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# Green Job Labor Supply Analysis





## Major Caveat

- Do policies to create green jobs lead to net job growth?
- In the short-run, it is unlikely
- In the long-run, it depends on what you believe about the causes of global warming and about the impact of global warming on the economy
- Study for Platte Institute: *The Potential Consequences of Proposed Climate Change Regulation*

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- What is a Green Job?
  - Green Jobs Analysis
  - Current Employment
  - Indirect Employment
  - Job Growth
  - Conclusion

# What is a green job?

- O\*Net Categories
  - Green Increased Demand Occupations
  - Green Enhanced Skills Occupations
  - Green New and Emerging Occupations

<b>Green Employment in Nebraska</b> Employment as a share of total statewide employment		
<b>O*NET Classification</b>	2009 estimated employment	2011 projected employment
<b>Green Increased Demand Occupations</b>	10.2785%	10.2242%
<b>Green Enhanced Skills Occupations</b>	9.3757%	9.3626%
<b>Green New and Emerging Occupations</b>	3.5856%	3.5891%

Table 1: Nebraska wide percent of workers in occupations and projected employment of same.  
Source O\*NET: The Green Economy-- <http://www.onetcenter.org/green.html?p=2>



# What is a green job?

“A green job is one in which an employee produces a product or service that improves energy efficiency, expands the use of renewable energy, or supports environmental sustainability.”

- Green jobs specific to Nebraska
  - Gathered by NDOL by surveying employers
  - Surveys gathered in 2010

## Examples of Green Occupations in Nebraska

<b>Vocational Education Teachers, Postsecondary</b>	<b>Environmental Engineering Technicians</b>
<b>Customer Service Representatives</b>	<b>Management Analysts</b>
<b>Landscaping and Groundskeeping Workers</b>	<b>Construction Managers</b>
<b>Conservation Scientists</b>	<b>First-Line Supervisors/Managers of Office and Administrative</b>
<b>Soil and Plant Scientists</b>	<b>Mechanical Engineers</b>
<b>Civil Engineering Technicians</b>	<b>Hazardous Materials Removal Workers</b>
<b>Architectural and Civil Drafters</b>	<b>Inspectors, Testers, Sorters, Samplers, and Weighers</b>

Based on NDOL survey results reporting green and non-green employment levels across surveyed occupations

## “Most Dense” Green Occupations

<b>Civil Engineers</b>	<b>Environmental Engineers</b>
<b>Electricians</b>	<b>Architects, Except Landscape and Naval</b>
<b>Heating, Air Conditioning, and refrigeration Mechanics and Installers</b>	<b>Laborers and Freight, Stock, and Material Movers, Hand</b>
<b>Refuse and Recyclable Material Collectors</b>	<b>Farmworkers and Laborers, Crop, Nursery, and Greenhouse</b>
<b>Plumbers, Pipefitters, and Steamfitters</b>	<b>First-Line Supervisors/Managers of Production and Operating Workers</b>
<b>Water and Liquid Waste Treatment Plant and System Operators</b>	<b>Truck Drivers, Heavy and Tractor-Trailer</b>
<b>Forest and Conservation Technicians</b>	<b>Carpenters</b>
<b>General and Operations Managers</b>	<b>Environmental Science and Protection Technicians, Including Health</b>

Based on survey results reporting green to non-green worker ratio across surveyed occupations

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# Green Jobs Analysis

- Data Sources
  - 2009 Employment Figures from NDOL Short Term Occupation Projections
  - NDOL Green Job Estimates
- Methodology
  - Gathered Workforce Data
  - Statewide and Economic Region Analysis
    - Current Employment
    - Indirect Employment
    - Net Job Growth Estimates

