



The Two-Year, Nine-Million-Jobs Investment

(The 2030 Challenge Stimulus Plan)

Architecture 2030

Plan Summary

Because the private building sector represents 93% of total U.S. building stock¹, and building construction alone accounts for approximately 10% of the U.S. GDP², the private building sector is the key to reviving the U.S. economy. Investing \$192.47 billion (\$96.235 billion each year for two years) in the private building sector to provide a 'housing mortgage interest rate buy-down' and a 'commercial building accelerated-depreciation program' for buildings that meet the energy reduction targets of the widely adopted 2030 Challenge³ will create, in just two years, over **9 million new jobs** and **\$1 trillion in direct, non-federal investment and spending** while opening up a new **\$236 billion renovation market** that could grow to **\$2.6 trillion** by 2030, and over **\$5.47 trillion** by 2069. This Plan pays for itself annually through the new tax base created and can be implemented quickly through existing federal programs (see **How Quickly Can Investment Begin** below).

Basis for Private Building Sector Focus

Although important, infrastructure and the public building sector cannot solve the U.S. economic crisis:

- The public building sector accounts for only 7% of total U.S. building stock.⁴
- Public Infrastructure and building are not currently in decline.⁵
- Compared to private building, public infrastructure and building generate very little private investment and spending.
- Public Infrastructure and building projects are dependent on strong tax revenues, which are now in decline.
- Because these projects cannot produce a sustainable tax base, the federal government will have to continue to provide funding for each new project.

The private building sector, on the other hand, is key to solving this crisis:

- The private building sector accounts for 93% of total U.S. building stock and impacts the entire U.S. economy. Building construction alone accounts for approximately 10% of the U.S. GDP.
- In 2008, construction of residential buildings was down a staggering 39%, and construction of commercial buildings was down 17%, with no bottom in sight.⁶
- Over one million construction workers are now unemployed, and every sector of the U.S. economy (from wholesale, retail, distribution, manufacturing and construction to professional services, banking and development) and every industry (from steel, rubber, insulation and caulking to mechanical and electrical equipment, glass, wood, metals, tile, fabrics and paint) is reeling from the effects.
- Investing in the private building sector generates demand for construction services and products and private investment and spending on a much larger scale than public infrastructure and building projects, creating millions of more jobs.
- The large tax base generated from the new jobs, private investment and spending, and new renovation market will both pay for the Plan each year it is in effect *and* provide the needed funding for future public infrastructure and building projects.

¹ 2007 Buildings Energy Data Book, Energy Information Administration.

² 2007 Buildings Energy Data Book, Energy Information Administration.

³ The 2030 Challenge, issued by Architecture 2030, calls for all new buildings and renovations to be designed so as to reduce their fossil-fuel, greenhouse-gas-emitting energy consumption by 30% below that required by the latest IECC 2006 and ASHRAE 90.1-2004 code standards, incrementally increasing the reductions to carbon neutral by 2030.

⁴ 2007 Buildings Energy Data Book, Energy Information Administration.

⁵ McGraw Hill Construction report, December 18, 2008. From January through November 2008, construction of infrastructure projects grew by 2%. Construction of institutional buildings grew by 6%, helped by public and government buildings (up 6%) and educational buildings and schools (up 6%).

⁶ McGraw Hill Construction report, December 18, 2008.

Plan Specifics

The Plan requires those participating in the housing mortgage interest rate buy-down or the commercial building accelerated-depreciation program to renovate (or build new) to specific energy reduction targets. This requirement is central to the Plan, immediately creating demand for Building Sector services and products, including \$236 billion of building renovation. It is this demand within the private building sector that generates \$1 trillion in private investment and spending, and it is this \$1 trillion in private investment and spending that makes the 9 million new jobs possible. Without this additional investment and spending, the number of jobs created would be far less.

Only 5.8% of homes and 3.1% of commercial buildings, i.e. just 5% of total U.S. building stock, would need to participate in the Two-Year, Nine-Million-Jobs Investment Plan to create these massive economic benefits. If demand for these construction services is also generated in the remaining 95% of the Building Sector, either through market forces or continuation of the Plan after two years, the demand created could fuel the economy for the next 40 to 50 years. The renovation market alone would be worth \$5.47 trillion.

In addition, during the two years the Plan is in effect, consumers will save \$44 billion to \$69 billion in energy costs and mortgage payments⁷, significantly reducing the risk of mortgage failure while increasing disposable income. Because the 2030 Challenge calls for buildings to be renovated or designed to reduce their fossil-fuel, GHG-emitting energy consumption either 30%, 50% or 75% below that required by the IECC 2006 and ASHRAE 90.1-2004 code standards, or to carbon neutral⁸, the Plan will also reduce CO₂ emissions by 168.16 MMT and energy consumption by 2.16 QBtu. All of these benefits continue in perpetuity, so that, for example, over five years, consumers will save \$132 billion to \$208 billion in energy costs and mortgage payments, and CO₂ emissions will be reduced by 504.47 MMT and energy consumption by 6.47 QBtu.

