

EcoWorks Project Report



Graham Sustainability Scholars Program

Graham Sustainability Institute, University of Michigan

Sam Works, Erin Schimmel, Ammar Safdari, and Jelena Pejovic

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Executive Summary

Based in Detroit, Michigan, EcoWorks is a nonprofit organization with a focus on community development and sustainability. The majority of our work assisted Eco-D, a subset of EcoWorks specializing in energy efficiency assistance. For our student project with the Graham Sustainability Institute, our focus was on the EcoWorks database system. Through research and team collaboration, we have compiled multiple tools to assist in revamping the current database. Our intention was to facilitate future updates with as little disruption to the ongoing work as possible. Our ultimate goal is to help EcoWorks help more people in their community.

Our work on this project began with a research portion that focused on database optimization, organizational guidelines, and the background and functions of Dropbox, the current system used by EcoWorks. Conducting this research allowed us to create a single page that compiles the most valuable information. After research, we determined the three goals for our project would be to improve the folder hierarchical structure, consolidate folder names and incorporate metadata into their organizational methods.

To address the structure of the database, we designed graphics that represent new, more efficient pathways. These graphics present a sensical and simple layout of our recommendations for the database. Before creating these graphics, we were able to simultaneously address the readability and consolidation of their current folders by creating a detailed spreadsheet. This spreadsheet contributes extensive detail to the new recommended folders as well as their contents. The incorporation of a tag system would increase context for each file while also equipping users with the ability to utilize the database without navigating the database as a whole.

The graphics, spreadsheet, and tag system provide guidance in refining the current database, ultimately increasing navigation efficiency. This will allow easier classification and identification of different projects and files. This optimized database would provide EcoWorks with guidelines to maintain a consistent and cohesive file storing system.

Introduction & Background

Focused on community development and sustainability, EcoWorks is a nonprofit organization that has been serving the Detroit area since 1981. With energy conservation as a main focal point for the organization, they have multiple programs that assist the residents of Detroit neighbors with addressing energy efficiency and inequities. The majority of our work took place with Gibran Washington, the director of the Eco-D program. This sector of EcoWorks manages the Refrigerator Replacement program, Healthy HomeKits, and weekly seminars with a multitude of local partners. These programs provide educational and physical resources that work toward the independence of community members.

One of the largest barriers to implementing sustainable practices through energy efficiency programs has little to do with the program itself. This barrier is organization. Our project focused on developing multiple tools that can be applied to EcoWorks' current file organization system. By focusing on the file database of the organization, we can facilitate future operations and help EcoWorks help more people.

Coming in to assist EcoWorks as outsiders, our main priority was to avoid disrupting the ongoing work. Developing tools for data reorganization will provide EcoWorks with the control of when and how to implement a new organization system. By taking this approach, we have avoided uprooting existing systems and ongoing operations or leaving unfinished work.

Activities

Our goal is to provide a series of database improvement recommendations for EcoD based on current practices, so that they could navigate their database with ease and efficiency, increasing their productivity and their ability to serve their communities. Beginning this project, many of us lacked the relevant database knowledge necessary for such an endeavor. We began by combing the internet for database organizational guidelines and optimization tips, especially those specifically relevant to dropbox. We met multiple times to share and discuss our findings and the main takeaways from our database sources. After the team had built up sufficient ground knowledge about databases, we then began to brainstorm what changes would be most beneficial for EcoD, considering the problems they had been facing (lack of clarity where certain resources were located, intermixing of data across file paths, and file/folder organization).

After some deliberation, we came to the conclusion that we had three main areas of focus for improving the EcoD database: improving their folder hierarchical structure, improving the readability and consolidation of folder names, and adding supporting metadata to directories and folders. We wanted to create tangible deliverables that would help EcoD to achieve each one of these goals. To advise on how to change the directory structure, we decided to make graphics that describe how we would change certain paths in the database, relocating different folders to new places. To consolidate and rename similar folders and reduce clutter, we created a spreadsheet mapping all of the proposed data labels to new internal contents.

