UNC CHARLOTTE
The WILLIAM STATES LEE COLLEGE of ENGINEERING

Senior Design Project Description

Company Name	Duke Energy	Date Submitted	7/27/18
Project Title	Blockchain P2P Trading (DUKE_BLOCK)	Planned Starting Semester	August 2018

Personnel

Typical teams will have 4-6 students, with engineering disciplines assigned based
on the anticipated Scope of the Project. 250 hours are expected per person.
Complete the following table if this information is known, otherwise the Senior
Design Committee will develop based on the project scope:

Discipline	Number	Discipline	Number
Mechanical		Electrical	2
Computer	2	Systems	
Other ( )			

Company and Project Overview:

Duke Energy is exploring several use cases that will leverage Blockchain software. For this project, the primary focus will be to develop a peer-to-peer (P2P) Blockchain platform for facilitating energy transactions between residential and commercial customers. The proof of concept (PoC) will be designed using IoT devices and PCs. The development of the software will be designed with expectations to be leverage for future use cases. The software will be able to securely and efficiently process and manage smart contracts, transaction validation and currency exchange. The developed system will be tested in the lab environment and will be potentially deployed in the utility industry by Duke Energy.

Project Requirements:

The P2P use case requirements:
- Establish Smart Contracts to facilitate energy trading
- Create a transaction validation model
- Develop a secure currency exchange channel

Expected Deliverables/Results:

- *Creation of Smart of Contracts amongst two or more entities*
- *Validation report that shows the data for energy transmitted*
- *Completed currency exchange amongst two or more entities*
- *Successfully execute a Peer-to-Peer transaction*

Disposition of Deliverables at the End of the Project:

Any and all hardware designed will be funded, owned and retained by the Emerging Digital department of Duke Energy. Dr. Cali will have rights to extend and use the built system for future research projects.

List here any specific skills, requirements, knowledge needed or suggested (If none please state none):

- Some background in programming
- Background/interest in energy systems