

# Background

No. 2470  
October 4, 2010



Published by The Heritage Foundation

## The Lieberman–Kerry Cap and Trade Bill: Making Housing Less Affordable

*Wendell Cox and Ronald D. Utt, Ph.D.*

**Abstract:** *Proposed legislation would offer financial incentives to increase the population density of communities in an effort to reduce greenhouse gas emissions and energy use. However, the available evidence, which is admittedly limited, indicates that such “smart growth” policies are misguided, producing minimal results at great expense and disruption. Such policies would threaten to disrupt the already wobbly housing market, make housing less affordable, reduce housing quality, and substantially limit consumer choice.*

---

The Clean Energy Jobs and American Power Act (S. 1733), introduced by Senators John Kerry (D–MA) and Joseph Lieberman (I–CT), includes troubling provisions that would provide financial incentives for metropolitan planning organizations to shift transportation resources and passengers away from automobiles to public transit and forms of nonmotorized transportation, such as walking and bicycles. The bill suggests accomplishing this objective through “zoning and other land use regulations,” which would lead to a more crowded living environment. In turn, these communities with higher population densities would become more amenable to modes of transportation that were common in the 19th century.

The purpose behind the Senators’ attempt to foster archaic living and travel arrangements—often called “smart growth”—is the belief that this would reduce greenhouse gas (GHG) emissions. However, there is scant evidence to support such a strategy. The avail-

### Talking Points

- The Senate’s cap and trade bill would foster archaic living and travel arrangements (often called “smart growth”) in the mistaken belief that they would lead to lower greenhouse gas (GHG) emissions.
- There is little evidence to suggest that this strategy will actually lower GHG emissions. Essentially, Senators are asking Americans to make an empty environmental gesture in return for higher house prices.
- The smart growth provisions that would induce more human crowding have become a common theme in bills introduced in this Congress.
- Achieving the minimal benefits that could result from such crowding would require extreme government coercion, which would not be tolerated in a free society.
- The consequence of this legislation would be to undermine efforts to restore affordable housing to American families, with potentially catastrophic results as seen in the recent housing market collapse.

---

This paper, in its entirety, can be found at:  
<http://report.heritage.org/bg2470>

Produced by the Thomas A. Roe Institute  
for Economic Policy Studies

Published by The Heritage Foundation  
214 Massachusetts Avenue, NE  
Washington, DC 20002–4999  
(202) 546-4400 • [heritage.org](http://heritage.org)

Nothing written here is to be construed as necessarily reflecting the views of The Heritage Foundation or as an attempt to aid or hinder the passage of any bill before Congress.

able evidence indicates that the Senators are proposing an empty environmental gesture that would contribute to returning house prices to the unaffordable levels reached in 2006–2007.

Although the academic and consulting communities are just beginning to investigate how land-use and transportation options affect GHG emissions and energy use, findings to date suggest that tighter land-use regulations have little or no impact on energy use or GHG emissions.<sup>1</sup> Indeed, realizing these minimal benefits would require extreme government coercion, which would not be tolerated in a free society and would receive little support in Congress.

Fortunately, as the findings of a National Academy of Sciences (NAS) study indicate, better options are available:

Urban planners hoping to help mitigate CO<sub>2</sub> emissions by increasing housing density would do better to focus on fuel-efficiency improvements to vehicles.... [The study] concludes that increasing population density in metropolitan areas would yield insignificant CO<sub>2</sub> reductions.<sup>2</sup>

However, legislative provisions to induce more human crowding have become a common theme in this Congress. The provisions also closely track the policy weapons being hustled to the front in President Barack Obama's whimsical war against cars and suburbs.

Senator Christopher Dodd (D–CT) has introduced legislation to encourage transit-oriented development (S. 1619) that incorporates language

similar to S. 1733. Representative James Oberstar (D–MN), chairman of the House Transportation and Infrastructure Committee, has released draft legislation that would reauthorize the federal highway program for another six years.<sup>3</sup> The current draft

---

***Surprisingly little reliable research and data are available on how population density affects greenhouse gas emissions.***

---

largely focuses on spending \$500 billion to alter how Americans live and travel.<sup>4</sup> As with S. 1733, the rationale behind these unprecedented forays into social engineering involves GHG reduction, energy savings, and/or the imposition of smart growth strategies for their own sake.

