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# Performance Metrics Tracking

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# Overview

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- Performance Objectives and Metrics Terminology
- Performance Metric Data Model
- Example Metric Hierarchies
- Performance Model with Building Data Model
- Performance Metric Tracking Scenario
- Metracker Software Prototype

# Performance Metric Terminology

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## ➤ Performance Objectives

- Qualitative statements regarding desired performance
  - energy-efficiency; environmental impact; life-cycle economics; occupant health, comfort and productivity; and building functionality, adaptability, durability, and sustainability

## ➤ Performance Metrics

- Quantitative criteria in a structured format that provides value across the life cycle
- Critical variables that measure or influence an objective
- Capable of prediction or measurement at various stages of the project to evaluate the achievement of each objective
- Both Benchmark and Assessment values defined and archived

# Performance Metric Data Model

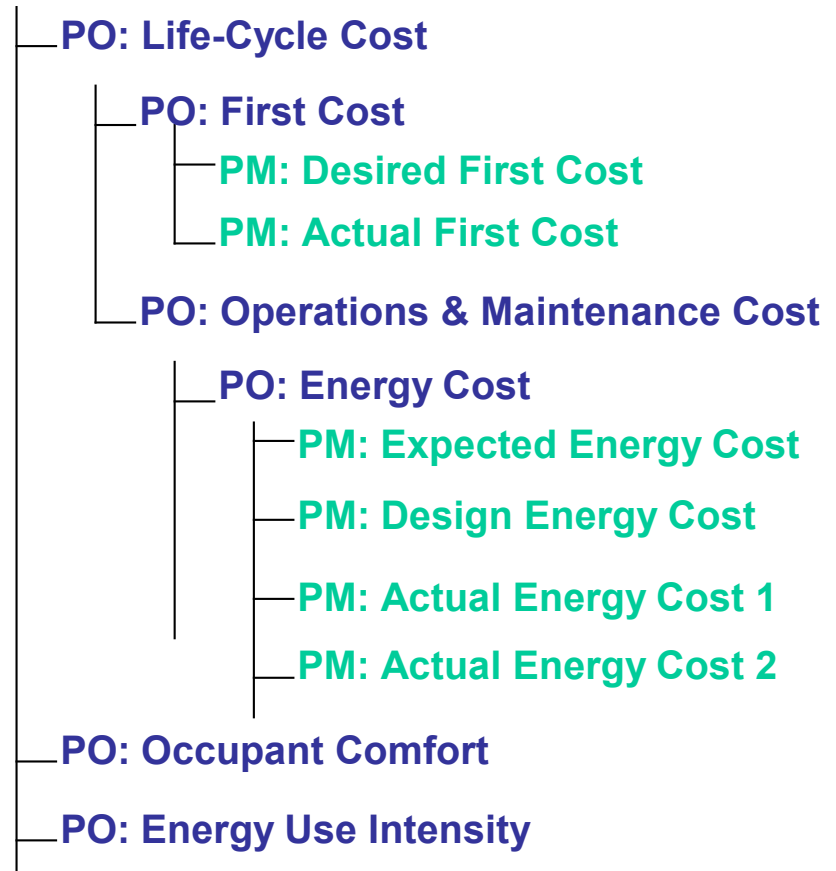
## ➤ Performance Objective

- Name, Specifier,
- Date of Creation,
- Description

## ➤ Performance Metric

- Name, Specifier,
- Date of Creation,
- Description,
- Metric Type,
- Data Type,
- Source
- Data Values

### PO Hierarchy



# Cost Performance Metric Branch

## Life-Cycle Cost (\$Total, \$/ft<sup>2</sup>)

— First Cost (\$Total, \$/ft<sup>2</sup>)

— Design (\$Total, \$/ft<sup>2</sup>)

— Construction (\$Total, \$/ft<sup>2</sup>)

— Operations & Maintenance Cost (\$Total/yr, \$/ft<sup>2</sup>/yr)

— Energy (\$Total/yr, \$/ft<sup>2</sup>/yr)

— Heating (\$Total/yr, \$/ft<sup>2</sup>/yr)

— Cooling (\$Total/yr, \$/ft<sup>2</sup>/yr)

— Lighting (\$Total/yr, \$/ft<sup>2</sup>/yr)

— Ventilation (\$Total/yr, \$/ft<sup>2</sup>/yr)

— Equipment (\$Total/yr, \$/ft<sup>2</sup>/yr)

