

CENTRAL HUDSON GAS & ELECTRIC CORPORATION  
CASE 17-E-\_\_\_\_ & 17-G-\_\_\_\_

EAM PANEL

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CENTRAL HUDSON GAS & ELECTRIC CORPORATION  
CASE 17-E-\_\_\_\_ & 17-G-\_\_\_\_  
CARBON INTENSITY EAM- CO<sub>2</sub> INTENSITY TARGETS & CARBON DIOXIDE

Residential Emissions (tons CO <sub>2</sub> )	2017	2018	2019	2020	2021	CAGR
Baseline	4,110,987	4,094,230	4,021,114	3,952,184	3,882,712	-1.4%
Less: Energy Efficiency	7,754	12,263	11,945	13,964	15,983	19.8%
Less: Solar PV	18,897	37,270	43,156	48,858	54,794	30.5%
Less: Carbon Reduction Program	0	12,028	36,103	60,205	85,026	N/A
Less: Natural Gas Conversions	5,976	11,951	17,927	23,903	29,878	49.5%
<b>Projected Emissions</b>	<b>4,078,361</b>	<b>4,020,718</b>	<b>3,911,982</b>	<b>3,805,255</b>	<b>3,697,031</b>	<b>-2.4%</b>

Residential Annual CO <sub>2</sub> Intensity	2017	2018	2019	2020	2021	CAGR
Baseline	16.0	16.0	15.7	15.4	15.1	-1.5%
Target	15.9	15.7	15.3	14.8	14.4	-2.5%
<b>Avoided CO<sub>2</sub> Tons/Customer</b>	<b>0.1</b>	<b>0.3</b>	<b>0.4</b>	<b>0.6</b>	<b>0.7</b>	
<b>Cumulative Avoided CO<sub>2</sub> Tons/Customer</b>	<b>0.1</b>	<b>0.4</b>	<b>0.8</b>	<b>1.4</b>	<b>2.1</b>	

Non-Residential Emissions (tons CO <sub>2</sub> )	2017	2018	2019	2020	2021	CAGR
Baseline	1,812,118	1,827,307	1,821,959	1,807,961	1,793,918	-0.3%
Less: Energy Efficiency	5,083	10,166	16,417	21,285	26,152	50.6%
Less: Solar PV	6,692	8,379	9,146	9,644	9,892	10.3%
Less: Carbon Reduction Program	0	1,446	4,339	7,233	10,168	N/A
Less: Natural Gas Conversions	544	1,088	1,632	2,176	2,720	49.5%
<b>Projected Emissions</b>	<b>1,799,799</b>	<b>1,806,229</b>	<b>1,790,424</b>	<b>1,767,623</b>	<b>1,744,987</b>	<b>-0.8%</b>

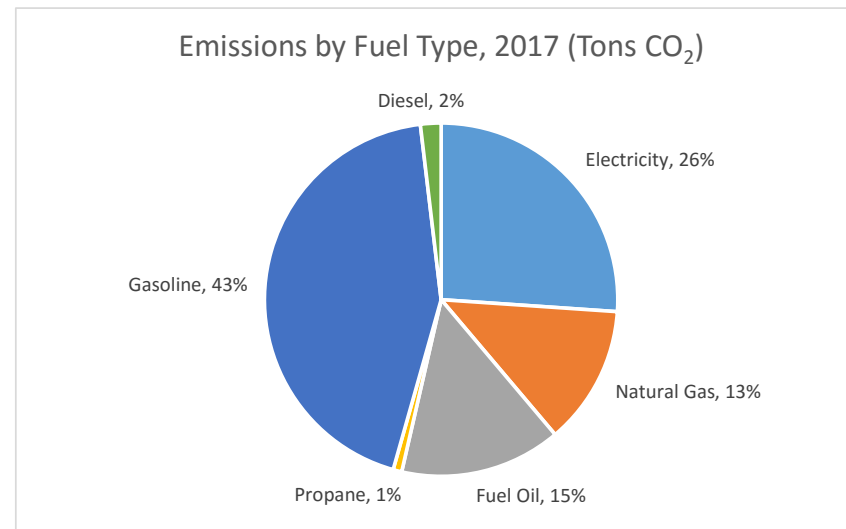
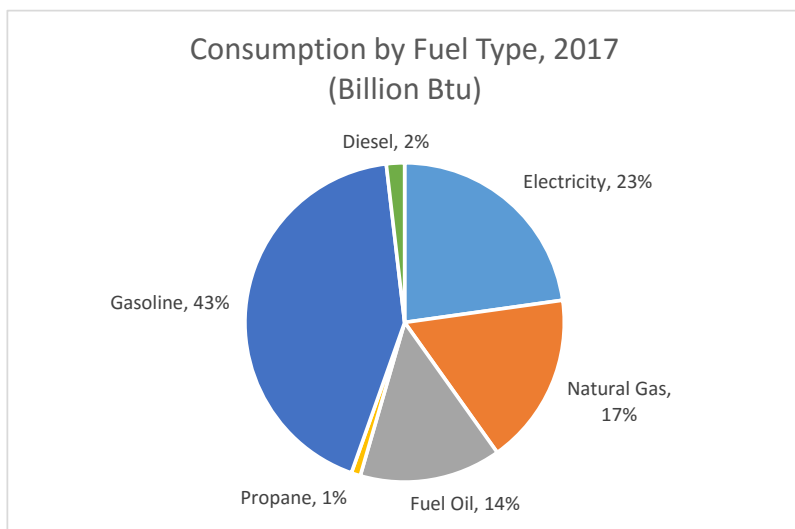
Non-Residential Annual CO <sub>2</sub> Intensity	2017	2018	2019	2020	2021	CAGR
Baseline	38.8	39.3	39.3	39.0	38.7	-0.1%
Target	38.6	38.9	38.6	38.1	37.7	-0.6%
<b>Avoided CO<sub>2</sub> Tons/Customer</b>	<b>0.3</b>	<b>0.5</b>	<b>0.7</b>	<b>0.9</b>	<b>1.1</b>	
<b>Cumulative Avoided CO<sub>2</sub> Tons/Customer</b>	<b>0.3</b>	<b>0.7</b>	<b>1.4</b>	<b>2.3</b>	<b>3.3</b>	

CENTRAL HUDSON GAS & ELECTRIC CORPORATION  
 CASE 17-E-\_\_\_\_ & 17-G-\_\_\_\_  
 CARBON INTENSITY EAM- CO<sub>2</sub> INTENSITY TARGETS & BASIS POINTS

