This document responds to the general comments and specific comments that were presented on the Meeting Agenda for the Florida Building Commission, Energy Technical Advisory Committee meeting, dated September 27<sup>th</sup> 2018. Responses are prepared by Integrated Environmental Solutions Ltd.

## Comment from Hilton T. Meadows of Diversified Environmental Planning:

www.floridabuilding.org/fbc/commission/FBC 1018/Energy Tac/Comment-from-Hilton-Meadows.pdf

Issue/Comment:	IES Response:
Mr. Meadows has made reference to the FBC	It appears that this comment is a general comment
accepting a "commercialized calculation	toward the TAC or FBC. However, to clarify from the
methodology" and accepting "Proprietary	perspective of Integrated Environmental Solutions
Methods".	Limited, the IESVE Software is implementing the
	"Energy Cost Budget Method" with its ASHRAE-140
	validated engine. The Energy Cost Budget Method,
	while is documented in ASHRAE Standards, does not
	belong to any proprietary organization and it is
	ASHRAE's intention to have this ECB method be
	implemented in software tools and be adopted by
	various AHJ. Thus, all detailed of the ECB Method are
	all publically available, including performance
	requirements of HVAC systems, schedules,
	constructions, etc.

## Comment from Michael Sheerin, CEO of TLC Engineering for Architecture:

www.floridabuilding.org/fbc/commission/FBC 1018/Energy Tac/IESVE-for-Energy-Compliance.pdf

Issue/Comment:	IES Response:
Mr. Sheerin, on behalf of nearly 400 engineers (90+	Integrated Environmental Solutions Limited agrees
licensed engineers) at TLC Engineering for	with this comment and would like to thank the
Architecture has strongly encouraged the approval	experienced perspective of nearly 400 engineers (90+
of IESVE version 2018 as an acceptable Energy	licensed engineers) at TLC Engineering for
Compliance Software as an alternative tool from the	Architecture.
FLACOM program.	

Comments from Muthusamy Swami, Director, Simulation Software Development at Florida Solar Energy Center

(FSEC): www.floridabuilding.org/fbc/commission/FBC\_1018/Energy\_Tac/IES\_SoftwareReview\_Findings.pdf

Introductory Statement by Dr. Swami				
Issue/Comment:		IES Response:		
Dr. Swami has stated that "IES seems to report only		Integrated Environmental Solutions Limited would like		
the Annual Energy Cost for the proposed and budget		to thanks Dr. Swami and others at the EnergyGauge		
building and components in a generic fashion."		FlaCom software development team for their		
		comments.		
		IESVE Software does not "report only the Annual		
		Energy Cost for the proposed and budget building and		
		components in a generic fashion". IESVE Software		
		reports various inputs and outputs of a building model		
		from the perspectives of building design, building		
		energy consumption, building energy cost, building		
		utility costs & building code compliance.		

The ASHRAE 90.1 ECB reports in IESVE Software are not "generic" and are based on the requirements and layouts prescribed by ASHRAE. These ASHRAE 90.1 ECB Report Templates are posted at https://xp20.ashrae.org/UM90.1-2013/ECB-Method-Compliance-Form-2013.pdf. See Figure 01 for a representative comparison

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Figure 1: ASHRAE Prescribed ECB Reports (above) and ASHRAE ECB Reports in IESVE Software (below)

Section C-1 (continued) by Dr. Swami	
<b>Issue/Comment:</b> The report form does not include input fields and results for the following categories	<b>Response:</b> The ASHRAE 90.1 ECB reports are as per the ASHRAE templates. However, there are additional input & output reports available in IESVE Software. In addition, a variety of ASHRAE 90.1 ECB value fields are carried over to the report.
<ol> <li>Number of Stories: Doesn't appear in the report and missing entry field</li> <li>Builder Name: Doesn't appear in the report and missing entry field</li> <li>Permit Office/Jurisdiction: no or missing entry field</li> <li>FL jurisdiction field and data does not appear to be included as the weather indicator. User has to know which weather file applies to a particular jurisdiction.</li> </ol>	<ol> <li>The number of stories can appear on the ECB report. Note that a building's number of stories can be interpreted differently, which is why a 3-D model image is presented on some IES input reports. Example of varying interpretation include:</li> <li>Mezzanine-levels at varying heights in tall spaces.</li> <li>A 3 ½ story atrium adjacent to 2 floors and 3 floors on opposite sites.</li> <li>Partially above-grade and below-grade floors.</li> <li>The builder name is another value field in the project details where the user has the option to enter designer and/or contractor information.</li> <li>The permit office/jurisdiction is another value whereby the user has the option to enter.</li> <li>The address, city, zip-code and weather file information is provided in the report.</li> </ol>

Section C-2 (continued) by Dr. Swami	
Issue/Comment:	Response:
The following compliance test results are missing or	The ASHRAE 90.1-2013 Energy Cost Budget Method
cannot be generated:	allows "Trade-Offs", it does not utilize the prescriptive
External lighting Compliance	method and does not require compliance reports for
Lighting controls Compliance	individual components.
System report Compliance	The compliance reports in IESVE software conforms to
Water Heating System Compliance	the requirements of ASHRAE 90.1-2013 Section 11.5.1.
Plant Compliance	Comparison between the proposed design and ECB for
Piping System Compliance	peak demand, energy consumption and energy costs
Other Required Compliance	are included for various individual energy end-uses:
	External Lighting
Compliance Summary for each major category are	Internal Lighting
missing or cannot be generated:	Heating
Exterior Lighting	Cooling
Lighting controls	Heat Rejection
HVAC System	Pumps
Plant	Fans
Water Heating System	Receptacle Equipment
Piping System	Office Equipment
	Elevators & Escalators
	The ECB Checklist report also includes additional
	information, including MEP & lighting controls, etc.

