DOCKETED	
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Document Title:	Presentation - 2019 Alternative Calculation Methods (ACM) Reference Manual and Software Update
Description:	Residential ACM Workshop Presentation Slides
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2019 Alternative Calculation Methods (ACM) Reference Manual and Software Update

Residential

February 14, 2019
California Energy Commission

General Workshop Information

- Broadcast using WebEx
  - The meeting is being recorded
  - In person participants: please sign in
- Online participants
  - Will remain muted unless they request to comment
  - Online comments will be taken after in person participants and in alphabetical order

General Workshop Information

- Overview of ACM, manual, and software
- Energy Design Rating (EDR)
- Photovoltaics (PV) and demand response
- *Public Comment*
- Envelope
- HVAC
- Water Heating
- *Public Comment / Lunch*
- Field verification
- HERS provider file upload
- Miscellaneous
- *Public Comment*
- Conclusion, Adjourn

Residential ACM Overview

- The Residential ACM Reference Manual describes the rules used for modeling residential buildings for performance compliance.
- Explains how the proposed design, standard design, and reference design are established for a building and what is reported on the Certificate of Compliance.
- California Building Energy Code Compliance (CBECC) residential software that, once approved, will be the Energy Commission's residential public domain compliance software program.

Energy Design Rating (EDR) Metric

- Aligned with RESNET
- Uses the 2006 IECC compliant building as the reference building
- EDR score is the ratio of the Time Dependent Valuation (TDV) energy of proposed building and the TDV energy of the reference building
- Score range from 0-100, 0 is full ZNE, 100 is IECC compliant building
- 2019 compliant buildings have EDR scores of 15-27 in most climate zones, including PV
- Provides builders with flexibility to meet performance targets

Energy Design Rating Metric

- EDR has three components
  - Efficiency EDR
  - EDR of PV and demand flexibility
  - Total EDR is calculated by subtracting the PV/flexibility EDR from the efficiency EDR

- For a building to comply
  - EDR score of proposed efficiency must be equal or less than the EDR score of the standard efficiency, and
  - Total proposed EDR score must be equal or less than the total standard design EDR score

Energy Design Rating Metric

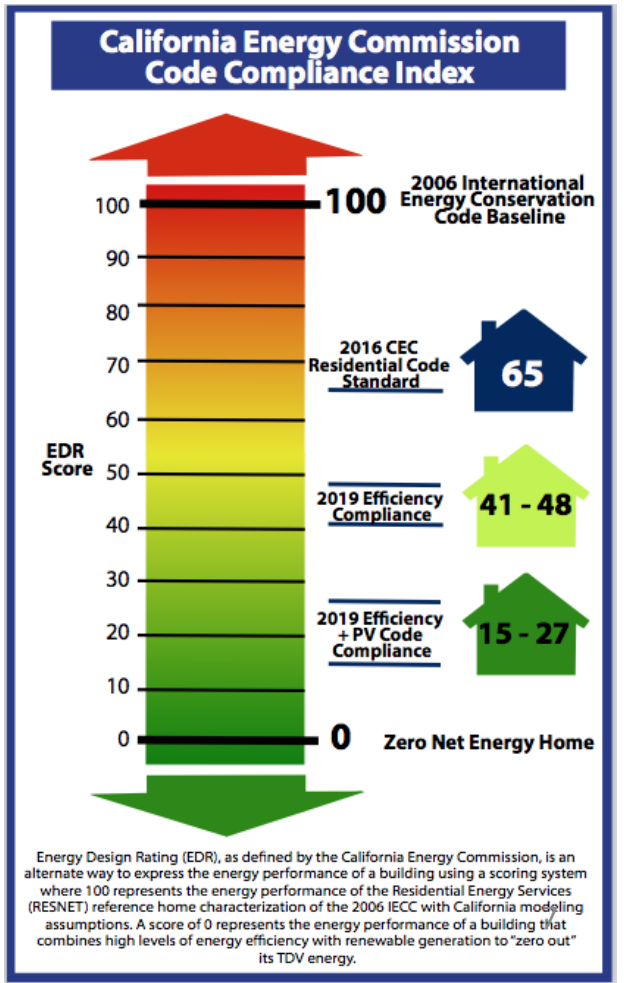
Here is an example of how CBECC-Res calculates the Target EDR for both EE and PV for a 2,700 ft2 house:

Compliance Summary | CO2 Emissions | Energy Design Rating | Energy Use Details

EDR of Standard Efficiency: 44.0 - EDR of Standard Design PV: 18.9 = Total Std Design EDR: 25.1
Std Design PV: 3.24 kW (not current)

EDR of Proposed Efficiency: 43.2 - EDR of Prop PV + Flexibility: 28.1 = Total Proposed EDR: 15.1

End Use	Reference Design Site (kWh)	Reference Design Site (therms)	Reference Design (kTDV/ft²-yr)	Proposed Design Site (kWh)	Proposed Design Site (therms)	Proposed Design (kTDV/ft²-yr)	Design Rating Margin (kTDV/ft²-yr)
Space Heating	601	499.8	48.97	144	212.2	18.71	30.26
Space Cooling	1,769		61.13	422		21.01	40.12
IAQ Ventilation	243		2.49	243		2.49	0.00
Other HVAC			0.00			0.00	0.00
Water Heating		184.0	30.91	90	122.8	10.03	20.88
Self Utilization Credit						0.00	0.00
Photovoltaics				-5,179		-47.96	47.96
Battery				250		-17.40	17.40
Inside Lighting	2,615		30.42	616		6.98	23.44
Appl. & Cooking	989	73.4	19.70	1,042	45.1	14.49	5.21
Plug Loads	3,267		35.06	2,371		25.03	10.03
Exterior	328		3.54	152		1.61	1.93
TOTAL	9,811	757.2	232.22	150	380.2	34.99	197.23



Photovoltaic Requirements

- The 2016 PV Compliance Credit (PVCC) that allowed tradeoff between PV system and building envelope has been removed
- Minimum PV system size based on a mixed-fuel home annual site electricity usage, consistent with Net Energy Metering (NEM) 2.0 rules
- For all-electric homes, the minimum PV size is the same as an equal sized mixed fuel home with similar envelope features
- PV is sized to displace the entire annual kWh consumption of the house, including:
  - Space heating, Space cooling, IAQ ventilation, water heating, battery storage, interior lighting, appliances and cooking, plug loads, and exterior lighting
- May use “Simplified” approach using preset defaults, or use “Detailed” approach which allows user specified attributes for modules, inverters, orientation, and shading

Photovoltaic Exceptions

The performance software allows the same Exceptions available to the prescriptive path, the software adjusts the PV baseline according to the Exception selected:

Definitions:

Annual Solar Access: The annual solar access is the ratio of solar insolation including shading over the solar insolation without shading.

Effective Annual Solar Access: The effective annual solar access shall be 70 percent or greater of the output of an unshaded PV array on an annual basis.

Effective Annual Solar Access Roof Areas: Are roof areas that meet the Effective Annual Solar Access requirements and are at least 80 contiguous square feet.

1. No PV is required if the effective annual solar access is restricted to less than 80 contiguous square feet by shading from existing permanent natural or manmade barriers external to the dwelling, including but not limited to trees, hills, and adjacent structures.