Residential Cumulative CO <sub>2</sub> Intensity	2018	2018 bp		2019	2020	2021	2019-2021 bp
Avoided CO <sub>2</sub> Tons/Customer - Baseline	0.0	0.0		0.0	0.0	0.0	0.0
Midpoint	0.2	5.0		0.3	0.4	0.4	10.0
Avoided CO <sub>2</sub> Tons/Customer - Target	0.4	10.0		0.6	0.7	0.9	20.0

Non-Residential Annual CO <sub>2</sub> Intensity	2018	2018 bp		2019	2020	2021	2019-2021 bp
Avoided CO <sub>2</sub> Tons/Customer - Baseline	0.0	0.0		0.0	0.0	0.0	0.0
Midpoint	0.5	5.0		0.6	0.7	0.8	10.0
Avoided CO <sub>2</sub> Tons/Customer - Target	0.9	10.0		1.2	1.4	1.6	20.0

CENTRAL HUDSON GAS & ELECTRIC CORPORATION  
CASE 17-E-\_\_\_\_ & 17-G-\_\_\_\_  
CARBON INTENSITY EAM- CARBON MARKET PROFILE (ALL SECTORS, FUEL TYPES & CARBON DIOXIDE)



Fuel	Consumption (billion Btu)			Emissions (tons CO <sub>2</sub> )		
	Residential	Non-Residential	Total	Residential	Non-Residential	Total
Electricity (MWh)	7,278	10,272	17,550	663,849	936,998	1,600,847
Natural Gas (Dth)	5,545	6,901	12,447	324,067	403,319	727,386
Fuel Oil #2 (Gallons)	9,497	1,102	10,600	778,788	90,395	869,183
Propane (Gallons)	428	274	702	29,025	18,536	47,560
Gasoline (Gallons)	26,319	3,584	29,903	2,145,039	292,094	2,437,133
Diesel (Gallons)	647	637	1,284	52,696	51,953	104,649
<b>Total</b>	<b>49,715</b>	<b>22,771</b>	<b>72,486</b>	<b>3,993,464</b>	<b>1,793,295</b>	<b>5,786,759</b>

CENTRAL HUDSON GAS & ELECTRIC CORPORATION  
CASE 17-E-\_\_\_\_ & 17-G-\_\_\_\_  
UTILITY CUSTOMER FUNDING OF TECHNOLOGIES THAT REDUCE CO<sub>2</sub> (\$/TON)

Analysis (Present Value of Costs / First Year CO <sub>2</sub> Impact)		2018	2019	2020	2021
Solar \$/Ton CO <sub>2</sub> Avoided		\$1,996	\$1,742	\$1,742	\$1,742
EE \$/Ton CO <sub>2</sub> Avoided		\$628	\$949	\$1,398	\$1,398
Carbon Reduction Program \$/Ton CO <sub>2</sub> Avoided		\$469	\$468	\$468	\$455
Natural Gas Conversions \$/Tons CO <sub>2</sub> Avoided		\$628	\$628	\$628	\$628

\* Note: Analysis excludes NYSDERDA rebates/incentives or NY State or Federal tax credits

Solar		2018	2019	2020	2021
Annual Solar MWh		59,032	18,912	18,319	19,073
Annual Solar Avoided Carbon		18,373	5,886	5,702	5,936

Solar PV Analysis	Rate	2018	2019	2020	2021
E Rate per kWh	0.0242	\$1,430,936	\$458,427	\$444,053	\$462,330
MTC tranche 1	0.0571	\$1,336,140	\$0	\$0	\$0
MTC tranche 2	0.0497	\$566,580	\$0	\$0	\$0
MTC tranche 3	0.0424	\$26,254	\$481,121	\$466,035	\$485,217
Solar Annual NPV		\$36,670,895	\$10,254,464	\$9,932,927	\$10,341,761

Energy Efficiency		2018	2019	2020	2021
Annual Energy Efficiency MWh		34,240	22,488	15,122	15,122
Annual Energy Efficiency Avoided CO <sub>2</sub> (tons)		14,643	9,617	6,467	6,467
Annual Energy Efficiency Dth		37,296	37,296	37,296	37,296
Annual Energy Efficiency Avoided CO <sub>2</sub> (tons)		198	198	198	198
Energy Efficiency Budget (electric & gas)		\$9,316,701	\$9,316,701	\$9,316,701	\$9,316,701

Carbon Reduction Programs		2018	2019	2020	2021
Annual Carbon Reduction Program Avoided CO <sub>2</sub>		13,474	26,968	26,996	27,755
Carbon Reduction Budget		\$6,313,260	\$12,626,520	\$12,626,520	\$12,626,520

Natural Gas Conversions		2018	2019	2020	2021
Natural Gas Conversions		375	750	750	750
Annual Avoided CO <sub>2</sub>		2,988	5,976	5,976	5,976
Natural Gas Conversion Budget		\$1,875,000	\$3,750,000	\$3,750,000	\$3,750,000

CENTRAL HUDSON GAS & ELECTRIC CORPORATION  
CASE 17-E-\_\_\_\_ & 17-G-\_\_\_\_  
CARBON INTENSITY EAM- RESIDENTIAL CARBON REDUCTION PROGRAMS

Cumulative Residential Participation	2018	2019	2020	2021
Electric Vehicles	1,228	3,684	6,140	8,596
Ground Source Heat Pump	138	413	688	963
Air Source Heat Pump/Mini-Split Heat Pump	793	2,378	3,964	5,549
<b>Total</b>	<b>2,158</b>	<b>6,475</b>	<b>10,791</b>	<b>15,108</b>

Cumulative Consumption	2018	2019	2020	2021
Avoided Gasoline (gallons)	(594,151)	(1,782,452)	(2,970,753)	(4,159,054)
Avoided Propane (gallons)	(123,792)	(371,376)	(618,961)	(866,545)
Avoided Oil (gallons)	(643,159)	(1,929,478)	(3,215,797)	(4,502,116)
Beneficial Electrification (MWh)	7,020	21,060	35,101	49,141

Cumulative Carbon Emission Reductions (tons CO <sub>2</sub> )	2018	2019	2020	2021
Electric Vehicles	4,635	13,919	23,221	33,019
Ground Source Heat Pump	924	2,772	4,621	6,509
Air Source Heat Pump/Mini-Split Heat Pump	6,469	19,412	32,362	45,498
<b>Total</b>	<b>12,028</b>	<b>36,103</b>	<b>60,205</b>	<b>85,026</b>

