

## Summary of Residential ACM Tests (kTDV/ft2 efficiency)

Comparison Date: 4/15/2021  
 Comparison Author: Ken Nittler  
 Candidate Software: CBECC-Res 2019\_2\_0\_Beta\_2067  
 Reference Software: CBECC-Res 2019\_1\_3\_1934  
 Type of Software: Reference  
 Single Family: Yes  
 Multi Family: Yes  
 Newly Constructed: Yes  
 Additions Alterations: Yes  
 Units for Summary: kTDV/ft2 efficiency  
 Tolerance: 0.04

Test	Pass/ Fail	Average Reference kTDV/ft2 efficiency	Average Candidate kTDV/ft2 efficiency	Description
V01	Pass	51.10	51.10	Standard Design in All Zones for Prototype S2100ft2
V02	Pass	47.48	47.48	Standard Design in All Zones for Prototype S2700ft2
V03	Pass	59.16	59.16	Standard Design in All Zones for Prototype S6960ft2
V04	Pass	47.65	47.65	Proposed Design in All Zones for Prototype P2100ft2
V05	Pass	43.68	43.68	Proposed Design in All Zones for Prototype P2700ft2
V06	Pass	55.77	55.77	Proposed Design in All Zones for Prototype P6960ft2
V07	Pass	54.88	54.88	Common Measures in Zone 12 for Prototype P2100ft2
V08	Pass	56.40	56.40	Water Heating in Zone 12 for Prototype P2100ft2
V09	Pass	57.55	57.55	Multiple Orientation in Zone 12 for Prototype S2100ft2/P2100ft2
V10	Pass	66.77	66.77	Multi Family Water Heating in Zone 12 for Prototype P6960ft2
V11	Pass	70.80	70.80	Source Energy in Zone 12 for Prototype P2100ft2
V12	Pass	218.87	218.87	E+A+A Base & Windows in Zone 12 for Prototype P1665ft2
V13	Pass	159.52	159.52	E+A+A Walls & HVAC in Zone 12 for Prototype P1665ft2
V14	Pass	60.36	60.36	Standard Design All Electric in All Zones for Prototype S2100ft2
V15	Pass	54.95	54.95	Standard Design All Electric in All Zones for Prototype S2700ft2
V16	Pass	67.90	67.90	Standard Design All Electric in All Zones for Prototype S6960ft2
V17	Pass	57.11	57.11	Proposed Design All Electric in All Zones for Prototype P2100ft2
V18	Pass	51.30	51.30	Proposed Design All Electric in All Zones for Prototype P2700ft2
V19	Pass	64.74	64.74	Proposed Design All Electric in All Zones for Prototype P6960ft2
V20	Pass	52.68	52.68	PV in Zone 12 for Prototype P2100ft2
V21	Pass	50.78	50.78	PV, Battery and Target EDR in Zone 12 for Prototype P2100ft2
V22	Pass	51.14	51.14	Verified and Buried Ducts in Zone 12 for Prototype P2100ft2

## Comparison between Reference & Candidate Software (kTDV/ft2 efficiency)

Comparison Date: 4/15/2021  
 Comparison Author: Ken Nittler  
 Candidate Software: CBECC-Res 2019\_2\_0\_Beta\_2067

Test	Run	Description	Pass/Fail	Reference Proposed	Candidate Proposed	Percent Difference	Within Tolerance	Standard Equals	Reference Standard	Candidate Standard	Percent Difference	Within Tolerance
V01	Standard Design in All Zones for Prototype S2100ft2							Standard = Proposed for this test				
V01	R01	Zone 01	Pass	61.55	61.55	0.00%	Yes	61.55	61.55	61.55	0.00%	Yes
V01	R02	Zone 02	Pass	43.76	43.76	0.00%	Yes	43.76	43.76	43.76	0.00%	Yes
V01	R03	Zone 03	Pass	36.24	36.24	0.00%	Yes	36.24	36.24	36.24	0.00%	Yes
V01	R04	Zone 04	Pass	35.43	35.43	0.00%	Yes	35.43	35.43	35.43	0.00%	Yes
V01	R05	Zone 05	Pass	34.57	34.57	0.00%	Yes	34.57	34.57	34.57	0.00%	Yes
V01	R06	Zone 06	Pass	26.90	26.90	0.00%	Yes	26.90	26.90	26.90	0.00%	Yes
V01	R07	Zone 07	Pass	18.73	18.73	0.00%	Yes	18.73	18.73	18.73	0.00%	Yes
V01	R08	Zone 08	Pass	28.55	28.55	0.00%	Yes	28.55	28.55	28.55	0.00%	Yes
V01	R09	Zone 09	Pass	42.39	42.39	0.00%	Yes	42.39	42.39	42.39	0.00%	Yes
V01	R10	Zone 10	Pass	45.59	45.59	0.00%	Yes	45.59	45.59	45.59	0.00%	Yes
V01	R11	Zone 11	Pass	73.08	73.08	0.00%	Yes	73.08	73.08	73.08	0.00%	Yes
V01	R12	Zone 12	Pass	57.53	57.53	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V01	R13	Zone 13	Pass	74.59	74.59	0.00%	Yes	74.59	74.59	74.59	0.00%	Yes
V01	R14	Zone 14	Pass	70.13	70.13	0.00%	Yes	70.13	70.13	70.13	0.00%	Yes
V01	R15	Zone 15	Pass	104.71	104.71	0.00%	Yes	104.71	104.71	104.71	0.00%	Yes
V01	R16	Zone 16	Pass	63.88	63.88	0.00%	Yes	63.88	63.88	63.88	0.00%	Yes
Result V01			Pass	51.10	51.10	0.00%		51.10	51.10	51.10	0.00%	Ave Min Max
V02	Standard Design in All Zones for Prototype S2700ft2							Standard = Proposed for this test				
V02	R01	Zone 01	Pass	47.89	47.89	0.00%	Yes	47.89	47.89	47.89	0.00%	Yes
V02	R02	Zone 02	Pass	39.64	39.64	0.00%	Yes	39.64	39.64	39.64	0.00%	Yes
V02	R03	Zone 03	Pass	29.45	29.45	0.00%	Yes	29.45	29.45	29.45	0.00%	Yes
V02	R04	Zone 04	Pass	35.17	35.17	0.00%	Yes	35.17	35.17	35.17	0.00%	Yes
V02	R05	Zone 05	Pass	27.28	27.28	0.00%	Yes	27.28	27.28	27.28	0.00%	Yes
V02	R06	Zone 06	Pass	25.24	25.24	0.00%	Yes	25.24	25.24	25.24	0.00%	Yes
V02	R07	Zone 07	Pass	16.87	16.87	0.00%	Yes	16.87	16.87	16.87	0.00%	Yes
V02	R08	Zone 08	Pass	28.99	28.99	0.00%	Yes	28.99	28.99	28.99	0.00%	Yes
V02	R09	Zone 09	Pass	42.70	42.70	0.00%	Yes	42.70	42.70	42.70	0.00%	Yes
V02	R10	Zone 10	Pass	43.82	43.82	0.00%	Yes	43.82	43.82	43.82	0.00%	Yes
V02	R11	Zone 11	Pass	70.80	70.80	0.00%	Yes	70.80	70.80	70.80	0.00%	Yes
V02	R12	Zone 12	Pass	55.30	55.30	0.00%	Yes	55.30	55.30	55.30	0.00%	Yes
V02	R13	Zone 13	Pass	71.95	71.95	0.00%	Yes	71.95	71.95	71.95	0.00%	Yes
V02	R14	Zone 14	Pass	67.80	67.80	0.00%	Yes	67.80	67.80	67.80	0.00%	Yes
V02	R15	Zone 15	Pass	98.44	98.44	0.00%	Yes	98.44	98.44	98.44	0.00%	Yes
V02	R16	Zone 16	Pass	58.37	58.37	0.00%	Yes	58.37	58.37	58.37	0.00%	Yes
Result V02			Pass	47.48	47.48	0.00%		47.48	47.48	47.48	0.00%	Ave Min Max

## Comparison between Reference & Candidate Software (kTDV/ft2 efficiency)

Comparison Date: 4/15/2021  
 Comparison Author: Ken Nittler  
 Candidate Software: CBECC-Res 2019\_2\_0\_Beta\_2067

Test	Run	Description	Pass/Fail	Reference Proposed	Candidate Proposed	Percent Difference	Within Tolerance	Standard Equals	Reference Standard	Candidate Standard	Percent Difference	Within Tolerance
V03	Standard Design in All Zones for Prototype S6960ft2							Standard = Proposed for this test				
V03	R01	Zone 01	Pass	45.03	45.03	0.00%	Yes	45.03	45.03	45.03	0.00%	Yes
V03	R02	Zone 02	Pass	47.78	47.78	0.00%	Yes	47.78	47.78	47.78	0.00%	Yes
V03	R03	Zone 03	Pass	34.57	34.57	0.00%	Yes	34.57	34.57	34.57	0.00%	Yes
V03	R04	Zone 04	Pass	48.08	48.08	0.00%	Yes	48.08	48.08	48.08	0.00%	Yes
V03	R05	Zone 05	Pass	33.88	33.88	0.00%	Yes	33.88	33.88	33.88	0.00%	Yes
V03	R06	Zone 06	Pass	37.53	37.53	0.00%	Yes	37.53	37.53	37.53	0.00%	Yes
V03	R07	Zone 07	Pass	33.89	33.89	0.00%	Yes	33.89	33.89	33.89	0.00%	Yes
V03	R08	Zone 08	Pass	49.61	49.61	0.00%	Yes	49.61	49.61	49.61	0.00%	Yes
V03	R09	Zone 09	Pass	59.48	59.48	0.00%	Yes	59.48	59.48	59.48	0.00%	Yes
V03	R10	Zone 10	Pass	60.87	60.87	0.00%	Yes	60.87	60.87	60.87	0.00%	Yes
V03	R11	Zone 11	Pass	82.46	82.46	0.00%	Yes	82.46	82.46	82.46	0.00%	Yes
V03	R12	Zone 12	Pass	67.86	67.86	0.00%	Yes	67.86	67.86	67.86	0.00%	Yes
V03	R13	Zone 13	Pass	85.20	85.20	0.00%	Yes	85.20	85.20	85.20	0.00%	Yes
V03	R14	Zone 14	Pass	78.36	78.36	0.00%	Yes	78.36	78.36	78.36	0.00%	Yes
V03	R15	Zone 15	Pass	119.01	119.01	0.00%	Yes	119.01	119.01	119.01	0.00%	Yes
V03	R16	Zone 16	Pass	62.94	62.94	0.00%	Yes	62.94	62.94	62.94	0.00%	Yes
Result V03			Pass	59.16	59.16	0.00%		59.16	59.16	59.16	0.00%	Ave
												Min Max
V04	Proposed Design in All Zones for Prototype P2100ft2							Standard = V01 Standard for this test				
V04	R01	Zone 01	Pass	60.40	60.40	0.00%	Yes	61.55	61.55	61.55	0.00%	Yes
V04	R02	Zone 02	Pass	41.75	41.75	0.00%	Yes	43.76	43.76	43.76	0.00%	Yes
V04	R03	Zone 03	Pass	34.38	34.38	0.00%	Yes	36.24	36.24	36.24	0.00%	Yes
V04	R04	Zone 04	Pass	33.80	33.80	0.00%	Yes	35.43	35.43	35.43	0.00%	Yes
V04	R05	Zone 05	Pass	32.61	32.61	0.00%	Yes	34.57	34.57	34.57	0.00%	Yes
V04	R06	Zone 06	Pass	24.88	24.88	0.00%	Yes	26.90	26.90	26.90	0.00%	Yes
V04	R07	Zone 07	Pass	17.83	17.83	0.00%	Yes	18.73	18.73	18.73	0.00%	Yes
V04	R08	Zone 08	Pass	25.79	25.79	0.00%	Yes	28.55	28.55	28.55	0.00%	Yes
V04	R09	Zone 09	Pass	38.56	38.56	0.00%	Yes	42.39	42.39	42.39	0.00%	Yes
V04	R10	Zone 10	Pass	41.65	41.65	0.00%	Yes	45.59	45.59	45.59	0.00%	Yes
V04	R11	Zone 11	Pass	67.20	67.20	0.00%	Yes	73.08	73.08	73.08	0.00%	Yes
V04	R12	Zone 12	Pass	52.68	52.68	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V04	R13	Zone 13	Pass	69.07	69.07	0.00%	Yes	74.59	74.59	74.59	0.00%	Yes
V04	R14	Zone 14	Pass	63.34	63.34	0.00%	Yes	70.13	70.13	70.13	0.00%	Yes
V04	R15	Zone 15	Pass	99.02	99.02	0.00%	Yes	104.71	104.71	104.71	0.00%	Yes
V04	R16	Zone 16	Pass	59.47	59.47	0.00%	Yes	63.88	63.88	63.88	0.00%	Yes
Result V04			Pass	47.65	47.65	0.00%		51.10	51.10	51.10	0.00%	Ave
												Min Max