Photovoltaic Exceptions

The performance software allows the same Exceptions available to the prescriptive path, the software adjusts the PV baseline according to the Exception selected:

2. In **climate zone 15**, the PV size shall be the smaller of a size that can be accommodated by the effective annual solar access roof areas, or a PV size required by the equation 1, but no less than 1.5 Watt DC per square foot of conditioned floor area.
3. In all climate zones, for dwelling units with **two habitable stories**, the PV size shall be the smaller of a size that can be accommodated by the effective annual solar access roof areas, or a PV size required by the Equation 1, but no less than 1.0 Watt DC per square foot of conditioned floor area
4. In all climate zones, for low-rise residential dwellings with **three habitable stories** and single family dwellings with three or more habitable stories, the PV size shall be the smaller of a size that can be accommodated by the effective annual solar access roof areas, or a PV size required by the Equation 1, but no less than 0.8 Watt DC per square foot of conditioned floor area
5. For a dwelling unit plan that is approved by the planning department prior to January 1, 2020 with available solar ready zone between 80 and 200 square feet, the PV size is limited to the lesser of the size that can be accommodated by the minimum solar zone area specified in Section 110.10(b) or a size that is required by the Equation 1.

Automated PV Sizing for EDR Targets

The compliance software can automatically calculate the PV size for a given EDR target

- Convenient for reach codes when a lower EDR target is specified
- The software will calculate the PV size based on the efficiency and demand flexibility features of the house, including the battery storage and type of battery control
- Eliminates the need for time consuming iterations

Oversizing the PV System

- For Title 24 Part 6 compliance, based on the features of the building, the software automatically sizes the PV system to offset the annual kWh of the house, in compliance with NEM rules
- For reach codes, when a minimum of 5 kWh battery storage is specified, the PV system may be oversized by a factor of up to 1.6 to get to a lower EDR target
- The 1.6 oversizing limit may be bypassed by checking a checkbox on the Battery tab; the software will warn that bypassing the size limit may violate the NEM rules
- Oversizing the PV system may be justified if additional loads, like Electric Vehicles (EV), are anticipated
- When oversizing the PV system, consultation with the local utility is advised

Community Solar (CS)

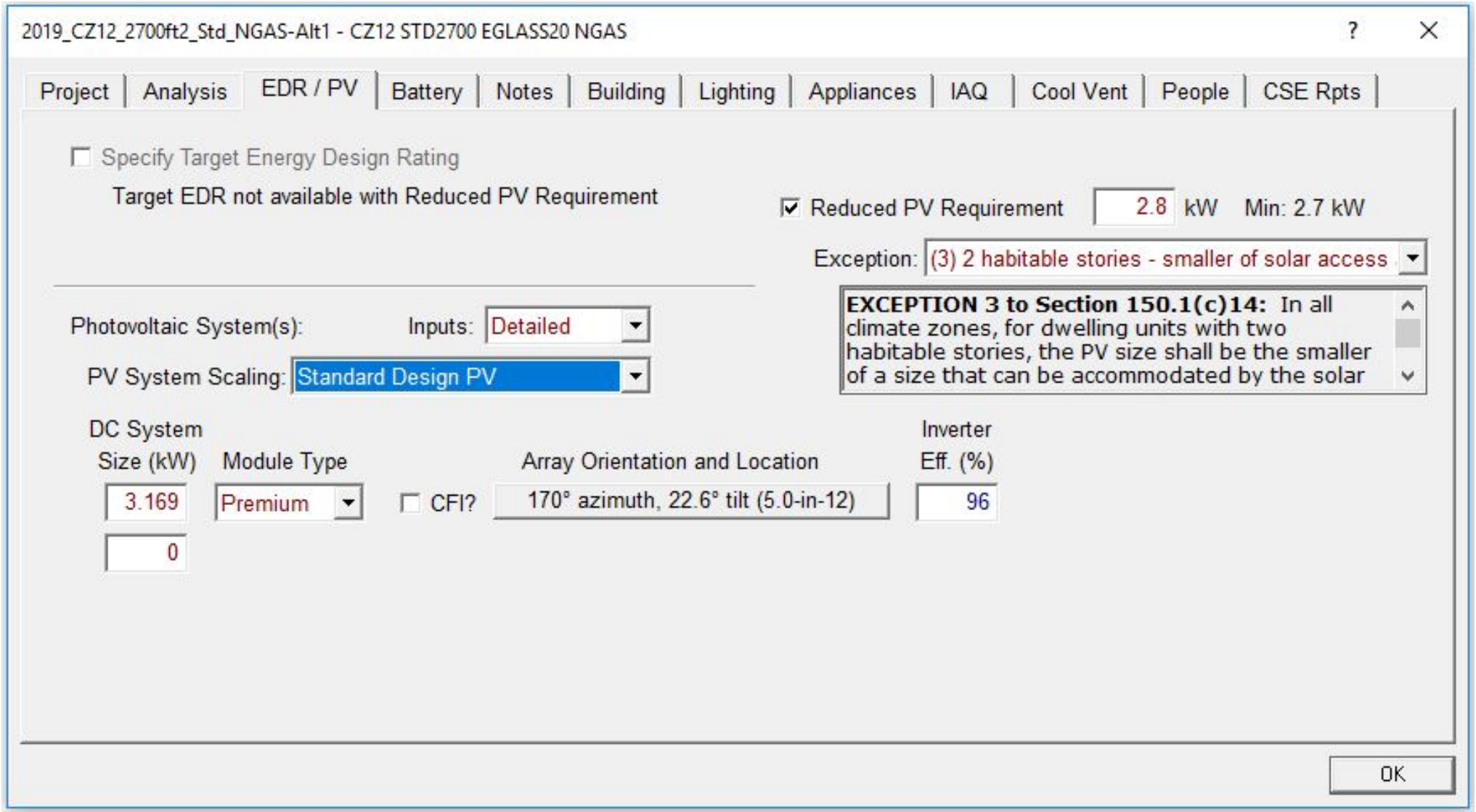
Provide energy savings benefits to the home that are similar to onsite PV

- Dedicated – Provide energy savings benefits directly to the building that would have been served by onsite PV system
- Durable – Provide energy savings to the building for 20 years, including present and future occupants
- Additional – The CS resources shall provide energy savings only to the dedicated building and not transferable to other buildings or purposes, such as Renewables Portfolio Standard (RPS) goals
- Accountability and Recordkeeping – Must maintain records for 20 years, must provide records to all parties involved, including builders, owners, enforcement agencies, and Commission
- Commission Approval – Must be approved by the Commission

Community Solar and CBECC

- There are no approved community solar plans as of today
- Once a CS plan is approved by the Commission, the software will be updated to allow that CS concept as an alternative to onsite PV systems
- Similarly, other unique Commission approved community solar plans can be incorporated into the software

