

Measure Description		Gas Product Detailed Technical Assumptions														Program Forecast Inputs		Stipulated Forecast Inputs			Program Forecast Outputs					
		High Efficiency Product Assumptions		Baseline Product Assumptions		Economic Assumptions				Stipulated Output				Economic Assumptions		2020		Valid Throughout Filing Period			2020					
Natural Gas Measure Group	Natural Gas Measure Description	High Efficiency Product Description / Rating	High Efficiency Product Consumption (Dth/yr)	Baseline Product Description / Rating	Baseline Product Consumption (Dth/yr)	Life of Product (years)	Average Rebate Amount	Average Baseline Product Cost	Average Incremental Cost of Efficient Product	Assumed Energy Cost (\$/Dth)	Rebate as a % of Incremental Cost	Incremental Cost Payback Period w/o Rebate	Incremental Cost Payback Period with Rebate	Average Annual Customer Dth Savings	Average rebated cost per Dth Saved	Average rebated Lifetime cost per Dth Saved	Non-Energy O&M Savings	Energy O&M Savings	2020 Participants (-)	2020 Units (-)	NTG (%)	Installation Rate (%)	Realization Rate (%)	2020 NET Dth (Dth)	2020 Rebate Budget (\$)	2020 Incremental Cost (\$)
TOTAL																										
Envelope Improvement 10% - 14.99% - IECC2009	Envelope Measures with 10% improvement over local code - Combo Customers - IECC 2009 or older	Energy Efficient Home Based Upon REMRate model by House Rater with Average Size 2357 and Percent BTC 13.68%	78	Reference Home Based upon Local Code	91	20	\$113	\$0	\$403	\$6.09	28%	5.069550793	3.647515018	13.06	\$8.66	\$0.43	\$0	\$0	45	79	92%	100%	100%	949	\$8,932	\$31,842
Envelope Improvement 15% - 19.99% - IECC2009	Envelope Measures with 15% improvement over local code - Combo Customers - IECC 2009 or older	Energy Efficient Home Based Upon REMRate model by House Rater with Average Size 2770 and Percent BTC 18.16%	76	Reference Home Based upon Local Code	96	20	\$204	\$0	\$303	\$6.09	32%	5.579795462	3.810848883	18.91	\$10.77	\$0.54	\$0	\$0	109	191	92%	100%	100%	3,323	\$38,913	\$122,742
Envelope Improvement 20% - 24.99% - IECC2009	Envelope Measures with 20% improvement over local code - Combo Customers - IECC 2009 or older	Energy Efficient Home Based Upon REMRate model by House Rater with Average Size 3450 and Percent BTC 22.75%	81	Reference Home Based upon Local Code	109	20	\$306	\$0	\$387	\$6.09	31%	5.701719016	3.933186821	28.41	\$10.77	\$0.54	\$0	\$0	154	269	92%	100%	100%	7,032	\$82,319	\$265,397
Envelope Improvement 25% - 29.99% - IECC2009	Envelope Measures with 25% improvement over local code - Combo Customers - IECC 2009 or older	Energy Efficient Home Based Upon REMRate model by House Rater with Average Size 3505 and Percent BTC 27.21%	78	Reference Home Based upon Local Code	115	20	\$403	\$0	\$1,263	\$6.09	31%	5.670242551	3.887469705	37.15	\$10.86	\$0.54	\$0	\$0	97	170	92%	100%	100%	5,810	\$68,561	\$218,065
Envelope Improvement 30% - 34.99% - IECC2009	Envelope Measures with 30% improvement over local code - Combo Customers - IECC 2009 or older	Energy Efficient Home Based Upon REMRate model by House Rater with Average Size 3979 and Percent BTC 31.65%	83	Reference Home Based upon Local Code	134	20	\$493	\$0	\$1,821	\$6.09	30%	5.279546453	3.683757931	50.73	\$9.72	\$0.49	\$0	\$0	24	42	92%	100%	100%	1,960	\$20,708	\$68,512
