



Assessing 'Green Jobs' in North Carolina

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Legislative Commission on Global Climate Change

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Outline

- Defining 'Green Jobs'
- Sampling of National Studies
- Overview of North Carolina Studies
- Policy Considerations
- Questions



Defining Green Jobs

United Nations – Green jobs are work in agricultural, manufacturing, research and development (R&D), administrative, and service activities that contribute substantially to preserving or restoring environmental quality.

Green For All – Green jobs also:

- pay a family or living wage and
- provide career advancement opportunities.

Sources: United Nations. *Green Jobs: Towards Decent Work in a Sustainable, Low-Carbon World*. 2008.
Green For All and Apollo Alliance. *Green Collar Jobs in America's Cities*. 2008.



Defining Green Jobs

Occupational Categories:

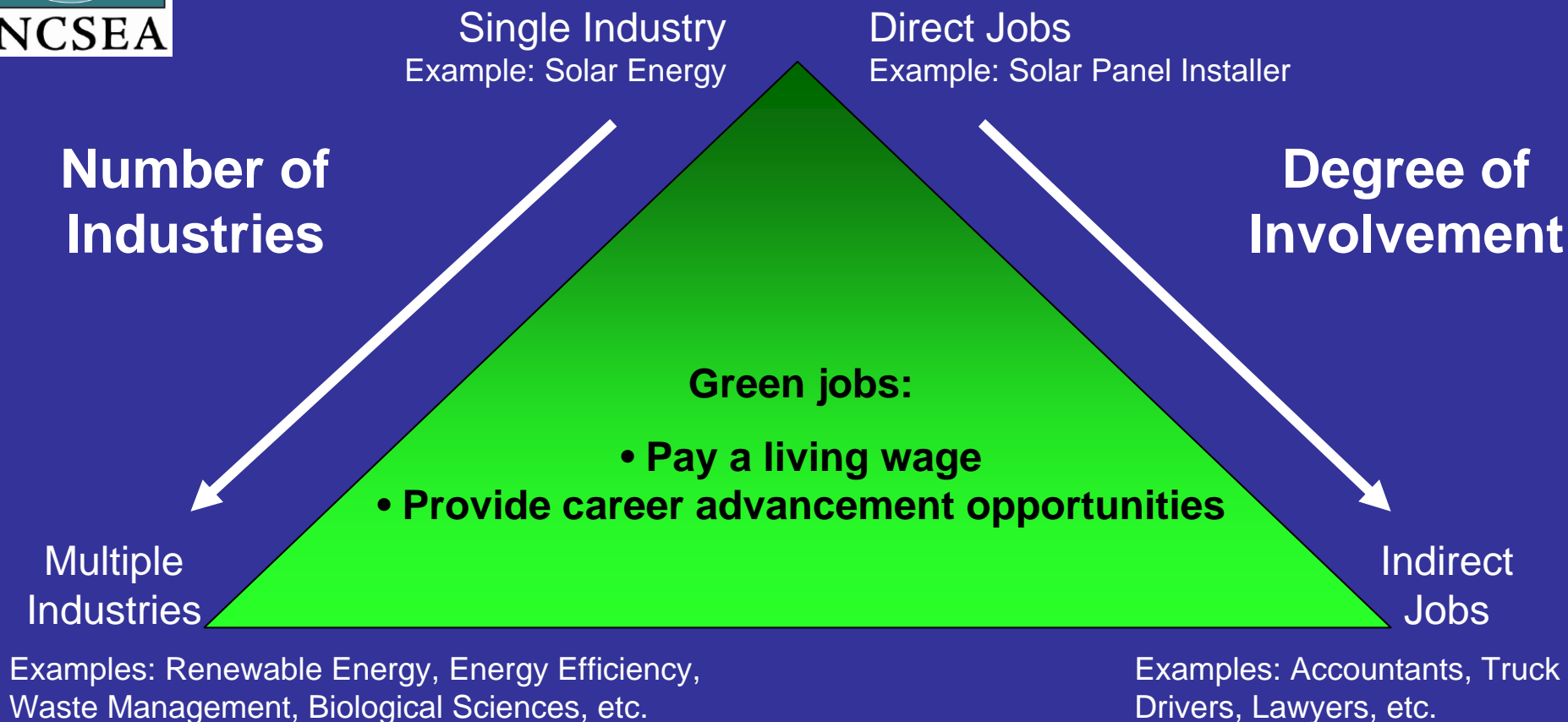
- Air Quality
- Emergency Preparedness & Response
- Energy Technologies & Services
- Environmental Information Management Systems
- Environmental Laboratory Services
- Environmental Site Management
- Natural Resource Management
- Safety & Health
- Solid & Hazardous Waste Management
- Wastewater Treatment
- Water Supply & Quality
- Sustainability

