

# Technical Energy Analysis Guidelines

Michigan Department of  
Labor & Economic Growth

**Energy Office**

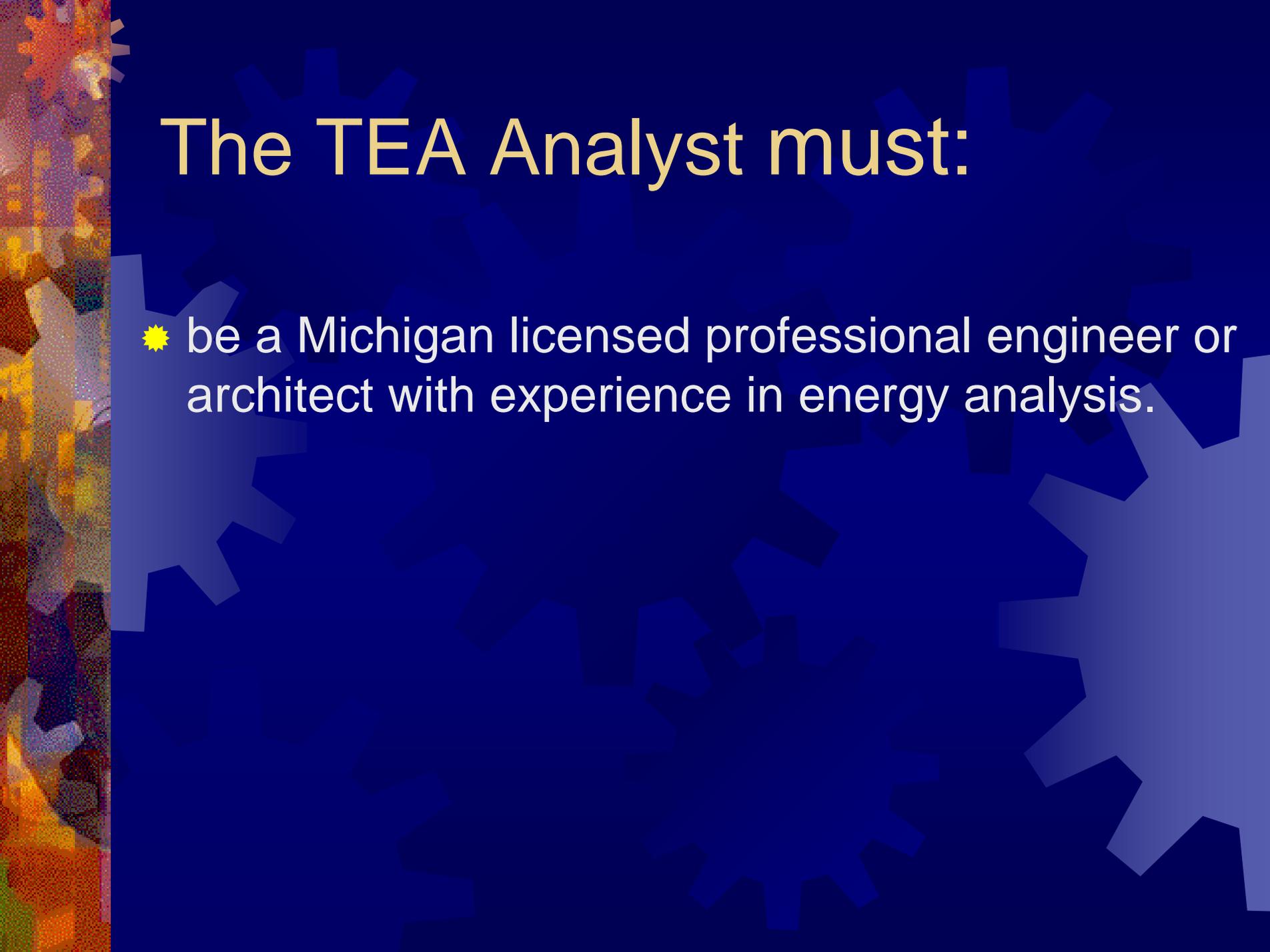
Rebuild Michigan TEA Webcast 2008

# Overview

- ★ TEA Guidelines
- ★ Requirements and Calculations
- ★ Recommendations for meeting the customer's needs.

