**RB V2019.1.004 Change Notes**

**ResHVAC base schema**

* *ResidentialHeatingSystemType –* add new values from CBECC
  + SPVHP
  + PTHP
* *ResidentialCoolingSystemType –* add new values from CBECC
  + SPVAC
  + SPVHP
  + PTAC
  + PTHP
* *HeatPumpWaterHeaterModel* – add new values
  + Add all new models that are highlighted green in the revised NEEA spreadsheet
* *HeatPumpWaterHeaterSimulationGroup* - add new values
  + Add 9 new simulation groups from column D/E in NEEA spreadsheet
* *HeatPumpWaterHeatersTier3NEEA* – add new values
  + Add all new models that are highlighted green in the NEEA spreadsheet
* *Efficiency Type* – add new value
  + CEER

**CF1R-ALT-01**

* J05 – revised pseudo code only (correct in schema)
  + <<if J0**4**~~3~~ = 1, then user select from Consumer instantaneous or Consumer Storage; if J0**4**~~3~~ = 2 or 4, then value = Consumer storage; if J0**4**~~3~~ is 3, then value = NEEA Tier 3 heat pump water heater>>
* J07 - revised pseudo code only (correct in schema)
  + << If J0**4**~~3~~ = 1, then user picks from list \*Natural gas, \*Propane; elseif J0**4**~~3~~ = 2 or 3, then value = Heat Pump; elseif J0**4**~~3~~ = 4, then value = Electricity>>
* Section J end note – revised schema (correct in pseudo code)
  + <d:line1/> Single Family &amp;~~amp;~~ Multifamily with Individual Water Heaters

**CF1R-ALT-02**

* C09 of Logic Table – revised pseudo code
  + e.g. new **ducted** hydronic ~~AHU~~ **fan coil unit** or furnace
* D09 – revised pseudo code
  + << if D08= no cooling component altered, then value =n/a, else user pick from list:

\*SEER;

\*EER

**\*CEER**>>

* E09 – revised pseudo code
  + << if E08= no cooling component altered, then value =n/a, else user pick from list:

\*SEER;

\*EER

**\*CEER**>>

* F09 – revised pseudo code
  + << if F08= no cooling component altered, then value =n/a, else user pick from list:

\*SEER;

\*EER

**\*CEER**>>

* M09 of Logic Table – revised pseudo code
  + e.g. **entirely** new ductless hydronic heating system **(boiler heating only); or new wall heater.**
* O09 of logic table – revised pseudo code
  + e.g. new ducted hydronic heating system, or other **new** ducted heating-only system
* New row U in logic table

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **u** | **no** | **no** | **yes** | **no** | **no** | **no** | **Altered space conditioning system** | **none** | **e.g. new ducted hydronic fan coil unit or new hydronic heating boiler** |

**CF1R-ENV-04**

* B01 – revised static text
  + **Is** Aged Reflectance Listed with CRRC**? (Yes or No)**
* C01 – revised static text
  + Solar ~~Reflective~~ **Reflectance** Index

**CF1R-NCB-01**

* K06 – revised pseudo code
  + <<If value in K05 = no cooling, then value = N/A; Else user selects from list: SEER, EER, **CEER**>>>

**CF1R-PLB-01**

* Section A header – revised pseudo code
  + **<<if ALT-01 or ALT-02 is registered, then display the “section does not apply” message; else display this table>>**

**CF2R-MCH-01a**

* B03 and D04 – add new allowed values
  + SPVHP
  + PTHP
* B04 and D05 – add new allowed values
  + SPVAC
  + SPVHP
  + PTAC
  + PTHP
* D05 – revised pseudo code
  + <<**auto filled text:** reference value from B04 ~~as default~~ >>
* D07 – revised pseudo code
  + <<if D04= \*VCHP-Ducted then value in this field= \*LowLlCod - Verified low-leakage ducts in conditioned space, elseif D04= \*VCHP-Ductless then value in this field= \*DuctsNone - Air distribution systems without ducts, elseif D04= \*VCHP-Ducted+Ductless then value in this field= \*Multiple split Indoor Units combined Ducted and Ductless.

else reference value from B06 as default. Allow user to overwrite only the following ~~three~~ default values from B06: \*DuctsAttic \*DuctsGarage \*DuctsOutdoor~~;~~ **\*N/A;**

If overriding pick one from list: \*DuctsAttic - Ducts located overhead in unconditioned attic …>>

* J09 – revised schema – add value
  + <xsd:restriction base="comp:DuctFilterGrilleSizingComplianceMethod"> <xsd:enumeration value="ExemptEvaporativeSystem"/>