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 Candidate Software: CBECC-Res 2019\_2\_0\_Beta\_2067

Test	Run	Description	Pass/Fail	Reference Proposed	Candidate Proposed	Percent Difference	Within Tolerance	Standard Equals	Reference Standard	Candidate Standard	Percent Difference	Within Tolerance
V05	Proposed Design in All Zones for Prototype P2700ft2							Standard = V02 Standard for this test				
V05	R01	Zone 01	Pass	46.65	46.65	0.00%	Yes	47.89	47.89	47.89	0.00%	Yes
V05	R02	Zone 02	Pass	36.01	36.01	0.00%	Yes	39.64	39.64	39.64	0.00%	Yes
V05	R03	Zone 03	Pass	27.67	27.67	0.00%	Yes	29.45	29.45	29.45	0.00%	Yes
V05	R04	Zone 04	Pass	32.11	32.11	0.00%	Yes	35.17	35.17	35.17	0.00%	Yes
V05	R05	Zone 05	Pass	25.37	25.37	0.00%	Yes	27.28	27.28	27.28	0.00%	Yes
V05	R06	Zone 06	Pass	23.28	23.28	0.00%	Yes	25.24	25.24	25.24	0.00%	Yes
V05	R07	Zone 07	Pass	15.96	15.96	0.00%	Yes	16.87	16.87	16.87	0.00%	Yes
V05	R08	Zone 08	Pass	26.38	26.38	0.00%	Yes	28.99	28.99	28.99	0.00%	Yes
V05	R09	Zone 09	Pass	38.58	38.58	0.00%	Yes	42.70	42.70	42.70	0.00%	Yes
V05	R10	Zone 10	Pass	39.74	39.74	0.00%	Yes	43.82	43.82	43.82	0.00%	Yes
V05	R11	Zone 11	Pass	64.76	64.76	0.00%	Yes	70.80	70.80	70.80	0.00%	Yes
V05	R12	Zone 12	Pass	50.50	50.50	0.00%	Yes	55.30	55.30	55.30	0.00%	Yes
V05	R13	Zone 13	Pass	65.87	65.87	0.00%	Yes	71.95	71.95	71.95	0.00%	Yes
V05	R14	Zone 14	Pass	60.73	60.73	0.00%	Yes	67.80	67.80	67.80	0.00%	Yes
V05	R15	Zone 15	Pass	91.84	91.84	0.00%	Yes	98.44	98.44	98.44	0.00%	Yes
V05	R16	Zone 16	Pass	53.44	53.44	0.00%	Yes	58.37	58.37	58.37	0.00%	Yes
Result V05			Pass	43.68	43.68	0.00%		47.48	47.48	47.48	0.00%	Ave
												Min Max
V06	Proposed Design in All Zones for Prototype P6960ft2							Standard = V03 Standard for this test				
V06	R01	Zone 01	Pass	45.54	45.54	0.00%	Yes	45.03	45.03	45.03	0.00%	Yes
V06	R02	Zone 02	Pass	45.78	45.78	0.00%	Yes	47.78	47.78	47.78	0.00%	Yes
V06	R03	Zone 03	Pass	33.46	33.46	0.00%	Yes	34.57	34.57	34.57	0.00%	Yes
V06	R04	Zone 04	Pass	44.15	44.15	0.00%	Yes	48.08	48.08	48.08	0.00%	Yes
V06	R05	Zone 05	Pass	32.89	32.89	0.00%	Yes	33.88	33.88	33.88	0.00%	Yes
V06	R06	Zone 06	Pass	35.34	35.34	0.00%	Yes	37.53	37.53	37.53	0.00%	Yes
V06	R07	Zone 07	Pass	31.66	31.66	0.00%	Yes	33.89	33.89	33.89	0.00%	Yes
V06	R08	Zone 08	Pass	47.16	47.16	0.00%	Yes	49.61	49.61	49.61	0.00%	Yes
V06	R09	Zone 09	Pass	55.09	55.09	0.00%	Yes	59.48	59.48	59.48	0.00%	Yes
V06	R10	Zone 10	Pass	56.75	56.75	0.00%	Yes	60.87	60.87	60.87	0.00%	Yes
V06	R11	Zone 11	Pass	77.08	77.08	0.00%	Yes	82.46	82.46	82.46	0.00%	Yes
V06	R12	Zone 12	Pass	63.23	63.23	0.00%	Yes	67.86	67.86	67.86	0.00%	Yes
V06	R13	Zone 13	Pass	79.44	79.44	0.00%	Yes	85.20	85.20	85.20	0.00%	Yes
V06	R14	Zone 14	Pass	73.08	73.08	0.00%	Yes	78.36	78.36	78.36	0.00%	Yes
V06	R15	Zone 15	Pass	111.64	111.64	0.00%	Yes	119.01	119.01	119.01	0.00%	Yes
V06	R16	Zone 16	Pass	60.03	60.03	0.00%	Yes	62.94	62.94	62.94	0.00%	Yes
Result V06			Pass	55.77	55.77	0.00%		59.16	59.16	59.16	0.00%	Ave
												Min Max

## Comparison between Reference & Candidate Software (kTDV/ft2 efficiency)

Comparison Date: 4/15/2021  
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Test	Run	Description	Pass/Fail	Reference Proposed	Candidate Proposed	Percent Difference	Within Tolerance	Standard Equals	Reference Standard	Candidate Standard	Percent Difference	Within Tolerance
V07	Common Measures in Zone 12 for Prototype P2100ft2							Standard = V01 Standard for this test				
V07	R01	Package	Pass	52.68	52.68	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V07	R02	Fenestration U 0.40/S 0.40	Pass	58.47	58.47	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V07	R03	Wall R13/Roof Deck Above R6	Pass	59.63	59.63	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V07	R04	Ceiling R49 /Roof Deck Below R0/Radiant Barrier	Pass	61.31	61.31	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V07	R05	Furnace AFUE 92	Pass	49.99	49.99	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V07	R06	Air Conditioner SEER 16/EER 14	Pass	50.42	50.42	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V07	R07	No Cool Vent	Pass	54.90	54.90	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V07	R08	Ducts 2% Leakage	Pass	51.90	51.90	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V07	R09	No Quality Insulation Installation	Pass	57.79	57.79	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V07	R10	Air Leakage ACH50 2.0	Pass	51.74	51.74	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
Result V07			Pass	54.88	54.88	0.00%		57.53	57.53	57.53	0.00%	Min Ave Max
V08	Water Heating in Zone 12 for Prototype P2100ft2							Standard = V01 Standard for this test				
V08	R01	Package	Pass	52.68	52.68	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V08	R02	Parallel Piping	Pass	52.86	52.86	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V08	R03	Gas Consumer Instantaneous (UEF)/UEF 0.96/0 gal	Pass	51.04	51.04	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V08	R04	Gas Consumer Storage (UEF)/UEF 0.61/50 gal	Pass	57.28	57.28	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V08	R05	Gas Commercial Instantaneous (TE)/TE 0.95/0 gal	Pass	49.91	49.91	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V08	R06	Gas Commercial Storage (TE & SBL)/TE 0.82/SBL 0.02/98 gal	Pass	60.04	60.04	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V08	R07	Electric Resistance Consumer Storage (UEF)/UEF 0.92/50 gal	Pass	76.49	76.49	0.00%	Yes	60.87	60.87	60.87	0.00%	Yes
V08	R08	Heat Pump NEEA Rated/Sanden/43 gal	Pass	52.62	52.62	0.00%	Yes	60.87	60.87	60.87	0.00%	Yes
V08	R09	2 Water Heaters using Multiplier	Pass	55.52	55.52	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V08	R10	2 Water Heaters Using 2 entries	Pass	55.52	55.52	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
Result V08			Pass	56.40	56.40	0.00%		58.20	58.20	58.20	0.00%	Min Ave Max
V09	Multiple Orientation in Zone 12 for Prototype S2100ft2/P2100ft2							Standard = V01 Standard for this test				
V09	R01	Single Standard Front 45	Pass	59.23	59.23	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V09	R02	North Standard	Pass	57.53	57.53	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V09	R03	East Standard	Pass	57.53	57.53	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V09	R04	South Standard	Pass	57.53	57.53	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V09	R05	West Standard	Pass	57.53	57.53	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V09	R06	Single Proposed Front 45	Pass	58.88	58.88	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V09	R07	North Proposed	Pass	52.68	52.68	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V09	R08	East Proposed	Pass	61.47	61.47	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V09	R09	South Proposed	Pass	54.17	54.17	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V09	R10	West Proposed	Pass	58.92	58.92	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
Result V09			Pass	57.55	57.55	0.00%		57.53	57.53	57.53	0.00%	Min Ave Max