The last of our action items, supporting metadata, was a little more difficult to accomplish since we did not have direct access to the folder or file contents, only screenshots of the database external view. Based on existing data and EcoD's project-based focus, we devised a tagging schema that would categorize folders as terminated, temporarily paused, ongoing, or archived. This tagging will be useful to determine the status of projects before searching. We also wanted to provide an example of external metadata, a separate file in folders that gives the rundown of all data paths from the current location. However, without knowing the specifics of what each folder was meant for, it was decided that such a deliverable could potentially be wildly off the mark and unhelpful.

Results & Recommendations

The basis of our project was focused on developing a database plan for EcoWorks that allowed them to become more efficient and organized. Through our research, we found that there are many strategies that could be implemented to help EcoWorks have a more organized database. The three biggest strategies we found to be most effective were having a logical structure of folders, keeping rigorous documentation of present contents in the database, and using tags. Having a logical structure to the folders within the system allows users to easily navigate and find the data they're looking for. Keeping rigorous documentation allows for users to easily identify documentation based on acronyms and such. This is helpful with large organizations because it allows everyone to easily understand certain documents without prior knowledge. Lastly, with database systems contained within Dropbox, tags allow users to easily access a given document or folder.

Given this information, the team took it upon themselves to create a plan to organize some of the folders within the EcoWorks database. Previous spots in the database where there were numerous folders and documents have now been condensed into more navigable and organized folders. This was done to help ease the clutter and make EcoWorks documents easier to find. Another recommendation that the team has is to use tags within the system. As the EcoWorks database is held on Dropbox, tags would allow users to easily search for and find documents relevant to their search. This would speed up the process of finding documents and would help users avoid having to navigate the database as a whole.

Anticipated Impact

The anticipated impact of our recommendations is to provide structure, clarity, and direction for the EcoWorks team when reorganizing the database. This project serves as a “how-to” guide to restructure a centralized database, to optimize efficiency, utility, and navigation, and streamline the process of information access. The recommendations above are “living” suggestions: adaptable guidelines that may change with the needs of the team or the project. The recommendations are a starting point for organizing current information and segmenting the database relative to the documents contained in it. As documentation and information expand, using the organizational guidelines as a reference will allow EcoWorks to increase efficiencies.

Appendix A: Research Report: Organizing a Database

Methods and Approaches

Databases are crucial to the day-to-day operations of most modern companies. The ways in which we retrieve, store, and organize data dictate how efficiently we can operate on that data. In the case of EcoD, retrieval and storage services are already provided by the cloud database hosting service known as Dropbox, allowing us to hone in on the organizational aspect of database management. There are many different ways to organize a database, mostly corresponding to the type of data being stored, but there are a few tried and tested standards that everyone agrees on. The first tenant of database organization is establishing a logical folder structure. This calls for consistent naming conventions, hierarchical structuring, separating ongoing and completed work, archiving older files, and keeping the database structure clean. The second tenant of database organization is keeping rigorous documentation and metadata. Documentation and metadata are key components of a successful database system, as it allows people to effectively find, use, and properly cite data whenever necessary. To further pin down what these terms mean, they refer to all information necessary to interpret and understand a given set of documents. There are two main avenues to accomplish this: embedded documentation and supporting documentation. Embedded documentation is contained within the file itself in some header or demarcated area of the file. Popular examples of embedded metadata are tags. Supporting documentation are external files that live in the same directory as the data they describe and provide a map of relevant files/folders and their contents. Sometimes using the file system search functionality is not sufficient and metadata bridges that gap, allowing users to locate files faster than traditional click and search methods.

