ESG Tracker Story

Turning Data Chaos into Board Room Clarity

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Picture a Friday morning boardroom. The CEO asks the simplest, hardest question:

“If we nudge just ten percent of our gas generation into renewables, how many dollars and tons of carbon will we actually save?”

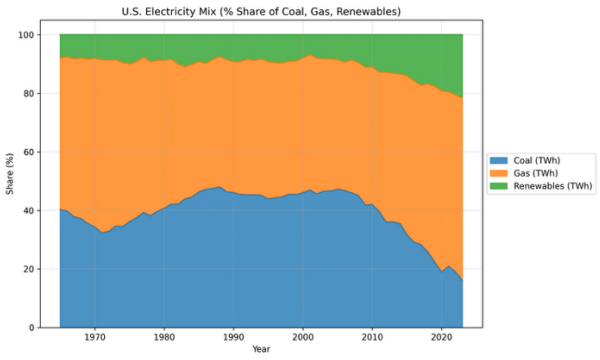
Spreadsheets can’t forecast and vendor dashboards blur assumptions. We needed a transparent, auditable engine fast.

Instead of locking ourselves behind pricey licenses, we tapped “Our World in Data”, a public trove of U.S. fuel and CO2 numbers. No paywalls, no NDAs, just raw CSVs we could automate.

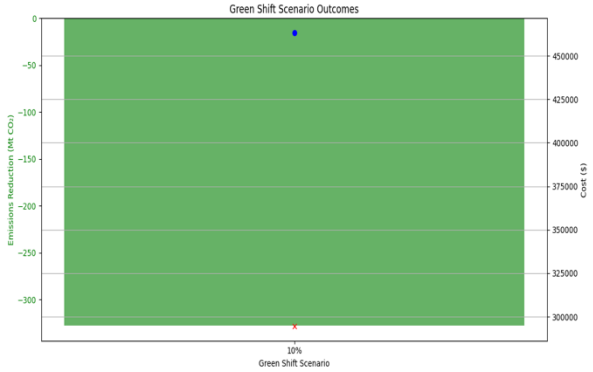
Raw files came in different shapes, so a quick Pandas pipeline merged gas, coal, renewables, and emissions into one tidy table one clean row per year, the way finance likes it. Forecasting the future demanded rigor, not faith. Two classics were set loose to duel: an ETS model for steady trends and an ARIMA model for volatility. Whichever delivered the lower error became our oracle.

We plotted STL decompositions plus autocorrelation charts to be sure the residuals whispered no hidden patterns. Only when the plots looked like noise did we trust the signal. Numbers rarely move executives; deltas do. So, we built a slider five, ten, twenty, thirty percent shifts from gas to renewables. Behind that single lever, gas megawatt hours drop, renewables rise, emissions recalc at point four one megatonnes per terawatthour, energy costs shift from sixty to forty dollars per megawatt hour, and carbon tax exposure flexes under a hundred-dollar price.

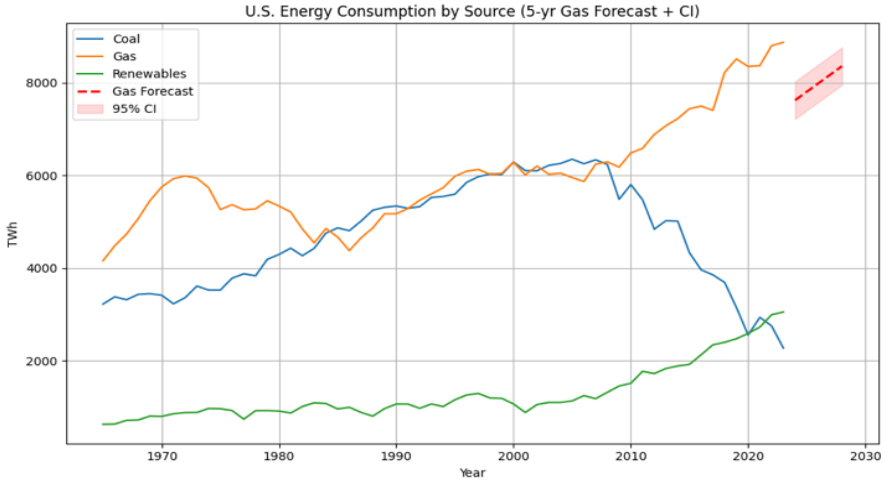
One run and the CLI prints the line every director understands: Ten percent shift minus three hundred twenty-seven megatonnes of CO, nearly sixteen thousand dollars saved, thirty-two thousand in tax avoided.



The following Friday the same question surfaced. This time we opened ESG Tracker and typed one command. Thirty seconds later a four-page PDF landed in every inbox forecast chart, scenario matrix, cost and carbon deltas, all sourced, all reproducible.



The room relaxed. The conversation moved from What if? to When do we start? In that moment every design choice open data, model duel, diagnostics, and the humble scenario slider proved itself as a story told through numbers so the board could act with confidence.



🙌 Author:

Edwin Joseph Ugbechie - *Led the design, modeling, and delivery of this tool as part of my graduate capstone on sustainable forecasting.*

View the full code and visuals on GitHub: https://github.com/Jowieeddy/ESG-Tracker