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Test	Run	Description	Pass/Fail	Reference Proposed	Candidate Proposed	Percent Difference	Within Tolerance	Standard Equals	Reference Standard	Candidate Standard	Percent Difference	Within Tolerance
V10	Multi Family Water Heating in Zone 12 for Prototype P6960ft2											
V10	R01	Package Gas Consumer Instantaneous (UEF)/UEF 0.81/0 gal	Pass	58.88	58.88	0.00%	Yes	67.86	67.86	67.86	0.00%	Yes
V10	R02	8 Gas Consumer Storage (UEF)/UEF 0.61/50 gal	Pass	76.24	76.24	0.00%	Yes	67.86	67.86	67.86	0.00%	Yes
V10	R03	8 Gas Commercial Storage (TE & SBL)/TE 0.80/SBL 0.02/100 gal	Pass	77.25	77.25	0.00%	Yes	67.86	67.86	67.86	0.00%	Yes
V10	R04	2 Gas Commercial Central Solar	Pass	61.48	61.48	0.00%	Yes	69.65	69.65	69.65	0.00%	Yes
V10	R05	2 Gas Commercial Central Solar Recirc	Pass	68.31	68.31	0.00%	Yes	71.16	71.16	71.16	0.00%	Yes
V10	R06	2 Gas Commercial Central Solar Recirc	Pass	73.39	73.39	0.00%	Yes	71.16	71.16	71.16	0.00%	Yes
V10	R07	2 Gas Consumer Instantaneous Central Solar	Pass	59.18	59.18	0.00%	Yes	67.39	67.39	67.39	0.00%	Yes
V10	R08	2 Gas Consumer Instantaneous Central Solar Recirc	Pass	65.41	65.41	0.00%	Yes	71.16	71.16	71.16	0.00%	Yes
V10	R09	1 Indirect/TE 0.80/300 gal Central Solar	Pass	60.06	60.06	0.00%	Yes	68.16	68.16	68.16	0.00%	Yes
V10	R10	1 Indirect/TE 0.80/300 gal Central Solar Recirc	Pass	67.54	67.54	0.00%	Yes	71.16	71.16	71.16	0.00%	Yes
Result V10			Pass	66.77	66.77	0.00%		69.34	69.34	69.34	0.00%	Min Ave Max
V11	Source Energy in Zone 12 for Prototype P2100ft2											
V11	R01	Package	Pass	52.68	52.68	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V11	R02	Package No Natural Gas	Pass	90.31	90.31	0.00%	Yes	96.36	96.36	96.36	0.00%	Yes
V11	R03	Electric DHW	Pass	80.87	80.87	0.00%	Yes	60.87	60.87	60.87	0.00%	Yes
V11	R04	Electric DHW no Natural Gas	Pass	104.95	104.95	0.00%	Yes	86.34	86.34	86.34	0.00%	Yes
V11	R05	Heatpump DHW	Pass	55.87	55.87	0.00%	Yes	60.87	60.87	60.87	0.00%	Yes
V11	R06	Heatpump DHW no Natural Gas	Pass	80.15	80.15	0.00%	Yes	86.34	86.34	86.34	0.00%	Yes
V11	R07	Heatpump HVAC	Pass	55.81	55.81	0.00%	Yes	60.62	60.62	60.62	0.00%	Yes
V11	R08	Heatpump HVAC no Natural Gas	Pass	69.36	69.36	0.00%	Yes	74.17	74.17	74.17	0.00%	Yes
V11	R09	Heatpump HVAC & DHW	Pass	58.99	58.99	0.00%	Yes	63.96	63.96	63.96	0.00%	Yes
V11	R10	Heatpump HVAC & DHW no Natural Gas	Pass	58.99	58.99	0.00%	Yes	63.96	63.96	63.96	0.00%	Yes
Result V11			Pass	70.80	70.80	0.00%		71.10	71.10	71.10	0.00%	Min Ave Max
V12	E+A+A Base & Windows in Zone 12 for Prototype P1665ft2											
V12	R01	E 1440ft2 as New Construction	Pass	282.88	282.88	0.00%	Yes	61.27	61.27	61.27	0.00%	Yes
V12	R02	E 1440ft2 as Addition/Alteration	Pass	279.21	279.21	0.00%	Yes	279.21	279.21	279.21	0.00%	Yes
V12	R03	EA 1665ft2	Pass	249.46	249.46	0.00%	Yes	243.42	243.42	243.42	0.00%	Yes
V12	R04	EAA Ceiling R38 Verified	Pass	223.59	223.59	0.00%	Yes	243.42	243.42	243.42	0.00%	Yes
V12	R05	EAA Ceiling R38 Verified Wind U0.41/S0.36	Pass	193.31	193.31	0.00%	Yes	212.51	212.51	212.51	0.00%	Yes
V12	R06	EAA Ceiling R38 Verified Wind U0.41/S0.36 Verified	Pass	193.31	193.31	0.00%	Yes	212.51	212.51	212.51	0.00%	Yes
V12	R07	EAA Ceiling R38 Verified Wind U0.40/S0.35	Pass	192.28	192.28	0.00%	Yes	212.51	212.51	212.51	0.00%	Yes
V12	R08	EAA Ceiling R38 Verified Wind U0.40/S0.35 Verified	Pass	192.28	192.28	0.00%	Yes	243.42	243.42	243.42	0.00%	Yes
V12	R09	EAA Ceiling R38 Verified Wind U0.39/S0.34	Pass	191.19	191.19	0.00%	Yes	212.51	212.51	212.51	0.00%	Yes
V12	R10	EAA Ceiling R38 Verified Wind U0.39/S0.34 Verified	Pass	191.19	191.19	0.00%	Yes	243.42	243.42	243.42	0.00%	Yes
Result V12			Pass	218.87	218.87	0.00%		216.42	216.42	216.42	0.00%	Min Ave Max

## Comparison between Reference & Candidate Software (kTDV/ft2 efficiency)

Comparison Date: 4/15/2021

Comparison Author: Ken Nittler

Candidate Software: CBECC-Res 2019\_2\_0\_Beta\_2067

Test	Run	Description	Pass/Fail	Reference Proposed	Candidate Proposed	Percent Difference	Within Tolerance	Standard Equals	Reference Standard	Candidate Standard	Percent Difference	Within Tolerance
V13	E+A+A Walls & HVAC in Zone 12 for Prototype P1665ft2							Standard = Varies for this test				
V13	R01	EAA Ceiling R38 Verified Wall R11	Pass	182.14	182.14	0.00%	Yes	202.58	202.58	202.58	0.00%	Yes
V13	R02	EAA Ceiling R38 Verified Wall R11 Verified	Pass	182.14	182.14	0.00%	Yes	202.58	202.58	202.58	0.00%	Yes
V13	R03	EAA Ceiling R38 Verified Wall R13	Pass	180.51	180.51	0.00%	Yes	202.58	202.58	202.58	0.00%	Yes
V13	R04	EAA Ceiling R38 Verified Wall R13 Verified	Pass	180.51	180.51	0.00%	Yes	243.42	243.42	243.42	0.00%	Yes
V13	R05	EAA Ceiling R38 Verified HVAC Worse	Pass	173.32	173.32	0.00%	Yes	150.52	150.52	150.52	0.00%	Yes
V13	R06	EAA Ceiling R38 Verified HVAC Worse Verified	Pass	173.32	173.32	0.00%	Yes	155.24	155.24	155.24	0.00%	Yes
V13	R07	EAA Ceiling R38 Verified HVAC Equal	Pass	139.67	139.67	0.00%	Yes	150.52	150.52	150.52	0.00%	Yes
V13	R08	EAA Ceiling R38 Verified HVAC Equal Verified	Pass	139.67	139.67	0.00%	Yes	243.42	243.42	243.42	0.00%	Yes
V13	R09	EAA Ceiling R38 Verified HVAC Better	Pass	121.96	121.96	0.00%	Yes	150.52	150.52	150.52	0.00%	Yes
V13	R10	EAA Ceiling R38 Verified HVAC Better Verified	Pass	121.96	121.96	0.00%	Yes	243.42	243.42	243.42	0.00%	Yes
Result V13			Pass	159.52	159.52	0.00%		194.48	194.48	194.48	0.00%	Min Ave Max

## Comparison between Reference & Candidate Software (kTDV/ft2 efficiency)

Comparison Date: 4/15/2021  
 Comparison Author: Ken Nittler  
 Candidate Software: CBECC-Res 2019\_2\_0\_Beta\_2067

Test	Run	Description	Pass/Fail	Reference Proposed	Candidate Proposed	Percent Difference	Within Tolerance	Standard Equals	Reference Standard	Candidate Standard	Percent Difference	Within Tolerance
V14	Standard Design All Electric in All Zones for Prototype S2100ft2							Standard = Proposed for this test				
V14	R01	Zone 01	Pass	87.48	87.48	0.00%	Yes	87.48	87.48	87.48	0.00%	Yes
V14	R02	Zone 02	Pass	52.36	52.36	0.00%	Yes	52.36	52.36	52.36	0.00%	Yes
V14	R03	Zone 03	Pass	46.91	46.91	0.00%	Yes	46.91	46.91	46.91	0.00%	Yes
V14	R04	Zone 04	Pass	45.10	45.10	0.00%	Yes	45.10	45.10	45.10	0.00%	Yes
V14	R05	Zone 05	Pass	47.64	47.64	0.00%	Yes	47.64	47.64	47.64	0.00%	Yes
V14	R06	Zone 06	Pass	29.57	29.57	0.00%	Yes	29.57	29.57	29.57	0.00%	Yes
V14	R07	Zone 07	Pass	20.46	20.46	0.00%	Yes	20.46	20.46	20.46	0.00%	Yes
V14	R08	Zone 08	Pass	29.68	29.68	0.00%	Yes	29.68	29.68	29.68	0.00%	Yes
V14	R09	Zone 09	Pass	44.02	44.02	0.00%	Yes	44.02	44.02	44.02	0.00%	Yes
V14	R10	Zone 10	Pass	47.93	47.93	0.00%	Yes	47.93	47.93	47.93	0.00%	Yes
V14	R11	Zone 11	Pass	82.06	82.06	0.00%	Yes	82.06	82.06	82.06	0.00%	Yes
V14	R12	Zone 12	Pass	63.82	63.82	0.00%	Yes	63.82	63.82	63.82	0.00%	Yes
V14	R13	Zone 13	Pass	81.60	81.60	0.00%	Yes	81.60	81.60	81.60	0.00%	Yes
V14	R14	Zone 14	Pass	79.33	79.33	0.00%	Yes	79.33	79.33	79.33	0.00%	Yes
V14	R15	Zone 15	Pass	108.43	108.43	0.00%	Yes	108.43	108.43	108.43	0.00%	Yes
V14	R16	Zone 16	Pass	99.29	99.29	0.00%	Yes	99.29	99.29	99.29	0.00%	Yes
Result V14			Pass	60.36	60.36	0.00%		60.36	60.36	60.36	0.00%	Min Ave Max
V15	Standard Design All Electric in All Zones for Prototype S2700ft2							Standard = Proposed for this test				
V15	R01	Zone 01	Pass	66.66	66.66	0.00%	Yes	66.66	66.66	66.66	0.00%	Yes
V15	R02	Zone 02	Pass	46.79	46.79	0.00%	Yes	46.79	46.79	46.79	0.00%	Yes
V15	R03	Zone 03	Pass	37.38	37.38	0.00%	Yes	37.38	37.38	37.38	0.00%	Yes
V15	R04	Zone 04	Pass	41.88	41.88	0.00%	Yes	41.88	41.88	41.88	0.00%	Yes
V15	R05	Zone 05	Pass	37.42	37.42	0.00%	Yes	37.42	37.42	37.42	0.00%	Yes
V15	R06	Zone 06	Pass	27.75	27.75	0.00%	Yes	27.75	27.75	27.75	0.00%	Yes
V15	R07	Zone 07	Pass	18.61	18.61	0.00%	Yes	18.61	18.61	18.61	0.00%	Yes
V15	R08	Zone 08	Pass	30.08	30.08	0.00%	Yes	30.08	30.08	30.08	0.00%	Yes
V15	R09	Zone 09	Pass	44.34	44.34	0.00%	Yes	44.34	44.34	44.34	0.00%	Yes
V15	R10	Zone 10	Pass	46.01	46.01	0.00%	Yes	46.01	46.01	46.01	0.00%	Yes
V15	R11	Zone 11	Pass	78.08	78.08	0.00%	Yes	78.08	78.08	78.08	0.00%	Yes
V15	R12	Zone 12	Pass	60.52	60.52	0.00%	Yes	60.52	60.52	60.52	0.00%	Yes
V15	R13	Zone 13	Pass	78.23	78.23	0.00%	Yes	78.23	78.23	78.23	0.00%	Yes
V15	R14	Zone 14	Pass	76.01	76.01	0.00%	Yes	76.01	76.01	76.01	0.00%	Yes
V15	R15	Zone 15	Pass	101.79	101.79	0.00%	Yes	101.79	101.79	101.79	0.00%	Yes
V15	R16	Zone 16	Pass	87.65	87.65	0.00%	Yes	87.65	87.65	87.65	0.00%	Yes
Result V15			Pass	54.95	54.95	0.00%		54.95	54.95	54.95	0.00%	Min Ave Max



Comparison Date: 4/15/2021  
Comparison Author: Ken Nittler  
Candidate Software: CBECC-Res 2019\_2\_0\_Beta\_2067

