CEC PAC Meeting Minutes- July 18, 2012

I. List of Attendees

ATTENDEE	COMPANY
Martha Brook	CEC
Jon McHugh	McHugh Energy
Owen Howlett	CEC
Nehemiah Stone	Benningfield Group
Martyn Dodd	EnergySoft Inc
Mike Gabel	Gabel Energy
Diane Pepetone	L'Monte
Pat Eilert	PG&E
Dimitri Contoyannis	AEC
Gary Flamm	CEC
Chitra Nambiar	AEC
John Arent	AEC
David Vasniak	PG&E
Elaine Hale	NREL
John Stoops	KEMA
Zulfikar Cumali	Consultant
Scott Criswell	Wrightsoft
William Worthen	AIA
Cathy Chappel	HMG
Randall Higa	SCE
Lynn Benningfield	Benningfield Group
Jason Glazer	Gard Analytics
REMOTE ATTENDEE	**COMPANY**
Amir Roth	DOE
Avery Kintner	Empowered Energy Solutions
Christian Stalberg	Design Builder
David Reddy	360 Analytics
Dru Crawley	Bentley
Kevin Maddison	JJ Associates
Lisa Heschong	HMG
Lisa Meline	Meline Engineering
Mark Hydeman	Taylor Engineering
Matt Biesterveld	Trane
Meg Waltner	NRDC
Mudit Saxena	HMG
Phil Henry	Geo Exchange Solutions
Phylroy Lopez	NR Canada
Ricson Chude	SCEdison
Ron Gorman	SCGas
Smita Gupta	ITRON
Will Vincent	SCEdison

Mike Rosenberg	PNNL
Patrick Saxton	CEC
David Ware	CEC
Roger Hedrick	AEC
Jose Torre- Bueno	Empowered Energy Solutions
Brian Samuelson	CEC
Chris Olivera	CEC
Justin Reignier	CEC
Peter Ellis	Big Ladder Software
Seran Thamilseran	CEC

II. Summary of Action Items:

Item	Owner	Date
Send out ACM Word doc to PAC	AEC	July 20
Send URL to google code tracker for issues	AEC	July 20
Schedule webinar demo of software	AEC	TBD
PAC Members provide feedback on ACM Manual	PAC Members and Meeting Attendees	August 8

III. Summary of Comments

ACM Manual

1. System Sizing: *(Nehemiah, Martyn)* - Does the ACM meet the CBC requirement for HVAC equipment?
2. Unmet Load Hours: *(Various)* - Regulating UMLHs is a very stringent requirement.
3. Schedules: (Nehemiah) – No schedules provided in ACM Appendix for multi-family buildings using the whole building approach.
4. Interior lighting: *(Martyn Dodd)* - Space heat gain ratio- In DOE 2 the reminder of heat is unaccounted for. How is this input being addressed?
5. Interior lighting: *(Jon McHugh, Randall Higa)*- Custom schedules for interior lighting controls- Removing custom schedules for lighting controls and replacing with PAF will impact the TDV as the lighting use profile will not be realistic .
6. Interior Lighting: *(Jon McHugh)*- User defined lighting schedules- Gives opportunity for gaming.
7. Interior Lighting: *(Jon McHugh, Martyn Dodd, Mike Gabel)* - Adjustments for mandatory lighting controls- Mandatory lighting controls are required for some spaces as per the standards- does the ACM accommodate these mandatory requirements?
   - Ans-Traditionally mandatory controls are not modeled for both proposed and baseline case. The only exceptions are daylight controls, Demand Controlled Ventilation.
   -Lighting Controls impact zone loads, hence mandatory controls should be included in the model.

8. Daylighting: *(Jon McHugh)*- Defining depth of daylit space- A rule set that defines the depth of the daylit space will be helpful for determining spaces vs thermal zones.

9. Daylighting: *(Jon McHugh)* - Adjustment factor using split flux method- daylighting controls can only control general lighting in a space. Display and ornamental lights which remain unaffected by daylighting controls use most energy in many buildings.

10. Plug Loads& Refrigeration *(Martyn Dodd, John Arent)* - Default valued given for interior loads in Appendix require further review.
(Nehemiah)- Why not allow for higher occupant density in dormitories?