Source: Advanced Technology Environmental and Energy Center. *Defining Environmental Technology Report*. 2008.



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Defining Green Jobs



Source: North Carolina Sustainable Energy Association. *Renewable Energy and Energy Efficiency Industry Census 2008*.



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National Studies

US Conference of Mayors

Report: Green Jobs In US Metro Areas (October 2008)

American Solar Energy Society

Report: Renewable Energy and Energy Efficiency: Economic Drivers for the 21st Century (2007)

Center for American Progress

Report: Green Recovery: A Program to Create Good Jobs and Start Building a Low-Carbon Economy (September 2008)



National Studies

US Conference of Mayors Report: Green Jobs In US Metro Areas (October 2008)

Green Jobs – activities that generate electricity using renewable or nuclear fuels; includes manufacturing, equipment dealers, construction and installation, and supporting jobs.

Green Jobs by Major Category - U.S. Total (2006)

Renewable Power Generation	127,246
Agriculture and Forestry	57,546
Construction & Systems Installation	8,741
Manufacturing	60,699
Equipment Dealers & Wholesalers	6,205
Engineering, Legal, Research & Consulting	418,715
Government Administration	71,900
US Total	751,051
NC METRO AREAS	16,338

Source: US Conference of Mayors. *Green Jobs in US Metros Areas*. 2008



National Studies

US Conference of Mayors Report: Green Jobs In US Metro Areas (October 2008)

Forecast Assumptions – By 2038:

- 40% of electricity generated from solar, wind, geothermal, biomass, and incremental hydro
- 35% reduction in energy consumption in current stock of residential and commercial buildings
- 30% of gasoline and diesel demand for passenger cars and light trucks is satisfied by an alternative
- One indirect job is created for every two direct jobs

Potential New Green Jobs - US Total
2038 – 4.2 million jobs

Potential New Green Jobs – NC Metro Total
2038 – 129,260 jobs



National Studies

US Conference of Mayors
Report: Green Jobs In US Metro Areas (October 2008)

Select NC Metro Areas: Current and Potential Green Jobs

Metro Area	2006	2038
Asheville	452	3,574
Charlotte-Gastonia-Concord	1,932	15,285
Durham	5,645	44,663
Greensboro-High Point	764	6,044
Hickory-Lenoir-Morganton	206	1,630
Raleigh-Cary	3,315	26,226
Rocky Mount	166	1,315
Wilmington	297	2,353
Winston-Salem	867	6,857

Source: US Conference of Mayors. *Green Jobs in US Metros Areas*. 2008



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National Studies

American Solar Energy Society

Report: Renewable Energy and Energy Efficiency: Economic Drivers for the 21st Century (2007)

- Broader definition of green jobs
- 2006 – 8.5 million jobs in industry
- 2030 – Base Case: 16.2 million jobs
- 2030 – Advanced Scenario: 40 million jobs (1 in 4 workers)

Center for American Progress

Report: Green Recovery: A Program to Create Good Jobs and Start Building a Low-Carbon Economy (September 2008)

