**Change Notes**

**CF1R-ADD-01**

* E04 – revised pseudo code only
  + <<if E02 = NA, then value = NA; elseif A09 = 16 and E01 = “Slab on grade”, then value = R-7; Else if A09 = 1-15 **and E01 = “Slab on grade”**, then value = NA; elseif A09 = 1-2, 11, 13-14, or 16 and E01 = “Concrete raised”, then value = R-8; elseif A09 = 3-10 and E01 = “Concrete raised”, then value = R-0…>>
* E05 – revised pseudo code only
  + <<if E03 = NA, then value = NA; elseif A09 = 16 and E01 = ”Slab on grade”, then value = 0.58; Else if A09 = 1-15 **and E01 = “Slab on grade”**, then value = NA; elseif A09 = 1-2, 11, 13-14, or 16 and ~~B02~~**E01** = “Concrete Raised”, then value = 0.092; elseif A09 = 3-10 and ~~B02~~**E01** = “Concrete Raised”, then value = 0.269**; else**if A09 = 12 or 15 and ~~B02~~**E01** = “Concrete Raised”, then value = 0.138; elseif E01 = “Heated slab”, then value = NA

Note: Range check, value in E03 must be less than or equal to E05 **(both can be NA)** in order to comply>>

* L04 – revised pseudo code
  + <<if **A11 = Single Family, value = 1**; else user input: whole number>>
* L05 – revised pseudo code
  + <<if L02 = Central **and L04 ≤8, then value =1, elseif L02 = Central and L04 >8** then user entry: allow ≥2 ~~unless L04 is ≤8 then allow 1~~; Else value = NA>>
* L10 – revised column header
  + Rated Input ~~(Range)~~

**CF1R-ALT-01**

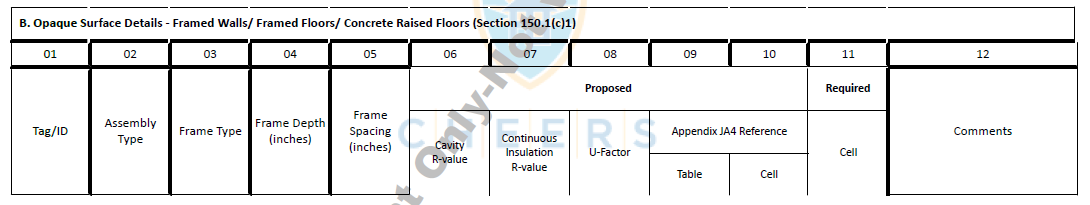
* J04 – revised pseudo code
* <<if **A11 = Single Family, value = 1**; else user input: whole number>>
* J05 – revised pseudo code
  + <<if J02 = Central **and J04 ≤8, then value =1, elseif J02 = Central and J04 >8** then user entry: allow ≥2 ~~unless J04 is ≤8 then allow 1~~; Else value = NA>>
* J10 – revised column header
  + Rated Input ~~(Range)~~

**CF1R-ALT-02**

* B09 – revised column header
  + Installing entirely new **ducted** SC system?

**CF1R-NCB-01**

* Section B – border formatting issues (report generator issue)



* G03 – GTE and LTE signs are missing from final PDF (report generator issue?)
* J03 – revised schema
  + Include restriction
    - **<xsd:restriction base="com:FenestrationFraming">**

**<xsd:enumeration value="Metal"/>**

**<xsd:enumeration value="Metal Thermal Break"/>**

**<xsd:enumeration value="Non-metal"/>**

**</xsd:restriction>**

* J18 – revised static text
  + Total Propose**d** West-Facing Fenestration Area
* L05
  + Word doc and pseudo code change
    - Attic Free Vent Area (in2 ~~ft~~~~2~~)
  + Schema change – close parentheses
    - Attic Free Vent area (in[d:sup]2[/d:sup]**)**
* M04 – revised pseudo code
  + <<**if A 11 = Single Family, value = 1; else** user input: whole number>>
* M05 – revised pseudo code
  + <<if M02 = Central **and M04 ≤8, then value =1, elseif M02 = Central and M04 >8** then user entry: allow ≥2 ~~unless M04 is ≤8 then allow 1~~; Else value = NA>>
* M10 – revised column header
  + Rated Input ~~(Range)~~
* User instructions
  + A14
    - ~~Exceptions to Fenestration U-factor and SHGC~~ **Fenestration Exceptions**: Installing less than or equal to 3 ft2 glass in door, Installing less than or equal to 3 ft2 tubular skylight, Installing less than or equal to 16 ft2 skylight, ~~or~~ Not Applicable, **or Installing storage water heater ≤ 55 gal**.
  + Delete A15 and A16

**CF2R-ENV-03**

* A10 – add option for string validation
* B10 – add option for string validation
* D03 – schema change only
  + Use *RaisedFloorFramingMaterialCBECC\_Res* (new term) for performance values and keep *PartitionFramingMaterial* for prescriptive

**CF2R-ENV-04**

* Section A end note – schema change only (pseudo code correct)
  + Note: in order to ~~comppy~~ **comply** with the 1/300 exception, a Class I or II vapor retarder is required to be installed in climate zone 14 and 16.
* H01
* ~~User input~~ **Pull information from CF1R**

**CF2R/3R-ENV-20**

* A08 – A11
  + **<<if A02≠"required", then value = N/A; Else if value available from CF1R, use value; Else user input numeric value, xxxxx.x >>**
* A12
  + **<< if A02≠"required", then value = N/A; Else if value available from CF1R, use value; Else value = sum of (A08+A09+A10+A11) >>**
* Da1 – Da4 and D01 – schema change only (pseudo code correct)
  + Use pseudo code versions of equations

**CF2R/3R-ENV-21**

* A02 – revised schema (correct pseudo code)
  + <xsd:documentation source="CalculationsAndRules">User selects from list: Method1Materials display term Method 1 (Individual Materials), Method2Assemblies display term Method 2 (Assemblies of Materials), Method3CompleteBuilding display term Method ~~2~~ **3** (Complete Building)</xsd:documentation>

**CF2R/3R-ENV-22**

* D02 – revised static text
  + Loose-fill and batt insulation is in contact with all six sides of wall cavities (top, bottom, back, left, right, front [to be installed later]) with no gaps, voids or compression. **Special Situation: Where framing depth is greater than required insulation thickness (e.g., double walls or framed bump-outs) a secondary air barrier shall be installed and in contact with the insulation, so that the insulation fills the cavity formed by the additional air barrier.** ~~Exception: Where framing depth is greater than minimum required insulation thickness (e.g., R-19 batts in 2x10 walls).~~
* D07 – revised static text
  + “All single-member window and door headers shall be insulated to a minimum of R-3 for a 2x4 framing, or equivalent width, and a minimum of R-5 for all other assemblies. **No header insulation is required for single-member headers that are the same width as the wall, provided that the entire wall has at least R-2 insulation.”**

**CF2R-LTG-01**

* C01 – schema change only (correct in pseudo code)
  + Do not contain ~~scree~~ **screw** based sockets
* D04
  + …. ~~or controlled,~~ or controlled by vacancy sensor.