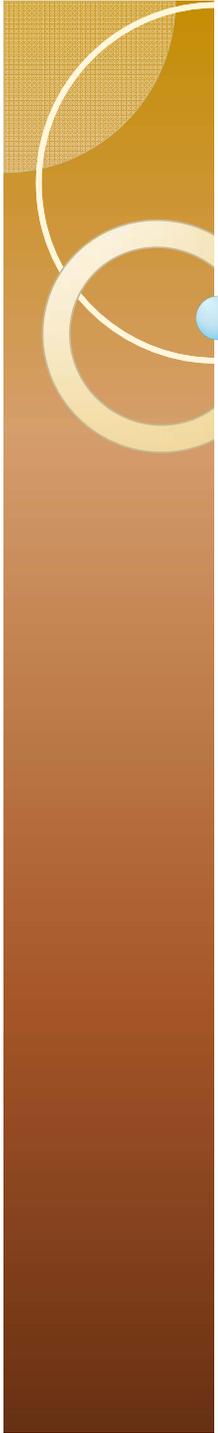
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# Current Employment

## 2009 Occupation Employment Level

Heating, Air Conditioning, and Refrigeration Mechanics and Installers (49-9021)				
Total Workforce	Current Employment	Indirect Employment		Net Job Growth
		Wide	Narrow	
Nebraska Statewide	2,197	8,074	3,680	239
Regions				
Omaha Consortium	941	3,756	1,874	102
Lincoln MSA	241	1,088	606	26
Southeast Region	44	179	91	5
Central Region	417	1,205	371	45
Mid Plains Region	159	497	179	17
Panhandle Region	131	391	129	14
Northeast Region	273	942	396	30

Source: NDOL Short-term Projections (2009), NDOL Green Job Estimates



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# Indirect Employment

- Related Occupations from O\*Net
- Current skill sets which overlap with green job skills
  - Calculated the percentage of overlap between the skill sets of each green occupation with the skill set of each of its related occupations
  - This analysis helps us determine a ranking of related occupations with respect to similar required skills for each green job
  - Individuals in occupations with the highest percentage overlap may be able to switch in to the respective green job more easily than other related occupations



# Indirect Employment

- Wide vs. narrow indirect employment
  - Wide includes SOC codes at decimal level
  - Narrow excludes SOC codes at decimal level
- Example: **Marine architects (17-2121.02)** is a related occupation to the green job civil engineers:
  - *Wide* estimate includes the NDOL Short Term Occupation Projection for 17-2121.00 (since 17-2121.02 is not listed)
    - Encompasses all related occupations defined by O\*Net, both at the whole number SOC level and a decimal place level.
    - This estimates at the total indirect employment at a maximum level given available NDOL data
  - *Narrow* estimate doesn't include marine architects in the total for indirect employment

# Indirect Employment

## 2009 Related Occupation Employment

<u>Carpenters (47-2031)</u>				
Total Workforce	Current Employment	Indirect Employment		Net Job Growth
		Wide	Narrow	
Nebraska Statewide	9,031	29,511	6,781	35
Regions				
Omaha Consortium	4,215	14,119	2,978	16
Lincoln MSA	1,900	5,220	1,000	7
Southeast Region	522	1,643	340	2
Central Region	964	3,428	945	4
Mid Plains Region	505	1,591	392	2
Panhandle Region	437	1,202	179	2
Northeast Region	855	2,716	640	3

Source: NDOL Short-term Projections (2009), NDOL Green Job Estimates

# Indirect Employment

## 2009 Related Occupation Employment

<u>Civil Engineers (17-2051)</u>				
Total Workforce	Current Employment	Indirect Employment		Net Job Growth
		Wide	Narrow	
Nebraska Statewide	1,805	2,489	2,248	156
Regions				
Omaha Consortium	1,069	1,063	985	92
Lincoln MSA	520	610	573	45
Southeast Region	40	50	41	3
Central Region	79	276	254	7
Mid Plains Region	34	68	64	3
Panhandle Region	21	66	62	2
Northeast Region	69	258	234	6

Source: NDOL Short-term Projections (2009), NDOL Green Job Estimates

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# Demand Estimates

- Data gathered through a survey conducted by NDOL-LMI
- Estimated net jobs added over the next two years by employers
- NDOL green estimates produced at state level
- Region estimates calculated by BBR

