



PRESENTED BY BETHANY SUAREZ

Summer Internship Experience

WITH THE ENVIRONMENTAL
STEWARDSHIP INITIATIVE

Hi, I'm Bethany!



B.S. in Environmental Sciences



Starting M.S. in Forestry in Fall 2021



Currently at NC State's Forest
Biotechnology Group





My Focal Areas

During my internship, I had two main areas of focus:

- The Sustainable Office Toolkit
- Member Success Stories

What is the Sustainable Office Toolkit?

- A guide for any business that wants to implement a sustainability program
- Helps companies learn how to incorporate more sustainable practices into their everyday operations.



Modules:

- Waste Reduction



- Green Building



- Environmentally Preferable Purchasing

- Corporate Social Responsibility

- Energy Conservation



- Transportation



- Water Efficiency

What are Member Success Stories?

- A series of reports highlighting the recent achievements of our ESI Members
- Showcase community involvement and awards earned
- Provide recognition for sustainability efforts



UPDATING THE INFORMATION

Ensure that the information shared in each module is up to date.



DESIGNING THE FORMAT

Create an aesthetically pleasing, professional template that is easy to navigate and replicate.



MAKING IT ACCESSIBLE

The documents can easily be shared and edited as information changes

Original Layout

Module 4: Water Efficiency

- I. Overview
- II. Program Planning
- III. Collecting Data
- IV. Common Options for Reducing Water Use
- V. Running Your Program
- VI. Resources

I. Overview

In light of cyclical drought conditions and recognition of our finite water supply, North Carolina is placing a greater emphasis on water efficiency as an alternative to developing additional water supply sources.

Water efficiency programs can result in savings in the cost of water, sewer, and energy while also helping to reduce environmental impacts.

This module provides an overview of water efficiency in institutional and commercial buildings with the intention of evaluating types of water uses, current water-efficient technologies available, and potential water-efficiency savings that could be achieved.

Water Use Standards

The Energy Policy Act of 1992 (EPA's 1992) establishes minimum energy- and water-efficiency levels for classes of covered products. The US Green Building Council's Leadership in Energy and Environmental Design (LEED) rating system uses these EPA's standards to establish water-use baselines. Points are earned for reducing water use beyond the baseline results. LEED ratings are described further in [Module 6: Sustainable Building](#).

Table 4-1

Fixtures	EPA's 1992 Standard	WaterSense Standard
Commercial and Residential Toilets	1.6 gpf	<1.28 gpf or less
Urinals	1.0 gpf	<0.5 gpf
Lavatory Faucets	2.5 gpm at 80 psi or 2.2 gpm at 60 psi	<1.5 gpm at 60 psi
Lavatory Replacement Aerators	2.2 gpm at 60 psi	No Standard
Kitchen Faucets	2.2 gpm at 60 psi	No Standard
Kitchen Replacement Aerators	2.2 gpm at 60 psi	No Standard
Metering Faucets	0.22 gpm at 60 psi	No Standard
Showerheads	2.5 gpm at 60 psi	<2 gpm at 60 psi

* gpf = Gallons per Flush, ** gpm = Gallons per Minute *** psi = Pounds per Square Inch

WaterSense labeled products are around 20% more efficient than the EPA's of 1992 Standard (see Table 4-1) and perform as well or better than less efficient counterparts. WaterSense also recognizes landscape irrigation professionals that incorporate a strong water efficiency component in their service. WaterSense is continually

working to expand the number of labeled products and service programs, so check the website often to find the most up to date information.

Primary Water Uses in Institutional and Commercial Buildings

Understanding water use at a facility is imperative to appropriately prioritize areas to focus time and resources. Institutional and commercial uses of water mainly encompass domestic uses (toilet flushing, hand washing), heating and cooling, and landscape irrigation. Domestic water use usually represents the highest water use at 35-50 percent (Vickers 2001).

