:
Wages/Availability (Rate 1-10)	
Plant-wide average earning	ss: \$ per hour/per diem.
Most Prominent Positions	(and #) Availability Rating #s Available?
<u>Skilled:</u>	
	\$per hour
Semi-skilled	
	\$per hour
<u>Unskilled</u>	
	\$per hour

<u>Other</u>	
	\$per hour
	\$per hour
	\$per hour
Last general increase (date):	Amount:
Next general increase (date):	Amount:
Labor Characteristics (rate 1 to 10)	
Overall Labor Quality of Worker	s (poor = 1, average = 5, excellent = 10):
Turnover:	
Absenteeism:	
Attitudes	
Trainability:	
Basic Skills:	
Communications:	
Alcohol/Drugs:	
Labor Productivity:	
Other Comments:	
Fringe Benefits:	
As percentage of total wage pack	age: %
Fringe benefit details – list (* if n	ew program)

Recruiting Experience	
Profile of today's applicants (older? military spouses? etc.)	
Toughest jobs to fill?:	
Toughest jobs to III	
Most sought after skills now?	
In 2 years?	
Satisfaction with training?	
<u>Commuting/Underemployment</u>	
Maximum # of miles/minutes employee will commute one way:	
Patterns?:	
Percentages commuting: 1-15 miles%; 16-30 miles%; 31-45% 45-60 miles %: over 60%	

	What % of employees travel to and from work with more than one in car?
	Number of underemployed workers applying for jobs (1=very low; 10=very high):
	Comments:
<u>Traini</u>	Outside training assistance utilized and who?
	Outside training assistance utilized and who?
	If yes, adequacy of local training capabilities? (poor = 1, average = 5, excellent = 10)
	Community Colleges?
	Technical Schools?
	High Schools?
	Comments:
Use of A	Agencies:
	Temporaries?
	Management Recruiters?

# Suppliers/Customers

Type of new industry that you would like to see in the area compatible to your operations (Linkages)?	
Other factors: Overall Rating? (poor = 1, average = 5, excellent = 10)	
Schools:	
Medical Services:	
Housing Availability and Affordability:	
Day Care:	
Roads:	
Electric Power:	
Other utilities:	
Air service:	
Recreation:	
Cultural Facilities:	
Overall, what are the positive aspects of hiring here? (including relocation issues)	
Overall, what are the negative aspects of hiring here? (including relocation issues)	
What advice would you give to another company in your line of business considering a location in this area?	

### **Companies/Educators Interviewed**

Alpine Bank Kaney

Android Midwest Aero Support

Belvidere District 100 Morningstar

Bon-Ton Stores, Inc. OSF St. Anthony College of

Cadbury Nursing

Campos Construction OSF St. Anthony Medical

CCS Center
ChemProcessing Radisson

Clickenbeard
Clock Tower
Comcast

Rasmussen College
Rock Valley College
Rockford Health Systems

Dean Foods Rockford Products

Employer Coalition on Health Rockford Register Star

(ECHO)ServiComFairhavenSyncreonFirst Rockford GroupTechWorksFurst StaffingThe WorkplaceIngeniumWilliam Charles

JNET Communications Woodward

### **Renewable Energy Sector Occupations**

#### Key Occupations in the Renewable Energy & Energy Efficiency Industry

Occupation Education/Training Required

Architects, except landscape Bachelor's degree

Architectural and civil drafters Postsecondary vocational award

Chemical engineers Bachelor's degree

Chemical plant and system operators

Long-term on-the-job training

Chemical techniciansAssociate degreeChemistsBachelor's degree

Civil engineering technicians Associate degree
Civil engineers Bachelor's degree

Earth drillers, except oil and gas

Moderate-term on-the-job training

Electrical and electronic engineering technicians

Electrical and electronic equipment assemblers

Associate degree

Short-term on-the-job training

Electrical and electronics drafters Postsecondary vocational award Electrical engineers Bachelor's degree

Electrical power-line installers and repairers

Long-term on-the-job training

Electricians Long-term on-the-job training

Electro-mechanical technicians Associate degree
Electronics engineers, except computer Bachelor's degree

Engineering managers Bachelor's or higher degree, plus work experience

Environmental engineers

Bachelor's degree
Environmental science and protection technicians, including health

Associate degree

Environmental scientists and specialists, including health Master's degree
Heating, air conditioning, and refrigeration mechanics and installers Long-term on-the-job training

Helpers--electricians

Short-term on-the-job training

Helpers--pipelayers, plumbers, pipefitters, and steamfitters

Machine Operators

Moderate-term on-the-job training

Machinists

Moderate-term on-the-job training

Moderate-term on-the-job training

Mathematicians Doctoral degree

Mechanical drafters Postsecondary vocational award

Mechanical engineering techniciansAssociate degreeMechanical engineersBachelor's degree

Physicists Doctoral degree
Pipelayers Moderate-term on-the-job training

Plumbers, pipefitters, and steamfitters

Long-term on-the-job training

Security and fire alarm systems installers

Postsecondary vocational award

Sheet metal workers

Long-term on-the-job training

Surveying and mapping technicians Moderate-term on-the-job training Surveyors Bachelor's degree

Welders Moderate-term on-the-job training