2018 ANNUAL MEETING

Advancing the Research Triangle’s Third Wave of Job Growth

featuring

David Foster, Distinguished Associate at the Energy Futures Initiative
Cleantech Commercialization Corridor: RTP ↔ Charlotte
Table Sponsors
RTCC Leadership

BOARD OF DIRECTORS

- ABB
- Duke Energy
- Honeywell
- Itron
- PowerSecure
- RTI International
- SAS
- Sensus (a Xylem brand)
- Trilliant

PROJECT PARTNER

- Chatham Park

LEADERSHIP

- Electric Cities of North Carolina, Inc.
- Smith Moore Leatherwood
- United States Environmental Protection Agency
- WRAL TechWire

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RTCC Members

Susan Sanford
Executive Director
Research Triangle Cleantech Cluster
MISSION
The Research Triangle Cleantech Cluster (RTCC) is an industry-led initiative of business, government, and academic leaders focused on accelerating the Research Triangle region’s cleantech economy.
2012-18 Cleantech Employment, Research Triangle Region

- Fastest growing targeted cluster among Ag Tech, Tech, Life Sciences, Advanced Manufacturing, and Logistics
- 24.4% growth rate over 5 years
- National 5-year growth rate of 6.7%

*100 = 2012 Levels  Data from RTRP
Regional Cleantech Growth

- 2nd-Fastest Growing Cluster in the U.S.
- 26,950 Cleantech Jobs
- #1 Cleantech Patents per Million Residents
- 1,859 Cleantech Companies
- $1.6B Annual Recurring Impact
Accelerating Growth: 301 new jobs
Creating Partnerships
Capturing Investment
Creating Jobs and Connecting Communities
Educator Immersion Day
Connecting Students to Careers
Thought Leadership
Stories of Innovation
SMART Series
Marketplace: Chatham Park
Membership Development
RTCC Membership Diversification

- **Municipality**: 5.50%
- **Professional Services**: 9.20%
- **Academic**: 9.30%
- **Leadership**: 1.80%
- **Board of Directors**: 16.60%
- **Entrepreneurs**: 18.50%
- **Industry**: 25.90%
- **Partner**: 1.80%
2019: Get Involved

• **NOV. 13-15**: Smart Cities Expo World Congress, Barcelona

• **2019**: Cleantech Corridor launch

• **Feb. 5-7, 2019**: DistribuTECH

• Programs and Communications Committee

• Talent Action Committee
David Foster
Distinguished Associate
Energy Futures Initiative

--A Joint Project of the National Association of State Energy Officials and the Energy Futures Initiative

Presentation for:
Research Triangle Cleantech Cluster
David Foster, Distinguished Associate
September 20, 2018
• U.S. solar jobs, Q3, 2017—2,848.
• North Carolina, Q3, 2017—163.
• 2017 U.S. solar jobs—349,725 (250,271 more than 50%).
• 2017 N.C. solar jobs—9,173 (7,622 more than 50%).
How Is the USEER Survey Administered?

• A national supplemental survey that tracks existing BLS QCEW data
  • QCEW is compiled from unemployment records collected at the state level and then aggregated into 1,057 industry sectors using the North American Industrial Classification System (NAICS)
  • The survey is administered to a representative sample of 30,000 employers by phone and internet out of a data base of 380,000 employers. Results are integrated with QCEW data.

• Analyzes four sectors
  1. Electric Power Generation and Fuels Production
  2. Electric Power and Fuels Transmission, Distribution and Storage
  3. Energy Efficiency
  4. Motor Vehicles
### Electric Power Generation:
#### National

<table>
<thead>
<tr>
<th>Fuel Source</th>
<th>QCEW-BLS</th>
<th>2018 USEER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fossil fuels</td>
<td>92,817</td>
<td>212,669</td>
</tr>
<tr>
<td>Nuclear</td>
<td>44,753</td>
<td>64,743</td>
</tr>
<tr>
<td>Wind</td>
<td>6,050</td>
<td>107,444</td>
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<tr>
<td>Solar</td>
<td>2,848</td>
<td>349,725</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(250,271)</td>
</tr>
<tr>
<td>CHP</td>
<td>1,649</td>
<td>27,239</td>
</tr>
<tr>
<td>Hydro</td>
<td>17,501</td>
<td>66,872</td>
</tr>
<tr>
<td>Geothermal</td>
<td>1,117</td>
<td>7,927</td>
</tr>
<tr>
<td>Biomass</td>
<td>1,693</td>
<td>12,385</td>
</tr>
</tbody>
</table>

### Electric Power Generation:
#### North Carolina

<table>
<thead>
<tr>
<th>Fuel Source</th>
<th>QCEW-BLS</th>
<th>2018 USEER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fossil fuels</td>
<td>n/a*</td>
<td>5,324</td>
</tr>
<tr>
<td>Nuclear</td>
<td>n/a*</td>
<td>1,697</td>
</tr>
<tr>
<td>Wind</td>
<td>n/a*</td>
<td>759</td>
</tr>
<tr>
<td>Solar</td>
<td>163</td>
<td>9,173</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(7,622)</td>
</tr>
<tr>
<td>CHP</td>
<td>n/a*</td>
<td>n/a</td>
</tr>
<tr>
<td>Hydro</td>
<td>60</td>
<td>551</td>
</tr>
<tr>
<td>Geothermal</td>
<td>n/a*</td>
<td>344</td>
</tr>
<tr>
<td>Biomass</td>
<td>61</td>
<td>1,528</td>
</tr>
</tbody>
</table>

*The federal government is required to suppress data when it would reveal an employer’s identity.
“Energy Efficiency employment is defined as the production or installation of energy efficiency products certified by the Environmental Protection Agency (EPA) ENERGY STAR program or installed pursuant to the ENERGY STAR program guidelines or supporting services.”
2.25 million people work, in whole or part, with Energy Efficiency technologies, a net increase of 67,000.*

• 1.274 million of these jobs are in construction, a decline of almost 100K.  
  • However, the intensity of energy efficiency construction businesses has increased with 80.3% reporting that their employees now spend the majority of their time working with these technologies, up from 74% in 2016.  
  • As a result, 1,024,000 construction employees spend a majority of their time on EE than in 2016, an increase of 6,500.

