



## Renewable Energy and Brownfields in North Carolina

### Introduction

Renewable energy is the key to America's economic prosperity and energy future. Improvement of technologies and growing public support for renewables are spurring the industry to unprecedented levels of development.

One of the most promising ideas for expanding renewable energy is to clean up and re-use brownfield sites for renewable energy generation facilities. Because they are underused, abundant, and often close to load, contaminated lands have tremendous potential for renewable energy development in all fifty states.

Leading the nation in the green revolution is the state of North Carolina. The state has tremendous utility-scale wind power resources along its coasts and in the western parts of the state,<sup>1</sup> and the Solar Center at North Carolina State University is one of the top research institutions for advancing innovative solar technologies. One of the state's major accomplishments in the renewables arena has been its Renewable Portfolio Standard of 12.5% renewables by 2021 for investor-owned utilities and 10% by 2018 for electric cooperatives and municipal utilities.<sup>2</sup> North Carolina has a great opportunity to design innovative programs to achieve its renewable energy goals, and brownfields re-development can be a part of the process.

### Brownfields

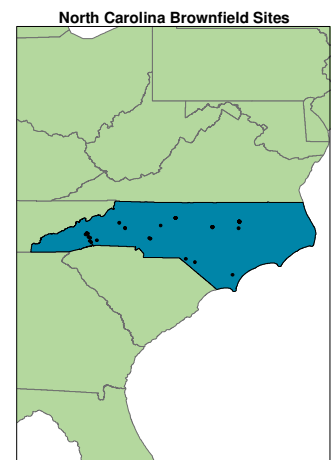
The term "brownfield" is used to describe an area that has been used for industrial purposes but has been contaminated by a hazardous substance.<sup>3</sup> They are commonly old industrial sites, former military bases, and marginal agricultural land which would otherwise lay dormant and contaminated. Development on brownfields leaves "greenfields" open for other uses such as recreation and ecosystem protection. There are more than 450,000 brownfields in the U.S., and while the exact number in North Carolina is difficult to estimate, it is believed that there are tens of thousands of sites.<sup>4</sup>

### North Carolina Potential

The U.S. Environmental Protection Agency has determined that nearly 4,100 brownfield sites have potential for renewable energy development.<sup>5</sup> The RE-Powering America's Land Initiative found that in North Carolina, there are approximately 56 brownfield sites with renewable energy potential in the vicinities of Pembroke, Farmville, Asheville, Navassa, Laurinburg, Arden, Fletcher, Raleigh, Greensboro, Concord, Hendersonville, Lenoir, Hickory, Swannacoa, and Lexington.

### North Carolina Case Study

As part of former Secretary of Energy Bill Richardson's Brightfields Initiative, in 2004 Carolina Solar Energy and North Carolina State University identified a prime site for a brownfield redevelopment project on the university's campus in Raleigh.<sup>6</sup> Over three years, "Lot 86," where the university's laboratory waste was formerly deposited, became the site of an operating a 75.6 KW PV solar generation project.<sup>7</sup>



<sup>1</sup> See U.S. Department of Energy National Renewable Resources Laboratory. "North Carolina - 50 m Wind Resources Map." [http://www.windpoweringamerica.gov/images/windmaps/nc\\_50m\\_800.jpg](http://www.windpoweringamerica.gov/images/windmaps/nc_50m_800.jpg)

<sup>2</sup> Database of State Incentives for Renewables and Efficiency. "North Carolina Incentives for Renewables and Efficiency." March 2009.

[http://www.dsireusa.org/library/includes/incentive2.cfm?Incentive\\_Code=NC09R&state=NC&CurrentPageID=1&RE=1&EE=1](http://www.dsireusa.org/library/includes/incentive2.cfm?Incentive_Code=NC09R&state=NC&CurrentPageID=1&RE=1&EE=1)

<sup>3</sup> See full Environmental Protection Agency definition here: <http://www.epa.gov/swerosps/bf/>

<sup>4</sup> "Program FAQ" North Carolina Department of Environment and Natural Resources. [http://www.ncbrownfields.org/program\\_faq.asp](http://www.ncbrownfields.org/program_faq.asp)

<sup>5</sup> See "Mapping Data Excel File" at Environmental Protection Agency. "Maps and Incentive Sheets." [http://www.epa.gov/renewableenergyland/maps\\_incentives.htm](http://www.epa.gov/renewableenergyland/maps_incentives.htm)

<sup>6</sup> U.S. Department of Energy. "Solar 'Brownfield' to Brightfields' Technology Demonstration." December 2006. [http://apps1.eere.energy.gov/state\\_energy\\_program/project\\_detail.cfm/sp\\_id=767](http://apps1.eere.energy.gov/state_energy_program/project_detail.cfm/sp_id=767)

<sup>7</sup> "CSE Projects - North Carolina State University." Carolina Solar Energy. [http://www.carolinassolarenergy.com/ncsu\\_project.html](http://www.carolinassolarenergy.com/ncsu_project.html)