PV Input Screen



Demand Response Measures: Battery Storage Credit and Self-Utilization Credit

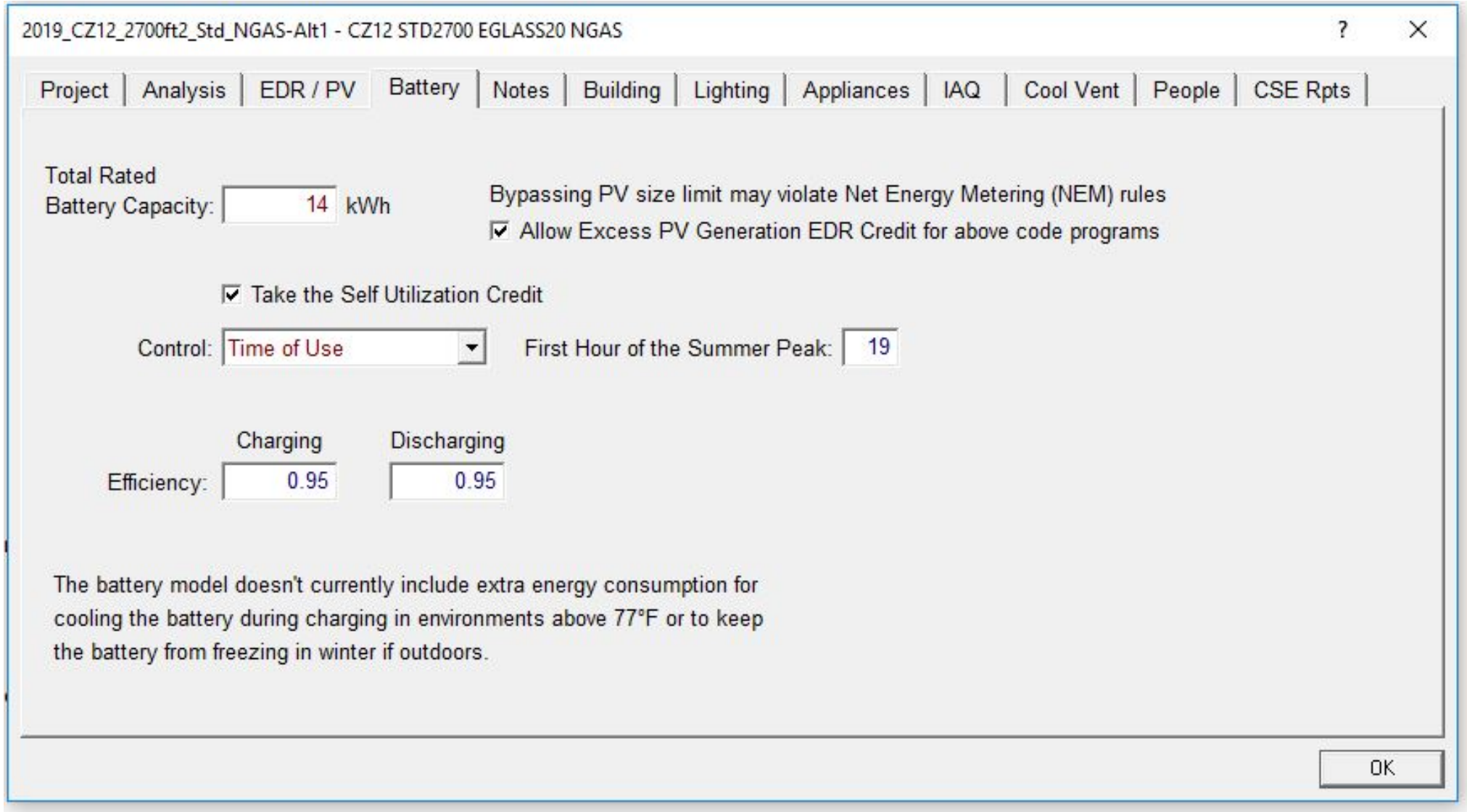
- The software allows coupling a Joint Appendices 12 (JA12) compliant battery storage with the PV systems to:
  - For Title 24 Part 6, reduce the PV size needed for compliance
  - For Title 24 Part 11, get to a target EDR with a smaller PV size
- Minimum battery storage size is 5 kWh and must be JA12 compliant
- The battery credit is the result of the TDV cost differentials: charge when the rates are low, discharge when the rates are high
- A potion of the battery storage credit may be used for tradeoffs against other building features, this is called “Self-Utilization” credit, which maximizes self-utilization of the PV system’s output and minimizes hourly exports back to the grid

Battery Storage and Self-Utilization Credit

The magnitude of the credit is equal to 90 percent of the difference between the 2016 and 2019 Standards envelope improvements, including:

1. Below deck batt roof insulation value of R-19 for the 2019 Standards, and R-13 for the 2016 Standards
2. Wall U-factor of 0.048 for the 2019 Standards, and U-factor of 0.051 for 2016 the Standards
3. Window U-factor of 0.30 for the 2019 Standards, and window U-factor of 0.32 for the 2016 Standards
4. In cooling climate zones, window SHGC of 0.23 for the 2019 Standards, and 0.25 for the 2016 Standards, and
5. New Quality Insulation Installation (QII) requirement in the 2019 standards, and no QII requirements in the 2016 Standards.

Battery Storage Input Screen



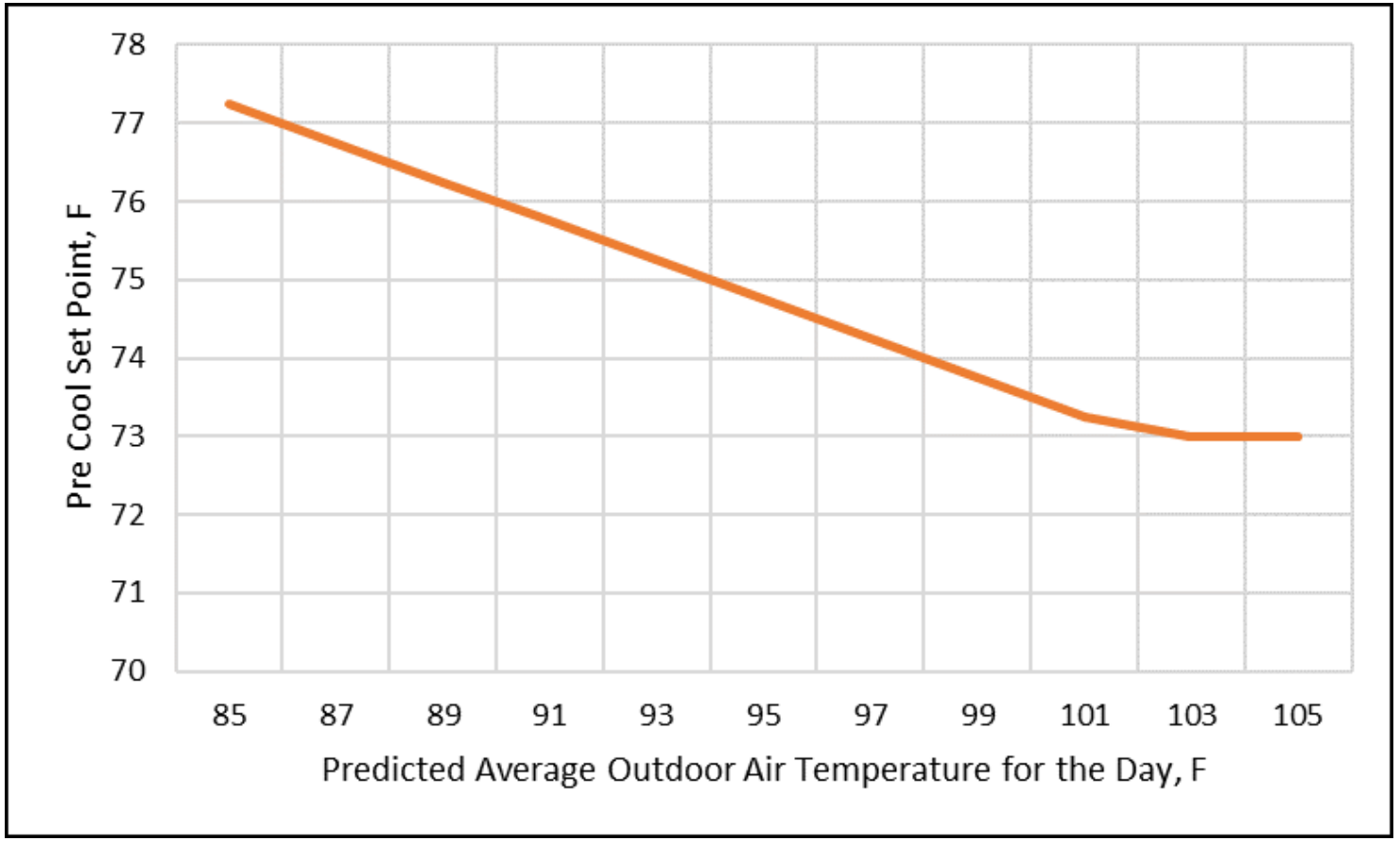
Demand Response Measures: Precooling Credit

