



# Fact Sheet

**Better Buildings Initiative**  
**Commercial Building Tax Credit**  
**March 4, 2011**

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## **Current Situation**

Between now and 2014, \$1.4 trillion in commercial real estate (CRE) loans are becoming due; half of these loans are underwater and commercial vacancy rates show little sign of improvement. In addition, the construction industry has lost over two million jobs leading to job losses in related sectors and further shrinking revenue to state and local governments. Construction unemployment now hovers at 22.5% (see Figures 1 & 2).

The largest CRE loan losses are falling disproportionately on small businesses and smaller regional and community banks. The FDIC reports that:

- 140 banks failed in 2009,
- 157 banks failed in 2010, and
- 23 banks have failed in the first two months of this year.

(<http://www.fdic.gov/bank/individual/failed/banklist.html>)

Because these banks play a critical role in providing capital to small businesses and new business start-ups, their failure and the CRE crisis are undermining the economic recovery, leading to high unemployment and greater economic instability.

## **Better Buildings Initiative**

The Administration's Better Buildings Initiative (BBI) proposed on February 3, 2011, includes commercial building efficiency tax credits, which mirror similar tax incentives called for by Architecture 2030 in the **CRE Solution**, published in June 2010. The BBI tax credits proposed for meeting energy reductions below ASHRAE 90.1-2004 (baseline) are:

- \$0.60 per square foot for a 20% to 29% reduction,
- \$0.90 per square foot for a 30% to 49% reduction, and
- \$1.80 per square foot for a reduction of 50% or more.

These tax credits would replace the current tax deductions contained in section 179D of the Internal Revenue Code. The tax credits are included in the President's budget, which must be passed by Congress to take effect. Based on the assumptions outlined below, Architecture 2030 estimates that for each \$1 billion in BBI commercial building efficiency tax credits, the program will generate \$16.4 billion in new private spending and \$3.6 billion in new federal tax revenue.

**The program will not only pay for itself, but also pay down the deficit by \$2.6 billion.** Additionally, each \$1 billion in CRE tax credits would:

- Create 303,551 jobs\*, quickly and cost effectively,
- Increase after-tax cash flow and property values,
- Reduce loan defaults,

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\* The 303,551 jobs created include 138,494 direct jobs, 78,071 indirect jobs, and 86,985 induced jobs



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- Increase CRE desirability and investment value,
- Increase new CRE sales (by narrowing the gap between the bid and asking price of CRE property),
- Bring ESCo's and A/E/C firms into the CRE market,
- Decrease building energy consumption, greenhouse gas emissions, and operating costs,
- Generate \$1.2 billion in state and local government tax revenue, and
- Generate \$4.8 billion in total tax revenue before the \$1 billion tax credit is given.

Although commercial buildings are often thought of as big-box stores or high rises in city centers, 90 percent are actually smaller than 25,000 square feet. These are mostly one- and two-story, single- or double-occupancy buildings that are easy and inexpensive to add on to and/or renovate. If Section 179D is amended, the tax credit would apply to property placed in service on or before December 31, 2013.

## Assumptions

The tax credits for renovations include \$0.60 for 20%, \$0.90 for 30%, and \$1.80 for 50% energy reductions. The tax credits for new buildings include \$0.90 for 30% and \$1.80 for 50% energy reductions. Architecture 2030 does not recommend including a \$0.60 tax credit for a 20% energy reduction in new buildings, since some state and local building codes already meet or are very close to meeting this target and the amount of private spending, tax revenue, and number of jobs per dollar outlay would be less.

For each \$1 billion in tax credits, \$700 million is allocated for renovation and \$300 million is allocated for new construction.

The federal tax credits available for renovations are allocated as follows: 50% for the 20% reduction, 35% for the 30% reduction, and 15% for the 50% reduction. These are conservative estimates. If the allocation for the higher reductions increase, private spending, tax revenue, and number of jobs will also increase.

The federal tax credits available for new construction are allocated as follows: no tax credits for the 20% reduction, 70% for the 30% reduction, and 30% for the 50% reduction. These are conservative estimates. If the allocation for the 50% reduction increases, private spending, tax revenue, and number of jobs will also increase.

The additional cost for meeting the efficiency targets for renovations is \$2.28 per square foot for a 20% reduction, \$3.41 per square foot for 30% reduction, and \$9.75 per square foot for a 50% reduction.

