**Objective:** Exchange information on the predominant whole building energy modeling simulation tools in the market to understand what’s out there, how it’s used, and how we understand the strengths and weaknesses of each tool

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| **Morning: Tools Introduction and Applications** | | |
| 9:30 – 9:40am | Introduction, Context, Ground Rules | Katie Wu |
| 9:40 – 10:10am | Overview of Modeling Tools and their uses | Pete Jacobs |
| 10:10-10:30am | Energy Trust of Oregon Criteria for Assessing Modeling Tools | Holly Farrah, Cadmus |
| 10:30-11:45am | DOE2 and EnergyPlus Overview | Joe Huang, Larry Brackney |
| 11:45am-12:30pm | Tool Applications in California | Ex ante staff, Utility staff, Martha Brook |
| 12:30 – 1:30pm | LUNCH |  |
| **Afternoon: How do we know what’s “right”?** | | |
| 1:30-2:15pm | Reflections from Building Modeling Experts | Pete Jacobs, Liam Buckley, Joe Huang |
| 2:15-2:45pm | Research on Modeling Tools | Phil Haves |
| 2:45-3:00pm | Break |  |
| 3:00-3:45pm | Small Group exercise: Modeling needs in CA in the future and criteria to assess which tools would meet those needs | All |
| 3:45-4:15pm | Report back from small groups | All |
| 4:15-4:30pm | Close | Katie Wu |

**Morning: Tools Introduction and Applications**

1. Overview of Modeling Tools and their uses (20 minutes) – presentation
   1. Basics of how and why energy modeling is used
   2. Defining basic terms
   3. Define modeling needs for small group exercise later
2. Overview of Cadmus work for Energy Trust of Oregon (20 minutes) – presentation
3. Overview of DOE2 and EnergyPlus (75 minutes) – presentations with Q&A. Questions to address:
   1. How are the tools currently being developed, updated, QC’ed, and documented?
   2. How do people access the tools and documentation?
   3. How do people understand which inputs are locked and which are set by users within the tool interfaces?
   4. What do the outputs look like?
   5. Is there access to the source code? How is this managed?
   6. Is there training available?
4. How are the engines and tools being applied in California and elsewhere? (45 minutes) – panel speakers
   1. Overview of how modeling is used in DEER
   2. Overview of utility modeling needs and how they get the modeling done
   3. Overview of CEC use of EnergyPlus

**Afternoon: How do we know what’s “right”?**

1. How do building modeling experts understand that a model is accurate? (45 minutes) – panel speakers
   1. How do modeling experts validate models?
   2. Are there some tool features that facilitate understanding of underlying calculation methods, inputs, and outputs?
   3. How do experts and non-experts understand whether an output is reasonable?
   4. How do people who aren’t building modeling experts understand what is accurate?
   5. What can be done to account for user error, if anything?
2. What research is being done to understand the accuracy of the tools? (30 minutes) – brief presentations
   1. Overview of ASHRAE Std 140 and the International Energy Agency “BESTEST” process
   2. FLEXLAB presentation
3. Small group exercise (75 minutes)
   1. What are the modeling needs in California moving into the future? Are there any trends that participants predict for future portfolios? (e.g., more complex industrial custom projects, more whole building approaches, more innovative measures and design strategies that haven’t been studied, more integrated projects, etc.)
   2. What criteria would you use to determine whether a modeling tool was adequate for your modeling needs?