The software allows a modest credit for precooling the building prior to the onset of the highest Time of Use (TOU) period:

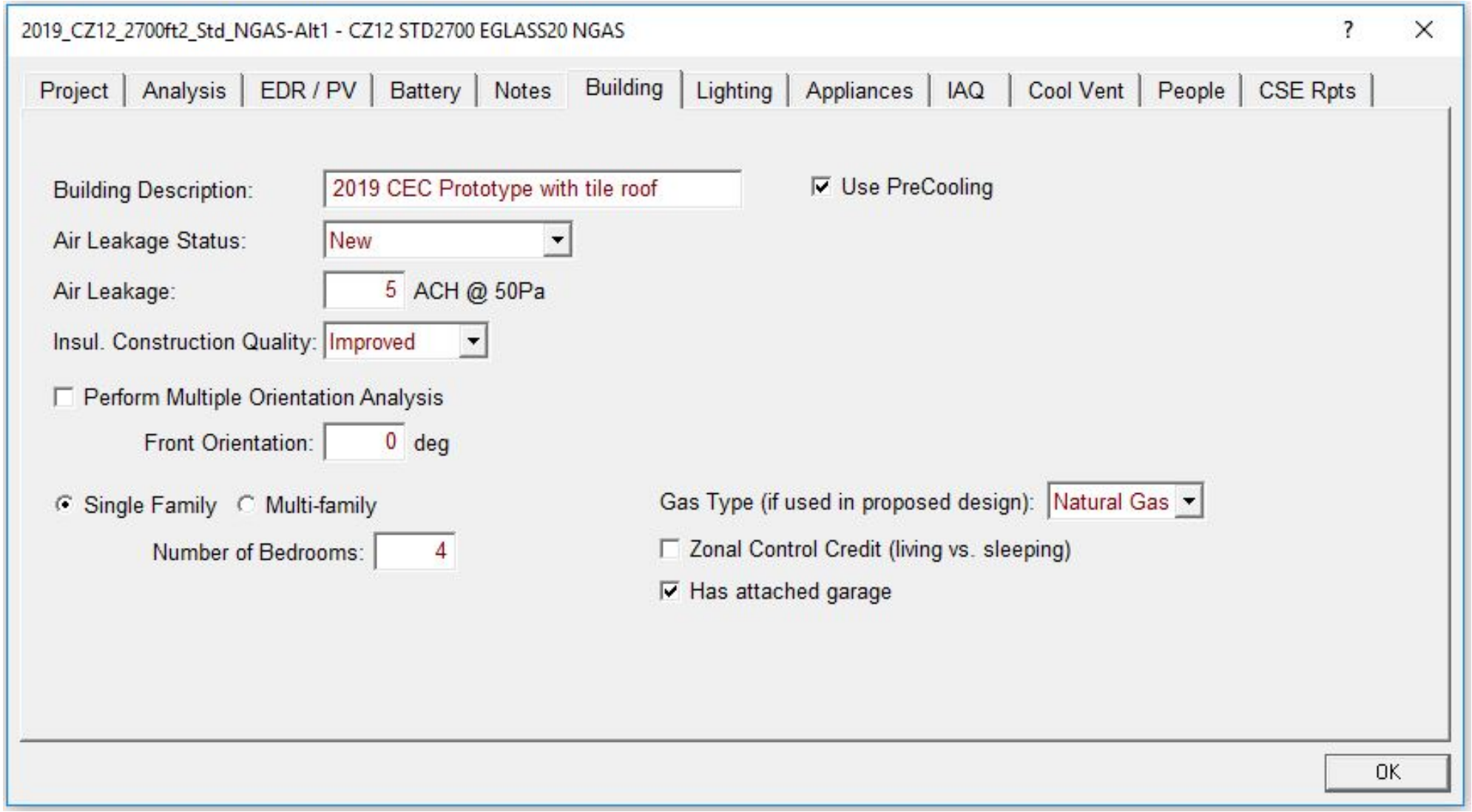
- This feature only impacts “PV + Flexibility” EDR score (no tradeoff against efficiency EDR)
- A checkbox is provided under the “Building” input tab to enable this option
- When this option selected, the software assumes that the house is precooled in hours preceding the onset of the highest peak period, and then the house “coasts” thru the highest peak hours
- This option requires installation of a demand responsive communicating thermostat
- Similar to the battery storage credit, this credit takes advantage of TDV cost differentials
- If the battery storage credit is already selected, selecting precooling will no longer have an impact on the EDR score
- This credit is discounted by 70% because of the “occupant dependent” nature of the credit

Demand Response Measures: Precooling Credit

The precooling setpoint and cooling start time is determined by the forecasted average outdoor temperatures:



Precooling Credit – Input Screen



CBECC Onscreen Reports: Compliance Summary

Reports compliance margins for Efficiency and Total EDRs and the Comply/Not Comply Results

Compliance Summary | CO2 Emissions | Energy Design Rating | Energy Use Details

	Energy Design Ratings:		Compliance Margins:	
	Efficiency[1] (EDR)	Total[2] (EDR)	Efficiency[1] (EDR)	Total[2] (EDR)
Standard Design	44.0	25.1		
Proposed Design	43.2	15.1	0.8	10.0

Result[3]: COMPLIES

[1] Efficiency measures include improvements like a better building envelope and more efficient equipment
[2] Total EDR includes efficiency, photovoltaics and batteries
[3] Building complies when all efficiency and total margins are greater than or equal to zero

Standard Design PV Capacity: 3.24 kW

CBECC Onscreen Reports: CO2 Emissions

Reports Total CO2 emissions (mTons/yr) with and without PV and battery storage

2019_CZ12_2700ft2_Std_NGAS-Batt - CZ12 STD2700 EGLASS20 NGAS

Compliance Summary | CO2 Emissions | Energy Design Rating | Energy Use Details

	Total CO2 Potential: (excl. Solar & Flexibility) (metric tons/yr)	CO2 Saved by Solar Electricity: Self Consumed (metric tons/yr)	CO2 Saved by Solar Electricity: Exported to Grid (metric tons/yr)	CO2 Generated: Total (metric tons/yr)	CO2 Generated: Excluding Exports (metric tons/yr)
Standard Design	3.20	0.29	0.48	2.42	2.91
Proposed Design	3.20	0.83	0.14	2.23	2.37