The additional cost for meeting the efficiency targets for new buildings is \$2.62 per square foot for a 30% reduction and \$7.48 per square foot for a 50% reduction.

Approximately 7% of the renovation tax credits are for renovations that would have met the efficiency targets anyway and do not generate new jobs or tax revenue, 80% are for renovations that upgrade to meet the efficiency targets (additional cost), and 13% are for renovations that would not have taken place if the tax credits were not available (See Worksheets for more detail).

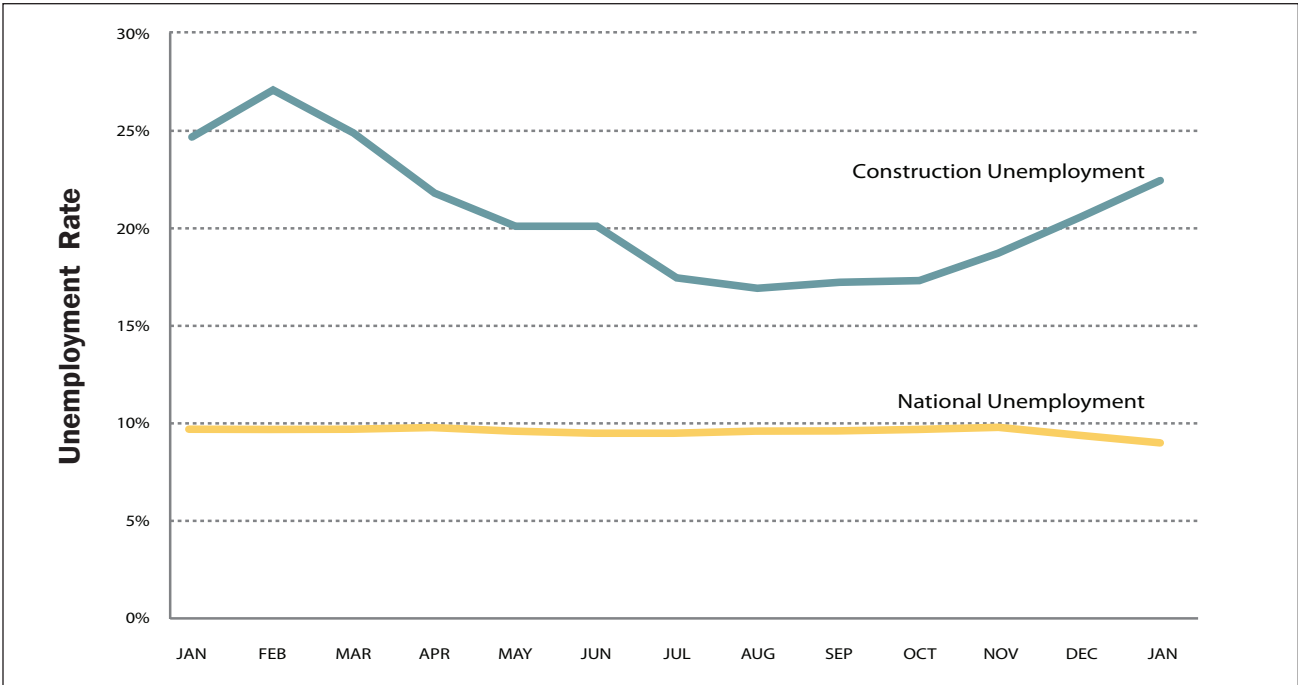
Approximately 5% of the new building tax credits are for buildings that would have met the efficiency targets anyway and do not generate new jobs or tax revenue, 70% are for new buildings that upgrade to meet the efficiency targets (additional cost), and 25% are for new buildings that would not have been built if the tax credits were not available (See Worksheets for more detail).



