City and County of San Francisco

Office of the Controller - Office of Economic Analysis

Mayor's Green Building Requirements:

Economic Impact Report

File No. 080063

May 21, 2008

City and County of San Francisco

Office of the Controller - Office of Economic Analysis

Mayor's Green Building Requirements: Economic Impact Report **May 21, 2008**

Main Conclusions

The proposed legislation would set the first requirement for green building construction standards on privately-owned buildings in San Francisco. It mandates higher standards in nearly every sector of the city's construction industry, from large to small residential and commercial new construction, as well as large commercial renovation projects. The legislation would impose a considerable cost on San Francisco's economy in the short term, although this cost is projected to decline after seven to ten years.

Presently, all new municipal buildings in the City are required to meet at least the LEED Silver standard, but there is no requirement for green building standards for private buildings in the city. Projects in the development pipeline when the legislation is adopted would be exempted from the requirements of this legislation.

Buildings are a major source of energy consumption and greenhouse gas emissions. The U.S. Environmental Protection Agency estimated that in 2005 electricity generation accounted for 41% of all carbon dioxide (CO_2) emissions from fossil fuel consumption in the United States. Increasing the energy efficiency of buildings can therefore significantly reduce greenhouse gas emissions, and produce financial savings, from greater energy efficiency, greater reliance on green power, and other efficiencies in design and construction. The proposed legislation is projected to reduce San Francisco's CO_2 emissions by several thousand tons per year, with a cumulative 20-year reduction of 1.034 million tons by 2027.

Green buildings have, however, higher up-front costs of construction, at least in the short to medium term. Requiring these higher costs would reduce the overall level of construction, raise the price of rental and owner-occupied housing, raise commercial rents, and potentially discourage businesses from locating and expanding in San Francisco.

When both the higher construction costs and long-term financial savings of green buildings are considered together, the OEA projects a 20-year average annual cost to the economy. This cost is projected to total between $30 million and $700 million of Gross City Product, between 70 and 2,300 jobs, and between $10 and $90 of per capita income. These figures represent a loss of from 0% to 0.5% of gross city product, 0% to 0.3% of employment, and 0% to 0.1% of per capita income. The range of estimates reflect the uncertainty regarding the higher cost associated with green buildings, and how long this greater expense will continue into the future. Beyond twenty years, the energy and water savings created by the legislation will likely create a net positive economic benefit.

The OEA concludes that the economic cost associated with the CO_2 savings is relatively high, compared to other potential policy approaches. The proposed legislation would generate fairly modest CO_2 reductions in its earliest years, with significant costs to the City's economy. A revenue-neutral carbon tax, on the other hand, could achieve similar levels of CO_2 reductions with no negative economic impact.

Highlights

- In the short term, the legislation will have a negative impact on the city's economy and employment. These impacts range up to 0.5% of Gross City Product and 0.3% of the city's total private sector employment.
- Over the long term, the legislation would generate economic benefits for San Francisco as the resource savings accumulate and the higher construction costs decline.
- The legislation is projected to reduce CO_2 emission in San Francisco by over one million tons by 2027.

Risk Mitigation

- In general, command-and-control environmental policies, which require specific behavior, impose a higher economic cost than market-based measures that have the same environmental benefits.
- In particular, a revenue-neutral shift in the city’s tax burden towards carbon-producing activities, and away from income-producing activities, could achieve the same environmental impact as this legislation at a much lower risk to the economy.

ECONOMIC SCORECARD

	Highly Negative Impact (More than 0.5%)	Moderately Negative Impact (0.1% to 0.5%)	Neutral Impact (0.1% Decline to 0.1% Gain)	Moderately Positive Impact (0.1% to 0.5%)	Highly Positive Impact (More than 0.5%)
Gross City Product					
Employment					
Per Capita Income					
Carbon Intensity of the Economy					

INTRODUCTION

Background

The proposed legislation would establish green building construction requirements for several classes of new construction, major renovations, and tenant improvements, of privately-owned properties in San Francisco. Green buildings utilize a range of environmentally-beneficial design and construction practices. In general, these practices result in savings in energy and water use over the life of the structure, as well as producing environmental benefits.

This legislation is a product of the Mayor's Green Building Task Force, which met during the spring and summer of 2007. It largely relies on green building standards developed by the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) program. New construction, and renovations, can apply for and receive a LEED rating ranging from Certified, to Silver, Gold, and Platinum.

In addition, smaller projects are required to achieve an increasingly stringent green building level through the GreenPoints program established by *Build It Green*, a California-based advocate for green buildings.

Presently, per Chapter 7 of the Environment Code, all new municipal buildings in the City are required to meet at least the LEED Silver standard. There is no present requirement on the books for green building standards for private buildings in the city. Projects in the development pipeline when the legislation is adopted would be exempted from its requirements.

Green Building Rating Systems: LEED and GreenPoint Rated

The Leadership in Environmental Design (LEED) standard is a nationally-accepted benchmark for the design, construction and operation of green buildings. The US Green Building Council, a non-profit organization with a national membership of experts from the building industry, certifies LEED projects. The LEED certification process requires a building project to meet performance standards ("credits") within six categories:

- Sustainable sites: sustainable site location and preparation, including location near transit.
- Water efficiency: water-efficient landscaping, wastewater management, and the reduction of water use in operation.
- Energy & atmosphere: chlorofluorocarbon (CFC) reductions, energy efficiency, and the use and generation

of renewable energy.

- Materials & resources: using local and recyclable materials in construction
- Indoor environmental quality: incorporating daylight, controlling the indoor atmosphere, and using low-emitting paints and other materials.
- Innovation & design process.

Projects are awarded Certified, Silver, Gold, or Platinum certification depending on the number of credits they achieve.

An alternative to LEED for newly constructed single-family homes and multifamily homes in California is **GreenPoint Rated**, a program of Build It Green, a professional non-profit membership organization whose mission is to promote healthy, energy- and resource-efficient buildings in California.

Similar to LEED, GreenPoint Rated homes achieve points and are graded on five categories:

- Energy Efficiency
- Resource Conservation
- Indoor Air Quality
- Water Conservation
- Community

If the home meets minimum point requirements in each category and scores at least 50 points, it earns the right to bear the GreenPoint Rated label. It also provides a numerical score, which allows buyers to evaluate and compare the environmental performance of different homes.

Both LEED and GreenPoint Rated certifications provide for flexibility as to how points are achieved. Thus, there are many potential ways to achieve a given LEED level or GreenPoint score, and no definitive way to establish the costs and benefits associated with each level.

The proposed legislation removes some of this flexibility, however, because it not only requires that a project attain a certain LEED level, but also that it meet specific LEED performance standards, related to stormwater management, renewable energy, etc. In other words, the legislation to some extent directs how projects must attain the specified LEED levels.