CBECC Onscreen Reports: Energy Design Rating

Reports Proposed and Standard EDR scores for Efficiency, PV/Flexibility, and Total

Compliance Summary | CO2 Emissions | Energy Design Rating | Energy Use Details

EDR of Standard Efficiency: 44.0 - EDR of Standard Design PV: 18.9 = Total Std Design EDR: 25.1
Std Design PV: 3.24 kW (not current)

EDR of Proposed Efficiency: 44.0 - EDR of Prop PV + Flexibility: 28.1 = Total Proposed EDR: **15.9**

End Use	Reference Design Site (kWh)	Reference Design Site (therms)	Reference Design (kTDV/ft²-yr)	Proposed Design Site (kWh)	Proposed Design Site (therms)	Proposed Design (kTDV/ft²-yr)	Design Rating Margin (kTDV/ft²-yr)
Space Heating	601	499.8	48.97	160	235.8	20.76	28.21
Space Cooling	1,769		61.13	409		20.91	40.22
IAQ Ventilation	243		2.49	243		2.49	0.00
Other HVAC			0.00			0.00	0.00
Water Heating		184.0	30.91	90	122.8	10.03	20.88
Self Utilization Credit						0.00	0.00
Photovoltaics				-5,179		-47.95	47.95
Battery				249		-17.38	17.38
Inside Lighting	2,615		30.42	616		6.98	23.44
Appl. & Cooking	989	73.4	19.70	1,041	45.1	14.48	5.22
Plug Loads	3,267		35.06	2,371		25.03	10.03
Exterior	328		3.54	152		1.61	1.93
TOTAL	9,811	757.2	232.22	151	403.8	36.96	195.26

CBECC Onscreen Reports: Energy Use Details

Reports Proposed and Standard Design kWh, Therms, and TDV by individual loads and Compliance Margins

Compliance Summary | CO2 Emissions | Energy Design Rating | Energy Use Details

End Use	Standard Design Site (kWh)	Standard Design Site (therms)	Standard Design (kTDV/ft²-yr)	Proposed Design Site (kWh)	Proposed Design Site (therms)	Proposed Design (kTDV/ft²-yr)	Compliance Margin (kTDV/ft²-yr)
Space Heating	160	235.8	20.76	144	212.2	18.71	2.05
Space Cooling	409		20.91	422		21.01	-0.10
IAQ Ventilation	243		2.49	243		2.49	0.00
Other HVAC			0.00			0.00	0.00
Water Heating	90	122.8	10.03	90	122.8	10.03	0.00
Self Utilization Credit						0.00	0.00
Compliance Total			54.19			52.24	1.95
Photovoltaics	-5,081		-44.06	-5,179		-47.96	3.6 %
Battery				250		-17.40	
Inside Lighting	616		6.98	616		6.98	
Appl. & Cooking	1,041	45.1	14.48	1,042	45.1	14.49	
Plug Loads	2,371		25.03	2,371		25.03	
Exterior	152		1.61	152		1.61	
TOTAL	0	403.8	58.23	150	380.2	34.99	

Generation Coincident Peak Demand (kW): Standard Design: 1.96 Proposed Design: 0.17 Reduction: 1.79

Envelope Standard Design
Attic/Ceiling

SINGLE FAMILY
ACM 2.5.6.1

Roof Deck (Below) Insulation

- CZ 1-3, 5-7 R-0
- CZ 4, 8-16 R-19 (Was previously R-13 roof deck insulation)

Ceiling Insulation

- CZ 1-2, 4, 8-16 R-38
- CZ 3, 5-7 R-30

Radiant Barrier

- CZ 2-3, 5-7 Included
- CZ 1, 4, 8-16 Not included

NOTE: Prescriptive option A (above deck insulation) is gone, but it can still be modeled

Envelope Standard Design
Attic/Ceiling (Cont'd)

MULTIFAMILY
ACM 2.5.6.1

Roof Deck (Below) Insulation

- CZ 1-7 R-0
- CZ 10, 16 R-13
- CZ 8-9, 11-15 R-19

Ceiling Insulation

- CZ 1-2, 4, 8-16 R-38
- CZ 3, 5-7 R-30

Radiant Barrier

- CZ 2-3, 5-7 Included
- CZ 1, 4, 8-16 Not included

Envelope Standard Design
Walls

ACM 2.5.6.3

SINGLE FAMILY

- CZ 1-5, 8-16: R-21 + R-5 (U-0.048) Was R-19 / U-factor 0.051
- CZ 6-7: R-15 + R-4 (U-0.065)

MULTIFAMILY (previously not a separate category)

- CZ 1-5, 8-16: R-21 + R-4 (U-0.051)
- CZ 6-7: R-15 + R-4 (U-0.065)

OTHER CONSTRUCTIONS (e.g., SIPs, straw bale)

- Same U-factor as above

MASS WALLS (same for single/multifamily)

	Above Grade	Below Grade
• CZ 1-15:	R-13 interior	R-13 interior
• CZ 16	R-17 interior	R-15 interior

Walls (Cont'd)

ACM 2.5.6.3

DEMISING/GARAGE WALL

- Same cavity insulation based on CZ and building type
- No continuous insulation

ADDITIONS

Exceptions for wood framed wall with R-15 in 2x4 or R-21 (previously R-19) in 2x6 wall is assumed to be equivalent to standard design when wall is:

- An existing walls with siding not removed, or
- An extensions of an existing wall

Envelope Standard Design Fenestration/Doors

ACM 2.5.6.6

U-Factor

- All climate zones 0.30 U-factor (Was previously U-0.32)

Solar Heat Gain Coefficient (SHGC)

- CZ 2, 4, 6-15: 0.23 SHGC
- CZ 1, 3, 5, 16: 0.35 SHGC

Two Major Changes:

- Zone 16 has moved into the Not Required (NR) category
- NR = 0.35 (was 0.50)

ACM 2.5.6.5

Opaque Doors

- 0.20 U-factor (previously NR or 0.50)

Envelope Standard Design
Quality Insulation Installation

ACM 2.2.5 (Newly Constructed)
ACM 2.10.4.1 (Additions)

Quality Insulation Installation (QII) included for:

SINGLE FAMILY

- Newly constructed in all climate zones
- Additions > 700 ft^2 in all climate zones

MULTIFAMILY

- Newly constructed in all climate zones EXCEPT 7
- Additions > 700 ft^2 in all climate zones EXCEPT 7

Standard Design Additions/Alterations

- Energy Compliance is expressed in TDV §150.1(b)2 (not EDR)
- PV not required §150.2, Exception 7

ACM Section 1.3:

The energy use is expressed in kTDV/ft^2 and includes space heating, space cooling, ventilation, and water heating . . . Photovoltaics (PV) generation and flexibility measures, such as battery storage, have no impact on additions and alterations.