**All This to Little Benefit**

Despite the intensity of the debate and the strongly held views by proponents on one side or the other, surprisingly little reliable research and data are available on how population density affects GHG emissions. Most of the “evidence” consists of anecdotes and the intuitive belief that one approach is better than another.

**NAS Report.** One notable exception is *Driving and the Built Environment: The Effects of Compact Development on Motorized Travel, Energy Use, and CO<sub>2</sub> Emissions*, a congressionally mandated study funded by the U.S. Department of Energy (DOE) and conducted by the Transportation Research Board and the Board on Energy and Environmental Systems within the National Academy of Sciences.

- 
1. The findings are from studies and reports from the National Academy of Sciences, Demographia, Abt Associates Inc., and the U.S. Department of Energy and based on data from the Australia Conservation Foundation.
  2. Phil McKenna, “Forget Curbing Urban Sprawl,” *Technology Review*, September 3, 2009, at <http://www.technologyreview.com/energy/23343> (August 19, 2010). For the full text of the report, see Committee for the Study on the Relationships Among Development Patterns, Vehicle Miles Traveled, and Energy Consumption, *Driving and the Built Environment: The Effects of Compact Development on Motorized Travel, Energy Use, and CO<sub>2</sub> Emissions*, National Research Council of the National Academies, Transportation Research Board *Special Report* No. 298, 2009, at [http://www.nap.edu/catalog.php?record\\_id=1274](http://www.nap.edu/catalog.php?record_id=1274) (August 31, 2010).
  3. Surface Transportation Authorization Act of 2009, Committee Print, 111th Cong., 1st Sess., June 22, 2009, at [http://transportation.house.gov/Media/file/Highways/HPP/OBERST\\_044\\_xml.pdf](http://transportation.house.gov/Media/file/Highways/HPP/OBERST_044_xml.pdf) (August 20, 2010).
  4. Ronald D. Utt, “Chairman Oberstar’s Transportation Plan: A Costly Exercise in Social Engineering,” Heritage Foundation *Background* No. 2348, December 10, 2009, at <http://www.heritage.org/Research/Reports/2009/12/Chairman-Oberstars-Transportation-Plan-A-Costly-Exercise-in-Social-Engineering>.

A committee of 12 leading experts in the field commissioned five papers “to explore various aspects of the study charge; conduct[ed] its own review of the literature; receiv[ed] informational briefings at its early meetings; and [held] a meeting in Portland, Oregon, to examine firsthand the impacts of that area’s well-known growth management policies on development patterns and travel.”<sup>5</sup> The study found little compelling evidence to indicate that higher-density housing, less driving, and more transit use, walking, and bicycling would significantly reduce GHG emissions and energy use.

In a key simulation, the study’s authors considered how two dramatic and unprecedented changes in land-use policy would alter housing development patterns. In the more extreme policy proposal, they assumed that 75 percent of new housing construction would take place in “more compact developments.” To achieve this goal, it would be necessary to force virtually all development into the existing urban footprint. The authors assume that this would reduce vehicle miles traveled (VMT) by the new residents of these developments by 25 percent. The less extreme policy proposal would require that 25 percent of new housing construction take place in more compact developments, which the authors assume would reduce VMT by new residents by 12 percent.

The more extreme policy is projected to reduce GHG emissions by 7 percent to 8 percent below baseline by 2030 and by 8 percent to 11 percent by 2050. The less extreme policy would reduce GHG emissions by about 1 percent below baseline by 2030 and by 1.3 percent to 1.7 percent by 2050.<sup>6</sup>

The NAS report suggests that the committee of experts was divided over the feasibility of the 75 percent plan and seemed to imply that it might be difficult to achieve. Over the next 40 years, this option would push 75 percent of new households (up to 200 million people) into homes that they

otherwise would not voluntarily choose. Thus, the somewhat less coercive 25 percent scheme became the default scenario because governments would be more likely to embrace it. Nonetheless, the simulation suggests that achieving a trivial reduction (1.5 percent) in GHG emissions over the next 40 years would necessitate massive amounts of government coercion, subsidies, regulations, penalties, and mandates.