- \$100 billion invested over two years
- Six green infrastructure investment priorities: building retrofitting; mass transit and freight rail; smart grid; wind energy; solar energy; and advanced biofuel
- US – 2 million new jobs in 2 years
- NC – \$2.9 billion in investment / 62,015 new jobs



North Carolina Studies

NC Sustainable Energy Association
Report: Renewable Energy & Energy Efficiency Industry Census
2008 (November 2008)

Dr. Keith Debbage, UNC-Greensboro & IEI Faculty Fellow
Report: Renewable Energy in North Carolina: The Potential Supply
Chain (August 2008)

NC Sustainable Energy Association
Report: Economic Analysis of the North Carolina Renewable
Energy and Energy Efficiency Portfolio Standard (November 2008)



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NC Sustainable Energy Association

Report: Renewable Energy & Energy Efficiency Industry Census 2008

Type of Firm	Manufacturing		Non-Manufacturing		Totals	
	Number of Firms	Number of Jobs	Number of Firms	Number of Jobs	Number of Firms	Number of Jobs
Renewable Energy	8	77	20	70	28	147
Energy Efficiency and/or Demand Response	10	136	56	193	66	329
Renewable Energy & Energy Efficiency	11	1,310	56	358	67	1,668
Total	29	1,523	132	621	161	2,144

Source: NC Sustainable Energy Association. *Renewable Energy and Energy Efficiency Industry Census 2008*.

- Employment grew 18% since 2007
- Estimate over 6,400 jobs across industry in North Carolina
- Over 70% of jobs are with firms associated with manufacturing
- Industry Composition: majority of firms small, relatively new to industry



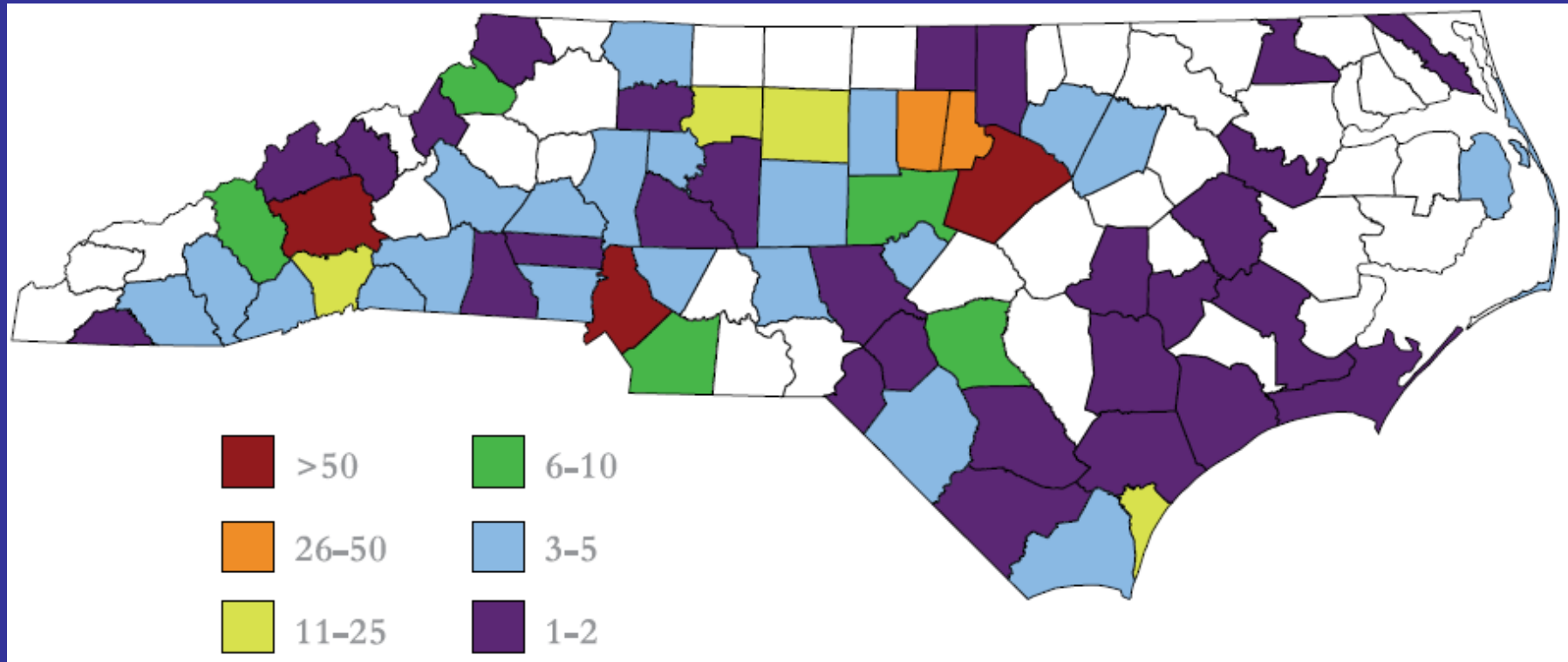
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Report: Renewable Energy & Energy Efficiency Industry Census 2008