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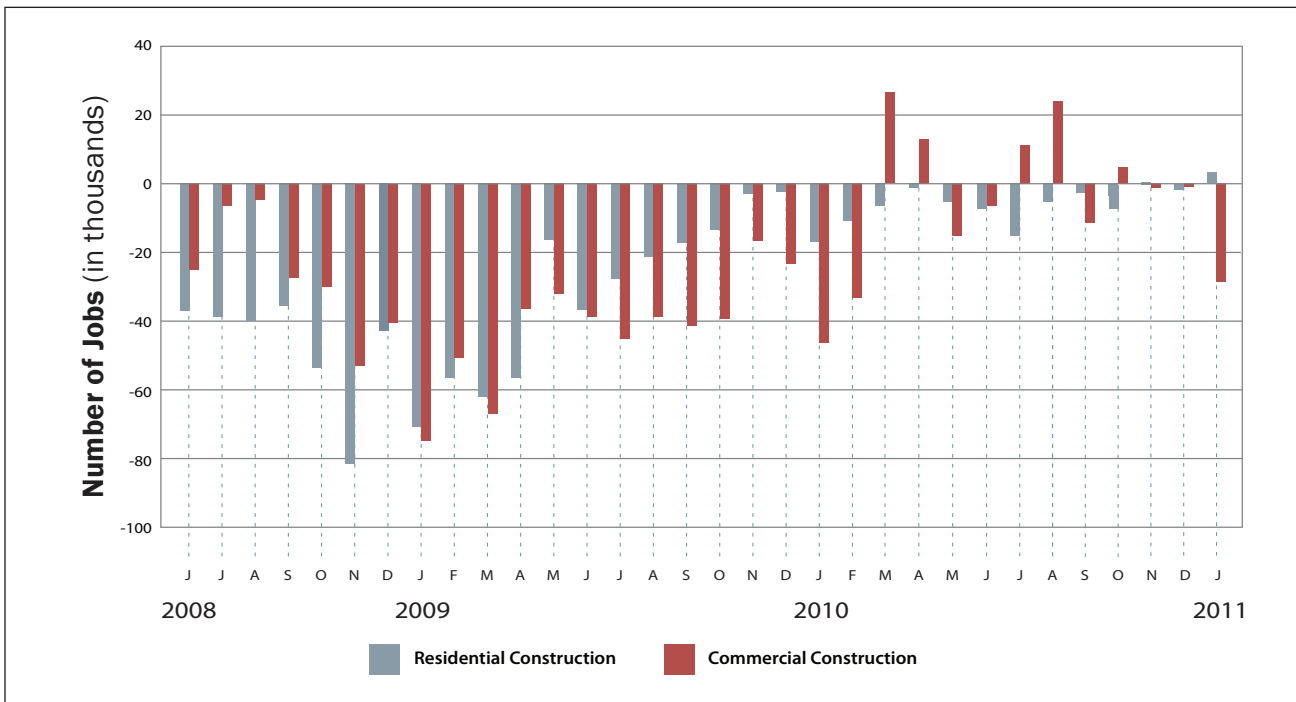
**Figure 1: U.S. Unemployment (2010 - 2011)**

Source: U.S. Bureau of Labor Statistics



**Figure 2: U.S. Monthly Job Losses or Gains in Construction (2008 - 2011)**

Source: U.S. Bureau of Labor Statistics





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## Worksheets:

### Commercial Building Tax Credit / Jobs Analysis

#### Architecture 2030

#### Renovations of Existing Buildings

Percentage better than ASHRAE 90.1 -2004	Maximum Tax Credit (\$/Sq. Ft.)	Private Investment of Incremental Cost <sup>1</sup> (\$/Sq. Ft.)	Private Investment of Incremental Cost + General Renovation Cost <sup>1, 2, 3</sup> (\$/Sq. Ft.)	Annual Energy Savings <sup>4, 5</sup> (\$/Sq. Ft.)	Annual Energy Savings <sup>5, 6</sup> (kBtu/Sq. Ft.)	Asset Valuation Increase <sup>7</sup> (\$/Sq. Ft.)
20%	\$0.60	\$2.28	\$23.38	\$0.65	31.34	7.66
30%	\$0.90	\$3.41	\$24.51	\$0.88	42.31	9.77
50%	\$1.80	\$9.75	\$30.85	\$1.25	60.07	13.14

#### New Construction

Percentage better than ASHRAE 90.1 -2004	Maximum Tax Credit (\$/Sq. Ft.)	Private Investment of Incremental Cost <sup>8, 9</sup> (\$/Sq. Ft.)	Private Investment of Incremental Cost + New Construction Cost <sup>8, 9, 10, 11</sup> (\$/Sq. Ft.)	Annual Energy Savings <sup>12</sup> (\$/Sq. Ft.)	Annual Energy Savings <sup>6</sup> (kBtu/Sq. Ft.)	Asset Valuation Increase <sup>7</sup> (\$/Sq. Ft.)
20%	\$0.60	\$1.75	\$150.36	\$0.40	21.94	4.71
30%	\$0.90	\$2.62	\$151.23	\$0.60	32.91	6.67
50%	\$1.80	\$7.48	\$156.09	\$1.00	54.85	10.53

<sup>1</sup> Pike Research, *Energy Efficiency Retrofits for Commercial and Public Buildings: Table 1.1 Energy Savings and Payback from Energy Retrofits of Various Types*. Released 3Q 2010.