**CF2R-MCH-01a**

* B03 – revised pseudo code
  + <<auto filled text: referenced from CF1R>>

Note: assume the VCHP and multisplit system types will be included in CBECC, thus included in the allowed values in this field:

\*VCHP-ducted \*VCHP-ductless \*VCHP-ducted+ductless \*multisplit HP-ducted \*multisplit HP-ductless \*multisplit HP-ducted+ductless **\*ducted mini-split HP**

* B04 – revised pseudo code
  + <<auto filled text: referenced from CF1R>>

Note: assume the VCHP and multisplit system types will be included in CBECC, thus included in the allowed values in this field: \*VCHP-ducted \*VCHP-ductless \*VCHP-ducted+ductless \*multisplit AC-ducted \*multisplit AC-ductless \*multisplit AC-ducted+ductless \*multisplit HP-ducted \*multisplit HP-ductless \*multisplit HP-ducted+ductless **\*ducted mini-split AC** **\*ducted mini-split HP**

* D04, D05, D07 – fully revised pseudo code
* Section E header – revised pseudo code
  + Add new system option triggers
* Section F header – revised pseudo code
  + Add new system option triggers
* F04 – revised pseudo code
  + << … cond 1: if ~~D05~~ **B04** = **{**central packaged AC**}**, ~~then~~ **and** 12.2 > value ≥11.0**,** **then the system** complies;

cond 2: if ~~D05~~ **B04** = "central split AC", and F10 < 45000, then value must be ≥ 12.2 to comply. else flag non-compliant value and do not allow registration to proceed>>

* Section G header – revised pseudo code
  + Add new system option triggers
* G10 – revised pseudo code
  + <<if **the following three conditions are ALL true: condition 1:[**D06 > 1**]**, **condition 2:[system type in D04 or D05=one of the following two values: {VCHP-Ducted}, {VCHP -Ducted+Ductless}] condition 3:[**G05= one of the following two values: **{**Ducted >10ft length**} {**Ducted ≤10ft length**}]** then user input numeric value, x.xx, else display text: "value not required">>
* Section H header – revised pseudo code
  + Add new system option triggers
* Section I header – revised pseudo code
  + Add new system option triggers
* J04 – revised pseudo code
  + <<**if value in D07= [Multiple split Indoor Units combined Ducted and Ductless] then pick one value from list below, else** reference value from D07 as default…. >>
* J06 – revised pseudo code
  + <<**if value in D07= [Multiple split Indoor Units combined Ducted and Ductless] then pick one value from list below, else** reference value from D07 as default…. >>
* J08 – Revised column header, pseudo code and schema change
  + ~~Exemption~~ **Exception** from Min R-value
  + << Default Value=No ~~Exemption~~ **Exceptions**, allow user to override the default … >>
  + Allow multiple selections
    - Pseudo code says: << Default Value=No Exemption, allow user to override the default and select one or more of the following two values…>>
* J09 – revised pseudo code
  + << if System Type in D05=no cooling, then result = Exempt - No Cooling; elseif **D04 or** D05=one of the following ~~three~~ **five** system types: \*evaporative - direct,\*evaporative - indirect, \*evaporative - indirectdirect, **\*VCHP-Ducted \*VCHP-Ducted+Ductless** then text value = Exempt ~~- Evaporative~~ System **Type**; … >>
* J13 – revised pseudo code
  + <<**if D04 or D05 = one of the following two types: 1:[VCHP-Ducted] 2:[VCHP-Ducted+Ductless] then text value=[Exempt System Type], else**if system type in D04 or D05 is one of the following **six** system types: \*central split AC; … >>
* M07 – revised pseudo code
  + <<**if D04 or D05 = one of the following two system types: \*VCHP-Ducted \*VCHP-Ducted+Ductless then result=yes**

**else**if J09 result is Fan Efficacy, and Airflow Rate then result = yes … >>

* N04 – fully revised pseudo code
* N05 – new field
  + **MCH-33 VCHP Compliance Credit**
  + **<<if D04 or D05=one of the following three system types: \*VCHP-Ducted \*VCHP-Ductless \*VCHP -Ducted+Ductless then result in this field=yes, else result in this field=no>>**

**CF2R-MCH-01b**

* Logic Table, Field O8 and O9 – revised pseudo code
  + O8 - DctLk + FE/AF or Tbl150.0-C,D
  + O9 - e.g. new ducted hydronic heating system, or other new heating-only system
* C03 – revised pseudo code
  + << … \*non-air-source heat pump; \*Wood Heat; \*N/A (no heating); \*Small duct high velocity HP; \*Ductless VRF HP; \*Packaged gas furnace\*multisplit HP-ducted \*multisplit HP-ductless \*multisplit HP-ducted+ductless **\*VCHP-ducted \*VCHP-ductless \*VCHP-ducted+ductless \*ducted mini-split HP** \*no heating … >>
* C07 – revised pseudo code
  + << … \*multisplit AC-ducted \*multisplit AC-ductless \*multisplit AC-ducted+ductless \*multisplit HP-ducted \*multisplit HP-ductless \*multisplit HP-ducted+ductless **\*VCHP-ducted \*VCHP-ductless \*VCHP-ducted+ductless \*ducted mini-split AC \*ducted mini-split HP** flag non-default values and report in project status notes field; a revised CF1R may be required >>
* C12 – revised schema
  + <xsd:documentation source="CalculationsAndRules">If C03 Or C07 == RoomHP, RoomAC, GasWallFurnace , GasSpaceHeater, Electric, WoodHeat, GasPackagedFurnace, CentralPackagedAC, CentralPackagedHP, CentralLargePackagedAC, CentralLargePackagedHP, EvaporativeDirect, EvaporativeIndirect, EvaporativeIndirectDirect, EvaporativelyCooledCondenser result = NotApplicable stored in NotApplicableMessage; Else If C14\_IsVentilationSystemCFI == true result = 1; Else default result = 1; Allow user to override and enter ~~either~~ **a value GT** 1 or NotApplicable stored in NotApplicableMessage.</xsd:documentation>
* Section D header – revised name and pseudo code
  + D. Installed Heating Equipment Information **for Gas Furnace Indoor Unit, or Heat Pump Indoor Unit, or Packaged Unit (Gas Furnace or Heat Pump)**
  + << If all systems listed in Section C have a value in C04= [no heating component altered[, then display the section does not apply message; **else for each of the SC systems in Section C for which C04≠[no heating component altered], do the following actions: A, B, C:**

**A: if C12 >1, then require one row of data in this table for each of the quantity of indoor units specified in C12,**

**B: if C12=1, then require one row of data in this table,**

**C: if C12=N/A, then require one row of data in this table**

~~else require one row of data in this table for each of the SC Systems listed in Section C that do not have a value in C04= no heating component altered>>~~

* D09 – new field
  + **Multi-split Indoor Unit Name or Description of Area Served**
  + **<<If C12=one of the following two values: {N/A}, {1}, then value=N/A, elseif value in C12>1 then prompt user to input text, 15 characters maximum; do not allow duplicate values in this column on this MCH-01 >>**
* D10 – new field
  + **Multi-split Indoor Unit Duct Status**
  + **<<if D09=NA, then text value=N/A, else user pick one of the following three values: 1:[Ductless] 2:[Ducted >10ft length] 3:[Ducted ≤10ft length]>>**
* Section E header – revised name
  + E. Installed Cooling Equipment Information **for Outdoor Condenser or Package Unit (Air Conditioner or Heat Pump:**
* F10 – revised column header and pseudo code
  + ~~Exemption~~ **Exception** from Min R-value
  + << if F04=no, then value=n/a, else default text value=No ~~Exemption~~ **Exceptions**…>>
* F12 – fully revised pseudo code
* G10 – revised column header and pseudo code
  + ~~Exemption~~ **Exception** from Min R-Value
  + < Default Value=No ~~Exemption~~ **Exceptions**; allow user to override the default … >>
* G15 – fully revised pseudo code