Annual Program Funding	2018	2019	2020	2021
Electric Vehicles	\$ 1,735,000	\$ 3,470,000	\$ 3,470,000	\$ 3,470,000
Ground Source Heat Pump	\$ 946,107	\$ 1,892,213	\$ 1,892,213	\$ 1,892,213
Air Source Heat Pump/Mini-Split Heat Pump	\$ 2,924,428	\$ 5,848,855	\$ 5,848,855	\$ 5,848,855
<b>Total</b>	<b>\$ 5,605,534</b>	<b>\$ 11,211,068</b>	<b>\$ 11,211,068</b>	<b>\$ 11,211,068</b>

Benefit Cost Analysis	2018	2019	2020	2021
<b>Total</b>	<b>3.11</b>	<b>3.12</b>	<b>3.12</b>	<b>3.13</b>

CENTRAL HUDSON GAS & ELECTRIC CORPORATION  
CASE 17-E-\_\_\_\_ & 17-G-\_\_\_\_  
CARBON INTENSITY EAM- NON-RESIDENTIAL CARBON REDUCTION PROGRAM

Cumulative Non-Residential Participation	2018	2019	2020	2021
Air Source Heat Pump/Mini-Split Heat Pump	177	532	887	1,241
<b>Total</b>	<b>177</b>	<b>532</b>	<b>887</b>	<b>1,241</b>

Cumulative Consumption	2018	2019	2020	2021
Avoided Propane (gallons)	(62,211)	(186,633)	(311,054)	(435,476)
Avoided Oil (gallons)	(104,113)	(312,338)	(520,564)	(728,789)
Beneficial Electrification (MWh)	391	1,173	1,956	2,738

Cumulative Carbon Emission Reductions (tons CO <sub>2</sub> )	2018	2019	2020	2021
Air Source Heat Pump/Mini-Split Heat Pump	1,446	4,339	7,233	10,168
<b>Total</b>	<b>1,446</b>	<b>4,339</b>	<b>7,233</b>	<b>10,168</b>

Annual Program Funding	2018	2019	2020	2021
Air Source Heat Pump/Mini-Split Heat Pump	\$ 707,726	\$ 1,415,452	\$ 1,415,452	\$ 1,415,452
<b>Total</b>	<b>\$ 707,726</b>	<b>\$ 1,415,452</b>	<b>\$ 1,415,452</b>	<b>\$ 1,415,452</b>

Benefit Cost Analysis	2018	2019	2020	2021
<b>Total</b>	<b>8.33</b>	<b>8.36</b>	<b>8.40</b>	<b>8.45</b>

CENTRAL HUDSON GAS & ELECTRIC CORPORATION  
CASE 17-E-\_\_\_\_ & 17-G-\_\_\_\_  
CARBON INTENSITY EAM- RESIDENTIAL ELECTRIC VEHICLE INCENTIVE PROGRAM

Electric Vehicle Incentive Program	2018	2019	2020	2021
Cumulative Participants	1,228	3,684	6,140	8,596
Cumulative Emissions Reduction (tons CO <sub>2</sub> )	4,635	13,919	23,221	33,019
Cumulative Avoided Gasoline (Gallons)	(594,151)	(1,782,452)	(2,970,753)	(4,159,054)
Cumulative Beneficial Electrification (MWh)	4,838	14,515	24,192	33,868
Tons of Carbon Reduced Per Unit	3.8	3.8	3.8	3.8

Annual Funding	2018	2019	2020	2021
Implementation	\$ 125,000	\$ 250,000	\$ 250,000	\$ 250,000
Marketing	\$ 75,000	\$ 150,000	\$ 150,000	\$ 150,000
Incentives	\$ 1,535,000	\$ 3,070,000	\$ 3,070,000	\$ 3,070,000
<b>Budget</b>	<b>\$ 1,735,000</b>	<b>\$ 3,470,000</b>	<b>\$ 3,470,000</b>	<b>\$ 3,470,000</b>

Electric Vehicle Assumptions	2018	2019	2020	2021
Incremental Cost of Electric Vehicle	\$ 12,506	\$ 12,506	\$ 12,506	\$ 12,506
Tax Incentives	\$ 7,500	\$ 7,500	\$ 7,500	\$ 7,500
Central Hudson Incentive	\$ 1,250	\$ 1,250	\$ 1,250	\$ 1,250
Net Customer Incremental Cost	\$ 3,756	\$ 3,756	\$ 3,756	\$ 3,756



CENTRAL HUDSON GAS & ELECTRIC CORPORATION  
CASE 17-E-\_\_\_\_\_ & 17-G-\_\_\_\_\_  
CARBON INTENSITY EAM - RESIDENTIAL GEOTHERMAL HEAT PUMP (GSHP) INCENTIVE PROGRAM

GSHP (Replacing Propane Heat)	2018	2019	2020	2021
Cumulative Participants	13	38	63	88
Cumulative Emissions Reduction (tons CO <sub>2</sub> )	74	221	369	521
Cumulative Avoided Propane (Gallons)	(13,613)	(40,839)	(68,065)	(95,291)
Cumulative Beneficial Electrification (MWh)	34	101	169	236
Tons of Carbon Reduced Per Unit	5.9	5.9	5.9	5.9

GSHP (Replacing Oil Heat)	2018	2019	2020	2021
Cumulative Participants	125	375	625	875
Cumulative Emissions Reduction (tons CO <sub>2</sub> )	850	2,550	4,252	5,988
Cumulative Avoided Oil (Gallons)	(84,056)	(252,167)	(420,278)	(588,390)
Cumulative Beneficial Electrification (MWh)	338	1,014	1,689	2,365
Tons of Carbon Reduced Per Unit	6.8	6.8	6.8	6.8

Annual Funding	2018	2019	2020	2021
Implementation	\$ 83,950	\$ 167,900	\$ 167,900	\$ 167,900
Marketing	\$ 37,157	\$ 74,313	\$ 74,313	\$ 74,313
Incentives	\$ 825,000	\$ 1,650,000	\$ 1,650,000	\$ 1,650,000
<b>Budget</b>	<b>\$ 946,107</b>	<b>\$ 1,892,213</b>	<b>\$ 1,892,213</b>	<b>\$ 1,892,213</b>

GSHP Inputs	2018	2019	2020	2021
Customer Cost of Geothermal Heat Pump	\$ 26,000	\$ 26,000	\$ 26,000	\$ 26,000
Central Hudson Incentive (per household)	\$ 6,000	\$ 6,000	\$ 6,000	\$ 6,000
Net Customer Cost	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000