Supervisor Peskin's Legislation and the September 2007 OEA Report

The legislation analyzed in this report, introduced by the Mayor in January 2008, is similar to legislation introduced in 2007 by Supervisor Peskin (Item #070925). The OEA prepared an economic impact report in September 2007 on that legislation. That report contains a great deal of background research on green buildings and their economic impact. The reader interested in more detail is invited to read that report, which is available at:

http://co.sfgov.org/webreports/details.aspx?id=639

The Mayor's legislation is different from Supervisor Peskin's legislation in three main ways:

1. The Mayor's legislation only requires the LEED Gold standard of new large commercial buildings, and large commercial interior renovation. Less stringent standards apply to other construction types. However, projects must attain specific performance targets within these standards. Supervisor Peskin's legislation requires the LEED Gold standard for all covered construction, but does not mandate any specific performance targets.
2. In the Mayor's legislation, higher standards are phased in over the 2008-2012 period, generally beginning with a LEED Certified requirement and concluding with a LEED Silver or Gold by 2012. Supervisor Peskin's legislation requires the LEED Gold standard in the first year the legislation became effective.
3. The Mayor's legislation covers most new construction in San Francisco, and also covers large commercial interior renovations. Supervisor Peskin's legislation only covers new construction, and only projects exceeding 20,000 gross square feet. However, the Mayor's legislation does *not* include retail or industrial buildings, while Supervisor Peskin's legislation would include new retail or industrial construction.

In this report, the OEA has compared the economic and environmental impacts of the two pieces of legislation, because they are both active and neither has been yet acted upon by the Board of Supervisors.

ECONOMIC IMPACT FACTORS

Introduction

As detailed in the September 2007 OEA report, green building requirements impact the economy in two basic ways:

1. Green building requirements lead to higher upfront construction and renovation costs, including costs of installing on-site renewable power generation. These higher costs will be partly passed on to tenants in the form of higher rents and housing prices. This reduces income that can be spent on other commodities, makes some projects financially infeasible, and generally reduces economic growth.
2. Green building requirements will also lead to lower costs for water and energy over the long run. These savings stem from green buildings' more resource-efficient design and construction, and greater use of on-site renewable energy.

In addition, green building requirements will, over time, reduce the greenhouse gas emissions associated with the city's building sector, as existing buildings are upgraded and new green buildings replace older, less resource-efficient ones.

In the sections that follow, all three of these impacts will be assessed for the proposed legislation, and compared against the impacts estimated earlier in the report on Supervisor Peskin's legislation.

Understanding the Cost of Green Building Requirements

Understanding the extent to which green building requirements will raise construction costs in San Francisco requires estimating several points:

1. The scope and timing of green building requirements contained in the legislation (Table 1).
2. The share of the city's construction industry that will be impacted by higher costs under the proposed legislation (Table 2).
3. The cost premiums associated with achieving different levels of LEED certification and GreenPoint points (Table 3).
4. The overall, industry-wide, construction cost premium that can be expected from the legislation (Table 4).

Scope and Timing of the Proposed Requirements

The Mayor's proposed legislation is more expansive than Supervisor Peskin's legislation, in terms of its timing, the types of construction projects that are covered, and the specific requirements. The detailed requirements of the Mayor's proposed legislation are summarized in Table 1 below.

The legislation creates specific requirements for seven different types of construction projects:

All new residential and most new commercial construction, as well as about one-third of the city's renovation business would be subject to new green building requirements under the proposed legislation.

1. New high-rise residential buildings, which are required to meet the LEED Silver standard by 2010, as well as other specific requirements immediately.
2. New mid-rise residential buildings, which are required to achieve 75 GreenPoints by 2011.
3. New small residential buildings, which have the same requirements as mid-rise residential buildings.
4. New high-rise commercial buildings, which are required to meet the LEED Gold standard by 2012, as well as other specific requirements immediately.
5. New mid-rise commercial buildings, which are required to achieve 7 specific LEED Credits by 2011, as well as other specific requirements immediately.
6. Large commercial interior renovations, which are required to meet the LEED Gold standard (for renovations) by 2012, as well as other specific requirements immediately.
7. Major alterations, which are large commercial renovations that also involve structural modifications. These projects are required to attain the LEED Gold Standard by 2012, without any other specific requirements.

TABLE 1	Green Building Requirements in the Proposed Legislation			
Type of Construction	Definition	General Requirement and Timeline	Minimum Energy Requirement	Other Specific Requirements and Timeline
New Residential Construction				
New High-Rise	Over 75 feet height	LEED: Certified in 2008, Silver in 2010.	14% Better than Title 24 (min. 2 points LEED Energy and Atmosphere (EA) Credit 1)	Upon effective date (2008): LEED WE 1.1-Water efficient landscaping (50% reduction) LEED WE 3.1-Water use reduction (20% in 2008; 30% in 2011) LEED MR 2.1-Construction Debris Management (75% diversion)
New Midsize	Under 75 feet height, 5 or more units	GreenPoints: 25 in 2009, 50 in 2010, 75 in 2011+.	15% Better than Title 24	None
New Small	1-4 Units	GreenPoints: 25 in 2009, 50 in 2010, 75 in 2011+.	15% Better than Title 24	None
New Commercial Construction				
New Large	Over 75 feet height, or over 25,000 sq ft floor area	LEED: Certified in 2008, Silver in 2009, Gold in 2012.	4% Better than Title 24 (min. 2 points LEED Energy and Atmosphere (EA) Credit 1)	Upon effective date (2008): LEED WE 1.1-Water efficient landscaping (50% reduction) LEED WE 3.1-Water use reduction (20% in 2008; 30% in 2011) LEED MR 2.1-Construction Debris Management (75% diversion) By 2010: LEED EA 3.0- Enhanced Commissioning By 2012: LEED EA2 or EA6- On site generation OR purchase Renewable Energy Credits (REC)
New Midsize	Over 5,000 square feet and 25,000 square feet and under 75 feet height	LEED: Submit checklist only	None	Upon effective date (2009): LEED WE 1.1-Water efficient landscaping (50% reduction) LEED WE 3.1-Water use reduction (20% in 2008; 30% in 2011) LEED MR 2.1-Construction Debris Management (75% diversion) By 2010: LEED EA 3.0- Enhanced Commissioning By 2012: LEED EA2 or EA6- On site generation OR purchase REC's
Renovations, Alterations and Tenant Improvements				
Large Commercial Interiors	Over 25,000 sq. ft.	Certified in 2008, Silver in 2009, Gold in 2012.	None	Upon effective date (2008): LEED Environmental Quality (EQ) 4.1/4.2/4.3-Low emitting materials
Major Alterations	Over 25,000 sq. ft. & major structural changes	Certified in 2008, Silver in 2009, Gold in 2012.	None	

As detailed in the Minimum Energy Requirements and Other Specific Requirements and Timelines columns of Table 1, the legislation's proposed requirements are more stringent than LEED because, in several cases, they include specific ways in which developments must achieve the relevant LEED standard. For example, by 2011 all new high-rise residential buildings must achieve a 30% reduction in water use. Even most LEED Gold buildings currently do not achieve that level, however.[1]

This means that the cost premiums associated with the construction required by this legislation is somewhat higher than average for that level of LEED certification.

Share of the Construction Industry Covered by the Legislation

Based on research conducted for the OEA's earlier report on green building requirements, we estimated that the total value of the construction industry in San Francisco in 2006 was $1.9 billion. Analysis of the types and sizes of residential, commercial, retail, and industrial construction in San Francisco led to the conclusion that 38% of the industry's annual activities would be covered by Supervisor Peskin's legislation. The largest segment of the industry that is excluded from Supervisor Peskin's legislation is building renovation, which is over half of the value of the industry.