• 450,000 Americans are employed in Energy Efficiency business and professional services, an increase of 63K.

• 315,000 Americans manufacture Energy Star products, an increase of 26K.

*This number does not include jobs in retail trade, such as hardware stores, big box appliance stores, etc.
<table>
<thead>
<tr>
<th>Electric Power Gen.</th>
<th>Fuels Production</th>
<th>Trans, Dist., Storage</th>
<th>Energy Efficiency</th>
<th>Motor Vehicles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar Photovoltaics</td>
<td>Coal</td>
<td>Traditional T &amp; D</td>
<td>Energy Star Appliance</td>
<td>Gasoline &amp; Diesel</td>
</tr>
<tr>
<td>Wind</td>
<td>Petroleum</td>
<td>Pumped Hydro</td>
<td>Efficient Lighting</td>
<td>Hybrid Electric</td>
</tr>
<tr>
<td>Geothermal</td>
<td>Natural Gas</td>
<td>Battery Storage</td>
<td>Traditional HVAC</td>
<td>Plug-in Hybrid</td>
</tr>
<tr>
<td>Bioenergy/Biomass</td>
<td>Other Fossil Fuels</td>
<td>Other Storage</td>
<td>Energy Star HVAC</td>
<td>All Electric</td>
</tr>
<tr>
<td>Low Impact Hydro</td>
<td>Corn Ethanol</td>
<td>Smart Grid</td>
<td>Renewable HVAC</td>
<td>Natural Gas</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>Woody Biomass</td>
<td>Other Modernizing</td>
<td>Recycled Build. Mat.</td>
<td>Fuel Cell</td>
</tr>
<tr>
<td>Advanced Gas</td>
<td>Other Biofuels</td>
<td></td>
<td>Reduced H2O</td>
<td></td>
</tr>
<tr>
<td>Nuclear</td>
<td>Nuclear Fuels</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Petroleum/Oil</td>
<td></td>
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</tr>
<tr>
<td>CHP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
North Carolina’s Energy Jobs’ Profile

Figure NC-1.
Employment by Major Energy Technology Application

- Electric Power Generation: 19,780
- Fuels: 7,209
- Transmission, Distribution, and Storage: 25,046
- Energy Efficiency: 84,020
- Motor Vehicles: 69,122
N.C. Low Carbon Generation and Fuels Jobs

Low Carbon Generation and Fuels Employment—17,661 Jobs

- Solar Electric Generation: 9,173
- Wind Electric Generation: 759
- Traditional Hydroelectric Generation: 551
- Low Impact Hydro: 377
- Geothermal: 344
- Bioenergy: 1,528
- Advanced Natural Gas: 1,017
- Nuclear: 1,697
- Corn Ethanol: 316
- Other Ethanol: 1033
- Biomass Fuels: 866

Total: 17,661 Jobs
Figure NC-8.

Energy Efficiency Employment by Detailed Technology Application

- Energy Star & Efficient Lighting: 42,223
- Traditional HVAC: 19,588
- High Efficiency & Renewable Heating & Cooling: 11,445
- Advanced Materials and Insulation: 5,885
- Other: 4,878
Figure NC-9.
Energy Efficiency Employment by Industry Sector

- Construction: 37,435
- Manufacturing: 14,401
- Trade: 4,854
- Professional Services: 26,030
- Other Services: 1,301
## N.C. Energy Efficiency Jobs by Intensity

<table>
<thead>
<tr>
<th>State</th>
<th>Total EE Jobs</th>
<th>Jobs w/ over 50% of Time</th>
<th>Percentage over 50%</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Carolina</td>
<td>84,020</td>
<td>48,964</td>
<td>58.3%</td>
</tr>
<tr>
<td>Tennessee</td>
<td>51,629</td>
<td>29,642</td>
<td>57.4%</td>
</tr>
<tr>
<td>Virginia</td>
<td>76,621</td>
<td>40,609</td>
<td>53.0%</td>
</tr>
<tr>
<td>South Carolina</td>
<td>29,286</td>
<td>14,806</td>
<td>50.6%</td>
</tr>
</tbody>
</table>
Raleigh-Durham-Chapel Hill MSA

• 29,118 Clean Tech Jobs.
• 26.7% of total North Carolina Clean Tech employment.
• But only 24.5% of total North Carolina employment.
• And only 23.5% of the state’s population.
• Outperforming the rest of the state by 2.2 percentage points, a 10% advantage.
David Foster
Distinguished Associate
Energy Futures Initiative
Charlie Nobles
Marketing Director,
Lighting Solutions
Sensus
Michael McGann
Vice President,
Sensus Americas
Panel: Talent

Suzanne Walden  
External Talent Programs, ABB

Dana Davis  
HR Director, NC Electric Cooperatives

Ryan Chan  
Co-Founder, Tethis
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