

REAL ESTATE PORTFOLIO TOOL

MINIMUM VIABLE PRODUCT



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PROJECT OVERVIEW & OBJECTIVES



WHAT IS THE REAL ESTATE PORTFOLIO TOOL?

An application prototype (or “minimum viable product”) capable of reading, analyzing & visualizing real estate portfolio data and running portfolio calculations for selected portfolio actions and scenarios.

PROJECT GOALS

- Create a technology-based real estate forecasting tool with the power to store client real estate data and automate calculations that support client real estate decisions.
- Build an end-to-end application that imports structured Excel-based data, stores data in a relational SQL database, runs portfolio calculations in Python, and visualizes & reports outputs in Streamlit.

WHY DEVELOP THIS TOOL?

- Corporate entities are now making quicker, high-profile decisions around real estate due to the pandemic and accelerated adoption of Hybrid work.
- Currently there is a lack of technology to support corporate real estate organizations and professionals in making quick and effective real estate decisions.
- Organization are slow in speed to execute strategies due to data silos and inaccuracies and there is a lack of technology that supports automation.

PROJECT APPROACH



Six Step Approach for Calculations & Visualizations:

Step 1: Populate Excel import template (multi-tab workbook).

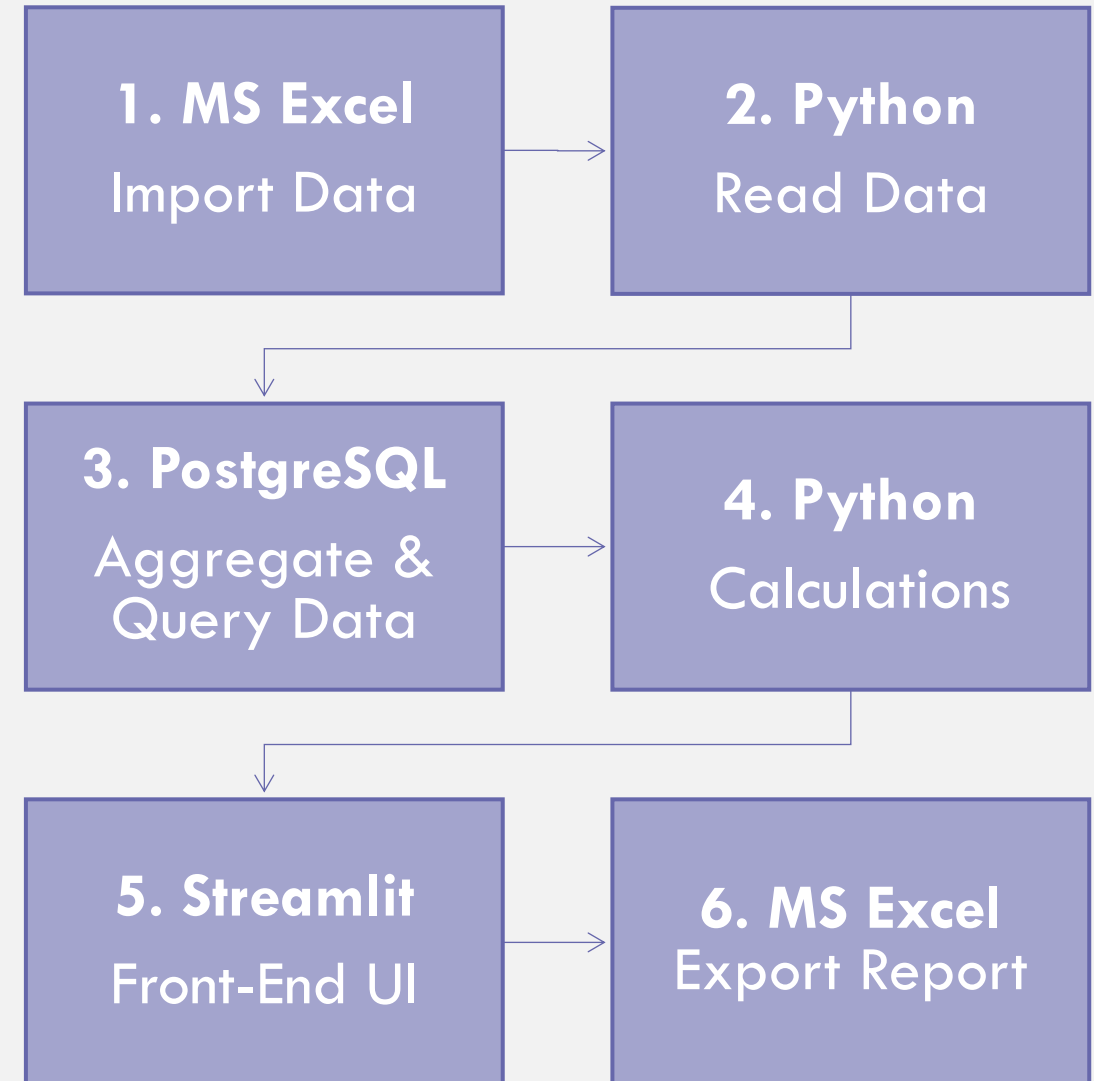
Step 2: Read Excel data into Python (parsing into individual CSVs). Execute schema and query SQL scripts and export data to PostgreSQL using SQLAlchemy.