CENTRAL HUDSON GAS & ELECTRIC CORPORATION  
CASE 17-E-\_\_\_\_ & 17-G-\_\_\_\_  
CARBON INTENSITY EAM- RESIDENTIAL AIR SOURCE HEAT PUMP (ASHP)/DUCTLESS MINI-SPLIT (MSHP)  
INCENTIVE PROGRAM

ASHP (Replacing Propane Heat)	2018	2019	2020	2021
Cumulative Participants	29	86	143	200
Cumulative Emissions Reduction (tons CO <sub>2</sub> )	166	499	832	1,174
Cumulative Avoided Propane (Gallons)	(31,192)	(93,576)	(155,960)	(218,344)
Cumulative Beneficial Electrification (MWh)	86	259	432	605
Tons of Carbon Reduced Per Unit	5.8	5.8	5.8	5.9

ASHP (Replacing Oil Heat)	2018	2019	2020	2021
Cumulative Participants	225	675	1,125	1,575
Cumulative Emissions Reduction (tons CO <sub>2</sub> )	1,508	4,525	7,545	10,635
Cumulative Avoided Oil (Gallons)	(151,329)	(453,988)	(756,646)	(1,059,305)
Cumulative Beneficial Electrification (MWh)	680	2,040	3,400	4,760
Tons of Carbon Reduced Per Unit	6.7	6.7	6.7	6.8

MSHP (Replacing Propane Heat)	2018	2019	2020	2021
Cumulative Participants	61	183	304	426
Cumulative Emissions Reduction (tons CO <sub>2</sub> )	452	1,357	2,263	3,180
Cumulative Avoided Propane (Gallons)	(78,987)	(236,962)	(394,936)	(552,911)
Cumulative Beneficial Electrification (MWh)	118	353	589	825
Tons of Carbon Reduced Per Unit	7.4	7.4	7.4	7.5

MSHP (Replacing Oil Heat)	2018	2019	2020	2021
Cumulative Participants	478	1,435	2,391	3,348
Cumulative Emissions Reduction (tons CO <sub>2</sub> )	4,343	13,031	21,722	30,508
Cumulative Avoided Oil (Gallons)	(407,775)	(1,223,324)	(2,038,873)	(2,854,422)
Cumulative Beneficial Electrification (MWh)	926	2,777	4,629	6,481
Tons of Carbon Reduced Per Unit	9.1	9.1	9.1	9.1

Annual Funding	2018	2019	2020	2021
Implementation	\$ 361,304	\$ 722,608	\$ 722,608	\$ 722,608
Marketing	\$ 73,838	\$ 147,676	\$ 147,676	\$ 147,676
Incentives (ASHP)	\$ 1,141,583	\$ 2,283,166	\$ 2,283,166	\$ 2,283,166
Incentives (MSHP)	\$ 1,347,702	\$ 2,695,405	\$ 2,695,405	\$ 2,695,405
<b>Budget</b>	<b>\$ 2,924,428</b>	<b>\$ 5,848,855</b>	<b>\$ 5,848,855</b>	<b>\$ 5,848,855</b>

ASHP Inputs	2018	2019	2020	2021
Initial Cost of Air Source Heat Pump	\$ 8,374	\$ 8,374	\$ 8,374	\$ 8,374
Tax Incentives	\$ -	\$ -	\$ -	\$ -
Central Hudson Incentive (per household)	\$ 4,500	\$ 4,500	\$ 4,500	\$ 4,500
Net Customer Cost	\$ 3,874	\$ 3,874	\$ 3,874	\$ 3,874

MSHP Inputs	2018	2019	2020	2021
Initial Cost of Geothermal Heat Pump	\$ 3,750	\$ 3,750	\$ 3,750	\$ 3,750
Tax Incentives	\$ -	\$ -	\$ -	\$ -
Central Hudson Incentive (per household)	\$ 2,500	\$ 2,500	\$ 2,500	\$ 2,500
Net Customer Cost	\$ 1,250	\$ 1,250	\$ 1,250	\$ 1,250

CENTRAL HUDSON GAS & ELECTRIC CORPORATION  
CASE 17-E-\_\_\_\_ & 17-G-\_\_\_\_  
CARBON INTENSITY EAM- NON-RESIDENTIAL AIR SOURCE HEAT PUMP/DUCTLESS MINI-SPLIT INCENTIVE PROGRAM

ASHP (Replacing Propane Heat)	2018	2019	2020	2021
Cumulative Participants	25	74	123	172
Cumulative Emissions Reduction (tons CO <sub>2</sub> )	158	474	790	1,112
Cumulative Avoided Propane (Gallons)	(28,385)	(85,156)	(141,926)	(198,696)
Cumulative Beneficial Electrification (MWh)	58	173	288	404
Tons of Carbon Reduced Per Unit	6.4	6.4	6.4	6.5

ASHP (Replacing Oil Heat)	2018	2019	2020	2021
Cumulative Participants	64	193	321	449
Cumulative Emissions Reduction (tons CO <sub>2</sub> )	474	1,424	2,373	3,339
Cumulative Avoided Oil (Gallons)	(45,904)	(137,712)	(229,520)	(321,328)
Cumulative Beneficial Electrification (MWh)	151	453	755	1,058
Tons of Carbon Reduced Per Unit	7.4	7.4	7.4	7.4

MSHP (Replacing Propane Heat)	2018	2019	2020	2021
Cumulative Participants	25	74	123	172
Cumulative Emissions Reduction (tons CO <sub>2</sub> )	194	581	969	1,362
Cumulative Avoided Propane (Gallons)	(33,826)	(101,477)	(169,128)	(236,780)
Cumulative Beneficial Electrification (MWh)	50	151	252	353
Tons of Carbon Reduced Per Unit	7.9	7.9	7.9	7.9

MSHP (Replacing Oil Heat)	2018	2019	2020	2021
Cumulative Participants	64	193	321	449
Cumulative Emissions Reduction (tons CO <sub>2</sub> )	620	1,860	3,101	4,355
Cumulative Avoided Oil (Gallons)	(58,209)	(174,626)	(291,044)	(407,461)
Cumulative Beneficial Electrification (MWh)	132	396	660	924
Tons of Carbon Reduced Per Unit	9.7	9.7	9.7	9.7