**CF2R-MCH-01c**

* B11 – revised pseudo code
  + Allow N/A as an option
* C04 – revised pseudo code
  + << reference value from B02 as default; allow user to override the default and pick one from list: … \*multisplit HP-ducted+ductless **\*VCHP-ducted \*VCHP-ductless \*VCHP-ducted+ductless\*ducted mini-split HP** \*no heating … >>
* C05 – revised pseudo code
  + << reference value from B05 as default; allow user to override the default and pick one from list: … \*multisplit HP-ducted+ductless **\*VCHP-ducted \*VCHP-ductless \*VCHP-ducted+ductless \*ducted mini-split AC \*ducted mini-split HP** … >>
* Section D header – revised pseudo code
  + Add new system option triggers
* Section E header – revised pseudo code
  + Add new system option triggers
* E04 – revised pseudo code
  + <<user input, numeric value, xx.x; check value: if B07≠N/A, then value must be ≥ value in B07, to comply; elseif value in B07=N/A **and E03 = SEER**, then value must be ≥ 14 to comply. Flag non-compliant values and do not allow registration to proceed if not in compliance>>
* Section F header – revised schema (pseudo code correct) and pseudo code
  + Remove *GasFurnaceDualFuelHP*
  + Add new system option triggers
* F10 – revised pseudo code
  + <<if **the following three conditions are ALL true: condition 1:[**C11 > 1**]**, **condition 2:[system type in C04 or C05=one of the following two values: {VCHP-Ducted}, {VCHP -Ducted+Ductless}]** **condition 3:[**F05= one of the following two values: **{**Ducted >10ft length**} {**Ducted ≤10ft length**}]**, then user input numeric value, x.xx, else display text: "value not required">>
* Section G header – revised pseudo code
  + Add new system option triggers
* Section H header – revised pseudo code
  + Add new system option triggers
* H08 – revised pseudo code
  + <<user input, numeric value, 100.0≥ xx.x≥0.0; check value: if B07≠N/A, then value must be ≥ value in B07, to comply; elseif value in B07=N/A **and E03 = SEER**, then value must be ≥ 14 to comply.

Flag non-compliant values and do not allow registration to proceed if not in compliance>>

* I08 – Revised column header, pseudo code and schema change
  + ~~Exemption~~ **Exception** from Min R-Value for Ducts In Conditioned Space
  + << Default Value=No ~~Exemption~~ **Exceptions**, allow user to override the default … >>
  + Allow multiple selections
    - Pseudo code says: << Default Value=No Exemption, allow user to override the default and select one or more of the following two values…>>
* I09 – revised pseudo code
  + << if System Type in C05=no cooling, then text value = "Exempt - No Cooling"; elseif System Type in C05=one of the following three system types: \*evaporative - direct, or \*evaporative - indirect, or \*evaporative - indirectdirect, then text value = "Exempt - Evaporative System"; elseif Section I **[**field 11 **or field 12]** = no, then text value = "Exempt - ~~RA3.3~~ **Approved** Protocols N/A" … >>
* L07 – revised pseudo code
  + <<**if section I field 11 = no, then result = no; else**if section I field 09 result is "HERS Verified Fan Efficacy and Airflow Rate", then result = yes, elseif the value in M03=yes, AND the value in L08=no, then result in this field=yes elseif C05=no cooling; AND one or more of the following two are true: \*[D04=yes] (is a CFI system) \*[F06=yes] (is a CFI system) then result=yes else result=no>>

**CF2R-MCH-01d**

* B03 – revised pseudo code
  + <<auto filled text: referenced from CF1R>>

Note: assume the VCHP and multisplit system types will be included in CBECC, thus included in the allowed values in this field:

\*VCHP-ducted \*VCHP-ductless \*VCHP-ducted+ductless \*multisplit HP-ducted \*multisplit HP-ductless \*multisplit HP-ducted+ductless **\*ducted mini-split HP**

* B04 – revised pseudo code
  + <<auto filled text: referenced from CF1R>>

Note: assume the VCHP and multisplit system types will be included in CBECC, thus included in the allowed values in this field: \*VCHP-ducted \*VCHP-ductless \*VCHP-ducted+ductless \*multisplit AC-ducted \*multisplit AC-ductless \*multisplit AC-ducted+ductless \*multisplit HP-ducted \*multisplit HP-ductless \*multisplit HP-ducted+ductless **\*ducted mini-split AC** **\*ducted mini-split HP**

* B11 – schema change only
  + Also allow New and Existing
  + B12 – Duct System Status
  + Also allow New, Existing, and Existing + New
* D04, D05, D07 – fully revised pseudo code
* Logic Table, Field O8 and O9 – revised pseudo code
  + O8 - DctLk ~~+ FE/AF or Tbl150.0-C,D~~
  + O9 - e.g. new ducted hydronic heating system**,** **or other new heating-only system**
* Section F header – revised pseudo code
  + Add new system option triggers
* Section G header – revised pseudo code
  + Add new system option triggers
* G04 – revised pseudo code
  + << … two conditions are applicable: cond 1: if ~~D05~~ **B04** = **{**central packaged AC**}**, ~~then~~ **and** 12.2 > value ≥11.0 **then the system** complies; cond 2: if ~~D05~~ **B04** = "central split AC", and G10 < 45000, then value must be ≥ 12.2 to comply. else flag non-compliant values and do not allow registration to proceed>>
* Section H header – revised pseudo code
  + Add new system option triggers
* Section I header – revised pseudo code
  + Add new system option triggers
* Section J header – revised pseudo code
  + Add new system option triggers
* K10 - revised column header and pseudo code
  + ~~Exemption~~ **Exception** from Min R-value
  + << if K04=no, then value=n/a, else default text value=No ~~Exemption~~ **Exceptions**…>>
* K12 – revised pseudo code
  + <<if **the following three conditions (A, B, C) are ALL true: condition A:[**D06 > 1**]**, **condition B:[system type in D04=one of the following two values: {VCHP-Ducted}, {VCHP -Ducted+Ductless}] condition C:[**one of the following two conditions **(1, 2)** is true: 1:{system is listed in section H (**in** H02)**;** and H05= one of the following two values: \*Ducted >10ft length \*Ducted ≤10ft length}, 2:{D11=existing, and D13 is ≥1}**]** then user input numeric value, x.xx, else value=N/A>>
* L06 – revised pseudo code
  + <<**if value in D07= [Multiple split Indoor Units combined Ducted and Ductless] then pick one value from list below, else** reference value from D07 as default…. >>
* L08 – revised pseudo code
  + <<**if value in D07= [Multiple split Indoor Units combined Ducted and Ductless] then pick one value from list below, else** reference value from D07 as default…. >>
* L10 – Revised column header, pseudo code and schema change
  + ~~Exemption~~ **Exception** from Min R-Value for Ducts In Conditioned Space
  + << Default Value=No ~~Exemption~~ **Exceptions**, allow user to override the default … >>
  + Allow multiple selections
    - Pseudo code says: <<Default Value=No Exemption; allow user to override the default and select one or more of the following two values>>
* L11 – revised pseudo code
  + << if System Type in D05=no cooling, then result = Exempt - No Cooling elseif **D04 or** D05=one of the following ~~three~~ **five** system types: \*evaporative - direct, \*evaporative - indirect, \*evaporative - indirectdirect, **\*VCHP-Ducted \*VCHP-Ducted+Ductless** then text value = Exempt ~~- Evaporative~~ System **Type**; elseif L13=no, then text value = Exempt - RA3.3 Protocols are N/A; … >>
* L14 – revised pseudo code
  + <<**if D04 or D05 = one of the following two types: 1:[VCHP-Ducted] 2:[VCHP-Ducted+Ductless] then text value=[Exempt System Type] else**if system type in D04 or D05 is one of the following **six** system types: … >>
* L15 – revised pseudo code
  + <<if **the following three conditions (A, B, C) are ALL true: condition A:[**D06 > 1**]**, **condition B:[system type in D04=one of the following two values: {VCHP-Ducted}, {VCHP -Ducted+Ductless}] condition C:[**one of the following two conditions **(1, 2)** is true: 1:{system is listed in section H (**in** H02)**;** and H05= one of the following two values: \*Ducted >10ft length \*Ducted ≤10ft length}, 2:{D11=existing, and D13 is ≥1}**]** then user input numeric value, x.xx, else value=N/A>>
* O08 – revised pseudo code
  + <calculated field: **if D04 or D05 = one of the following two system types: \*VCHP-Ducted \*VCHP-Ducted+Ductless then result=yes else**if L11 result is Fan Efficacy, and Airflow Rate, then result = yes … >>
* P04 – fully revised pseudo code
* P05 – new field
  + **MCH-33 VCHP Compliance Credit**
  + **<<if D04 or D05=one of the following three system types: \*VCHP-Ducted \*VCHP-Ductless \*VCHP -Ducted+Ductless then result in this field=yes, else result in this field=no>>**