Step 3: PostgreSQL database houses all portfolio data in normalized form with primary and foreign key connections for all tables.

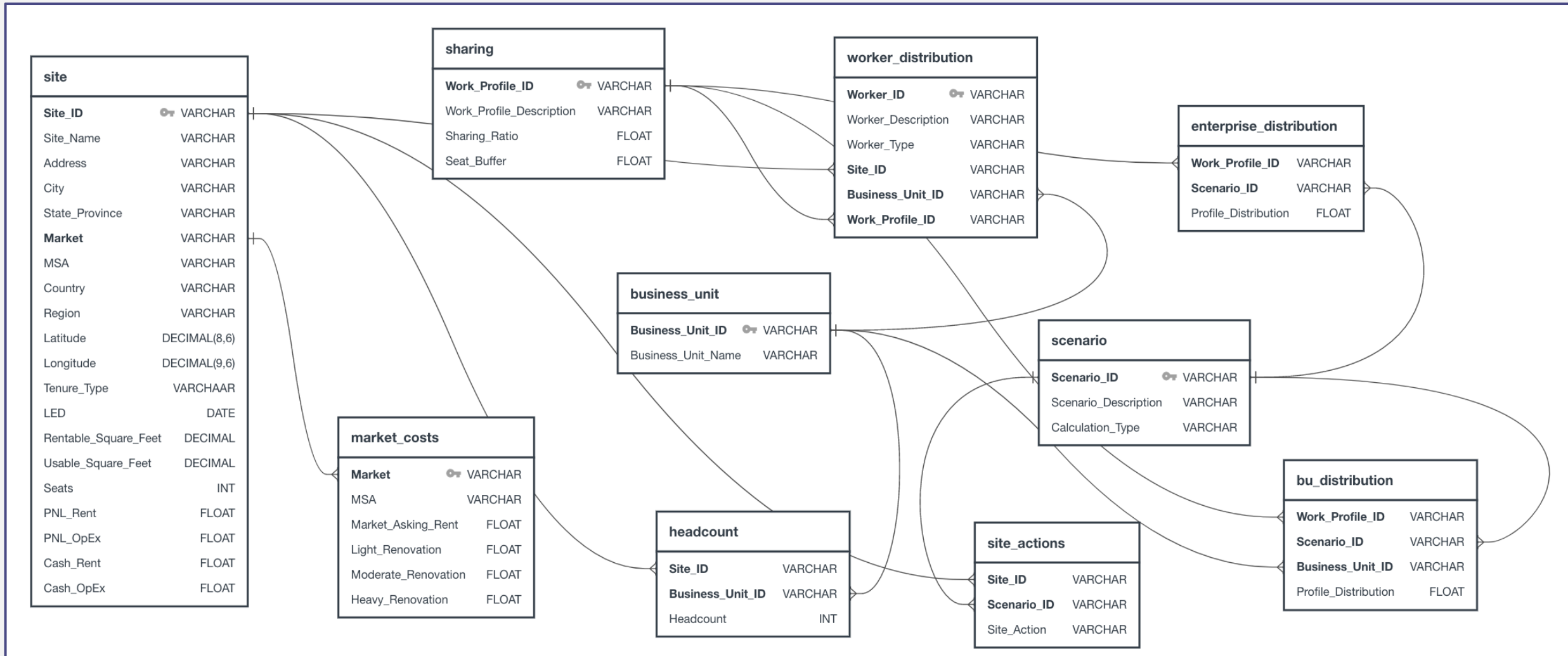
Step 4: Data is queried from created Views in PostgreSQL and read back into Python. Calculations are then run on the aggregated View data.