<sup>2</sup> McGraw-Hill. *U.S. Construction Starts in Millions of Dollars*. Using 2009 data.

<sup>3</sup> Pike Research, *Energy Efficiency Retrofits for Commercial and Public Buildings: Table 1.2 Quantitative Overview of the Commercial Building Retrofit Market*. Released 3Q 2010.

<sup>4</sup> U.S. Department of Energy. Office of Energy Efficiency and Renewable Energy. *2008 Building Energy Databook: Table 3.3.8 Average Annual Energy Expenditures per Square Foot of Commercial Floorspace, by Year*. Washington: March 2009. Using 2010 data.

<sup>5</sup> 2030 adjusted for renovation using relationship between percentage below code and percentage below existing energy use, based on: 2030, Inc. / Architecture 2030. (2008). *Meeting the 2030 Challenge Through Building Codes*. Released June 20, 2008, [www.architecture2030.org/news/multimedia.html](http://www.architecture2030.org/news/multimedia.html).

<sup>6</sup> U.S. Department of Energy. Office of Energy Efficiency and Renewable Energy. *2008 Building Energy Databook: Table 3.1.3 Commercial Delivered and Primary Energy Consumption Intensities, by Year*. Washington: March 2009. Using 2010 data.

<sup>7</sup> U.S. Environmental Protection Agency. *Summary of the Financial Benefits of ENERGY STAR® Labeled Office Buildings*. Washington: February 2006. (Pg. 7). 2030 increased the capitalization rate by 0.5% for each incremental reduction beyond 30% to be conservative.

<sup>8</sup> New Buildings Institute and American Institute of Architects. *Economics of the Major Commercial Building Energy Code Proposals*. For the 20% and 30% reductions 2030 assumed a linear relationship between the reduction and incremental cost, using the average incremental reduction from the New England states sample in the referenced document.

<sup>9</sup> Department of Energy. National Renewable Energy Laboratory and Pacific Northwest National Laboratory. *Technical Support Documents for 50% Energy Savings for common commercial building types*.

<sup>10</sup> U.S. Department of Energy. Office of Energy Efficiency and Renewable Energy. *2008 Building Energy Databook: Table 3.5.1 Value of New Commercial Building Construction, by Year*. Washington: March 2009. Using 2006 data.

<sup>11</sup> U.S. Energy Information Administration. *Annual Energy Outlook 2009 Reference Case Reflecting Provisions of the American Recovery and Reinvestment Act and Recent Changes in the Economic Outlook: Table 5. Commercial Sector Key Indicators and Consumption*. ONLINE. 2009. Energy Information Administration. Available: [http://www.eia.doe.gov/oiia/aeo/aeoref\\_tab.html](http://www.eia.doe.gov/oiia/aeo/aeoref_tab.html) [April 2009]. Using 2006 data.

<sup>12</sup> The Average Annual Energy Expenditures per Sq. Ft. for New Commercial is assumed to be \$2.00 per sq. ft.



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## Renovations to Existing Buildings

Allocated Percentage of Total Federal Tax Credits Available <sup>1</sup>		Federal Tax Credits Available <sup>1</sup>					
70%		\$700,000,000					

Percentage better than ASHRAE 90.1 -2004	Allocated Percentage of Federal Tax Credits Available <sup>2</sup>	Tax Credits Available <sup>2</sup>	Square Footage Participating	Percentage That Would Have Renovated To The Efficiency Standard Anyway <sup>3</sup>	Percentage Spending Only Incremental Cost <sup>4</sup>	Percentage Spending Incremental Cost + General Renovation Cost <sup>5</sup>	New Private Spending <sup>3, 4, 5</sup>
20%	50%	\$350,000,000	583,333,333	10%	80%	10%	\$2,425,408,942
30%	35%	\$245,000,000	272,222,222	5%	80%	15%	\$1,742,553,204
50%	15%	\$105,000,000	58,333,333	1%	79%	20%	\$809,269,288
	100%	\$700,000,000	913,888,889				\$4,977,231,434