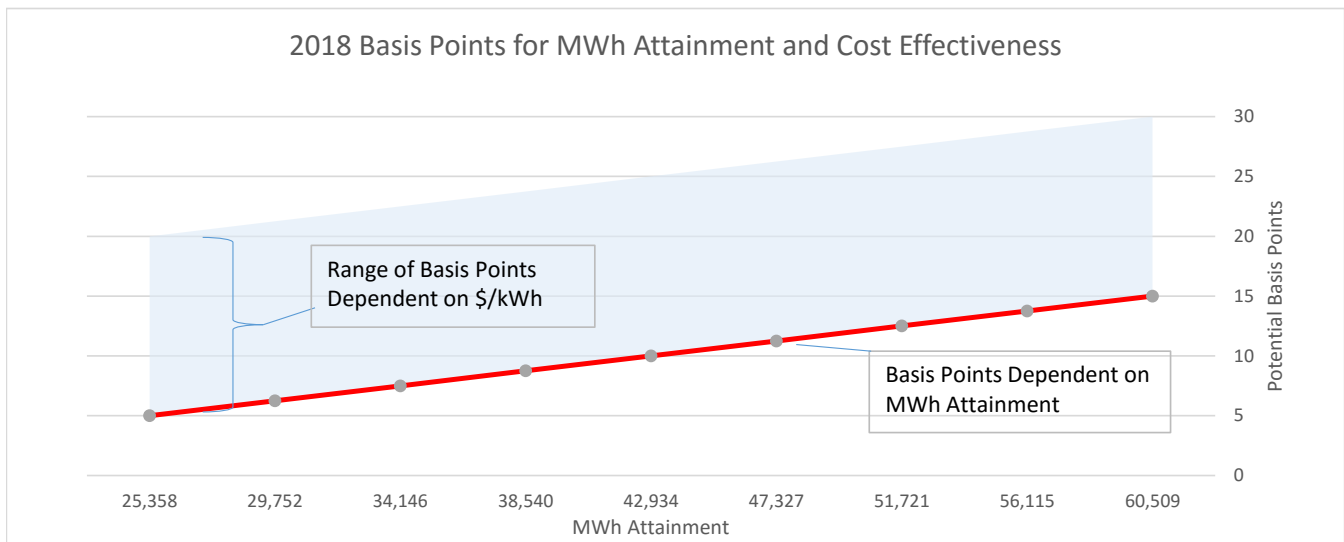
Annual Funding	2018	2019	2020	2021
Implementation	\$ 72,261	\$ 144,522	\$ 144,522	\$ 144,522
Marketing	\$ 14,768	\$ 29,535	\$ 29,535	\$ 29,535
Incentives (ASHP)	\$ 399,020	\$ 798,040	\$ 798,040	\$ 798,040
Incentives (MSHP)	\$ 221,678	\$ 443,356	\$ 443,356	\$ 443,356
<b>Budget</b>	<b>\$ 707,726</b>	<b>\$ 1,415,452</b>	<b>\$ 1,415,452</b>	<b>\$ 1,415,452</b>

ASHP Annual Inputs	2018	2019	2020	2021
Initial Cost of Air Source Heat Pump	\$ 8,227	\$ 8,227	\$ 8,227	\$ 8,227
Central Hudson Incentive (per household)	\$ 4,500	\$ 4,500	\$ 4,500	\$ 4,500
Net Customer Cost	\$ 3,727	\$ 3,727	\$ 3,727	\$ 3,727

MSHP Annual Inputs	2018	2019	2020	2021
Initial Cost of Geothermal Heat Pump	\$ 6,000	\$ 6,000	\$ 6,000	\$ 6,000
Central Hudson Incentive (per household)	\$ 2,500	\$ 2,500	\$ 2,500	\$ 2,500
Net Customer Cost	\$ 3,500	\$ 3,500	\$ 3,500	\$ 3,500

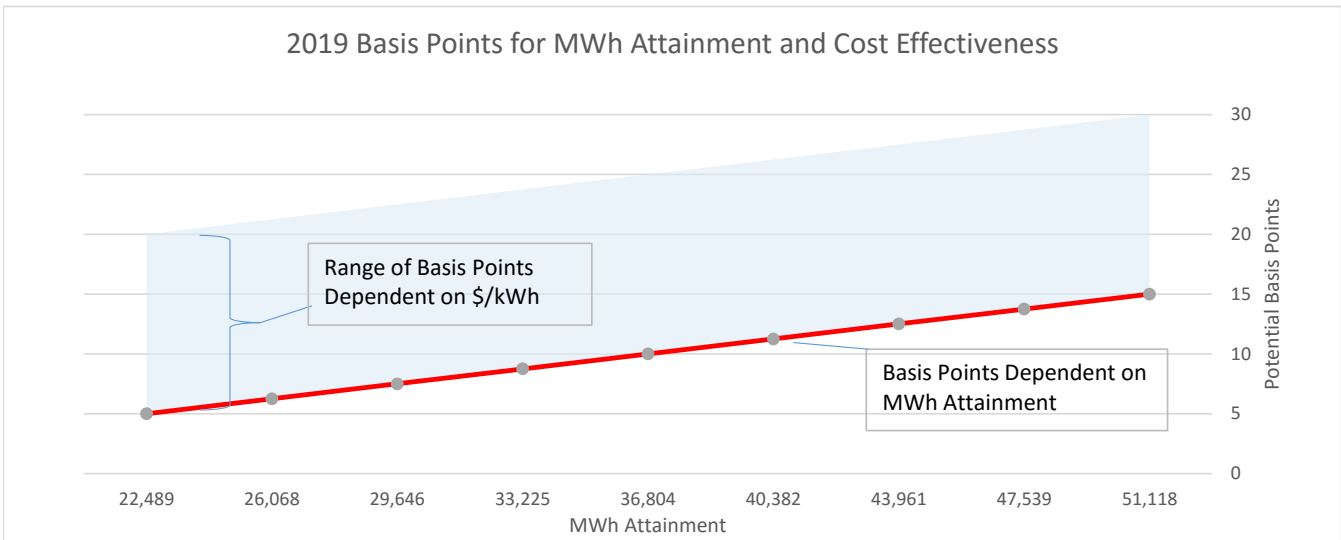
CENTRAL HUDSON GAS & ELECTRIC CORPORATION  
CASE 17-E-\_\_\_\_ & 17-G-\_\_\_\_  
ENERGY EFFICIENCY EAM- 2018 EE EAM TARGET