**No GHG Improvement from Denser Housing Practices.** Oddly, the committee seems to be disappointed with this finding. Their findings raise the prospect that such a regulatory scheme could produce other beneficial outcomes that might lead to GHG emission reductions not considered by the authors of the simulation. This could include the impact of higher-density housing on energy savings other than those related to reduced automobile use:

Whether reductions in energy use and CO<sub>2</sub> emissions from VMT reductions occur rapidly or slowly, more compact development will also yield significant savings in energy use and production of CO<sub>2</sub> emissions by improving the energy efficiency of residential buildings. The U.S. residential sector accounts for more than one-fifth of the nation’s total annual energy use and an equivalent share of CO<sub>2</sub> emissions. Multifamily housing is particularly energy efficient relative to single-family housing because of a combination of reduced exposed surface area per dwelling unit and shared walls and floors that reduce the heating and cooling costs of individual units. Downsizing to smaller single-family dwellings also yields savings, but much smaller than the reduction from moving to multifamily units.<sup>7</sup>

However, little research or data support this statement, and the committee cited no studies to support this conclusion. Ironically, data from the

5. Committee for the Study on the Relationships Among Development Patterns, Vehicle Miles Traveled, and Energy Consumption, *Driving and the Built Environment: The Effects of Compact Development on Motorized Travel, Energy Use and CO<sub>2</sub> Emissions*, Transportation Research Board Special Report No. 298, 2009, p. x.

6. *Ibid.*, p. 182.

7. *Ibid.*, p. 183.

U.S. Department of Energy's *Buildings Energy Data Book* largely contradict the statement.<sup>8</sup> A similar analysis in Australia also raises questions about the accuracy of this statement.

**Ewing-Cervero Study.** More recent research by Reid Ewing and Robert Cervero, who have often expressed views supportive of smart growth, synthesizes the impact of various strategies on vehicle miles traveled. They note:

Conventional wisdom holds that population density is a primary determinant of vehicular travel, and that density at the work end of trips is as important as density at the home end in moderating VMT. This does not appear to be the case once other variables are controlled.<sup>9</sup>

The sensitivities that they calculated indicate, for example, that doubling population densities would reduce vehicle travel by only 4 percent and that doubling employment density would have no impact on vehicle travel. These small or nonexistent results pale by comparison to the gargantuan task of doubling population densities. "Still," the authors suggest, "the combined effect of several such variables on travel could be quite large."<sup>10</sup> However, they fail to elaborate on how such small sensitivities could translate into "quite large" reductions in vehicle travel—something also missing in the NAS report.

**DOE Data on Residential Energy Use.** Table 1 reproduces a table that shows differences in energy consumption for single-family detached and attached (townhouse) homes, mobile homes, and multifamily housing, both two-unit to four-unit build-

ings and buildings with five or more units.<sup>11</sup> It also shows energy consumption for each residential building type per square foot of living space, per household (or unit), and per household member (person living in the unit).

As Table 1 reveals, single-family detached housing, which is common in American and European suburbs, has the highest energy efficiency rating per square foot, while multifamily housing has the worst. Even mobile homes conserve energy better than the typical multifamily unit when measured in this way. On a per-unit or household basis, apartments were more energy efficient, but this advantage stems entirely from the fact that the apartments in the survey were much smaller than the typical single-family home or manufactured housing unit.

In effect, the apartments' only advantage in energy efficiency is their small size, and Energy Secretary Steven Chu referenced the importance of this austerity and rationing in an April 2009 inter-

### Residential Energy Consumption, 2005

Type	Per Square Foot (in thousands of BTU)	Per Household (in millions of BTU)	Per Household Members (in millions of BTU)	Percent of Total Consumption
<b>Single-Family</b>	<b>52.9</b>	<b>106.6</b>	<b>42.6</b>	<b>80.5%</b>
<i>Detached</i>	39.8	108.3	39.7	73.9%
<i>Attached</i>	47.3	91.7	37.0	6.6%
<b>Multifamily</b>	<b>67.6</b>	<b>63.7</b>	<b>29.5</b>	<b>14.8%</b>
<i>2 to 4 units</i>	77.6	84.5	34.9	6.3%
<i>5 or more units</i>	61.7	53.8	26.4	8.5%
<b>Mobile homes</b>	<b>68.7</b>	<b>72.7</b>	<b>29.4</b>	<b>4.7%</b>

Sources: U.S. Department of Energy, 2009 *Buildings Energy Data Book*, October 2009, p. 2-9, Table 2.1.10, at <http://buildingsdatabook.eren.doe.gov/TableView.aspx?table=2.1.10> (August 30, 2010).