Presence of Responding Firms by County



‘Presence’ refers to a HQs, manufacturing facility, satellite office, or remote employee

Source: NC Sustainable Energy Association. *Renewable Energy and Energy Efficiency Industry Census 2008.*



North Carolina Studies

Dr. Keith Debbage, UNC-Greensboro & Faculty Fellow, IEI
Report: Renewable Energy in North Carolina: The Potential Supply Chain

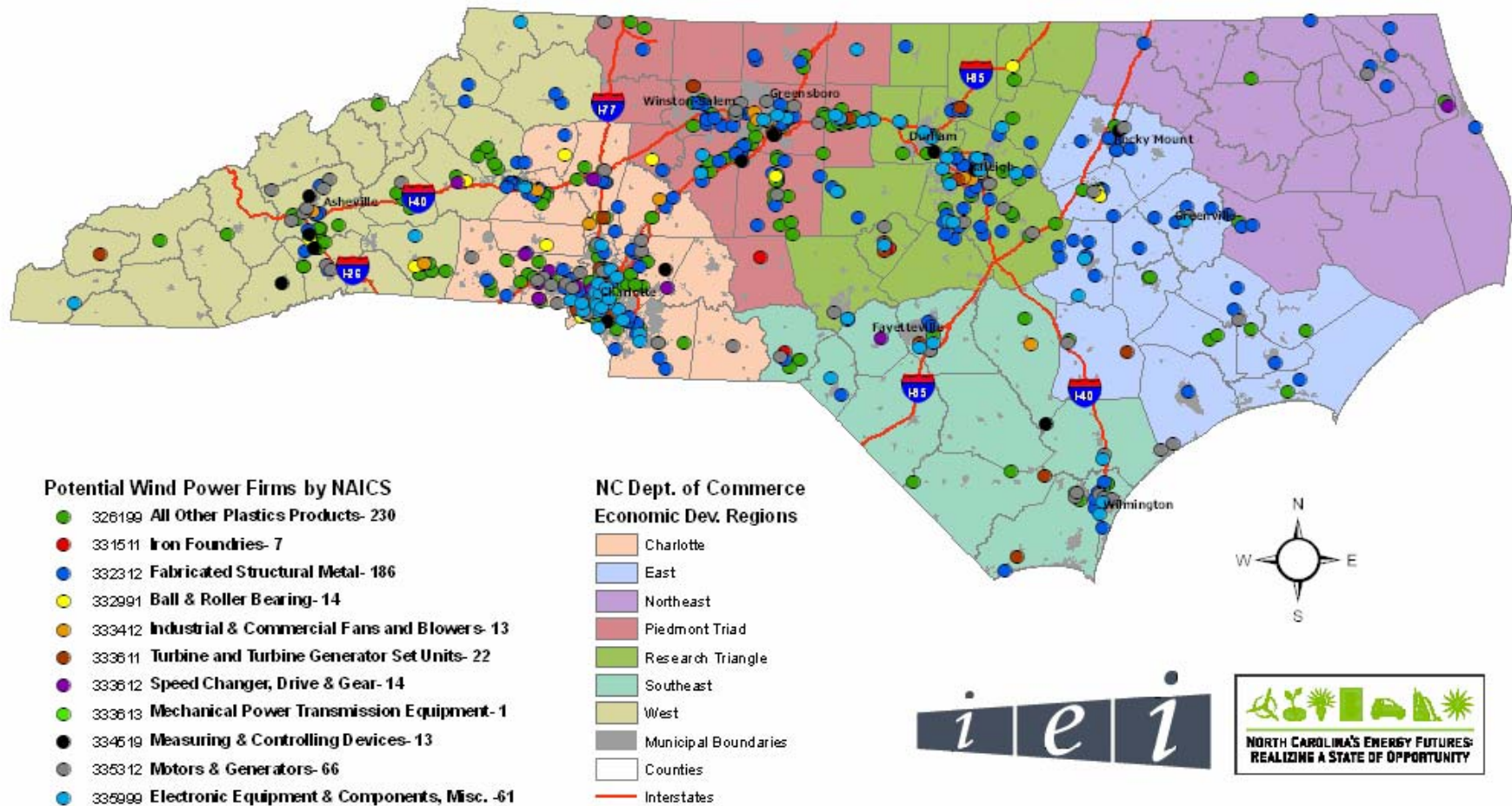
- Examined potential supply using North American Industrial Classification System (NAICS)
- Potential includes 1,300 firms employing just over 61,000 workers