	2018 MWh	Step 1	Step 2	Step 3	Step 4	Step 5	Total EE Incentive
		Achievement Basis Points	\$/kWh Benchmark	Example \$/kWh	\$/kWh Savings	bp = Lesser of: 15bp or 50% savings	
<b>Max Achievable (MAP)</b>	<b>60,509</b>	15.00	0.54	0.00	0.54	15.00	30
linear equation	56,115	13.75	0.50	0.00	0.50	15.00	29
linear equation	51,721	12.50	0.46	0.00	0.46	15.00	28
linear equation	47,327	11.25	0.41	0.00	0.41	15.00	26
<b>Midpoint</b>	<b>42,934</b>	10.00	0.37	0.00	0.37	15.00	25
linear equation	38,540	8.75	0.33	0.00	0.33	15.00	24
linear equation	34,146	7.50	0.29	0.00	0.29	15.00	23
linear equation	29,752	6.25	0.24	0.00	0.24	15.00	21
<b>Realistic Achievable (RAP)</b>	<b>25,358</b>	5.00	0.20	0.00	0.20	15.00	20



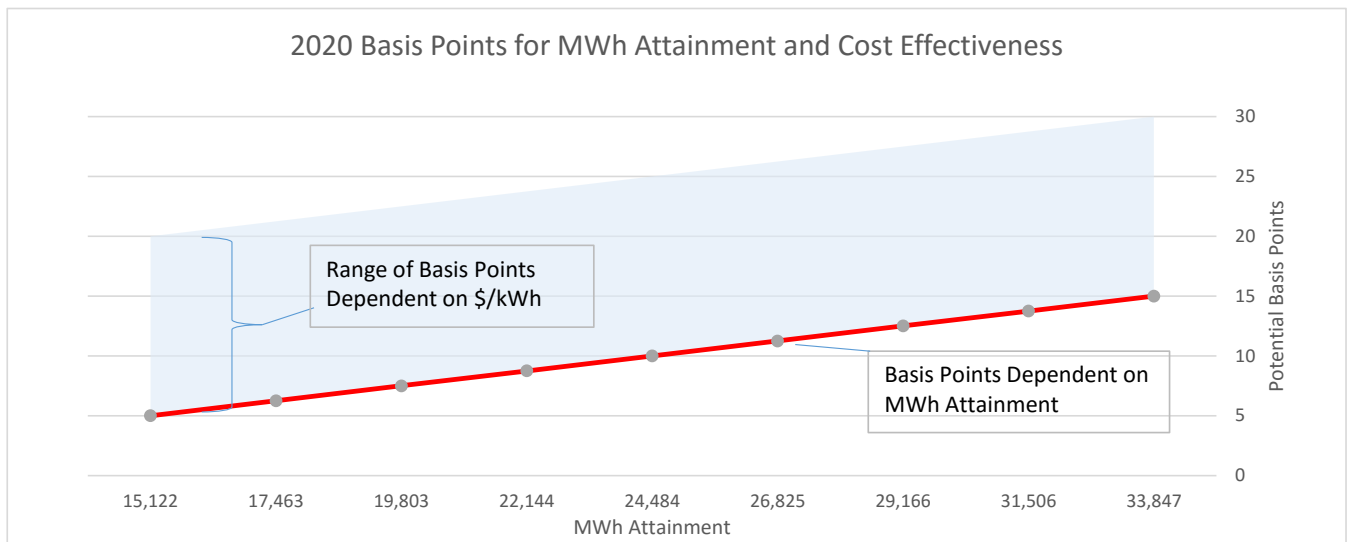
CENTRAL HUDSON GAS & ELECTRIC CORPORATION  
CASE 17-E-\_\_\_\_ & 17-G-\_\_\_\_  
ENERGY EFFICIENCY EAM- 2019 EE EAM TARGET

		Step 1	Step 2	Step 3	Step 4	Step 5	Total
	2019 MWh	Achievement Basis Points	\$/kWh Benchmark	Example \$/kWh	\$/kWh Savings	bp = Lesser of: 15bp or 50% savings	EE Incentive
<b>Max Achievable (MAP)</b>	<b>51,118</b>	15.00	0.54	0.00	0.54	15.00	30
linear equation	47,539	13.75	0.50	0.00	0.50	15.00	29
linear equation	43,961	12.50	0.46	0.00	0.46	15.00	28
linear equation	40,382	11.25	0.41	0.00	0.41	15.00	26
<b>Midpoint</b>	<b>36,804</b>	10.00	0.37	0.00	0.37	15.00	25
linear equation	33,225	8.75	0.33	0.00	0.33	15.00	24
linear equation	29,646	7.50	0.29	0.00	0.29	15.00	23
linear equation	26,068	6.25	0.24	0.00	0.24	15.00	21
<b>Realistic Achievable (RAP)</b>	<b>22,489</b>	5.00	0.20	0.00	0.20	15.00	20



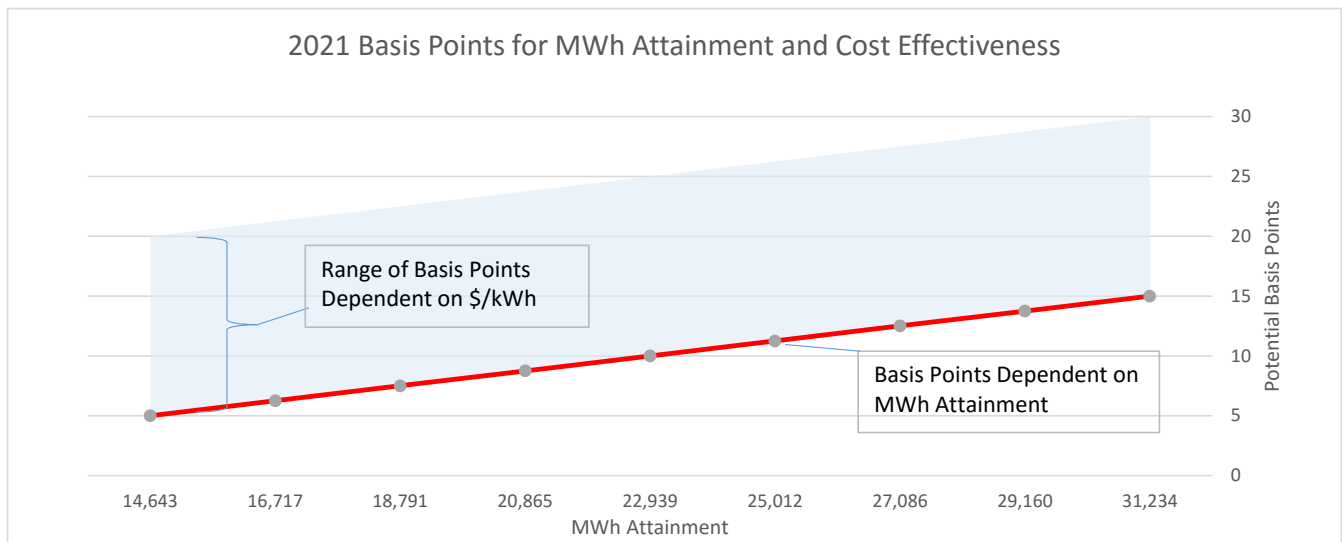
CENTRAL HUDSON GAS & ELECTRIC CORPORATION  
CASE 17-E-\_\_\_\_ & 17-G-\_\_\_\_  
ENERGY EFFICIENCY EAM- 2020 EE EAM TARGET