Envelope Improvement 35% - 39.99% - IECC2009	Envelope Measures with 35% improvement over local code - Combo Customers - IECC 2009 or older	Energy Efficient Home Based Upon REMRate model by House Rater with Average Size 4040 and Percent BTC 36.56%	79	Reference Home Based upon Local Code	140	20	\$605	\$0	\$1,882	\$6.09	30%	5.372575297	3.740560714	60.88	\$9.94	\$0.50	\$0	\$0	3	6	92%	100%	100%	336	\$3,630	\$11,951
Envelope Improvement 40% & higher - IECC2009	Envelope Measures with 40% improvement over local code - Combo Customers - IECC 2009 or older	Energy Efficient Home Based Upon REMRate model by House Rater with Average Size 3649 and Percent BTC 44.02%	52	Reference Home Based upon Local Code	110	20	\$794	\$0	\$2,389	\$6.09	34%	6.726044336	4.467472245	57.71	\$13.75	\$0.69	\$0	\$0	0	0	92%	100%	100%	0	\$0	\$0
Envelope Improvement 10% - 14.99% - IECC2009	Envelope Measures with 10% improvement over local code - Gas Only Customers - IECC 2009 or older	Energy Efficient Home Based Upon REMRate model by House Rater with Average Size 1965 and Percent BTC 13.51%	70	Reference Home Based upon Local Code	82	20	\$200	\$0	\$286	\$6.09	75%	3.537900297	0.872257237	12.32	\$16.23	\$0.81	\$0	\$0	19	34	92%	100%	100%	385	\$6,800	\$9,025
Envelope Improvement 15% - 19.99% - IECC2009	Envelope Measures with 15% improvement over local code - Gas Only Customers - IECC 2009 or older	Energy Efficient Home Based Upon REMRate model by House Rater with Average Size 2605 and Percent BTC 17.82%	81	Reference Home Based upon Local Code	102	20	\$350	\$0	\$500	\$6.09	70%	4.012339294	1.214468474	20.54	\$17.04	\$0.85	\$0	\$0	47	82	92%	100%	100%	1,550	\$28,700	\$41,158
Envelope Improvement 20% - 24.99% - IECC2009	Envelope Measures with 20% improvement over local code - Gas Only Customers - IECC 2009 or older	Energy Efficient Home Based Upon REMRate model by House Rater with Average Size 3342 and Percent BTC 23.03%	91	Reference Home Based upon Local Code	110	20	\$500	\$0	\$873	\$6.09	57%	4.884480223	2.082242419	29.30	\$17.07	\$0.85	\$0	\$0	66	115	92%	100%	100%	3,100	\$57,500	\$100,226
Envelope Improvement 25% - 29.99% - IECC2009	Envelope Measures with 25% improvement over local code - Gas Only Customers - IECC 2009 or older	Energy Efficient Home Based Upon REMRate model by House Rater with Average Size 3807 and Percent BTC 27.21%	81	Reference Home Based upon Local Code	120	20	\$650	\$0	\$1,198	\$6.09	56%	4.893710768	2.14124357	38.78	\$16.76	\$0.84	\$0	\$0	42	73	92%	100%	100%	2,604	\$47,450	\$84,363
Envelope Improvement 30% - 34.99% - IECC2009	Envelope Measures with 30% improvement over local code - Gas Only Customers - IECC 2009 or older	Energy Efficient Home Based Upon REMRate model by House Rater with Average Size 4092 and Percent BTC 31.41%	65	Reference Home Based upon Local Code	137	20	\$800	\$0	\$1,480	\$6.09	54%	4.725612709	2.18917951	51.79	\$15.45	\$0.77	\$0	\$0	10	17	92%	100%	100%	810	\$13,600	\$25,338
