## Enhanced Security Documentation

Goal

One of our team's priorities going into the implementation of the Texas Grid and Analytics was to make our design solution secure and reliable to prevent data breaches. Preventing data breaches is essential since we are working with voluminous and diverse data from ERCOT. As specified by our mentors, adding enhanced security to the dashboard should give anyone the ability to view data, but only allow registered users to download data. This restriction prevents unauthorized access to ERCOT's valuable data. As our team implemented this enhanced security, we also made sure to comply with US/EU identity protection laws. This document takes users through the process of becoming registered users with the ability to download chart data.
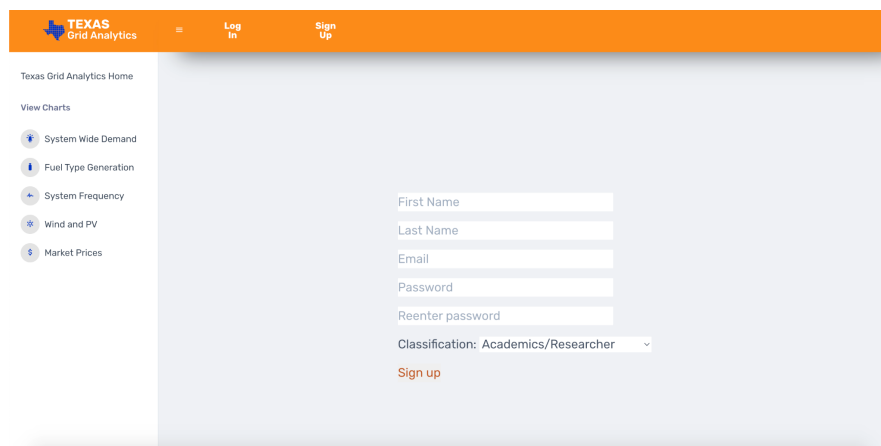
Updated Navigation Bar on the Home Page

When users navigate to the Texas Grid Analytics website, they can see two buttons in the navigation bar: "Log in" and "Sign up". The screenshot below depicts this.
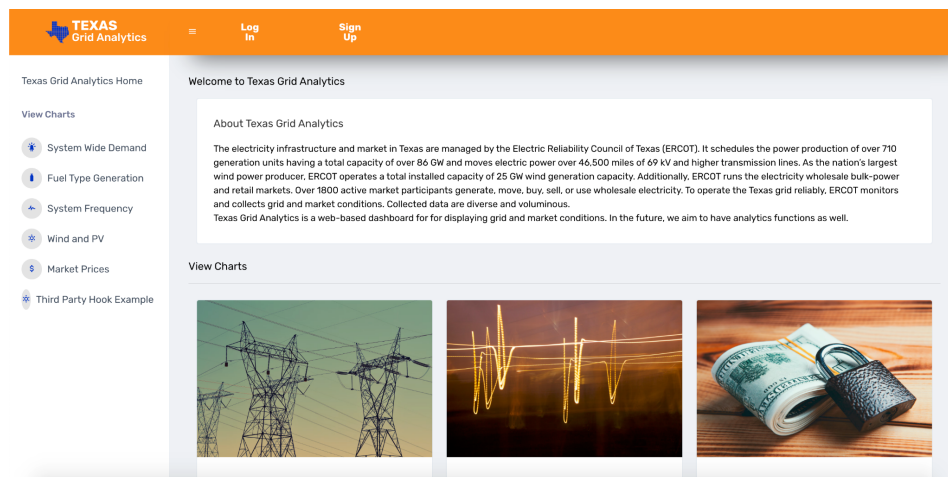
Sign up Page

The purpose of the "Sign up" page is to allow users to create an account for the Texas Grid and Analytics dashboard. This page requests users for their first name, last name, email, password, and classification. They can be classified as one of the following five categories: Academics/Researcher, Utility/Industry Professional, Market Participant, Policy Maker/Reporter, and General Public. Once users provide the requested information, our backend puts this information in the "Users" database. It also encrypts the user's password before doing so. Below is a screenshot of the "Sign up" page.


Log in Page

Likewise, the "Log in" page simply authenticates a user and authorizes them to be able to download data. This page also includes a "Forgot password?" button. Below is a screenshot of the "Log in" page.
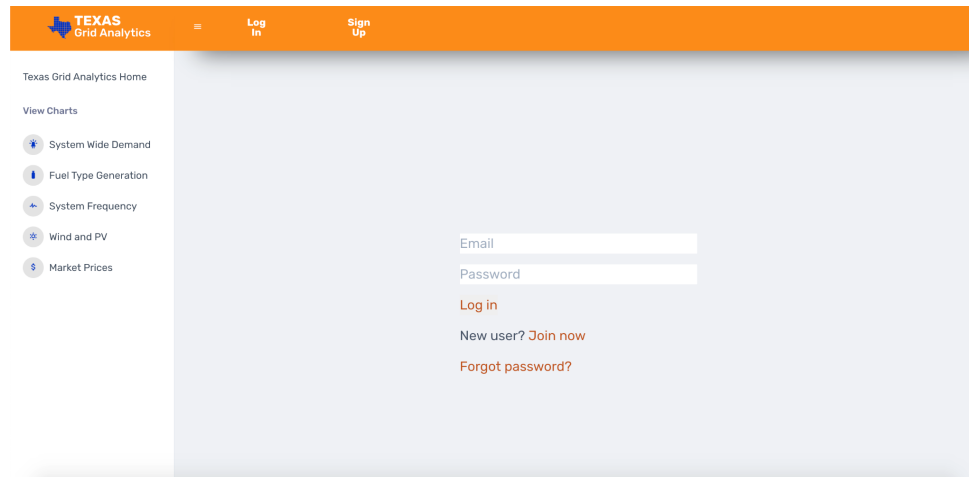
Forgot password

