

# REPD: Renewable Energy Project Development 2024

## COURSE DESCRIPTION

The goal of the 40-hour Renewable Energy Project Development (REPD) course is to provide a sound foundation regarding existing renewable energy technology applications, solar fundamentals, and the business aspects of project development. Additionally, the course will delve into the policies that currently dictate the market, the financial models involved in funding a project, and what considerations need to be made when developing a project.

This nine-week course includes live and pre-recorded webinars and assignments completed virtually. Participants are required to submit 2 project summaries, respond to 2 classmates' summaries, and a final project report to successfully complete the course.

## WHO SHOULD ATTEND THIS COURSE

- Project Developers
- Lawyers
- Environmental Non-profits
- Financial Professionals
- Commercial Realtors
- Code Officials
- Planning Boards and Staff
- Professional Engineers
- Energy Professionals
- Zoning Officials
- County Managers and Staff
- Economic Development Community Leaders
- Renewable Energy Management Professionals
- Individuals interested in Renewable Energy Management and Development

## CONTINUING EDUCATION INFORMATION FOR 2024

- 25 PDHs for North Carolina Professional Engineers and Land Surveyors, approved by the NC Board of Examiners for Professional Engineers and Land Surveyors (NCBELS)
- 40 LU|HSW for Registered Architects, approved by the American Institute of Architects (AIA), course code REPD2024
- This course is approved by the North American Board of Certified Energy Practitioners (NABCEP) for initial exam application JTA credits and recertification credits. For more information about approved credits, visit the [course listing](#).

## COURSE SCHEDULE

A week runs from Sunday at 12:00 am ET to Saturday at 11:59 pm ET. Each week, the topics, presentations, and independent progress toward the final project should result in approximately 3-5 hours of dedicated effort in the class.

Module	Topic	Assignments
Week 1	<b>1.1 Course Introduction (Live Webinar – 60 minutes)</b> <ul style="list-style-type: none"> <li>● Classmate Introductions</li> <li>● Review of Syllabus, Expectations, Final Project and Assignments</li> <li>● Module Quizzes and Surveys</li> </ul>	<b>Review:</b> <ul style="list-style-type: none"> <li>● Course Syllabus</li> <li>● Expectations</li> <li>● Course Deliverables</li> </ul>
	<b>1.2 Overview of Renewable Energy Technology and Project Development, Bob Kingery, Southern Energy Management (Recorded - 90 minutes)</b> <ul style="list-style-type: none"> <li>● Understand the global, national, and local trends in energy</li> <li>● Definition of renewable energy technologies in NC Law:</li> <li>● Photovoltaic (PV) technical review</li> <li>● How to site a project, choose the technology, and which products to install</li> <li>● Common technical issues with renewable energy technologies</li> </ul>	<b>Start thinking about what project you want to explore for your final project report</b>
Week 2	<b>2.1 Practical Aspects of Renewable Energy Project Development, Cullen Morris, Headwater Energy (Live Webinar - 180 minutes)</b> <ul style="list-style-type: none"> <li>● What should developers be thinking of when putting together a renewable project?</li> <li>● Who are the players and what are their roles?</li> <li>● How do developers put it all together?</li> </ul>	
Week 3	<b>3.1 Offshore Wind Energy in North Carolina, Karly Lohan, Southeastern Wind Coalition (Recorded - 35 minutes)</b> <ul style="list-style-type: none"> <li>● Understand the history and evolution of offshore wind</li> <li>● What is driving offshore wind development</li> <li>● The state policies impacting offshore wind in NC</li> <li>● The advantages, opportunities, and barriers of offshore wind in NC</li> <li>● Understand the offshore wind permitting process</li> <li>● The types of ocean users and how to mitigate impacts to their use</li> <li>● Current offshore wind projects in North Carolina</li> </ul>	