Table 1 • B 2470  [heritage.org](http://heritage.org)

8. D&R International, 2009 *Buildings Energy Data Book*, Chapter 2, Residential Sector, U.S. Department of Energy, pp. 2-5–2-38, at <http://buildingsdatabook.eren.doe.gov/ChapterView.aspx?chap=2#2> (August 19, 2010).  
 9. Reid Ewing and Robert Cervero, "Travel in the Built Environment: A Meta-Analysis," *Journal of the American Planning Association*, Vol. 76, Issue 3 (June 2010), p. 275.  
 10. *Ibid.*, p. 265.  
 11. D&R International, 2009 *Buildings Energy Data Book*, Table 2.1.10.

view.<sup>12</sup> Notably, the NAS report did not include smaller size among the several reasons that multi-family units are allegedly more energy efficient than single-family units.

Although the data in Table 1 reveal the energy-saving opportunities that are available to Americans if they revert to a more limited lifestyle, they overstate the energy-saving benefits of an austerity strategy because of a serious deficiency in the survey data, which the DOE staff has acknowledged. Specifically, the DOE failed to collect and incorporate information on the energy used to light the exterior

---

***Single-family detached housing, which is common in American and European suburbs, has the highest energy efficiency rating per square foot, while multifamily housing has the worst.***

---

and parking areas, lobbies, stairwells, common areas, and hallways. Nor did the data include energy used to heat and cool common areas or operate the elevators, washers, dryers, and swimming pools. The DOE also failed to collect data on energy used for water heating, space heating, and air conditioning for apartments and condominiums, which is often supplied by the building's owner and therefore not reflected in household energy bills.

Indeed, by the DOE's admission, none of the book's many comparative analyses accounts for the significant energy usage in the common areas of residential buildings. A later study by Abt Associates concludes:

[T]he most densely populated housing type—high-rise apartments—were found in one study to produce higher per capita GHG emissions than mid-rise, low-rise or detached housing.... The inefficiency of

high-rise buildings is a result of the huge energy draw from heating and cooling common areas and maintaining amenities, such as gyms and swimming pools.<sup>13</sup>

If this energy usage had been included in the data and calculations, the data for usage per square foot would be even more favorable to single-family detached dwellings. Importantly, accurate data would either narrow or reverse the per-unit and per-household differences in favor of single-family units.

Despite its serious flaws, which further undermine support for densification, the DOE *Buildings Energy Data Book* offers no support for the commonly held belief that higher density leads to energy savings. Nonetheless, to the extent that Senators Kerry and Lieberman believe that their densification plan will deter GHGs, they and the White House should be up-front about the lack of supporting DOE evidence.

**Similar Findings in Australia.** The Australian Conservation Foundation (ACF) produced perhaps the most comprehensive study of GHG emissions: the *Consumption Atlas*. Recognizing that people (households) are the source of human GHG emissions, the ACF allocated virtually every gram of GHG emissions in the nation to household locations. Thus, the study considered much more than transportation and residences. The data reveal that GHG emissions may in fact be higher in denser central-city communities than in less dense communities on the urban fringe.<sup>14</sup> Table 2 provides the estimates of GHG emissions for the four different geographic segments of the five Australian capital cities in 1998 and 1999.<sup>15</sup>

For purposes of land-use patterns, energy consumption, and GHG emissions, the ACF data are precisely the opposite of what the smart growth advocates and environmentalists contend. Specifi-

---

12. Ronald Utt, "Slouching Toward a Huddled Masses Housing Program," Heritage Foundation *Background* No. 2281, June 2, 2009, at <http://www.heritage.org/Research/Reports/2009/06/Slouching-Toward-a-Huddled-Masses-Housing-Policy-Saving-Energy-with-Higher-Densities>.

13. Abt Associates, *Research on Factors Relating to Density and Climate Change*, June 2010, p. 11, at [http://www.nahb.org/fileUpload\\_details.aspx?contentID=139993](http://www.nahb.org/fileUpload_details.aspx?contentID=139993) (August 23, 2010).

14. Australian Conservation Foundation, *Consumption Atlas*, Web site, at <http://www.acfonline.org.au/consumptionatlas> (August 19, 2010).