Domestic Water Use

Water use that is not associated with the main organizational activity is regarded as domestic water use. For example, water required for laundry washing in a commercial laundromat is not considered domestic as it is their primary business activity, while laundry washing at a hospital would be considered domestic use as it is ancillary to their primary business activity. Domestic water use includes water used for toilet flushing, hand washing, and general cleaning.

Available [fresh water](#) amounts to less than one-half of one percent of all water on earth. It is estimated that the global consumption of water is doubling every 20 years, more than twice the rate of human population growth.

Irrigation

Water used for landscape irrigation can account for 38 percent of a building's water use. With such a large percentage of total water use devoted to irrigation, there is an opportunity for water efficiency through efficient irrigation practices. Excessive water use and inefficiencies arise from improperly designed, installed, maintained and operated irrigation systems.

II. Program Planning

Form a Team

If an organization is not directly staffed, it may be appropriate to assemble a team to gather information, perform the water audit, consider possible opportunities, and implement the changes. The team must bring enthusiasm and a desire to improve operations to effect changes throughout the organization. Other employees will take their cue from the team, so it is important that they see positive changes are taking place, and that they want to be included.

Collect Background Site Information and Records

The background information may include such items as age of the equipment, how the facility evolved over time, regulatory constraints, resource constraints and other issues that may be unique to the facility. Records will include utility bills, estimates of the amount of time the facility is occupied, water needs, and environmental and sanitation needs for people, animals and equipment.

Establish Commitment and Goals

Crucial to the success of a program are upper management's support, help and commitment of time and resources. Secure from management the ability or permission to review additional data that may not be routinely available or compiled.

Claudia Powell
www.jump-link.com

Original Layout



2021 ESI Member Success Stories



Eaton - Arden, an ESI Steward member since 2019, was presented the Clean Air Excellence Award in November 2020 by the Western North Carolina Regional Air Quality Agency (WNCRAQA). The award gives special recognition to local businesses and organizations that have gone above and beyond air quality rules and regulations to implement voluntary, innovative programs that reduce air pollution in Western N.C.

Eaton - Arden is a manufacturer of power management products such as Low Voltage Switchgear, Medium Voltage Drives, Automatic Transfer Switches, and Power Factor Correctors. To support the plant objective to reduce greenhouse gas emissions and energy consumption, 52,000 of the 134,000- square feet of roofing was replaced in 2019. Additional insulation was added to the roof in accordance with manufacturer's recommendations to achieve R30 insulation value and reduce energy loss from the facility. In addition, two of the roof mounted HVAC units using R-22 refrigerant were replaced with more efficient Energy Star units, using the more environmentally friendly R-410A refrigerant.

Projected annual decreases in greenhouse gas (carbon dioxide) emissions for the projects:

- 517,903-pounds of Carbon Dioxide for roofing upgrade
- 26,610-pounds of Carbon Dioxide for HVAC upgrade

The facility's projected cost savings for the roofing project when completed is \$17,239 a year. HVAC energy use and associated costs are expected to decrease by 6%.



2021 ESI Member Success Stories



The N.C. Zoological Park, an ESI Member since 2002 and a Steward since 2013, was highlighted on televisions across the country during the fall of 2020. The National Geographic WILD series, Secrets of the Zoo: North Carolina, premiered on October 31, 2020.

The eight-part series, featured several N.C. Zoological park staff, including keepers and veterinarians and highlighted routine animal husbandry, emergency procedures, and the park's work in conservation, rescue, and release of injured wildlife. National Geographic representatives chose the ESI Steward because of its size encompassing 2,600 acres, its large natural habitats and the more than 1,800 animals in its care.



2021 ESI Member Success Stories



Daimler Trucks North America (DTNA) incorporating J.B. Hunt's all-electric Freightliner eCascadia to its fleet.