Our initial implementation of the "Forgot password" functionality was to allow users to reset their password on-site. Once a user enters their email, the backend checks if the email exists in the database. If it exists, then users will be redirected to a page where they can enter a new password. After discussing with our mentors, however, we have determined that this feature is a security risk, as any user can change other users' passwords if they know their emails. When users click on "Forgot password?" now, we simply direct users to the following page:
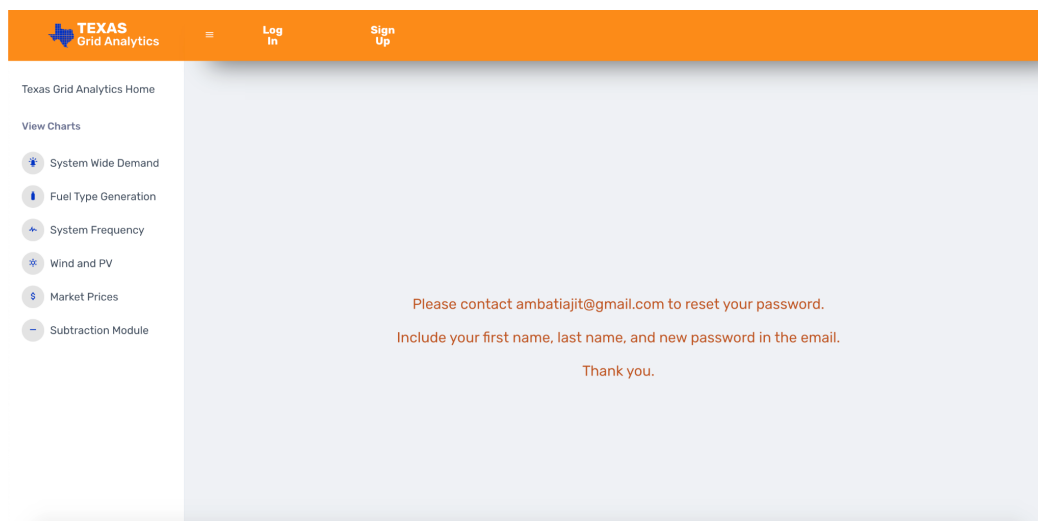
Download Data Button

Once users are signed in, the "Download Data" button that was once disabled becomes enabled. This feature is essentially the backbone of our implementation for enhanced security, as it only allows registered users to download chart data. The screenshots below depict the download button before and after signing in.
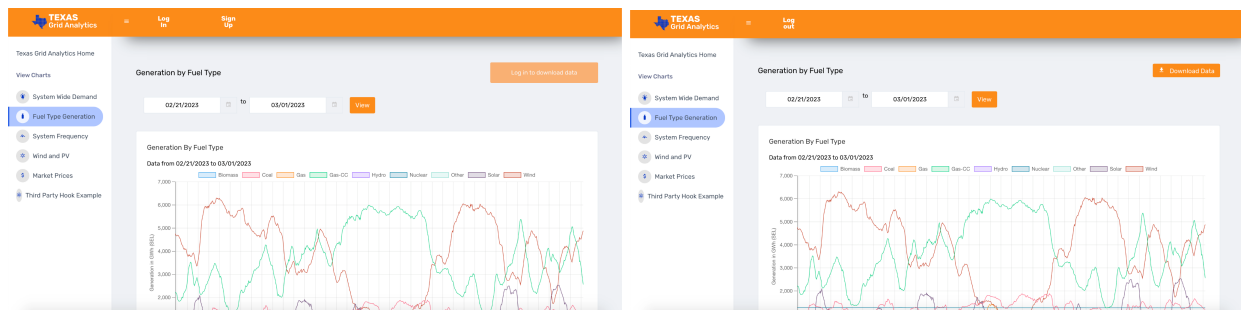
Summary

After months of implementing enhanced security for the Texas Grid Analytics dashboard, our team is confident that our implementation is secure and reliable enough to prevent data breaches. By adding pages like "Log in" and "Sign up" and only enabling the download data button for registered users, we are confident that we have accomplished our goals for enhanced security.