## Annual Per-Capita Energy Consumption by Proximity to City Core

Combined Data for Australia's Five Most Populated Cities (1 Million and Larger)

Location	GHG Emissions (Tonnes)	Water Use (Liters)
Core	27.87	900,000
Inner ring	21.11	820,000
Second ring	18.82	760,000
Outer ring	17.40	670,000
<b>Total</b>	<b>19.88</b>	<b>770,000</b>

Source: Wendell Cox, *Housing Form in Australia and Its Impact on Greenhouse Gas Emissions*, Residential Development Council of the Property Council of Australia, October 22, 2007, at [http://www.propertyoz.com.au/library/RDC\\_ACF\\_Greenhouse-Report.pdf](http://www.propertyoz.com.au/library/RDC_ACF_Greenhouse-Report.pdf) (September 26, 2010).

Table 2 • B 2470  heritage.org

cally, the study and the data in Table 2 imply that lower GHG emissions are associated with:

- Urban fringe locations, not the core;
- Households in areas that have higher rates of detached housing;
- Households in areas that have greater automobile use;<sup>16</sup> and
- Areas with lower population densities.

**Abt Associates Study.** Perhaps the most recent study of land use and GHG is a 2010 literature review conducted by Abt Associates for the National Association of Homebuilders.<sup>17</sup> In the study, Abt reviewed nearly 200 studies in 12 key areas related to GHG emissions and density, transit use and density, VMT and density, impact of New Urbanist design on auto use and VMT, and other similar relationships.

Acknowledging that this field of inquiry is in its infancy and that significant methodological and data obstacles hinder efforts to draw firm conclusions about the relationships between the many variables under review, Abt drew some tentative conclusions. Importantly, Abt found that the link between density and VMT was rather weak:

The research on the relationship between density and travel is virtually unanimous: after controlling for socioeconomic factors, density directly influences VMT and mode choice. The weight of the evidence suggests that the effect of density on travel behavior is modest. Several studies, including one meta-analysis, find that a doubling of density is associated with a 5 to 7 percent decrease in VMT per household per year.<sup>18</sup>

In other words, a massive government-imposed national relocation program that would uproot half of the American population (150 million people) and force them to live in closer proximity with the other half would reduce travel by no more than 7 percent.

Although such coercive actions may appeal to some smart growth extremists, Congress is unlikely to support it or even the somewhat less extreme option of limiting all new development to the doubled density standard (one-sixth of an acre compared to the current one-third). While this approach would also substantially infringe on individual freedom, it would likely take a century or more to achieve even the 5 percent VMT reduction that current studies suggest would occur from such densification.

As for the impact of New Urbanist designs on energy use and driving, the Abt review found, "Overall, most studies find that *New Urbanism-type*

15. The Australian Conservation Foundation's *Consumption Atlas* provided data by local government area. The local government area was classified by urban geography in Wendell Cox, *Housing Form in Australia and Its Impact on Greenhouse Gas Emissions*, Residential Development Council of Australia, October 22, 2007, at [http://www.propertyoz.com.au/library/RDC\\_ACF\\_Greenhouse-Report.pdf](http://www.propertyoz.com.au/library/RDC_ACF_Greenhouse-Report.pdf) (August 19, 2010).

16. This is not to suggest that using cars more reduces GHG emissions, but rather that fringe neighborhoods where cars are used more tend to have lower emissions. This could be due to any number of reasons, but the focus is on neighborhoods, not cars or houses.

17. Abt Associates, *Research on Factors Relating to Density and Climate Change*.

18. *Ibid.*, p. 8.

---

**“Overall, most studies find that New Urbanism-type street patterns have only a weak or no impact on auto use.”**

---

street patterns have only a weak or no impact on auto use.”<sup>19</sup> The review found similar results in mixed-use neighborhoods, which combine commercial, retail, and residential in a single community: “Households living in mixed-use neighborhoods own fewer cars and drive less than other households, although the impact of mixed-use development is fairly small. These households are also more likely to walk and bike, and to commute via public transit.”<sup>20</sup>

**Density = Traffic Congestion = More GHGs per VMT.** Another factor not considered in the NAS study is that not all VMTs are equal. VMTs in uninterrupted driving at steady speeds use much less energy and produce far less GHGs than VMTs in stop-and-go traffic, which is common in congested urban areas.