DTNA, an ESI member since 2010 has four facilities in the program with all achieving Steward membership by 2017, announced that the first J.B. Hunt Intermodal delivery using an all-electric Class 8 truck pulled out of the Southgate terminal in August 2020, barely making a sound. The transport, a 120-mile haul for Walmart, kicks off a three-month testing phase in which J.B. Hunt will integrate the eCascadia with its day-to-day fleet operations in Los Angeles.

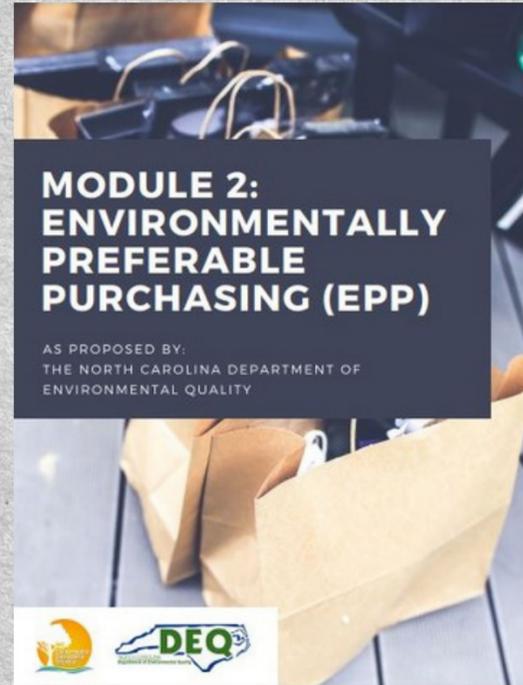
With zero tailpipe emissions, the eCascadia is an environmentally friendly vehicle that can greatly reduce a fleet's carbon footprint. On a full charge, the series-produced eCascadia is expected to have a driving range of up to 250 miles, making it ideal for local and regional distribution and drayage. The all-electric tractor has a 525-horsepower engine and can recharge as much as 80 percent in just 90 minutes.

"Together with our great customers, we are leading the way to a future of CO₂-neutral commercial transportation," said Richard Howard, senior vice president, DTNA On-Highway Sales and Marketing.

Charging stations have been installed at the Los Angeles terminal, and drivers are being trained on an ongoing basis to operate the vehicle. The eCascadia that J.B. Hunt is testing is part of the Freightliner Customer Experience Fleet, an initiative to provide DTNA customers with first-hand experience implementing electric vehicles within their operations.

