# LCCA Track – Roadmap

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## Overview

This document outlines the roadmap for the LCCA (Life Cycle Cost Analysis) Track within the EM Tools suite. The roadmap includes completed modules, in-progress components, planned enhancements, and integration points with other tracks (e.g., EM Core Tools, EnergyPlus, Explorer).

## Phase 1 – Core Functionality

- ✅ `lcca\_main\_v0\_05.py`: Core scenario handler and calculation logic.

- ✅ `write\_to\_excel.py`: Populates Excel tool with LCCA outputs.

- ✅ `generate\_financials.py`: Calculates key financial metrics (NPV, ROI, Payback, etc.).

- ✅ `LCCA\_Tool\_v0.05.xlsm`: Core tool with VBA macros, dashboard, and financial logic.

- ✅ `scenario\_config.json`: Flexible scenario definitions used across the LCCA pipeline.

- ✅ `load\_costdb.py`: Reads and filters the Construction Cost Database.

- ✅ Construction Cost Database files: `CostDB\_v0.05.xlsx`, `cost\_sources.csv`, etc.

## Phase 2 – Emissions & Utility Enhancements

- ✅ `lookup\_zip\_properties.py`: Maps ZIP code → state + climate zone.

- ✅ `select\_utility\_rate.py`: Assigns utility rates by ZIP or region.

- ✅ `estimate\_emissions.py`: Adds emissions calculations from utility sources.

- ✅ Emissions factor database (planned): Hourly emissions by eGrid subregion.

- ⏳ `generate\_lcca\_report.py`: Exports full ECON-1 style report (Excel/PDF hybrid).

## Phase 3 – Integration with Other Modules

- ✅ Streamlit GUI integration initiated (connects to Explorer Track).

- ✅ LCCA results pipeline planned to export to comparison engine.

- ⏳ LEED, C-PACE, and NYSERDA metrics alignment (post-MVP).

- ⏳ ESG output formatting and QA flagging (post-MVP).

## Post-MVP Features

- ☑️ EC3 / OneClick LCA integration for embodied carbon pricing.

- ☑️ Whole-life carbon tracking (A1–C4 phases).

- ☑️ QA rulesets for material and cost assumptions.

- ☑️ ENERGY STAR and LEED benchmarking integration.

- ☑️ ESG Report generation and stakeholder formatting.