Dropbox Specific Organization

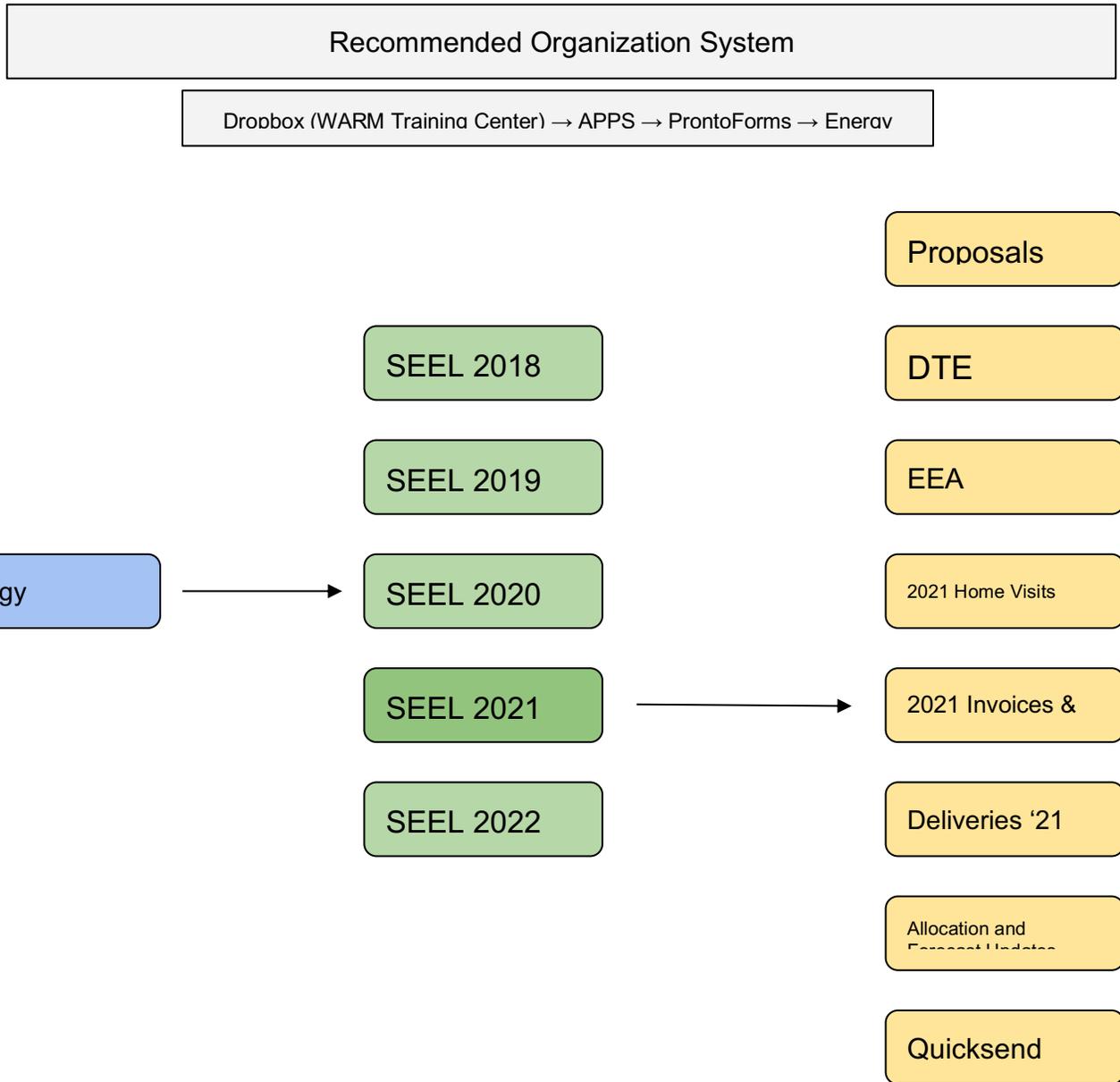
Based on relevant articles and sources on Dropbox organization, there were a few notable best practices recommended. These recommendations include the following three methods: (1) creating a folder hierarchy, (2) organizing with standard folder names, and (3) adding tags to files and folders. When creating a folder hierarchy it's important to pick an organizational method (e.g., by date, category, location, etc.) and determine how people would naturally use it. This allows for easy navigation and accessibility within the newly developed structure. Organizing folders with standardized names also assists people in easily navigating through different folders within the database to locate necessary data. Finally, adding tags to files and folders make it easier for a person to search for and find files. Utilizing these three methods will create an organized, easily navigable workspace for a Dropbox database.