**CF2R-MCH-02**

* A06 – new column
  + **Vent Location**
  + **<<User select from: \*Attic, \*Outside>>**
* B02 – new row
  + **Sum of Airflow vented to attic**
  + **<<calculated field: sum of all values from WHFsTotalRatedAirFlow where A06 = Attic>>**
* B03 – new row
  + **Sum of Airflow vented to outside**
  + **<<calculated field: sum of all values from WHFsTotalRatedAirFlow where A06 = Outside>>**
* Section C – new table

|  |  |  |
| --- | --- | --- |
| **C. Attic Vent Free Area**  **<<if any fans in A06 = Attic, show table; else display this section does not apply message>>** | | |
| **01** | **Required Attic Vent Free Area (ft2)** | **<<calculated field: *WHFsAllModelsRatedAirFlowAttic* (B02)/750>>** |
| **02** | **Installed Attic Vent Free Area (ft2)** | **<<user input: numeric, xxx.x>>** |

* Section D (was C) – revised pseudo code
  + <<calculated field: if WHFsAllModelsTotalRatedAirFlow (B01) ≥ WHFsMinimumRequiredAirflow (B05), **and if Section C applies and** AtticVentFreeAreaInstalled (~~B03~~**C02**) ≥ AtticVentFreeAreaRequired (~~B02~~**C01**), then display result: pass - dwelling complies with the prescriptive WHF requirement; else display result: fail - dwelling does not comply with the prescriptive WHF requirement>>

**CF2R-MCH-20a**

* + A07 – revised pseudo code
    - **<<If parent is MCH-01b and B08 or B09 = Yes, then user pick from list: New; or Replacement; Else** user pick one from list: New; or Replacement; or Alteration; or Replacement using Smoke Test; or Alteration using Smoke Test>>

**CF2R/CF3R-MCH-22c**

* + D03 – revised pseudo code and schema
    - <<calculated field: if parent is MCH-01a, then reference value from MCH-01a Section C Row ~~C09~~**C12**; else if parent is MCH-01d, then reference value from MCH-01d Section C Row ~~C09~~**C12**…>>
      * (schema has MCH-01 references as Section TBD)

**CF2R/3R-MCH-23**

**CF2R/3R-MCH-23d**

* + Section E header – revised pseudo code
    - **<<if A12 = Not a CFVCS, then display the section does not apply message; else display table>>**

**CF2R/3R-MCH-24**

* A08 – A11
  + **<<if A02≠"required", then value = N/A;**

**Else user input numeric value, xxxxx.x >>**

~~<<if A02="required", then value is taken from CF1R;~~

~~Else user input numeric value, xxxxx.x;~~

~~else, if A02 ≠ “required”, then value=N/A>>~~

* A12
  + **<< if A02≠"required", then value = N/A;**

**Else value = sum of (A08+A09+A10+A11) >>**

~~<<if A02="required", then value is taken from CF1R;~~

~~Else value = sum of (A08+A09+A10+A11);~~

~~if A02 ≠ “required”, then value=N/A>>~~

* + A13 – new row
    - **Building Volume**
    - **<<if performance, reference from CF1R; Elseif prescriptive, user input>>**
  + Rest of form
    - Fix references to Table A after new A13
  + Da1 – Da4 and D01 – schema change only (pseudo code correct)
  + Use pseudo code versions of equations

**CF2R-MCH-25**

* A12 – revised static text and pseudo code
  + Is the system of a type that the minimum airflow can be verified **for all indoor units** using an approved measurement procedure (RA3.3 or RA3.3.3)?
  + << (**\*for criterion 1 below** reference data on MCH-01: MCH-01aJ12; or MCH-01b **F11, or** G13; or MCH-01cI11, or MCH-01d **K11, or** L13**;**

**\*for criterion 2 below reference data on MCH-01: MCH-01a D07; or MCH-01c C06, or MCH-01d D07;**

**\*for criterion 3 below reference data on MCH-01: MCH-01b C12, C13; MCH-01d D06, D13)**

If **one of the following three criteria are true:**

**criterion 1:[**value **for the RA3 airflow measurement question field for any of the ducted indoor units for this system** on MCH-01=**NO**~~Yes~~],

**criterion 2:[distribution system type on MCH-01= one of the following two: {\* Multiple split Indoor Units combined Ducted and Ductless}, {\*DuctsNone};**

**criterion 3:[number of ducted indoor units is less than the total number of indoor units]** thenvalue in this field=**NO**~~yes, this is a ducted system and one of~~ (the system airflow rate measurement procedures in RA3.3 or RA3.3.3 can**not** be used to verify system airflow rate requirements **for all of the indoor units for this system**;

**else** value=yes

~~Elseif value on MCH-01=No, then value in this field=no, the airflow rate measurement procedures in~~

~~RA3.3 or RA3.3.3 are not applicable to this system, therefore compliance shall use HERS Rater~~

~~observation of the installer's weigh-in charging procedure~~

~~Else user input: Yes or No~~>>

* A15 – revised pseudo code
  + Remove Winter Setup (applicable when outdoor temperature is < 55 degF)
    - <<user pick one from list:

Superheat (outdoor temperature must be ≥ 55 degF); or

Subcooling (outdoor temperature must be ≥ 55 degF); or

Weigh-in with Installer independent; or

Weigh-in with HERS Rater observation; or

~~Winter Setup (applicable when outdoor temperature is < 55 degF)~~; or

New Package Unit Factory Charge >>

* **E03** on the MCH-25**a** and MCH-25**b** and MCH-25**e**; **D03** on the MCH-25**c**; **C03** on the MCH-25**f** – revised pseudo code
  + << … elseif the CF2R-MCH-01 indicates a MCH-23 is required for minimum airflow rate compliance, then if this system has a registered CF2R-MCH-23a**,** ~~or~~ CF2R-MCH-23b**,** **CF2R-MCH-23e or CF2RMCH-23f** that meets the compliance criterion in D01, then result = System complies with minimum airflow rate requirements; elseif A10=Alteration, then if the system complies with the alternative airflow compliance method on a registered CF2R-MCH23c; then result =system complies using the alternative remedial actions specified in RA3.3.3.1.5… >>

**CF2R-MCH-25c**

* Section D
  + Make minOccurs=**0**
* E01 – schema change only (pseudo code correct)

<xsd:documentation source="CalculationsAndRules">User input numeric value xxx.x, check range = 0 to 130; If all of the following condiitons are true: A12 equals yes, A13 equals yes and A15 equals WeighIn or WeighInHERS And value entered is greater than **or equal to** 55 degrees F, Then display message: "For this system, compliance using Weigh-In with HERS Rater observation is allowed only when outside temperature is … >

* E11 and E12 – schema change
  + Allowed range expanded to -50 to 50 and -15 to 15

**CF2R/3R-MCH-27**

* A07 – revised pseudo code
  + Remove Scheduled and Real-time Control options
    - << calculated value if registered CF1R form equals CF1R-PRF-01, reference data from CF1R; Else if “Building Type” (A02) = “Non-dwelling unit”, then value = N/A; Else if registered CF1R form equals CF1R-NCB-01 or CF1R-ADD-01, user pick one from list:

\*\*Continuous; or

\*\*Short-Term Average; ~~or~~

~~\*\*Scheduled; or~~

~~\*\*Real-time Control~~…>>

* A08 – revised pseudo code
  + <<…Else if “Building Type” (A02) = Multifamily **and “Ventilation System Type” (A06) = Central Ventilation System – Supply, Central Ventilation System – Exhaust, or Central Ventilation System – Balanced,** then display method: \*\*27b – Multifamily; if “Building Type” (A02)= “Non-dwelling unit”; then display method: \*\*27d – Non-dwelling unit >>

**CF2R/3R-MCH-27a**

* + A09 – new field
    - **Climate Zone (this row is not visible to the user)**
    - **<<value from CF1R>>**
  + B03 – revised static text
* ~~Vertical distance from the lowest above-grade floor to the highest ceiling in feet~~ **Vertical distance between the lowest and highest above-grade points within the pressure boundary in feet**
  + B05 – revised pseudo code
  + **<<Calculated field: If parent document is CF1R-PRF-01, reference value from it but allow user to override it. If not overridden, result is stored in B05\_WeatherStationANSI\_ASHRAE;**

**Else if user overrides CF1R-PRF-01 value Or parent is CF1R-NCB-01 or CF1F-ADD-01, user selects from list of weather stations based on value in A09\_ClimateZone and this is stored in B05\_WeatherStationCZ# where # is the climate zone;**

**Else If A02\_ResidentialBuildingType == NonDwellingUnit result = N/A>> stored in NotApplicableMessage>>**

* Use **WSF FACTOR LISTING** spreadsheet (similar to NEEA HPWH forms)
* B06 – revised pseudo code
  + **<<Calculated field: If parent document is CF1R-PRF-01 And B05\_WeatherStationANSI\_ASHRAE has a value, reference value from CF1R-PRF-01;**

**Else If B05\_WeatherStationCZ# (# is the climate zone) has a value, based on weather station value in B05\_WeatherStationCZ#, assign lookup wsf from Table B1 US Climates, Normative Appendix B shown in the instructions section of the layout document;**

**Else If A02\_ResidentialBuildingType == NonDwellingUnit result = N/A stored in NotApplicableMessage>>**

**CF2R/3R-MCH-30**

* A07 – revised pseudo code
  + << **if A06=fixed flow**, user select from list**:**

\*\*Fixed Flow

\*\*Variable Flow;

**Elseif A06 = variable flow, then value = variable flow**>>

**CF2R/3R-MCH-31**

* Add new Section B

|  |  |  |  |
| --- | --- | --- | --- |
| |  | | --- | | **B. Required Whole House Fan Specifications** | | | |
| **01** | **02** | **03** |
| **Fan Name** | **WHF Modeled Airflow (CFM)** | **WHF Modeled Fan Power (Watts)** |
| **<<Auto populate from CF1R/2R>>** | **<<Auto populate from CF1R/2R>>** | **<<Auto populate from CF1R/2R>>** |
|  |  |  |

* Section C (was Section B) – revised table name/static text
  + **Tested** Whole House Fan Equipment Information
  + Requirements for Whole House Fans are given in Sections 150.1(b)3.B.vi. and 150.1(c)12~~d~~
* C05 – revised field name
  + WHF ~~Measured~~ **Tested** Airflow (CFM) **Per RA3.9.4.1**
* C06 – revised field name
  + WHF ~~Measured~~ **Tested** Watts **Per RA3.9.4.2**
* D01 – revised pseudo code
  + **<<calculated field: sum of all WHF Modeled Airflow (CFM) values from Table B >>**~~<< auto filled text: Reference from CF1R>>~~
* D02 – revised pseudo code
  + <<calculated field: sum of all WHF ~~Measured~~ **Tested** Airflow (CFM) values from Table **C**~~B~~ >>
* D03 – revised pseudo code
  + **<<calculated field: sum of all WHF Modeled Fan Power (Watts) / sum of all WHF Modeled Airflow (CFM) values from Table B >>**~~<< auto filled text: Reference from CF1R>>~~
* D04 – revised pseudo code
  + <<calculated field: sum of all WHF ~~Measured~~ **Tested** Watts from Table ~~B~~**C** / Installed CFM from Table ~~C~~**D** >>

**CF2R/3R-MCH-32**

* C11/B11 – revised pseudo code
  + <<If C08 = ‘Demand Control’, and C05 (HVI Directory Listed Rated Airflow) ≥ C09 (Required Minimum Ventilation Rate), and C06 ≤ C10 **or C10 = N/A**, then display text: "Complies”; If C08 = Continuous, and C06 ≤ C10 **or C10 = N/A**, then display text: "Complies”; else display text: "Does Not Comply">>

**CF2R/3R-MCH-33**

* New document

**CF2R-MCH-34**

* New document

**CF2R-PLB-01a**

* A01 – revised pseudo code
  + ~~Dwelling Unit Name~~ **Building Name**
* Section B./C. – CalculationsAndRules
  + <<require one row of data for each water heater identified on the CF1R-PRF>>
* C09 – revised pseudo code only (schema correct)
  + << Reference value from B09; elseif prescriptive, then user select from AFUE, Thermal Efficiency, Uniform Energy Factor, **and Energy Factor** >>
* C10 – revised schema only
  + Add *EnergyFactor* to correspond with B10
* Section D./E. – CalculationsAndRules
  + <<require one row of data for each water heating system identified on the CF1R-PRF>>
* Section F. – CalculationsAndRules
  + <<require one row of data for each water heater identified in Section C.>>

**CF2R-PLB-01b**

* Section B./C. – CalculationsAndRules
  + <<require one row of data for each water heater identified on the CF1R-PRF>>
* B06 – revised pseudo code
  + Make A06 optional (minOccurs = 0). Only require when performance.
    - <<**if performance,** hide column from user, needed for equivalency lookup; Reference value from XML; **elseif prescriptive, do not require field**>>
* C02 – revised pseudo code
  + <<**If performance,** user input is equal to B02 as default, and allow user to override with an equivalent system based on the simulated equipment in B06; **elseif prescriptive, allow user to enter any Tier 3 model**>>
    - Use NEEA HPWH spreadsheet for Tier 3 models
* Section D./E. – CalculationsAndRules
  + <<require one row of data for each water heating system identified on the CF1R-PRF>>

**CF2R-PLB-02a**

* Section A./B. – CalculationsAndRules
  + <<require one row of data for each Dwelling Unit DHW System name identified on the CF1R report that has one of the Dwelling Unit DHW System Distribution types identified in the following list: \*Standard Distribution System, \*Parallel Piping, \*Recirculation System Non-Demand Control, \*Demand Recirculation Manual Control, or \* Demand Recirculation Sensor Control>>
* A09 – revised pseudo code
  + Add *DemandRecirculation* to allowed values
* B09 - revised schema
  + Add *DemandRecirculation* to allowed values
* Section C./D./E. – CalculationsAndRules
  + <<require one row of data for each water heater identified in Section B.>>
* Section G. – CalculationsAndRules
  + <<require one row of data, reporting the longest distances, for each dwelling unit identified in Section B. with B10 = Basic. If no dwelling in B10 = Basic, then display section header and standard “This section does not apply” message>>
* G07 – revised schema (correct in pseudo code)
  + Assigned correct property - *WaterHeaterQualificationDistance*
  + ~~PRODUCT (SUM(CompactDistCoefA,CompactDistCoefB), CFA) / A04\_WaterHeater TotalSystemCount~~ **SUM(CompactDistCoefA, PRODUCT(CompactDistCoefB, CFA))/ A04\_WaterHeaterTotalSystemCount**