Indeed, research presented at the 2008 annual meeting of the Transportation Research Board indicates that the rate of GHG reduction from higher population density diminishes substantially as traffic congestion increases. In fact, the research indicates that traffic congestion can impose massive losses in fuel economy. In heavy but not congested freeway traffic traveling at 42 miles per hour, GHG grams per vehicle mile were less than one-half GHG emissions at 16 miles per hour.<sup>21</sup>

Based on this relationship, if densification were to reduce driving by 10 percent in an urban area while increasing congestion and reducing speed from an average of 30 miles per hour to 25 miles per hour, GHG emissions would rise by more than 5

percent.<sup>22</sup> It is incorrect to assume that reducing driving through densification produces a 1:1 reduction in GHG emissions. Moreover, the projected reductions in driving from the densification strategies would not produce a 10 percent reduction in driving even by 2050. Given the attention and interest in densification and forcing people to drive less, there is an urgent need for objective and serious work on the relationship between GHG emissions and the greater traffic congestion that occurs in more dense circumstances.

Data from the 2000 Census and INRIX, a traffic information firm, reveal a close correspondence between a community’s population density and its degree of traffic congestion. INRIX’s Travel Time Index yields a Travel Time Tax,<sup>23</sup> a measure of traffic congestion expressed as the percentage delay that motorists face during peak periods (rush hour) compared to off-peak periods. For example, motorists in Los Angeles face a Travel Time Tax of 35 percent, the highest in the country. This means that a trip during peak periods takes 35 percent longer than the same trip during off-peak hours. The Washington, D.C., metropolitan area has the second worst Travel Time Tax (22.4 percent).

Table 3 shows the correlation between population density and traffic congestion.

- Virtually all of the congestion and most of the analyzed road mileage are in the urban areas. The metropolitan areas with more densely populated core urban areas tend to have worse traffic congestion.
- During peak hours, congestion delays in metropolitan areas with more than 4,000 people per square mile were more than three times the delays in metropolitan areas of less than 2,000 people per square mile.

---

19. *Ibid.*, p. 12 (emphasis in original).

20. *Ibid.*, p. 14.

21. Authors’ calculations based on Martin Treiber, Arne Kesting, and Christian Thiemann, “How Much Does Traffic Congestion Increase Fuel Consumption and Emissions? Applying a Fuel Consumption Model to the NGSIM Trajectory Data,” paper presented at the 87th Annual Meeting of the Transportation Research Board, 2008. Their research is on fuel economy, which yields the same percentage change as GHGs.

22. This figure is based on the curve calculated in *ibid.*

23. The Travel Time Tax is based on the Texas Transportation Institute’s Travel Time Index.

## Traffic Congestion and Urban Density in the U.S., 2009

Core Population per Square Mile in 2000*	Peak Period Average Congestion Delay (2009)	Compared to Least Dense Category	Worst Hour Average Congestion Delay (2009)	Compared to Least Dense Category
More than 4,000	18.4%	3.26	37.5%	2.36
3,000–3,999	10.0%	1.76	22.3%	1.41
2,000–2,999	7.3%	1.30	17.7%	1.12
Less than 2,000	5.6%	1.00	15.9%	1.00

\* The most recent reliable data is for 2000.

Sources: Calculated using data from U.S. Census, 2000, and INRIX, "National Traffic Scorecard," at <http://scorecard.inrix.com/scorecard> (September 26, 2010).

Table 3 • B 2470  [heritage.org](http://heritage.org)

- During the worst peak, metropolitan areas with the highest densities averaged congestion delays of 37.5 percent, nearly 2.4 times the average congestion delays in metropolitan areas with the lowest population densities (15.9 percent).

More intense traffic would have additional negative impacts. It would impose longer journey times on trucks, both for local deliveries and for moving products from factories, ports, or airports to homes and retailers. Heavier traffic congestion would also

***The findings to date suggest that increasing population density through tighter land-use regulations has little to no effect on energy use or greenhouse gas emissions.***

intensify local air pollution, slowing or reversing the substantial progress toward cleaner urban air in recent decades.

The negative health impacts of density-intensified traffic congestion have been noted by the American Heart Association, which found that being close to congested roadways increases the likelihood of cardiac arrest. The association cites a study indicating that "a person's exposure to toxic components of air pollution may vary as much within one city as across different cities." Obviously, such exposure will be greater where traffic densities are higher.<sup>24</sup>

**A Summary.** Although the academic and consulting communities are just beginning to investigate how land-use and transportation options affect GHG emissions and other energy usage, the findings to date suggest that increasing population density through tighter land-use regulations has little to no effect on energy use or GHG emissions. Moreover, achieving the minimal benefits would require extreme government coercion that would not be tolerated in a free society or enacted by Congress.

