CALEB GEMPERLEIN

TIME AS AN INTERN

ESI INTERN

CALEB'S JOBS

- CREATED A MICROSOFT FORM THAT ORGANIZATIONS WILL FILL OUT WHEN INTERESTED IN THE ENERGY TOOLKIT
- CREATED A LIST FOR KEEPING TRACK OF EQUIPMENT
- CREATED A LIST THAT WILL KEEP TRACK OF ALL THE FORMS ANSWERS
- CREATED A FLOW WITHIN POWER AUTOMATE TO MAKE SOME OF THE PROCESS AUTOMATIC
- CREATED TABLES FOR EACH OF THE EQUIPMENT WITHIN THE ENERGY TOOLKIT
- FOUND EQUIPMENT OPERATION MANUALS FOR EACH OF THE DEVICES
- HELPED IN EDITING AND REVISING THE ENERGY TOOLKIT APPLICATION AND WAIVER
- CREATED A VISUAL CHECK IN LIST
- CREATED A VISUAL CHECK OUT LIST
- CREATED IDEAL PROCESS FLOWCHART
- HELPED TO CREATE SOP FOR THE ENERGY TOOLKIT
- RESEARCHED REFERENCE LINKS FOR A POTENTIAL YOUTUBE TRAINING VIDEO
- BEGAN SCRIPT FOR POTENTIAL YOUTUBE TRAINING VIDEO
- CREATED A FEEDBACK FORM FOR ORGANIZATIONS TO FILL OUT ONCE THEY HAVE RETURNED THE TOOLKIT
- CREATED A MINI FLOW FOR THE FEEDBACK FORM THAT WILL NOTIFY AN ESI MEMBER THAT A RESPONSE HAS BEEN SUBMITTED
- CREATED A GAP ANALYSIS SHEET FOR ISO 50001 STANDARD
- HELPED TO UPDATE AND CONVERT OLD ENERGY AND WASTE OFFICE TOOLKIT ENERGY MODULES
- CREATED A LUNCH AND LEARN ADVERTISEMENT POSTER

Background About Energy Toolkit

CREATED A MICROSOFT INTEREST FORM

CREATED A LIST FOR KEEPING TRACK OF EQUIPMENT

Equipment		Equipment Status	Company That Has Tool	Date Checked Out	Expected Date Back	Number of Units	+ Add column
Electricity Usage Monitor	💬	Repairs Needed		6/1/2021	6/23/2021		
Digital Light Meter		Available		6/9/2021	6/22/2021		
Ultrasonic Leak Detector		Available					
Infrared Thermometer		Available					
Photo-Sensor Tachometer	⋮ ↗ 💬	Available					
Analog Sound Level Meter		Available					
Digital Probe Thermometer		Available					
IR Thermometer		Available					
Finepix Camera		Available					
AC Current Probe Clamp		Available					
Lightning Logger		Available					
ELITEpro XC Portable Power Data Logger		Available					

CREATED A LIST THAT WILL KEEP TRACK OF ALL THE FORMS ANSWERS

Title ⌄	Contact Inform... ⌄	Additional Cont... ⌄	Dent Case or In... ⌄	Equipment Req... ⌄	Training Required ⌄	Amount Of Tim... ⌄
TACO	caleb.gemperlein@ncdenr.gov	NA	Individual Equipment	["Electricity Usage Monitor","Digital Light Meter","Ultrasonic Leak Detector","Infrared Thermometer","Finepix Camera","Lightning Logger"]	Acquiring the equipment via the mail and using online training recourses	2 weeks

CREATED A FLOW WITHIN POWER AUTOMATE

AUTOMATION

Power automate allows users to create flows that are triggered when a certain action is taken. After the trigger is set off the rest of the flow runs to completion.

LIST OF AUTOMATION

After a response is submitted to the microsoft form mentioned earlier the process begins and a number of things occur. First is the transfer of information to the microsoft list. Next the flow notifies team members via email that the form has been filled out. This flow will also email back whoever filled out the form and notify them that their response has been recieved. Attached to this email is the legal documentation that the companies need to fill out before receiving the equipment