**CF2R-PLB-02b**

* Section A./B. – CalculationsAndRules
  + <<require one row of data for each water heater identified on the CF1R-PRF>>
* A07 – revised pseudo code
  + Add *DemandRecirculation* to allowed values
* A09 – revised pseudo code
  + Make A09 optional (minOccurs = 0). Only require when performance.
  + <<**if performance,** hide column from user, needed for equivalency lookup; Reference value from XML; **elseif prescriptive, do not require field**>>
* B03 – revised pseudo code
  + <<**If performance,** user input is equal to A03 as default, and allow user to override with an equivalent system based on the simulated equipment in A09; **elseif prescriptive, allow user to enter any Tier 3 model**>>
    - Use NEEA HPWH spreadsheet for Tier 3 models
* B07 – revised schema
  + Add *DemandRecirculation* to allowed values
* Section D. – CalculationsAndRules
  + <<require one row of data, reporting the longest distances, for each dwelling unit identified in Section B. with B08 = Basic. If no dwelling in B08 = Basic, then display section header and standard “This section does not apply” message>>
* D07 – revised schema (correct in pseudo code)
  + Assigned correct property - *WaterHeaterQualificationDistance*
  + ~~PRODUCT (SUM(CompactDistCoefA,CompactDistCoefB), CFA) / A04\_WaterHeater TotalSystemCount~~ **SUM(CompactDistCoefA, PRODUCT(CompactDistCoefB, CFA))/ A04\_WaterHeaterTotalSystemCount**

**CF2R/3R-PLB-21a**

* Section B./C. – CalculationsAndRules
  + <<require one row of data for each water heater identified on the CF1R-PRF>>
* Section D./E. – CalculationsAndRules
  + <<require one row of data for each water heating system identified on the CF1R-PRF>>
* Section F. – CalculationsAndRules
  + <<require one row of data for each water heater identified in Section C.>>

**CF2R/3R-PLB-21b**

* Section B./C. – CalculationsAndRules
  + <<require one row of data for each water heater identified on the CF1R-PRF>>
* B06 – revised pseudo code
  + Make A06 optional (minOccurs = 0). Only require when performance.
    - <<**if performance,** hide column from user, needed for equivalency lookup; Reference value from XML; **elseif prescriptive, do not require field**>>
* C02 – revised pseudo code
  + <<**If performance,** user input is equal to B02 as default, and allow user to override with an equivalent system based on the simulated equipment in B06; **elseif prescriptive, allow user to enter any Tier 3 model**>>
    - Use NEEA HPWH spreadsheet for Tier 3 models
* Section D./E. – CalculationsAndRules
  + <<require one row of data for each water heating system identified in Section C.>>

**CF2R/3R-PLB-22a**

* Section A./B. – CalculationsAndRules
  + <<require one row of data for each water heater identified on the CF1R-PRF>>
* A10 - revised pseudo code
  + Add *DemandRecirculation* to allowed values
* B10 - revised schema
  + Add *DemandRecirculation* to allowed values
* Section C./D./E. – CalculationsAndRules
  + <<require one row of data for each water heater identified in Section B.>>
* Section G. – CalculationsAndRules
  + <<require one row of data, reporting the longest distances, for each dwelling unit identified in Section B. with B11 = Expanded. If no dwelling in B11 = Expanded, then display section header and standard “This section does not apply” message>>
* Section H. – CalculationsAndRules
  + <<require one row of data, reporting the longest distances, for each dwelling unit identified in Section B. with B11 = Basic. If no dwelling in B11 = Basic, then display section header and standard “This section does not apply” message>>
* G07 and H07 – revised schema (correct in pseudo code)
  + Assigned correct property - *WaterHeaterQualificationDistance*
  + ~~PRODUCT (SUM(CompactDistCoefA,CompactDistCoefB), CFA) / A05\_WaterHeater TotalSystemCount~~  **SUM(CompactDistCoefA, PRODUCT(CompactDistCoefB, CFA))/ A05\_WaterHeaterTotalSystemCount**
* Section I. – CalculationsAndRules
  + <<require one row of data for each drain water heat recovery system identified in Section B. with B12 = Yes. Else report section header and standard “This section does not apply” message>>

**CF2R/3R-PLB-22b**

* Section A./B. – CalculationsAndRules
  + <<require one row of data for each water heater identified on the CF1R-PRF>>
* A07 – revised pseudo code
  + Add *DemandRecirculation* to allowed values
* A10 – revised pseudo code
  + Make A10 optional (minOccurs = 0). Only require when performance.
  + <<**if performance,** hide column from user, needed for equivalency lookup; Reference value from XML; **elseif prescriptive, do not require field**>>
* B03 – revised pseudo code
  + <<**If performance,** user input is equal to A03 as default, and allow user to override with an equivalent system based on the simulated equipment in A09; **elseif prescriptive, allow user to enter any Tier 3 model**>>
    - Use NEEA HPWH spreadsheet for Tier 3 models
* B07 – revised schema
  + Add *DemandRecirculation* to allowed values
* Section D. – CalculationsAndRules
  + <<require one row of data, reporting the longest distances, for each dwelling unit identified in Section B. with B08 = Expanded. If no dwelling in B08 = Expanded, then display section header and standard “This section does not apply” message>>
* Section E. – CalculationsAndRules
  + <<require one row of data, reporting the longest distances, for each dwelling unit identified in Section B. with B08 = Basic. If now dwelling in B08 = Basic, then display section header and standard “This section does not apply” message>>
* D07 and E07 – revised schema (correct in pseudo code)
  + Assigned correct property - *WaterHeaterQualificationDistance*
  + ~~PRODUCT (SUM(CompactDistCoefA,CompactDistCoefB), CFA) / A04\_WaterHeater TotalSystemCount~~  **SUM(CompactDistCoefA, PRODUCT(CompactDistCoefB, CFA))/ A04\_WaterHeaterTotalSystemCount**
* Section F. – CalculationsAndRules
  + <<require one row of data for each drain water heat recovery system identified in Section B. with B09 = Yes. Else report section header and standard “This section does not apply” message>>

**CF2R-PVB-01**

* B01 – revised pseudo code
* Allow user input if information is not available from the software
  + - <<auto filled text: referenced from CF1R; **elseif not available, user input**>>
* B06 – revised pseudo code
  + <<If performance and CFI = Yes, then **user input between** 150 ~~≤B06≤~~ **and** 270; **if performance and CFI=No, then pull from CF1R (between 0 and 359);** if prescriptive, **then** **user input** **between** 90 ~~≤B06≤~~ **and** 300~~; else, 0 ≤B06≤ 359~~>>
* B10 – Shading Requirement Path
  + <<~~From CF1R-PRF-01; Else~~ **Default value** = “Minimum Shading Criterion”>>
* Section C – revised schema only (correct in pseudo code)
  + <xsd:documentation source="CalculationsAndRules">This section is required If A05\_PhotoVoltaicExceptionRes ~~!= NoExceptionsNA~~ **Not== LimitedSolarAccess** </xsd:documentation>
* C02 – revised pseudo code
  + <<If B05=No, then autofill from B03 but allow user to override only if ≥ B03;

Else user input **≥ B03**>>

* Section D – revised schema only (correct in pseudo code)
  + <xsd:documentation source="CalculationsAndRules">This section is displayed If A05\_PhotoVoltaicExceptionRes ~~!= NoExceptionsNA~~ **Not== LimitedSolarAccess** </xsd:documentation>

