

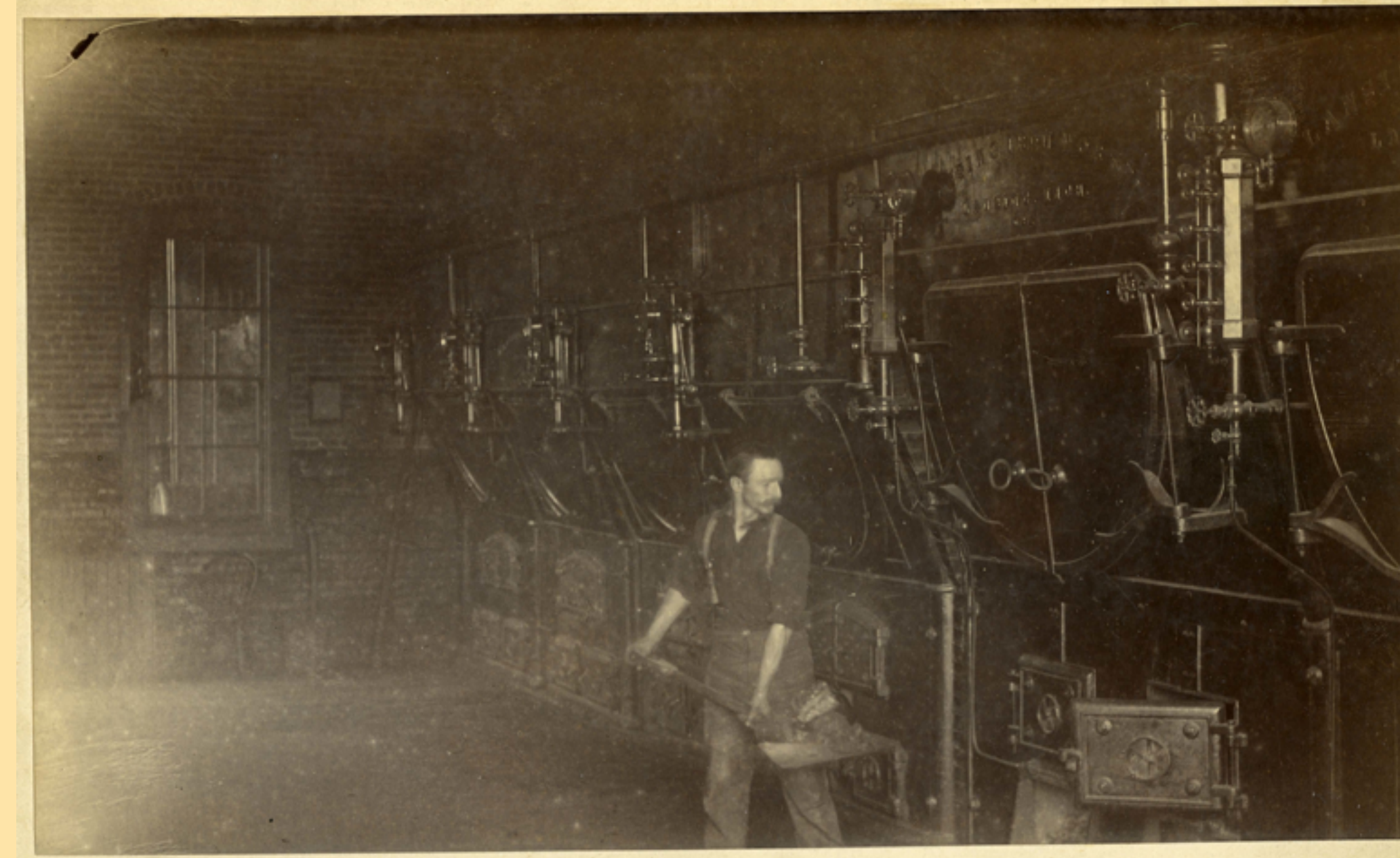


# Exploring the Evolution of Energy: A History of Michigan State University Energy Use

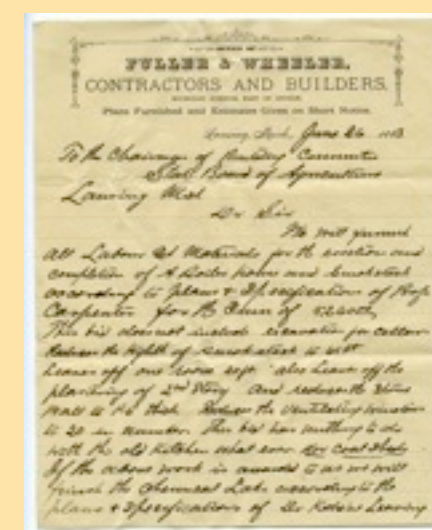
## Introduction

The MSU Campus Archaeology program (CAP) is dedicated to investigating the evolution of higher education through the study of archaeological and historic evidence.