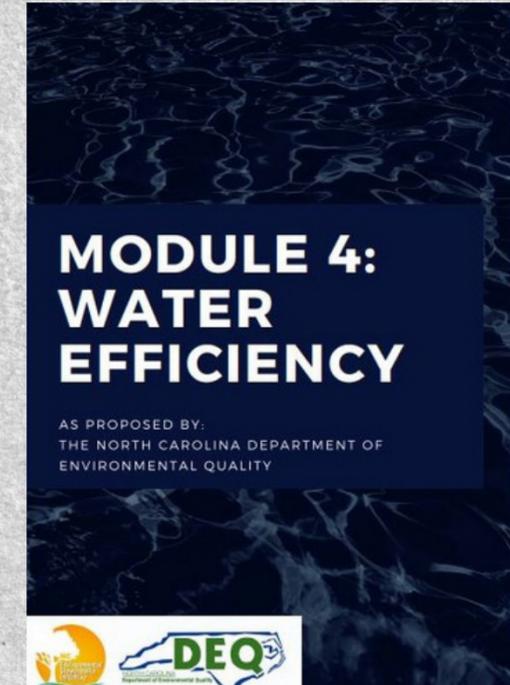


*Designs
Made
With
Canva*



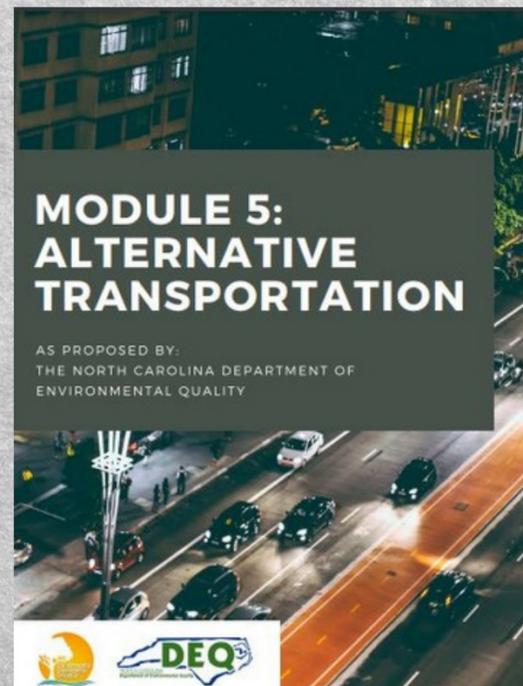
**MODULE 2:
ENVIRONMENTALLY
PREFERABLE
PURCHASING (EPP)**

AS PROPOSED BY:
THE NORTH CAROLINA DEPARTMENT OF
ENVIRONMENTAL QUALITY



**MODULE 4:
WATER
EFFICIENCY**

AS PROPOSED BY:
THE NORTH CAROLINA DEPARTMENT OF
ENVIRONMENTAL QUALITY



**MODULE 5:
ALTERNATIVE
TRANSPORTATION**

AS PROPOSED BY:
THE NORTH CAROLINA DEPARTMENT OF
ENVIRONMENTAL QUALITY



2021
**ESI MEMBER
SUCCESS
STORIES**

PREPARED BY
**NORTH CAROLINA
DEPARTMENT OF
ENVIRONMENTAL QUALITY**





NC DEPARTMENT OF ENVIRONMENTAL QUALITY

MEMBER SUCCESS STORIES

From the Environmental Stewardship Initiative

AJINOMOTO

Ajinomoto, an ESI Member since 2015 and Rising Steward since 2016, made headlines in January 2021 with its big role in the development of COVID-19 vaccines. In early 2020, Ajinomoto's Health & Nutrition facility in Raleigh expanded its operation prior to the COVID-19 pandemic. Its main product – amino acids – is used in various items as well as in many drugs and vaccines. Amino acids help stabilize medications and vaccines or serve as a preservative to prevent contamination. Read the complete [article about Ajinomoto's role with COVID-19 vaccination development](#).



OVERVIEW

In light of cyclical drought conditions and recognition of our finite water supply, North Carolina is placing a greater emphasis on water efficiency as an alternative to developing additional water supply sources.

Water efficiency programs can result in savings in the cost of water, sewer, and energy while also helping to reduce environmental impacts.

This module provides an overview of water efficiency in institutional and commercial buildings with the intention of evaluating types of water uses, current water-efficient technologies available, and potential water-efficiency savings that could be achieved.

WATER USE STANDARDS

The Energy Policy Act of 1992 (EPA 1992) establishes minimum energy- and water-efficiency levels for classes of covered products. The U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) rating system uses these EPA standards to establish water-use baselines. Points are earned for reducing water use beyond the baseline results. LEED ratings are described further in Module 6: Sustainable Building.



IDENTIFYING OPTIONS

Alternatives to solo driving:

- Teleworking
- Carpooling and Vanpooling
- Mass transit
- Flextime
- Alternative schedules
- Walking
- Biking

Teleworking

Teleworking, also known as telecommuting, replaces travel to and from work with telecommunications (Internet) technologies. It refers to working at home or another location on a full- or part-time basis. Many employees telework only once or twice per week; other employees telework full-time, such as Delta Air Lines customer service representatives, and go to the office only on an occasional basis. Managing responsible, well-trained employees with job appropriate job responsibilities doesn't necessarily require constant visual monitoring or even office space.