LATER UPDATING OF THE AUTOMATION

Later the visual checkout form was added to the first email to the team member notification so that this team member will not have to search through sharepoint to find the checkout form. In addition to this I also added a 2 week delay timer that once it has completed will prompt a team member at ESI to check on the staus of the equipment.
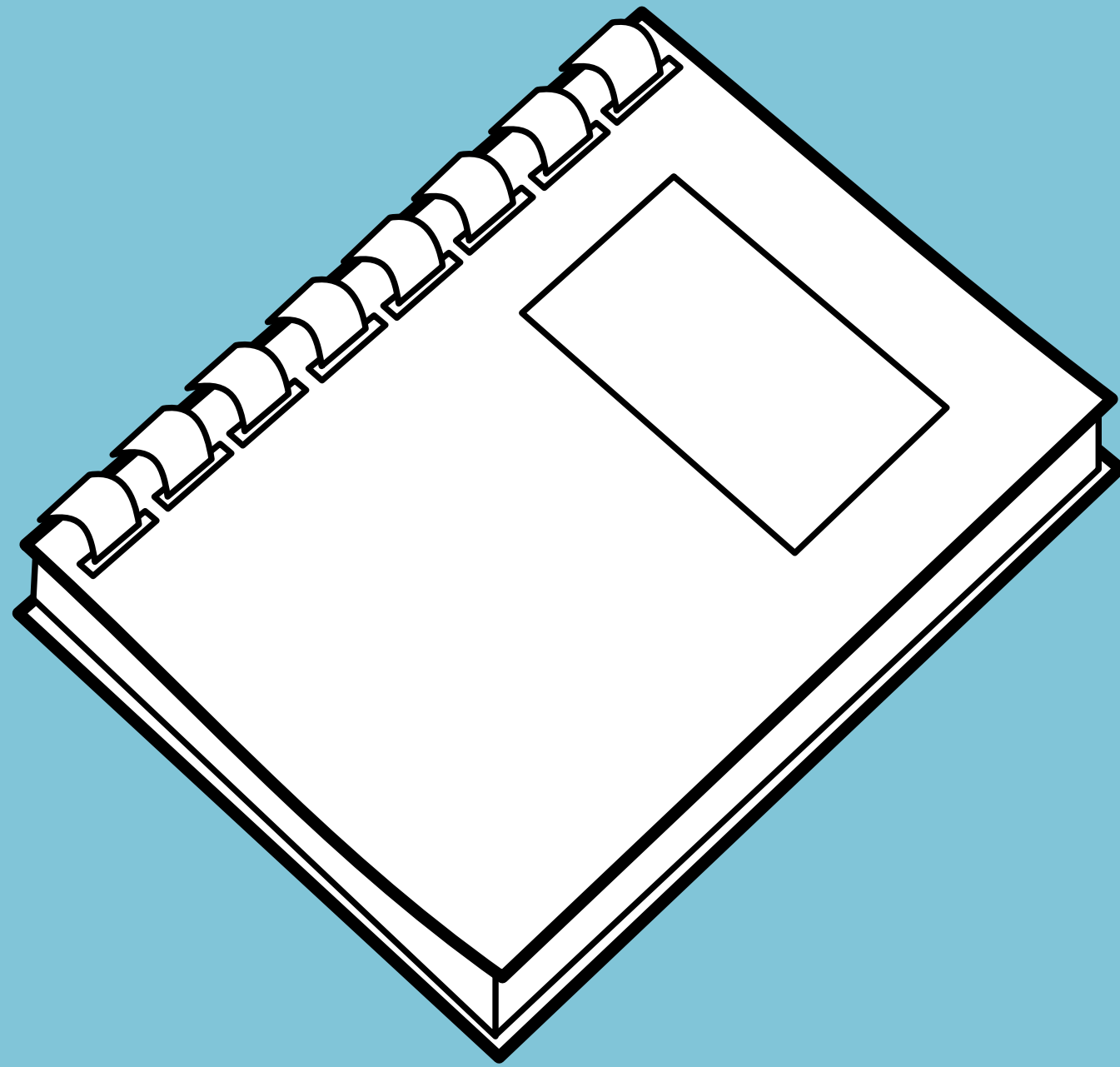
CREATED TABLES FOR EACH OF THE EQUIPMENT

Instruments

Instrument	Description
Electricity Usage Monitor	Device capable of measuring the electricity consumption of any device that is connected directly into it while the usage monitor itself is plugged into a 110 volt electrical outlet.
Digital Light Meter	Device to determine amount of illumination within an area.
Ultrasonic Leak Detector	An ultrasonic leak detector can detect the vibrations created by compressed air or gasses from leaks.
Infrared Thermometer	Useful device for measuring temperature across different environments without having to be in direct contact with an object.
Photo-Sensor Tachometer	Device that can measure the speed of rotation for a shaft or disc.
Analog Sound Level Meter	Device used to accurately measure the noise that is being produced in an environment
Digital Probe Thermometer	Inexpensive device for spot checking a liquid, sludge or other penetrable solid's internal temperature.
Finepix Camera	Small, mobile camera capturing digital images, without cell or Wi-Fi connection.
AC Current Probe Clamp	A device that measures current going through a line.
Lightning Logger	Device made for logging scalars and manual logging for other data
Portable Power Data Logger	This meter will catalogue the power consumption of equipment or circuits in an electrical panel.

