

Estimate of Emission Reductions from Time-of-Sale Energy Efficiency Requirements

Baseline Forecast

	2016	2017	2018	2019	2020
Electricity (MMTCO2e)					129
Natural Ga	14,625	14,836	15,049	15,266	15,486
Natural Gas (MMCO2e)					82
Total					211
					1.446%

source: California Energy Commission, *Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004*, CEC-600-2006-013-SF, December 2006, Table F-2
 source: The California Energy Commission's forecast for statewide consumption of natural gas in 2016 is 14,625 MM Therms, with a growth rate from 2008-2016 of 1.44%

Assumptions

500,000 homes per year sold in California	
Energy Savings - HERS rating only required for 2010 and 2011	
535 kWh/yr	
0.15 kW	
26 therm/yr	
Energy Savings - EE requirement for 2012 and after (assuming savings are double HERS rating only)	
1070 kWh/yr	
0.3 kW	
52 therm/yr	
Conversion Factors	
313	kg CO2e per MWh
53.06	kg CO2e per MMBtu
1 therm	= 100000 Btu
0.018	kg NOx per MWh of electricity
0.018	kg PM10 per MWh of electricity
2205	pounds per metric ton
4.5E-05	metric ton NOx/ MMBtu

source: CEC, Options for Energy Efficiency in Existing Buildings, CEC-400-2005-039-CMF, December 2005, p. 54.
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 source: Climate Action Team Economics Subgroup, Updated Macroeconomic Analysis of Climate Strategies Presented in the March 2006 Climate Action Team Report, Public Review
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 source: see below, average from Energy and Environmental Economics, Methodology and Forecast of Long Term Avoided Costs for the Evaluation of California Energy Efficiency Prog

Energy Savings

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
annual incr GWh	267.5	267.5	535	535	535	535	535	535	535	535	535
MW	75	75	150	150	150	150	150	150	150	150	150
MM Therm	13	13	26	26	26	26	26	26	26	26	26
cumulative GWh	267.5	535	1070	1605	2140	2675	3210	3745	4280	4815	5350
MW	75	150	300	450	600	750	900	1050	1200	1350	1500
MM Therm	13	26	52	78	104	130	156	182	208	234	260

CO2 savings (MMTCO2e)

electric	1.7
natural gas	1.4
Total	3.1 MMTCO2e

Criteria Pollutant Savings

electric	Nox	96.3 metric tons Nox
	PM10	96.3 metric tons PM10
natural gas	Nox	1164 metric tons Nox
	PM10	n/a
total	Nox	1260 metric tons Nox
	PM10	96.3 metric tons PM10

PM10 emissions are so low as to be inconsequential so they were not included in: Energy and Environmental Economics, Methodology and Forecast of Long Term Avoided Costs for the Evaluation of California Energy Efficiency f

Natural gas end-use emission rates

Nox (lb/MMBtu)	
	0.186
	0.137
	0.098
	0.098
	0.049
	0.031
	0.092
average	0.1 lb/MMBtu
	4.5E-05 metric ton NOx/ MMBtu

source: Energy and Environmental Economics, *Methodology and Forecast of Long Term Avoided Costs for the Evaluation of California Energy Efficiency Programs*, for California Publi

per year. Extrapolating to 2020 results in statewide consumption of 15,486 MM Therms in 2020. California Energy Commission, California Energy Demand 2008-2018, Staff Draft Report, CEC-200-2007-015SD, July 2007, p. 1-9

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