Percentage better than ASHRAE 90.1 -2004	Square Footage Participating	New Private Spending <sup>3, 4, 5</sup>	Direct Jobs <sup>6</sup>	Indirect Jobs <sup>6</sup>	Induced Jobs <sup>6</sup>	Total Jobs <sup>6</sup>
20%	583,333,333	\$2,425,408,942	22,799	10,672	13,340	46,810
30%	272,222,222	\$1,742,553,204	16,380	7,667	9,584	33,631
50%	58,333,333	\$809,269,288	7,607	3,561	4,451	15,619
	913,888,889	\$4,977,231,434	46,786	21,900	27,375	96,061

Percentage better than ASHRAE 90.1 -2004	Square Footage Participating	Total Annual Energy Savings <sup>7, 8</sup>	Total Annual Energy Savings (TBtu) <sup>8, 9</sup>	Total Annual CO <sub>2</sub> Savings <sup>10, 11</sup> (MMT)	Total Asset Valuation Increase <sup>12</sup>
20%	583,333,333	\$380,025,333	18.28	1.50	\$4,470,886,275
30%	272,222,222	\$239,399,761	11.52	0.95	\$2,659,997,340
50%	58,333,333	\$72,833,261	3.50	0.29	\$766,665,900
	913,888,889	\$692,258,354	33.31	2.74	\$7,897,549,515

Percentage better than ASHRAE 90.1 -2004	Square Footage Participating	New Private Spending <sup>3, 4, 5</sup>	Increased Federal Revenue from New Private Spending <sup>13</sup>	Increased Local and State Revenue from New Private Spending <sup>13</sup>
20%	583,333,333	\$2,425,408,942	\$526,798,822	\$173,416,739
30%	272,222,222	\$1,742,553,204	\$378,482,556	\$124,592,554
50%	58,333,333	\$809,269,288	\$175,773,289	\$57,862,754
	913,888,889	\$4,977,231,434	\$1,081,054,667	\$355,872,048



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## Assumptions for Renovations to Existing Buildings

<sup>1</sup> Assumes 70% of the total federal tax credits available are allocated for renovations.

<sup>2</sup> Assumes that of the federal tax credits available for renovations, 50% are allocated for the 20% reduction, 35% are allocated for the 30% reduction, and 15% are allocated for the 50% reduction.

<sup>3</sup> Assumes that 10% of those meeting the 20% reduction, 5% of those meeting the 30% reduction, and 1% of those meeting the 50% reduction would have been renovated and met the efficiency standard anyway. Therefore no new private spending is generated.

<sup>4</sup> Assumes that 80% of those meeting the 20% reduction, 80% of those meeting the 30% reduction, and 79% of those meeting the 50% reduction would have been renovated anyway, but without meeting the efficiency standards. Therefore only the incremental cost to achieve the efficiency standards is considered as new private spending.

<sup>5</sup> Assumes that 10% of those meeting the 20% reduction, 15% of those meeting the 30% reduction, and 20% of those meeting the 50% reduction would not have been renovated if the tax credits were not available. Therefore, the total cost of construction and the incremental cost to achieve the efficiency standards is considered as new private spending.

<sup>6</sup> The Political Economy Research Institute (PERI) estimates that every \$1 billion invested in Non-Residential Renovation creates 9,400 direct jobs, 4,400 indirect jobs, and 5,500 induced jobs.

<sup>7</sup> U.S. Department of Energy. Office of Energy Efficiency and Renewable Energy. *2008 Building Energy Databook: Table 3.3.8 Average Annual Energy Expenditures per Square Foot of Commercial Floorspace, by Year*. Washington: March 2009. Using 2010 data.

<sup>8</sup> 2030 adjusted for renovation using relationship between percentage below code and percentage below existing energy use, based on: 2030, Inc. / Architecture 2030. (2008). *Meeting the 2030 Challenge Through Building Codes*. Released June 20, 2008, [www.architecture2030.org/news/multimedia.html](http://www.architecture2030.org/news/multimedia.html).

<sup>9</sup> U.S. Department of Energy. Office of Energy Efficiency and Renewable Energy. *2008 Building Energy Databook: Table 3.1.3 Commercial Delivered and Primary Energy Consumption Intensities, by Year*. Washington: March 2009. Using 2010 data.

<sup>10</sup> U.S. Department of Energy. Office of Energy Efficiency and Renewable Energy. *2008 Building Energy Databook: Table 1 and 6 of Summary Sheet*. Washington: September 2007.