**CF2R-SRA-01**

* Replace signature block with one from Certificate of Installation

**CF2R-SRA-02**

* Beginning text box - revised static text
  + Single family residences without PV that wish to show compliance with the Solar Ready requirements (Section 110.10(b) by providing a solar zone on the roof of the residence. Note that Exceptions 1 and 6 to Section 110.10(b)1A exempt a residence from the solar ready requirements and are documented on the Certificate of ~~Compliance~~ **Installation** document CF2R-SRA-01-E. Check the exception being used and fill in the relevant details.
  + Low-rise multifamily projects without PV that wish to show compliance with the Solar Ready requirements (Section 110.10(b) by providing a solar zone on the roof of the building. Note that Exceptions 4 and 5 to Section 110.10(b)1B exempt a multifamily building from the solar ready requirements and are documented on the Certificate of ~~Compliance~~ **Installation** document CF2R-SRA-01-E. Check the exception being used and fill in the relevant details.
* Replace signature block with one from Certificate of Installation

**CF2R-STH-01**

* A03 and A04 – switch
  + A03 - SRCC Certification Type
  + A04 - Central DHW System Distribution Type
  + A03 - Central DHW System Distribution Type
  + A04 - SRCC Certification Type
* A04 (SRCC Certification Type) – revised pseudo code
  + <<**if A03 = N/A, then** user drop down select OG-100 or OG-300; **else value = OG-100**>>

**CF3R-MCH-21**

* A07 and A08 – revised pseudo code
* <<calculated Field: if Exemption from Minimum R-Value for Duct Portions Located in Wall Cavities reported on MCH-01 = yes, then display message “true” ~~and display Table E below~~; else display message "not applicable” >>
* Section E
* Delete whole table
* Section F
* Label E after deleting previous Section E
* <<calculated field: if Section B is applicable and B02≠fail, if Section C is applicable and C02≠fail, if Section D is applicable and D03="the space conditioning system is considered to be entirely in conditioned space and Duct R-Value less than minimum is allowable"~~, and if Section E is applicable and E04≠fail~~; then display: “Complies: All specified verification protocol requirements on this document are met”; else display: “Does not comply: One or more specified verification protocol requirements on this document are not met” >>

**CF3R-MCH-25**

* A12 – revised static text
  + Is the system of a type that the minimum airflow can be verified **for all indoor units** using an approved measurement procedure (RA3.3 or RA3.3.3)?
* A15 – revised pseudo code
  + Remove Winter Setup (applicable when outdoor temperature is < 55 degF)
    - <<user pick one from list:

Superheat (outdoor temperature must be ≥ 55 degF); or

Subcooling (outdoor temperature must be ≥ 55 degF); or

Weigh-in with Installer independent; or

Weigh-in with HERS Rater observation; or

~~Winter Setup (applicable when outdoor temperature is < 55 degF)~~; or

New Package Unit Factory Charge >>

* **E03** on the MCH-25**a** and MCH-25**b** and MCH-25**e**; **C03** on the MCH-25**c** and MCH-25**f** – revised pseudo code
  + << … elseif the CF2R-MCH-01 indicates a MCH-23 is required for minimum airflow rate compliance, then if this system has a registered CF2R-MCH-23a, ~~or~~ CF2R-MCH-23b**,** **CF2R-MCH-23e or CF2RMCH-23f** that meets the compliance criterion in D01, then result = System complies with minimum airflow rate requirements; elseif A10=Alteration, then if the system complies with the alternative airflow compliance method on a registered CF2R-MCH23c; then result =system complies using the alternative remedial actions specified in RA3.3.3.1.5… >>

**CF3R-MCH-25c**

* **Section C**
  + Make minOccurs=**0**

**CF3R-MCH-26**

* **Section J**
  + Remove whole table
* **Section K** 
  + Label J after deleting previous Section J

K01 pseudo code needs correction to references

<< If section **G is displayed and H02** Verification Status = Fail,

Or if section **H is displayed and I02** Verification Status = Fail,

Or If section **I is displayed and J02** DoesSystemComplyWithRequirements = Fail;

Then the result is false;

**CF3R-MCH-27a**

* **Section G**
  + Remove whole table
* **Section H**
  + Remove whole table

**CF3R-MCH-27b**

* **Section H**
  + Remove whole table
* **Section I**
  + Remove whole table

**CF3R-MCH-27c**

* **Section B**
  + Remove whole table
* **Section C**
  + Remove whole table

**CF3R-MCH-31c**

* C06 – schema change only
  + From *AirFlowMeasuredRate* to *FanPowerActual*

**CF3R-PLB-22a**

* F05 and F06 – Doc layout change only
  + Add Verification Status (F05), Correction Notes (F06), and endnote to doc layout (already in pseudo code)

**CF3R-PLB-22b**

* C05 and C06 – new rows
  + **C05 - Verification Status** 
    - **Pass - all applicable requirements are met; or**
    - **Fail - one or more applicable requirements are not met. Enter reason for failure in corrections notes field below; or**
    - **All N/A - This entire table is not applicable**
  + **C06 – Correction Notes**
    - **<<if Verification Status= Fail, then text entry in this Corrections Notes field is required; user input text>>**
  + **Endnote –** 
    - **The responsible person’s signature on this compliance document affirms that all applicable requirements in this table have been met unless otherwise noted in the Verification Status and the Corrections Notes in this table.**

**CF3R-EXC-20**

* E02 – revised pseudo code
  + ~~Azimuth~~ **Parent Surface**
  + Change to *ParentSurfaceName* (ObjectNamePermissive)
* G08 – Standby Loss
* Allow N/A
* K03 – schema change only
  + Change to *DuctSpaceType*
* K04 – schema change only
  + Change to *DuctSpaceType*

**CF3R-MCH-30**

* Delete Section B
* B01 (was C01) – revised pseudo code
  + <<if A12 = System Complies with Fan and Duct Verification Requirements ~~and B07 ≠ Fail~~, then display “Complies: All specified verification protocol requirements on this document are met”…>>

**NRCV-MCH-04**

* A04 – revised field name and static text
  + Verified Low Leakage Air-Handling Unit Credit ~~from NRCC-PRF-01-E~~
  + <<**User input, select from** list, “Yes” or “No”, ~~from PRF-01~~>>

**NRCV-MCH-24**

* A06 – A09
  + **<<if A01≠"required", then value = N/A;**

**Else user input numeric value, xxxxx.x >>**

~~<<if A01="required", then value is taken from NRCC-PRF-01;~~

~~Else user input numeric value, xxxxx.x~~

~~if A01=! “required”, then value=N/A>>~~

* A10
  + - **<< if A01≠"required", then value = N/A;**

**Else value = sum of (A06+A07+A08+A09) >>**

~~<<if A01="required", then value is taken from NRCC-PRF-01;~~

~~Else value = sum of (A06+A07+A8+A09);~~

~~if A01=! “required”, then value=N/A>>~~

* + Da1 – Da4 and D01 – schema change only (pseudo code correct)
  + Use pseudo code versions of equations

**NRCV-MCH-27**

* A07 – revised pseudo code
  + << Calculated value, allow user pick one from list:

\*\*Continuous; or

\*\*Short-Term Average; or

~~\*\*Scheduled; or~~

~~\*\*Real-time Control~~

Else if “Ventilation System Type” (A06) = Central Fan Integrated & “Ventilation Operation Schedule” (A07)= Continuous; then display: “Central Fan Integrated Ventilation System Not Allowed to Operate Continuously - Do Not Proceed”>>

**NRCV-MCH-27b**

* Section H
  + Remove whole table
* Section I
  + Remove whole table

**NRCV-MCH-27c**

* Beginning text box – revised schema
  + Title 24, Part 6, Section 120.1(b)2 Attached Dwelling Unit (Ventilation). All dwelling units shall meet the requirements of ANSI/ASHRAE Standard62.2-2016 Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings subject to the amendments specified by Title 24, Part 6, Section ~~150.0(o)1~~ **120.1(b)2A.iv**
* Section B header – revised schema
  + Ventilation - ~~Totla~~ **Total** Ventilation Rate
* Section C
  + Remove whole table
* Section D
  + Remove whole table

