

Interest Rate Percent Reduction	Mortgages / Year ²	Cost / Mortgage ³ (\$/Mortgage)	Federal Investment (\$)	Annual Consumer Savings (low) (\$)	Annual Consumer Savings (high) (\$)
1.04	600,000	\$11,360	\$6,816,213,600	\$1,105,000,270	\$2,963,859,720
1.54	300,000	\$16,806	\$5,041,906,800	\$723,334,459	\$1,652,764,184
2.54	600,000	\$27,698	\$16,619,013,600	\$1,947,619,412	\$3,806,478,862
3.54	600,000	\$38,590	\$23,154,213,600	\$2,421,265,300	\$4,280,124,750
TOTAL	2,100,000		\$51,631,347,600	\$6,197,219,441	\$12,703,227,516

¹US census. The average cost of a new home sold in the US in October 2008 was \$272,300.

²Approximately 500,000 to 800,000 home sales will result from each 1 percent reduction in mortgage interest.
 (Nick Timiraos, Wall Street Journal, Home Builders Make Plea for Federal Aid, <http://online.wsj.com/article/SB122748520112251743.html>, November 24, 2008.)

³The cost to the government for each 1 percent reduction in mortgage interest is 4 percent of the loan principle.
 (Nick Timiraos, Wall Street Journal, Home Builders Make Plea for Federal Aid, <http://online.wsj.com/article/SB122748520112251743.html>, November 24, 2008.)

RESIDENTIAL MORTGAGE BUY-DOWN COST: NEW CONSTRUCTION

Interest Rate Percent Reduction	Mortgages / Year ¹	Cost / Mortgage ² (\$/Mortgage)	Federal Investment (\$)	Annual Consumer Savings (\$)
0.54	250,000	\$5,914	\$1,478,589,000	\$210,616,879
1.04	250,000	\$11,360	\$2,840,089,000	\$354,012,864
2.04	500,000	\$22,252	\$11,126,178,000	\$1,122,004,715
2.54	250,000	\$27,698	\$6,924,589,000	\$495,305,063
TOTAL	1,250,000		\$22,369,445,000	\$2,181,939,521

¹Approximately 500,000 to 800,000 home sales will result from each 1 percent reduction in mortgage interest.
 (Nick Timiraos, Wall Street Journal, Home Builders Make Plea for Federal Aid, <http://online.wsj.com/article/SB122748520112251743.html>, November 24, 2008.)

²The cost to the government for each 1 percent reduction in mortgage interest is 4 percent of the loan principle.
 (Nick Timiraos, Wall Street Journal, Home Builders Make Plea for Federal Aid, <http://online.wsj.com/article/SB122748520112251743.html>, November 24, 2008.)

% Below Code ¹	Mortgages / Year	Annual Energy Savings ² (\$)	Annual Energy Savings ² (TBtu)	Annual CO2 Savings (MMT)
30	600,000	\$723,000,000	57.66	4.38
50	300,000	\$448,199,552	37.07	2.81
75	600,000	\$1,050,770,378	94.73	7.19
Carbon neutral	600,000	\$1,383,600,000	115.32	8.75
TOTAL	2,100,000	\$3,605,569,930	304.77	23.14

Residential building fossil fuel energy: 16.46 Quads/ year. Source: 2007 Building Energy Databook, Summary Table 1 and 6.
Residential building CO2 emissions: 1249.5 MMTCO2/ year. Source: Emissions of Greenhouse Gases in the United States 2007, EIA, page 16.
Primary energy consumption per household 0.00019220 TBtu/households - year. Source: 2007 Building Energy Databook, Table 1.2.4.

¹ 2030 Challenge targets expressed as percentage below IECC 2006.

² Adjusted for renovation using relationship between percentage below code and percentage below existing energy use.

RESIDENTIAL ENERGY EFFICIENCY: NEW CONSTRUCTION

% Below Code ¹	Mortgages / Year	Annual Energy Savings (\$)	Annual Energy Savings (TBtu)	Annual CO2 Savings (MMT)
30	250,000	\$180,750,000	14.42	1.09
50	250,000	\$290,500,000	24.03	1.82
75	500,000	\$867,000,000	72.08	5.47
Carbon neutral	250,000	\$576,500,000	48.05	3.65
TOTAL	1,250,000	\$1,914,750,000	158.57	12.04

Residential building fossil fuel energy: 16.46 Quads/ year. Source: 2007 Building Energy Databook, Summary Table 1 and 6.
Residential building CO2 emissions: 1249.5 MMTCO2/ year. Source: Emissions of Greenhouse Gases in the United States 2007, EIA, page 16.
Primary energy consumption per household 0.00019220 TBtu/households - year. Source: 2007 Building Energy Databook, Table 1.2.4.