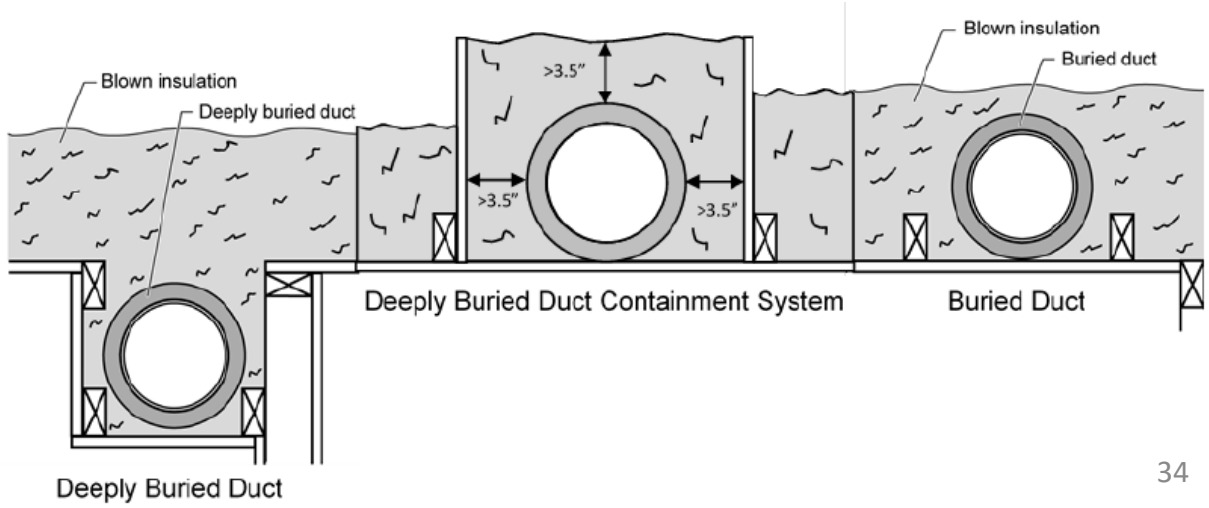
Space Conditioning Systems Airflow and Fan Efficacy

- Verified System Airflow - ACM Section 2.4.5.2
  - Small Duct High Velocity systems must verify airflow ≥ 250 CFM/ton according to procedures in RA3.3.
  - Inputs less than 350 cfm/ton for zonally controlled single-speed compressor systems require HERS verification in all zonal control modes using procedures in RA3.3. HERS verification for these systems cannot use group sampling.
- Verified Air-Handling Unit Fan Efficacy - ACM Section 2.4.5.3
  - Small Duct High Velocity systems must verify fan efficacy ≤ 0.62 W/CFM
  - Central and packaged Gas Furnaces manufactured later than July 3, 2019 must verify fan efficacy ≤ 0.45 W/CFM.
  - All other systems remain at ≤ 0.58 W/CFM

Buried Ducts

- Updated effective R-value tables in ACM to reflect new mandatory and prescriptive duct insulation levels.
- Clarified qualification criteria for buried duct credit in ACM and Compliance Manual
- Deeply buried credit now available without lowered duct chase
- Software updates in progress:
  - Old system required user to side-calculate system effective R-value
  - New system will calculate effective duct R-value based on user entered duct design.

	R-8 Insulated: Nominal Round Duct Diameter										
Attic Insulation	4"	5"	6"	7"	8"	10"	12"	14"	16"	18"	20"
	Effective Duct Insulation R-Value for Blown Fiberglass Insulation										
R-30	R-13	R-13	R-13	R-13	R-8	R-8	R-8	R-8	R-8	R-8	R-8
R-38	R-18	R-18	R-18	R-13	R-13	R-13	R-8	R-8	R-8	R-8	R-8
R-40	R-26	R-18	R-18	R-18	R-13	R-13	R-8	R-8	R-8	R-8	R-8
R-43	R-26	R-26	R-18	R-18	R-18	R-13	R-13	R-8	R-8	R-8	R-8
R-49	R-26	R-26	R-26	R-26	R-18	R-18	R-13	R-13	R-8	R-8	R-8
R-60	R-26	R-26	R-26	R-26	R-26	R-26	R-26	R-18	R-13	R-13	R-8
	Effective Duct Insulation R-Value for Blown Cellulose Insulation										
R-30	R-14	R-8	R-8	R-8	R-8	R-8	R-8	R-8	R-8	R-8	R-8
R-38	R-14	R-14	R-14	R-14	R-8	R-8	R-8	R-8	R-8	R-8	R-8
R-40	R-20	R-14	R-14	R-14	R-8	R-8	R-8	R-8	R-8	R-8	R-8
R-43	R-20	R-20	R-14	R-14	R-14	R-8	R-8	R-8	R-8	R-8	R-8
R-49	R-20	R-20	R-20	R-20	R-14	R-14	R-8	R-8	R-8	R-8	R-8
R-60	R-32	R-32	R-32	R-20	R-20	R-20	R-14	R-8	R-8	R-8	R-8

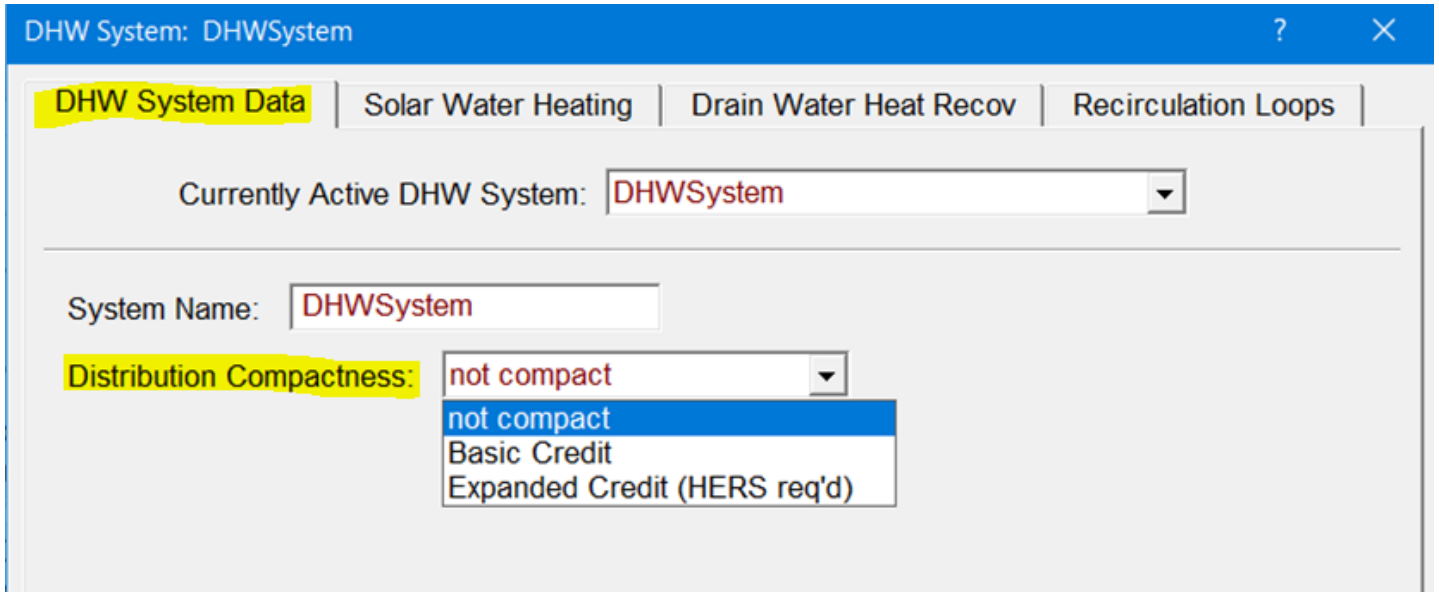


Whole House Fan, Central Fan Ventilation

- Whole House Fan - ACM Section 2.4.10
  - Standard design is 1.5 CFM/ft2 @ 0.14 W/CFM
  - Credit if more than 1.5 CFM/ft2 and/or less than 0.14 W/CFM (no field verification)
  - Additional credit with field verification (essentially increases airflow by 1.5x)
  - Ability to model whole house fan in cathedral/No attic venting
- Central Fan Ventilation Cooling System – ACM Section 2.4.10
  - Credit due to ventilation airflow and fan efficacy which reduces cooling energy

