

## Biomass Technology in order to Use the Wood Chips and Dried Trees of the City of Albuquerque to Generate Electricity

Tohid Khalili

Electrical and Computer Engineering Department

University of New Mexico

[khalili@unm.edu](mailto:khalili@unm.edu)

This spring of 2022, I spent my time researching at the City of Albuquerque's Department of Municipal Development (DMD). I worked with the Albuquerque Energy Council on this project (AEC). Conducting research in Albuquerque and collaborating with real-world initiatives in Albuquerque were two of my activities. The administrative aspects of real-world projects are introduced to me. As a case study, I conducted research on the city of Albuquerque. I learned about how the city does sustainability updates and how their project contracts operate. I assisted the City of Albuquerque's energy management in achieving better energy efficiency and renewable objectives in order to minimize utility costs and CO2 emissions. I did some research on smart cities and smart grids. I presented several innovative strategies for the city to achieve its goal of being a 100 percent renewable city. I'm also shown how to use biomass technology.

In this project, we tried to find out how much power generation can be reached through biomass technology as a renewable source of energy. Particularly, I estimated how much electricity can the City of Albuquerque generate from the waste wood that they have. This project provides a rough estimate for designing a biomass system for the City of Albuquerque. In this project, using wood chips and dried wood are considered. I have considered one year generation of electricity based on an estimated amount of wood. Each of these works aligned with my current project with the EPSCoR Program, which focuses on grid optimization and the development of a smart and dependable system. In my present study, I can draw on my unique expertise in working with the City of Albuquerque's practical projects and continuing projects. I am confident that my competence, knowledge, and experience in tackling the optimization challenges of my study sponsored by the NM EPSCoR program increased as a result of my externship at the City of Albuquerque. As I previously stated, I needed to be familiar with real-world test systems in order to create realistic models for my articles in order to improve the power system's operation. This externship aided me in properly completing my assignment. This externship is a research opportunity that will help me advance my articles faster.

That stated, as a Ph.D. candidate supported by the NM EPSCoR for the past three years at UNM, I have worked to produce unique publications and contribute to my field of smart grid research. I've already published a few papers with the help of the NSF NM EPSCoR Program, and I'll be publishing more in the following days. However, my resume's sole flaw was a lack of actual experience. Indeed, taking this internship prepares me for my future academic and professional aspirations. Thank you for NM EPSCoR's great sponsorship, which enabled me to obtain this excellent experience. The city of Albuquerque, the University of New Mexico, and my supervisors at both institutes, Prof. Ali Bidram and Mr. Saif Ismail, deserve special thanks. I'd like to thank the NM SMART Grid Center for their generous Externship Award.