Test	Run	Description	Pass/Fail	Reference Proposed	Candidate Proposed	Percent Difference	Within Tolerance	Standard Equals	Reference Standard	Candidate Standard	Percent Difference	Within Tolerance	
V16	Standard Design All Electric in All Zones for Prototype S6960ft2							Standard = Proposed for this test					
V16	R01	Zone 01	Pass	70.58	70.58	0.00%	Yes	70.58	70.58	70.58	0.00%	Yes	
V16	R02	Zone 02	Pass	60.88	60.88	0.00%	Yes	60.88	60.88	60.88	0.00%	Yes	
V16	R03	Zone 03	Pass	46.88	46.88	0.00%	Yes	46.88	46.88	46.88	0.00%	Yes	
V16	R04	Zone 04	Pass	55.20	55.20	0.00%	Yes	55.20	55.20	55.20	0.00%	Yes	
V16	R05	Zone 05	Pass	50.25	50.25	0.00%	Yes	50.25	50.25	50.25	0.00%	Yes	
V16	R06	Zone 06	Pass	39.43	39.43	0.00%	Yes	39.43	39.43	39.43	0.00%	Yes	
V16	R07	Zone 07	Pass	34.35	34.35	0.00%	Yes	34.35	34.35	34.35	0.00%	Yes	
V16	R08	Zone 08	Pass	47.89	47.89	0.00%	Yes	47.89	47.89	47.89	0.00%	Yes	
V16	R09	Zone 09	Pass	60.23	60.23	0.00%	Yes	60.23	60.23	60.23	0.00%	Yes	
V16	R10	Zone 10	Pass	61.75	61.75	0.00%	Yes	61.75	61.75	61.75	0.00%	Yes	
V16	R11	Zone 11	Pass	95.53	95.53	0.00%	Yes	95.53	95.53	95.53	0.00%	Yes	
V16	R12	Zone 12	Pass	75.02	75.02	0.00%	Yes	75.02	75.02	75.02	0.00%	Yes	
V16	R13	Zone 13	Pass	94.78	94.78	0.00%	Yes	94.78	94.78	94.78	0.00%	Yes	
V16	R14	Zone 14	Pass	88.76	88.76	0.00%	Yes	88.76	88.76	88.76	0.00%	Yes	
V16	R15	Zone 15	Pass	119.03	119.03	0.00%	Yes	119.03	119.03	119.03	0.00%	Yes	
V16	R16	Zone 16	Pass	85.81	85.81	0.00%	Yes	85.81	85.81	85.81	0.00%	Yes	
Result V16				Pass	67.90	67.90	0.00%	67.90	67.90	67.90	0.00%	Min Ave Max	
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V17	Proposed Design All Electric in All Zones for Prototype P2100ft2							Standard = V14 Standard for this test					
V17	R01	Zone 01	Pass	85.39	85.39	0.00%	Yes	87.48	87.48	87.48	0.00%	Yes	
V17	R02	Zone 02	Pass	51.52	51.52	0.00%	Yes	52.36	52.36	52.36	0.00%	Yes	
V17	R03	Zone 03	Pass	44.91	44.91	0.00%	Yes	46.91	46.91	46.91	0.00%	Yes	
V17	R04	Zone 04	Pass	42.76	42.76	0.00%	Yes	45.10	45.10	45.10	0.00%	Yes	
V17	R05	Zone 05	Pass	45.46	45.46	0.00%	Yes	47.64	47.64	47.64	0.00%	Yes	
V17	R06	Zone 06	Pass	28.10	28.10	0.00%	Yes	29.57	29.57	29.57	0.00%	Yes	
V17	R07	Zone 07	Pass	19.96	19.96	0.00%	Yes	20.46	20.46	20.46	0.00%	Yes	
V17	R08	Zone 08	Pass	26.97	26.97	0.00%	Yes	29.68	29.68	29.68	0.00%	Yes	
V17	R09	Zone 09	Pass	40.38	40.38	0.00%	Yes	44.02	44.02	44.02	0.00%	Yes	
V17	R10	Zone 10	Pass	43.94	43.94	0.00%	Yes	47.93	47.93	47.93	0.00%	Yes	
V17	R11	Zone 11	Pass	77.22	77.22	0.00%	Yes	82.06	82.06	82.06	0.00%	Yes	
V17	R12	Zone 12	Pass	58.88	58.88	0.00%	Yes	63.82	63.82	63.82	0.00%	Yes	
V17	R13	Zone 13	Pass	76.34	76.34	0.00%	Yes	81.60	81.60	81.60	0.00%	Yes	
V17	R14	Zone 14	Pass	73.34	73.34	0.00%	Yes	79.33	79.33	79.33	0.00%	Yes	
V17	R15	Zone 15	Pass	102.96	102.96	0.00%	Yes	108.43	108.43	108.43	0.00%	Yes	
V17	R16	Zone 16	Pass	95.58	95.58	0.00%	Yes	99.29	99.29	99.29	0.00%	Yes	
Result V17				Pass	57.11	57.11	0.00%	60.36	60.36	60.36	0.00%	Min Ave Max	
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## Comparison between Reference & Candidate Software (kTDV/ft2 efficiency)

Comparison Date: 4/15/2021  
 Comparison Author: Ken Nittler  
 Candidate Software: CBECC-Res 2019\_2\_0\_Beta\_2067

Test	Run	Description	Pass/Fail	Reference Proposed	Candidate Proposed	Percent Difference	Within Tolerance	Standard Equals	Reference Standard	Candidate Standard	Percent Difference	Within Tolerance	
V18	Proposed Design All Electric in All Zones for Prototype P2700ft2							Standard = V15 Standard for this test					
V18	R01	Zone 01	Pass	64.66	64.66	0.00%	Yes	66.66	66.66	66.66	0.00%	Yes	
V18	R02	Zone 02	Pass	43.83	43.83	0.00%	Yes	46.79	46.79	46.79	0.00%	Yes	
V18	R03	Zone 03	Pass	35.47	35.47	0.00%	Yes	37.38	37.38	37.38	0.00%	Yes	
V18	R04	Zone 04	Pass	40.06	40.06	0.00%	Yes	41.88	41.88	41.88	0.00%	Yes	
V18	R05	Zone 05	Pass	35.08	35.08	0.00%	Yes	37.42	37.42	37.42	0.00%	Yes	
V18	R06	Zone 06	Pass	26.06	26.06	0.00%	Yes	27.75	27.75	27.75	0.00%	Yes	
V18	R07	Zone 07	Pass	17.89	17.89	0.00%	Yes	18.61	18.61	18.61	0.00%	Yes	
V18	R08	Zone 08	Pass	27.37	27.37	0.00%	Yes	30.08	30.08	30.08	0.00%	Yes	
V18	R09	Zone 09	Pass	40.26	40.26	0.00%	Yes	44.34	44.34	44.34	0.00%	Yes	
V18	R10	Zone 10	Pass	42.19	42.19	0.00%	Yes	46.01	46.01	46.01	0.00%	Yes	
V18	R11	Zone 11	Pass	72.15	72.15	0.00%	Yes	78.08	78.08	78.08	0.00%	Yes	
V18	R12	Zone 12	Pass	55.83	55.83	0.00%	Yes	60.52	60.52	60.52	0.00%	Yes	
V18	R13	Zone 13	Pass	72.08	72.08	0.00%	Yes	78.23	78.23	78.23	0.00%	Yes	
V18	R14	Zone 14	Pass	69.40	69.40	0.00%	Yes	76.01	76.01	76.01	0.00%	Yes	
V18	R15	Zone 15	Pass	95.27	95.27	0.00%	Yes	101.79	101.79	101.79	0.00%	Yes	
V18	R16	Zone 16	Pass	83.23	83.23	0.00%	Yes	87.65	87.65	87.65	0.00%	Yes	
Result V18			Pass	51.30	51.30	0.00%		54.95	54.95	54.95	0.00%	Min Ave Max	
V19	Proposed Design All Electric in All Zones for Prototype P6960ft2							Standard = V16 Standard for this test					
V19	R01	Zone 01	Pass	71.05	71.05	0.00%	Yes	70.58	70.58	70.58	0.00%	Yes	
V19	R02	Zone 02	Pass	59.26	59.26	0.00%	Yes	60.88	60.88	60.88	0.00%	Yes	
V19	R03	Zone 03	Pass	45.71	45.71	0.00%	Yes	46.88	46.88	46.88	0.00%	Yes	
V19	R04	Zone 04	Pass	52.29	52.29	0.00%	Yes	55.20	55.20	55.20	0.00%	Yes	
V19	R05	Zone 05	Pass	49.25	49.25	0.00%	Yes	50.25	50.25	50.25	0.00%	Yes	
V19	R06	Zone 06	Pass	38.05	38.05	0.00%	Yes	39.43	39.43	39.43	0.00%	Yes	
V19	R07	Zone 07	Pass	33.15	33.15	0.00%	Yes	34.35	34.35	34.35	0.00%	Yes	
V19	R08	Zone 08	Pass	45.07	45.07	0.00%	Yes	47.89	47.89	47.89	0.00%	Yes	
V19	R09	Zone 09	Pass	56.46	56.46	0.00%	Yes	60.23	60.23	60.23	0.00%	Yes	
V19	R10	Zone 10	Pass	58.28	58.28	0.00%	Yes	61.75	61.75	61.75	0.00%	Yes	
V19	R11	Zone 11	Pass	89.52	89.52	0.00%	Yes	95.53	95.53	95.53	0.00%	Yes	
V19	R12	Zone 12	Pass	69.50	69.50	0.00%	Yes	75.02	75.02	75.02	0.00%	Yes	
V19	R13	Zone 13	Pass	89.37	89.37	0.00%	Yes	94.78	94.78	94.78	0.00%	Yes	
V19	R14	Zone 14	Pass	83.16	83.16	0.00%	Yes	88.76	88.76	88.76	0.00%	Yes	
V19	R15	Zone 15	Pass	111.91	111.91	0.00%	Yes	119.03	119.03	119.03	0.00%	Yes	
V19	R16	Zone 16	Pass	83.77	83.77	0.00%	Yes	85.81	85.81	85.81	0.00%	Yes	
Result V19			Pass	64.74	64.74	0.00%		67.90	67.90	67.90	0.00%	Min Ave Max	

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## Comparison between Reference & Candidate Software (kTDV/ft2 efficiency)

Comparison Date: 4/15/2021  
 Comparison Author: Ken Nittler  
 Candidate Software: CBECC-Res 2019\_2\_0\_Beta\_2067

Test	Run	Description	Pass/Fail	Reference Proposed	Candidate Proposed	Percent Difference	Within Tolerance	Standard Equals	Reference Standard	Candidate Standard	Percent Difference	Within Tolerance
Standard = V04R12												
V20	PV in Zone 12 for Prototype P2100ft2											
V20	R01	Package	Pass	52.68	52.68	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V20	R02	Maximum PV	Pass	52.68	52.68	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V20	R03	2 kWdc PV	Pass	52.68	52.68	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V20	R04	Premium Module	Pass	52.68	52.68	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V20	R05	Tracking (one axis) Array	Pass	52.68	52.68	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V20	R06	Tracking (two axis) Array	Pass	52.68	52.68	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V20	R07	Microinverters	Pass	52.68	52.68	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V20	R08	DC Power Optimizers	Pass	52.68	52.68	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V20	R09	Maximum PV Premium Fixed Microinverter	Pass	52.68	52.68	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V20	R10	Maximum PV Premium Tracking DC Power Optimizers	Pass	52.68	52.68	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
Result V20			Pass	52.68	52.68	0.00%		57.53	57.53	57.53	0.00%	Min Ave Max
Standard = V04R12												
V21	PV, Battery and Target EDR in Zone 12 for Prototype P2100ft2											
V21	R01	Package	Pass	52.68	52.68	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V21	R02	Two 1 kWdc PV	Pass	52.68	52.68	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V21	R03	Two 1 kWdc PV 90/270 Azm/18.43 Tilt/97 Eff	Pass	52.68	52.68	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V21	R04	Reduced PV 0 kWdc < 80 ft2 area	Pass	52.68	52.68	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V21	R05	14 kWh Battery Basic	Pass	52.68	52.68	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V21	R06	14 kWh Battery TOU	Pass	52.68	52.68	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V21	R07	14 kWh Battery Advanced	Pass	52.68	52.68	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V21	R08	Self Utilization Credit	Pass	44.63	44.63	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V21	R09	Self Utilization Credit Allow Excess PV	Pass	49.80	49.80	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V21	R10	Self Utilization Credit Allow Excess PV Target EDR 0	Pass	44.63	44.63	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
Result V21			Pass	50.78	50.78	0.00%		57.53	57.53	57.53	0.00%	Min Ave Max
Standard = V04R12												
V22	Verified and Buried Ducts in Zone 12 for Prototype P2100ft2											
V22	R01	Package	Pass	52.68	52.68	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V22	R02	Verified equal to default ducts	Pass	52.68	52.68	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V22	R03	Buried R-60	Pass	51.13	51.13	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V22	R04	Buried R-60/Ducts Half Length	Pass	49.78	49.78	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V22	R05	Buried R-60/Ducts R-6	Pass	51.13	51.13	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V22	R06	Buried R-60/Duct Diameters 8, 4, 7, 6	Pass	49.33	49.33	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V22	R07	Buried R-60/Duct Diameters 8, 4, 7, 6/Attic R-49, R-43, R-40, R-38	Pass	49.39	49.39	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V22	R08	Buried R-60/Duct Diameters 8, 4, 7, 6/Attic Cellulose	Pass	49.32	49.32	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V22	R09	Buried R-60/Ducts Half Length/Ceiling R-60	Pass	48.96	48.96	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
V22	R10	Buried R-60/Ducts Half Length/Ceiling R-60/No below Deck Ins	Pass	57.00	57.00	0.00%	Yes	57.53	57.53	57.53	0.00%	Yes
Result V22			Pass	51.14	51.14	0.00%		57.53	57.53	57.53	0.00%	Min Ave Max

