



Strategic Energy and Water Management Plan North Carolina Department of Natural and Cultural Resources



Prepared by:

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PURPOSE

The Department of Natural & Cultural Resources finds that public buildings can be built and renovated using sustainable, energy efficient methods that save money, promote environmental sustainability, and make employees more productive. The main objective of this plan is to develop a strategic initiative which will evaluate departmental energy and water usage, identify inefficient buildings and systems, and determine measures to correct inefficiencies, establish corrective action priorities, identify funding sources, implement corrective actions, and ensure that corrective action results meet or exceed performance specifications. The goals of the Department's plan should create buildings that at a minimum, meet the specific performance criteria and goals for sustainable, energy and water efficiency as mandated by senate bill 668 and Executive Order No. 80. Our plan will be considered successful when sustainable, energy efficient buildings avoid depleting the resources of energy, water, and raw materials; prevent environmental degradation caused by facilities and infrastructure throughout their life cycle; and create buildings that are livable, comfortable, safe, and productive.

OVERVIEW

The Department of Natural & Cultural Resources spent \$6,200,000 in FY 2017-18 on energy and water resources. A well-executed long-term energy efficient plan could result in cost savings of 10% or greater annually, which could lead to significant long-term operation cost savings.

The Department is responsible for the operation and maintenance of approximately 1,825 buildings per State Property Office. The Department's building inventory includes historic structures (primarily houses), museums, amphitheaters, administrative offices, support & maintenance buildings, the North Carolina Zoo, State Park facilities, Aquariums and the USS North Carolina Battleship. At least half of the buildings are more than 30 years old, with over 100 built before 1900. Only around 25 structures are larger than 20,000 gross square feet.

This plan will initially focus on identification of major energy and water consumers, which will most likely be existing major facilities (20,000 square feet or larger) with older less efficient systems. The Department will work closely with the State Energy Office and energy consultants to identify measures to correct major inefficiencies. It is anticipated that major renovations & upgrades will require significant funding. Low or no cost actions will be implemented as soon as possible at all facilities. A comprehensive energy & water efficiency awareness & training program will be established for employees. The Department will seek to train facility maintenance personnel on innovative and low-cost techniques to lower energy and water consumption for their specific site.

This plan will also implement sustainable, energy efficient standards for design and construction for new facilities, improvements in lighting systems, reduction of water usage, implementing high efficiency HVAC systems, utilization of energy conservation measures, and environmental sustainability.

FY 2020-2021 GOALS

- Reduce energy consumption per square foot towards the goal of a 40% decrease in comparison to FY 2002-2003 levels, consistent with Executive Order No. 80.
- Conduct informal energy audits on highest energy consuming facilities in the Department to identify energy cost saving measures to reduce consumption by FY 2020-21.
- Continual annual self-audit procedure and checklist for Departmental facilities to identify low or no cost energy saving initiatives to reduce consumption in FY 2020-21.
- Establish annual energy and water usage reporting form to more accurately collect data and determine seasonal trends. Conduct assessment and evaluation of individual sites and energy billing rate schedules.

DATA MANAGEMENT

Current base year for Department data is FY 2010-11. Goals for energy reduction are based on comparison to 2005 levels.

- Merge additional data for former Natural Resource sites (State Parks, Zoo, etc.) for the years before 2010-11.
- Project Cultural Resource sites for the years before 2010-11.
- Research data management options, such as bill paying services to ensure more accurate utility data.

NEW CONSTRUCTION AND RENOVATIONS

New construction of facilities, even at current minimum standards will perform at better btu/ft² levels than existing buildings in the department's portfolio.

- New Visitor Center and Museum at Fort Fisher State Historic Site (in design)
- New Underwater Archeology Building at Kure Beach (in design)
- New Addition to the Museum of History in downtown Raleigh (in design)
- New HVAC system at the Tryon Palace Main Building (completed 2018)
- South Mountains State Park Visitor Center, R-22 substitute refrigerant study
- Various Connect NC bond projects with State Parks
- Roof repair projects will include increased insulation value where applicable
- A third-party firm is conducting a study of the Department's largest energy users to investigate the feasibility of combining multiple sites into a Performance Contract.

OUTREACH AND SUSTAINABILITY

Energy Management will continue to focus on demand-side management by implementing low/no-cost conservation and energy efficiency measures first.

- Adopt best-practice strategies to reduce energy usage at NC-DNCR sites throughout the State
- Develop sustainability policies that emphasize reuse and reduction of consumables
- Support sustainability initiatives through electronic materials and signage at waste stations
- The DNCR Environmental and Energy Performance Committee meets monthly including members from each division in the Department.

ENERGY MANAGEMENT PLAN BUY-IN

GOAL to accomplish the following by the year 2025:

Reduce annual Total Energy Consumption by a minimum of 40% from a baseline established in fiscal year of 2002-03, consistent with Executive Order No. 80.

MEASURES

Our tracking measures will be: Total Energy Use in Btu per Square Foot per Year

COMMITMENT

- We recognize that energy and water consumption can be managed to our benefit. Energy and water management is a responsibility of the occupants at each facility, guided and supported by the Utility Manager and Utility Savings Initiative (USI) Liaison.
- The attached plan outlines the activities and expenditures required to reduce energy and water consumption to achieve the goals of the program.
- The Division Heads will review progress and results and will support staff attendance at training in energy and water management.