		Step 1	Step 2	Step 3	Step 4	Step 5	Total
	2020 MWh	Achievement Basis Points	\$/kWh Benchmark	Example \$/kWh	\$/kWh Savings	bp = Lesser of: 15bp or 50% savings	EE Incentive
<b>Max Achievable (MAP)</b>	<b>33,847</b>	15.00	0.54	0.00	0.54	15.00	30
linear equation	31,506	13.75	0.50	0.00	0.50	15.00	29
linear equation	29,166	12.50	0.46	0.00	0.46	15.00	28
linear equation	26,825	11.25	0.41	0.00	0.41	15.00	26
<b>Midpoint</b>	<b>24,484</b>	10.00	0.37	0.00	0.37	15.00	25
linear equation	22,144	8.75	0.33	0.00	0.33	15.00	24
linear equation	19,803	7.50	0.29	0.00	0.29	15.00	23
linear equation	17,463	6.25	0.24	0.00	0.24	15.00	21
<b>Realistic Achievable (RAP)</b>	<b>15,122</b>	5.00	0.20	0.00	0.20	15.00	20



CENTRAL HUDSON GAS & ELECTRIC CORPORATION  
CASE 17-E-\_\_\_\_ & 17-G-\_\_\_\_  
ENERGY EFFICIENCY EAM- 2021 EE EAM TARGET

		Step 1	Step 2	Step 3	Step 4	Step 5	Total
	2021 MWh	Achievement Basis Points	\$/kWh Benchmark	Example \$/kWh	\$/kWh Savings	bp = Lesser of: 15bp or 50% savings	EE Incentive
<b>Max Achievable (MAP)</b>	<b>31,234</b>	15.00	0.54	0.00	0.54	15.00	30
linear equation	29,160	13.75	0.50	0.00	0.50	15.00	29
linear equation	27,086	12.50	0.46	0.00	0.46	15.00	28
linear equation	25,012	11.25	0.41	0.00	0.41	15.00	26
<b>Arithmetic Average</b>	<b>22,939</b>	10.00	0.37	0.00	0.37	15.00	25
linear equation	20,865	8.75	0.33	0.00	0.33	15.00	24
linear equation	18,791	7.50	0.29	0.00	0.29	15.00	23
linear equation	16,717	6.25	0.24	0.00	0.24	15.00	21
<b>Realistic Achievable (RAP)</b>	<b>14,643</b>	5.00	0.20	0.00	0.20	15.00	20



CENTRAL HUDSON GAS & ELECTRIC CORPORATION  
CASE 17-E-\_\_\_\_ & 17-G-\_\_\_\_  
ENERGY EFFICIENCY EAM- HISTORICAL SPENDING

Central Hudson	2012	2013	2014	2015	2016	Total
MWh Acquired	39,883	36,753	35,144	47,816	51,112	210,708
Expenditures	\$6,442,461	\$6,097,413	\$7,122,576	\$13,275,394	\$6,587,023	\$39,524,867
Spend per kWh	\$0.16	\$0.17	\$0.20	\$0.28	\$0.13	\$0.19
Administration & Evaluation Costs	\$690,045	\$832,610	\$642,025	\$504,739	\$579,555	\$3,248,974
Spend per kWh	\$0.18	\$0.19	\$0.22	\$0.29	\$0.14	\$0.20
Joint Utility (excluding CH)	2012	2013	2014	2015	2016	Total
MWh Acquired	481,155	451,908	548,803	638,579	527,535	2,647,980
Expenditures	\$149,814,739	\$127,551,565	\$150,427,212	\$127,346,557	\$139,995,816	\$695,135,889
Spend per kWh	\$0.31	\$0.28	\$0.27	\$0.20	\$0.27	\$0.26



CENTRAL HUDSON GAS & ELECTRIC CORPORATION  
CASE 17-E-\_\_\_\_ & 17-G-\_\_\_\_  
SYSTEM EFFICIENCY EAM- TARGET & BASIS POINTS

SE EAM Target (MW)	2018	2018 bp	2019	2020	2021	2019 - 2021 bp
MW Reduction Maximum	16	5.0	42	64	76	10.0
MW Reduction Midpoint	8	2.5	21	32	38	5.0
MW Reduction Minimum	-	-	-	-	-	-

CENTRAL HUDSON GAS & ELECTRIC CORPORATION  
CASE 17-E-\_\_\_\_ & 17-G-\_\_\_\_  
SYSTEM EFFICIENCY EAM- PEAK LOAD FORECAST, ADJUSTED BASELINE & TARGET

Peak Load Forecast (MW)	2017	2018	2019	2020	2021
System-Wide Forecast	1,098	1,099	1,099	1,100	1,101
Coldenham	0.1	0.4	0.6	0.6	0.6
DLM Forecast	3	3	3	3	3
TDM Forecast	11	15	16	16	16
Incremental EE Impact	16	23	30	35	40
Incremental PV Impact	6	24	39	42	46
<b>Adjusted Peak Load Forecast</b>	<b>1,134</b>	<b>1,165</b>	<b>1,188</b>	<b>1,196</b>	<b>1,207</b>

SE EAM Target (MW)	2017	2018	2019	2020	2021
Baseline Forecast	1,134	1,165	1,188	1,196	1,207
Less: EE Impact (RAP)	6	11	15	19	23
Less Incremental PV Impact	6	24	39	42	46
Less: DLM (RAP)	4	6	9	13	15
Less: TOU Rate Reduction	0.01	0.50	1.00	1.50	2.00
Less: SHR Pilot Reduction	0.05	0.20	0.20	0.20	0.20
<b>Projected Peak after Intervention</b>	<b>1,118</b>	<b>1,123</b>	<b>1,124</b>	<b>1,121</b>	<b>1,121</b>
Cumulative MW Reduction	16	42	64	76	86
Annual MW Reduction	16	42	22	12	10

