EM-Tools Development Project - Fully Updated Development Map

# 1. Project Overview

The EM-Tools development project is structured into four primary tracks: EM Core Tools, Reference Documents, EnergyPlus, and LCCA. Each track is focused on creating modular tools to support energy modeling, lifecycle cost analysis (LCCA), and compliance with standards such as ASHRAE 90.1. This development map includes updated milestones, deliverables, and review dates based on the latest progress and fast-tracking strategies.

# 2. Current Status and Milestones

## 2.1 EM Core Tools Track

The EM Core Tools track focuses on foundational tools for energy modeling, data parsing, and comparison. Key deliverables are progressing, with several modules in active development for model visualization, data parsing, and IDF export functionality.

- \*\*Model Viewer/Inspector\*\*: Basic model display functionality is being developed, focusing on visualizing CBECC and IESVE models.  
- \*\*Model Conversion Engine\*\*: Parsing of basic geometry and system data between CBECC and IESVE models is in progress.  
- \*\*Data Processing Modules\*\*: The CBECC XML parser and IDF generation modules are being built to handle data from energy models.  
- \*\*Comparison Engine\*\*: A basic comparison of energy consumption between baseline and proposed models is working.  
- \*\*Report Generation Modules\*\*: Initial ECON-1 and ASHRAE 90.1 reports are being generated.  
- \*\*Visualization Tools\*\*: Development of interactive dashboards is underway for comparing energy use and system configurations.

## 2.2 Reference Documents Track

The Reference Documents track is focused on creating structured documentation for energy modeling tools and processes. The CBECC Modeling Guide and IES Modeling Guide are being finalized, and the comparison document is in progress.

- \*\*CBECC Modeling Guide\*\*: Descriptions of key input fields and modeling requirements are being completed.  
- \*\*IES Modeling Guide\*\*: Documentation for IESVE-specific inputs is being finalized.  
- \*\*CBECC vs. IES Modeling Comparison\*\*: A side-by-side comparison of modeling processes with examples is being drafted.

## 2.3 EnergyPlus Track

The EnergyPlus track is focused on validating energy models against ASHRAE 90.1 compliance and generating IDF files for EnergyPlus simulations. The baseline modeling tool is under development, and integration with the EM Core Tools and LCCA tools is in progress.

- \*\*EnergyPlus Baseline Modeling Tool\*\*: Baseline model generation for residential buildings is nearing completion.  
- \*\*EnergyPlus Compliance Validator\*\*: Compliance validation for HVAC systems is being tested.  
- \*\*EnergyPlus IDF Generator\*\*: Basic IDF export for building geometry has been implemented.  
- \*\*Performance Analysis Tool\*\*: Energy consumption and cost savings analysis are being validated.

## 2.4 LCCA Track

The LCCA track is focused on integrating lifecycle cost analysis with energy modeling results. Key tools for scenario comparison, cost projection, and system cost estimation are being actively developed, with integration planned for later stages.

- \*\*LCCA Tool\*\*: The scenario comparison module is in development, with early cost projections available.  
- \*\*Construction Cost Database\*\*: Material cost entries and escalation factors are being added.  
- \*\*Cost Estimator\*\*: HVAC and PV system cost estimations are being tested.  
- \*\*Integration\*\*: Early integration of LCCA Tool, EM Core Tools, and EnergyPlus data is underway.

# 3. Updated Milestones and Review Dates

## 3.1 EM Core Tools Track Milestones

The following dates mark key review milestones for the EM Core Tools track. These milestones represent incremental deliverables that will be reviewed at each stage of development.

- \*\*August 15, 2025\*\*: Review of \*\*Model Viewer/Inspector\*\* (Basic model display) and \*\*CBECC to IESVE parsing\*\*.  
- \*\*September 1, 2025\*\*: Review of \*\*baseline model generation logic\*\* and \*\*compliance checks\*\* for EnergyPlus.  
- \*\*September 15, 2025\*\*: Review of \*\*scenario comparison logic\*\* in \*\*LCCA Tool\*\* and \*\*CBECC Modeling Guide\*\*.  
- \*\*October 1, 2025\*\*: Review of \*\*data normalization modules\*\* and \*\*integration with EnergyPlus IDF export\*\*.  
- \*\*October 15, 2025\*\*: \*\*Full integration testing\*\* of core tools and \*\*cost estimator\*\* for HVAC systems.  
- \*\*November 1, 2025\*\*: Review of \*\*report generation\*\* (ECON-1) and \*\*energy consumption analysis results\*\*.  
- \*\*December 1, 2025\*\*: Final \*\*testing and integration\*\* of all tools, including dashboards, and final documentation.

## 3.2 Reference Documents Track Milestones

- \*\*September 15, 2025\*\*: Draft of \*\*CBECC Modeling Guide\*\* and \*\*IES Modeling Guide\*\*.  
- \*\*September 30, 2025\*\*: Review of \*\*common use cases\*\* in \*\*CBECC Modeling Guide\*\*.  
- \*\*October 1, 2025\*\*: Review of \*\*CBECC vs. IES Modeling Comparison\*\* (modeling process and system comparisons).  
- \*\*November 1, 2025\*\*: Finalization of all reference documents for release.

## 3.3 EnergyPlus Track Milestones

- \*\*August 15, 2025\*\*: Review of \*\*EnergyPlus Baseline Modeling Tool\*\* and \*\*Compliance Validator\*\*.  
- \*\*September 1, 2025\*\*: Final review of \*\*EnergyPlus IDF Generator\*\* (basic geometry export).  
- \*\*September 15, 2025\*\*: Finalization of \*\*EnergyPlus Performance Analysis Tool\*\*.  
- \*\*October 1, 2025\*\*: Review of \*\*EnergyPlus Compliance Validator\*\* and full testing for ASHRAE compliance.

## 3.4 LCCA Track Milestones

- \*\*September 1, 2025\*\*: Review of \*\*LCCA Tool\*\* (scenario comparison module).  
- \*\*October 1, 2025\*\*: Review of \*\*Construction Cost Database\*\* and \*\*Cost Estimator\*\* (HVAC and PV systems).  
- \*\*November 1, 2025\*\*: Review of \*\*full LCCA Tool integration\*\* with \*\*EnergyPlus\*\* and \*\*EM Core Tools\*\* data.