Approximately 57% of the city's construction industry would experience higher costs as a result of the legislation.

Because the Mayor's legislation requires certain commercial renovations and interior tenant improvements to achieve green building standards, a larger percentage of the industry would be affected by it. As detailed in Table 2, approximately 57% of the city's construction industry would be affected by the legislation, and hence be subject to the higher construction costs, while benefiting from operating cost savings associated with green building construction. All new residential construction, effectively all new commercial construction, and about one-third of the city's renovation business would be subject to new green building requirements under the proposed legislation.

[1] For example, OEA's review of LEED point totals for 164 Gold-rated projects indicated an average water reduction of about 28% per year, slightly less than the water savings threshold required by the Mayor's legislation.

TABLE 2 San Francisco Construction Industry Segments Covered by the Proposed Legislation

Construction Industry Segment	Ten-Year Average Annual Square Feet (000s)	Average Annual Value ($M)	% Covered by Proposed Legislation*	Covered Annual Value ($M)
Residential				
New High-Rise	1,075[j]	$376.3[d]	100%	$376.3
New Midsize	341[j]	$119.5[d]	100%	$119.5
New Small	57[j]	$19.8[d]	100%	$19.8
Subtotal - Residential	1,473[a]	$515.6[d]	100%	$515.6
Retail	311[c]	$109.0[d]	0%	$0
Commercial				
New Large	572[k]	$200.1[d]	100%	$200.1
New Midsize	0[k]	$0.0[d]	100%	$0.0
Other New Commercial	0[k]	$0.0[d]	0%	$0.0
Subtotal - Commercial	572[b]	$200.1[d]	100%	$200.1
Renovation				
Large Commercial Interiors / Major Alterations	3,150f	$363.9[g]	100%	$363.9
Small Commercial Interiors	2,527f	$63.2 [h]	0%	$0.0
Other Renovations	N/A	$650.3 [i]	0%	$0.0
Subtotal Renovation	N/A	$1,077.3[e]	34%	$363.9
Total Construction Industry		$1,901.9	57%	$1,079.5

* See Table 1.

[a] Based on the average annual number of housing units constructed over 1995-2005 (1,473), at an assumed average size of 1,000 square feet per unit. Source: Office of Economic and Workforce Development, *San Francisco Economic Trends*, June 2007.

[b] Based on the average annual amount of new commercial construction in San Francisco over the past ten years. Source: NAI BT.

[c] Based on the average annual amount of new retail construction in San Francisco over the past ten years. Source: Costar Group, *The Costar Retail Report*, Mid-Year 2007.

[d] Value of residential and commercial/industrial construction estimated at $350/square foot, in 2006 dollars.

[e] Based on 2006 building permits issued of less than $3 million. Permits above $3 million were generally for new construction. Department of Building Inspection, *Monthly Building Permit Activity Reports, Building Permits Issued*, January-December, 2007.

[f] The major alterations estimate is a ten-year average of adaptive re-use building area provided by Grubb and Ellis for 1996-2006. The large and small commercial interiors was estimated by first subtracting new commercial inventory from Grubb and Ellis estimated historic gross commercial absorption. The result represents commercial tenants moving within San Francisco, which generally results in a tenant improvement, particularly for larger spaces. Grubb and Ellis estimates of the size distribution of the gross absorption were used to determine large (>25k square feet) from small (<25k square feet) tenant improvements.

[g] The value was estimated at $75/square foot for large commercial interiors and $350/square foot for major alterations.

[h] The value was estimated at $25/square foot for small commercial interiors.

[i] The value of other renovations was estimated as the total value of renovations less the estimated values of (i) Large Commercial Interiors / Major Alterations and (ii) Small Commercial Interiors .

[j] Distribution of size types based on current development pipeline proportions. Small refers to projects of 1 to 9 units; midsize to projects of 10 to 100 units, and hi-rise to projects over 100 units.

[k] The size distribution of new commercial construction is based a ten-year review of individual commercial development projects as reported by Grubb and Ellis and NAI BT.

Cost of Meeting Green Building Standards

In obtaining an estimate of the total economic impact of the legislation, it is important to determine how much construction costs will increase for the 57% of the industry that will be affected.

In its September 2007 report on green buildings, the OEA reviewed the existing research on the cost premiums associated with attaining specific levels of LEED certification. A caveat from that report bears repeating here: these cost estimates are inherently uncertain, for two main reasons. First, there are many ways to achieve any given LEED standard or earn GreenPoints, so costs may vary across projects that attain the same standard. Second, costs are declining every year, as knowledge of the standards and best practices spread throughout the industry, and economies of scale lead to falling prices for green construction materials.

Cost estimates are inherently uncertain, for two reasons. First, there are many ways to achieve a given standard, so costs may vary across projects that attain the same standard.

For these reasons, as in September 2007 report, the costs associated with green building standards will be presented as a range, with high, medium, and low values. In addition, the cost premiums are assumed to decline over time – at the rate of 5% per year under the high scenario, 15% under the medium scenario, and 25% under the low scenario. Where applicable, the same cost premiums used in the September 2007 report were used in this report.

Second, costs are declining every year, as knowledge of the standards and best practices spread throughout the industry, and economies of scale lead to falling prices for green construction materials.

TABLE 3 **Initial Cost Premiums Associated with Achieving Green Building Requirements**

Requirement *	Low Estimate	Medium Estimate	High Estimate
LEED			
Certified	0.00%	1.00%	2.00%
Silver	1.00%	2.00%	3.00%
Gold	1.80%	3.00%	5.00%
GreenPoints Rated			
25 Points	0.00%	0.25%	0.50%
50 Points	0.40%	0.70%	1.10%
75 Points	0.60%	1.20%	1.80%
Specific Requirements			
Water efficient landscaping	0.00%	0.05%	0.10%
Water use reduction	0.00%	0.25%	0.50%
Construction Debris Management	0.00%	0.10%	0.15%
Enhanced Commissioning	0.00%	0.00%	0.00%
On-site generation / Purchase RECs	0.00%	0.00%	0.00%
Low-emitting materials	0.00%	0.00%	0.00%

* See Table 1 for the types of construction each requirement applies to, and when it applies.

Source: OEA's September 2007 Green Building Report. Green Points Rated and specific requirement cost premiums were estimated based on discussions with Green Point consultants and developer representatives.

Effective City-Wide Construction Cost Premiums

When the construction industry experiences higher costs over a long period of time, the city's economy is impacted by a reduction in construction projects, and higher rents and/or selling prices on those projects that do move forward. The ultimate result is less spending, lower employment, and reduced incomes—although these impacts may be counteracted by the value of resource savings, discussed below.

Estimating these impacts of higher construction costs requires developing an estimate of the overall, industry-wide average construction cost premium associated with the legislation.

Because different green building requirements apply to different types of construction at different times, a weighted average construction cost premium is required. The OEA's estimate of this value is detailed in Table 4. The cost premiums associated with each industry segment's requirements are multiplied by its percentage of total industry revenues to obtain this weighted average.