¹ 2030 Challenge targets expressed as percentage below IECC 2006.

RESIDENTIAL FEDERAL INVESTMENT AND CONSUMER SAVINGS

Year	Federal Investment (\$)	Consumer Savings (low) (\$)	Consumer Savings (high) (\$)	Energy Savings (TBtu)	CO2 Savings (MMT)
1	\$74,000,792,600	\$13,899,478,892	\$20,405,486,967	463.34	35.17
2	\$74,000,792,600	\$27,798,957,784	\$40,810,973,933	926.68	70.35
3		\$27,798,957,784	\$40,810,973,933	926.68	70.35
4		\$27,798,957,784	\$40,810,973,933	926.68	70.35
5		\$27,798,957,784	\$40,810,973,933	926.68	70.35
TOTAL	\$148,001,585,200	\$125,095,310,027	\$183,649,382,700	4,170.05	316.57



Accelerated Depreciation (yrs)	% Below Code ¹	Sq. Ft. / Year	Value of Annual Depreciation ² (\$)	Annual Construction Cost (\$)	Annual Energy Savings ³ (\$)	Annual Energy Savings ³ (TBtu)	Annual CO2 Savings (MMT)
4	30	225,000,000	\$731,250,000	\$6,750,000,000	\$233,630,552	27.12	2.23
3	50	225,000,000	\$1,012,500,000	\$6,750,000,000	\$300,381,838	34.87	2.87
2	75	225,000,000	\$1,575,000,000	\$6,750,000,000	\$383,821,237	44.56	3.67
1	Carbon neutral	225,000,000	\$3,262,500,000	\$6,750,000,000	\$467,261,104	54.25	4.46
TOTAL		900,000,000	\$6,581,250,000	\$27,000,000,000	\$1,385,094,730	160.81	13.23

Assumes approximately 1.5 billion sq. ft. of commercial building renovation each year.
 Assuming 60 percent of annual commercial building construction would take advantage of the accelerated depreciation.
 Total commercial building energy cost: \$154.30 billion. Source: 2007 Building Energy Databook, Table 4.1.3.
 Total commercial building square footage: 74.3 billion sq. ft. Source: 2007 Building Energy Databook, Table 2.2.1.
 Cost energy per square foot of floor area for commercial buildings: \$2.08/ sq. ft. - year.
 Assumed average cost of commercial renovation: \$30/ sq. ft.
 Commercial building fossil fuel energy: 13.22 Quads/ year. Source: 2007 Building Energy Databook, Summary Table 1 and 6.
 Commercial buildings CO2 emissions: 1,087.4 MMTCO2/ year. Source: Emissions of Greenhouse Gases in the United States 2007, EIA, page 17.
 Primary energy consumption per sq. ft. of commercial buildings: 0.000002411 TBtu/ sq. ft. - year. Source: 2007 Building Energy Databook, Table 1.3.4.

¹ 2030 Challenge targets expressed as percentage below ASHRAE 90.1-2004.
² The federal investment (deferred revenue) for commercial building depreciation is calculated at 50% since the tax savings is repaid at the time of building sale.
³ Adjusted for renovation using relationship between percentage below code and percentage below existing energy use.

COMMERCIAL BUILDING ACCELERATED DEPRECIATION: NEW CONSTRUCTION

Accelerated Depreciation (yrs)	% Below Code ¹	Sq. Ft. / Year	Value of Annual Depreciation ² (\$)	Annual Construction Cost (\$)	Annual Energy Savings (\$)	Annual Energy Savings (TBtu)	Annual CO2 Savings (MMT)
8	30	100,000,000	\$532,583,333	\$11,620,000,000	\$62,301,480	7.23	0.59
6	50	100,000,000	\$774,666,667	\$11,620,000,000	\$103,835,801	12.06	0.99
4	75	100,000,000	\$1,258,833,333	\$11,620,000,000	\$155,753,701	18.08	1.49
2	Carbon neutral	100,000,000	\$2,711,333,333	\$11,620,000,000	\$207,671,602	24.11	1.98
TOTAL		400,000,000	\$5,277,416,667	\$46,480,000,000	\$529,562,584	61.48	5.06

