# Staff Review/Comments of Energy Compliance Software REM Rate.

We detailed below issues we feel need to be addressed before this program is sufficient to receive approval for use in determining compliance with the Florida Building Code

1. There is a glitch that was encountered with REM Rate that was installed on one of our machines. It will not allow you to start a new project with all data fields blank. When you try to start a new project it keeps or loads the project you last saved in REM Rate. We were not able to find out how to stop this and had to manually blank out the fields – Default Building mistake on their part! I think the user had set the default building. This means that for every new building file created, the screens are filled out. The user can delete the default building and it will start with no fields entered. This is under the File menu. No change made here

2. The REM Rate program as it is currently setup is a global function by which the interface provides users with comprehensive screens. Some of these screens are not related to code compliance. It is advisable that the program be re-configured so that users are given the option to select the Florida code compliance option as a starting point, independent from the other areas. We will have something like this in our web tool, but not the desktop. Right now REM/Rate is used nationally and to avoid requiring users of Florida to have two installations of REM/Rate – we want to have Florida in the standard version. No change made here.

3. Energy Rating information should not be part of the code compliance program or subject areas. We will have something like this in our web tool, but not the desktop. Right now REM/Rate is used nationally and to avoid requiring users of Florida to have two installations of REM/Rate – we want to have Florida in the standard version. No change made here.

4. Utility defaults not clear. What is significance for different types of fuel? Do these calculations have any influence on whether a project will pass Florida Code compliance? Not sure what this means exactly. No change made here.

5. If a project is started with building input mode set to Detailed and then switches to Simplified will any inputted data be lost? Will it have any effect on entered information? Yes, data will be lost and some things may be altered. Current users of REM/Rate understand this and we explain this in our help system as well as with a warning before it happens. No changes made here.

6. Currently the Volume of conditioned space must be entered manually. It would be more practical for the program to calculate volume from depth and height of building parameters. We have found that volume may not be simply area multiplied by depth and height. No changes here

7. Building Information tab. The year built functionality should be flagged for year of input. No change required here.

8. Building Information tab. The Mobile home option under housing type is not covered by Florida building code and should be removed from the pull down. We might look into getting rid of Mobile Homes, but not yet. We will simply send an error when a mobile home is set for Florida Energy Code.

9. Building Information tab. Under housing type "none" should not be able to be selected. A building file with a housing type set to "none" would cause a simulation error and stop. A message would be shown that a housing type must be selected. REM/Rate uses none as a starting point rather than a default choice. We may change that when going to our web application. No changes made here.

10. In the help files there is no mention of the Florida Building Code or its requirements it only refers to I-Code. We will reference in Florida Energy Code in the code compliance section and What's New Section and the Introduction.

11. Building Information tab. Under housing type "Number of units" should be labeled with (Apartments Only). Not correct – for whole building multifamily only, not apartments. This is something we could do to say that Number of Units is for whole building multifamily only. Level Type is for apartments only.

12. Building Information tab. Floors on or above grade is confusing; REM Rate should ask for Number of floors. We could make that change for sure.

13. Foundation Walls tab. Foundation walls screen should not be triggered if slab on grade is selected on previous screen. True – we could look into locking out foundation walls if a slab floor is selected as foundation type. That is good software logic. We will make this change in our web version for sure. No changes here.

14. Slab Floor tab. With slab on grade selected the program allows the entering of elevated floor specifications ie R-30. We could easily limit the inputs to reasonable numbers.

15. Help screens. Diagrams would be helpful in showing what values relate to a certain building assembly and remove confusion. Good sections that do this are the help page for Rib and Band Joists. It would be good to have diagrams for each Building tab. That is a good idea – we can enhance our help system with pictures for sure. WE have begun this for slabs and foundations.

16. Above-Grade Wall tab. Above-Grade Wall properties such as "gross area" should be calculated automatically by the program. There are no data fields to enter dimensions of a wall. Length and Height for example. We have always had it at gross area and the net area is calculated. Means one less input. No changes made.

17. Working with a building component should have popup or restriction from deleted an item by accident. A "Do you really want to delete this item" message would be helpful. Agreed, it would be helpful, but also annoying if you are sure and just do not need to see that information. WE could look into that for our web application.

18. Please add functionality to widen the "errors/warnings" box with handles or mouse dynamically. The error/warning box can be detached from the application and set as a stand alone box and then it can be sized appropriately.

19. Is the only way to save added components to press the next button? There should be better save functionality to kept data from being lost and to kept progress from being lost in general. The data must be manually saved by hitting the save button or save in the File menu. There is no autosave at this point. We have had mixed feelings about this from our users. Some do not want autosave, others do. What is the right approach. For now we seem to have most satisfied with manual save.

20. Mechanical Efficiency tab. How does REM Rate account for performance efficiency adjustments on new construction? What does Performance Adj. (%) have to do with Florida Code Compliance? Default at 100% - we used the Performance Adjustment in the Florida reference home at 0.80 for equipment served by the ducts to represent the Duct System Efficiency (DSE).

21. The REM Rate program does not restrict minimum required R values below Florida Code minimum requirements. For example on the Duct System tab, a duct R-value is allowed to be entered in unconditioned attic that is below R-8. We are now checking all mandatory requirements for Florida code and highlighting them prior to report viewing.