Step 5: Front-end user interface is driven in Streamlit with ability to select calculation types, portfolio details, and scenarios.

Step 6: End user can export calculations into Excel report.



RELATIONAL DATABASE DIAGRAM (POSTGRESQL)

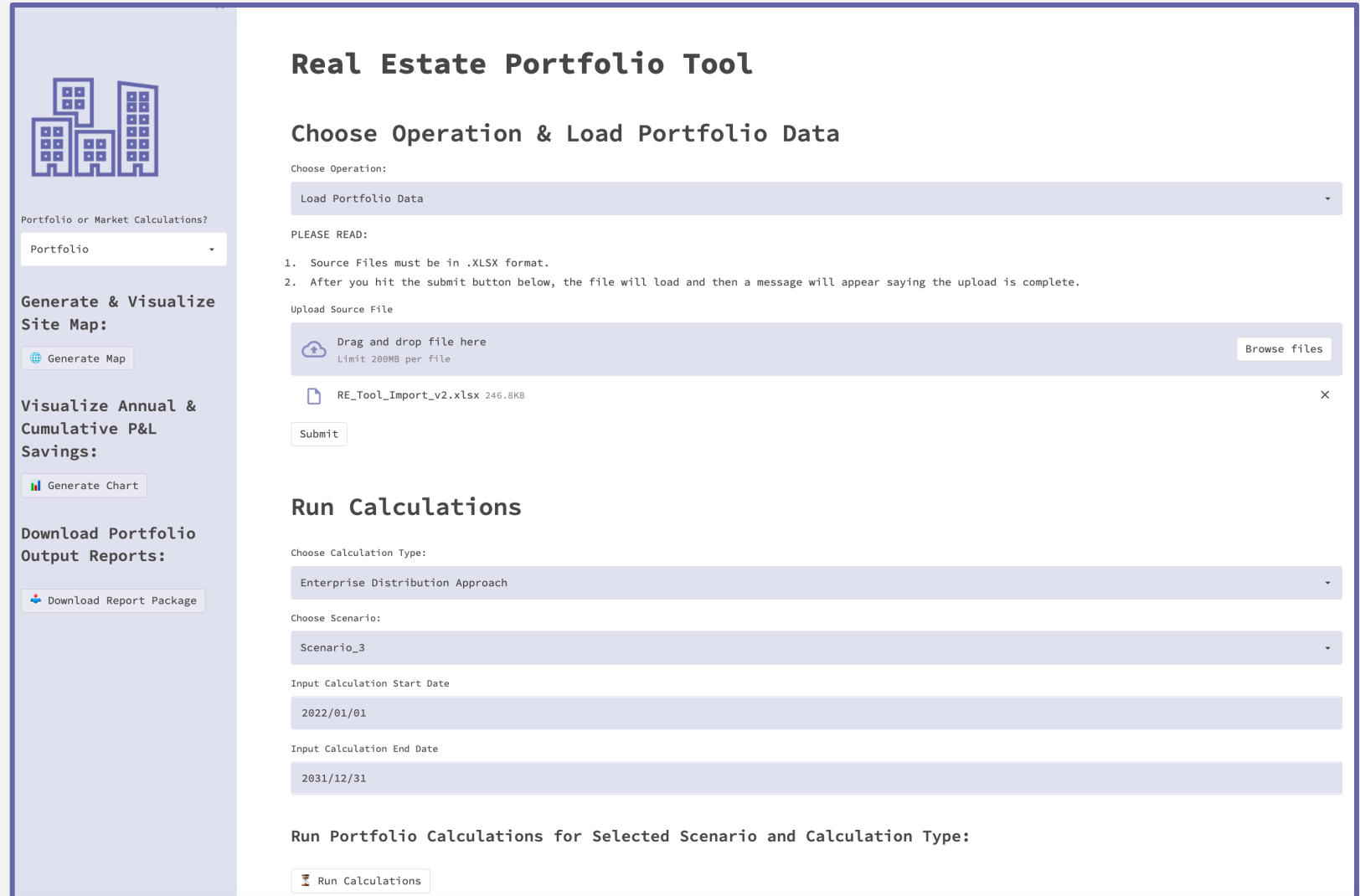


KEY OUTCOMES – STREAMLIT APPLICATION



Streamlit User Interface

- Upload Excel data using file browser.
- Click submit to read Excel data and query the data to PostgreSQL.
- Select either Portfolio or Market-level calculations in the left side bar. If Market-level is selected, an additional drop down will display to select a market based on the imported data.
- Prior to running calculations, select calculation type to perform, scenario, and input calculation start and end dates
- Run calculation and download reports



The image shows a Streamlit application interface for a Real Estate Portfolio Tool. The interface is divided into two main sections: a left sidebar and a main content area.

Left Sidebar:

- At the top is a logo of three stylized buildings.
- Below the logo is a section titled "Portfolio or Market Calculations?" with a dropdown menu currently set to "Portfolio".
- Next is a section titled "Generate & Visualize Site Map:" with a button labeled "Generate Map".
- Below that is a section titled "Visualize Annual & Cumulative P&L Savings:" with a button labeled "Generate Chart".
- At the bottom is a section titled "Download Portfolio Output Reports:" with a button labeled "Download Report Package".