11. Envelope: *(Jon McHugh)* - Baseline Envelope Criteria- Specifying Baseline envelope type as metal framed could be a step backwards in terms of stringency especially for roof

12. Envelope: *(Jon McHugh)* Window glazing- According to a study done by JJ Associates angular solar incidence has a huge impact on peak cooling load. He recommends using the layer by layer approach for glazing assemblies instead of Simplified approach.

13. Envelope: *(Nehemiah Stone)* - Language for envelope reflectance is confusing.

14. System Sizing: *(Nehemiah Stone)* - Current version has only one baseline system type for multi-family buildings.

15. Water heating: *(Nehemiah Stone)* - No rules in NonRes Standards for DHW recirculation for high-rise buildings. *(Martha Brook)* - Option A- Use Res rules and model using the CEC DLL or Option B- Use the modeling method present in Energy Plus

16. Exterior lighting: *(Various)* - Language in the standards for exterior lighting is confusing. More clarity required.

17. Forms: *(Mike Gabel)* - Software should report summary of baseline assumptions- similar to LEED forms.

Reference Method Tests

18. Compliance Margin Test: *(Nehemiah Stone)* - Consider test cases using High-Rise residential Prototype Building Model.
(Zulfikar Cumali) - In addition to stand-alone tests have some tests that lump various components to verify interactive affects that can mask each other.
(Nehemiah Stone, Cathy Chappell) - Metrics other than overall TDV can be compared.

19. Rule set Implementation Test: *(Mike Gabel)* - Include some test cases for verifying rules for building alteration.
(Martyn Dodd, Gary Flamm) - Standards have a definition for the term "Standard Design". Use this term instead of "baseline"

20. **Compliance Software Progress Update**: (Martha Brook)- Standard Design Tests should be completed. This is a top priority for software vendor pilot. PAC Members and attendees should review items and send their comments within two weeks.

21. **Rule Set Summary:** *(Nehemiah Stone)* - We're putting emphasis on NC when the bulk is alterations (roughly 80/20); more emphasis should be placed on that. *(Martha Brook)* - ACM can include sections dedicated for Retrofits and Alterations.

22. **Open Items**: *(Dimitri)* - Should high-rise be addressed as a separate section or as an addition to all inputs/ (Martha)- Easiest way- add inputs to individual sections in ACM for M/F where they differ from others. Sections like HW distribution which is not covered, can have a new section.

23. - Provide list of items that require 3rd party verification
24. - Completion of ACM is the highest priority.
25. - Provide access to Google issue tracking website.

IV. Meeting Minutes:

Topic	Commenter	Comment
Morning Session (9:30- 12:15)- ACM MANUAL		
System Sizing	Nehemiah Stone, Martyn Dodd	As per the California Building Code, HVAC equipments are required to meet 70% of the load. Is this addressed in the 2013 standards and ACM? CBC requires a temperature of 72F to be maintained within 3ft of the floor.
	Martha Brook	Needs to be verified
Design Day Data	Randall Higa	How will local design conditions be used in sizing runs?
	John Arent	Ans-By using Design Day Data
	Randall Higa	Will the weather condition details for all months be included in the software?
	Zulfikar Cumali	Weather file used for Sizing runs should have data for all months.
	Dimitri Contoyannis	Ans- Determination of sizing run periods and weather data can be done using ASHRAE procedure.
Unmet Load Hours & System Sizing		Why should the baseline UMLHs be a concern?
	Dimitri Contoyannis	Ans - Because baseline systems should represent a well-designed building which is more realistic and in accordance with popular practice.
	Matt Biesterveld	Sizing is not the only issue driving UMLHs in a simulation; other factors can also cause UMLhs.
	John Arent	Ans- Limiting the number of unmet load hours encourages the modeler to check the model is built appropriately.
	Jose Torre- Bueno	Will UMLHs depend upon the schedules? Ans-Yes Will the baseline and proposed have the same schedule? Ans-Yes The proposed design will get penalized if the baseline is allowed upto 300 UMNLs.
	Kevin Madison	Controlling UMLH's looks like an attempt to control the design model rather than the compliance model. As long as the baseline is conservative, UMLHs should not be controlled.
	Nehemiah Stone	Previously multifamily buildings with no a/c had to be modeled with a min. efficiency a/c. Will the requirement for UMLH allow modeling without a/c?
	Martha Brook	Ans-Yes.
Chapter 5.2,	Nehemiah Stone	Schedules provided in Appendix 5.5 A does not have any

