

Reproducibility Guide – Renewable Asset Valuation

Step 1 — Provide the Input Excel File Paths

Before running the analysis, specify the file paths for the required input Excel files located in the **Input_Excel** folder. Update the following section at the top of the Python script (e.g., *Hackathon.py* or *Hackathon_Plottings.py*):

```
HISTORICAL_XLSX = Path(r"file path")
FWD_ERCOT      = Path(r"file path")
FWD_MISO       = Path(r"file path")
FWD_CAISSO     = Path(r"file path")
```

⚠ Replace "file path" with the full absolute path to each file in your local system.
For example:

```
HISTORICAL_XLSX = Path(r"C:\Users\YourName\Desktop\Input_Excel\HackathonDataset.xlsx")
```

Step 2 — Run the Python File

Once the file paths have been correctly specified, execute the main analysis or plotting script: *Hackathon.py* or, if you wish to generate also the plots: *Hackathon_Plottings.py*

Step 3 — Check the Results

After successful execution, all outputs will be automatically saved in a new folder named "**results**", located in the same directory as the Python file.

The results folder will contain:

- Subfolders for each market: **ERCOT**, **MISO**, and **CAISO**
- Corresponding Excel reports and plots for each market

Step 4 — If the File Shows an Error

If the program encounters an error (typically related to the creation of the master workbook), follow these steps:

1. **Comment out** the section of code shown below and run the script once to complete the individual market analyses.
2. After the per-market outputs are successfully generated, **uncomment** the same block and rerun the script to create the master Excel file.

```
# --- Master workbook aggregating all markets ---
master = OUTDIR / "Valuation_Report_ALL_MARKETS.xlsx"
with pd.ExcelWriter(master, engine="xlsxwriter") as w:
    for mkt in ["ERCOT","MISO","CAISO"]:
        base = OUTDIR / mkt
        # bring in the key CSVs you already produced
        pm   = pd.read_csv(base / "fixed_price_matrix_P50_P75_P90.csv")
        gen  = pd.read_csv(base / "expected_generation_2026_2030.csv")
        drv  = pd.read_csv(base / "volatility_driver_summaries.csv")
        scen = pd.read_csv(base / "scenario_unit_PV_distribution.csv")

        pm.to_excel(w, sheet_name=f"{mkt}_FairPrices", index=False)
        gen.to_excel(w, sheet_name=f"{mkt}_ExpectedGen", index=False)
        drv.to_excel(w, sheet_name=f"{mkt}_VolDrivers", index=False)
        scen.to_excel(w, sheet_name=f"{mkt}_Scenarios", index=False)

print(f"✓ Master Excel written: {(OUTDIR / 'Valuation_Report_ALL_MARKETS.xlsx').resolve()}"
```