

TITLE: North Carolina A&T State University GIS Facilities Model

\*Project and Research

AUTHORS: Grant Holmes, Chris Silver, Darnell Baldwin, Chris Hinton, Elijah White, Paige Bostick, Jasmine Ellerbe, Rishonda Shankle, Nydja Rousse, Devin McGee

Major: Bachelor of Science: Graphic Communication Systems

MENTOR: Dr. Tony Graham

INSTITUTION: North Carolina Agricultural & Technical State University

Geographic information system (GIS) integrates hardware, software, and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information. It allows us to understand, question, interpret, and visualize data in many ways that reveal relationships, patterns, and trends in the form of a model. A GIS model helps answer questions and solve problems by looking at the data in a way that is quickly understood and easily shared because, this technology can be integrated into any enterprise information system framework (ESRI, 2014). With a direct focal point on green energy the US Green Building Council (USGBC)'s Leadership in Energy and Environmental Design (LEED) certification process is useful in grading levels of sustainability or energy efficiency of a building (Langdon, 2003).

Recent studies have proven that incorporating GIS with facilities management can improve the longevity of buildings and universities at North Carolina A&T State University. These types of resources cease to exist until a unique team of GIS students developed a strategic plan where the ultimate goal was to reduce energy consumption campus wide, assess emergency responses, and evaluate the operation of the facilities. The purpose of this project will show how facility managers can develop and evaluate the university's operations and management to save money due to the inefficient methods of wasting energy in four different areas: Base Map, Facilities Management, Emergency Management, and Green Energy using ArcGIS Online interactive maps. In addition to creating the maps the data was created inside of ArcGIS Desktop 10, ESRI Maps for Microsoft Office, and ArcGIS online. Data sets were collected from the facilities of NC A&T regarding power consumption for the entire campus, also a database of property values. BRAE water systems calculator was used to calculate all of the flat roof tops on the campus to produce estimates of how much rain water could be collected, harvested, filtrated and reused. The canopy and greenery areas were directly recorded into the GIS model in order to direct the university towards a LEED certified college campus. Using address points for emergency responses in city limits of Guilford County, their proximity was calculated in relation to the schools location. Findings concluded in the development of a GIS facilities map that is a living breathing model that needs editors and analysts to refine and continue the research to use as a foundation for NC A&T as well as other universities to implement for energy conservation and drastic fiscal benefits.

Word Count: 407

Author: Grant Holmes

[grantholmes22@gmail.com](mailto:grantholmes22@gmail.com)

919-935-9927

Faculty Advisor: Dr. Tony Graham

[tgraham@ncat.edu](mailto:tgraham@ncat.edu)

336-334-7550

## References

- [1] [http://www.esri.com/what-is-gis/overview#overview\\_panel](http://www.esri.com/what-is-gis/overview#overview_panel)
- [2] The Facilities of North Carolina Agricultural & Technical State University
- [3] Langdon , D. (2004). Costing green: A comprehensive cost database and budgeting methodology.
- [4] <http://www.braewater.com/calculator>
- [5] GIS in Education: Across Campuses, Inside Facilities. (2012, August 1). . Retrieved , from <http://www.esri.com/library/ebooks/gis-in-education-facilities.pdf>

Word Count: 407

Author: Grant Holmes

Faculty Advisor: Dr. Tony Graham

[grantholmes22@gmail.com](mailto:grantholmes22@gmail.com)

[tgraham@ncat.edu](mailto:tgraham@ncat.edu)

919-935-9927

336-334-7550