As an intern for CAP, I was responsible for developing a research project related to campus history and choose to focus on the **evolution of energy use** from the college's creation to the present.



## Methodology



### Archives

The University Archives and Historical Collections have resulted in the majority of my primary resources, especially concerning the earliest years of the campus and include

- documents
- maps
- photographs

Many official college contracts, orders, and correspondence concerning the building of power facilities and the purchase of machinery exist.

Although these documents can provide great detail, they vary in type and time period so finding information on each phase is not certain.



### Historical Sources

Several informative histories on the development of campus have been written. Including

- From an Oak Opening* by Harold Lautner
- Michigan State: The First Hundred Years*, by campus historian Madison Kuhn

This information can be difficult to interpret. Since the names or uses of buildings have evolved over time, references to buildings can include a new structure, an addition, or a preexisting building being referred to by a different name.



### Archaeology

From the material evidence we can recognize transitions in the technological methods of energy, including heating and lighting.

For example, CAP has recovered

- coal and clinkers (remnants of coal)
- tungsten lightbulbs
- stove pipes

My research was based mostly on historical and archival sources but is supplemented by archaeological evidence.

## Timeline

### •Phase 1 1855-1900

**February 12, 1855:** College is founded

**1855-1881:** Wood burning stoves, kerosene lamps

**1859:** College Hall's inadequate furnaces abandoned in favor of classroom stoves

**1881:** Centralized Steam heat and telephone arrive on campus

**1884:** Old Boiler House erected

**1890:** Power Plant building constructed

**1892:** 25 kerosene lanterns installed on walkways

**1895:** Electric light plant installed, lights placed on trees and posts

### •Phase 2 1900-1925

**1900:** 1 ¼ mile railroad track built to transport coal to Old College Power Plant

**1903:** Enlargement of heating plant, allowed for 25% increase of capacity

**1904:** Power House (Heating and Lighting Plant) erected

**1921:** North Power Plant built (now site of Administration building)

**1924:** Power House for central campus heating completed

### Phase 3 1925-1955

**1929:** Great Depression reduces enrollment and building resources, little construction on campus through WWII

**1941-1945:** WWII creates energy and food shortages, expansion of power plant desperately needed

**1948:** Shaw Lane Power Plant erected

### •Phase 4 1955-Present

**1965:** Theodore B. Simon Power Plant erected (or Power Plant 65)

**1969:** Michigan Air Pollution Control Commission issues Simon Plant its first of several air pollution violations

**2008:** Simon Power Plant implements experimental use of bio-fuels

**2010:** MSU Beyond Coal Movement initiated

## Future Directions

Although methods and sources have been slow to change, the future may hold a change in direction. MSU has been investigating and experimenting with renewable energy sources such as

- solar energy
- biomass fuels, such as plant byproducts
- geothermal heating

Since the Simon Power Plant is currently on track to reach capacity for steam and electricity by 2023, an Energy Transition Plan and committee were organized to seriously address the future energy needs of the campus.

Therefore, energy needs will continue to be a critical campus priority heavily impacting the future status of the university.



## Problem

CAP organizes campus history into **four distinct phases**.

The four periods include

- **Phase I 1855-1900**
- **Phase II 1900-1925**
- **Phase III 1925-1955**
- **Phase IV 1955-present**

These periods are characterized by shifts in campus landscapes, purpose and population, and contain specific evidence for various energy resources and uses.

Using these four historical time periods I investigated the impact of campus growth on energy, and the consequences of particular systems. I was especially concerned with the chronology of campus power structures, the introduction of utilities such as electricity, and variations of fuel requirements or sources.



## Conclusions

Based on my research the four phases of campus history can be summarized by these energy characteristics

- **Phase I:** Initial use of wood fuel with a transition to coal producing steam power and heat.
- **Phase II:** Increased rates of coal power plant building construction and additions
- **Phase III:** Campus energy becomes self sufficient with construction of Shaw Lane Power Plant
- **Phase IV:** Coal remains chief fuel source, energy demands continue to increase

Historical and archaeological evidence reveal that energy has and continues to play a vital role in the growth and development of the university. Energy capacities determined the construction of buildings or the allowed enrollment rate. Yet energy is also impacted by these factors. Renovations and additions to energy facilities have been continuously implemented to meet rising energy demands.

Researching past energy methods can provide a greater understanding of the history of MSU as well as valuable information for future energy use on campus.



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