TABLE 4 **Weighted Range of Cost Premiums Associated With Green Building Requirements**

Construction Type	Covered Value ($M)*	Covered Value as % of Total Construction Industry	2008 Cost Premium	2009 Cost Premium	2010 Cost Premium	2011 Cost Premium	2012 Cost Premium
Residential							
New Hi-Rise	$376.3	20%	0.0-2.8%	0.0-2.6%	0.6-3.4%	0.4-3.2%	0.3-3.1%
New Midsize	$119.5	6%	0.0-0.0%	0.0-0.5%	0.2-1.0%	0.3-1.5%	0.2-1.5%
New Small	$19.8	1%	0.0-0.0%	0.0-0.5%	0.2-1.0%	0.3-1.5%	0.2-1.5%
Commercial							
New Large	$200.1	11%	0.0-2.8%	0.8-3.6%	0.6-3.4%	0.4-3.2%	0.6-4.7%
New Midsize	$0.0	0%	0.0-0.8%	0.0-0.7%	0.0-0.7%	0.0-0.6%	0.0-0.6%
Renovation							
Large Commercial Interiors / Major Alterations	$363.9	19%	0.0-2.0%	0.8-2.9%	0.6-2.7%	0.4-2.6%	0.6-4.1%
Total Construction Industry Covered by Legislation	$1,079.5	57%	0.0-1.2%	0.2-1.5%	0.3-1.6%	0.2-1.6%	0.2-2.0%

* See Table 2.

Source: Annual cost premium are ranges based on the legislation's requirements as detailed in Table 1, and the cost premiums associated with specific green building standards as detailed in Table 3. Reductions in cost premiums are applied each year after 2008, as discussed in the text.

The overall effect of the legislation will be to raise construction costs, initially in the range of 0.0 to 1.2%, and rising to 0.2 to 2.0% by 2012. After 2012, the construction cost premium will gradually decline under the low, medium, and high scenarios. This is because all requirements are in place by 2012, but the cost of meeting those standards is expected to decline, as discussed above.

Understanding the Economic Benefits of Green Building Legislation

The negative economic impact associated with higher construction costs are, to some extent, counteracted by the resource savings that green buildings offer its owners and tenants over its lifetime. A complete accounting of the economic costs and benefits of green building requirements must involve an estimate of these savings. Energy and water are the resource savings that are most clearly spelled out in quantitative terms in the LEED standard, and consequently those savings are the easiest to estimate quantitatively.

The OEA's September 2007 report reviewed research on the energy and water savings generally associated with

different levels of LEED certification. These estimates were determined by averaging the energy and water savings that actual certified projects were able to achieve.

TABLE 5 Average Energy and Water Savings Associated with LEED and GreenPoint Standards

Requirement	Average Energy Savings	Average Water Savings
LEED - New Construction[a]		
Gold	40%	30%
Silver	35%	30%
Certified	30%	25%
LEED – Renovations[b]		
Gold	6.4%	4.8%
Silver	5.6%	4.8%
Certified	4.8%	4.0%
GreenPoints Rated[c]		
75 Points	20%	20%
50 Points	15%	15%
25 Points	0%	0%

[a] OEA's September 2007 Green Buildings report. Savings associated with other specific requirements detailed in Table 1, such as mandated 30% reduction in water consumption, are included.

[b] Estimated based on an assumption that renovations on a non-LEED building can generate 80% of the savings of new LEED construction of a corresponding level, over the life of the building, and an assumption of five major renovations over a typical building's useful life.

[c] Estimates based on discussions with Green Point consultants and developer representatives.

Like the cost premiums, these energy savings have to be set against the requirements—and consequent savings—associated different segments of the industry. In a manner similar to Table 4, Table 6 below creates a weighted average energy savings by comparing the savings associated with each industry segment's requirement with its share of the entire covered portion of the industry.

Table 6 indicates that the new construction and renovations that will occur in the future will achieve, on average, a 24% reduction in energy compared to what they would consume without attaining any green building standard. While this is significantly less than the 40% average that the LEED Gold buildings required by Supervisor Peskin's legislation would achieve, it must be kept in mind that the Mayor's legislation applies to a much wider share of the industry.

TABLE 6	Average Reduction in Energy Consumption by Construction Industry Segment, and Industry-Wide

Construction Industry Segment	Covered Value ($M)	Covered Value as % of Total Covered Industry	2008 % Savings	2009 % Savings	2010 % Savings	2011 % Savings	2012 and beyond % Savings
Residential							
New Hi-Rise	$376.3	35%	30%	30%	35%	35%	35%
New Midsize	$119.5	11%	0%	0%	15%	20%	20%
New Small	$19.8	2%	0%	0%	15%	20%	20%
Commercial							
New Large	$200.1	19%	30%	35%	35%	35%	40%
New Midsize	$0.0	0%	0%	0%	0%	0%	0%
Renovation							
Large Commercial Interiors / Major Alterations	$363.9	34%	4.8%	5.6%	5.6%	5.6%	6.4%
Total Covered Construction Industry	$1,079.6	100%	18%	19%	23%	23%	24%

Similarly, the water savings associated with the legislation can also be quantified. In this case, the average water savings rises to 20% and stays at that level.

TABLE 7	Average Reduction in Water Consumption by Construction Industry Segment, and Industry-Wide						
Construction Industry Segment	Covered Value ($M)	Covered Value as % of Total Covered Industry	2008	2009	2010	2011	2012 and beyond
Residential							
New Hi-Rise	$376.3	35%	25%	25%	30%	30%	30%
New Midsize	$119.5	11%	0%	0%	15%	20%	20%
New Small	$19.8	2%	0%	0%	15%	20%	20%
Commercial							
New Large	$200.1	19%	25%	30%	30%	30%	30%
New Midsize	$0.0	0%	0%	0%	0%	0%	0%
Renovation							
Large Commercial Interiors / Major Alterations	$363.9	34%	4.0%	4.8%	4.8%	4.8%	4.8%
Total Covered Construction Industry	$1,079.6	100%	15%	16%	20%	20%	20%

Modeling the Combined Impacts of Higher Construction Costs and Resource Savings

The economic impact of green building legislation will always be positive, given a long enough time horizon.

In order to model the combined impacts of the higher construction costs and savings on electricity and water expenses, the construction cost premiums outlined in Table 4 have to be estimated into the future, figuring the continuing decline in these premiums discussed earlier. For the purposes of this study (and the OEA's September 2007 green buildings report), a time horizon of 20 years was selected. This analysis is shown in Table 8.

Similarly, the cumulative resource savings have to be calculated each year until 2027. The resource savings accumulate, on a city-wide basis, because they apply every year after a building is constructed or a renovation occurs. Thus, the $44.6 million in savings experienced in 2027 will be the result of that year's construction and renovation, as well as construction in earlier years that is still generating savings. It is important to stress that these resource savings are expressed in 2006 dollars, and that the REMI model inflates them when calculating the impacts in future years. The inflator factor is based on baseline national and regional projections, modified by how the regional economy is projected to change over the course of the policy.

The continual increase in resource savings, combined with

the gradual fall in the construction cost premium, is the primary reason why the economic impact of green building legislation will always be positive, given a long enough time horizon.