Another proposed recommendation is to delete unused/unnecessary files. A handy feature of dropbox is version control, which allows more freedom in deleting and creating files because archived projects remain accessible in the cloud. To reduce clutter, deleting unnecessary files in Dropbox is recommended because archived files may be retrieved from the cloud when needed.

EcoWorks Current System Overview

EcoWorks data and project information is currently stored on Dropbox. The files pertaining to energy education and energy efficiency are stored within the Energy Education folder. The path taken to find this folder is Apps→ProntoForms→Energy Education. From within Energy Education, there are multiple pertinent file paths relating to their service. These focuses include Eco-D Client Services, EnergySmart UWSEM Grants, Lowes Appliance Orders and Deliveries, HVAC Contractor Proposals and Information, Data Science, Planning and Research, Home Repair Resources, And Data and Research. These pathways are the focal point of our proposed database plan and will scarcely address individual files.

Appendix B: Recommended Organization System Graphics



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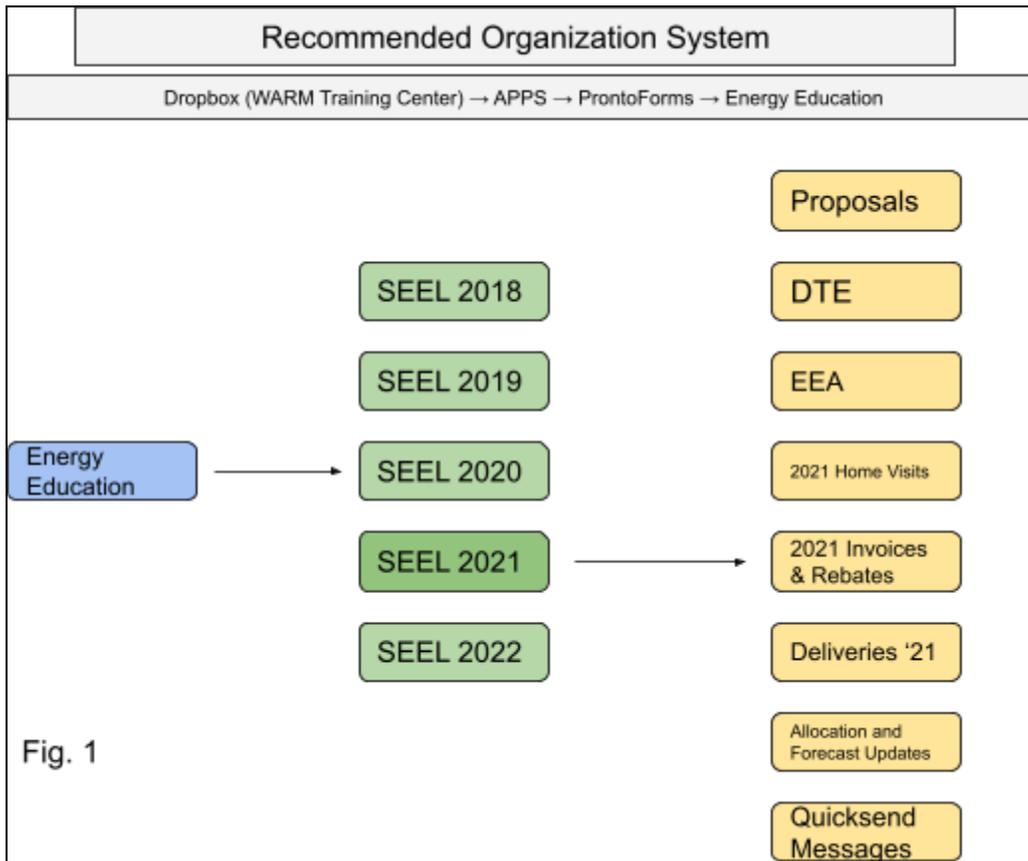