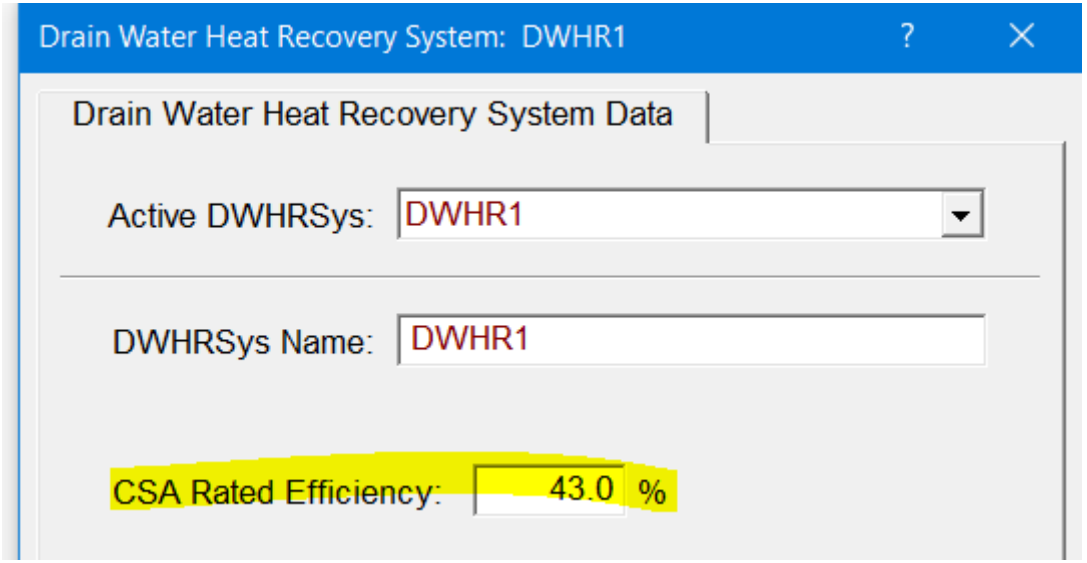
Water Heating Compliance Credit

- Compact hot water distribution
  - Three Selections:
    - None
    - Compact Distribution Basic Credit
    - Compact Distribution Expanded Credit – requires field verification