	<p><b>3.2 Bioenergy Through Organic Waste Harvesting, Gus Simmons, Cavanaugh Solutions (Recorded - 48 minutes)</b></p> <ul style="list-style-type: none"> <li>• Ability to articulate bioenergy definition and terminology</li> <li>• Understand the biogas and bioenergy industry drivers</li> <li>• Understand state policies that are impacting the biogas industry in North Carolina</li> <li>• What are the innovations and who are the innovators who are changing the biogas industry</li> <li>• Ability to identify buyers of bioenergy</li> <li>• Understand the new and emerging markets in bioenergy</li> </ul>	<p><b>Assignment: Project Summary Part 1</b></p>
<p><b>Week 4</b></p>	<p><b>4.1 NC Clean Energy Fund and Green Banks, Melissa Malkin-Weber and Jen Weiss, NC Clean Energy Fund (Recorded - 35 minutes)</b></p> <ul style="list-style-type: none"> <li>• What are green banks?</li> <li>• How do green banks fill market gaps?</li> <li>• What barriers do green banks help to overcome?</li> <li>• What is The North Carolina Clean Energy Fund?</li> <li>• What products and resources does The North Carolina Clean Energy Fund provide?</li> <li>• Examples of current programs</li> <li>• What are lenders thinking when evaluating a renewable energy project?</li> <li>• Walk through the financial evaluation of an example solar project</li> <li>• Solar For All and EnergizeNC Opportunities</li> </ul>	<p><b>Assignment: Respond to classmate's Summary Part 1</b></p>
	<p><b>4.2.1 Renewable Energy Project Financial Modeling, Thomas Pash, CohnReznick, LLP (Recorded - 60 minutes)</b></p> <ul style="list-style-type: none"> <li>• Learn the basics of financial modeling for utility-scale solar projects</li> <li>• Understand tax credit structures are calculated in financial models</li> </ul>	
	<p><b>4.2.2 Renewable Energy Project Financing, Thomas Pash, CohnReznick, LLP (Live Webinar - 90 minutes)</b></p> <ul style="list-style-type: none"> <li>• Ability to understand and utilize tax and financial terminology</li> <li>• Discuss multiple tax credit structures</li> <li>• Understand how policies and incentives drive the solar market</li> </ul> <p><b>Additional 30 minutes (Optional):</b> Thomas will stay on the webinar to answer any questions you have about the financial modeling in Excel. Jen Weiss and Melissa Malkin-Weber will also be available to answer any questions from their presentation.</p>	

<p><b>Week 5</b></p>	<p><b>5.1 Renewable Energy Policies, Brian Lips, NCCETC (Recorded - 90 minutes)</b></p> <ul style="list-style-type: none"> <li>● Putting renewable energy in context</li> <li>● Introduction to public policy</li> <li>● Snapshot of international policies</li> <li>● Types of energy policies</li> <li>● Learn what to expect in the local permitting process, including paperwork, community issues, and dealing with local courts</li> </ul>	
	<p><b>5.2 Permitting, Contracts, &amp; Zoning Considerations, Benjamin Snowden, Fox Rothchild LLP (Recorded - 60 minutes)</b></p> <ul style="list-style-type: none"> <li>● Understand what permits at the local, state, and federal level are needed for a renewable energy project</li> <li>● Understand common contracts involved in a renewable energy project, what clauses should be included, what to avoid, and common mistakes</li> <li>● Learn about the various zoning types and their differences, and associated implications</li> </ul>	
<p><b>Week 6</b></p>	<p><b>6.1 NC Utility Commission's Role in Managing Renewable Energy in North Carolina, Jay Lucas, NC Utility Commission Public Staff (Recorded - 23 minutes)</b></p> <ul style="list-style-type: none"> <li>● Understand what the NC Utilities Commission and Public Staff are, who they serve, and who they protect</li> <li>● Understand what NC legislation pertains to renewable energy and the Utilities Commission's role</li> <li>● The filing procedures for renewable energy systems in North Carolina</li> <li>● Learn about the common mistakes people make when filing forms with the NCUC</li> <li>● Understand the difference between Report of Proposed Construction (ROPC), Certificate of Public Convenience and Necessity (CPCN), and Registration Statement</li> </ul>	<p><b>Assignment: Project Summary - Part 2</b></p>
	<p><b>6.2 Understanding the Utility, John Gajda, Duke Energy (Recorded - 38 minutes)</b></p> <ul style="list-style-type: none"> <li>● Understand the different electric utility organizations, market structures, and regulatory regimes</li> <li>● Understand the Integrated Resource Planning process and outcomes for investor-owned utilities</li> <li>● Understand utility rate making policy and processes</li> <li>● Understand how policies, programs, and processes affect utility decision-making regarding renewables</li> </ul>	