# TEA Guidelines – Key Areas

- ★ The analyst
- ★ TEA definitions and objectives
- ★ Report requirements
- ★ Energy savings calculations
- ★ Computer modeling
- ★ Report review



# The TEA Analyst must:

- ✦ be a Michigan licensed professional engineer or architect with experience in energy analysis.

# TEA Objectives

- ✦ Identify all feasible no/low-cost O&Ms.
- ✦ Provide baseline data.
- ✦ Provide sufficient information to the customer and to the Energy Office engineer to review and verify energy savings calculations.

# TEA Types

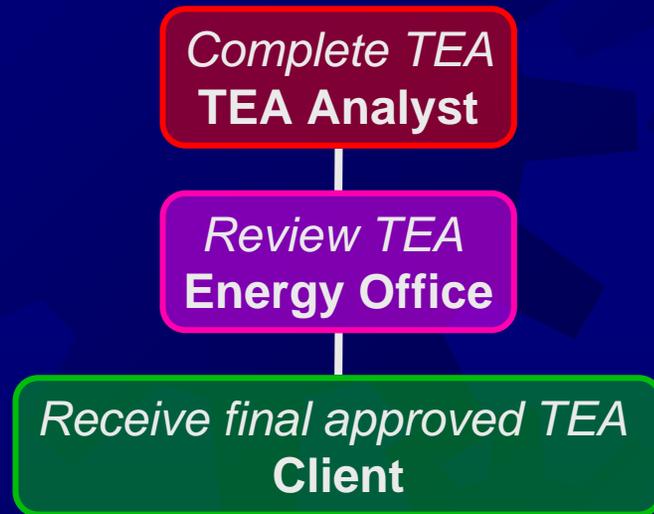
## Comprehensive TEA

- ✦ Include measures which may require load analysis or computer modeling

## Limited Component

- ✦ Limited to simpler measures requiring straight forward savings calculations

# The TEA Process



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# REPORT REQUIREMENTS

# Required Sections

- ✦ Cover
- ✦ Table of Contents
- ✦ TEA Analyst Certification/Disclosure
- ✦ Executive Summary
- ✦ Building Description/Characteristics
- ✦ Building Fuel Cost Information
- ✦ Energy Use Profile
- ✦ No/Low Cost O&Ms
- ✦ Analysis of O&Ms/ECMs (Including all listed requirements)

# Types of O&M Changes or ECMs

All four areas *must* be evaluated:

- Building Envelope
- Domestic Hot Water
- HVAC
- Lighting

# Presentation of O&Ms/ECMs

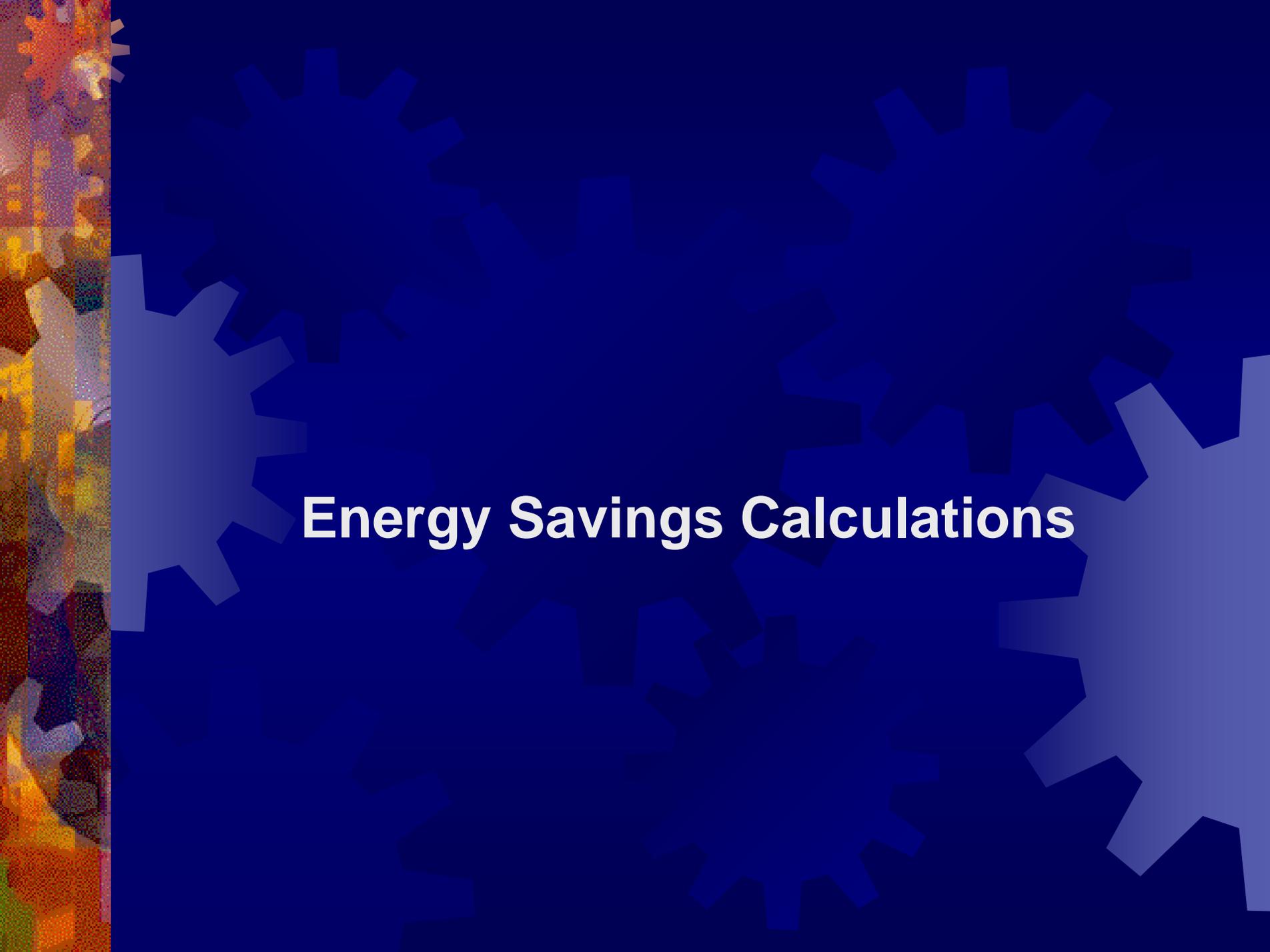
- ✦ Describe existing conditions;
- ✦ List quantity, type and location;
- ✦ Provide clear and thorough description;
- ✦ Discuss utility savings; and
- ✦ Include *“Detailed Description Form”*  
(Appendix E of 2008 TEA Guidelines).

# Cost Estimating Worksheet

(Appendix F of *2008 TEA Guidelines*)