It is imperative that North Carolina organizations consider telework as an option to compete for and retain quality employees. Most jobs, at least in part, can be accomplished outside the main office. Today's technologies of computing and communications bridge the distance gap between a worker and the office. With a successful telework program, agencies will see:

- Less employee stress, when more needs to be done with less resources
- Improved job satisfaction
- Increased productivity
- Reduction in facility space needed at the main office
- Employee cost reductions from travel, parking and clothing
- Increase in quality family time and flexibility for the employee
- Broader base of recruitment
- Reduced use of sick leave and even use of mental health services

You will need to judge how long it will take before the program begins showing results, but not wait until a small problem turns into a big handicap you can't easily overcome.

This need is why it might be useful to take several surveys throughout the year, or to have the program participants self-report. If it does not appear that you will meet your goals, you will need to decide whether to modify your goals or implement additional educational or other measures to increase participation in your program.

If you have thought through this possibility in advance, whatever modification you make will go smoother and faster—increasing your chances of meeting your goals.

If 10 percent employee participation is thought to be too high, lower your goal or consider setting a goal for total number of single occupancy vehicle commuter miles reduced. It will be better for the program to meet a lower goal than to not meet one at all.

Expand

Think you're done? Think again. Once your transportation options program is up and running and all the bugs and kinks have been worked out, convene a meeting to talk about the next steps.



- Santa Monica also began buying 100 percent renewable electricity for all of its facilities. This purchase will reduce greenhouse gas emissions by 13,672 tons, Nitrogen dioxide (NO₂) emissions by 16.2 tons, and sulfur dioxide (SO₂) emissions by 14.6 tons annually. Because electricity generation produces 36 percent of all U.S. carbon dioxide emissions and generates 15 percent of all U.S. toxic emissions, numerous areas of the country—including Pennsylvania; Chicago, Illinois; and Santa Barbara and Oakland, California—are following Santa Monica's lead.
- Cape May County, New Jersey, switched to an integrated pest management approach, significantly reduced its pesticide use, and saved \$45,000 over five years. This purchase will help reduce the 4.5 billion pounds of chemicals used each year in the United States to control insects, rodents, and weeds.
- Pennsylvania; Seattle, Washington; San Diego, California; and other parts of the country are incorporating energy-efficiency standards for office products such as computers and photocopiers because they recognize that 50 percent of the carbon dioxide emissions in 2010 will come from using products purchased between now and then.

For additional information, read the [State and Local Government Pioneers case study](#) published by the U.S. Environmental Protection Agency.

Example EPP Programs

- [California](#)
- [King County, Washington](#)
- [Massachusetts](#)
- [Minnesota](#)
- [Santa Monica, California](#)



According to the American Automobile Association (AAA), the cost per mile for operating and ownership costs is 56.2 cents, for a medium size car, when driven 15,000 miles per year. Visit [Go Triangle's Commute Savings Calculator](#) to see how much money you can save by riding the bus, vanpooling, carpooling or riding your bike! Fewer cars also mean lower costs for road maintenance and expansion.

It improves employee morale! Reducing the stress that stems from traffic congestion can be a real perk in the office and even decrease tardiness and absenteeism or sick leave.

Vehicle travel in North Carolina increased 60% from 1990 to 2008, the eighth highest percentage increase in the nation, according to TRIP; AAA estimates that solo driving costs each of us more than \$15 every day, or about \$550 each month. And those figures don't include extras such as parking costs.

Options for Alternative Transportation

The options that exist for alternative transportation vary from building to building and from city to city. If a building is not near a bus or rail line, those options will obviously not be available. Other options do exist, however, and these are discussed when you move on to Program Planning.

Teleworking is another great way to save miles, gasoline and emissions.



Thank You!

For your attention during my presentation

To the North Carolina Department of Environmental Quality
and the Environmental Stewardship Initiative

To Marcia Allocco, Don Burke, and Angela Barger for
their guidance and leadership this summer