**NRCV-MCH-32**

* A01 – revised pseudo code
  + <<~~Calculated field, referenced data from MCH-01, “Dwelling Unit Name” (A01)CF1R~~ **User input**>>
* A02 – revised pseudo code
  + << ~~calculated field, referenced data from CF1R, allowed values =~~ **user input, select from:** multifamily, single family detached, or single family attached>>
* Section B – Deleted table
* Section B (was C) – new table
  + Changes were made to the layout of this table to allow for multiple exhaust system entries.
  + Changes were also made to the logic/pseudo code within this table
* Section C – new table

|  |  |  |
| --- | --- | --- |
| **C. Continuous Kitchen Exhaust** | | |
| 01 | Total Continuous Ventilation Airflow | <<Result = Sum(C05 for all C08 = Continuous) {sum ‘listed rated airflow’ for all continuously operated fans};  Else result = “N/A”>> {want this entry to be N/A if there are no continuously operated fans} |
| 02 | Required Minimum Continuous Ventilation Airflow | <<If D01 = N/A, then result = “N/A”,  Else result = 5\*A05/60>> |
| 03 | Compliance Statement | <<If D01 = N/A, then result = “N/A”;  Else if D01 ≥ D02 then result = “Complies”, else result = “Does Not Comply” |

* Section D – Deleted table
* D01 (was E01) – revised pseudo code
  + **<<if B11 = complies for all rows (exhaust systems), and C03 = complies or N/A, then Result = “Complies: All specified verification protocol requirements on this document are met”; else Result = “Does not comply: One or more specified verification protocol requirements on this document are not met”>>** ~~If Compliance Statement C10 = “Kitchen Exhaust System Complies” and Verification Status D07 = “Pass”, Then display: “Complies: All specified verification protocol requirements on this document are met”; else display: “Does not comply: One or more specified verification protocol requirements on this document are not met”>>~~

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* + A01 – revised pseudo code
    - <<~~reference values from CF1R (see rule in header)~~**user input**>>
  + B11 – new column
    - **Drain Water Heat Recovery**
    - **<<User input from:**

**\*Yes**

**\*None>>**

* + - C11 – new column
      * **Drain Water Heat Recovery**
      * **<<Reference value from B11>>**
* Section G. – CalculationsAndRules
  + <<require one row of data, reporting the longest distances, for each dwelling unit identified in Section B. with B10 = Expanded. If no dwelling in B10 = Expanded, then display section header and standard “This section does not apply” message>>
* Section G header
  + Revised static text
    - **For dwelling units with multiple systems, enter the master bath distance and kitchen distance to the closest water heater, and enter the average of the furthest fixture to each water heater.** ~~For dwelling units with multiple systems, only allow one value to be entered for both master bath distance and kitchen distance.~~
  + Revised pseudo code
    - **<< Require one row for each dwelling identified in Table A with A10 = Expanded. If no dwelling in A10 = Expanded, then display section does not apply message>>**~~<<Require one row where A10 “Compact Distrib.” = “Expanded”; else display the "section does not apply" message>>~~
  + G03 – revised pseudo code
    - <<~~Reference Value from NRCC; Else if prescriptive compliance,~~ user input>>
  + G04 – revised pseudo code
    - <<~~Reference Value from NRCC; Else if prescriptive compliance,~~ user input>>
  + G05 – revised column header and pseudo code
  + Furthest Third furthest fixture to Water Heater in feet **(Avg for multiple water heaters)**
  + <<~~Reference Value from NRCC; Else if prescriptive compliance,~~ user input>>
* G06 – revised pseudo code
  + <<~~Reference value from NRCC; else if prescriptive and~~ If ~~A09~~ **B09** = Standard Distribution System, then value = (G03\*0.4) **+** (G04\*0.4) **+** (~~average of column~~ G05\*0.2); else if ~~A09~~ **B09** = Demand Recirculation Manual Control, then value = G05>>
  + G07 – revised pseudo code and schema
    - * Pseudo code: << **calculated** ~~Reference Value from NRCC; Else if prescriptive compliance,~~ value = ((a+b \*CFA)/n) >>
  + Assigned correct property - *WaterHeaterQualificationDistance*
    - * Schema: ~~PRODUCT (SUM(CompactDistCoefA,CompactDistCoefB), CFA) / B04\_WaterHeater TotalSystemCount~~ **SUM(CompactDistCoefA, PRODUCT(CompactDistCoefB, CFA))/ B04\_WaterHeaterTotalSystemCount**
* Section H. – CalculationsAndRules
  + <<require one row of data for each drain water heat recovery system identified in Section B. with B11 = Yes. Else report section header and standard “This section does not apply” message>>
* Hidden Table 4.4.6-2: Coefficients for the Qualification Distance Calculation

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Table 4.4.6-2: Coefficients for the Qualification Distance Calculation  << do not show table, only use for equation in G07 ~~and H07~~>> | | | | |
|  | Coefficient a | | Coefficient b | |
| Building Type | Non-Recirculating  **Use when distribution type (B09) is \*Standard Distribution System** | Recirculating  **Use when distribution type (B09) is**  **\* Demand Recirculation Manual Control** | Non-Recirculating | Recirculating |
| Single Family |  |  |  |  |
| One story | 10 | 22.7 | 0.0095 | 0.0099 |
| Two story | 15 | 11.5 | 0.0045 | 0.0095 |
| Three story | 10 | 0.5 | 0.0030 | 0.014 |

* + - Section H – **fully revised table and pseudo code**

**ResCompliance Schema**

* WHFsAllModelsTotalRatedAirFlow
  + From *DecimalNonnegative* to *IntegerNonnegative*
* *WHFsMinimumRequiredAirflow*
  + From *DecimalNonnegative* to *IntegerNonnegative*
* *WHFsMinimumRequiredAirflow*
  + From *DecimalNonnegative* to *IntegerNonnegative*
* *WHF\_RatedAirFlow*
  + From *DecimalNonnegative* to *IntegerNonnegative*
* *WHFsTotalMeasuredAirFlow*
  + From *DecimalNonnegative* to *IntegerNonnegative*
* *WHFsTotalRatedAirFlow*
  + From *DecimalNonnegative* to *IntegerNonnegative*
* *FanEfficacyRequired*
  + From *DecimalNonnegative* to *Decimal4PlacesNonnegative*
* *WHFsInstalledFanEfficacy*
  + From *DecimalNonnegative* to *Decimal4PlacesNonnegative*

**ResEnvelope Schema**

* All U-factor references – make *Decimal3PlacesNonnegative*
  + *AreaWeightedAverageUfactor*
  + *InsulationExteriorUFactor*
  + *InsulationInteriorUFactor*
  + *InsulationExteriorUFactorLimit*
  + *InsulationInteriorUFactorLimit*
  + *InsulationUFactor*
* Add new term with values
  + *RaisedFloorFramingMaterialCBECC\_Res*
    - WoodFramedFloor
    - SIPS\_Floor
    - ConcreteBrickICF
* Add new values
  + *PartitionFramingMaterial*
    - WoodFramedFloor
    - SIPS\_Floor
    - ConcreteBrickICF

**ResHVAC Schema**

* Add new terms with values
  + *SupplyDuctLocationPerf*
    - ConditionedZone;
    - Attic;
    - Outside;
    - CrawlSpace;
    - Garage
    - N/A
  + *ReturnDuctLocationPerf*
    - ConditionedZone;
    - Attic;
    - Outside;
    - CrawlSpace;
    - Garage
    - N/A
* *EfficiencyMinimumValueCOP*
  + Remove “Value is stored as the fraction expressed as decimal and for display the value is multiplied by 100 and has % sign e.g. .80 stored value and 80% display value” in property rules