Instrument Checkout list

Type	Manufacturer	Model	Range	Units	Quantity Requested Total		Link to website
Electricity Usage Monitor	P3 Kill-A-Watt	P4400	85 - 125 Vrms 0 - 15 Arms 0 - 1875 Watts 47 - 63 Hz 0 - 9999 KWH	Volts, Amps, Watts, Hz, VA	of	5	Kill A Watt Meter - Electricity Usage Monitor	P3 (p3international.com)
Digital Light Meter	Extech	407026	200, 2000, 5000 Fc 2000, 20000, 50000 Lux	FC, Lux	of	1	407026: Heavy Duty Light Meter with PC Interface	Extech Instruments
Ultrasonic Leak Detector	Amprobe	UT-300	20 – 100 kHz		of	1	https://www.amprobe.com/product/uld-300/
Infrared Thermometer	Fluke	62 Mini	0 – 500 C (932 F)	Celsius, Fahrenheit	of	1	62MiniBroEngRevA.indd (itu.edu.tr)
Photo-Sensor Tachometer	Cen-Tech	41727	2.5 to 99.999 RPM	RPM	of	1	Harbor Freight Item 41727 - Digital Photo Tachometer DT-838 - SnapWhole.com
Analog Sound Level Meter	Cen-Tech	92282	50 – 126 dB	Decibels	of	1	Harbor Freight Item 92282 - Cen-Tech Analog Sound Level Meter 2004 - SnapWhole.com
Digital Probe Thermometer	Type K	1T951	-250 to 1372 C -418 to 2502 F	Celsius, Fahrenheit	of	1	Microsoft Word - Digi-Sense Type K Thermocouple_Rev0 FTP .doc (instrumart.com)
IR thermometer	Cen-tech	93984	-33 to 250 C -27 to 482 F	Celsius, Fahrenheit	of	3	CEN-TECH 93984 OPERATING INSTRUCTIONS Pdf Download	ManualsLib
Finepix Camera	Finepix	Z30			of	2	FinePix Z30 Owner's Manual (fujifilm-x.com)
AC Current Probe Clamp	Dent	CON0500	0 – 600 A	Amps	of	3	ta019-operators-manual-A.pdf (picotech.com)
Lightning Logger	Dent	TOU			of	12	Microsoft Word - SMARTware_manual.doc (dentinstruments.com)
ELITEpro XC™ Portable Power Data Logger	Dent	ELITEpro XC	0 – 10 VDC 4 – 20 mA		of	2	https://shop.dentinstruments.com/products/elitepro-xc-power-meter?gclid=Cj0KCQjwy8f6BRC7ARIsAPlXQjjDObZJftKoCxas501fpr1UpTr7V6Pv7MlaGFyJSVrUpWPgRTBsSQgaAg3OEALw_wcB
LED Light Meter	Extech	LT40	99.99, 999.9, 9999, 40000 FC 999.9, 9999, 99990, 400000 Lux	Fc, Lux	of	1	LT40_LT45_DS-en.pdf (extech.com)
Ultrasonic Leak Detector	Tru Pointe	1100	0 – 255 volume		of	1	Bacharach - Tru Pointe 1100 Ultrasonic Leak Detector (mybacharach.com)

EQUIPMENT OPERATION MANUALS

After completing the tables for each of the pieces of equipment it was decided that we needed a pdf of each of the owners manuals. Originally the links on the table were linked to the company's home page, but we decided to instead have the owner manual pdf's downloaded to sharepoint so that the manuals and how to use the equipment will not be lost.

CREATED A VISUAL CHECK IN LIST

Visual Equipment Checklist (Check-In)

P3 Kill-A-Watt

- ❑ Check the device screen and confirm there are no breaks or scratches
- ❑ Plug in the device and confirm LED screen lights up
- ❑ Confirm the buttons on the device are all working and the function of the device changes when they are pressed.
- ❑ Perform a quick test to see if numbers are accurate by plugging in a load.

Additional Comments:

Digital Light Meter

- ❑ Make sure all pieces are present (device itself, hard outer cover, and plug in light sensor)
- ❑ Check the screen to confirm it is not broken
- ❑ Check that the device powers on
- ❑ Confirm that the LED screen still works properly
- ❑ Make sure each of the buttons still work and that the function changes
- ❑ Perform a quick test to see if the device is functional

Additional Comments:

CREATED A VISUAL CHECK OUT LIST

Visual Equipment Checklist (Check-Out)