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

<xsd:enumeration value="ExemptNoCooling"/>

<xsd:enumeration value="ExemptRA3\_3Protocols"/>

<xsd:enumeration value="HERS\_FanEfficacyAirflowRate"/>

<xsd:enumeration value="HERS\_ReturnDuctDesignTable150"/> </xsd:restriction>

* N04 – revised pseudo code
  + <<**if N01 is one of the HP systems listed in H01, then result = yes;**

**else**if B03 or B04=one of the following three system types:

\*ductless mini-split AC ~~\*ductless mini-split HP~~ \*ductless VRF AC; ~~\*ductless VRF HP;~~ \*ductless multi-split AC ~~\*ductless multi-split HP~~ \*ducted mini-split AC ~~\*ducted mini-split HP~~, then result=no

elseif B04={Small Duct High Velocity AC system}, and C06 > 12, then result=yes.

elseif C06 > 14, then result=yes;

~~elseif N01 is one of the HP systems listed in H01, then result = yes;~~

elseif the following three conditions are true: 1:[B04 = {central packaged AC}], 2:[C07 ≠N/A], 3:[C07 > 11.0], then result = yes…>>

**CF2R-MCH-01b**

* C03 – add new allowed values
  + SPVHP
  + PTHP
* C07 – add new allowed values
  + SPVAC
  + SPVHP
  + PTAC
  + PTHP
* C09 – revised pseudo code
  + <<reference value from CF1R as default;if C08= no cooling component altered, then value =n/a else allow user to override the default; to enter value: user pick from list:

\*SEER;

\*EER;

**\*CEER;**…>>

* C09 of Logic Table – revised pseudo code
  + e.g. new **ducted** hydronic ~~AHU~~ **fan coil unit** or furnace
* M09 of Logic Table – revised pseudo code
  + e.g. **entirely** new ductless hydronic heating system **(boiler heating only); or new wall heater.**
* O09 of logic table – revised pseudo code
  + e.g. new ducted hydronic heating system, or other **new** ducted heating-only system
* New row U in logic table

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **u** | **no** | **no** | **yes** | **no** | **no** | **no** | **Altered space conditioning system** | **none** | **e.g. new ducted hydronic fan coil unit or new hydronic heating boiler** |

* J08 – revised pseudo code
  + << Calculated field: **if the value in F11 or G13=no, then result ="no";**

**else**if the value in G11= "HERS Verified Fan Efficacy (W/cfm) and Airflow Rate (cfm/ton)", then display text result in this field="yes"; …>>

**CF2R-MCH-01c**

* B02 and C04 – add new allowed values
  + SPVHP
  + PTHP
* B05 and C05 – add new allowed values
  + SPVAC
  + SPVHP
  + PTAC
  + PTHP
* B06 – add allowed value
  + CEER
* E03 – revised pseudo code
  + <<as default autofill value from B06

allow user to override the default and pick one value from following ~~two~~ **list**:

\*SEER;

\*EER;

**\*CEER;**…>>

* H07 – revised pseudo code
  + <<as default reference value from B06.

allow user to override the default and pick one value from following ~~two~~ **list**:

\*SEER;

\*EER;

**\*CEER;**…>>

**CF2R-MCH-01d**

* B03 and D04 – add new allowed values
  + SPVHP
  + PTHP
* B04 and D05 – add new allowed values
  + SPVAC
  + SPVHP
  + PTAC
  + PTHP
* C09 of Logic Table – revised pseudo code
  + e.g. new **ducted** hydronic ~~AHU~~ **fan coil unit** or furnace
* D07 – revised pseudo code
  + << if SC system is not shown in section B, then user pick one from list below, elseif D04=

\*VCHP-Ducted then value in this field= \*LowLlCod - Verified low-leakage ducts in conditioned space, elseif D04= \*VCHP-Ductless then value in this field= \*DuctsNone - Air distribution systems without ducts, elseif D04= \*VCHP-Ducted+Ductless then value in this field= \*Multiple split Indoor Units combined Ducted and Ductless.

else:reference value from B06 as default. Allow user to overwrite only the following default values from B06: \*DuctsAttic \*DuctsGarage \*DuctsOutdoor~~;~~ **\*N/A;**

If overriding pick one from list: \*DuctsAttic - Ducts located overhead in unconditioned attic…>>