<sup>11</sup> U.S. Department of Energy. U.S. Energy Information Administration. *Emissions of Greenhouse Gases in the United States 2007*. Pg. 17. Washington: December 2008.

<sup>12</sup> U.S. Environmental Protection Agency. *Summary of the Financial Benefits of ENERGY STAR® Labeled Office Buildings*. Washington: February 2006. (Pg. 7). 2030 increased the capitalization rate by 0.5% for each incremental reduction beyond 30% to be conservative.

<sup>13</sup> Assumes commercial construction produces the same percentage of tax revenue per dollar spent as residential construction. National Association of Home Builders. *Fiscal Impacts of Building an Average Housing Unit on the U.S. Economy in 2005*. Based primarily on data from the U.S. Bureau of Economic Analysis. Released August 5, 2005, <http://www.nahb.org/generic.aspx?genericContentID=44096>.



# Fact Sheet

## New Construction

Allocated Percentage of Total Federal Tax Credits Available <sup>1</sup>	Federal Tax Credits Available <sup>1</sup>
30%	\$300,000,000

Percentage better than ASHRAE 90.1 -2004	Allocated Percentage of Federal Tax Credits Available <sup>2</sup>	Tax Credits Available <sup>2</sup>	Square Footage Participating	Percentage That Would Have Been Built To The Efficiency Standard Anyway <sup>3</sup>	Percentage Spending Only Incremental Cost <sup>4</sup>	Percentage Spending Incremental Cost + New Construction Cost <sup>5</sup>	New Private Spending <sup>3, 4, 5</sup>
20%	0%	\$0	0	0%	0%	0%	\$0
30%	70%	\$210,000,000	233,333,333	5%	70%	25%	\$9,250,472,556
50%	30%	\$90,000,000	50,000,000	5%	70%	25%	\$2,213,082,961
	100%	\$300,000,000	283,333,333				\$11,463,555,516

Percentage better than ASHRAE 90.1 -2004	Square Footage Participating	New Private Spending <sup>3, 4, 5</sup>	Direct Jobs <sup>6</sup>	Indirect Jobs <sup>6</sup>	Induced Jobs <sup>6</sup>	Total Jobs <sup>6</sup>
20%	0	0	0	0	0	0
30%	233,333,333	9,250,472,556	74,004	45,327	48,102	167,434
50%	50,000,000	2,213,082,961	17,705	10,844	11,508	40,057
	283,333,333	11,463,555,516	91,708	56,171	59,610	207,490

Percentage better than ASHRAE 90.1 -2004	Square Footage Participating	Total Annual Energy Savings <sup>7</sup>	Total Annual Energy Savings (TBtu) <sup>8</sup>	Total Annual CO <sub>2</sub> Savings <sup>9, 10</sup> (MMT)	Total Asset Valuation Increase <sup>11</sup>
20%	0	\$0	0.00	0.00	\$0
30%	233,333,333	\$140,000,000	7.68	0.63	\$1,555,555,556
50%	50,000,000	\$50,000,000	2.74	0.23	\$526,315,789
	283,333,333	\$190,000,000	10.42	0.86	\$2,081,871,345

Percentage better than ASHRAE 90.1 -2004	Square Footage Participating	New Private Spending <sup>3, 4, 5</sup>	Increased Federal Revenue from New Private Spending <sup>12</sup>	Increased Local and State Revenue from New Private Spending <sup>12</sup>
20%	0	0	\$0	\$0
30%	233,333,333	9,250,472,556	\$2,009,202,639	\$661,408,788
50%	50,000,000	2,213,082,961	\$480,681,619	\$158,235,432
	283,333,333	11,463,555,516	\$2,489,884,258	\$819,644,219



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## Assumptions for New Construction