P3 Kill-A-Watt

- ❑ Check the device screen and confirm there are no breaks or scratches
- ❑ Plug in the device and confirm LED screen lights up
- ❑ Confirm the buttons on the device are all working and the function of the device changes when they are pressed.
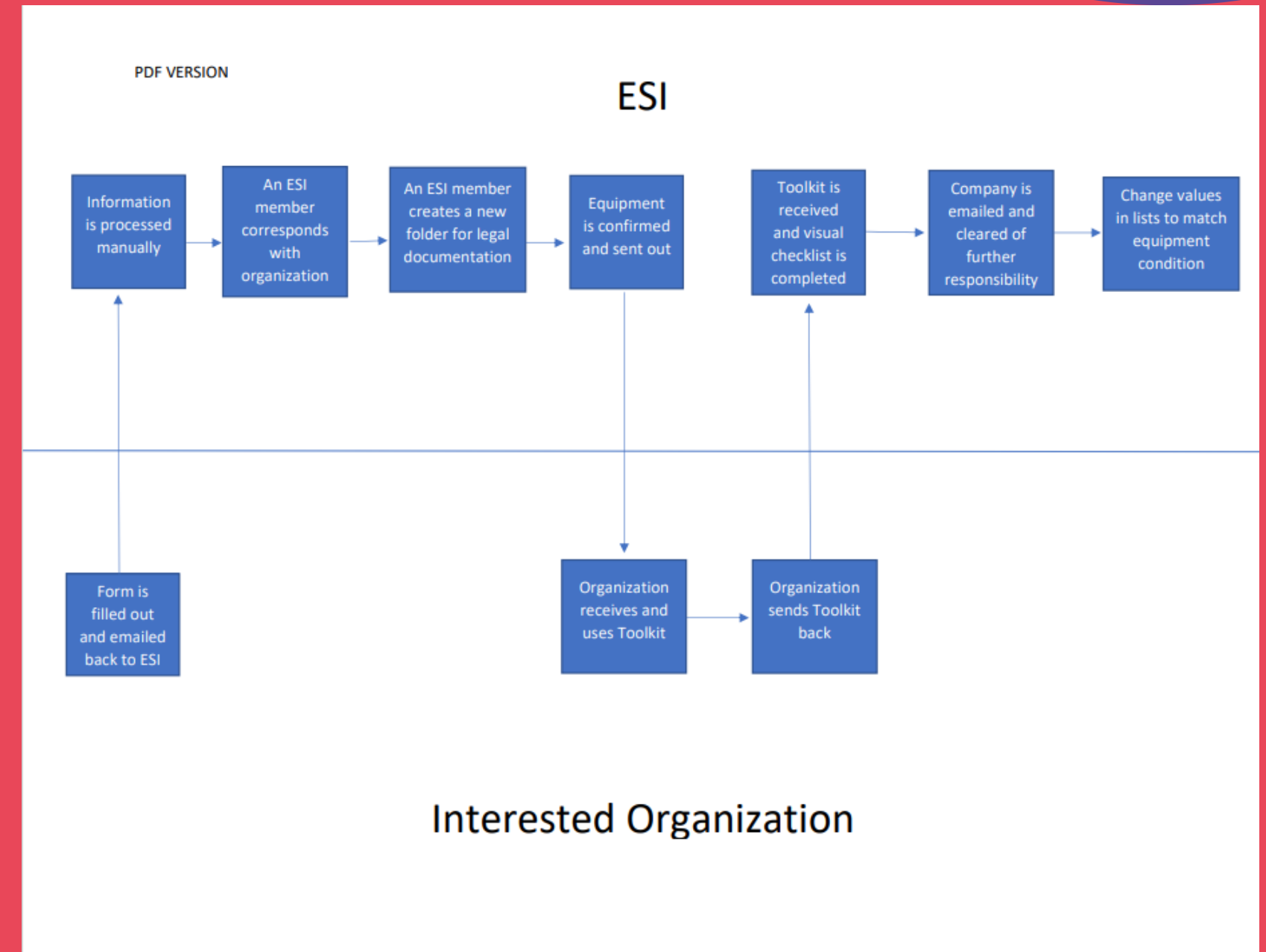
Additional Comments:

Digital Light Meter

- ❑ Make sure all pieces are present (device itself, hard outer cover, and plug in light sensor)
- ❑ Check the screen to confirm it is not broken
- ❑ Check that the device powers on
- ❑ Confirm that the LED screen still works properly

Additional Comments:

CREATE IDEAL PROCESS FLOWCHART AND SOP

1. Interest form completed and submitted
2. The form and its information are shared with the ESI team
   a. E-mail notification to ESI e-mail directing team to forms to list
   b. Access to form answers can be viewed via Forms
3. A folder is automatically created in SharePoint with their organization name being the folder title
4. Legal documentation (Application and Waiver) is sent to organization contact
   a. Contact completes and submits back to ESI staff e-mail
   b. Returned and completed Application and Waiver put within said folder from above
5. A Visual Check-out Form is created/generated and sent to whoever gets the kit together
6. The kit is then gathered and sent out
   a. Driven by ESI staff to site
   b. Sent to regional office for client to pick up
   c. Shipped to site
7. The computer tracks how long a company has had the toolbox and emails @ ESI when their time is up
   a. Currently set to 2 weeks as default
8. Upon return of the toolkit the equipment will undergo the Visual Check-in Form
9. The completed form is then put into the organization's folder in SharePoint
10. The organization is notified that equipment has been returned and is in working order. Unless there are damaged items in which the organization will be held accountable.
11. ESI staff will update the status of all instruments to show that they have been checked in or needs attention/damaged.
12. Then the process will repeat

PDF VERSION

ESI

- Information is processed manually
- An ESI member corresponds with organization
- An ESI member creates a new folder for legal documentation
- Equipment is confirmed and sent out
- Toolkit is received and visual checklist is completed
- Company is emailed and cleared of further responsibility
- Change values in lists to match equipment condition

- Form is filled out and emailed back to ESI
- Organization receives and uses Toolkit
- Organization sends Toolkit back