Envelope Improvement 35% - 39.99% - IECC2009	Envelope Measures with 35% improvement over local code - Gas Only Customers - IECC 2009 or older	Energy Efficient Home Based Upon REMRate model by House Rater with Average Size 3505 and Percent BTC 36.77%	76	Reference Home Based upon Local Code	137	20	\$1,000	\$0	\$1,798	\$6.09	57%	4.762365885	2.039254567	60.30	\$16.58	\$0.83	\$0	\$0	1	2	92%	100%	100%	111	\$2,000	\$3,498
Envelope Improvement 40% & higher - IECC2009	Envelope Measures with 40% improvement over local code - Gas Only Customers - IECC 2009 or older	Energy Efficient Home Based Upon REMRate model by House Rater with Average Size 3990 and Percent BTC 42.35%	50	Reference Home Based upon Local Code	96	20	\$1,400	\$0	\$2,090	\$6.09	68%	7.60400304	2.449629554	44.60	\$31.39	\$1.57	\$0	\$0	0	0	92%	100%	100%	0	\$0	\$0
Envelope Improvement 10% - 14.99% - IECC2012	Envelope Measures with 10% improvement over local code - Combo Customers IECC 2012 or Higher 2015	Energy Efficient Home Based Upon REMRate model by House Rater with Average Size 3996 and Percent BTC 12.76%	88	Reference Home Based upon Local Code	103	20	\$154	\$0	\$284	\$6.09	23%	7.523078784	5.77254001	14.49	\$10.66	\$0.53	\$0	\$0	532	932	92%	100%	100%	12,425	\$143,975	\$618,743
Envelope Improvement 15% - 19.99% - IECC2012	Envelope Measures with 15% improvement over local code - Combo Customers IECC 2012 or Higher 2015	Energy Efficient Home Based Upon REMRate model by House Rater with Average Size 4000 and Percent BTC 17.33%	80	Reference Home Based upon Local Code	100	20	\$197	\$0	\$1,080	\$6.09	19%	8.889810709	7.238544611	19.63	\$10.06	\$0.50	\$0	\$0	370	647	92%	100%	100%	11,686	\$127,740	\$687,705
Envelope Improvement 20% - 24.99% - IECC2012	Envelope Measures with 20% improvement over local code - Combo Customers IECC 2012 or Higher 2015	Energy Efficient Home Based Upon REMRate model by House Rater with Average Size 4217 and Percent BTC 21.78%	73	Reference Home Based upon Local Code	99	20	\$318	\$0	\$2,382	\$6.09	15%	13.16267364	11.15110322	25.98	\$12.25	\$0.61	\$0	\$0	70	123	92%	100%	100%	2,940	\$39,143	\$256,131
Envelope Improvement 25% - 29.99% - IECC2012	Envelope Measures with 25% improvement over local code - Combo Customers IECC 2012 or Higher 2015	Energy Efficient Home Based Upon REMRate model by House Rater with Average Size 3947 and Percent BTC 26.8%	67	Reference Home Based upon Local Code	97	20	\$457	\$0	\$3,301	\$6.09	15%	16.44692903	13.9451297	29.96	\$15.24	\$0.76	\$0	\$0	15	27	92%	100%	100%	744	\$12,326	\$81,030
Envelope Improvement 30% - 34.99% - IECC2012	Envelope Measures with 30% improvement over local code - Combo Customers IECC 2012 or Higher 2015	Energy Efficient Home Based Upon REMRate model by House Rater with Average Size 3610 and Percent BTC 32.17%	59	Reference Home Based upon Local Code	94	20	\$775	\$0	\$3,190	\$6.09	15%	23.21918258	19.62329016	35.40	\$21.90	\$1.09	\$0	\$0	14	24	92%	100%	100%	782	\$18,605	\$120,138
Envelope Improvement 35% - 39.99% - IECC2012	Envelope Measures with 35% improvement over local code - Combo Customers IECC 2012 or Higher 2015	Energy Efficient Home Based Upon REMRate model by House Rater with Average Size 4666 and Percent BTC 38.47%	62	Reference Home Based upon Local Code	114	20	\$1,062	\$0	\$6,491	\$6.09	13%	27.01920459	23.63963321	51.60	\$20.58	\$1.03	\$0	\$0	6	10	92%	100%	100%	475	\$10,620	\$84,906