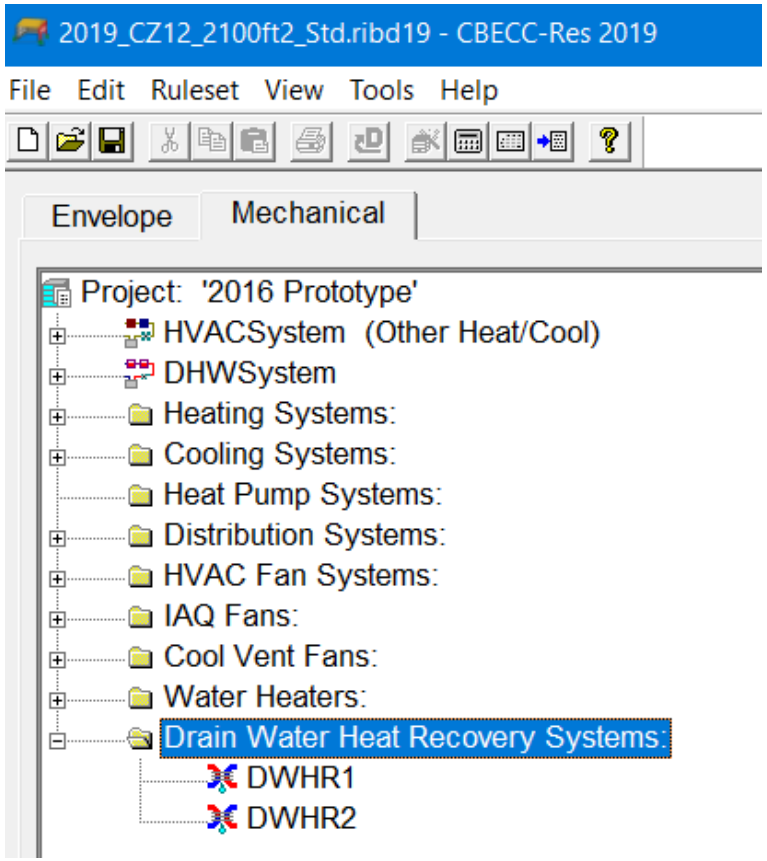
Water Heating
Compliance Credit cont'd

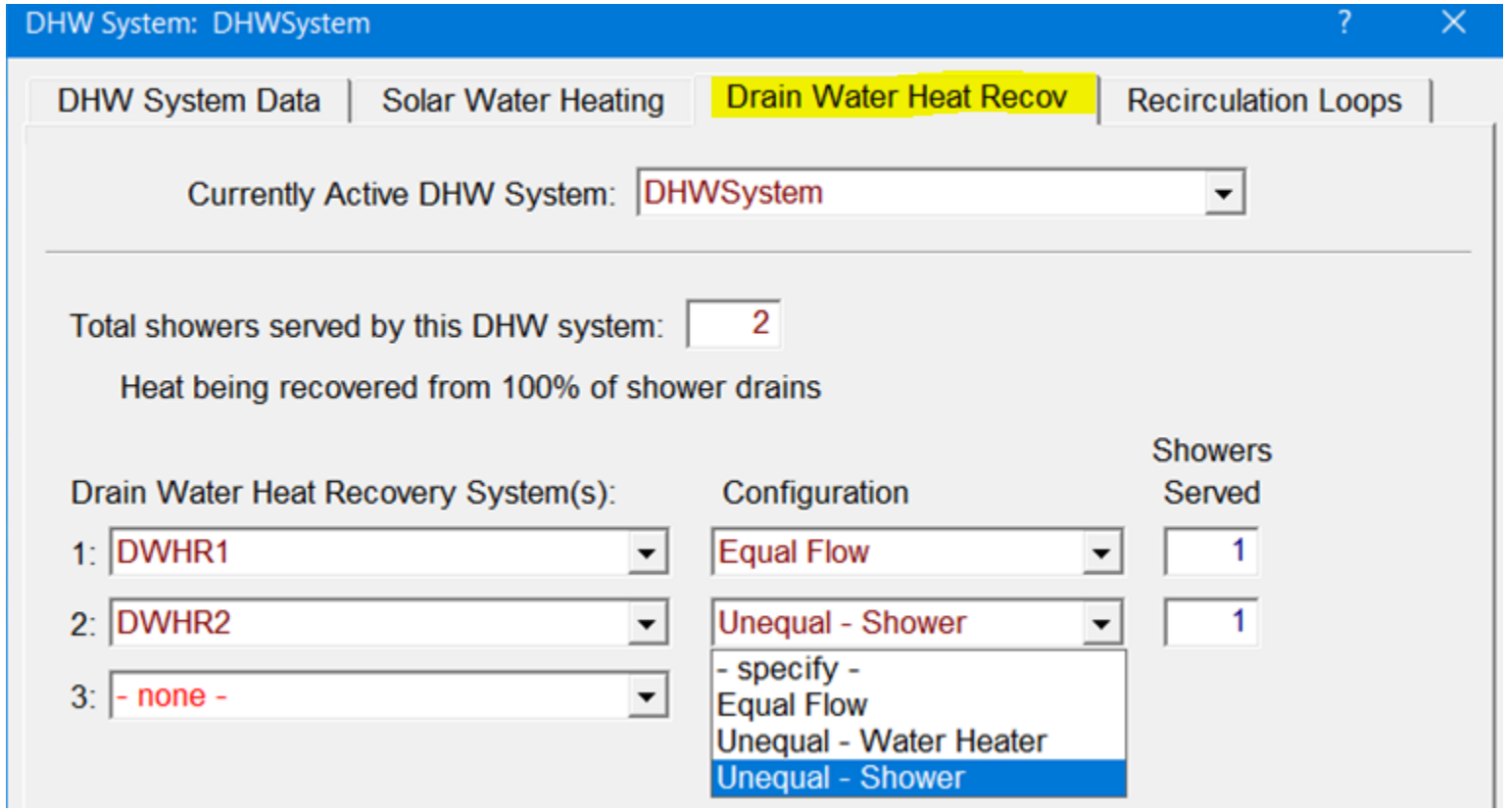
- Drain water heat recovery system
  - Three Configuration Choices:
    - Equal Flow
    - Unequal Flow – Water Heater
    - Unequal Flow – Shower
  - Efficiency Input
  - Multiple showers, multiple configurations



Water Heating
Compliance Credit cont'd

Drain Water Heat Recovery System





Water Heating

- Individual dwelling unit electric water heating system
  - Standard design uses 2.0 UEF heat pump water heater with basic compact hot water distribution and drain water heat recovery system
- Multiple dwelling unit electric water heating system without recirculation
  - Standard design uses 2.0 UEF heat pump water heater
- Multiple dwelling unit electric water heating system with recirculation
  - Standard design uses gas-fired water heater

HERS Field Verification

- IAQ Ventilation Airflow - ACM Section 2.4.9
  - Dwelling-unit ventilation airflow is required to be measured according to RA3.7.
  - In multifamily buildings, when unbalanced ventilation system types (exhaust or supply) are used, a dwelling unit enclosure tightness test (blower door test) must meet 0.3 CFM/ft2 of dwelling unit enclosure area according to the procedures in RA3.8.
- Kitchen Range Hood - ACM Section 2.4.9
  - Verify the installed Range hood performance is Home Ventilating Institute (HVI) certified according to the procedures in RA3.7.4.3.
  - HVI rated performance must comply with minimum airflow (usually 100 CFM) and sone requirements less than or equal to 3.
- Improved HSPF - ACM Section 2.4.1.1
  - When better than minimum efficiency/HSPF is modeled, HERS verification must confirm the installed system HSPF is equal or better than the modeled value using the procedures in RA3.4.4.2.
- Heat Pump Heating Capacity - ACM Section 2.4.1
  - Verify the heating capacity at 47°F, and 17°F is greater than or equal to the Capacity modeled.

HERS Field Verification cont'd

- Verified System Airflow - ACM Section 2.4.5.2
  - Small Duct High Velocity systems must verify airflow ≥ 250 CFM/ton according to procedures in RA3.3.
  - Inputs less than 350 cfm/ton for zonally controlled single-speed compressor systems require verification in all zonal control modes using procedures in Reference Residential Appendix RA3.3. HERS verification compliance for these systems cannot use group sampling.
- Verified Air-Handling Unit Fan Efficacy - ACM Section 2.4.5.3
  - Small Duct High Velocity systems must verify fan efficacy ≤ 0.62 W/CFM
  - Gas Furnaces manufactured later than July 3, 2019 must verify fan efficacy ≤ 0.45 W/CFM.

HERS Field Verification cont'd

- Whole House Fan - ACM Section 2.4.10
  - HERS verification according to the procedures RA3.9 is required when modeling credit for better than prescriptive airflow and fan efficacy.
- Central Fan Ventilation Cooling System – ACM Section 2.4.10
  - HERS verification according to the procedures in RA3.3.4 is required when modeling credit for a central fan ventilation cooling system.
- Quality Insulation Installation (QII) - ACM Section
  - Prescriptive requirement in all climate zones except for CZ 7 for multifamily buildings
- Compact Hot Water Design (Enhanced) - ACM Section 2.9
  - HERS verification is required according to RA3.6.5 and RA4.4.6
- Drain Water Heat Recovery - ACM Section 2.9
  - HERS verification is required according to RA3.6.9

New CBECC Output Report

- Propose to replacing the current (Project Name)-AnalysisResults-BEES.xml file that is uploaded to the HERS Providers.
- New report (Project Name)-CF1RPRF01E.xml would be used for the 2019 Standards.
- New report is improved in the following ways:
  - New document is validated against a schema which will allow CEC to provide quality control checks on software versions
  - Data included in report uses the same data dictionary as the compliance documents which should make HERS Registry Programing simpler and easier to maintain
  - Streamed lined data set focused on the HERS Provider needs
- Reporting is not 100% finished:
  - Finishing basic HERS flags
  - Next step is to include all date for child compliance documents
  - Communicating our progress to the HERS providers in our bimonthly meetings

Miscellaneous

- Compliance run time
  - 2100 ft2 prototype (run times are for reference and may vary depending on computer configuration)
    - 0:48 – Run without target EDR (standard compliance run)
    - 1:33 – Run with battery and target EDR of 20
    - 2:15 – Run with battery and target EDR of 0
- Existing + Addition + Alteration
  - Not fully functional in Alpha version
- Reporting
  - CF-1R (PDF Report) not accurate in Alpha version

ACM and CBECC-Res Schedule

Release	Scheduled ACM Date	Scheduled CBECC-Res Date
2019 Alpha *Public Workshop*	January 2019	January 2019
2019 Release Candidate *Existing+Addition+Alteration*	April 2019	April 2019
2019 1.0 (certified) *CF-1R (PDF Report)*	May 2019	May 2019

How to Submit Written Comments

We strongly encourage submitting written comments via e-file by March 1, 2019.

Comments on the Draft 2019 Alternative Calculation Method Reference Manuals and Compliance Software Tools can be submitted to:

https://efiling.energy.ca.gov/EComment/EComment.aspx?docketnumber=19-BSTD-01

Comments can also be submitted physically or by e-mail, here:

California Energy Commission
Dockets Office, MS-4
Re: Docket No. 19-BSTD-01
1516 Ninth Street
Sacramento, CA 95814-5512
Docket@energy.ca.gov

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