    Mandatory Checks
    1. UA Only - Electric Space Heating cannot be used for UA Analysis
    2. UA Only - Air Handlers cannot be in the attic
    3. UA Only - Window Area cannot exceed 20% ( Unless an addition – the have 50% )
    4. All – Equipment Efficiency must be above federal minimums.
    5. All – Air Leakage
    6. All – Maximum Fenestration SHGC (includes overhang exemption)
    7. All – Duct Leakage
    8. All – Mechanical Ventilation
    9. All – Heating/Cooling Equipment Sized  Accordingly
        a. Heating and Cooling Equipment within 1.15 of capacity (warning only)
        b. Efficiencies meeting federal minimums (water, heat, cool)
    10. Performance – Ceiling Insulation shall be at least R-19
    11. Performance – Duct Insulation R-6 if not fully inside conditioned envelope

22. In the duct leakage the program allows selection of un-code related defaults such as "RESnet/Hers default" Yes, if any duct leakage setting besides ASHRAE Std 152 is used, it will automatically fail all Florida reports.

23. Duct System tab. Default duct leakage does not allow selection of "leaky with insulation" as a default selection. These are defined based on the HERS Standards, but we will be removing soon as the new RESNET/ANSI Standards to not define qualitative duct leakage anymore.

24. With regard to air leakage the program does not allow for a passive compliance option. The code allows for passive and as an option for testing. Passive Compliance meaning exempt. We do have a checkbox that allows for that in the duct screen. Maybe we need to understand the code better for passive compliance. What exactly does that mean?

25. Whole house infiltration tab. Menu does not show Florida Building Compliance. We changed the nomenclature to code verification or something that is basic code compliance.

26. Lights and Appliances tab. The Rating/Audit screen energy features that are not related to the Florida code ie. Appliances. Is there a way to remove appliances from a given project? The design and reference home have the same values for lighting and appliances. So there is no credit or discredit for lights and appliances, but it is part of the total annual energy costs.

27. Mandatory requirements screen is not functional. Most of these fields have no bearing on if a project passes the Florida Code. True – only used for ENERGY STAR but we use the checkbox for Florida to state that mandatory requirements that the software cannot check have been met.

28. DOE challenge home tab. DOE challenge home is not applicable to Florida code compliance. True – only used for DOE Challenge Home.

29. Interior Mass tab. Interior mass/interior walls not part of Florida code energy calculations. The Florida code states credit can be gained from thermal storage internal mass. The reference home has the standard 8 lbs per sq ft.

30. How are sunspace room factored in from the rest of the house. What calculations are involved? What do these calculations have to do with Florida code compliance? Heat from the sunspace can be actively or passively added to home during the heating season. Calculations are proprietary. WE simply calculate how much heat is captured in a sunroom and how much is utilized to the conditioned space.

31. When doing a quick analysis the Error/Warning screen does not refer to specific that is causing the Error. This would be helpful. Some messages are better than others but most are fairly specific to what is causing the error.

32. Quick Analysis does not show a pass/fail indicator for the Florida Code. The only way to determine this is to run a report to see any Florida Code information. We could add Florida to QA for sure – that would not be a problem.

33. The Florida Form 405-10 (1) report/printout should only show data limited to code compliance. Footnote shows analysis for rating. The report shows what is in the building. The footer is exactly as shown in the sample reports from the Florida website.

34. REM Rate does not specify type of Roof to be constructed. For example Built up roofing or Metal. True.

35. The software seems to lack error checking for mandatory measures when running a performance compliance. A user could enter windows not meeting the area weighted window SHGC when the overhang is less than 4 feet and still believe that they passed the code. The building inspector would have to catch this on the output. We are now checking all mandatory requirements for Florida code and highlighting them prior to report viewing.

36. The software also seems to provide a detailed and a simplified entry method for data entry which does not provide wall orientation or wall area and perhaps other entries. The simplified entry method will be less accurate and the commission should consider whether they want to allow the such a simplified method if approving this software.

Answer - The simplified entry is converted to the detailed inputs prior to any analysis, but is done behind the interface. Most experienced users use the detailed input screen. The compliance runs through the same process and error checking after mapping to detailed inputs.

37. The software does not provide an option for specifying the construction is an addition.

Answer - Actually it does – under the Tools menu, and the Miscellaneous, the Florida screen is selected to be shown and when a city in Florida is chosen, the screen becomes active and the home can be set as new or an addition.

38. The FL Code report in REM/Rate uses the term "Baseline" when it should indicate "Standard Reference."

Answer - IF he is referencing the 405 report, the example given from the Florida website uses baseline loads as the title. Maybe I am missing which report he is referencing.

39. The software does not provide an input for the user to identify a roof solar absorptance or reflectance has been tested according to the ASTM standard but provides credit anyhow.

Answer - This is set via the roof color setting under the ceiling/roof summary inputs.

40. When you change refrigerators or lighting in REM/rate (features of energy ratings) the Florida code compliance can change. For Florida code 2010, the internal loads are fixed and the performance values for code purposes should not change.

Answer – the internal gains are fixed for the code compliance.  However, when a refrigerator is set in REM, for all codes, the same value is in the design home and standard reference home.  So, if I enter 400 kWh for the building, the reference home will also have 400 kWh and thus no credit or penalty is given.  However, if I then put in 600 kWh, the standard reference will also have 600 kWh.  So the results will change slightly for both design and reference home.

41. The solar entry does not include the FEF input which is required by FL Code which states:  True, this is not one of the inputs for REM.  We have our own calculation procedure for PV and solar thermal.

    *403.4.3.2.3 Solar water heating systems. Solar systems for domestic hot water production are rated by the annual solar energy factor of the system. The solar energy factor of a system shall be determined from the Florida Solar Energy Center Directory of Certified Solar Systems. Solar collectors shall be tested in accordance with ISO Standard 9806,Test Methods for Solar Collectors, and SRCC Standard TM-1, Solar Domestic Hot Water System and Component Test Protocol.*

    Answer – For Florida Compliance – we will not allow credit for solar thermal applications because we do not use the annual solar energy factor of the system.