APPLIANCE FUEL SELECT OPTIONS AND IMPACT ON PROGRAM ELIGIBILITY

The California Advanced Homes Program (CAHP) and California Multifamily New Homes (CMFNH) Program uses the Energy Design Rating (EDR) for single family and multifamily low-rise projects. EDR, which is a home energy index that uses time dependent valuation (TDV) of energy, is the eligibility and incentive metric for the programs. The *Delta EDR* is the difference between the *EDR of Standard Efficiency* and the *EDR of Proposed Efficiency*—it compares a home built via the prescriptive path to one built using custom measures that feature higher energy efficiency than current California building code. The EDR score calculation is a whole-house efficiency metric that includes both regulated and unregulated loads while compliance only includes the regulated loads. EDR scores are based on the energy use of all end uses, which includes space heating and cooling, indoor air quality, water heating, lighting, appliances, and plug loads.

Compliance Software Update for Appliances

CBECC-Res 2016 and Energy Pro 7 software allow users to select *fuel* for clothes dryer and cooking appliances. The refrigerator and dishwasher inputs are still not user-editable. In all previous versions of the software, the default standard appliance fuel source for dryers and cooking was gas, regardless of the fuel selection for the proposed design. This meant that the standard EDR defaulted to gas dryer and gas cooking for projects with electric dryers and cooking. The most current versions of the software (CBECC-Res 2016.3.0 (SP2) and Energy Pro 7.2 have corrected this so that the baseline for dryers correlates with fuel selection of the proposed design, allowing for a direct comparison between fuel types.

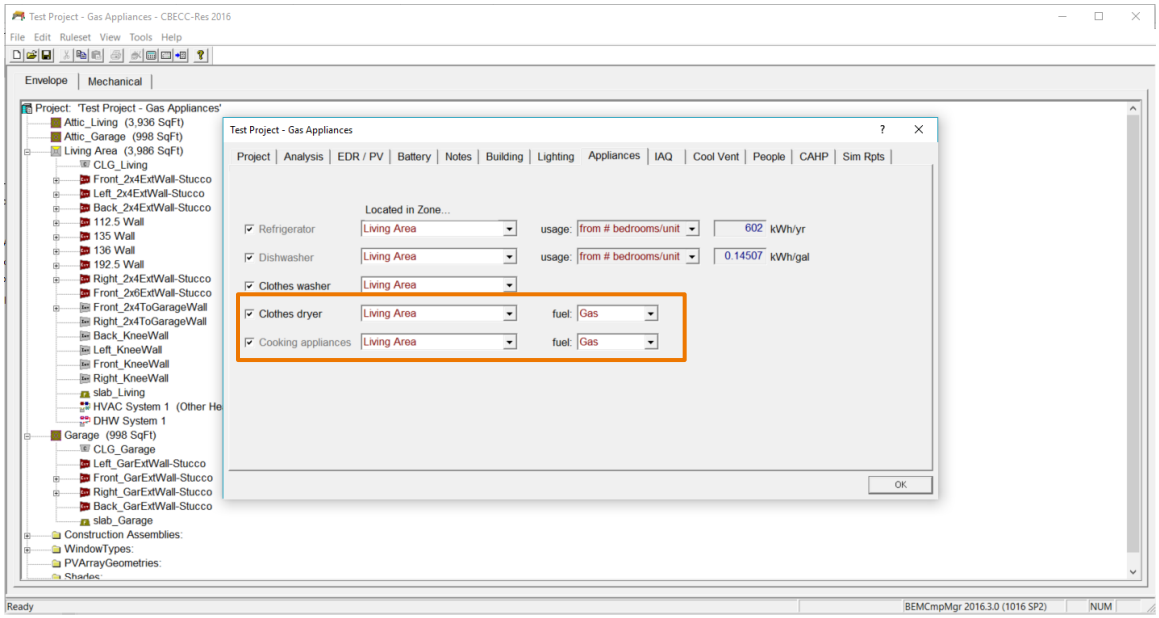

Figure 1: Fuel Selection for Clothes Dryer and Cooking Appliances Available Under the Appliances Tab in CBECC-Res View Pane