Assumes approximately 1 billion sq. ft. of new commercial building each year.
 Assuming 40 percent of annual commercial building construction would take advantage of the accelerated depreciation.
 Total commercial building energy cost: \$154.30 billion. Source: 2007 Building Energy Databook, Table 4.1.3.
 Total commercial building square footage: 74.3 billion sq. ft. Source: 2007 Building Energy Databook, Table 2.2.1.
 Cost energy per square foot of floor area for commercial buildings: \$2.08/ sq. ft. - year.
 Assumed average cost of commercial new construction: \$116.20/ sq. ft.
 Commercial building fossil fuel energy: 13.22 Quads/ year. Source: 2007 Building Energy Databook, Summary Table 1 and 6.
 Commercial buildings CO2 emissions: 1,087.4 MMTCO2/ year. Source: Emissions of Greenhouse Gases in the United States 2007, EIA, page 17.
 Primary energy consumption per sq. ft. of commercial buildings: 0.000002411 TBtu/ sq. ft. - year. Source: 2007 Building Energy Databook, Table 1.3.4.

¹ 2030 Challenge targets expressed as percentage below ASHRAE 90.1-2004.
² The federal investment (deferred revenue) for commercial building depreciation is calculated at 50% since the tax savings is repaid at the time of building sale.



Year	Value of Annual Depreciation ¹ (\$)	Consumer Savings ² (\$)	Energy Savings (TBtu)	CO2 Savings (MMT)
1	\$11,858,666,667	\$1,914,657,314	222.29	18.29
2	\$11,858,666,667	\$3,829,314,629	444.57	36.57
3		\$3,829,314,629	444.57	36.57
4		\$3,829,314,629	444.57	36.57
5		\$3,829,314,629	444.57	36.57
TOTAL	\$23,717,333,333	\$17,231,915,828	2,000.57	164.57

¹The federal investment (deferred revenue) for commercial building depreciation is calculated at 50% since the tax savings is repaid at the time of building sale.

² Depreciation savings was not included in this figure because tax savings from accelerated depreciation is repaid at the time of building sale, which varies greatly.

TOTAL: RESIDENTIAL AND COMMERCIAL

Year	Federal Investment (\$)	Value of Annual Depreciation ¹ (\$)	Total Federal Investment (\$)	Mortgage Savings (low) (\$)	Mortgage Savings (high) (\$)	Energy Savings (\$)
1	\$74,000,792,600	\$11,858,666,667	\$85,859,459,267	\$8,379,158,962	\$14,885,167,037	\$7,434,977,244
2	\$74,000,792,600	\$11,858,666,667	\$85,859,459,267	\$16,758,317,924	\$29,770,334,074	\$14,869,954,488
3				\$16,758,317,924	\$29,770,334,074	\$14,869,954,488
4				\$16,758,317,924	\$29,770,334,074	\$14,869,954,488
5				\$16,758,317,924	\$29,770,334,074	\$14,869,954,488
TOTAL	\$148,001,585,200	\$23,717,333,333	\$171,718,918,533	\$75,412,430,660	\$133,966,503,334	\$66,914,795,195

TOTAL: RESIDENTIAL AND COMMERCIAL (continued)

Year	Total Consumer Savings ² (low) (\$)	Total Consumer Savings ² (high) (\$)	Energy Savings (TBtu)	CO2 Savings (MMT)	Natural Gas Savings (Billion CF)	Crude Oil (Million Barrels)
1	\$15,814,136,206	\$22,320,144,281	685.62	53.46	203.27	9.26
2	\$31,628,272,412	\$44,640,288,562	1,371.25	106.92	406.54	18.52
3	\$31,628,272,412	\$44,640,288,562	1,371.25	106.92	406.54	18.52
4	\$31,628,272,412	\$44,640,288,562	1,371.25	106.92	406.54	18.52
5	\$31,628,272,412	\$44,640,288,562	1,371.25	106.92	406.54	18.52
TOTAL	\$142,327,225,855	\$200,881,298,529	6,170.62	481.13	1829.43	83.35

¹ The federal investment (deferred revenue) for commercial building depreciation is calculated at 50% since the tax savings is repaid at the time of building sale.

² Depreciation savings was not included in this figure because tax savings from accelerated depreciation is repaid at the time of building sale, which varies greatly.