Fig. 1

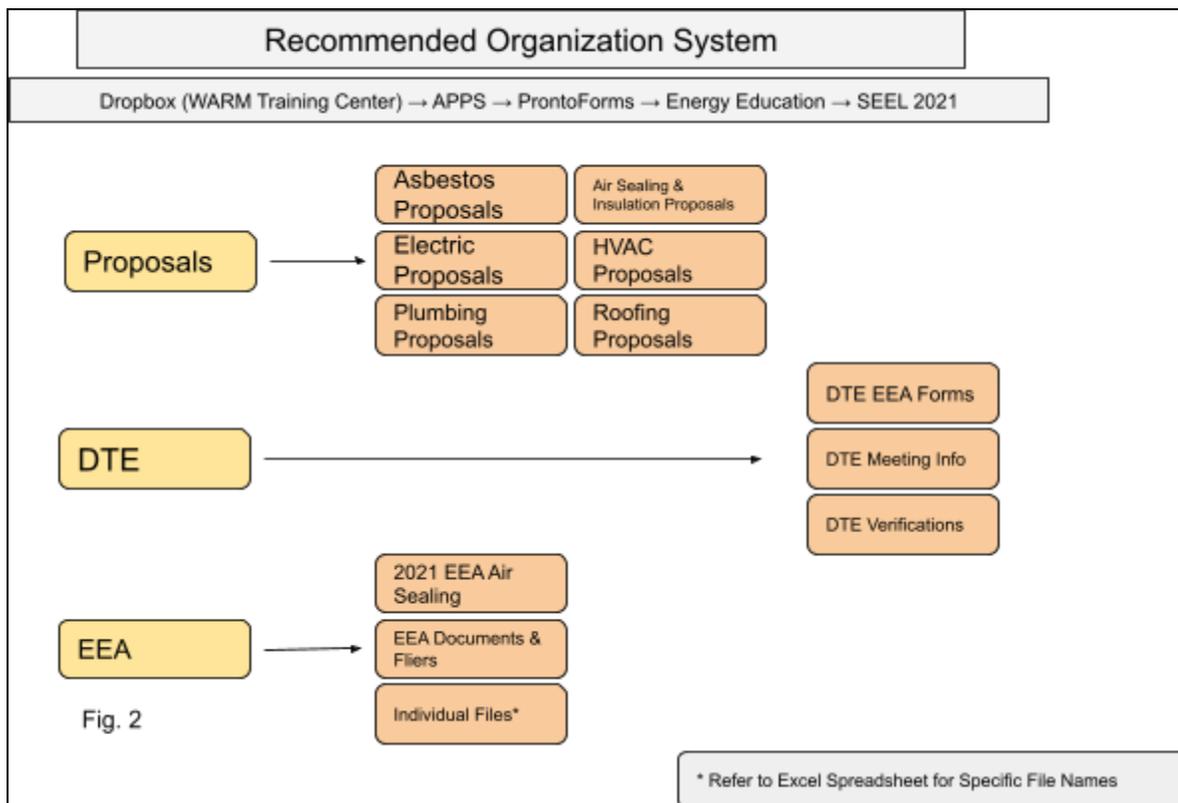