TABLE 8 **Overall Construction Cost Premiums and Value of Resource Savings, 2008-2028**

	Construction Cost Premium			
	Low	Medium	High	Cumulative Energy and Water Savings ($2006)
2008	0.0%	0.6%	1.2%	$ 1,710,767
2009	0.2%	0.8%	1.5%	$ 3,421,535
2010	0.3%	0.8%	1.6%	$ 5,515,963
2011	0.2%	0.7%	1.6%	$ 7,640,290
2012	0.2%	0.8%	2.0%	$ 9,947,642
2013	0.2%	0.7%	1.9%	$ 12,254,995
2014	0.1%	0.6%	1.8%	$ 14,562,348
2015	0.1%	0.5%	1.7%	$ 16,869,700
2016	0.1%	0.4%	1.6%	$ 19,177,053
2017	0.1%	0.3%	1.5%	$ 21,484,406
2018	0.0%	0.3%	1.5%	$ 23,791,758
2019	0.0%	0.3%	1.4%	$ 26,099,111
2020	0.0%	0.2%	1.3%	$ 28,406,464
2021	0.0%	0.2%	1.3%	$ 30,713,816
2022	0.0%	0.2%	1.2%	$ 33,021,169
2023	0.0%	0.1%	1.1%	$ 35,328,522
2024	0.0%	0.1%	1.1%	$ 37,635,874
2025	0.0%	0.1%	1.0%	$ 39,943,227
2026	0.0%	0.1%	1.0%	$ 42,250,579
2027	0.0%	0.1%	0.9%	$ 44,557,932

* Estimates derived by multiplying the annual square footage of new construction by type from Table 2 by the resource savings percentages in Table 6 and Table 7, by the following annual energy and water consumption factors:

	Residential	Commercial
Electricity	$0.54/sq.ft.	$2.79/sq.ft.
Natural Gas	$0.54/sq.ft.	$0.61/sq.ft.
Drinking water	$0.13/sq.ft.	$0.14/sq.ft.
Wastewater	$0.29/sq.ft.	$0.42/sq.ft.

ECONOMIC IMPACT ASSESSMENT

Introduction

The OEA's REMI model of the San Francisco economy allows the direct impacts of the proposed legislation—higher construction costs and less expenditure on energy and water—to be understood in terms of macroeconomic variables like total spending in San Francisco, total employment, and per capita income.

Three scenarios were run: one using the Low estimate of construction cost premiums shown in Table 8, one using the Medium estimate, and one using the High estimate. Each scenario was compared against REMI's baseline projection for the San Francisco economy, which represents how the city's economy would be expected to change without the policy.

Impact on Gross City Product

All three scenarios will impose a cost to the city's economy, ranging from an average of about $30 million per year under the Low Scenario, to $190 million a year in the Middle scenario, to about $700 million per year under the High Scenario.

San Francisco's Gross City Product (GCP) is the local equivalent to a Gross National Product, representing the value of all goods and services produced in the city. REMI's baseline projection for San Francisco is a healthy increase in GCP over the next twenty years, and this will remain the case under all three scenarios.

All three scenarios will nevertheless impose a cost to the city's GCP, ranging from an average of about $30 million per year under the Low Scenario, to $190 million a year in the Middle scenario, to about $700 million per year under the High Scenario. The impacts are not declines per se, but rather slower growth than the city would experience under the baseline projection. All of the negative economic impacts peak in the 2012-2014 period, and decline afterwards.

These GCP impacts very closely mirror the GCP impacts associated with Supervisor Peskin's legislation, detailed in the OEA's September 2007 report.

TABLE 9 San Francisco's Projected Gross City Product, 2008-2027 (Billion 2007 $): Baseline and Three Scenarios

	Baseline	Low		Medium		High	
	Value	Value	Difference	Value	Difference	Value	Difference
2008	$104.6	$104.6	$0.00	$104.5	-$0.09	$104.4	-$0.18
2009	$109.1	$109.1	-$0.03	$108.9	-$0.16	$108.8	-$0.31
2010	$112.9	$112.8	-$0.06	$112.7	-$0.22	$112.5	-$0.41
2011	$117.0	$117.0	-$0.07	$116.8	-$0.24	$116.5	-$0.49
2012	$121.1	$121.0	-$0.08	$120.8	-$0.28	$120.4	-$0.63
2013	$125.3	$125.2	-$0.08	$125.0	-$0.29	$124.6	-$0.70
2014	$129.9	$129.9	-$0.07	$129.6	-$0.29	$129.2	-$0.76
2015	$133.6	$133.5	-$0.06	$133.3	-$0.28	$132.8	-$0.80
2016	$137.3	$137.2	-$0.06	$137.0	-$0.26	$136.4	-$0.82
2017	$140.9	$140.9	-$0.05	$140.7	-$0.24	$140.1	-$0.83
2018	$144.4	$144.4	-$0.04	$144.2	-$0.22	$143.6	-$0.84
2019	$148.0	$148.0	-$0.03	$147.8	-$0.20	$147.2	-$0.84
2020	$151.5	$151.4	-$0.02	$151.3	-$0.19	$150.6	-$0.84
2021	$154.9	$154.9	-$0.01	$154.7	-$0.17	$154.1	-$0.83
2022	$158.4	$158.4	-$0.01	$158.3	-$0.15	$157.6	-$0.82
2023	$162.0	$162.0	$0.00	$161.9	-$0.13	$161.2	-$0.81
2024	$165.5	$165.5	$0.00	$165.4	-$0.12	$164.7	-$0.79
2025	$169.1	$169.1	$0.01	$169.0	-$0.10	$168.3	-$0.78
2026	$172.7	$172.7	$0.01	$172.6	-$0.09	$172.0	-$0.76
2027	$176.3	$176.4	$0.02	$176.3	-$0.07	$175.6	-$0.75
Average Difference			-$0.03		-$0.19		-$0.70
As % of Average Baseline			0.0%		-0.1%		-0.5%

Impact on Employment

The proposed legislation will also have a negative impact on the city's employment, in line with its impact on gross city product. Private non-farm employment is projected to be between 0.0% and 0.3% below the baseline projection, on an annual average basis. The city will still experience significant job growth, under all three scenarios. This job impact is also closely in line with the negative employment impact associated with Supervisor Peskin's legislation.