## ☀ Detailed cost analysis:

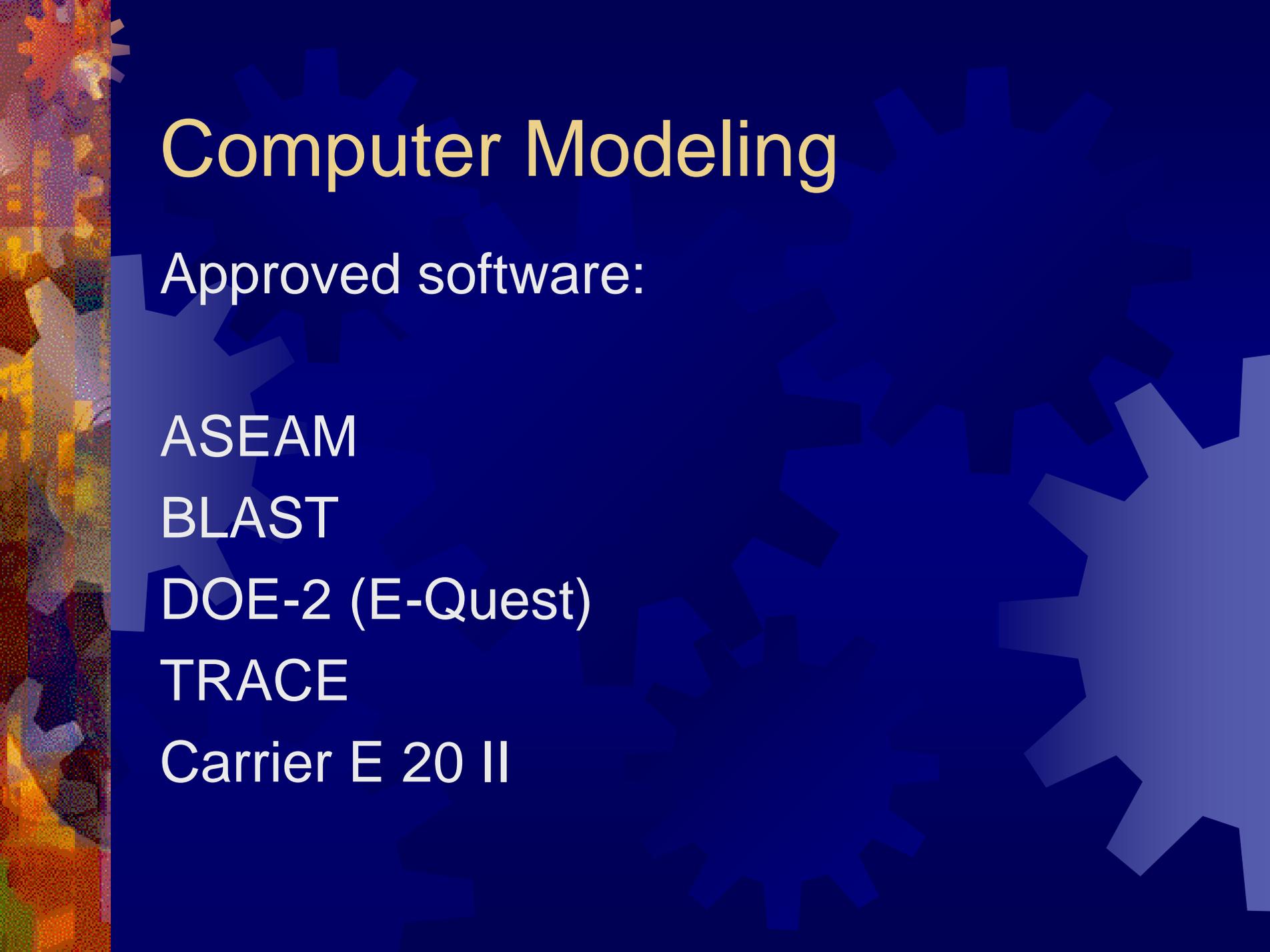
- ▶ Break down total cost to implement O&M/ECM;
- ▶ Include any design, equipment, installation and disposal costs.
- ▶ Cite sources of cost estimates.

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# Energy Savings Calculations

# Energy Savings Calculations

- ✦ Calculations must be clear and precise
- ✦ Include formulas used
- ✦ Provide units of measurement
- ✦ State input parameters
- ✦ Provide original manual calculations and
- ✦ **Verify calculations for accuracy.**



# Computer Modeling

Approved software:

ASEAM

BLAST

DOE-2 (E-Quest)