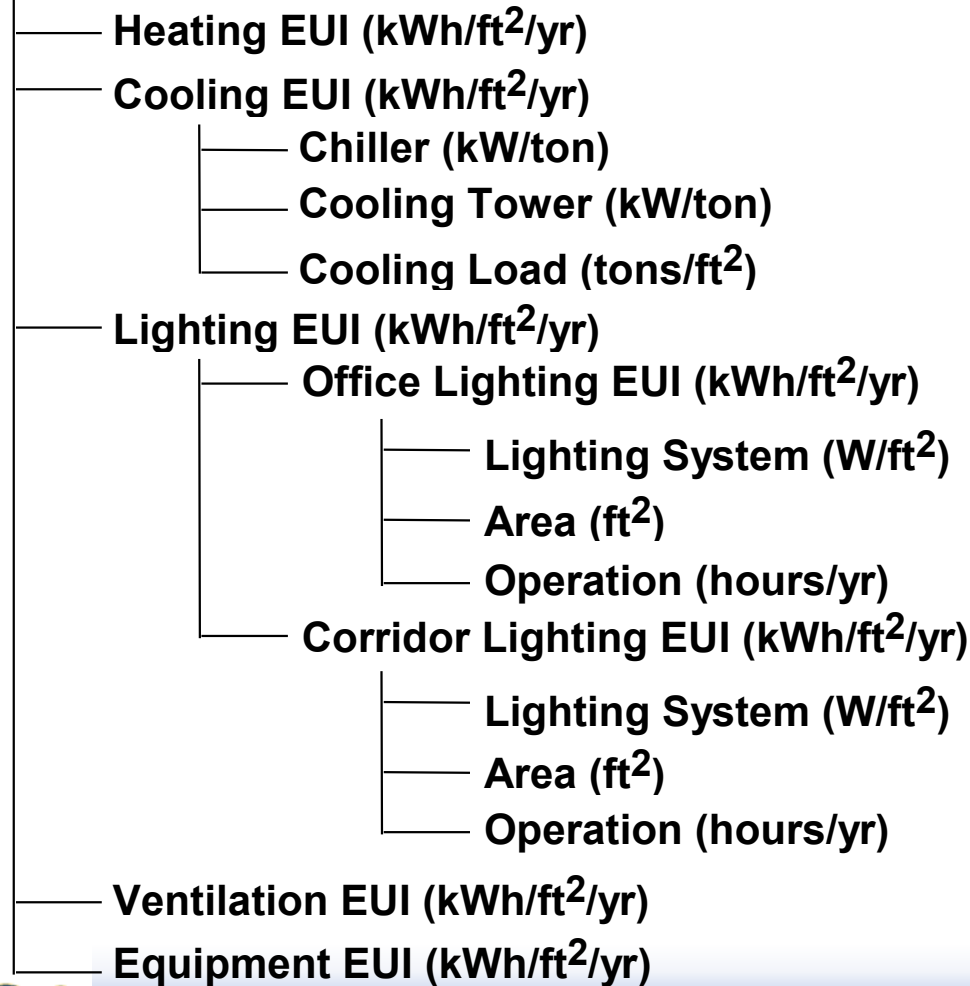
— Labor (\$Total/yr, \$/ft<sup>2</sup>/yr)

— Materials (\$Total/yr, \$/ft<sup>2</sup>/yr)

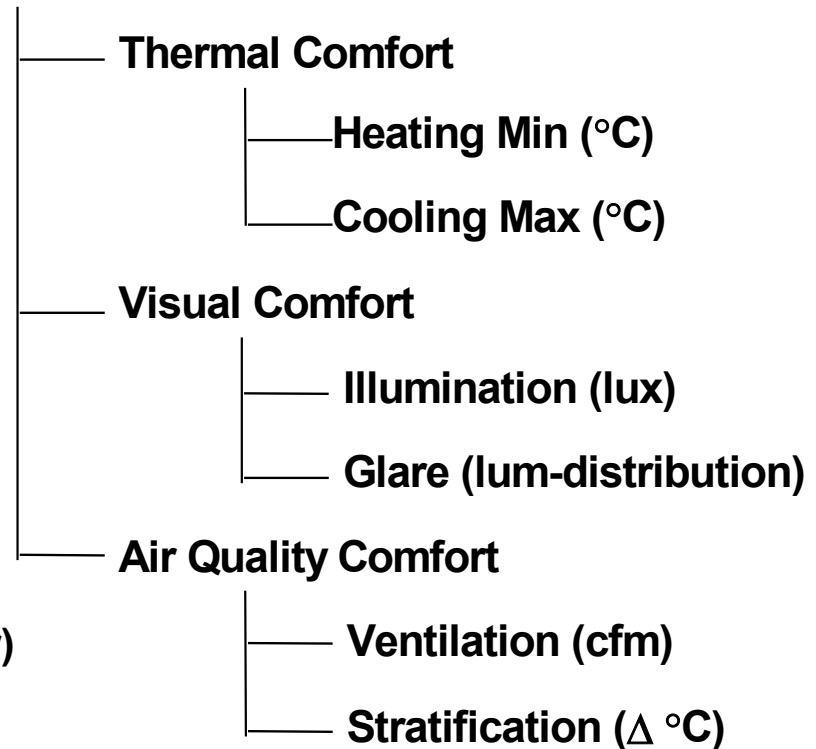
— Equipment (\$Total/yr, \$/ft<sup>2</sup>/yr)