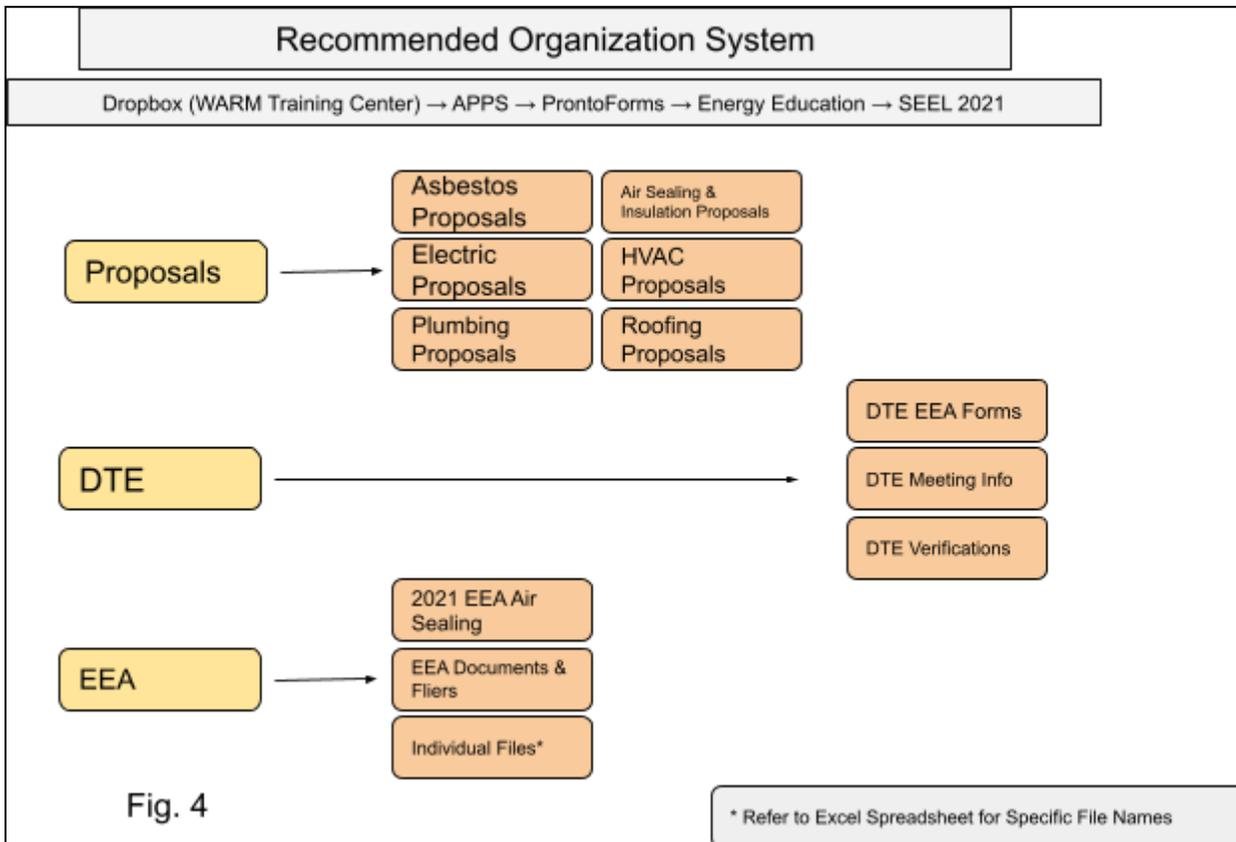
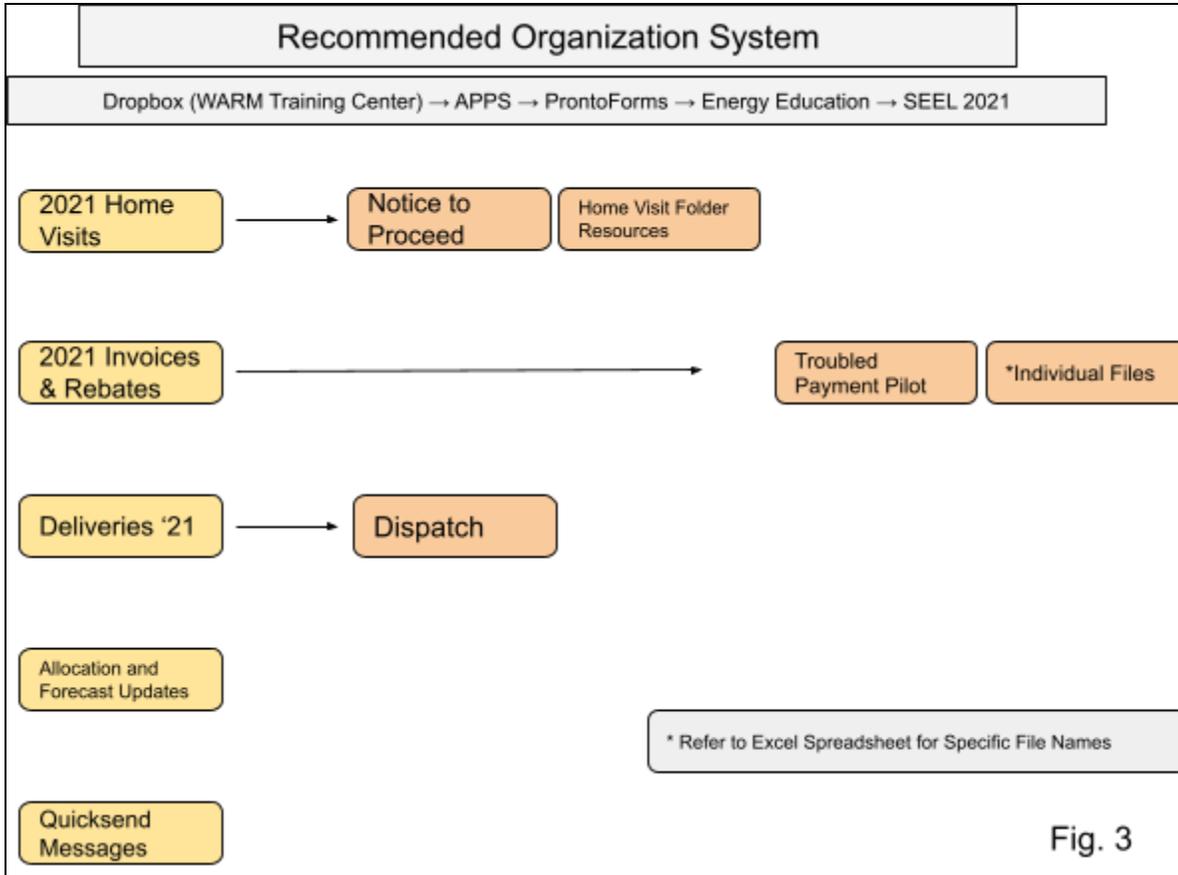