- <sup>1</sup> Assumes 30% of the total federal tax credits available are allocated for new construction.
- <sup>2</sup> Assumes that of the federal tax credits available for new construction, no tax credits are allocated for the 20% reduction, 70% are allocated for the 30% reduction, and 30% are allocated for the 50% reduction.
- <sup>3</sup> Assumes 5% of all square footage participating would have been built and met to the efficiency standards anyway. Therefore, no new private spending is generated.
- <sup>4</sup> Assumes 70% of all square footage participating would have been built anyway, but not have met the efficiency standards. Therefore only the incremental cost to achieve the efficiency standards is considered as new private spending.
- <sup>5</sup> Assumes 25% of all square footage participating would not have been built anyway. Therefore the total cost of construction and the incremental cost to achieve the efficiency standards is considered as new private spending.
- <sup>6</sup> The Political Economy Research Institute (PERI) estimates that every \$1 billion invested in Commercial New Construction creates 8,000 direct jobs, 4,900 indirect jobs, and 5,200 induced jobs.
- <sup>7</sup> The Average Annual Energy Expenditures per Sq. Ft. for New Commercial is assumed to be \$2.00 per sq. ft.
- <sup>8</sup> U.S. Department of Energy. Office of Energy Efficiency and Renewable Energy. *2008 Building Energy Databook: Table 3.1.3 Commercial Delivered and Primary Energy Consumption Intensities, by Year*. Washington: March 2009. Using 2010 data.
- <sup>9</sup> U.S. Department of Energy. Office of Energy Efficiency and Renewable Energy. *2008 Building Energy Databook: Table 1 and 6 of Summary Sheet*. Washington: September 2007.
- <sup>10</sup> U.S. Department of Energy. U.S. Energy Information Administration. *Emissions of Greenhouse Gases in the United States 2007*. Pg. 17. Washington: December 2008.
- <sup>11</sup> U.S. Environmental Protection Agency. *Summary of the Financial Benefits of ENERGY STAR® Labeled Office Buildings*. Washington: February 2006. (Pg. 7). 2030 increased the capitalization rate by 0.5% for each incremental reduction beyond 30% to be conservative.
- <sup>12</sup> Assumes commercial construction produces the same percentage of tax revenue per dollar spent as residential construction. National Association of Home Builders. *Fiscal Impacts of Building an Average Housing Unit on the U.S. Economy in 2005*. Based primarily on data from the U.S. Bureau of Economic Analysis. Released August 5, 2005, <http://www.nahb.org/generic.aspx?genericContentID=44096>.

## Summary

### Total Federal Tax Credits Available

\$1,000,000,000

	Square Footage Participating	New Private Spending	Direct Jobs	Indirect Jobs	Induced Jobs	Total Jobs
Renovations of Existing Buildings	913,888,889	\$4,977,231,434	46,786	21,900	27,375	96,061
New Construction	283,333,333	\$11,463,555,516	91,708	56,171	59,610	207,490
<b>Total</b>	<b>1,197,222,222</b>	<b>\$16,440,786,950</b>	<b>138,494</b>	<b>78,071</b>	<b>86,985</b>	<b>303,551</b>

	Total Annual Energy Savings	Total Annual Energy Savings (Tbtu)	Total Annual CO <sub>2</sub> Savings (MMT)	Total Asset Valuation Increase	Federal Revenue from New Private Spending	Local and State Revenue from New Private Spending
Renovations of Existing Buildings	\$692,258,354	33.31	2.74	\$2,081,871,345	\$1,081,054,667	\$355,872,048
New Construction	\$190,000,000	10.42	0.86	\$7,897,549,515	\$2,489,884,258	\$819,644,219
<b>Total</b>	<b>\$882,258,354</b>	<b>43.73</b>	<b>3.60</b>	<b>\$9,979,420,860</b>	<b>\$3,570,938,926</b>	<b>\$1,175,516,267</b>





# Fact Sheet

## Assumptions

Average Annual Energy Expenditures per Sq. Ft. for Existing Commercial <sup>1</sup>	\$2.28	\$/sq. ft.
Average Annual Energy Expenditures per Sq. Ft. for New Commercial <sup>2</sup>	\$2.00	\$/sq. ft.
Average Delivered Energy Consumption Intensity for Existing Commercial <sup>3</sup>	109.7	kBtu/sf/yr
Commercial Building Fossil Fuel Energy <sup>4</sup>	13.22	Quads / Year
Commercial Buildings CO2 Emissions <sup>5</sup>	1,087.4	MMTCO <sub>2</sub> / Year
Value of New Commercial Building Construction in 2006 <sup>6</sup>	307.1	\$2006 billion
New Additions in 2006 <sup>7</sup>	2.1	billion square feet
Value of New and Existing Commercial Building per Sq. Ft. <sup>6,7</sup>	\$148.61	per square foot
Value of Commercial Alterations in 2009 <sup>8</sup>	42.21	billion \$
Renovated Annual Commercial Floorspace <sup>9</sup>	2.0	billion square feet
Value of New and Existing Commercial Building per Sq. Ft. <sup>8,9</sup>	\$21.10	per square foot
Asset Valuation Increase from Energy Cost Savings <sup>10</sup>	8.50%	Capitalization Rate
Federal Tax Revenue as Percentage of Private Spending <sup>12</sup>	21.72%	
Local and State Tax Revenue as Percentage of Private Spending <sup>13</sup>	7.15%	