Schedules		input for multi-family building using whole building approach
Chapter 5.4.3, Interior Lighting	Nehemiah Stone	For high rise residential, if lighting on proposed is less than baseline will the modeled space heat gain ratio remain the same?
	Martha Brook	Ans- Yes baseline and proposed heat gain ratio remains the same, this can be considered during the 2016 update
	Martyn Dodd	Heat gain to space is a fraction. In DOE 2 the reminder of heat is unaccounted for. How is that input being addressed?
	Randall Higa & Jon McHugh	Removing custom schedules for lighting controls and replacing with PAF will impact the TDV as the lighting use profile will not be realistic
	Jon McHugh	Allowing applicants to create their own schedules gives opportunity for gaming.
	Jon McHugh	Mandatory lighting controls are required for some spaces as per the standards- does the ACM accommodate these mandatory requirements?
	Martyn Dodd	Ans-Traditionally mandatory controls are not modeled for both proposed and baseline case. The only exceptions are daylight controls, Demand Controlled Ventilation etc.
	Mike Gabel	Lighting Controls impact zone loads, hence mandatory controls should be included in the model.
Daylighting	Jon McHugh	A rule set that defines the depth of the daylit space will be helpful for determining spaces vs thermal zones.
	John McHugh	Comment on Split Flux method adjustment factors- daylighting controls can only control general lighting in a space. Display and ornamental lights which remain unaffected by daylighting controls use most energy in many buildings.
	Kevin Madison	What are the minimum capabilities of the Compliance Software
Plug Loads & Refrigeration	Jon McHugh	Is refrigeration devices with remote condenser also included ? Ans-Yes
	Martyn Dodd	There is a typo in the table for Refrigeration for Civic spaces
	John Arent	Some values in table including EPD for office buildings require further review.
	Randall Higa	Is there a credit allowed for regenerative elevators?
	Martha Brook	Ans- No, this is allowed in Calgreen.
Schedules	Nehemiah Stone	Schedules and default internal load inputs for residential spaces should be allowed some flexibility to reflect actual loads in the building. Why not allow for higher occupant density in dormitories?
	Mike Gabel	Depending on the sensitivity of the input on overall TDV, some flexibilities should be allowed.
	Cathy Chappell	In the examples presented, why does the occupancy never reach 100%

	Dimitri	Ans- The rationale behind this is that all rooms in a building does not get reach full occupancy at a given time.
Envelope	Jon McHugh	Specifying Baseline envelope type as metal framed could be a step backwards in terms of stringency especially for roof
	Martyn Dodd	Listing all layers for construction assemblies can become a huge task. Instead provide a list of materials with properties to build the construction assembly.
	Nehemiah Stone	Requiring the details of the construction assemblies to be submitted along with the building compliance application will help in finding irregularities if any in the model
	Martha Brook	Ans-Sufficient Documentation will be required to be submitted.
	Kevin Madison	Will prescriptive glazing be modeled using the Simplified Glazing Approach? Ans-Y
	Jon McHugh	According to a study done by JJ Associates angular solar incidence has a huge impact on peak cooling load. He recommends using the layer by layer approach for glazing assemblies.
	Nehemiah Stone	Language for envelope reflectance is confusing.
System mapping	Jon McHugh	Is there a time step version in the data structure of the software that gets updated to accommodate the threshold requirement for Single Zone VAV system? A-Yes
	Nehemiah Stone	Older version of the standards had more than one baseline system type for multi-family buildings. Current version has only one baseline system type.
	Jon McHugh	Why move towards ASHRAE modeling methodology?
	Martha Brook	Ans- Because experts agreed so, and to allow a model built for compliance usable for other purposes.
	Kevin Madison	Deciding baseline system type based on zone capacity can get tricky especially when zones get combined.
	Jason Glazer	ASHRAE procedure for defining multi-zone or single zone system based on floor area and number of floors was developed to avoid gaming.
Garage Exhaust	Martyn Dodd	Do small fans get compliance credit? Ans-No
Ventilation	Nehemiah Stone	No ventilation schedule for high-rise residential? Provision for natural ventilation in multi-family buildings should be provided. Building with natural ventilation should have custom fan schedule.
Water Heating	Nehemiah Stone	No rules in NonRes Standards for DHW recirculation for high-rise buildings.
	Martha Brook	Option A- Use Res rules and model using the CEC DHL or Option B- Use the modeling method present in Energy Plus
Exterior Lighting	Cathy Chappell, Martyn Dodd, Nehemiah Stone	Language in the standards for exterior lighting is confusing. More clarity required.
Forms	Mike Gabel	Software should report summary of baseline assumptions-similar to LEED forms.