Main Content Area:

- The title "Real Estate Portfolio Tool" is at the top.
- Below the title is the section "Choose Operation & Load Portfolio Data".
- Under "Choose Operation:", there is a dropdown menu set to "Load Portfolio Data".
- Below that is a "PLEASE READ:" section with two instructions:
 1. Source Files must be in .XLSX format.
 2. After you hit the submit button below, the file will load and then a message will appear saying the upload is complete.
- Next is the "Upload Source File" section, which includes a text area for "Drag and drop file here" (with a "Limit 200MB per file" note) and a "Browse files" button.
- Below the text area, a file named "RE_Tool_Import_v2.xlsx" (246.8KB) is shown with a close button (X).
- A "Submit" button is located below the file list.
- The "Run Calculations" section follows, starting with a "Choose Calculation Type:" dropdown set to "Enterprise Distribution Approach".
- Below that is a "Choose Scenario:" dropdown set to "Scenario_3".
- Next is the "Input Calculation Start Date" field, which contains the date "2022/01/01".
- Below that is the "Input Calculation End Date" field, which contains the date "2031/12/31".
- At the bottom of the main content area is the text "Run Portfolio Calculations for Selected Scenario and Calculation Type:" followed by a button labeled "Run Calculations".

OUTPUT ANALYTICS (PORTFOLIO MAP)



Select Market or Portfolio:


Portfolio or Market Calculations?