Interested Organization

RESEARCH POSSIBLE YOUTUBE SCRIPT

AN IMPORTANT FOCUS OF THE ENERGY TOOLKIT WAS THE ABILITY FOR ORGANIZATIONS TO EASILY USE THESE DEVICES WITH MINIMAL TROUBLES.
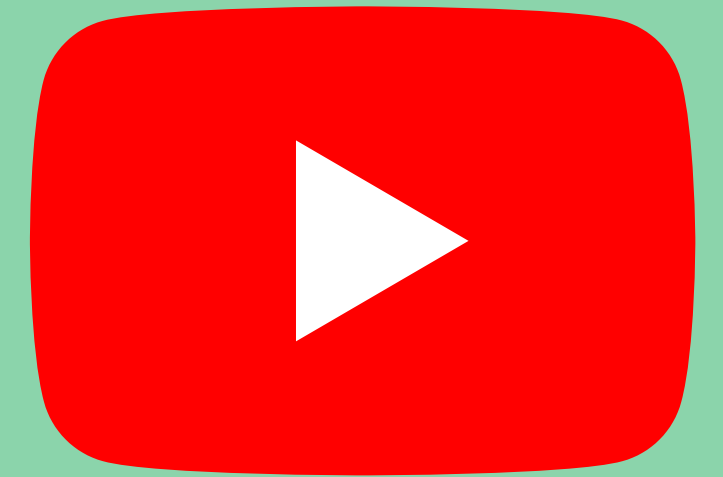
PROBLEM 1

When a company gets the tools they may not know how to use the equipment properly due to little to no training on the equipment

PROBLEM 2

There is very little training online that would help larger organizations teach their staff about how to use the equipment. Some may also find it difficult to learn just by reading the owners manuals

SOLUTION FOR THE LACK OF TRAINING

If the organizations that we are sending the toolkit to have little to no idea on how to use the equipment. The toolkit will not be useful in the slightest. In order for more organizations to make the most out of our equipment I proposed that we make a youtube training video series that explains how each of the tools works. These videos would also go over how to troubleshoot and fix issues if any arise.
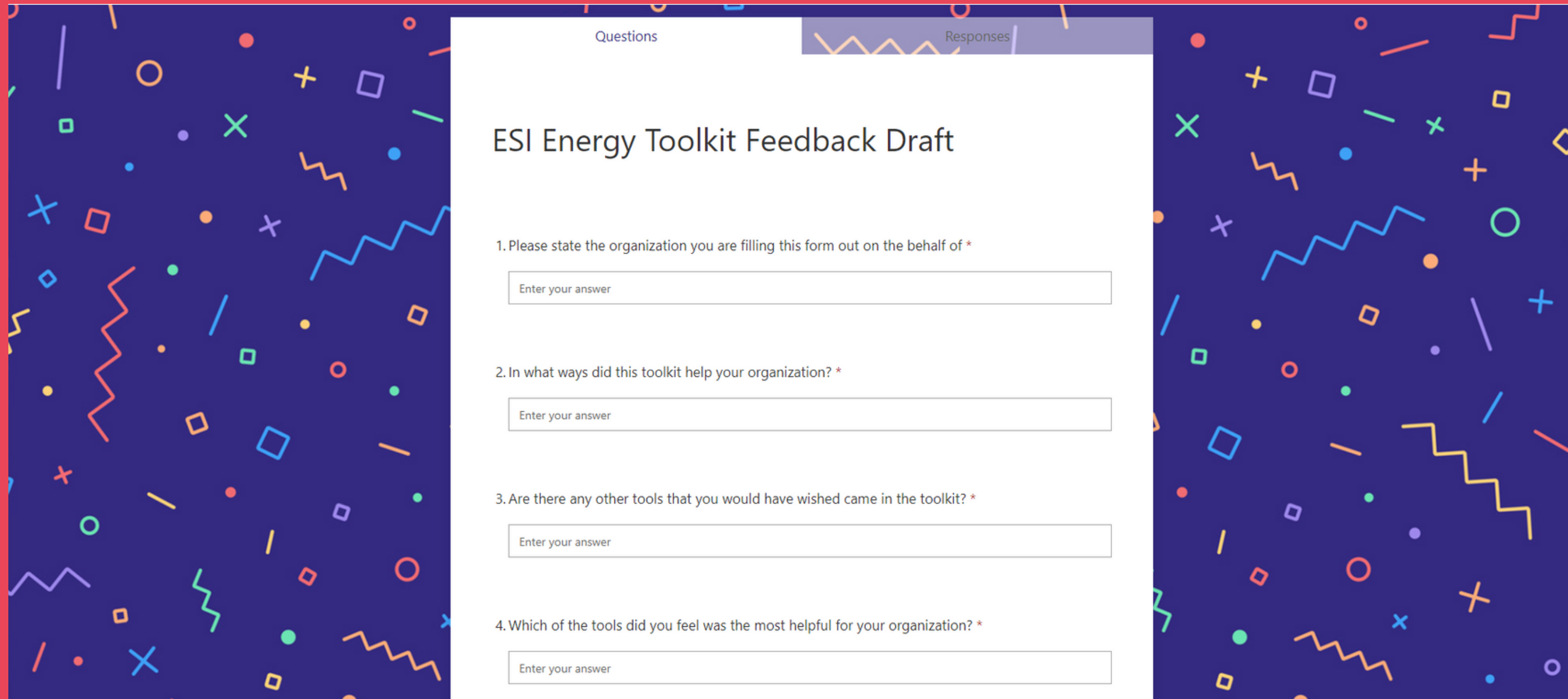
Since I believed that there was a need for the training videos I decided to create a document linking to videos that had already been done on the equipment individually. This document had at least one video for each of our devices outlining the use of each tool

YOUTUBE VIDEO SERIES SCRIPT

Going off of the research that I had just accomplished I created a working script for each of the devices that could be used if a youtube series was ever created. This script would go through each of the uses of the device and how to use the device itself. Within the script I talked about the buttons on the device and what they controlled, the screen and what should be displayed, errors that may populate on the display as well as what to do if the device is not working properly.