<b>Week 7</b>	<p><b>7.1 Principles of Low-Impact Solar Siting &amp; Design, Liz Kalies, The Nature Conservancy (Recorded - 39 minutes)</b></p> <ul style="list-style-type: none"> <li>• Understand how climate change, habitat loss, and biodiversity impact one another</li> <li>• Understand the three steps of the mitigation hierarchy for development</li> <li>• Understand how to evaluate adaptive management, landscape arrangement, and wildlife passageways when siting and constructing a solar facility</li> <li>• Understand the wildlife passageway design principles</li> <li>• Identify the different types of animal movement and how these can impact siting and design of a project</li> </ul>	<b>Assignment: Respond to classmate's Summary Part 2</b>
	<p><b>7.2 Grazing for Vegetation Management in Solar Sites, Andrew Weaver, NC State University, Johnny Rogers, NC State University, Cameron Maierle, American Lamb Board (Recorded - 38 minutes)</b></p> <ul style="list-style-type: none"> <li>• Learn about the benefits of biological land management for grazers, solar developers, and communities</li> <li>• Understand the benefits challenges of having sheep on solar sites</li> <li>• Understand how grazers manage vegetation on solar sites</li> <li>• Understand how dogs are utilized on solar grazing sites</li> </ul>	
<b>Week 8</b>	<p><b>8.1 Pollinator-Friendly Solar (Recorded - 60 minutes)</b></p> <ul style="list-style-type: none"> <li>• The contributions of pollinators to agriculture and the urgency for accelerated development of habitat</li> <li>• How pollinator-friendly solar sites can provide significant benefits to agriculture, the environment, business, and solar developer</li> <li>• Low-impact solar development approaches resulting in net savings for solar developers</li> <li>• Solar and agriculture co-location dual outputs and benefits</li> <li>• The economics of pollinator-friendly solar practices</li> <li>• Solar site design and operation and maintenance considerations</li> </ul>	
	<p><b>8.2 Drone Utilization in Renewable Energy, Dr. Kuldeep Rawat, Elizabeth City State University (Recorded - 60 minutes)</b></p> <ul style="list-style-type: none"> <li>• History of drone technology</li> <li>• How drones are currently utilized</li> <li>• Drone use for maintenance of renewable energy projects</li> </ul>	
<b>Week 9</b>	<p><b>Work on final report</b></p> <ul style="list-style-type: none"> <li>• Analyze feedback received from classmates and course administrator on project summaries</li> <li>• Incorporate feedback into final report</li> <li>• Include supplemental photos, graphs, diagram, and financial tables</li> </ul>	<b>Assignment: Submit Final Project Report</b>

## Course Deliverable and Final Report Criteria

Completing the Renewable Energy Project Development (REPD) course requires submitting the following items:

- Submitting Quiz Responses for Each Lecture
- 2 Project Summaries that will help to build the final project report
- 1 Response to a classmate's Summary Part 1
- 1 Response to a classmate's Summary Part 2
- A final 10-page written report of a renewable energy project.

### Final Report Components:

The goal of your project is to be able to connect what you have learned through the course with your interests outside of the classroom. Your final report should demonstrate that you have a firm understanding of the project development process as well as how to deal with obstacles that may arise from customers, stakeholders, and the public. The two project summaries help to make up the final report. The final report should be 8-10 pages long. The final report should include:

1. Executive Summary
2. Scope of the project: The type of technology(ies) being utilized. If multiple locations on the site can be used, a comparison of the locations and the pros/cons for each.
3. Identify the location of the project; the customer, and the utility provider.
4. What is the load and size of the renewable energy system?
5. Reasons for adding renewable energy at this site?
6. What needs are being met by the development of the project?
7. If this were a real project, what is the timeline for all the activities and requirements to develop and complete the project?
8. Identify what types of permits are needed and from what entities.
9. Considerations for how receptive the customer/end-user is to the project (reference comments from classmates).
10. Considerations of how the public is receptive to the project.
11. What natural habitats have been considered and how have they been addressed?
12. What kind of plan needs to be created for operation and maintenance? Are there any technologies that can/should be utilized as an option in this plan/schedule?
13. Potential pain points from customers, stakeholders, and/or the public and how you plan to mitigate or alleviate these concerns?
14. A financials section that details how the project could make a profit (what year will it turn a profit?) or operate sustainably.
15. Any outstanding questions or variables that would require additional investigation, planning, or consideration?