Market ▼

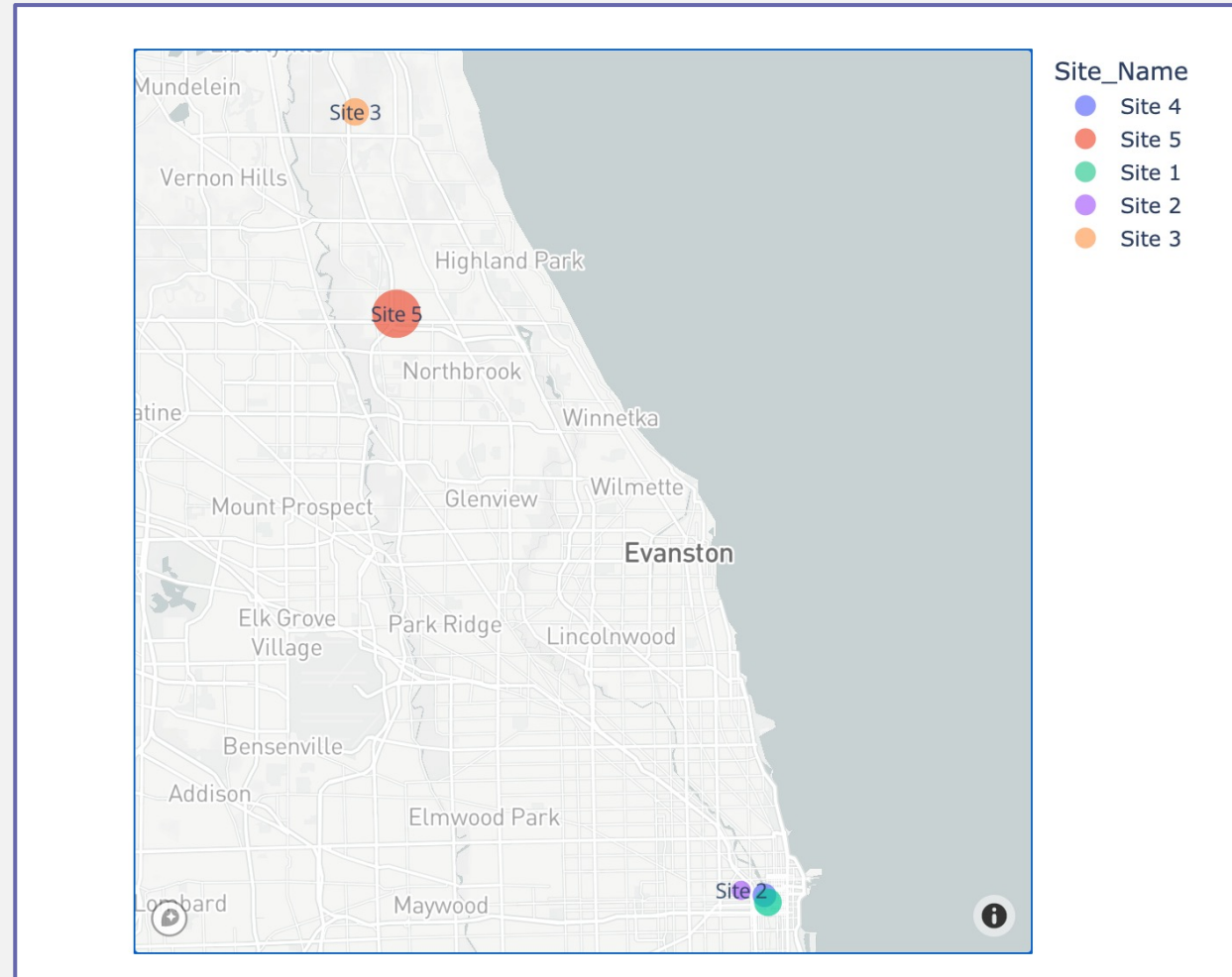
Select Market

Chicago_CBD ▼

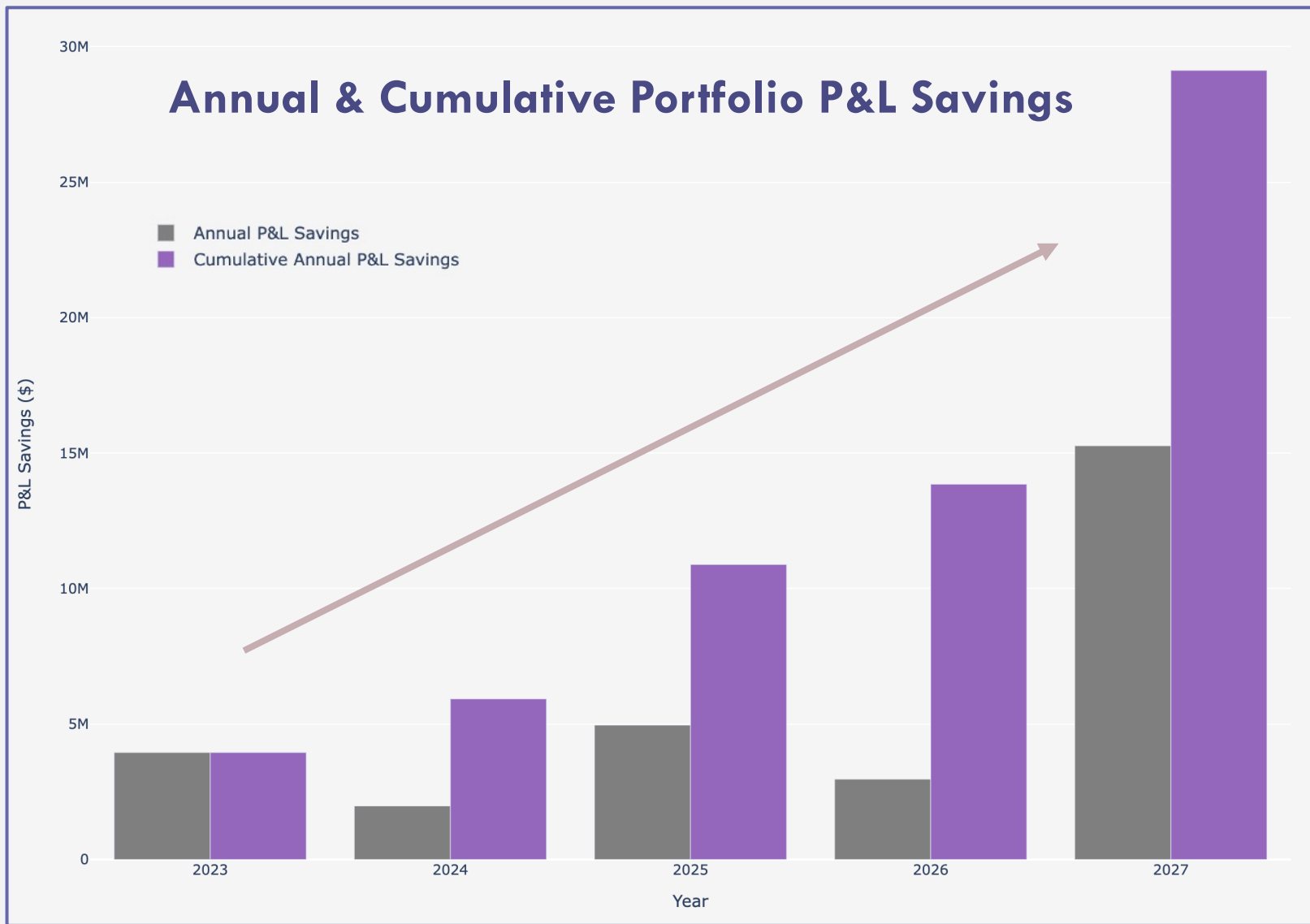
**Generate & Visualize
Site Map:**

 Generate Map

Current Portfolio Map (Based on Selection):



OUTPUT ANALYTICS (ANNUAL P&L SAVINGS)



Generate Visuals & Reports:

Visualize Annual & Cumulative P&L Savings:



Generate Chart

Download Portfolio Output Reports:



Download Report Package

NEXT STEPS (BEYOND THIS BOOTCAMP)



1. Continue to develop Python script adding detailed calculations & functions for current portfolio analytics, site-level actions, and projected cash & P&L financials
2. Re-direct scenario calculation data back to SQL database for storage & reporting.
3. Build-out additional visualization and reporting capabilities.
4. Develop front-end user interface outside of Streamlit (i.e., Tableau, Power BI, Other Platforms).
5. Other portfolio tracking capabilities (i.e., project execution, actual vs. forecasts, supply vs. demand forecasting)
6. Cloud data storage, client licensing, account management tool, and more...