CREATED A FEEDBACK FORM

CREATED A MINIFLOW

EMAIL

After creating the feedback form I wanted to add some more automation to make the energy toolkit process easier. The mini flow will notify a member of ESI when a response has been submitted to the feedback form that was created and previously mentioned. This quick and easy notification will allow for quicer analysis of feedback in order to improve the energy toolkit.

CREATED A GAP ANALYSIS

After helping with the energy toolkit and setting up most of the process for the energy toolkit I was asked to work on creating a gap analysis in excel that would allow for users to fill it out and gain feedback on the completion amount that they currently have when it comes to the ISO standard. This document allows users to answer questions on their organization's completion of ISO 50001 standards. The excel sheet also creates a graph of each of the individual section completion percentages for users to have a visual representation of what sections need to be worked on more.

50001 Gap Analysis

N6 | f_x | 4) See "Please Read" page for more info.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P

ISO 50001 Guidance Navigation Menu

3 Terms

3.1 Terms Related to Organization

3.1.1	Organization
3.1.2	Top Management
3.1.3	Boundary
3.1.4	Energy Management System Scope
3.1.5	Interested Party/Stakeholder

3.2 Terms Related to Management Systems

3.2.1	Management Systems
3.2.2	Energy Management System EnMs
3.2.3	Policy
3.2.4	Energy Policy
3.2.5	Energy Management Team

3.3 Terms related to requirement

3.3.1	Requirement
3.3.2	Conformity
3.3.3	Nonconformity
3.3.4	Corrective Action
3.3.5	Documented Information
3.3.6	Process
3.3.7	Monitoring

4 Context of the Organization

4.1	Understanding the Organization and its Context
4.2	Understanding the Needs and Expectations of Interested Parties
4.3	Determining the Scope of the EMS
4.4	Environmental Management System (EMS)

5 Leadership

5.1	Leadership and Commitment
5.2	Energy Policy
5.3	Organizational Roles, Responsibilities and Authorities

6 Planning

6.1	Actions to Address Risks and Opportunities
6.2	Objectives, Energy Targets and Planning to Achieve Them
6.3	Energy Review
6.4	Energy Performance Indicators
6.5	Energy Baseline
6.6	Planning for Collection of Energy Data

7 Support

Audit Information

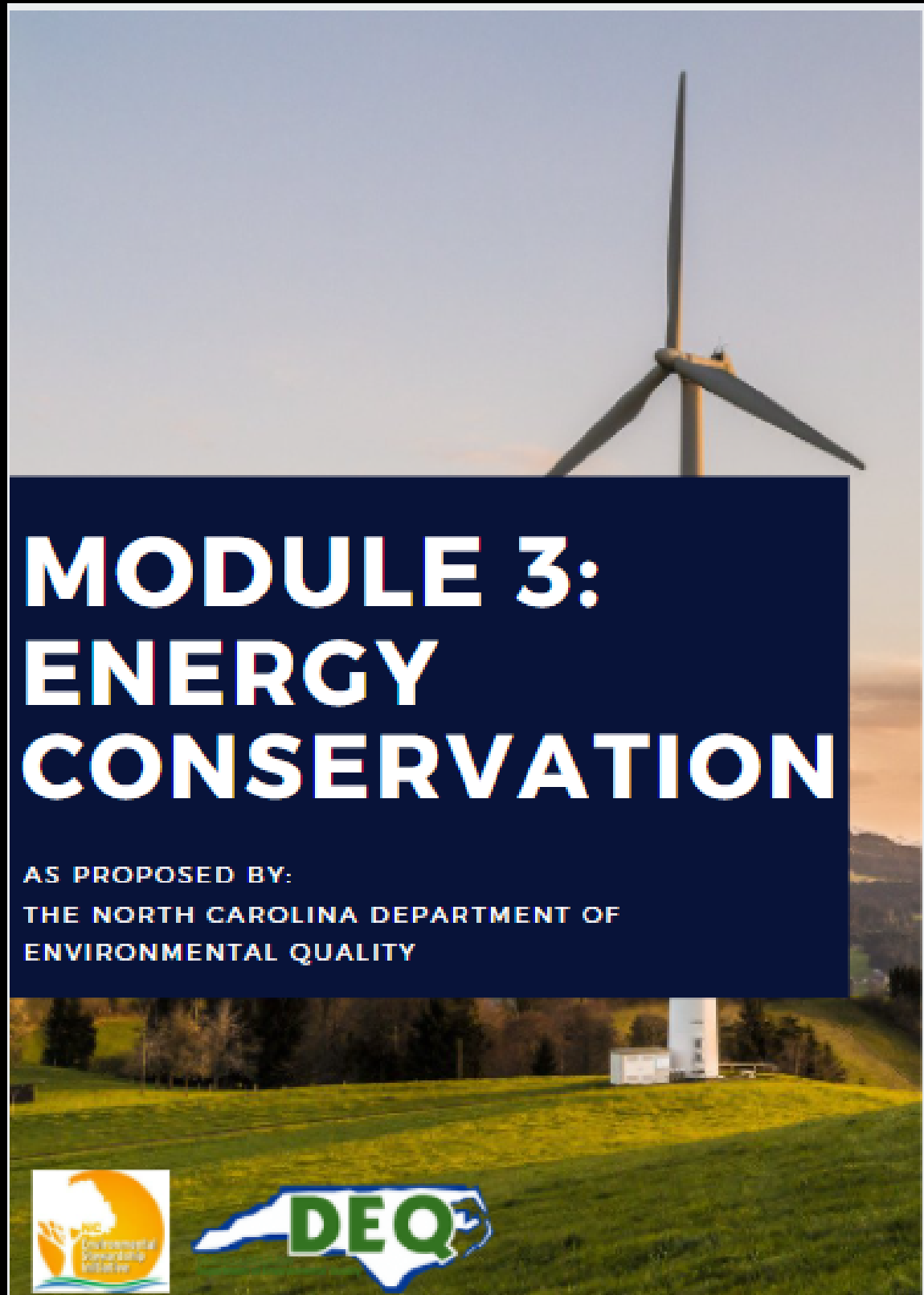Facility:

Auditee:

Dates of Audit:

UPDATE AND CONVERT ENERGY MODULE OF THE SUSTAINABLE OFFICE TOOLKIT

After completing the gap analysis in excel I was asked to help with the updating of the energy sustainable office toolkit module. This module delt with how companies can save energy around their office buildings. I was also asked to convert the energy module into a Canva document as Canva allows for better formatting and backgrounds.

The most work that had to be done for this document was the formatting and recreation of graphs. This took a lot of effort in trying to find a design for the document that would suit both the content and follow the design that the other intern had already created.

MODULE 3: ENERGY CONSERVATION

AS PROPOSED BY:

THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY

OVERVIEW

This module is designed as an overview of energy and electricity production and to guide you through how to reduce your energy use and costs. If you would like to skip straight to a list of things you can do to conserve energy, see Waste Reduction Partners energy resources.

ENERGY 101

Energy is needed to heat and cool office buildings, provide light, and power the computer, copier, refrigerator, and other equipment you use daily. Most of the energy used in office buildings is in the form of electricity. (See Figure 1.)

INCENTIVES FOR WISE ENERGY USE

The main incentives for wise energy use are two-fold: reducing energy costs and reducing negative environmental impacts. However, there are other, perhaps less obvious, reasons to improve your energy management. In addition to 'doing the right thing' to reduce impacts to the environment, such efforts can carry a positive image to customers, shareholders, and employees. Also, some energy efficient building features, such as the use of daylighting have been shown to increase occupant productivity and attitude:

For more information on daylighting visit the U.S. Department of Energy's Building Technologies Program, click on the URL: http://www.eere.energy.gov/buildings/info/design/integratedbuilding/passivedaylighting.html

In general, reducing your usage of electricity and other forms of energy will result in reduced utility bills. But there are other specific incentives, including tax breaks, offered by the 2005 Energy Policy Act. The Tax Incentives Assistance Project (TIAP) has information on specific incentives for commercial buildings, for energy efficient new construction, and for upgrades to existing buildings.
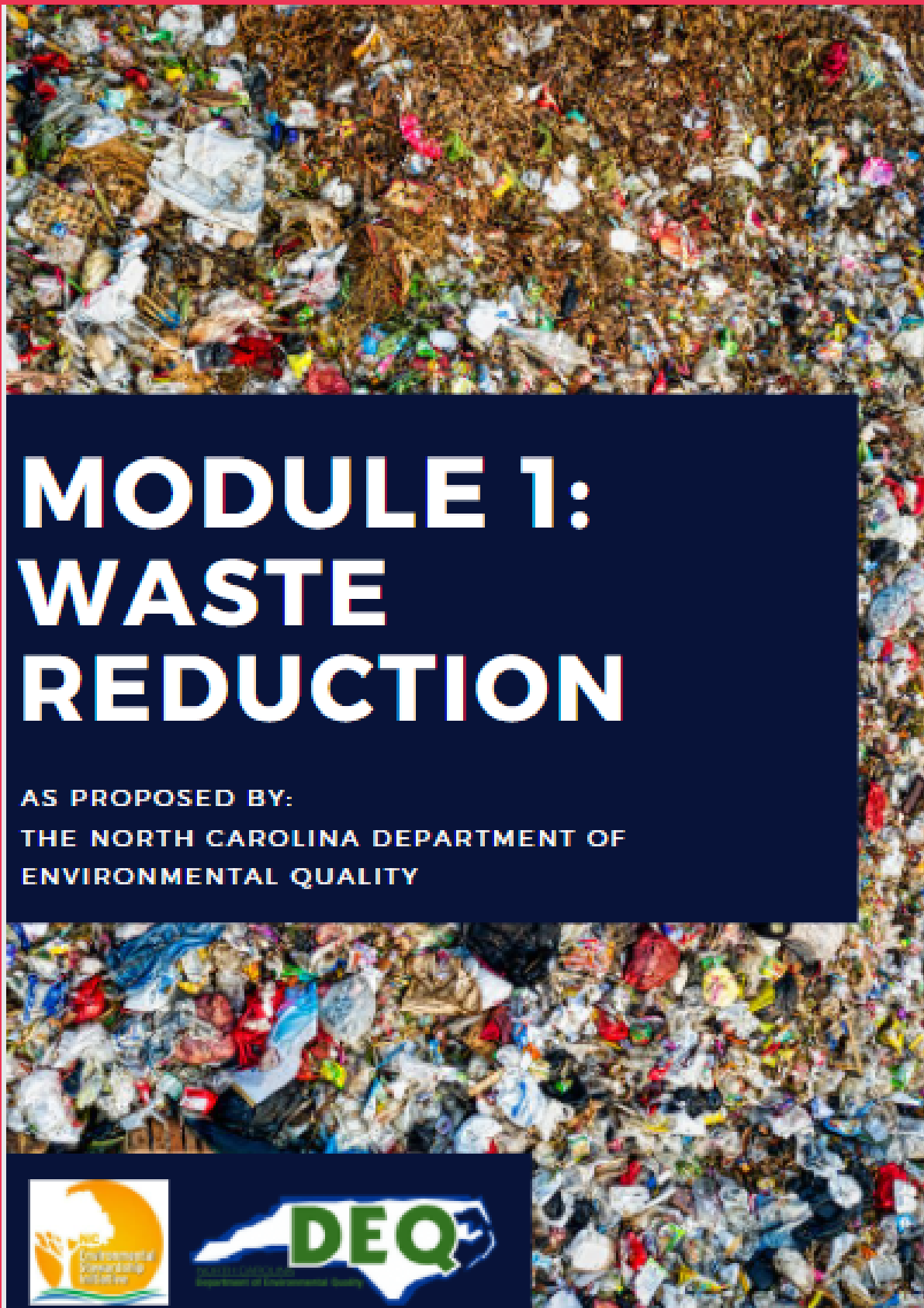
ENVIRONMENTAL IMPLICATIONS