## Summary of Residential ACM Tests (EDR total)

Comparison Date: 4/15/2021  
 Comparison Author: Ken Nittler  
 Candidate Software: CBECC-Res 2019\_2\_0\_Beta\_2067  
 Reference Software: CBECC-Res 2019\_1\_3\_1934  
 Type of Software: Reference  
 Single Family: Yes  
 Multi Family: Yes  
 Newly Constructed: Yes  
 Additions Alterations: Yes  
 Units for Summary: **EDR total**  
 Tolerance: 0.04

Test	Pass/ Fail	Average Reference EDR total	Average Candidate EDR total	Description
V01	Pass	25.25	25.25	Standard Design in All Zones for Prototype S2100ft2
V02	Pass	23.89	23.89	Standard Design in All Zones for Prototype S2700ft2
V03	Pass	27.31	27.31	Standard Design in All Zones for Prototype S6960ft2
V04	Pass	23.70	23.70	Proposed Design in All Zones for Prototype P2100ft2
V05	Pass	22.14	22.14	Proposed Design in All Zones for Prototype P2700ft2
V06	Pass	26.04	26.04	Proposed Design in All Zones for Prototype P6960ft2
V07	Pass	25.01	25.01	Common Measures in Zone 12 for Prototype P2100ft2
V08	Pass	25.65	25.65	Water Heating in Zone 12 for Prototype P2100ft2
V09	Pass	26.11	26.11	Multiple Orientation in Zone 12 for Prototype S2100ft2/P2100ft2
V10	Pass	25.86	25.86	Multi Family Water Heating in Zone 12 for Prototype P6960ft2
V11	Pass	28.78	28.78	Source Energy in Zone 12 for Prototype P2100ft2
V12	Pass	n/a	n/a	E+A+A Base & Windows in Zone 12 for Prototype P1665ft2
V13	Pass	n/a	n/a	E+A+A Walls & HVAC in Zone 12 for Prototype P1665ft2
V14	Pass	33.13	33.13	Standard Design All Electric in All Zones for Prototype S2100ft2
V15	Pass	30.38	30.38	Standard Design All Electric in All Zones for Prototype S2700ft2
V16	Pass	35.22	35.22	Standard Design All Electric in All Zones for Prototype S6960ft2
V17	Pass	31.73	31.73	Proposed Design All Electric in All Zones for Prototype P2100ft2
V18	Pass	28.73	28.73	Proposed Design All Electric in All Zones for Prototype P2700ft2
V19	Pass	34.11	34.11	Proposed Design All Electric in All Zones for Prototype P6960ft2
V20	Pass	22.87	22.87	PV in Zone 12 for Prototype P2100ft2
V21	Pass	17.30	17.30	PV, Battery and Target EDR in Zone 12 for Prototype P2100ft2
V22	Pass	23.44	23.44	Verified and Buried Ducts in Zone 12 for Prototype P2100ft2

## Comparison between Reference & Candidate Software (EDR total)

Comparison Date: 4/15/2021  
 Comparison Author: Ken Nittler  
 Candidate Software: CBECC-Res 2019\_2\_0\_Beta\_2067

Test	Run	Description	Pass/Fail	Reference Proposed	Candidate Proposed	Percent Difference	Within Tolerance	Standard Equals	Reference Standard	Candidate Standard	Percent Difference	Within Tolerance
V01	Standard Design in All Zones for Prototype S2100ft2											
V01	R01	Zone 01	Pass	34.70	34.70	0.00%	Yes	34.70	34.70	34.70	0.00%	Yes
V01	R02	Zone 02	Pass	25.80	25.80	0.00%	Yes	25.80	25.80	25.80	0.00%	Yes
V01	R03	Zone 03	Pass	25.10	25.10	0.00%	Yes	25.10	25.10	25.10	0.00%	Yes
V01	R04	Zone 04	Pass	22.90	22.90	0.00%	Yes	22.90	22.90	22.90	0.00%	Yes
V01	R05	Zone 05	Pass	23.50	23.50	0.00%	Yes	23.50	23.50	23.50	0.00%	Yes
V01	R06	Zone 06	Pass	23.50	23.50	0.00%	Yes	23.50	23.50	23.50	0.00%	Yes
V01	R07	Zone 07	Pass	20.60	20.60	0.00%	Yes	20.60	20.60	20.60	0.00%	Yes
V01	R08	Zone 08	Pass	20.70	20.70	0.00%	Yes	20.70	20.70	20.70	0.00%	Yes
V01	R09	Zone 09	Pass	24.30	24.30	0.00%	Yes	24.30	24.30	24.30	0.00%	Yes
V01	R10	Zone 10	Pass	25.20	25.20	0.00%	Yes	25.20	25.20	25.20	0.00%	Yes
V01	R11	Zone 11	Pass	24.80	24.80	0.00%	Yes	24.80	24.80	24.80	0.00%	Yes
V01	R12	Zone 12	Pass	26.10	26.10	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V01	R13	Zone 13	Pass	26.30	26.30	0.00%	Yes	26.30	26.30	26.30	0.00%	Yes
V01	R14	Zone 14	Pass	25.90	25.90	0.00%	Yes	25.90	25.90	25.90	0.00%	Yes
V01	R15	Zone 15	Pass	23.30	23.30	0.00%	Yes	23.30	23.30	23.30	0.00%	Yes
V01	R16	Zone 16	Pass	31.30	31.30	0.00%	Yes	31.30	31.30	31.30	0.00%	Yes
Result V01			Pass	25.25	25.25	0.00%		25.25	25.25	25.25	0.00%	Min Ave Max
V02	Standard Design in All Zones for Prototype S2700ft2											
V02	R01	Zone 01	Pass	30.80	30.80	0.00%	Yes	30.80	30.80	30.80	0.00%	Yes
V02	R02	Zone 02	Pass	24.10	24.10	0.00%	Yes	24.10	24.10	24.10	0.00%	Yes
V02	R03	Zone 03	Pass	22.80	22.80	0.00%	Yes	22.80	22.80	22.80	0.00%	Yes
V02	R04	Zone 04	Pass	22.80	22.80	0.00%	Yes	22.80	22.80	22.80	0.00%	Yes
V02	R05	Zone 05	Pass	20.90	20.90	0.00%	Yes	20.90	20.90	20.90	0.00%	Yes
V02	R06	Zone 06	Pass	22.90	22.90	0.00%	Yes	22.90	22.90	22.90	0.00%	Yes
V02	R07	Zone 07	Pass	19.70	19.70	0.00%	Yes	19.70	19.70	19.70	0.00%	Yes
V02	R08	Zone 08	Pass	20.90	20.90	0.00%	Yes	20.90	20.90	20.90	0.00%	Yes
V02	R09	Zone 09	Pass	24.30	24.30	0.00%	Yes	24.30	24.30	24.30	0.00%	Yes
V02	R10	Zone 10	Pass	23.80	23.80	0.00%	Yes	23.80	23.80	23.80	0.00%	Yes
V02	R11	Zone 11	Pass	23.50	23.50	0.00%	Yes	23.50	23.50	23.50	0.00%	Yes
V02	R12	Zone 12	Pass	24.80	24.80	0.00%	Yes	24.80	24.80	24.80	0.00%	Yes
V02	R13	Zone 13	Pass	24.80	24.80	0.00%	Yes	24.80	24.80	24.80	0.00%	Yes
V02	R14	Zone 14	Pass	24.60	24.60	0.00%	Yes	24.60	24.60	24.60	0.00%	Yes
V02	R15	Zone 15	Pass	22.10	22.10	0.00%	Yes	22.10	22.10	22.10	0.00%	Yes
V02	R16	Zone 16	Pass	29.50	29.50	0.00%	Yes	29.50	29.50	29.50	0.00%	Yes
Result V02			Pass	23.89	23.89	0.00%		23.89	23.89	23.89	0.00%	Min Ave Max

## Comparison between Reference & Candidate Software (EDR total)

Comparison Date: 4/15/2021  
 Comparison Author: Ken Nittler  
 Candidate Software: CBECC-Res 2019\_2\_0\_Beta\_2067

Test	Run	Description	Pass/Fail	Reference Proposed	Candidate Proposed	Percent Difference	Within Tolerance	Standard Equals	Reference Standard	Candidate Standard	Percent Difference	Within Tolerance
V03	Standard Design in All Zones for Prototype S6960ft2			Standard = Proposed for this test								
V03	R01	Zone 01	Pass	28.50	28.50	0.00%	Yes	28.50	28.50	28.50	0.00%	Yes
V03	R02	Zone 02	Pass	27.00	27.00	0.00%	Yes	27.00	27.00	27.00	0.00%	Yes
V03	R03	Zone 03	Pass	25.30	25.30	0.00%	Yes	25.30	25.30	25.30	0.00%	Yes
V03	R04	Zone 04	Pass	27.30	27.30	0.00%	Yes	27.30	27.30	27.30	0.00%	Yes
V03	R05	Zone 05	Pass	24.90	24.90	0.00%	Yes	24.90	24.90	24.90	0.00%	Yes
V03	R06	Zone 06	Pass	27.70	27.70	0.00%	Yes	27.70	27.70	27.70	0.00%	Yes
V03	R07	Zone 07	Pass	27.80	27.80	0.00%	Yes	27.80	27.80	27.80	0.00%	Yes
V03	R08	Zone 08	Pass	27.40	27.40	0.00%	Yes	27.40	27.40	27.40	0.00%	Yes
V03	R09	Zone 09	Pass	28.30	28.30	0.00%	Yes	28.30	28.30	28.30	0.00%	Yes
V03	R10	Zone 10	Pass	28.60	28.60	0.00%	Yes	28.60	28.60	28.60	0.00%	Yes
V03	R11	Zone 11	Pass	26.00	26.00	0.00%	Yes	26.00	26.00	26.00	0.00%	Yes
V03	R12	Zone 12	Pass	27.30	27.30	0.00%	Yes	27.30	27.30	27.30	0.00%	Yes
V03	R13	Zone 13	Pass	27.30	27.30	0.00%	Yes	27.30	27.30	27.30	0.00%	Yes
V03	R14	Zone 14	Pass	26.80	26.80	0.00%	Yes	26.80	26.80	26.80	0.00%	Yes
V03	R15	Zone 15	Pass	26.60	26.60	0.00%	Yes	26.60	26.60	26.60	0.00%	Yes
V03	R16	Zone 16	Pass	30.20	30.20	0.00%	Yes	30.20	30.20	30.20	0.00%	Yes
Result V03			Pass	27.31	27.31	0.00%		27.31	27.31	27.31	0.00%	Ave Min Max
V04	Proposed Design in All Zones for Prototype P2100ft2			Standard = V01 Standard for this test								
V04	R01	Zone 01	Pass	34.10	34.10	0.00%	Yes	34.70	34.70	34.70	0.00%	Yes
V04	R02	Zone 02	Pass	24.80	24.80	0.00%	Yes	25.80	25.80	25.80	0.00%	Yes
V04	R03	Zone 03	Pass	24.10	24.10	0.00%	Yes	25.10	25.10	25.10	0.00%	Yes
V04	R04	Zone 04	Pass	22.00	22.00	0.00%	Yes	22.90	22.90	22.90	0.00%	Yes
V04	R05	Zone 05	Pass	22.40	22.40	0.00%	Yes	23.50	23.50	23.50	0.00%	Yes
V04	R06	Zone 06	Pass	22.10	22.10	0.00%	Yes	23.50	23.50	23.50	0.00%	Yes
V04	R07	Zone 07	Pass	19.90	19.90	0.00%	Yes	20.60	20.60	20.60	0.00%	Yes
V04	R08	Zone 08	Pass	19.00	19.00	0.00%	Yes	20.70	20.70	20.70	0.00%	Yes
V04	R09	Zone 09	Pass	22.30	22.30	0.00%	Yes	24.30	24.30	24.30	0.00%	Yes
V04	R10	Zone 10	Pass	23.20	23.20	0.00%	Yes	25.20	25.20	25.20	0.00%	Yes
V04	R11	Zone 11	Pass	22.70	22.70	0.00%	Yes	24.80	24.80	24.80	0.00%	Yes
V04	R12	Zone 12	Pass	24.10	24.10	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V04	R13	Zone 13	Pass	24.30	24.30	0.00%	Yes	26.30	26.30	26.30	0.00%	Yes
V04	R14	Zone 14	Pass	23.30	23.30	0.00%	Yes	25.90	25.90	25.90	0.00%	Yes
V04	R15	Zone 15	Pass	21.50	21.50	0.00%	Yes	23.30	23.30	23.30	0.00%	Yes
V04	R16	Zone 16	Pass	29.40	29.40	0.00%	Yes	31.30	31.30	31.30	0.00%	Yes
Result V04			Pass	23.70	23.70	0.00%		25.25	25.25	25.25	0.00%	Ave Min Max

