Energy Analysis Software for Nonresidential Buildings

California Energy Commission
Staff Workshop

September 23, 2010

High Performance Buildings & Standards Development Office
Efficiency & Renewable Energy Division
Workshop Objectives

- Introduce CEC Staff long term vision for software development, updates & availability
- Explain current status, plans & schedule for 2011 Title 24 nonresidential software
- Explain plans for upcoming technical support RFP
- Discuss options & identify issues
Background

- CEC support for public domain energy analysis programs
- CEC provision of compliance software
- Current limitations
The Long View

Zero Net Energy Buildings

Efficient Existing Buildings

New Construction Programs

Title 24 Standards

Green Building Programs

Rating & Labeling Programs

Collaborative Software Platform & Environment

Current CEC Needs
Public Goods Software Architecture

- User Interface
  - Building project data
  - Reports, Forms, Performance Data

- Compliance Processor
  - Std. Design, Proposed Design
  - Energy Performance Rule Set (e.g. Title 24)
  - Hourly loads for each design sent

- Simulation Engine
Energy Performance Rule Sets

- Computer Processable Performance Rules
- Create, modify & document using controlled vocabulary and logical operators
- “Lock” rule set for energy policy deployment

“BEARS” = Building Energy Asset Rating System
Public Goods Software Consortium

- Collaborative group to develop, test, document, support energy simulation software and special function processors / applications for public good clean energy purposes

- Provide software under a Lesser General Public License (or equivalent)

- Workforce development is a critical component
  - Give young energy analysts & software developers a career path
  - Sponsor student projects relevant to achieving our energy policy goals
Public Goods Software Consortium

- Collaboratively manage and make available:
  - Software applications for Standards, rating & labeling programs, utility efficiency programs, general energy analysis
  - Controlled vocabulary, data models, data exchange schema
  - Building & energy system prototypes, weather & solar data, energy cost data (e.g. TDV)
  - Rule sets, application code, energy analysis projects
  - Documentation & tutorials
Current Activities

- Zero Kit Software Architecture
- Building Energy Standards Modeler & Controlled Vocabulary
- EnergyPlus Interface
- COMNET
- 2011 Rule Set Development
- 2011 Title 24 Work Group & Web Site
- Compliance Data Exchange & Archive
Plans for CEC Technical Support

- **High Performance Buildings** Technical Support RFP
  - 2011 Title 24 “public domain” software completion
  - Title 24 compliance data repository
  - Title 24 exceptional analysis
  - **HPB** consortium support & software platform development
  - 2014 Standards Update – research key topic areas
Plans for CEC Technical Support

- Budget: ~ $1,500,000
- Term: Q2, 2011 – Q2, 2014
- Schedule:
  - Release RFP – November, 2010
  - Proposals Due - January, 2011
  - Notice of Proposed Award – February, 2011
  - Contract Start – May, 2011
Plans for 2011 Title 24 Software

- **Scope**
  - Compliance Processor
  - 2011 Title 24 Nonresidential Rule Set
  - Building Model data exchange schema
  - Compliance data exchange schema

- **Approach**
  - EnergyPlus for simulation engine
  - Lesser General Public License, or equivalent for Standards application software

- **Schedule**
Workshop Discussion

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