Afternoon Session (1:15- 4:30)		
Reference Method Tests		
Compliance Margin Tests	John Stoops	Is population density of California considered for choice of climate zones? Ans-No, only extremes in weather conditions.
	Nehemiah Stone	Consider using Climate zones 12 or 13 since it experiences both hot and cold weather conditions with high gains.
	Nehemiah Stone	Consider test cases using High-Rise residential Prototype Building Model. Benningfield group and HMG volunteer to review the PNNL model.
	Zulfikar Cumali	In addition to stand-alone tests have some tests that lump various components to verify interactive affects that can mask each other.
	Avery Kintner	Will multiple criteria be tested for same building in same climate zone/D-yes
	Nehemiah Stone, Cathy Chappell	Metrics other than overall TDV can be compared if the model is to be used for other purposes.
Rule set Implementation Tests	Mike Gabel	Include some test cases for verifying rules for building alteration.
	Martyn Dodd, Gary Flamm	Standards have a definition for the term "Standard Design". Use this term instead of "baseline"
	Ron Nelson	Do these tests cover the gaps in COMNET tests?
	Dimitri	Ans- These tests resemble COMNET only in format.
Compliance Software Progress Update		
Project Update	John Stoops	request to look at current Standards in Compliance Software tool; and flexibility to accommodate future versions of EnergyPlus
	Dimitri	Current scope excludes older versions of ACM. But the ruleset will be simple enough to be modified easily.
	Martha	With more funding, rulesets for older versions of the ACM can be made.
	Timothy Moore	Will presentations be made available? Ans- Yes
	Nehemiah Stone	CEA exams based on ACM Material planned for late fall. Will software pilot occur within that time frame?
	Ron Nelson	When will information on ruleset syntax be made available?
	Martha Brook	At what point will 3rd part vendors be invited to run pilots?
	Dimitri	Ans- We can begin that discussion ASAP.
	Martha Brook	Standard Design Tests should be completed. This is a top priority for software vendor pilot PAC Members and attendees should review items and send their comments within two weeks.
ACM Rule set Summary		
	Nehemiah Stone	We're putting emphasis on NC when the bulk is alterations (roughly 80/20); more emphasis should be placed on that. Almost all M/F alterations are done via performance method

	David Vasniak	guidance isn't very clear on when permits need to be taken out
	Martha Brook	ACM can include sections dedicated for Retrofits and Alterations
Proof of Concept Demo		
	Nehemiah Stone	IS it possible to simulate multifamily HW using the same engine? A performance approach for multifamily HW. Will energy plus modify the water heating model to accommodate for multifamily HW
	Martha Brook	Option A- Use Res rules and model using the CEC DHL or Option B- Use the modeling method present in Energy Plus
	Christian Stalberg	Will the Compliance engine be licensed?
	Dimitri	Ans- It will be open source, details TBD.
	Zulfikar Cumali	Can other geometry generating engines (other than open studio) be used? Ans- Y
	Lynn Benningfield	Will there be a webinar for the Proof of Demo? Ans- Yes
		Will the materials and construction libraries be included?
	Scott Criswell	Materials, yes. Constructions, no.
		Can people define common constructions for reuse?
	Scott Criswell	Within a project, yes. Also there is a copy and paste version to a clipboard; however, there isn't a library of constructions within the software. (However, a third-party could build this feature in their software.)
Organization of ACM	Martha Brook	What is the overall impression of the manual?
	Nehemiah Stone	Resembles 90.1. Some descriptions require clarity.
Open Items		
	Mike Gabel	When is the next meeting?
	Martha Brook	Ans- when we have a complete ruleset for NC
	Jon McHugh	What is the highest priority for feedback
	Martha Brook	ACM Manual
	John Arent	Will distribute a word version to the group.
	Kevin Madison	Distribute link to the google issue tracking website
		List of items that require 3rd party verification
	Dimitri	Should high-rise be addressed as a separate section or as a addition to all inputs/ Ans- Easiest is to add inputs where they differ from others. Sections like HW distribution which is not covered, can have a new section.