# Net Job Growth

## NDOL 2 year net growth estimates

Forest and Conservation Technicians (19-4093)				
Total Workforce	Current Employment	Indirect Employment		Net Job Growth
		Wide	Narrow	
Nebraska Statewide	299	(Unavailable)		19
Regions				
Omaha Consortium	97	(Unavailable)		6
Lincoln MSA	54	(Unavailable)		3
Southeast Region	11	(Unavailable)		1
Central Region	23	(Unavailable)		1
Mid Plains Region	55	(Unavailable)		3
Panhandle Region	50	(Unavailable)		3
Northeast Region	17	(Unavailable)		1

Source: NDOL Short-term Projections (2009), NDOL Green Job Estimates

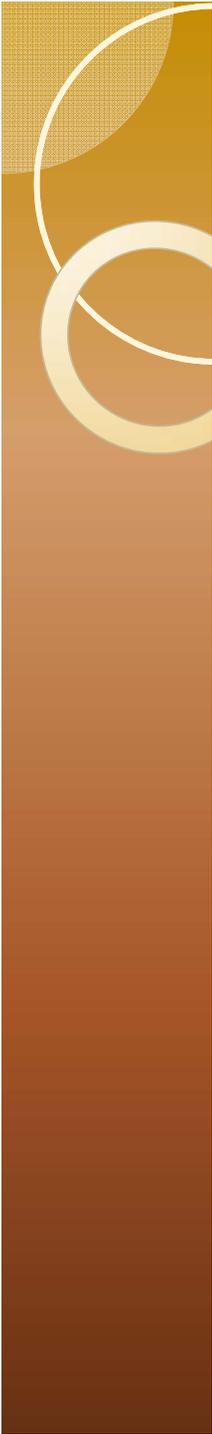
# Net Job Growth

## NDOL 2 year net growth estimates

<u>Electricians (47-2111)</u>				
Total Workforce	Current Employment	Indirect Employment		Net Job Growth
		Wide	Narrow	
Nebraska Statewide	5,325	3,282	2,745	140
Regions				
Omaha Consortium	2,680	1,507	1,284	70
Lincoln MSA	926	712	556	24
Southeast Region	219	288	265	6
Central Region	389	324	275	10
Mid Plains Region	208	257	219	5
Panhandle Region	171	161	146	4
Northeast Region	649	506	431	17

Source: NDOL Short-term Projections (2009), NDOL Green Job Estimates

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# Conclusion

- Results suggest that Nebraska has a substantial labor force to meet green job demand
- The current work force preparation system is succeeding in readying a workforce for future green occupations
  - Current programs include formal education and firm-training
- This implies potential for firm-led training and that training programs might focus on the green component rather than general skills of emerging green occupations



# What about people who need to search for a new kind of work?

- What characteristics made it more likely that workers would find work in a Green Occupation?
- We conducted a 2<sup>nd</sup> study - we looked specifically at displaced workers in hardest-hit industries like manufacturing, construction and related services



## Second study - Design

- Examined displaced workers from around the United States who lost their jobs during 2007 to 2009
- Current Population Survey (used to determine unemployment rates), special survey of displaced workers
- 9,100 displaced workers were surveyed
- 5,600 had complete information including previous occupation and new occupation



## Second study - Design

- Probability of Finding a Green Job as a Function of:
  - Gender, age, education, full/part-time, previous industry
- Two tests
  - Probability for workers who had a green occupation when displaced
  - Probability for workers who were in other occupations when displaced



## Second study – Findings

- Relative to other industries, displaced manufacturing, construction, or related service workers had as high or a higher likelihood of finding re-employment in a “green collar job”
- Displaced construction workers were more likely than manufacturing workers to find a green collar job



## Second study – Findings

- Even after accounting for industry, men were more likely to find a green collar job than women, especially married men
- Displaced college graduates were more likely than displaced high school graduates to find a green collar job
  - There was mixed evidence that community college graduates were more likely than high school graduates