# Energy and Comfort Metrics

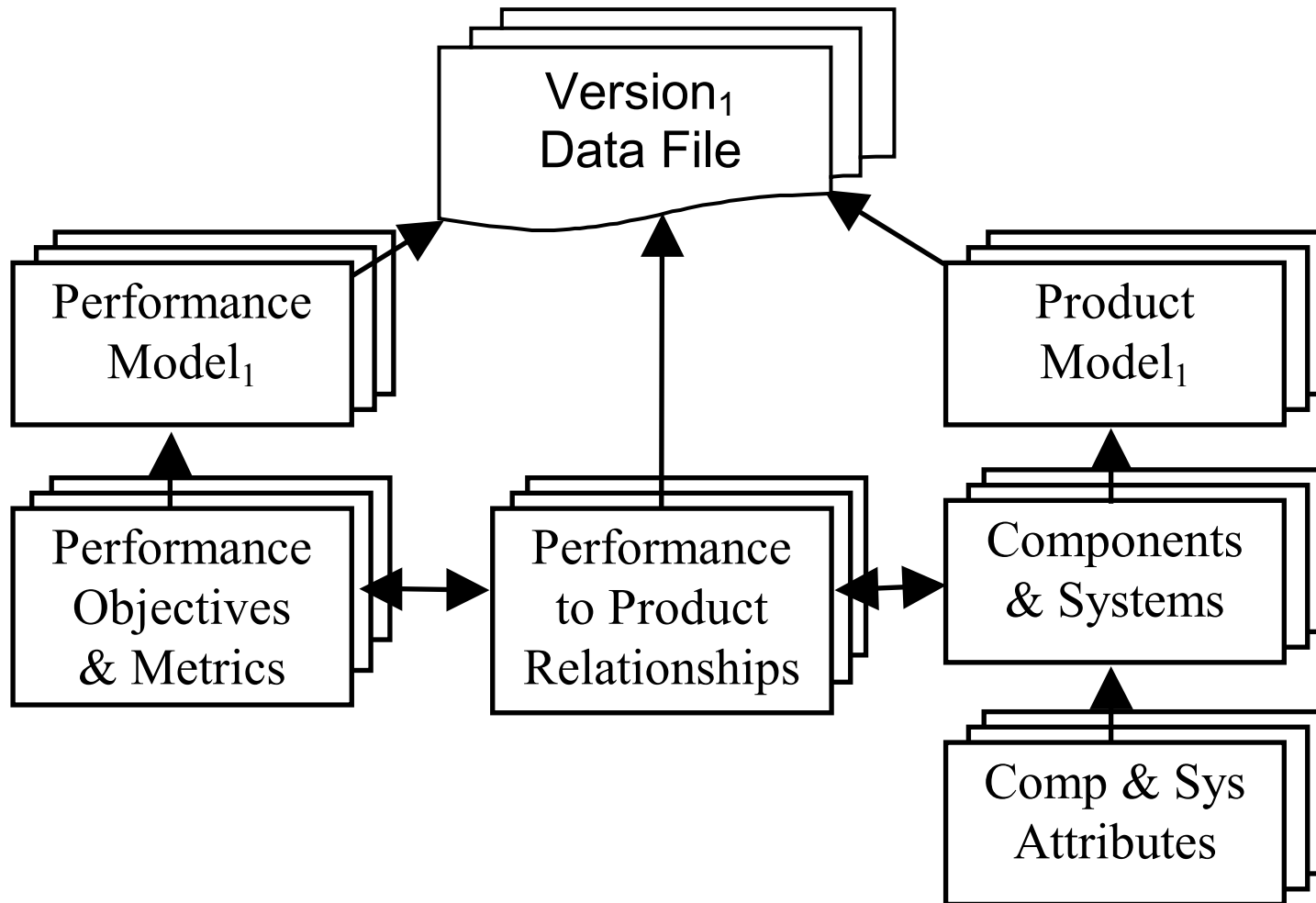
## Energy Use Intensity (kWh/ft<sup>2</sup>/yr)