Envelope Improvement 40% & higher - IECC2012	Envelope Measures with 40% improvement over local code - Combo Customers IECC 2012 or Higher 2015	Energy Efficient Home Based Upon REMRate model by House Rater with Average Size 3890 and Percent BTC 42.63%	50	Reference Home Based upon Local Code	96	20	\$1,209	\$0	\$6,191	\$6.09	15%	29.54333104	25.0914186	44.60	\$27.11	\$1.36	\$0	\$0	1	1	92%	100%	100%	41	\$1,209	\$8,024
Envelope Improvement 10% - 14.99% - IECC2012	Envelope Measures with 10% improvement over local code - Gas Only Customers IECC 2012 or Higher 2015	Energy Efficient Home Based Upon REMRate model by House Rater with Average Size 3793 and Percent BTC 12.7%	64	Reference Home Based upon Local Code	97	20	\$250	\$0	\$486	\$6.09	52%	6.160829505	2.98774471	12.94	\$19.32	\$0.97	\$0	\$0	228	399	92%	100%	100%	4,749	\$99,750	\$193,674
Envelope Improvement 15% - 19.99% - IECC2012	Envelope Measures with 15% improvement over local code - Gas Only Customers IECC 2012 or Higher 2015	Energy Efficient Home Based Upon REMRate model by House Rater with Average Size 4033 and Percent BTC 17.15%	85	Reference Home Based upon Local Code	106	20	\$400	\$0	\$880	\$6.09	40%	8.062966154	4.807171088	20.17	\$19.83	\$0.99	\$0	\$0	158	277	92%	100%	100%	5,141	\$110,800	\$274,396
Envelope Improvement 20% - 24.99% - IECC2012	Envelope Measures with 20% improvement over local code - Gas Only Customers IECC 2012 or Higher 2015	Energy Efficient Home Based Upon REMRate model by House Rater with Average Size 4107 and Percent BTC 21.21%	78	Reference Home Based upon Local Code	104	20	\$600	\$0	\$1,802	\$6.09	32%	11.47851376	7.759595441	26.49	\$22.65	\$1.13	\$0	\$0	30	53	92%	100%	100%	1,292	\$31,800	\$98,151
Envelope Improvement 25% - 29.99% - IECC2012	Envelope Measures with 25% improvement over local code - Gas Only Customers IECC 2012 or Higher 2015	Energy Efficient Home Based Upon REMRate model by House Rater with Average Size 3827 and Percent BTC 26.07%	80	Reference Home Based upon Local Code	117	20	\$900	\$0	\$2,398	\$6.09	35%	11.3004735	7.295507344	36.90	\$24.39	\$1.22	\$0	\$0	6	11	92%	100%	100%	373	\$9,900	\$27,934

Envelope Improvement 30% - 34.99% - IECC2012	Envelope Measures with 30% improvement over local code - Gas Only Customers IECC 2012 or Higher 2015	Energy Efficient Home Based Upon RESRRate model by House Rater with Average Size 3050 and Percent BTC 33.34%	59	Reference Home Based upon Local Code	95	20	\$1,300	\$0	\$5,824	\$6.09	22%	26.86329152	20.86709219	35.60	\$36.52	\$1.83	\$0	\$0	6	11	92%	100%	100%	360	\$14,300	\$64,065
Envelope Improvement 35% - 39.99% - IECC2012	Envelope Measures with 35% improvement over local code - Gas Only Customers IECC 2012 or Higher 2015	Energy Efficient Home Based Upon RESRRate model by House Rater with Average Size 3050 and Percent BTC 39.64%	54	Reference Home Based upon Local Code	95	20	\$2,000	\$0	\$7,898	\$6.09	26%	30.93052284	22.84167493	40.60	\$49.26	\$2.46	\$0	\$0	3	5	92%	100%	100%	187	\$10,000	\$38,238
Envelope Improvement 40% & higher - IECC2012	Envelope Measures with 40% improvement over local code - Gas Only Customers IECC 2012 or Higher 2015	Energy Efficient Home Based Upon RESRRate model by House Rater with Average Size 3050 and Percent BTC 42.63%	50	Reference Home Based upon Local Code	95	20	\$2,550	\$0	\$9,024	\$6.09	32%	29.54333104	20.15500791	44.60	\$57.17	\$2.86	\$0	\$0	0	0	92%	100%	100%	0	\$0	\$0