## Comparison between Reference & Candidate Software (EDR total)

Comparison Date: 4/15/2021  
 Comparison Author: Ken Nittler  
 Candidate Software: CBECC-Res 2019\_2\_0\_Beta\_2067

Test	Run	Description	Pass/Fail	Reference Proposed	Candidate Proposed	Percent Difference	Within Tolerance	Standard Equals	Reference Standard	Candidate Standard	Percent Difference	Within Tolerance
V05	Proposed Design in All Zones for Prototype P2700ft2			Standard = V02 Standard for this test								
V05	R01	Zone 01	Pass	30.10	30.10	0.00%	Yes	30.80	30.80	30.80	0.00%	Yes
V05	R02	Zone 02	Pass	22.20	22.20	0.00%	Yes	24.10	24.10	24.10	0.00%	Yes
V05	R03	Zone 03	Pass	21.70	21.70	0.00%	Yes	22.80	22.80	22.80	0.00%	Yes
V05	R04	Zone 04	Pass	21.20	21.20	0.00%	Yes	22.80	22.80	22.80	0.00%	Yes
V05	R05	Zone 05	Pass	19.80	19.80	0.00%	Yes	20.90	20.90	20.90	0.00%	Yes
V05	R06	Zone 06	Pass	21.50	21.50	0.00%	Yes	22.90	22.90	22.90	0.00%	Yes
V05	R07	Zone 07	Pass	19.00	19.00	0.00%	Yes	19.70	19.70	19.70	0.00%	Yes
V05	R08	Zone 08	Pass	19.20	19.20	0.00%	Yes	20.90	20.90	20.90	0.00%	Yes
V05	R09	Zone 09	Pass	22.10	22.10	0.00%	Yes	24.30	24.30	24.30	0.00%	Yes
V05	R10	Zone 10	Pass	21.70	21.70	0.00%	Yes	23.80	23.80	23.80	0.00%	Yes
V05	R11	Zone 11	Pass	21.30	21.30	0.00%	Yes	23.50	23.50	23.50	0.00%	Yes
V05	R12	Zone 12	Pass	22.70	22.70	0.00%	Yes	24.80	24.80	24.80	0.00%	Yes
V05	R13	Zone 13	Pass	22.60	22.60	0.00%	Yes	24.80	24.80	24.80	0.00%	Yes
V05	R14	Zone 14	Pass	21.80	21.80	0.00%	Yes	24.60	24.60	24.60	0.00%	Yes
V05	R15	Zone 15	Pass	20.00	20.00	0.00%	Yes	22.10	22.10	22.10	0.00%	Yes
V05	R16	Zone 16	Pass	27.30	27.30	0.00%	Yes	29.50	29.50	29.50	0.00%	Yes
Result V05			Pass	22.14	22.14	0.00%		23.89	23.89	23.89	0.00%	Min Ave Max
V06	Proposed Design in All Zones for Prototype P6960ft2			Standard = V03 Standard for this test								
V06	R01	Zone 01	Pass	28.70	28.70	0.00%	Yes	28.50	28.50	28.50	0.00%	Yes
V06	R02	Zone 02	Pass	26.10	26.10	0.00%	Yes	27.00	27.00	27.00	0.00%	Yes
V06	R03	Zone 03	Pass	24.80	24.80	0.00%	Yes	25.30	25.30	25.30	0.00%	Yes
V06	R04	Zone 04	Pass	25.60	25.60	0.00%	Yes	27.30	27.30	27.30	0.00%	Yes
V06	R05	Zone 05	Pass	24.40	24.40	0.00%	Yes	24.90	24.90	24.90	0.00%	Yes
V06	R06	Zone 06	Pass	26.60	26.60	0.00%	Yes	27.70	27.70	27.70	0.00%	Yes
V06	R07	Zone 07	Pass	26.60	26.60	0.00%	Yes	27.80	27.80	27.80	0.00%	Yes
V06	R08	Zone 08	Pass	26.30	26.30	0.00%	Yes	27.40	27.40	27.40	0.00%	Yes
V06	R09	Zone 09	Pass	26.50	26.50	0.00%	Yes	28.30	28.30	28.30	0.00%	Yes
V06	R10	Zone 10	Pass	26.90	26.90	0.00%	Yes	28.60	28.60	28.60	0.00%	Yes
V06	R11	Zone 11	Pass	24.30	24.30	0.00%	Yes	26.00	26.00	26.00	0.00%	Yes
V06	R12	Zone 12	Pass	25.70	25.70	0.00%	Yes	27.30	27.30	27.30	0.00%	Yes
V06	R13	Zone 13	Pass	25.50	25.50	0.00%	Yes	27.30	27.30	27.30	0.00%	Yes
V06	R14	Zone 14	Pass	25.00	25.00	0.00%	Yes	26.80	26.80	26.80	0.00%	Yes
V06	R15	Zone 15	Pass	24.50	24.50	0.00%	Yes	26.60	26.60	26.60	0.00%	Yes
V06	R16	Zone 16	Pass	29.10	29.10	0.00%	Yes	30.20	30.20	30.20	0.00%	Yes
Result V06			Pass	26.04	26.04	0.00%		27.31	27.31	27.31	0.00%	Min Ave Max

## Comparison between Reference & Candidate Software (EDR total)

Comparison Date: 4/15/2021  
 Comparison Author: Ken Nittler  
 Candidate Software: CBECC-Res 2019\_2\_0\_Beta\_2067

Test	Run	Description	Pass/Fail	Reference Proposed	Candidate Proposed	Percent Difference	Within Tolerance	Standard Equals	Reference Standard	Candidate Standard	Percent Difference	Within Tolerance
V07	Common Measures in Zone 12 for Prototype P2100ft2							Standard = V01 Standard for this test				
V07	R01	Package	Pass	24.10	24.10	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V07	R02	Fenestration U 0.40/S 0.40	Pass	26.50	26.50	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V07	R03	Wall R13/Roof Deck Above R6	Pass	27.00	27.00	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V07	R04	Ceiling R49 /Roof Deck Below R0/Radiant Barrier	Pass	27.70	27.70	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V07	R05	Furnace AFUE 92	Pass	23.00	23.00	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V07	R06	Air Conditioner SEER 16/EER 14	Pass	23.10	23.10	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V07	R07	No Cool Vent	Pass	25.00	25.00	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V07	R08	Ducts 2% Leakage	Pass	23.80	23.80	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V07	R09	No Quality Insulation Installation	Pass	26.20	26.20	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V07	R10	Air Leakage ACH50 2.0	Pass	23.70	23.70	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
Result V07			Pass	25.01	25.01	0.00%		26.10	26.10	26.10	0.00%	Ave
												Min
												Max
V08	Water Heating in Zone 12 for Prototype P2100ft2							Standard = V01 Standard for this test				
V08	R01	Package	Pass	24.10	24.10	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V08	R02	Parallel Piping	Pass	24.10	24.10	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V08	R03	Gas Consumer Instantaneous (UEF)/UEF 0.96/0 gal	Pass	23.40	23.40	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V08	R04	Gas Consumer Storage (UEF)/UEF 0.61/50 gal	Pass	26.00	26.00	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V08	R05	Gas Commercial Instantaneous (TE)/TE 0.95/0 gal	Pass	22.90	22.90	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V08	R06	Gas Commercial Storage (TE & SBL)/TE 0.82/SBL 0.02/98 gal	Pass	27.10	27.10	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V08	R07	Electric Resistance Consumer Storage (UEF)/UEF 0.92/50 gal	Pass	34.20	34.20	0.00%	Yes	27.70	27.70	27.70	0.00%	Yes
V08	R08	Heat Pump NEEA Rated/Sanden/43 gal	Pass	24.30	24.30	0.00%	Yes	27.70	27.70	27.70	0.00%	Yes
V08	R09	2 Water Heaters using Multiplier	Pass	25.20	25.20	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V08	R10	2 Water Heaters Using 2 entries	Pass	25.20	25.20	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
Result V08			Pass	25.65	25.65	0.00%		26.42	26.42	26.42	0.00%	Ave
												Min
												Max
V09	Multiple Orientation in Zone 12 for Prototype S2100ft2/P2100ft2							Standard = V01 Standard for this test				
V09	R01	Single Standard Front 45	Pass	26.80	26.80	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V09	R02	North Standard	Pass	26.10	26.10	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V09	R03	East Standard	Pass	26.10	26.10	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V09	R04	South Standard	Pass	26.10	26.10	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V09	R05	West Standard	Pass	26.10	26.10	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V09	R06	Single Proposed Front 45	Pass	26.70	26.70	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V09	R07	North Proposed	Pass	24.10	24.10	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V09	R08	East Proposed	Pass	27.70	27.70	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V09	R09	South Proposed	Pass	24.70	24.70	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V09	R10	West Proposed	Pass	26.70	26.70	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
Result V09			Pass	26.11	26.11	0.00%		26.10	26.10	26.10	0.00%	Ave
												Min
												Max