Residential Buildings

As noted, the Plan requires participants to meet the energy reduction targets of the 2030 Challenge. Plan benefits are weighted so as to encourage renovation in the current 'overbuilt' environment; however, the Plan also offers benefits for new buildings that meet the targets to further encourage an immediate and rapid shift to an energy-efficient built environment.

The Plan leverages the benefits of energy reductions by offering for both existing and new homes, through Fannie Mae, Freddie Mac and other GSEs, increased mortgage financing with reduced interest rates in proportion to the energy reduction target reached:

- A. Those seeking to purchase an existing home or refinance their mortgage (including to avoid foreclosure) would be required to renovate the home to meet one of the following energy reduction targets of the 2030 Challenge, depending on the interest rate desired:

Mortgage Interest Rate*	2030 Challenge Energy Reduction (Energy Savings) ⁹
4.0%	30% below code
3.5%	50% below code
2.5%	75% below code
2.0%	Carbon neutral

* Interest rates to be adjusted based on market conditions.

For example, a homeowner with a current \$272,300 mortgage with equity of \$12,000, would have a mortgage balance of \$260,300. At an interest rate of 6%, the current monthly mortgage payment would be \$1633. If this homeowner wants to qualify for the 2.5% interest rate, they will need to renovate their home to use 75% less energy than that required by code, immediately creating jobs and putting construction teams back to work.

⁷ Depreciation savings was not included here because tax savings from accelerated depreciation is repaid at the time of building sale, which varies greatly.

⁸ Carbon neutral means any imported energy from a new development or community-scale energy system is not produced from fossil fuels.

⁹ Building energy consumption from non-depletable energy sources collected on site or provided from within a development is considered an energy savings.

The cost of renovation would be approximately \$51,250¹⁰, which includes a solar system. The solar system would qualify for a \$7000 tax credit. The cost of the renovation, minus the tax credit, would be added to the mortgage balance, so that the new mortgage is now \$304,550. However, because of the significantly lower interest rate, i.e. 2.5%, the new mortgage payment is just \$1203, a savings of \$430 per month. With the additional monthly savings on energy bills of approximately \$145¹¹, this homeowner would **save a total of \$575 per month**.

- B. For those seeking a reduced-rate, 30-year mortgage to purchase a newly constructed home, the new home will be required to meet one of the energy reduction targets of the 2030 Challenge, depending on the interest rate desired:

Mortgage Interest Rate*	2030 Challenge Energy Reduction (Energy Savings)
4.5%	30% below code
4.0%	50% below code
3.0%	75% below code
2.5%	Carbon neutral

* Interest rates to be adjusted based on market conditions.

Commercial Buildings

To stimulate sustainable renovation and development in the commercial building sector, the Plan calls for accelerated depreciation for property placed into service from 2009 through 2011 as follows:

- A. For those seeking to renovate an existing commercial building or commercial building space, the renovated building or space will be required to meet one of the energy reduction targets of the 2030 Challenge, depending on the accelerated depreciation schedule desired:

Accelerated Depreciation	2030 Challenge Energy Reduction (Energy Savings)
4 years	30% below code
3 years	50% below code
2 years	75% below code
1 year	Carbon neutral

- B. For those seeking to purchase or build a new commercial building, the building will be required to meet one of the energy reduction targets of the 2030 Challenge, depending on the accelerated depreciation schedule desired:

Accelerated Depreciation	2030 Challenge Energy Reduction (Energy Savings)
8 years	30% below code
6 years	50% below code
4 years	75% below code
2 years	Carbon neutral

The taxes due at the time of building sale would be waived for the additional cost of meeting the energy consumption reduction targets of the 2030 Challenge.

¹⁰ The typical residence would spend approximately \$41,000 to renovate to 75% below code. However, to show that the Plan works even if costs are significantly higher, this analysis assumed \$51,250.

¹¹ Anderson, R., "Example Performance Targets and Efficiency Packages, Greensburg, Kansas (Presentation)," National Renewable Energy Laboratory (NREL). Assumes a 75% reduction below codes is the average between 50% below and net-zero energy.

Job Creation Results

The total number of new jobs created by implementing the 2030 Challenge Stimulus Plan is estimated as follows:

Building Sector	Indirect & Induced	Consumer Spending (Residential Savings)	Consumer Spending (Commercial Savings)	TOTAL NEW JOBS
4,157,073	4,812,830	283,253	44,531	9,297,687

NOTE: The total number of new jobs is based on 1.25 million new and 2.1 million refinanced 30-year mortgages and 400 million square feet of new and 900 million square feet of renovated commercial building space in each year.

Because of the effectiveness of energy efficiency, any economic stimulus and job-creation plan should require all Building Sector programs receiving federal funds, including public building projects (e.g. government, education and community facilities) to meet the 2030 Challenge targets.