	Number of Firms	Number of Employees
Wind	627	32,534
Solar	296	16,122
Biomass	509	20,925
Geothermal	98	4,287

Note: It is inappropriate to aggregate this data since some firms are listed for more than one of the renewable technologies.

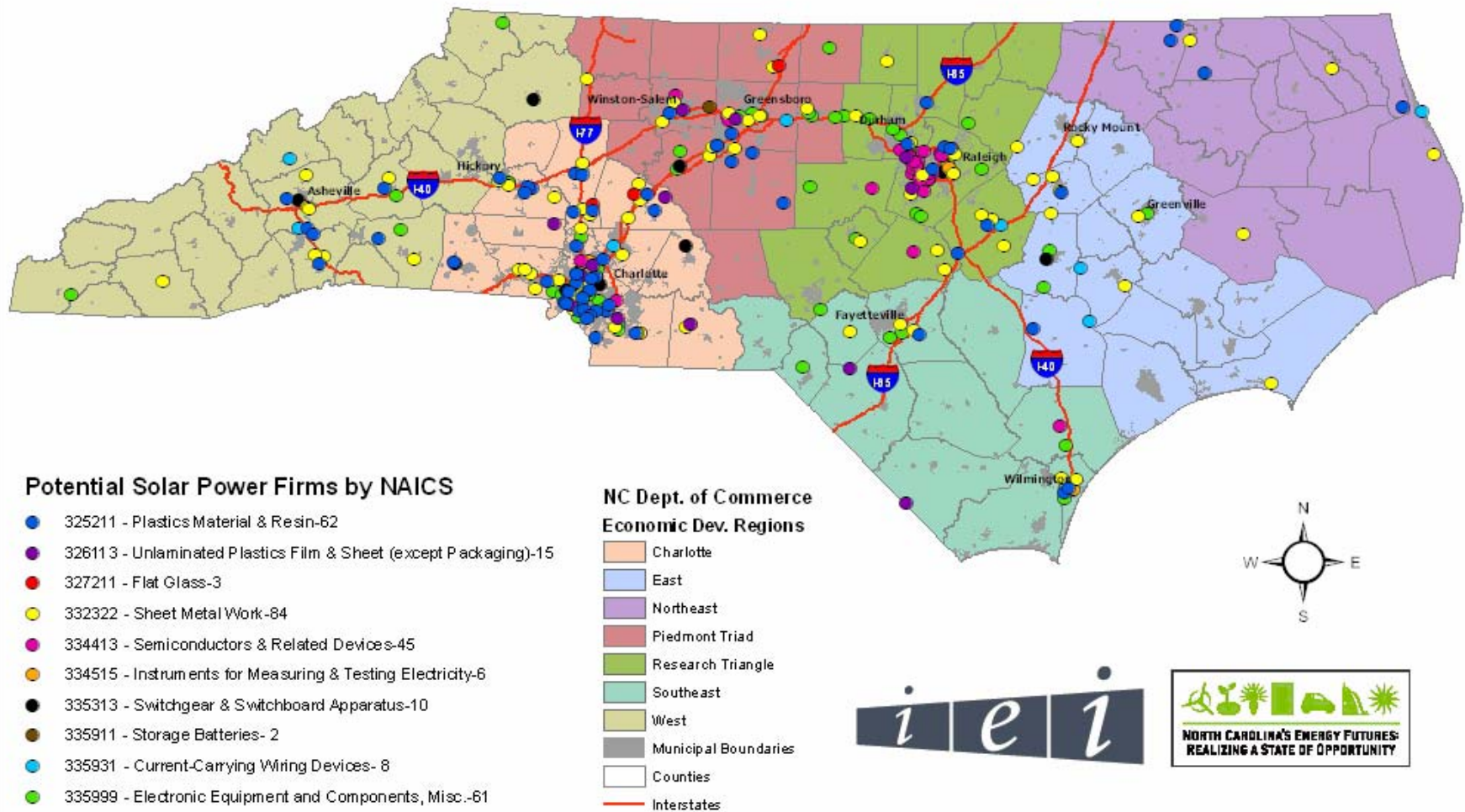
Wind Power: The Potential Supply Chain, 2008

627 Firms in North Carolina



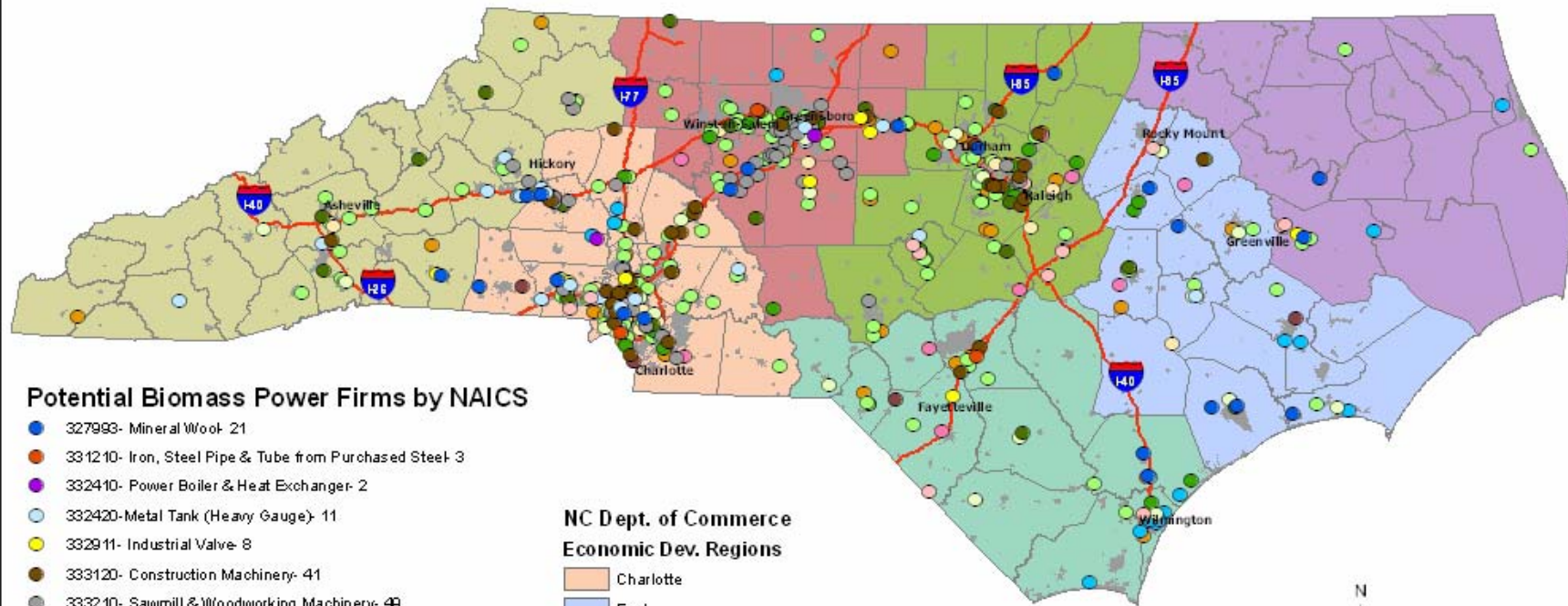
Solar Power: The Potential Supply Chain, 2008