Year	Consumer Savings (low) (billion \$)	Consumer Savings (high) (billion \$)	Jobs (low)	Jobs (high)
1	\$13.90	\$20.41	154,687	284,333
2	\$13.90	\$20.41	154,687	284,333
Total	\$27.80	\$40.81	309,374	568,667

	Jobs/billion \$ ¹
Consumer high	13,934
Consumer low	11,129

¹Mitra Toossi, "Consumer spending: an engine for U.S. job growth", Monthly Labor Review, November 2002, Page 16.

JOBS FROM NEW CONSUMER SPENDING: COMMERCIAL

Year	Consumer Savings (billion \$)	Jobs (low)	Jobs (high)
1	\$1.91	21,308	26,679
2	\$1.91	21,308	26,679
Total	\$3.83	42,616	53,358

RESIDENTIAL BUILDING SECTOR JOBS

Year	Renovation	New Construction	Renovation Cost (billion \$)	New Construction Cost (billion \$)	Direct Jobs ¹	Indirect Jobs ¹	Induced Jobs ¹	TOTAL JOBS
1	2,100,000	1,250,000	\$72.30	\$340.38	3,183,788	2,100,516	1,585,497	6,869,801
2	2,100,000	1,250,000	\$72.30	\$340.38	3,183,788	2,100,516	1,585,497	6,869,801

¹ Political Economy Research Institute (PERI). For each \$1 million of spending, 7.715 jobs are directly created within the construction industry. An additional 5.090 jobs are indirectly created in industries such as transportation, administrative services, etc. Induced job creation (the jobs that are created when workers spend their earnings on retail goods, fuel, food, etc.) is 3.842 per \$1 million.

COMMERCIAL BUILDING SECTOR JOBS

Year	Renovation	New Construction	Renovation Cost (billion \$)	New Construction Cost (billion \$)	Direct Jobs ¹	Indirect Jobs ¹	Induced Jobs ¹	TOTAL JOBS
1	900,000,000	400,000,000	\$27.00	\$46.48	566,898	374,013	282,310	1,223,222
2	900,000,000	400,000,000	\$27.00	\$46.48	566,898	374,013	282,310	1,223,222

¹ Political Economy Research Institute (PERI). For each \$1 million of spending, 7.715 jobs are directly created within the construction industry. An additional 5.090 jobs are indirectly created in industries such as transportation, administrative services, etc. Induced job creation (the jobs that are created when workers spend their earnings on retail goods, fuel, food, etc.) is 3.842 per \$1 million.

TOTAL JOBS

Year	Consumer Spending Residential (low)	Consumer Spending Commercial (low)	Direct Jobs	Indirect Jobs	Induced Jobs	TOTAL BUILDING SECTOR JOBS	TOTAL INDIRECT AND INDUCED JOBS	TOTAL NEW JOBS
1	154,687	21,308	3,750,686	2,474,529	1,867,808	3,750,686	4,342,336	8,269,017
2	309,374	42,616	3,750,686	2,474,529	1,867,808	3,750,686	4,342,336	8,445,012

% Below Code ¹	HERS Index ²	Added Cost ³	Mortgage Rate (%) ⁴	Efficiency Tax Credit ⁵	30% Solar Tax Credit ⁶	Mortgage Amount ⁷	Monthly Payment ⁸	Monthly Mortgage Savings (\$)	Monthly Energy Savings ^{3,9} (\$)	TOTAL Monthly Savings (\$)	TOTAL Annual Savings (\$)
0			7.00%			\$272,300	\$1,811.62				
0			5.54%			\$272,300	\$1,553.44				
30	65	\$4,000	4.50%	\$0	\$0	\$276,300	\$1,399.97	\$153.47 - \$411.65	\$100.42 \$253.89 -	\$512.06	\$3,046.67 - \$6,144.77
50	50	\$13,000	4.00%	\$2,000	\$0	\$283,300	\$1,352.52	\$200.93 - \$459.10	\$124.50 \$325.43 -	\$583.60	\$3,905.11 - \$7,003.21
75	25	\$41,000	3.00%	\$2,000	\$7,000	\$304,300	\$1,282.94	\$270.50 - \$528.68	\$145.94 \$416.44 -	\$674.62	\$4,997.32 - \$8,095.42
Carbon Neutral	0	\$69,000	2.00%	\$2,000	\$10,000	\$329,300	\$1,217.16	\$336.29 - \$594.46	\$192.17 \$528.45 -	\$786.63	\$6,341.44 - \$9,439.54

¹ 2030 Challenge targets expressed as percentage below IECC 2006.