Number of Jobs Per \$1 Billion <sup>14</sup>	Direct	Indirect	Induced	Total
Non-Residential Renovations	9,400	4,400	5,500	19,300
Commercial New Construction	8,000	4,900	5,200	18,100

## Approximate Equivalent Percentage below Average Energy Use<sup>15</sup>

Renovation	42.86%	64.29%	82.14%	100.00%
New Construction	30.00%	50.00%	75.00%	100.00%

<sup>1</sup> U.S. Department of Energy. Office of Energy Efficiency and Renewable Energy. *2008 Building Energy Databook: Table 3.3.8 Average Annual Energy Expenditures per Square Foot of Commercial Floorspace, by Year*. Washington: March 2009. Using 2010 data.

<sup>2</sup> The Average Annual Energy Expenditures per Sq. Ft. for New Commercial is assumed to be \$2.00 per sq. ft.

<sup>3</sup> U.S. Department of Energy. Office of Energy Efficiency and Renewable Energy. *2008 Building Energy Databook: Table 3.1.3 Commercial Delivered and Primary Energy Consumption Intensities, by Year*. Washington: March 2009. Using 2010 data.

<sup>4</sup> U.S. Department of Energy. Office of Energy Efficiency and Renewable Energy. *2008 Building Energy Databook: Table 1 and 6 of Summary Sheet*. Washington: September 2007.

<sup>5</sup> U.S. Department of Energy. U.S. Energy Information Administration. *Emissions of Greenhouse Gases in the United States 2007. Pg. 17*. Washington: December 2008.

<sup>6</sup> U.S. Department of Energy. Office of Energy Efficiency and Renewable Energy. *2008 Building Energy Databook: Table 3.5.1 Value of New Commercial Building Construction, by Year*. Washington: March 2009. Using 2006 data.

<sup>7</sup> U.S. Energy Information Administration. *Annual Energy Outlook 2009 Reference Case Reflecting Provisions of the American Recovery and Reinvestment Act and Recent Changes in the Economic Outlook: Table 5. Commercial Sector Key Indicators and Consumption*. ONLINE. 2009. Energy Information Administration. Available: [http://www.eia.doe.gov/oiaf/aeo/aeoref\\_tab.html](http://www.eia.doe.gov/oiaf/aeo/aeoref_tab.html) [April 2009]. Using 2006 data.

<sup>8</sup> McGraw-Hill. *U.S. Construction Starts in Millions of Dollars*. Using 2009 data.

<sup>9</sup> Pike Research, *Energy Efficiency Retrofits for Commercial and Public Buildings: Table 1.2 Quantitative Overview of the Commercial Building Retrofit Market*. Released 3Q 2010.

<sup>10</sup> U.S. Environmental Protection Agency. *Summary of the Financial Benefits of ENERGY STAR® Labeled Office Buildings*. Washington: February 2006. (Pg. 7). 2030 increased the capitalization rate by 0.5% for each incremental reduction beyond 30% to be conservative.

<sup>11</sup> United States Government Accountability Office. *Report to the Committee on Finance, U.S. Senate. U.S. MULTINATIONAL CORPORATIONS: Effective Tax Rates Are Correlated with Where Income Is Reported*. (August 2008).

<sup>12</sup> Assumes commercial construction produces the same percentage of tax revenue per dollar spent as residential construction. National Association of Home Builders. *Fiscal Impacts of Building an Average Housing Unit on the U.S. Economy in 2005*. Based primarily on data from the U.S. Bureau of Economic Analysis. Released August 5, 2005, <http://www.nahb.org/generic.aspx?genericContentID=44096>.

<sup>13</sup> The Political Economy Research Institute (PERI)

<sup>14</sup> 2030, Inc. / Architecture 2030. (2008). *Meeting the 2030 Challenge Through Building Codes*. Released June 20, 2008, [www.architecture2030.org/news/multimedia.html](http://www.architecture2030.org/news/multimedia.html).