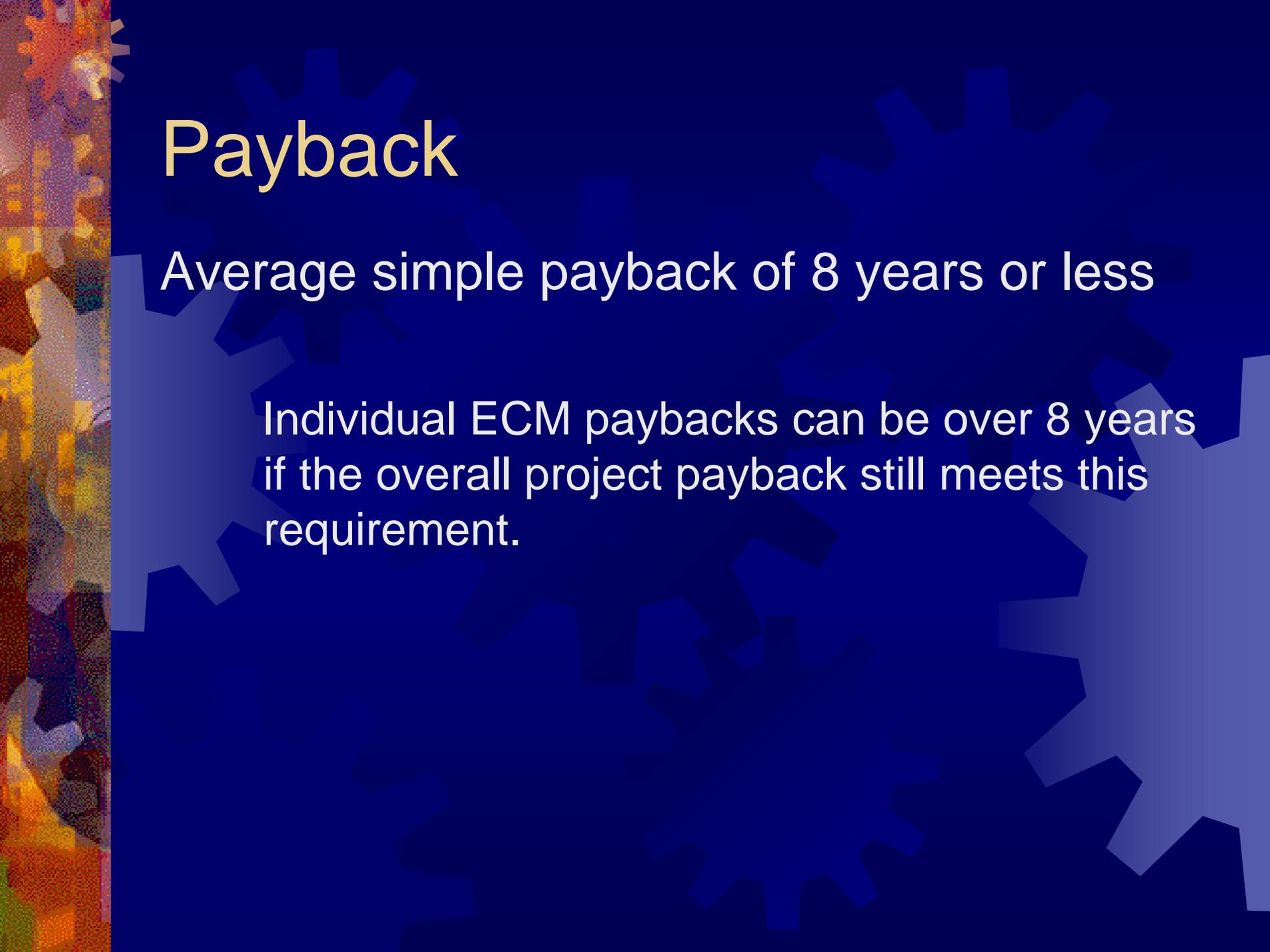
TRACE

Carrier E 20 II

# Computer Modeling

## What to Include:

- Name and version of program used.
- Table showing comparison of baseline consumption to actual consumption ( $\pm 10\%$ ).
- Input parameters for each ECM, with clear justification.
- Output summary for each ECM.



# Payback

Average simple payback of 8 years or less

Individual ECM paybacks can be over 8 years if the overall project payback still meets this requirement.

# Reviewing and Scoring of the TEA Report

- ★ The Energy Office will conduct a review of the energy savings.
- ★ 100 points possible (*refer to appendix G*).
- ★ 75 points required for approval.
- ★ Criteria not met may receive full or partial deductions.

# Meeting the Customer's Needs

- ✦ The customer may want specific measures in their report that do not meet the payback requirement.
- ✦ Additional items may be included that are not included in the payback calculation. (e.g. calculations for a new boiler)

# Final Points

- ✦ Provide the participants with complete, detailed and easy to understand reports.
- ✦ Communication with the Energy Office throughout the process will ensure timely reviews of the reports.
- ✦ Provide the participants with all of the information they need to make their decision to *SAVE ENERGY!*

# For Assistance

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