Envelope Improvement 10% - 14.99% - IECC2018	Envelope Measures with 10% improvement over local code - Combo Customers IECC 2018	Energy Efficient Home Based Upon RESRRate model by House Rater	94	Reference Home Based upon Local Code	100	30	\$142	\$0	\$108	\$6.09	90%	1.677505592	0.168581449	15.43	\$9.19	\$0.46	\$0	\$0		546	92%	100%	100%	7,749	\$77,396	\$86,042
Envelope Improvement 15% - 19.99% - IECC2018	Envelope Measures with 15% improvement over local code - Combo Customers IECC 2018	Energy Efficient Home Based Upon RESRRate model by House Rater	78	Reference Home Based upon Local Code	100	30	\$253	\$0	\$798	\$6.09	34%	5.046884826	3.343271086	24.35	\$10.38	\$0.52	\$0	\$0		389	92%	100%	100%	8,715	\$98,277	\$291,141
Envelope Improvement 20% - 24.99% - IECC2018	Envelope Measures with 20% improvement over local code - Combo Customers IECC 2018	Energy Efficient Home Based Upon RESRRate model by House Rater	70	Reference Home Based upon Local Code	100	30	\$346	\$0	\$7,298	\$6.09	29%	6.357769912	4.529850446	31.09	\$11.13	\$0.56	\$0	\$0		74	92%	100%	100%	2,117	\$25,614	\$89,090
Envelope Improvement 25% - 29.99% - IECC2018	Envelope Measures with 25% improvement over local code - Combo Customers IECC 2018	Energy Efficient Home Based Upon RESRRate model by House Rater	69	Reference Home Based upon Local Code	100	30	\$579	\$0	\$1,340	\$6.09	38%	8.104965638	5.055657811	31.20	\$18.57	\$0.93	\$0	\$0		15	92%	100%	100%	431	\$8,691	\$23,101
Envelope Improvement 30% - 34.99% - IECC2018	Envelope Measures with 30% improvement over local code - Combo Customers IECC 2018	Energy Efficient Home Based Upon RESRRate model by House Rater	68	Reference Home Based upon Local Code	100	30	\$1,003	\$0	\$3,320	\$6.09	30%	10.6031144	7.402894783	51.49	\$19.49	\$0.97	\$0	\$0		15	92%	100%	100%	711	\$15,052	\$49,871
Envelope Improvement 35% - 39.99% - IECC2018	Envelope Measures with 35% improvement over local code - Combo Customers IECC 2018	Energy Efficient Home Based Upon RESRRate model by House Rater	66	Reference Home Based upon Local Code	100	30	\$1,544	\$0	\$3,320	\$6.09	46%	10.6031144	5.679699606	51.49	\$29.98	\$1.50	\$0	\$0		7	92%	100%	100%	332	\$10,807	\$23,273
Envelope Improvement 40% & higher - IECC2018	Envelope Measures with 40% improvement over local code - Combo Customers IECC 2018	Energy Efficient Home Based Upon RESRRate model by House Rater	60	Reference Home Based upon Local Code	100	30	\$1,968	\$0	\$3,320	\$6.09	59%	10.6031144	4.32576054	51.49	\$38.23	\$1.91	\$0	\$0		5	92%	100%	100%	237	\$9,842	\$16,624
Envelope Improvement 10% - 14.99% - IECC2018	Envelope Measures with 10% improvement over local code - Gas Only Customers IECC 2018	Energy Efficient Home Based Upon RESRRate model by House Rater	94	Reference Home Based upon Local Code	100	30	\$250	\$0	\$278	\$6.09	90%	2.958563655	0.297321779	15.43	\$16.21	\$0.81	\$0	\$0		234	92%	100%	100%	3,321	\$58,500	\$65,036