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.

Rain sensors can be an effective way to reduce water usage. These sensors cause an irrigation system to shut off in the presence of rainfall.

UPDATE AND CONVERT WASTE MODULE OF THE SUSTAINABLE OFFICE TOOLKIT

After completing the conversion of the energy module into Canva I was given the task of working on the waste module next and doing almost the exact same thing. I converted the entirety of the waste module into Canva. To improve the document, I first made sure all the links were still intact and led me to the correct domain. Checking these links is extremely important as domains can get bought out by different companies and they can direct people that click on them to dangerous websites which could contain malware. In addition to checking all the links I researched some information of my own. The links that I provided redirect readers to an Energy Star webpage with programs that could be used by organizations to keep track of their waste production. These programs can also be used to keep track of how your waste program and how well it is working. After going through and testing links and adding some of my own to the resources tab section. I then went about adding all the information from the old module to the Canva document.

MODULE 1: WASTE REDUCTION

AS PROPOSED BY:
THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY

TABLE OF CONTENTS

REDUCE AT THE SOURCE

Reduce at the source Source reduction conserves natural resources and energy and reduces disposal costs. Examples:
· Cancel multiple subscriptions when one copy can be shared.
· Stop junk mail.
· Print documents double sided and don't print e-mails unless necessary.
· When color is not important, print in gray scale (monochrome).

REUSE WHENEVER POSSIBLE

· Drink your coffee from a reusable mug not a Styrofoam cup.
· Make a scratch pad or print drafts on one-side-printed papers.
· Require vendors to take back shipping pallets.
· Replace disposable cafeteria items with washable tableware, dishes, and cloth napkins.

Recycle as much as possible Paper may be the most commonly recycled item in an office, but there are many more opportunities:
· All types of paper (except food wrappers) including junk mail, magazines, brochures, cardboard, manila folders, envelopes, etc.
· Plastic drink containers; aluminum beverage cans.
· Tyvek envelopes.
· Printer cartridges.
· CDs, DVDs, magnetic tapes; unwanted computers, electronics, and office equipment.
· Rechargeable batteries.

What do we mean by solid waste reduction? As used here, waste reduction refers to the combined efforts of reducing, reusing, recycling, and composting.

4

Lunch and Learn Poster

Lunch & Learn
ESI - Assisting Organizations to go Beyond Compliance

9/22

Lunch & Learn
ESI - Assisting Organizations to go Beyond Compliance

9/22

Words are super cool they fill up my poster and give meaning to what is trying to be conveyed. These words are present here so that I can tell if this looks like absolute garbage or not.

N.C. Department of Environmental Quality's Environmental Stewardship Initiative (ESI) is designed to promote and encourage superior environmental performance in North Carolina. ESI is a voluntary program administered by the Division of Environmental Assistance and Customer Service (DEACS) and is available at no cost. This program seeks to reduce the impact on the environment beyond measures required by any permit or rule, producing a better environment, conserving natural resources and resulting in long-term economic benefits.

Thank you for listening

FREE ILLUSTRATION RESOURCES

USE THESE FREE RECOLORABLE ICONS AND ILLUSTRATIONS IN YOUR CANVA DESIGN