* Section K header – revised pseudo code
  + <<… A: require one row of data in this table for each space conditioning system in section F field F02 for which D04=Packaged Gas Furnace. B: ~~require one row of data in this table for each indoor unit in section F field F03 that meets both of the following two conditions: 1:[value in D04=central gas furnace], 2:[the value in F03 ≠ H03];~~ **for each system where D04=central gas furnace, IF [the value in F03 ≠ H03] THEN require one row of data in this table for each indoor unit in section F field F03 ELSE IF no corresponding records exist in F03 or H03 AND a corresponding record exists in G01 THEN require one row of data in this table for that system;…>>**
* Section L header – revised pseudo code
  + <<… A: require one row of data in this table for each space conditioning system in section F field F02 for which D04=Packaged Gas Furnace. B: ~~require one row of data in this table for each indoor unit in section F field F03 that meets both of the following two conditions: 1:[value in D04=central gas furnace], 2:[the value in F03 ≠ H03];~~ **for each system where D04=central gas furnace, IF [the value in F03 ≠ H03] THEN require one row of data in this table for each indoor unit in section F field F03 ELSE IF no corresponding records exist in F03 or H03 AND a corresponding record exists in G01 THEN require one row of data in this table for that system;…>>**
* L11 – revised schema – add value
  + <xsd:restriction base="comp:DuctFilterGrilleSizingComplianceMethod"> <xsd:enumeration value="ExemptDuctSystemNotAllNew"/> <xsd:enumeration value="ExemptEvaporativeSystem"/>

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

<xsd:enumeration value="ExemptNoCooling"/>

<xsd:enumeration value="ExemptRA3\_3Protocols"/>

<xsd:enumeration value="HERS\_FanEfficacyAirflowRate"/>

<xsd:enumeration value="HERS\_ReturnDuctDesignTable150"/> </xsd:restriction>

* M09 of Logic Table – revised pseudo code
  + e.g. **entirely** new ductless hydronic heating system **(boiler heating only); or new wall heater.**
* O09 of logic table – revised pseudo code
  + e.g. new ducted hydronic heating system, or other **new** ducted heating-only system
* New row U in logic table

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **u** | **no** | **no** | **yes** | **no** | **no** | **no** | **Altered space conditioning system** | **none** | **e.g. new ducted hydronic fan coil unit or new hydronic heating boiler** |

* O08 – revised pseudo code
  + <<calculated field: **if the value in K11 or L13=no, then result ="no";**

**else**if D04 or D05 = one of the following two system types:

\*VCHP-Ducted \*VCHP-Ducted+Ductless, then result=yes;

elseif L11 result is Fan Efficacy, and Airflow Rate, then result = yes; …>>

* P04 – revised pseudo code
  + <<**if P01 is one of the HP systems listed in I01, then result = yes;**

**else**if B03 or B04=one of the following three system types: \*ductless mini-split AC ~~\*ductless mini-split HP~~ \*ductless VRF AC; ~~\*ductless VRF HP;~~ \*ductless multi-split AC ~~\*ductless multi-split HP~~ \*ducted mini-split AC ~~\*ducted mini-split HP~~, then result=no

elseif B04={Small Duct High Velocity AC system}, and C06 > 12, then result=yes.

elseif both of the following two criteria are true: 1: [C06≠N/A]; 2: [C06 > 14]; then result=yes;

~~elseif P01 is one of the HP systems listed in I01, then result = yes;~~

elseif the following three conditions are true: 1: [B04 = {central packaged AC}], 2:[C07≠N/A]; 3:[C07 > 11.0]; then result = yes…>>

**CF2R/3R-MCH-25**

* E02 (a, b, & e ), D02 (c & CF3R-d only), C02 (CF2R-f only) – revised pseudo code
  + <<**if the CF2R-MCH-01 indicates a MCH-28 is required for alternate minimum airflow rate compliance, then text value in this field=Verification of Table 150.0-B or C Alternative Return Duct Design Criteria is Required;** ~~calculated field, numeric xxxx:~~

**else** reference **numeric xxxx** value from applicable MCH-23 field for the indoor unit in E01 according to the following list:

MCH-23a field D02

MCH-23b field E03

MCH-23c field E02

(MCH-23d is not applicable)

MCH-23e field D02

MCH-23f field D02>>

**CF2R-MCH-25c**

* E01 – revised schema
  + <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…>

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

* A03 - revised pseudo code
  + <<User Entered Value (XX.XX)**,** **if A06 = Non-Enclosed and [C03 = VentedRangeHood & C08 = Demand Control for ALL systems], then allow N/A**>>
* A04 – revised pseudo code
  + <<User Entered Value (XX.XX)**,** **if A06 = Non-Enclosed and [C03 = VentedRangeHood & C08 = Demand Control for ALL systems], then allow N/A**>>
* A05 – revised pseudo code
  + <<calculated value, “Kitchen Floor Area (A03)” \* “Kitchen Average Ceiling Height” (A04) (XX.XX)**; else if A03 or A04 = N/A, then value = N/A**>>

**CF2R-PLB-01b**

* Section B – several new fields
* Section C – several new fields

**CF2R-PVB-01**

* A05 – revised pseudo code
  + << user pick from list:

No PV – limited solar access (Trigger CF2R-SRA-01)

CZ15 reduced PV size

2 habitable stories

3 habitable stories

Plan approved before 1/1/20

Battery storage (Trigger CF2R-PVB-02)

**Community Solar**

NA >>

* A06 – new field
  + **Community Solar**
  + **<<Auto filled field text: Reference text from CF1R; allow NA >>**
* Section B – F header – revised pseudo code
  + <<if A05 = “No PV – limited solar access” **or “Community Solar”**, then display the "section does not apply" message; else display this entire table >>
* B06 – revised pseudo code
  + <<If performance and CFI = Yes, then if CF1R-PRF Da07\_AzimuthRange = 150 to 270, user input between 150 and 270; elseif CF1R-PRF Da07\_AzimuthRange = 105 to 300, then user input between 105 and 300; **else if performance and CFI = Yes and value is not on CF1R-PRF, then user input between 150 and 270;** **else** if performance and CFI=No, **use value from CF1R-PRF Da07\_Azimuth; else if performance and CFI=No and value is not on CF1R-PRF, then user input between 0 and 359;** ~~then pull from CF1R (between 0 and 359)~~ if prescriptive, then user input between ~~90~~ **0** and ~~300~~ **359**>>
* B08 – revised pseudo code
  + <<If prescriptive and B07=Deg **and (B06≤59 or B06≥301)**, then user input 0 ≤B08≤ 10; **if prescriptive and B07=Deg and 90≤B06≤300, then user input 0 ≤B08<90;** if prescriptive and B07=Pitch **and (B06≤59 or B06≥301)**, then user input 0 ≤B08≤ 2; **if prescriptive and B07=Pitch and 90≤B06≤300, then user input 0 ≤B08≤50; else**if performance and CFI = Yes, then value from CF1R-PRF and B08 ≤ 7; if performance and CFI = No, then value from CF1R-PRF>>
* B12 – new field
  + **Array Type**
  + **<<From CF1R-PRF-01; Else = NA>>**
* B13 – new field
  + **Module Level Power Electronics**
  + **<<From CF1R-PRF-01; Else = NA>>**
* Section C header – revised pseudo code
  + **<< For each record in table B, require a record in Table C. If B05 is Yes for an array, allow user to add a record in Table C for that array>>**
* C01 – revised pseudo code
  + <<auto filled text: referenced from CF1R**; else user input** >>
* C02 – revised pseudo code
  + <<If B05=No, then autofill from B03 but allow user to override only if ≥ B03; Else user input ~~≥ B03~~>>
* C07 – revised pseudo code
  + <<reference value from B09 as default, but allow user to override ~~only if ≥ B09~~>>
* C08 – revised pseudo code
  + <<reference value from B10 as default, but allow user to override ~~only if ≥ B10; else user input~~ >>
* C09 – new field
  + **Array Type**
  + **<<reference value from B12 >>**
* C10 – new field
  + **Module Level Power Electronics**
  + **<<reference value from B13 as default, if B13 = “none”, then allow user to override and pick from list: \*Microinverters or \*DC power Optimizers>>**
* Section G header – revised pseudo code
  + <<If A05 “Qualifying Exceptions” = “NA” **or** **“Community Solar”**, then display the "section does not apply" message; else display this entire table >>
* New table H

|  |  |  |
| --- | --- | --- |
| **H. SMUD Solar Share Program**  <<If A05 ≠ “Community Solar”, then display the "section does not apply" message; else display this entire table >> | | |
| 01 | Required kW | << From CF1R-PRF-01>> |
| 02 | Attach a copy of SMUD Attestation of Premise Registration in Neighborhood SolarShares (Attestation). | |
| **The responsible person’s signature on this compliance document affirms that all applicable requirements in this table have been met.** | | |

* Section I (was H) header – revised pseudo code
  + <<calculated field: if C0~~8~~**11** ≥ B1**4**~~2~~ or A05 = “No PV – limited solar access” **or “Community Solar”**, then display result: Pass - dwelling complies with the Photovoltaic Systems requirements; else display result: Fail - dwelling does not comply with the Photovoltaic System requirements>>

**CF2R-STH-01**

* A10 – Revised pseudo code
  + << **if performance and SRRC Certification Type = OG-100,** from CF1R-PRF; **if performance and SRRC Certification Type = OG-300, then user input;** elseif prescriptive, from CF1R-STH-01~~; else user input if SRCC Certification Type = OG-300~~>>

**CF3R-MCH-31c**

* E01 – revised schema
  + <xsd:element name="E**01**\_DoesWHF\_AirFlowEfficacyComply" type="comp:Does WHF\_AirFlowEfficacyComply">