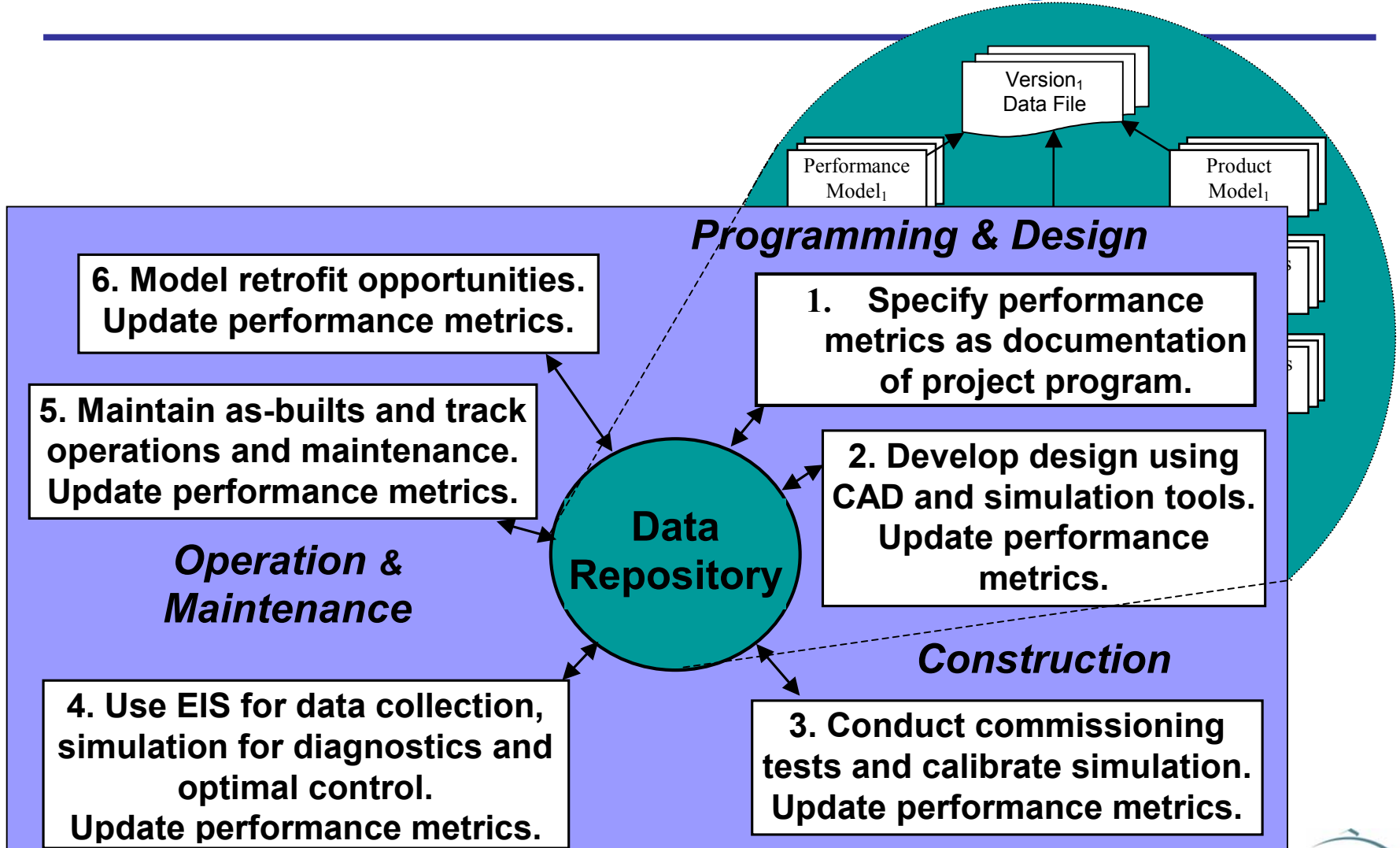
## Occupant Comfort



# Performance Model with Building Data Model

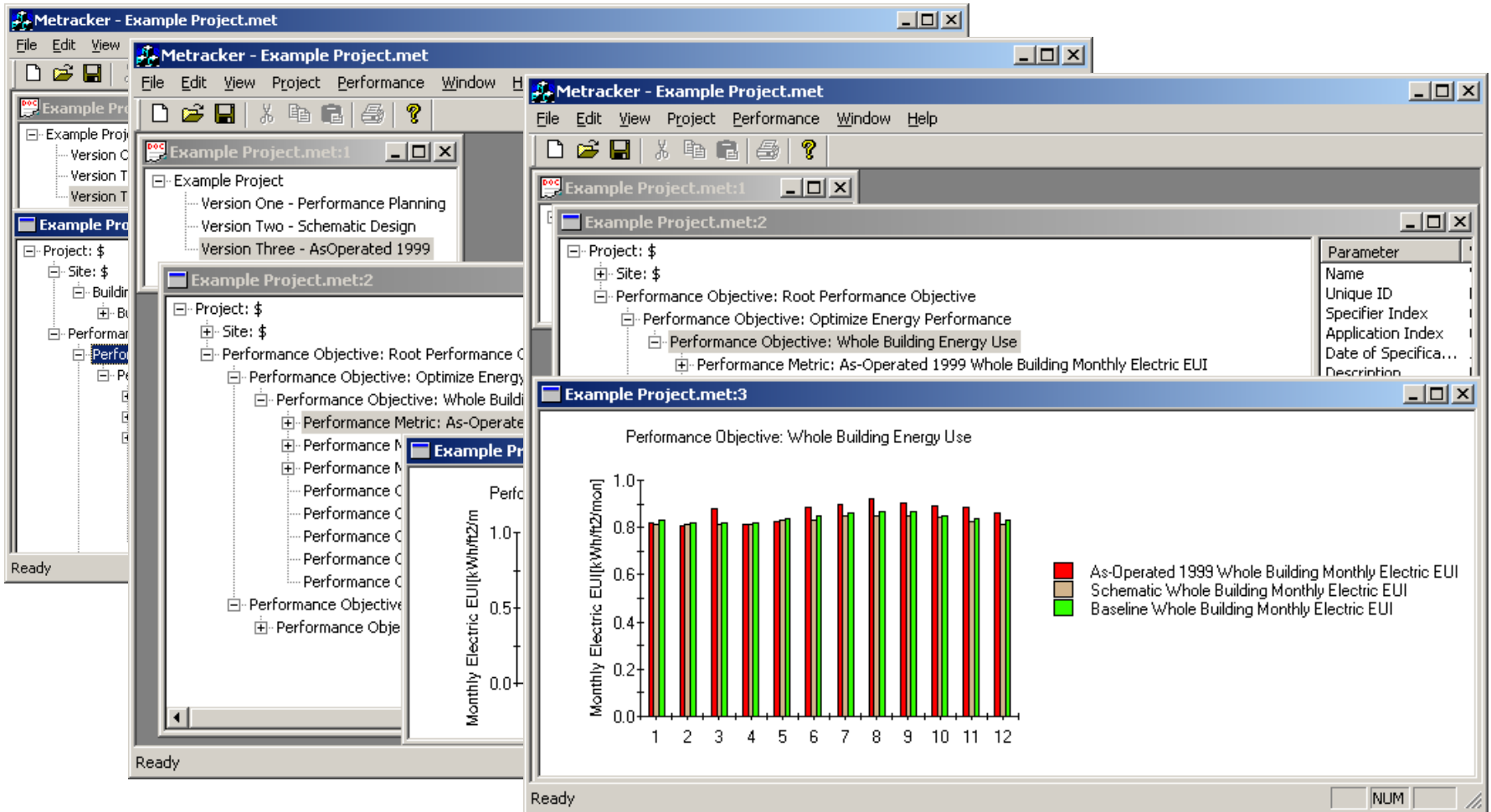


# Performance Metric Tracking Scenario





# Metracker Software Prototype



# Status and Next Steps

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- Industry Foundation Classes Model Complete
- Metracker Version 1.5 Beta
  - Testbed Status Only
- Next Steps
  - Standardized Performance Metrics Branches
  - Case Study based on Oakland Administration Buildings Performance Contract
  - Rethink Software Implementation for Deployment
  - Link with Related Software (e.g., simulation, EIS)
  - Feedback from You
- [http://buildings.lbl.gov/hpcbs/Year\\_01/Element\\_2/01\\_E2\\_P2\\_1\\_2.html](http://buildings.lbl.gov/hpcbs/Year_01/Element_2/01_E2_P2_1_2.html)