TABLE 10 **San Francisco's Projected Private Non-Farm Employment, 2008-2027 (000s): Baseline and Three Scenarios**

		Low		Medium		High	
	Baseline Value	Value	Difference	Value	Difference	Value	Difference
2008	632.2	632.2	0.005	631.7	-0.503	631.2	-0.994
2009	641.2	641.1	-0.176	640.4	-0.796	639.7	-1.500
2010	648.6	648.3	-0.285	647.6	-0.991	646.7	-1.909
2011	657.4	657.1	-0.284	656.4	-1.035	655.3	-2.135
2012	664.5	664.2	-0.322	663.4	-1.138	661.9	-2.650
2013	672.3	672.0	-0.289	671.2	-1.098	669.5	-2.803
2014	681.6	681.4	-0.246	680.6	-1.028	678.7	-2.886
2015	687.0	686.8	-0.197	686.0	-0.931	684.1	-2.886
2016	691.8	691.6	-0.148	691.0	-0.826	688.9	-2.843
2017	695.8	695.7	-0.104	695.1	-0.721	693.0	-2.770
2018	699.2	699.1	-0.063	698.6	-0.619	696.5	-2.679
2019	702.7	702.7	-0.027	702.2	-0.522	700.1	-2.574
2020	705.5	705.5	0.005	705.1	-0.433	703.0	-2.462
2021	707.9	708.0	0.032	707.6	-0.352	705.6	-2.348
2022	710.5	710.6	0.056	710.2	-0.280	708.3	-2.234
2023	712.9	713.0	0.078	712.7	-0.214	710.8	-2.124
2024	714.9	715.0	0.097	714.8	-0.155	712.9	-2.014
2025	716.9	717.1	0.115	716.8	-0.102	715.0	-1.906
2026	718.9	719.0	0.131	718.8	-0.055	717.1	-1.799
2027	720.7	720.8	0.146	720.7	-0.010	719.0	-1.694
Average Difference			-0.074		-0.590		-2.261
As % of Average Baseline			0.0%		-0.1%		-0.3%

Impact on Real Disposable Per Capita Income

The proposed legislation will have a much smaller impact on per capita income in San Francisco over the next twenty years. Under all three scenarios, per capita income is projected to be reduced by between $10 and $90 per year off the baseline projection, which is between 0.0% and 0.1% of the projected average. Again, even under the high impact scenario, per capita income will be higher in 2028 than it is today; the gain will not be as great, however.

Again, this average impact precisely mirrors the impact of the Peskin legislation on per capita income.

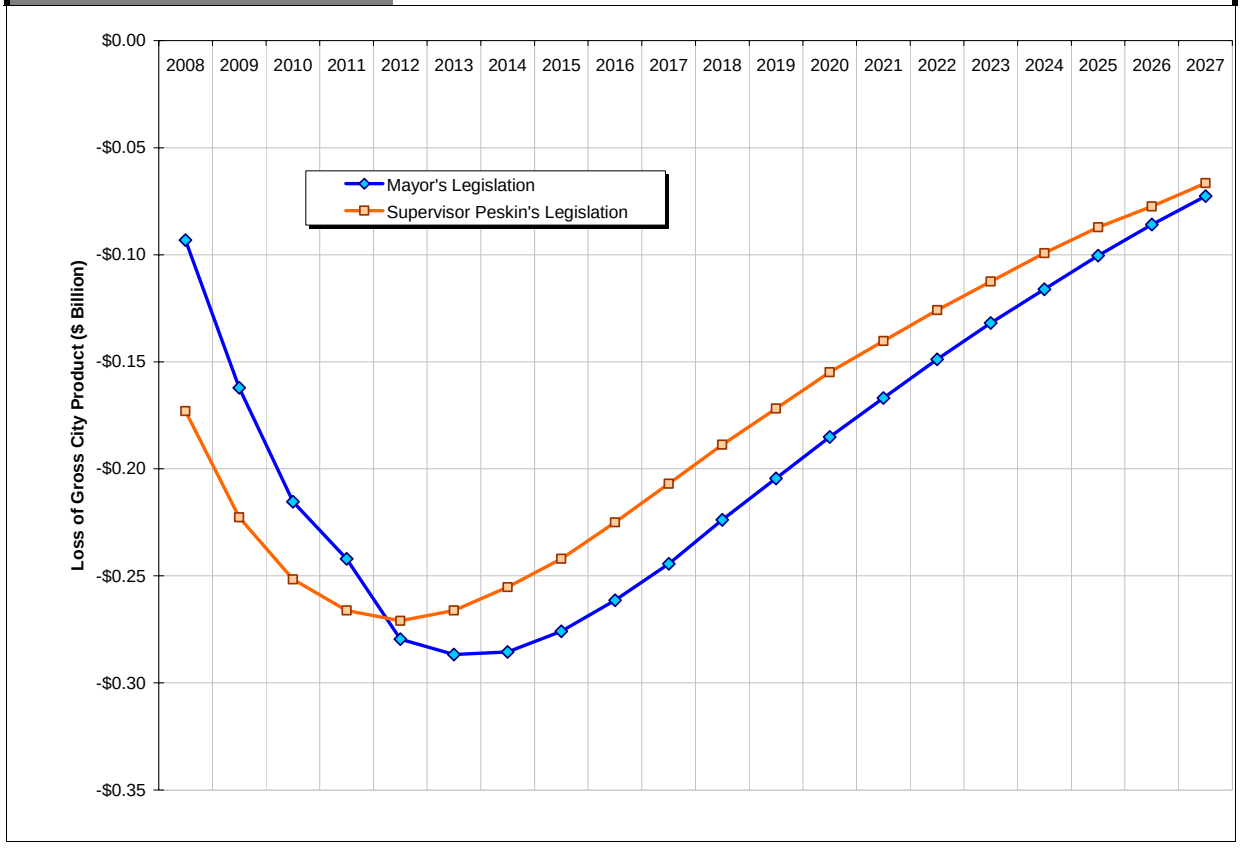
TABLE 11 **San Francisco's Projected Real Disposable Per Capita Income, 2008-2027 ($000): Baseline and Three Scenarios**

		Low		Medium		High	
	Baseline Value	Value	Difference	Value	Difference	Value	Difference
2008	$59.8	$59.8	$0.00	$59.7	-$0.06	$59.6	-$0.12
2009	$61.6	$61.6	-$0.02	$61.5	-$0.08	$61.4	-$0.15
2010	$62.5	$62.5	-$0.03	$62.4	-$0.08	$62.3	-$0.16
2011	$63.5	$63.5	-$0.02	$63.4	-$0.07	$63.4	-$0.15
2012	$64.3	$64.3	-$0.02	$64.3	-$0.07	$64.2	-$0.19
2013	$65.3	$65.3	-$0.01	$65.2	-$0.05	$65.1	-$0.17
2014	$66.4	$66.4	$0.00	$66.3	-$0.04	$66.2	-$0.16
2015	$67.2	$67.2	$0.00	$67.2	-$0.02	$67.1	-$0.14
2016	$68.1	$68.1	$0.01	$68.0	-$0.01	$67.9	-$0.12
2017	$68.9	$68.9	$0.01	$68.9	$0.00	$68.8	-$0.11
2018	$69.7	$69.8	$0.02	$69.7	$0.01	$69.6	-$0.09
2019	$70.7	$70.7	$0.02	$70.7	$0.01	$70.6	-$0.08
2020	$71.6	$71.6	$0.02	$71.6	$0.02	$71.6	-$0.07
2021	$72.6	$72.6	$0.02	$72.6	$0.02	$72.5	-$0.05
2022	$73.6	$73.6	$0.02	$73.6	$0.03	$73.5	-$0.04
2023	$74.6	$74.6	$0.02	$74.6	$0.03	$74.6	-$0.03
2024	$75.6	$75.7	$0.02	$75.7	$0.03	$75.6	-$0.03
2025	$76.8	$76.8	$0.02	$76.8	$0.03	$76.7	-$0.02
2026	$77.8	$77.8	$0.02	$77.8	$0.03	$77.8	-$0.01
2027	$78.9	$78.9	$0.02	$78.9	$0.03	$78.9	-$0.01
Average Difference			$0.01		-$0.01		-$0.09
As % of Average Baseline			0.0%		0.0%		-0.1%

Impacts Relative to Supervisor Peskin's Legislation

Although the average impacts of the Mayor's and Supervisor Peskin's legislation are similar over a twenty-year period, because the two ordinances are structured differently, their timing of their impacts is different. Supervisor Peskin's legislation places a greater burden on the economy up-front, but the maximum negative economic impact is felt sooner, in 2012. After 2012, the Mayor's legislation has a greater negative economic impact than the Peskin legislation. This is due to the fact that the Mayor's legislation covers a larger share of the construction industry and is structured to impose its highest cost burden in 2012, and its greatest economic impact will be felt in the city in the year or two following 2012.