The fuel selected has no impact on the regulated loads and thus, the compliance percentages remain unchanged. However, selecting appliances does impact the *EDR of Standard Efficiency* and *the EDR of Proposed Efficiency,* which ultimately impacts the *Delta EDR.*

ENERGY USE SUMMARY				
04	05	06	07	08
Energy Use (kTDV/ft^2-yr)	Standard Design	Proposed Design	Compliance Margin	Percent Improvement
Space Heating	21.19	18.03	3.16	14.9%
Space Cooling	29.01	27.64	1.37	4.7%
IAQ Ventilation	0.93	0.93	0.00	0.0%
Water Heating	4.73	4.73	0.00	0.0%
Photovoltaic Offset	----	-11.06	11.06	----
Compliance Energy Total	55.86	40.27	15.59	27.9%

Figure 2: Screenshot of the Energy Use Summary (Which Includes Only Regulated Loads) From CF-1R Document

Software Results

An example of the impact of fuel selection for dryer and cooking appliances on EDR scores follows below. The two scenarios show how *EDR of Standard Efficiency, EDR of Proposed Efficiency* and *Delta EDR* for the same model can vary in different versions of the CBECC-Res software, simply by assigning different fuel types for the two appliances.

Scenario 1:

CBECC-Res 2016.2.1: Gas Dryer and Gas Cooking Modeled

EDR of Standard Design	EDR of Proposed Design	EDR Value of Proposed PV	Final EDR of Proposed Design
46.2	43.7	36.3	7.4

Figure 3: CF-1R excerpt showing EDR results from CBECC-Res 2016.2.1 software version

CBECC-Res 2016.3.0 (SP2): Gas Dryer and Gas Cooking Modeled

EDR of Standard Efficiency	EDR of Proposed Efficiency	EDR Value of Proposed PV + Battery	Final Proposed EDR
47.5	44.9	22.3	22.6

Figure 4: CF-1R excerpt showing EDR results from CBECC-Res 2016.3.0 (SP2) software version

	Gas Appliances	
	Version 2016.2.1	Version 2016.3.0 (SP2)
EDR of Standard Efficiency	46.2	47.5
EDR of Proposed Efficiency	43.7	44.9
Delta EDR	2.5	2.6

Figure 5: Results comparing the Delta EDR scores from different versions of the software for models with Gas Appliances

Scenario 2:

CBECC-Res 2016.2.1: Electric Dryer and Electric Cooking Modeled

EDR of Standard Design	EDR of Proposed Design	EDR Value of Proposed PV	Final EDR of Proposed Design
46.9	46.0	36.3	9.7

Figure 6: CF-1R excerpt showing EDR results from CBECC-Res 2016.2.1 software version

CBECC-Res 2016.3.0 (SP2): Electric Dryer and Electric Cooking Modeled

EDR of Standard Efficiency	EDR of Proposed Efficiency	EDR Value of Proposed PV + Battery	Final Proposed EDR
49.1	46.5	25.2	21.3

Figure 7: CF-1R excerpt showing EDR results from CBECC-Res 2016.3.0 (SP2) software version

	Electric Appliances	
	Version 2016.2.1	Version 2016.3.0 (SP2)
EDR of Standard Efficiency	46.9	49.1
EDR of Proposed Efficiency	46	46.5
Delta EDR	0.9	2.6

Figure 8: Results comparing the Delta EDR scores from different versions of the software for models with Electric Appliances

Projects with electric appliances may see significant improvement in their Delta EDR scores than originally predicted. We encourage projects with electric dryers and cooking that **previously did not qualify** for the program to **re-run their models** using *current* versions of CBECC-Res 2016 and EnergyPro 7 to determine CAHP/CMFNH eligibility. For support in doing so, and to learn more about how to re-submit your project, please contact us at cahp@trcsolutions.com or info@cmfnh.com, or (866) 352-7457.