## Comparison between Reference & Candidate Software (EDR total)

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Test	Run	Description	Pass/Fail	Reference Proposed	Candidate Proposed	Percent Difference	Within Tolerance	Standard Equals	Reference Standard	Candidate Standard	Percent Difference	Within Tolerance
V10		Multi Family Water Heating in Zone 12 for Prototype P6960ft2						Standard = Varies for this test				
V10	R01	Package Gas Consumer Instantaneous (UEF)/UEF 0.81/0 gal	Pass	24.10	24.10	0.00%	Yes	27.30	27.30	27.30	0.00%	Yes
V10	R02	8 Gas Consumer Storage (UEF)/UEF 0.61/50 gal	Pass	30.40	30.40	0.00%	Yes	27.30	27.30	27.30	0.00%	Yes
V10	R03	8 Gas Commercial Storage (TE & SBL)/TE 0.80/SBL 0.02/100 gal	Pass	30.70	30.70	0.00%	Yes	27.30	27.30	27.30	0.00%	Yes
V10	R04	2 Gas Commercial Central Solar	Pass	24.50	24.50	0.00%	Yes	27.30	27.30	27.30	0.00%	Yes
V10	R05	2 Gas Commercial Central Solar Recirc	Pass	25.20	25.20	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V10	R06	2 Gas Commercial Central Recirc	Pass	26.80	26.80	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V10	R07	2 Gas Consumer Instantaneous Central Solar	Pass	23.00	23.00	0.00%	Yes	25.90	25.90	25.90	0.00%	Yes
V10	R08	2 Gas Consumer Instantaneous Central Solar Recirc	Pass	25.10	25.10	0.00%	Yes	27.00	27.00	27.00	0.00%	Yes
V10	R09	1 Indirect/TE 0.80/300 gal Central Solar	Pass	24.00	24.00	0.00%	Yes	26.80	26.80	26.80	0.00%	Yes
V10	R10	1 Indirect/TE 0.80/300 gal Central Solar Recirc	Pass	24.80	24.80	0.00%	Yes	25.90	25.90	25.90	0.00%	Yes
Result V10			Pass	25.86	25.86	0.00%		26.70	26.70	26.70	0.00%	Min Ave Max
V11		Source Energy in Zone 12 for Prototype P2100ft2						Standard = Varies for this test				
V11	R01	Package	Pass	24.10	24.10	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V11	R02	Package No Natural Gas	Pass	28.50	28.50	0.00%	Yes	30.20	30.20	30.20	0.00%	Yes
V11	R03	Electric DHW	Pass	35.90	35.90	0.00%	Yes	27.70	27.70	27.70	0.00%	Yes
V11	R04	Electric DHW no Natural Gas	Pass	38.00	38.00	0.00%	Yes	31.90	31.90	31.90	0.00%	Yes
V11	R05	Heatpump DHW	Pass	25.50	25.50	0.00%	Yes	27.70	27.70	27.70	0.00%	Yes
V11	R06	Heatpump DHW no Natural Gas	Pass	29.90	29.90	0.00%	Yes	31.90	31.90	31.90	0.00%	Yes
V11	R07	Heatpump HVAC	Pass	25.40	25.40	0.00%	Yes	27.40	27.40	27.40	0.00%	Yes
V11	R08	Heatpump HVAC no Natural Gas	Pass	26.30	26.30	0.00%	Yes	27.90	27.90	27.90	0.00%	Yes
V11	R09	Heatpump HVAC & DHW	Pass	26.80	26.80	0.00%	Yes	28.90	28.90	28.90	0.00%	Yes
V11	R10	Heatpump HVAC & DHW no Natural Gas	Pass	27.40	27.40	0.00%	Yes	29.40	29.40	29.40	0.00%	Yes
Result V11			Pass	28.78	28.78	0.00%		28.91	28.91	28.91	0.00%	Min Ave Max
V12		E+A+A Base & Windows in Zone 12 for Prototype P1665ft2						Standard = Varies for this test				
V12	R01	E 1440ft2 as New Construction	Pass	0.00	0.00	0.00%	Yes	0.00	0.00	0.00	0.00%	Yes
V12	R02	E 1440ft2 as Addition/Alteration	Pass	0.00	0.00	0.00%	Yes	0.00	0.00	0.00	0.00%	Yes
V12	R03	EA 1665ft2	Pass	0.00	0.00	0.00%	Yes	0.00	0.00	0.00	0.00%	Yes
V12	R04	EAA Ceiling R38 Verified	Pass	0.00	0.00	0.00%	Yes	0.00	0.00	0.00	0.00%	Yes
V12	R05	EAA Ceiling R38 Verified Wind U0.41/S0.36	Pass	0.00	0.00	0.00%	Yes	0.00	0.00	0.00	0.00%	Yes
V12	R06	EAA Ceiling R38 Verified Wind U0.41/S0.36 Verified	Pass	0.00	0.00	0.00%	Yes	0.00	0.00	0.00	0.00%	Yes
V12	R07	EAA Ceiling R38 Verified Wind U0.40/S0.35	Pass	0.00	0.00	0.00%	Yes	0.00	0.00	0.00	0.00%	Yes
V12	R08	EAA Ceiling R38 Verified Wind U0.40/S0.35 Verified	Pass	0.00	0.00	0.00%	Yes	0.00	0.00	0.00	0.00%	Yes
V12	R09	EAA Ceiling R38 Verified Wind U0.39/S0.34	Pass	0.00	0.00	0.00%	Yes	0.00	0.00	0.00	0.00%	Yes
V12	R10	EAA Ceiling R38 Verified Wind U0.39/S0.34 Verified	Pass	0.00	0.00	0.00%	Yes	0.00	0.00	0.00	0.00%	Yes
Result V12			Pass	n/a	n/a	n/a	n/a	n/a	n/a	n/a	#VALUE!	Min Ave Max

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Test	Run	Description	Pass/Fail	Reference Proposed	Candidate Proposed	Percent Difference	Within Tolerance	Standard Equals	Reference Standard	Candidate Standard	Percent Difference	Within Tolerance
V13	E+A+A Walls & HVAC in Zone 12 for Prototype P1665ft2											
V13	R01	EAA Ceiling R38 Verified Wall R11	Pass	0.00	0.00	0.00%	Yes	0.00	0.00	0.00	0.00%	Yes
V13	R02	EAA Ceiling R38 Verified Wall R11 Verified	Pass	0.00	0.00	0.00%	Yes	0.00	0.00	0.00	0.00%	Yes
V13	R03	EAA Ceiling R38 Verified Wall R13	Pass	0.00	0.00	0.00%	Yes	0.00	0.00	0.00	0.00%	Yes
V13	R04	EAA Ceiling R38 Verified Wall R13 Verified	Pass	0.00	0.00	0.00%	Yes	0.00	0.00	0.00	0.00%	Yes
V13	R05	EAA Ceiling R38 Verified HVAC Worse	Pass	0.00	0.00	0.00%	Yes	0.00	0.00	0.00	0.00%	Yes
V13	R06	EAA Ceiling R38 Verified HVAC Worse Verified	Pass	0.00	0.00	0.00%	Yes	0.00	0.00	0.00	0.00%	Yes
V13	R07	EAA Ceiling R38 Verified HVAC Equal	Pass	0.00	0.00	0.00%	Yes	0.00	0.00	0.00	0.00%	Yes
V13	R08	EAA Ceiling R38 Verified HVAC Equal Verified	Pass	0.00	0.00	0.00%	Yes	0.00	0.00	0.00	0.00%	Yes
V13	R09	EAA Ceiling R38 Verified HVAC Better	Pass	0.00	0.00	0.00%	Yes	0.00	0.00	0.00	0.00%	Yes
V13	R10	EAA Ceiling R38 Verified HVAC Better Verified	Pass	0.00	0.00	0.00%	Yes	0.00	0.00	0.00	0.00%	Yes
Result V13			Pass	n/a	n/a	n/a	n/a	n/a	n/a	n/a	#VALUE!	Min
											Ave	Max

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Test	Run	Description	Pass/Fail	Reference Proposed	Candidate Proposed	Percent Difference	Within Tolerance	Standard Equals	Reference Standard	Candidate Standard	Percent Difference	Within Tolerance
V14	Standard Design All Electric in All Zones for Prototype S2100ft2			Standard = Proposed for this test								
V14	R01	Zone 01	Pass	50.30	50.30	0.00%	Yes	50.30	50.30	50.30	0.00%	Yes
V14	R02	Zone 02	Pass	33.90	33.90	0.00%	Yes	33.90	33.90	33.90	0.00%	Yes
V14	R03	Zone 03	Pass	35.00	35.00	0.00%	Yes	35.00	35.00	35.00	0.00%	Yes
V14	R04	Zone 04	Pass	31.60	31.60	0.00%	Yes	31.60	31.60	31.60	0.00%	Yes
V14	R05	Zone 05	Pass	34.10	34.10	0.00%	Yes	34.10	34.10	34.10	0.00%	Yes
V14	R06	Zone 06	Pass	29.90	29.90	0.00%	Yes	29.90	29.90	29.90	0.00%	Yes
V14	R07	Zone 07	Pass	27.20	27.20	0.00%	Yes	27.20	27.20	27.20	0.00%	Yes
V14	R08	Zone 08	Pass	25.70	25.70	0.00%	Yes	25.70	25.70	25.70	0.00%	Yes
V14	R09	Zone 09	Pass	29.00	29.00	0.00%	Yes	29.00	29.00	29.00	0.00%	Yes
V14	R10	Zone 10	Pass	30.20	30.20	0.00%	Yes	30.20	30.20	30.20	0.00%	Yes
V14	R11	Zone 11	Pass	30.90	30.90	0.00%	Yes	30.90	30.90	30.90	0.00%	Yes
V14	R12	Zone 12	Pass	32.10	32.10	0.00%	Yes	32.10	32.10	32.10	0.00%	Yes
V14	R13	Zone 13	Pass	31.90	31.90	0.00%	Yes	31.90	31.90	31.90	0.00%	Yes
V14	R14	Zone 14	Pass	32.30	32.30	0.00%	Yes	32.30	32.30	32.30	0.00%	Yes
V14	R15	Zone 15	Pass	27.10	27.10	0.00%	Yes	27.10	27.10	27.10	0.00%	Yes
V14	R16	Zone 16	Pass	48.90	48.90	0.00%	Yes	48.90	48.90	48.90	0.00%	Yes
Result V14			Pass	33.13	33.13	0.00%		33.13	33.13	33.13	0.00%	Ave Min Max
V15	Standard Design All Electric in All Zones for Prototype S2700ft2			Standard = Proposed for this test								
V15	R01	Zone 01	Pass	43.40	43.40	0.00%	Yes	43.40	43.40	43.40	0.00%	Yes
V15	R02	Zone 02	Pass	30.90	30.90	0.00%	Yes	30.90	30.90	30.90	0.00%	Yes
V15	R03	Zone 03	Pass	30.70	30.70	0.00%	Yes	30.70	30.70	30.70	0.00%	Yes
V15	R04	Zone 04	Pass	29.30	29.30	0.00%	Yes	29.30	29.30	29.30	0.00%	Yes
V15	R05	Zone 05	Pass	29.90	29.90	0.00%	Yes	29.90	29.90	29.90	0.00%	Yes
V15	R06	Zone 06	Pass	28.20	28.20	0.00%	Yes	28.20	28.20	28.20	0.00%	Yes
V15	R07	Zone 07	Pass	25.30	25.30	0.00%	Yes	25.30	25.30	25.30	0.00%	Yes
V15	R08	Zone 08	Pass	25.30	25.30	0.00%	Yes	25.30	25.30	25.30	0.00%	Yes
V15	R09	Zone 09	Pass	27.90	27.90	0.00%	Yes	27.90	27.90	27.90	0.00%	Yes
V15	R10	Zone 10	Pass	27.70	27.70	0.00%	Yes	27.70	27.70	27.70	0.00%	Yes
V15	R11	Zone 11	Pass	28.60	28.60	0.00%	Yes	28.60	28.60	28.60	0.00%	Yes
V15	R12	Zone 12	Pass	29.80	29.80	0.00%	Yes	29.80	29.80	29.80	0.00%	Yes
V15	R13	Zone 13	Pass	29.50	29.50	0.00%	Yes	29.50	29.50	29.50	0.00%	Yes
V15	R14	Zone 14	Pass	29.90	29.90	0.00%	Yes	29.90	29.90	29.90	0.00%	Yes
V15	R15	Zone 15	Pass	25.30	25.30	0.00%	Yes	25.30	25.30	25.30	0.00%	Yes
V15	R16	Zone 16	Pass	44.30	44.30	0.00%	Yes	44.30	44.30	44.30	0.00%	Yes
Result V15			Pass	30.38	30.38	0.00%		30.38	30.38	30.38	0.00%	Ave Min Max