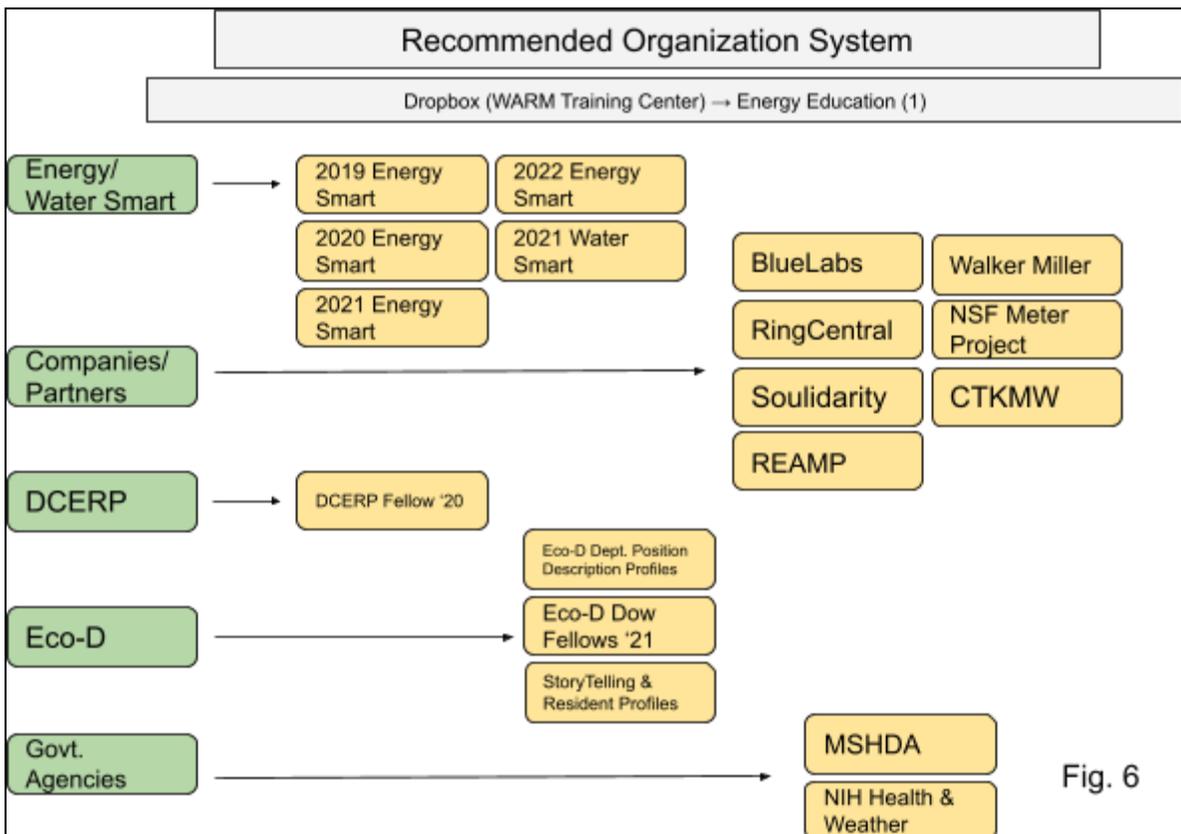
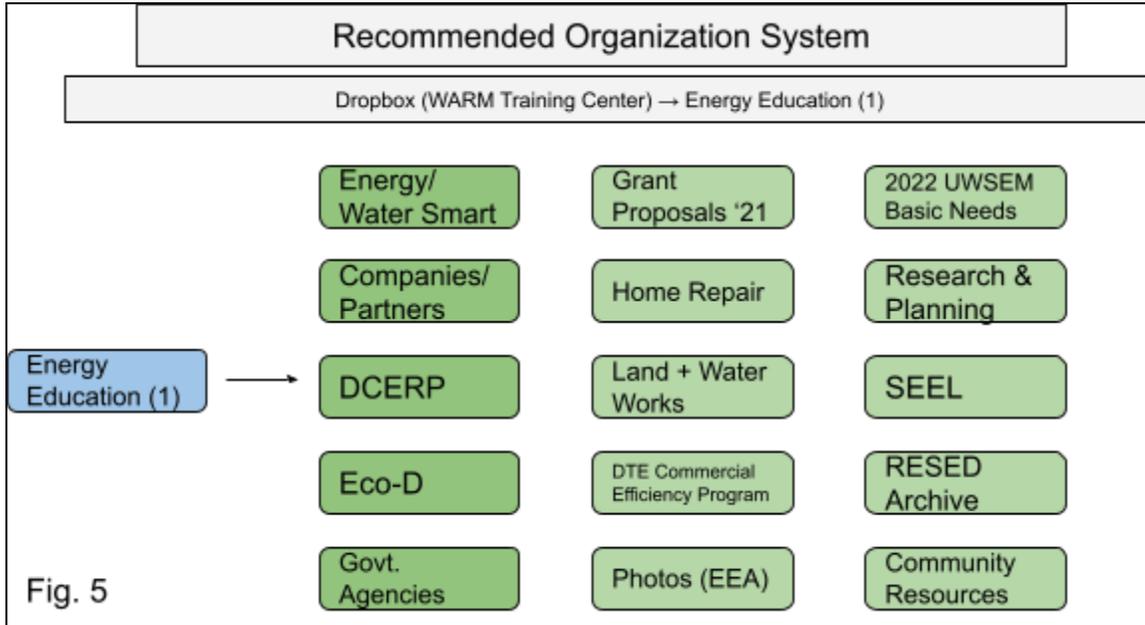


Fig. 2





Appendix C: Tag System Graphic