CENTRAL HUDSON GAS & ELECTRIC CORPORATION

CASE 17-E-\_\_\_\_ & 17-G-\_\_\_\_

SYSTEM EFFICIENCY EAM- TIME-OF-USE (TOU) & SMART HOME RATE (SHR) MW REDUCTION

Impact of Optional Rates	2017	2018	2019	2020	2021	CAGR
TOU Rate Participants	25	2,500	5,000	7,500	10,000	347%
Expected kW impact per Participant	0.2	0.2	0.2	0.2	0.2	0%
Expected MW Reduction due to TOU Rate	0.0	0.5	1.0	1.5	2.0	347%
SHR Rate Participants	136	500	500	500	500	38%
Expected kW impact per Participant	0.4	0.4	0.4	0.4	0.4	0%
Expected MW Reduction due to SHR Rate	0.1	0.2	0.2	0.2	0.2	38%

CENTRAL HUDSON GAS & ELECTRIC CORPORATION  
CASE 17-E-\_\_\_\_ & 17-G-\_\_\_\_  
CUSTOMER ENGAGEMENT EAM

Program Participants	2017	2018	2019	2020	2021	CAGR
CenHub	113,664	120,832	128,000	135,168	142,336	6%
TOU Rate	25	2,500	5,000	7,500	10,000	347%
SHR	136	500	500	500	500	38%
Insights+	400	2,700	4,000	4,000	4,000	78%

Program Participants (% Basis)	2017	2018	2019	2020	2021
CenHub	44%	47%	50%	53%	56%
TOU Rate	0%	1%	2%	3%	4%
SHR	0.1%	0.2%	0.2%	0.2%	0.2%
Insights+	0.2%	1.1%	1.6%	1.6%	1.6%

CENTRAL HUDSON GAS & ELECTRIC CORPORATION  
CASE 17-E-\_\_\_\_\_ & 17-G-\_\_\_\_\_  
DER UTILIZATION EAM- DER UTILIZATION BASELINES DEVELOPMENT

DER Resource Baseline Penetration	2017	2018	2019	2020	2021	CAGR
Solar PV (MW)	52	102	118	134	150	30%
Battery Storage	-	-	-	-	-	N/A
CHP	-	-	-	-	-	N/A
EV Beneficial Electrification (Vehicles)	-	1,228	3,684	6,140	8,596	N/A
Hybrid EV Beneficial Electrification (Vehicles)	-	-	-	-	-	N/A
Geothermal Heat Pump Beneficial Electrification (Participants)	-	138	413	688	963	N/A
Air-Source/Mini-Split Heat Pump Beneficial Electrification (Participants)	-	793	2,378	3,964	5,549	N/A

DER Resource Baseline Penetration (MWhs)	2017	2018	2019	2020	2021	CAGR
Solar PV	60,714	119,746	138,658	156,977	176,050	30%
Battery Storage	-	-	-	-	-	N/A
CHP	-	-	-	-	-	N/A
EV Beneficial Electrification	-	4,838	14,515	24,192	33,868	N/A
Hybrid EV Beneficial Electrification	-	-	-	-	-	N/A
Geothermal Heat Pump Beneficial Electrification	-	372	1,115	1,858	2,601	N/A
Air-Source/Mini-Split Heat Pump Beneficial Electrification	-	2,201	6,604	11,006	15,409	N/A
Energy Efficiency Programs	34,240	61,810	77,628	92,750	107,872	33%
<b>Total MWh</b>	<b>94,954</b>	<b>188,967</b>	<b>238,520</b>	<b>286,783</b>	<b>335,801</b>	
<b>Annual Change in MWhs</b>		<b>94,013</b>	<b>49,552</b>	<b>48,263</b>	<b>49,017</b>	

Linear Target and bps	2018	2018 bp	2019	2020	2021	2019-2021 bp
Min Annual Change in MWhs	-	-	-	-	-	-
Midpoint	30,106	1.25	30,106	30,106	30,106	2.50
Target Average Annual Change in MWhs	60,212	2.50	60,212	60,212	60,212	5.00

CENTRAL HUDSON GAS & ELECTRIC CORPORATION  
CASE 17-E-\_\_\_\_ & 17-G-\_\_\_\_  
INTERCONNECTION EAM- BASIS POINT ALLOCATION

<b>Basis Points: Survey Results at or above baseline</b>				
SIR Timeliness Targets (After Removing Exceptions)	2018	2019	2020	2021
No Timeliness Targets Missed	2.0	4.0	4.0	4.0
1 Timeliness Target Missed	1.9	3.8	3.8	3.8
2 Timeliness Target Missed	1.8	3.6	3.6	3.6
3 Timeliness Target Missed	1.7	3.4	3.4	3.4
4 Timeliness Target Missed	1.6	3.2	3.2	3.2
5 Timeliness Target Missed	1.5	3.0	3.0	3.0
6 Timeliness Target Missed	1.4	2.8	2.8	2.8
7 Timeliness Target Missed	1.3	2.6	2.6	2.6
8 Timeliness Target Missed	1.2	2.4	2.4	2.4
9 Timeliness Target Missed	1.1	2.2	2.2	2.2
10 Timeliness Target Missed	1.0	2.0	2.0	2.0
11 Timeliness Target Missed	0.9	1.8	1.8	1.8
12 Timeliness Target Missed	0.8	1.6	1.6	1.6
13 Timeliness Target Missed	0.7	1.4	1.4	1.4
14 Timeliness Target Missed	0.6	1.2	1.2	1.2
15 Timeliness Target Missed	0.5	1.0	1.0	1.0
16 Timeliness Target Missed	0.4	0.8	0.8	0.8
17 Timeliness Target Missed	0.3	0.6	0.6	0.6
18 Timeliness Target Missed	0.2	0.4	0.4	0.4
19 Timeliness Target Missed	0.1	0.2	0.2	0.2
20 or More Timeliness Targets Missed	0.0	0.0	0.0	0.0

<b>Metric and Basis Points: Average Timeliness Exceeded</b>				
Days and Basis Points	2018	2019	2020	2021
Percentage of Average Days vs. SIR Allowance	95%	95%	93%	90%
Basis Points	0.5	1	1	1