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Test	Run	Description	Pass/Fail	Reference Proposed	Candidate Proposed	Percent Difference	Within Tolerance	Standard Equals	Reference Standard	Candidate Standard	Percent Difference	Within Tolerance	
V16	Standard Design All Electric in All Zones for Prototype S6960ft2							Standard = Proposed for this test					
V16	R01	Zone 01	Pass	43.60	43.60	0.00%	Yes	43.60	43.60	43.60	0.00%	Yes	
V16	R02	Zone 02	Pass	36.80	36.80	0.00%	Yes	36.80	36.80	36.80	0.00%	Yes	
V16	R03	Zone 03	Pass	36.20	36.20	0.00%	Yes	36.20	36.20	36.20	0.00%	Yes	
V16	R04	Zone 04	Pass	35.10	35.10	0.00%	Yes	35.10	35.10	35.10	0.00%	Yes	
V16	R05	Zone 05	Pass	37.30	37.30	0.00%	Yes	37.30	37.30	37.30	0.00%	Yes	
V16	R06	Zone 06	Pass	33.90	33.90	0.00%	Yes	33.90	33.90	33.90	0.00%	Yes	
V16	R07	Zone 07	Pass	33.70	33.70	0.00%	Yes	33.70	33.70	33.70	0.00%	Yes	
V16	R08	Zone 08	Pass	31.50	31.50	0.00%	Yes	31.50	31.50	31.50	0.00%	Yes	
V16	R09	Zone 09	Pass	32.90	32.90	0.00%	Yes	32.90	32.90	32.90	0.00%	Yes	
V16	R10	Zone 10	Pass	33.20	33.20	0.00%	Yes	33.20	33.20	33.20	0.00%	Yes	
V16	R11	Zone 11	Pass	34.20	34.20	0.00%	Yes	34.20	34.20	34.20	0.00%	Yes	
V16	R12	Zone 12	Pass	34.30	34.30	0.00%	Yes	34.30	34.30	34.30	0.00%	Yes	
V16	R13	Zone 13	Pass	34.40	34.40	0.00%	Yes	34.40	34.40	34.40	0.00%	Yes	
V16	R14	Zone 14	Pass	34.10	34.10	0.00%	Yes	34.10	34.10	34.10	0.00%	Yes	
V16	R15	Zone 15	Pass	30.10	30.10	0.00%	Yes	30.10	30.10	30.10	0.00%	Yes	
V16	R16	Zone 16	Pass	42.20	42.20	0.00%	Yes	42.20	42.20	42.20	0.00%	Yes	
Result V16			Pass	35.22	35.22	0.00%		35.22	35.22	35.22	0.00%	Min Max	
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V17	Proposed Design All Electric in All Zones for Prototype P2100ft2							Standard = V14 Standard for this test					
V17	R01	Zone 01	Pass	49.30	49.30	0.00%	Yes	50.30	50.30	50.30	0.00%	Yes	
V17	R02	Zone 02	Pass	33.50	33.50	0.00%	Yes	33.90	33.90	33.90	0.00%	Yes	
V17	R03	Zone 03	Pass	34.00	34.00	0.00%	Yes	35.00	35.00	35.00	0.00%	Yes	
V17	R04	Zone 04	Pass	30.40	30.40	0.00%	Yes	31.60	31.60	31.60	0.00%	Yes	
V17	R05	Zone 05	Pass	33.00	33.00	0.00%	Yes	34.10	34.10	34.10	0.00%	Yes	
V17	R06	Zone 06	Pass	28.90	28.90	0.00%	Yes	29.90	29.90	29.90	0.00%	Yes	
V17	R07	Zone 07	Pass	26.80	26.80	0.00%	Yes	27.20	27.20	27.20	0.00%	Yes	
V17	R08	Zone 08	Pass	24.20	24.20	0.00%	Yes	25.70	25.70	25.70	0.00%	Yes	
V17	R09	Zone 09	Pass	27.20	27.20	0.00%	Yes	29.00	29.00	29.00	0.00%	Yes	
V17	R10	Zone 10	Pass	28.30	28.30	0.00%	Yes	30.20	30.20	30.20	0.00%	Yes	
V17	R11	Zone 11	Pass	29.20	29.20	0.00%	Yes	30.90	30.90	30.90	0.00%	Yes	
V17	R12	Zone 12	Pass	30.10	30.10	0.00%	Yes	32.10	32.10	32.10	0.00%	Yes	
V17	R13	Zone 13	Pass	30.00	30.00	0.00%	Yes	31.90	31.90	31.90	0.00%	Yes	
V17	R14	Zone 14	Pass	30.00	30.00	0.00%	Yes	32.30	32.30	32.30	0.00%	Yes	
V17	R15	Zone 15	Pass	25.30	25.30	0.00%	Yes	27.10	27.10	27.10	0.00%	Yes	
V17	R16	Zone 16	Pass	47.40	47.40	0.00%	Yes	48.90	48.90	48.90	0.00%	Yes	
Result V17			Pass	31.73	31.73	0.00%		33.13	33.13	33.13	0.00%	Min Max	
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Test	Run	Description	Pass/Fail	Reference Proposed	Candidate Proposed	Percent Difference	Within Tolerance	Standard Equals	Reference Standard	Candidate Standard	Percent Difference	Within Tolerance
V18	Proposed Design All Electric in All Zones for Prototype P2700ft2			Standard = V15 Standard for this test								
V18	R01	Zone 01	Pass	42.30	42.30	0.00%	Yes	43.40	43.40	43.40	0.00%	Yes
V18	R02	Zone 02	Pass	29.40	29.40	0.00%	Yes	30.90	30.90	30.90	0.00%	Yes
V18	R03	Zone 03	Pass	29.60	29.60	0.00%	Yes	30.70	30.70	30.70	0.00%	Yes
V18	R04	Zone 04	Pass	28.30	28.30	0.00%	Yes	29.30	29.30	29.30	0.00%	Yes
V18	R05	Zone 05	Pass	28.60	28.60	0.00%	Yes	29.90	29.90	29.90	0.00%	Yes
V18	R06	Zone 06	Pass	27.10	27.10	0.00%	Yes	28.20	28.20	28.20	0.00%	Yes
V18	R07	Zone 07	Pass	24.70	24.70	0.00%	Yes	25.30	25.30	25.30	0.00%	Yes
V18	R08	Zone 08	Pass	23.60	23.60	0.00%	Yes	25.30	25.30	25.30	0.00%	Yes
V18	R09	Zone 09	Pass	25.80	25.80	0.00%	Yes	27.90	27.90	27.90	0.00%	Yes
V18	R10	Zone 10	Pass	25.80	25.80	0.00%	Yes	27.70	27.70	27.70	0.00%	Yes
V18	R11	Zone 11	Pass	26.50	26.50	0.00%	Yes	28.60	28.60	28.60	0.00%	Yes
V18	R12	Zone 12	Pass	27.80	27.80	0.00%	Yes	29.80	29.80	29.80	0.00%	Yes
V18	R13	Zone 13	Pass	27.20	27.20	0.00%	Yes	29.50	29.50	29.50	0.00%	Yes
V18	R14	Zone 14	Pass	27.30	27.30	0.00%	Yes	29.90	29.90	29.90	0.00%	Yes
V18	R15	Zone 15	Pass	23.20	23.20	0.00%	Yes	25.30	25.30	25.30	0.00%	Yes
V18	R16	Zone 16	Pass	42.40	42.40	0.00%	Yes	44.30	44.30	44.30	0.00%	Yes
Result V18			Pass	28.73	28.73	0.00%		30.38	30.38	30.38	0.00%	Ave
												Min Max
V19	Proposed Design All Electric in All Zones for Prototype P6960ft2			Standard = V16 Standard for this test								
V19	R01	Zone 01	Pass	43.80	43.80	0.00%	Yes	43.60	43.60	43.60	0.00%	Yes
V19	R02	Zone 02	Pass	36.20	36.20	0.00%	Yes	36.80	36.80	36.80	0.00%	Yes
V19	R03	Zone 03	Pass	35.70	35.70	0.00%	Yes	36.20	36.20	36.20	0.00%	Yes
V19	R04	Zone 04	Pass	33.90	33.90	0.00%	Yes	35.10	35.10	35.10	0.00%	Yes
V19	R05	Zone 05	Pass	36.80	36.80	0.00%	Yes	37.30	37.30	37.30	0.00%	Yes
V19	R06	Zone 06	Pass	33.20	33.20	0.00%	Yes	33.90	33.90	33.90	0.00%	Yes
V19	R07	Zone 07	Pass	33.10	33.10	0.00%	Yes	33.70	33.70	33.70	0.00%	Yes
V19	R08	Zone 08	Pass	30.30	30.30	0.00%	Yes	31.50	31.50	31.50	0.00%	Yes
V19	R09	Zone 09	Pass	31.50	31.50	0.00%	Yes	32.90	32.90	32.90	0.00%	Yes
V19	R10	Zone 10	Pass	31.90	31.90	0.00%	Yes	33.20	33.20	33.20	0.00%	Yes
V19	R11	Zone 11	Pass	32.40	32.40	0.00%	Yes	34.20	34.20	34.20	0.00%	Yes
V19	R12	Zone 12	Pass	32.40	32.40	0.00%	Yes	34.30	34.30	34.30	0.00%	Yes
V19	R13	Zone 13	Pass	32.70	32.70	0.00%	Yes	34.40	34.40	34.40	0.00%	Yes
V19	R14	Zone 14	Pass	32.30	32.30	0.00%	Yes	34.10	34.10	34.10	0.00%	Yes
V19	R15	Zone 15	Pass	28.20	28.20	0.00%	Yes	30.10	30.10	30.10	0.00%	Yes
V19	R16	Zone 16	Pass	41.40	41.40	0.00%	Yes	42.20	42.20	42.20	0.00%	Yes
Result V19			Pass	34.11	34.11	0.00%		35.22	35.22	35.22	0.00%	Ave
												Min Max

## Comparison between Reference & Candidate Software (EDR total)

Comparison Date: 4/15/2021  
 Comparison Author: Ken Nittler  
 Candidate Software: CBECC-Res 2019\_2\_0\_Beta\_2067

Test	Run	Description	Pass/Fail	Reference Proposed	Candidate Proposed	Percent Difference	Within Tolerance	Standard Equals	Reference Standard	Candidate Standard	Percent Difference	Within Tolerance
Standard = V04R12												
V20	PV in Zone 12 for Prototype P2100ft2											
V20	R01	Package	Pass	24.10	24.10	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V20	R02	Maximum PV	Pass	24.40	24.40	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V20	R03	2 kWdc PV	Pass	29.10	29.10	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V20	R04	Premium Module	Pass	24.00	24.00	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V20	R05	Tracking (one axis) Array	Pass	17.50	17.50	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V20	R06	Tracking (two axis) Array	Pass	14.30	14.30	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V20	R07	Microinverters	Pass	24.10	24.10	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V20	R08	DC Power Optimizers	Pass	24.30	24.30	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V20	R09	Maximum PV Premium Fixed Microinverter	Pass	24.30	24.30	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V20	R10	Maximum PV Premium Tracking DC Power Optimizers	Pass	22.60	22.60	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
Result V20			Pass	22.87	22.87	0.00%		26.10	26.10	26.10	0.00%	Min Ave Max
Standard = V04R12												
V21	PV, Battery and Target EDR in Zone 12 for Prototype P2100ft2											
V21	R01	Package	Pass	24.10	24.10	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V21	R02	Two 1 kWdc PV	Pass	29.10	29.10	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V21	R03	Two 1 kWdc PV 90/270 Azm/18.43 Tilt/97 Eff	Pass	30.30	30.30	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V21	R04	Reduced PV 0 kWdc < 80 ft2 area	Pass	44.10	44.10	0.00%	Yes	46.10	46.10	46.10	0.00%	Yes
V21	R05	14 kWh Battery Basic	Pass	5.30	5.30	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V21	R06	14 kWh Battery TOU	Pass	0.00	0.00	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V21	R07	14 kWh Battery Advanced	Pass	0.00	0.00	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V21	R08	Self Utilization Credit	Pass	5.30	5.30	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V21	R09	Self Utilization Credit Allow Excess PV	Pass	34.80	34.80	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V21	R10	Self Utilization Credit Allow Excess PV Target EDR 0	Pass	0.00	0.00	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
Result V21			Pass	17.30	17.30	0.00%		28.10	28.10	28.10	0.00%	Min Ave Max
Standard = V04R12												
V22	Verified and Buried Ducts in Zone 12 for Prototype P2100ft2											
V22	R01	Package	Pass	24.10	24.10	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V22	R02	Verified equal to default ducts	Pass	24.10	24.10	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V22	R03	Buried R-60	Pass	23.40	23.40	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V22	R04	Buried R-60/Ducts Half Length	Pass	22.90	22.90	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V22	R05	Buried R-60/Ducts R-6	Pass	23.40	23.40	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V22	R06	Buried R-60/Duct Diameters 8, 4, 7, 6	Pass	22.70	22.70	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V22	R07	Buried R-60/Duct Diameters 8, 4, 7, 6/Attic R-49, R-43, R-40, R-38	Pass	22.70	22.70	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V22	R08	Buried R-60/Duct Diameters 8, 4, 7, 6/Attic Cellulose	Pass	22.70	22.70	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V22	R09	Buried R-60/Ducts Half Length/Ceiling R-60	Pass	22.50	22.50	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
V22	R10	Buried R-60/Ducts Half Length/Ceiling R-60/No below Deck Ins	Pass	25.90	25.90	0.00%	Yes	26.10	26.10	26.10	0.00%	Yes
Result V22			Pass	23.44	23.44	0.00%		26.10	26.10	26.10	0.00%	Min Ave Max