To support both the residential and commercial segments of the Plan, Architecture 2030 recommends funding State Energy Departments for the specific purpose of compliance training of building inspectors to verify that the buildings meet the energy reduction specifications. Other organizations have submitted proposals recommending funding for training. Architecture 2030 supports these proposals.¹²

Cost

\$192.47 billion (\$96.235 billion each year for two years). The Plan will pay back this cost each year through the new tax base created by the 9 million new jobs, as well as the increased economic activity. In addition, the Plan will save the government the cost of unemployment benefits. Prior to the end of the stimulus period, the number of jobs created, increased tax revenues and strength of the market would be evaluated to determine the timeline for phasing out or terminating the Plan and the need for other funding mechanisms.

How Quickly Investment Can Begin

Ninety to 180 days. This Plan can be implemented through existing federal programs, such as Fannie Mae and Freddie Mac. The Secretary of the Treasury can carry out the Plan using the authority made available under the Housing and Economic Recovery Act of 2008.

Number of Jobs Produced

9.297 million (4.16 million direct jobs in the Building Sector, as well as an additional 4.81 million indirect and induced jobs and over 327,000 jobs from consumer spending).

Plan Justification

Numerous studies have shown that investing in energy reductions in buildings is the most effective way to create American jobs and revitalize the economy. Energy reductions can be implemented immediately, creates the most jobs, costs the least and offers great benefits to the planet.¹³ By integrating energy reduction requirements with a mortgage buy-down and an accelerated depreciation program, we can leverage the effectiveness of these reductions to keep families in their homes and revive the economy.

The Building Sector has taken the brunt of the economic downturn with over 1.4 million professionals, builders and laborers out of work. A well-thought-out, strategic investment in this sector would revitalize it, and, due to the large number of products and services involved, spread the investment across the entire U.S. and across all industries

¹² The 9.297 million jobs created by this Plan does not include the jobs that will be created by the investment in compliance training.

¹³ Kershner, K. and Mazria, E., "The 2030 Blueprint: Solving Climate Change Saves Billions," 2030, Inc. / Architecture 2030, <http://www.architecture2030.org/pdfs/2030Blueprint.pdf>.

(from steel, insulation and caulking to mechanical and electrical equipment, glass, wood, metals, tile, fabrics and paint) and all sectors (from architecture, planning, design, engineering, banking and development to manufacturing, construction, wholesale, retail and distribution).

One of the greatest benefits of the Plan is the potential to create a whole new renovation market for the construction industry, which would immediately get this vital industry back to work and potentially provide work for the next 40 to 50 years. As noted above, in the first two years alone, building owners renovating their buildings to meet the 2030 Challenge targets will create a renovation market worth over \$236 billion.¹⁴ This market has the potential to reach \$2.6 trillion by 2030 and \$5.47 trillion by 2069.¹⁵ As impressive as these numbers are, they are conservative because they assume each building is renovated only once and they do not take into account that many participants will complete additional renovations while doing the required energy-reduction renovations to take advantage of the reduced, one-time mortgage rate afforded under the Plan. It is important to note, however, that this market is only created if the mortgage rate buy-down and accelerated depreciation programs require participants to meet the energy reduction targets.

Another important benefit is that the Plan pays for itself *and* provides funding for public infrastructure and building projects through the large tax base generated from the new jobs, private investment and spending, and new renovation market. This ability to pay for itself provides the opportunity to continue the Plan past two years, if needed or desired.

Unlike other plans, this Plan would also move the U.S. toward significant energy and emissions reductions. The Building Sector is responsible for approximately half of all energy consumption and GHG emissions in the U.S. annually. An investment of \$96.235 billion each year for two years in the Plan would not only create jobs and save consumers money, it would also, over a five-year period, reduce CO₂ emissions by 504.47 MMT and energy consumption by 6.47 QBtu, including 1.95 trillion cu. ft. of natural gas and 90 million barrels of oil, thereby addressing climate change and energy independence as well.

Finally, a significant benefit of building performance standards is that they do not pick clean-energy technology winners or losers. Any existing or new non-CO₂-emitting technology or planning and design strategy can be employed to meet a standard. This includes everything from increasing neighborhood density, building orientation and color, daylighting, appropriate materials, passive solar heating, and cooling and natural ventilation strategies, to insulation, high-performance glazing, solar hot water heating, photovoltaics, micro-wind turbines, energy management systems, daylighting controls and any other site, development or community-scale clean-energy source or strategy.

Conclusion

Addressing the foreclosure crisis and the collapse of the private building sector is critical to stabilizing the U.S. economy. This Plan addresses both, as well as many other challenges facing the country, including energy independence and climate change. With a single investment, the U.S. can create millions of jobs, strengthen the U.S. economy, reduce CO₂ emissions and energy consumption, and save consumers billions of dollars. **Investing in the private building sector is the only investment that can accomplish all of these objectives.**

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¹⁴ See attached analysis.

¹⁵ The total amount of the building renovation market available after the two-year Plan period assumes that the same level of renovation intensity will continue due either to continuation of the Plan, market forces, other incentives and/or improved building codes to drive additional energy reductions in the Building Sector.