296 Firms in North Carolina



Biomass: The Potential Supply Chain, 2008

509 Firms in North Carolina

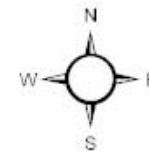


Potential Biomass Power Firms by NAICS

- 327993- Mineral Wool- 21
- 331210- Iron, Steel Pipe & Tube from Purchased Steel- 3
- 332410- Power Boiler & Heat Exchanger- 2
- 332420- Metal Tank (Heavy Gauge)- 11
- 332911- Industrial Valve- 8
- 333120- Construction Machinery- 41
- 333210- Sawmill & Woodworking Machinery- 49
- 333411- Air Purification Equipment- 15
- 333414- Heating Equipment (except Warm Air Furnaces)- 21
- 333415- AC, Warm Air Heating and Refrigeration Equipment- 29
- 333911- Pump & Pumping Equipment- 24
- 333912- Air & Gas Compressor- 8
- 333922- Conveyor & Conveying Equipment- 15
- 333923- Overhead Traveling Crane, Hoist & Monorail System- 21
- 333999- General Purpose Machinery, Misc.- 148
- 334513- Inst. for Measuring, Displaying, and Controlling- 11
- 335311- Power, Distribution, and Specialty Transformer- 16
- 335999- Electronic Equipment & Components, Misc.- 61
- 336510- Railroad Rolling Stock- 5

NC Dept. of Commerce Economic Dev. Regions

- Charlotte
- East
- Northeast
- Piedmont Triad
- Research Triangle
- Southeast
- West
- Municipal Boundaries
- Counties
- Interstates





North Carolina Studies

NC Sustainable Energy Association

Report: Economic Analysis of the North Carolina Renewable Energy and Energy Efficiency Portfolio Standard

- Prepared by La Capra Associates – examines direct, indirect, and induced jobs related to REPS compliance
- Over 4,000 jobs required to meet REPS compliance in 2021
- Majority of jobs in biomass (1,602 jobs), solar PV (859 jobs), wind energy (470) and energy efficiency (525 jobs)
- Conservative figure – does not capture jobs outside of REPS compliance (ex – LEED building)



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Policy Considerations

- 'Green jobs' is a broad term; programs and public policies need to be targeted.
- Significant employment and growth potential exists in the manufacturing sector.
- How can the state leverage federal stimulus funding?
- How can the state make long-term investments within current financial environment?
- How can the state ensure sufficient workforce training?
- How can the state engage individuals with barriers to employment?



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Questions

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