C-3 (continued) by Dr. Swami			
Issue/Comment: Compliance Certification Box.		Response:	
Check box and signature box for Owner, Builder,		Signature box is included for the Owner, Builder,	
registered design professional, and Building		registered design professional, or Building Commission	
Commission Code Official are missing from the		Code Official on the compliance report form.	
compliance report form. Version Number of the		There is ample space in the report for any additional	
software is also missing in the compliance report.		signatures, stamp, and other officials' information.	
		The software version number is included on multiple	
		input reports and can be added to the ECB compliance	
		report. Examples are shown in Figure 02.	

C-4 (continued) by Dr. Swami		
Issue/Comment: Building Input Summary Report	Response:	
No minimum building input summary report is included in the sample compliance report.	IESVE software does provide various building input summary reports for the building, plant, HVAC systems, thermal zones, rooms, building envelop comparison, internal gains comparison, schedules, etc. Some examples are shown in Figure 02.	

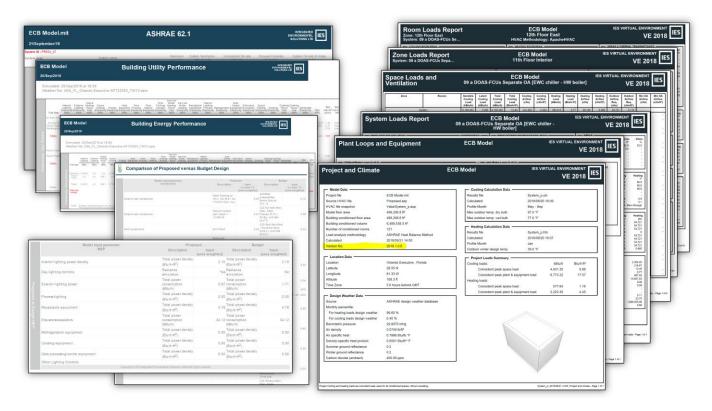


Figure 2: Example Reports from IESVE Software

C-5 (continued) by Dr. Swami		
Issue/Comment: Energy Code Compliance Checklist		Response:
No Energy code compliance checklist is included in		IESVE software includes an ECB Compliance Checklist
the sample compliance report.		report.
		IESVE also utilizes an integrated Navigator as a
		compliance checklist for the ASHRAE 90.1-2013 ECB
		Method.

C-6 (continued) by Dr. Swami	
Issue/Comment: Baseline Model Creation	Response:
"The program does create the baseline model automatically; however, it also allows users to import the baseline model for editing. Some of the baseline HVAC system input characteristics such as cooling and heating coils capacity, heat recovery Heat Exchanger efficiency and auxiliary power, and fan power and efficiency can be modified by users. One is able to modify the budget building model input assumption and reverse the compliance whole building compliance."	<ul> <li>In IESVE Software, the ASHRAE 90.1 ECB model is indeed created automatically, but this ECB model cannot be 'imported for editing'. The proposed model and ECB model reside in the same project and they are intrinsically tied to one another.</li> <li>In IESVE Software, the ASHRAE 90.1 ECB model utilizes automated sizing routines for its HVAC systems in accordance with ASHRAE 90.1-2013 ECB Method. Coils, fans and equipment are auto-sized and cannot be edited by users. An example fan dialog from an autosized ECB model is shown in Figure 03. As shown, fan power, efficiency and other autosized data cannot be edited by the user.</li> </ul>
	<ul> <li>In rare scenarios, edits may be warranted, but will be flagged as edited. Examples:</li> <li>A large amount of unmet load hours often requires airflow rates and coil capacities to be increased manually. This can only result is <i>increased</i> ECB model energy, which nobody would try to 'game the system' by doing so. The Unmet Load Hour check keeps this in check.</li> <li>New construction project adjoined to an existing/protected structure should be modeled as the existing construction on the ECB model. Note, this will be reported/flagged in the output reports.</li> </ul>

## Settings

Design flow rate:	Autosize	262147.33	cfm <mark>A</mark>
Oversizing factor:		1.00	
Design total pressure:		3.00	in water
Fan efficiency at design flow rate:		36.67	%
Motor efficiency at design flow rate:		90.00	% <mark>A</mark>
Motor airstream heat pickup factor:		100.00	%
Design fan power:		280.149	kW A
Electricity meter:		Electricity: Meter 1 $\sim$	
Fan category:		Interior central $\checkmark$	

Figure 3: ECB Model Fan Dialog

C-7 (continued) by Dr. Swami			
Issue/Comment: Help Documentation		Response:	
Help document is incomplete (sometimes referring to ASHRAE standard 90.1-2010 instead of 2013).		The Help document discovered by Dr. Swami was erroneously forwarding to an outdated document. The same link has since been updated and now reflects the current ASHRAE 90.1 Navigator tools in IESVE Software. There are no references to editing any baseline/budget model. help.iesve.com/ve2018/ecb_guidance_2013.htm	