² HERS Index equivalent of the 2030 Challenge targets.

³ Example Performance Targets and Efficiency Packages Greensburg, Kansas, Dr. Ren Anderson, NREL. Pgs. 4, 12 and 20. Assumes a 75% reduction below codes is the average between 50% below and carbon neutral.

⁴ Assumes a 7 percent interest rate for foreclosed mortgages and a 5.54 percent current interest rate.

⁵ Existing Federal Energy-Efficient New Homes Tax Credit for Home Builders.

⁶ Existing Federal Residential Renewable Energy Tax Credit.

⁷ US census. The average cost of a new home sold in the US in October 2008 was \$272,300.

⁸ Assumes a 30-year, fixed rate conforming mortgage with no down payment.

⁹ Adjusted for renovation using relationship between percentage below code and percentage below existing energy use.

NEW HOUSING / EFFICIENCY MORTGAGES

% Below Code ¹	HERS Index ²	Added Cost ³	Mortgage Rate (%) ⁴	Efficiency Tax Credit ⁵	30% Solar Tax Credit ⁶	Mortgage Amount ⁷	Monthly Payment ⁸	Monthly Mortgage Savings (\$)	Monthly Energy Savings ³ (\$)	TOTAL Monthly Savings (\$)	TOTAL Annual Savings (\$)
0			5.54%			\$272,300	\$1,553.44				
30	65	\$4,000	5.00%	\$0	\$0	\$276,300	\$1,483.24	\$70.21	\$60.25	\$130.46	\$1,565.47
50	50	\$13,000	4.50%	\$2,000	\$0	\$283,300	\$1,435.44	\$118.00	\$96.83	\$214.84	\$2,578.05
75	25	\$41,000	3.50%	\$2,000	\$7,000	\$304,300	\$1,366.44	\$187.00	\$144.50	\$331.50	\$3,978.01
Carbon Neutral	0	\$69,000	3.00%	\$2,000	\$10,000	\$329,300	\$1,388.34	\$165.10	\$192.17	\$357.27	\$4,287.22

¹ 2030 Challenge targets expressed as percentage below IECC 2006.

² HERS Index equivalent of the 2030 Challenge targets.

³ Example Performance Targets and Efficiency Packages Greensburg, Kansas, Dr. Ren Anderson, NREL. Pgs. 4,12 and 20. Assumes a 75% reduction below codes is the average between 50% below and carbon neutral.

⁴ Assumes a 7 percent interest rate for foreclosed mortgages and a 5.54 percent current interest rate.

⁵ Existing Federal Energy-Efficient New Homes Tax Credit for Home Builders.

⁶ Existing Federal Residential Renewable Energy Tax Credit.

⁷ US census. The average cost of a new home sold in the US in October 2008 was \$272,300.

⁸ Assumes a 30-year, fixed rate conforming mortgage with no down payment.

¹ Building Energy Data Book, 6.1.2.

US BUILDING PRIMARY ENERGY CONSUMPTION¹

Fuel Source	Quadrillion Btu	% of Total
Electricity	28.6	72.04%
Natural Gas	8.1	20.40%
Oil	2.3	5.79%
Coal	0.1	0.25%
Renewables	0.58	1.46%
Total	39.7	100.00%

¹ Building Energy Data Book, Summary Table 2.

US ELECTRICITY NET GENERATION, BY PLANT TYPE¹

Fuel Source	Billion Kilowatt-Hours	% of Total
Natural Gas	546	14.06%
Oil	111	2.86%
Coal	1956	50.37%
Renewables	323	8.32%
Nuclear	780	20.09%
Total	3883	100.00%

¹ Building Energy Data Book, Summary Table 6.

US RESIDENTIAL BUILDING PRIMARY ENERGY CONSUMPTION¹

Fuel Source	Quadrillion Btu	% of Total
Electricity	14.8	67.89%
Natural Gas	5	22.94%
Oil	1.5	6.88%
Coal	0	0.00%
Renewables	0.44	2.02%
Total	21.8	100.00%

¹ Building Energy Data Book, Summary Table 1.

US COMMERCIAL BUILDING PRIMARY ENERGY CONSUMPTION¹

Fuel Source	Quadrillion Btu	% of Total
Electricity	13.7	76.54%
Natural Gas	3.1	17.32%
Oil	0.8	4.47%
Coal	0.1	0.56%
Renewables	0.15	0.84%
Total	17.9	100.00%

¹ Building Energy Data Book, Summary Table 1.