Envelope Improvement 15% - 19.99% - IECC2018	Envelope Measures with 15% improvement over local code - Gas Only Customers IECC 2018	Energy Efficient Home Based Upon RESRRate model by House Rater	75	Reference Home Based upon Local Code	100	30	\$400	\$0	\$1,180	\$6.09	34%	7.99063462	5.293336108	24.35	\$16.43	\$0.82	\$0	\$0		167	92%	100%	100%	3,741	\$66,800	\$197,892
Envelope Improvement 20% - 24.99% - IECC2018	Envelope Measures with 20% improvement over local code - Gas Only Customers IECC 2018	Energy Efficient Home Based Upon RESRRate model by House Rater	70	Reference Home Based upon Local Code	100	30	\$600	\$0	\$1,097	\$6.09	29%	11.02057534	7.852054855	31.09	\$19.30	\$0.96	\$0	\$0		31	92%	100%	100%	887	\$18,600	\$64,694
Envelope Improvement 25% - 29.99% - IECC2018	Envelope Measures with 25% improvement over local code - Gas Only Customers IECC 2018	Energy Efficient Home Based Upon RESRRate model by House Rater	68	Reference Home Based upon Local Code	100	30	\$900	\$0	\$1,392	\$6.09	38%	12.58926008	7.852639097	31.20	\$28.84	\$1.44	\$0	\$0		7	92%	100%	100%	201	\$6,300	\$16,745
Envelope Improvement 30% - 34.99% - IECC2018	Envelope Measures with 30% improvement over local code - Gas Only Customers IECC 2018	Energy Efficient Home Based Upon RESRRate model by House Rater	66	Reference Home Based upon Local Code	100	30	\$1,300	\$0	\$4,307	\$6.09	30%	13.73638346	9.590484237	51.49	\$25.25	\$1.26	\$0	\$0		7	92%	100%	100%	332	\$9,100	\$30,151
Envelope Improvement 35% - 39.99% - IECC2018	Envelope Measures with 35% improvement over local code - Gas Only Customers IECC 2018	Energy Efficient Home Based Upon RESRRate model by House Rater	66	Reference Home Based upon Local Code	100	30	\$2,000	\$0	\$4,307	\$6.09	46%	13.73638346	7.358076961	51.49	\$38.84	\$1.94	\$0	\$0		3	92%	100%	100%	142	\$6,000	\$12,922
Envelope Improvement 40% & higher - IECC2018	Envelope Measures with 40% improvement over local code - Gas Only Customers IECC 2018	Energy Efficient Home Based Upon RESRRate model by House Rater	66	Reference Home Based upon Local Code	100	30	\$2,550	\$0	\$4,307	\$6.09	59%	13.73638346	5.604042673	51.49	\$49.53	\$2.48	\$0	\$0		1	92%	100%	100%	47	\$2,550	\$4,307
ES Clothes Washer	Energy Star Clothes Washer - Combo Customers w/ Gas DHW	Energy Star Clothes Washer	0.3	Standard Clothes Washer	0.5	11	\$19	\$0	\$19	\$6.09	100%	2.074614251	0.00	0.12	\$162.24	\$14.75	\$8	\$0	101	176	92%	100%	100%	19	\$3,291	\$3,291
ES Clothes Washer	Energy Star Clothes Washer - Gas Only Customers w/ Gas DHW	Energy Star Clothes Washer	0.3	Standard Clothes Washer	0.5	11	\$30	\$0	\$19	\$6.09	161%	2.074614251	-1.26	0.12	\$260.79	\$23.71	\$8	\$0	43	76	92%	100%	100%	8	\$2,270	\$1,412
Energy Star Smart Thermostat	Install Energy Star certified smart thermostat - COMBO	Average Single Family House with EnergyStar Smart Thermostat	55.4	Average Single Family House with Standard Thermostat	60.2	10	\$18	\$0	\$78	\$6.09	23%	2.657979267	2.04	4.82	\$3.76	\$0.38	\$0	\$0	408	715	92%	100%	100%	3,168	\$12,963	\$55,739
Energy Star Smart Thermostat	Install Energy Star certified smart thermostat - GAS ONLY	Average Single Family House with EnergyStar Smart Thermostat	55.4	Average Single Family House with Standard Thermostat	60.2	10	\$50	\$0	\$78	\$6.09	64%	2.657979267	0.95	4.82	\$10.38	\$1.04	\$0	\$0	134	235	92%	100%	100%	1,041	\$11,750	\$18,320