FIGURE 1 **Comparison of Impacts on Gross City Product: Middle Impact Scenario Differences from Baseline Under the Two Ordinances**



Impact on Greenhouse Gas Emissions

Although the analysis just reviewed indicates that the economic impact of the proposed legislation is more or less identical to that of Supervisor Peskin's legislation, its impact on San Francisco's greenhouse gas emissions would be considerably larger. In its September 2007 report, the OEA determined that the Peskin legislation would remove 882,000 tons of CO_2 from the atmosphere by 2027. As detailed in Table 12, however, the Mayor's legislation would remove 1.034 million tons over the same time period, which is 17% more.

Because the Mayor's legislation covers a higher percentage of the industry, it generates more energy savings and hence CO_2 reductions. In particular, commercial renovations—which are not covered by Supervisor Peskin's legislation—are a major source of CO_2 reductions, as about 5.5 million square feet of commercial space is renovated each year, with more than 3 million square feet of this commercial renovation covered by the ordinance.

TABLE 12 Annual and Total of CO_2 Reductions Associated with the Proposed Legislation

Year	CO_2 Emissions Reduced - Residential	CO_2 Emissions Reduced - Commercial	Total Annual CO_2 Reductions	Total Cumulative CO_2 Reductions
2008	1,046	2,843	3,889	3,889
2009	1,046	2,843	3,889	7,778
2010	1,414	3,317	4,731	12,509
2011	1,478	3,317	4,795	17,304
2012	1,478	3,791	5,269	22,573
2013	1,478	3,791	5,269	27,842
2014	1,478	3,791	5,269	33,111
2015	1,478	3,791	5,269	38,380
2016	1,478	3,791	5,269	43,649
2017	1,478	3,791	5,269	48,918
2018	1,478	3,791	5,269	54,187
2019	1,478	3,791	5,269	59,456
2020	1,478	3,791	5,269	64,726
2021	1,478	3,791	5,269	69,995
2022	1,478	3,791	5,269	75,264
2023	1,478	3,791	5,269	80,533
2024	1,478	3,791	5,269	85,802
2025	1,478	3,791	5,269	91,071
2026	1,478	3,791	5,269	96,340
2027	1,478	3,791	5,269	101,609
			Cumulative Total	1,034,936

RISK FACTORS AND MITIGATION

Impact on the Carbon Intensity of the San Francisco Economy

The proposed legislation, like Supervisor Peskin's similar legislation, generates an environmental benefit at a net economic cost to San Francisco that ranges into the hundreds of millions of dollars annually, at least in the short term. It thus invites the question of whether or not the policy can be reconfigured in a way that realizes the same environmental benefit at a lower economic cost.

In global warming policy debates, the concept of the *carbon intensity* of an economy is an important one for weighing these trade-offs. Carbon intensity refers to the amount of carbon (or CO_2) that an economy or area emits per dollar of gross regional product. Among developed economies, areas with highly energy-intensive manufacturing industries, and areas where residents are dependent on the automobile, generally have a high carbon intensity. Conversely, denser urban areas with knowledge based economies often have a lower one.

The concept is an important one because the reality of global warming will require advanced economies to reduce their greenhouse gas emissions—but if they do not reduce their carbon intensity at the same time, every CO_2 reduction will directly hit the economy in proportion. Without reducing the carbon intensity of the economy, a 50% reduction in CO_2 emissions would lead to a very severe 50% reduction in economic output.

In practice, any city's economy is comprised of a myriad of production and consumption practices, each of which produce some economic value and each of which involve some release of carbon into the atmosphere. A city's carbon intensity is thus an average of all of these practices; some of them create great economic value at relatively little environmental cost, while others are wasteful, creating little value but causing a lot of CO_2 emission.

Designing any kind of CO_2 reduction strategy needs to consider the carbon intensity of the economy, by effectively discouraging those activities with a high environmental cost and little economic value, while encouraging those low carbon intensity activities that create economic value with few CO_2 emissions.

In general, from a policy implementation stand-point, one way to accomplish is for the government to identify and determine what practices have low economic value and high environmental cost, and regulate or prohibit them. An

alternative approach, which is likely to be cheaper to implement and less prone to inaccuracies, is to create incentives for individuals and businesses to reduce wasteful activities on their own.

A "carbon tax" on energy, combined with an offsetting payroll tax cut, could encourage greenhouse gas reductions without damaging the economy, even in the short term.

The key to creating such an incentive is to make energy more costly. A revenue-neutral "carbon tax" on energy, whose harm to the economy as a whole would be offset by a revenue-neutral cut to another tax, would accomplish this. Such a move would increase the incentive for individuals and businesses to reduce their energy consumption, and they would naturally choose to cut those activities that produced the least amount of value to them first.

Command-and-control measures like green building legislation are one method to encourage the economy to move in a less carbon-intensive direction. But because they change behavior on a one-size-fits-all model, however, and not through decentralized individual actions, they do not consider all of the trade-offs and individual benefits and costs. This, fundamentally, is why they have a negative economic impact.

An incentive-based approach, on the other hand, allows individuals and businesses to weigh the higher price in the context of all of their energy consumption, and make the specific conservation decisions that are in their best interest. Notwithstanding the decentralized nature of the process, fairly regular and predictable responses to price increases can be obtained across the city's energy market as a whole.

Comparing Green Building Legislation and a Revenue-Neutral Carbon Tax

The impacts of the two green building ordinances on carbon intensity can be compared with a hypothetical carbon tax proposal. The carbon tax alternative modeled here was a phased increase, to 24%, of the electricity and gas components of the City's current Utility User's Tax (UUT), which is paid by all businesses and is currently 7.5%. Residents would pay no additional tax in this hypothetical example.

To minimize the shock the economy, the increase to 24% was phased-in over 11 years, in 1.5% annual increments (9% the first year, 10.5% the second year, etc.). Using the REMI model, the amount of additional UUT raised (above the baseline 7.5%) was returned to the economy in the form of a payroll tax reduction. This tax cut would tend to stimulate the economy even as a UUT increase weakened it, leading to a small net impact.

Under this set of assumptions, the OEA projects that San

The economic impact of a revenue-neutral carbon tax would be slightly positive. This is likely because payroll expenses are mostly kept within the local economy, while energy expenditures largely leak out.

Francisco businesses would respond by total reducing energy consumption by approximately 10% by 2027. This would save 1.45 million tons of CO_2 by that year—more than either the Mayor's or Supervisor Peskin's legislation[2]. It is worth pointing out that this higher level of CO_2 reduction would come exclusively from the business sector, who would also of course be the only direct beneficiary of the payroll tax cut.

The REMI model analysis of its economic impact suggested that it was, in fact, slightly positive. It is likely this is due to the fact that the city's economy would be substituting expenditure on payroll, which has strong local multipliers, for expenditure on energy, which mainly flows outside of the city and has few local multipliers.

Figure 2 below shows how the carbon intensity of San Francisco would change, from its current level, under both green building ordinances and the hypothetical carbon tax. The carbon tax has two clear advantages—it lowers the carbon intensity of the city's economy to a greater extent over the long term, and in the short term, it lowers it immediately.

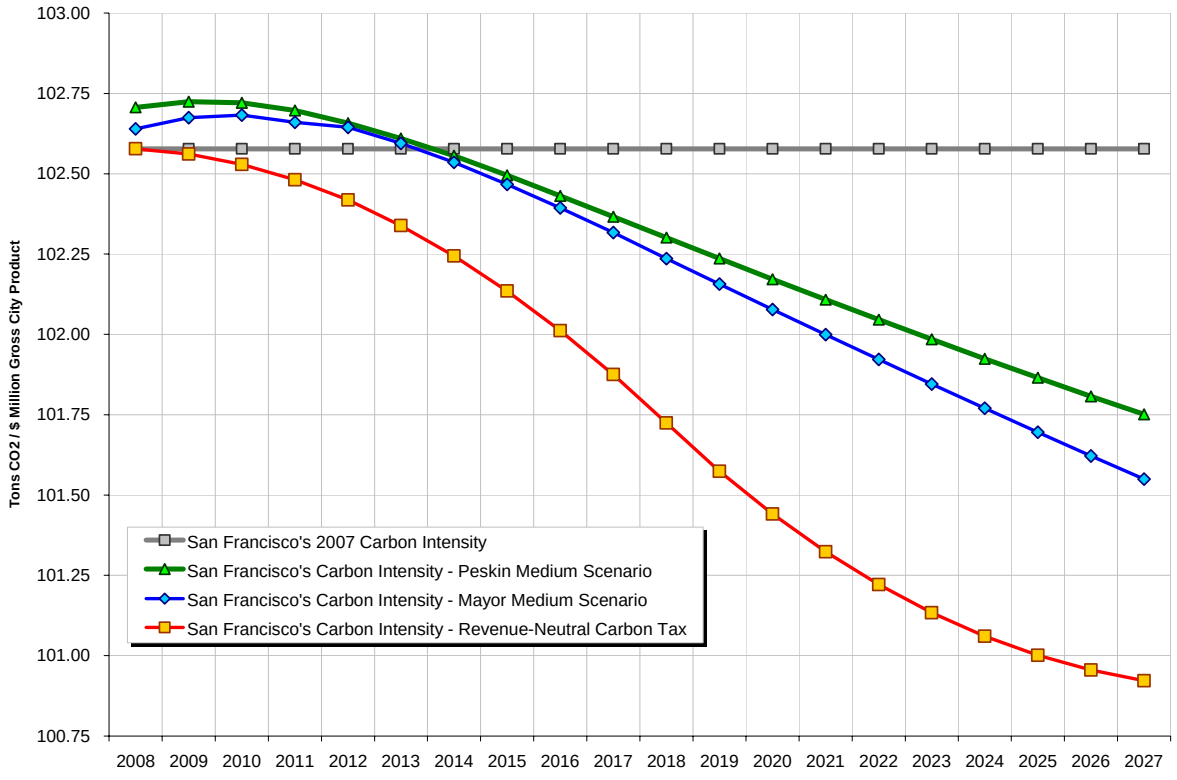
The carbon tax alternative has two clear advantages over green building requirements—it lowers the carbon intensity of the city's economy to a greater extent over the long term, and in the short term, it lowers it immediately.

In the short term, both green building ordinances move the economy in a *more* carbon-intensive direction—the wrong direction—by requiring activities that have a small environmental benefit but a large economic cost, like construction. Over the longer term—after six or seven years—the CO_2 savings associated with energy-saving construction become significant and tend to shift the city's economy in a more carbon-efficient, less carbon-intensive direction.

Both proposed ordinances, and the carbon tax alternative, are tools to reduce greenhouse gas emissions. However, desired outcomes in greenhouse gas emissions can be more efficiently achieved, in economic terms, using tax policy and market forces, instead of command-and-control legislation.

[2] Based on research from the Carbon Tax Center, the OEA assumed that the price elasticity of demand for energy was -0.7, over a ten year adjustment process. This means that every 1% increase in the price of energy would, over ten years, lead to a 0.7% decrease in energy consumption. The OEA believes this estimate is a reasonable estimate of how the San Francisco market might respond to higher prices, but a detailed analysis of the local market has not been conducted. Thus, this estimate should be viewed as suggestive rather than definitive.

FIGURE 2 **Impacts of Both Green Building Ordinances, and a Revenue-Neutral Carbon Tax, on San Francisco's Carbon Intensity**



STAFF CONTACTS

Ted Egan, Chief Economist (ted.egan@sfgov.org) (415) 554-5268

Kurt Fuchs, Senior Economist (kurt.fuchs@sfgov.org) (415) 554-5369

The authors thank numerous firms and individuals for their assistance in the preparation of this report, including Dan Cressman and Asa Flynn with Grubb & Ellis, Ken Cleaveland with the Building Owners and Managers Association (BOMA), Rich Chien with the Department of the Environment, Wade Crowfoot with the Mayor's Office, Phil Williams with the Mayor's Green Buildings Task Force, Nolan Boyd with Staubach Realty, Brian Parker, with BuilditGreen, Mike Gabel, with Gabel Energy, and Bill Roberts with Economic Sciences Inc. All errors, ommissions, and conclusions are solely those of the Office of Economic Analysis.

CITY AND COUNTY OF SAN FRANCISCO - CONTROLLER'S OFFICE

We want your feedback!

Please use the following web link – or fill out, detach and mail the attached card to let us know your thoughts on this report.

Option 1: Web

Use the link below to give feedback. If you are reading this report electronically, you can click on the link:

http://co.sfgov.org/controller/feedback/?id=721

Option 2: Mail

Just fill in the card below, fold this in half and mail!

Option 3: Phone

Call the Controller's Office at 415-554-7500 and we will take your feedback over the phone.

Fold along the dotted line and mail!

Thank you for your feedback!

Controller's Office Report Feedback

Report 080063 – Mayor's Green Building Requirements

I am a:

San Francisco Resident
Media Reporter
City of San Francisco Employee

Resident of Another City: _____

Other: _____

How do you rate this report?

	Very Good	Good	Neutral	Poor	Very Poor
Significance of topic					
Clear & concise					
Objective & fair					
Useful					
Overall Report Quality					

Comments:

_____

_____

For a complete list of our reports, visit our website at
http://www.sfgov.org/controller/oea

Thank you!

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 22978 SAN FRANCISCO, CA

POSTAGE WILL BE PAID BY ADDRESSEE

OFFICE OF THE CONTROLLER
CITY & COUNTY OF SAN FRANCISCO
875 STEVENSON RM 125
SAN FRANCISCO CA 94103-9576

▲ Fold completed survey here and mail ▲

▼ Tape here - no staples please ▼