Fortunately, better options are available. As noted, a Massachusetts Institute of Technology newsletter observed about the NAS study's findings:

Urban planners hoping to help mitigate CO<sub>2</sub> emissions by increasing housing density would do better to focus on fuel-efficiency improvements to vehicles.... It concludes that increasing population density in metropolitan areas would yield insignificant CO<sub>2</sub> reductions.<sup>25</sup>

Despite the evidence, Senator Kerry, Senator Lieberman, Senator Dodd, Representative James Oberstar, Secretary of Transportation Ray LaHood, and President Obama take the opposite view. Over the past year, they have either introduced legislation to begin the process of population densification or supported such legislation. However, the consequence of this legislation would be to undermine efforts to restore affordable housing to American

24. American Heart Association, "Air Pollution, Heart Disease and Stroke," at <http://www.americanheart.org/presenter.jhtml?identifier=4419> (September 9, 2010).

25. McKenna, "Forget Curbing Urban Sprawl."



families, with potentially catastrophic results as seen in the recent housing market collapse.

## Wrecking the Remnants of the U.S. Housing Market

The evidence suggests that, in addition to doing little or nothing to curb GHG emissions, smart growth and New Urbanist housing policies will disrupt the already wobbly housing market, make housing less affordable, reduce housing quality, and substantially limit consumer choice. If enacted, the legislative proposals that call for “implementation of zoning and other land use regulations and plans to support infill, transit-oriented development, redevelopment, or mixed use development”<sup>26</sup> would lead to higher-density living arrangements than most households would find attractive.

**Measuring Housing Affordability.** Traditionally, housing is said to be affordable if the median house price in a community is no more than three times the median income of a household in that community. This measure of affordability is referred to as the median multiple. A median multiple of 3.0 or less is considered affordable.

By 2007, just as the housing market was beginning to decline, many California metropolitan areas—notably Los Angeles, San Francisco, and San Diego—had median multiples of 10 or more. In 2006, Phoenix’s median multiple was 5.1, and Las Vegas’s was 6.1.<sup>27</sup> Miami’s median multiple was 7.1 in 2007.

By contrast, housing remained affordable in areas with less onerous land-use regulation: 2.3 in Indianapolis and 2.8 in Atlanta in 2007. Housing also remained affordable in Texas, which, in appreciation of its minimal land regulation, has a special Texas land regulation system classification created by the Brookings Institution.<sup>28</sup> Dallas–Fort Worth’s median multiple was 2.5, and Houston’s was 2.9. In each of these affordable areas, the median sales price of a house never exceeded \$200,000. In Dallas–Fort Worth and Houston, it never exceeded \$165,000. By contrast, median house prices reached \$846,800 in San Francisco and \$865,000 in San Jose in 2007.<sup>29</sup>

**Consequences of the Smart Growth Collapse.** Two years after the housing collapse, the consequences of the crisis were most extreme in the states with the toughest land-use rules. According to RealtyTrac, by 2008, 18 of the 20 areas with the highest foreclosure rates were in urban areas (in California, Nevada, Arizona, and Florida) that the Brookings Institution includes in its most restrictive category.<sup>30</sup>

By early 2010, foreclosure and delinquency rates compiled and reported by Lender Processing Services revealed that mortgages in Florida, Nevada, and Arizona were the worst three performers in the country and that California mortgages were the fifth worst.<sup>31</sup> Nearly a quarter of the residential mortgages in Florida and Nevada were noncurrent as of early 2010.

**Fischel Study.** In 1995, William Fischel linked the increase in California housing prices above

26. Clean Energy Jobs and American Power Act, S. 1733, 111th Cong., 2nd Sess., § 112(b)(1)(D), amending 23 U.S. Code § 134(k)(6)(C)(iv)(V)(cc).

27. Las Vegas and Phoenix are often cited as metropolitan areas with less restrictive land use regulation and considerable land for building new housing. In fact, both metropolitan areas are tightly ringed by government-owned land, which operates as a virtual urban growth boundary.

28. Rolf Pendell, Robert Puentes, and Jonathan Martin, “From Traditional to Reformed: A Review of the Land Use Regulations in the Nation’s 50 Largest Metropolitan Areas,” Brookings Institution, Metropolitan Policy Program, August 2006, at [http://www.brookings.edu/~media/Files/rc/reports/2006/08metropolitanpolicy\\_pendall/20060802\\_Pendall.pdf](http://www.brookings.edu/~media/Files/rc/reports/2006/08metropolitanpolicy_pendall/20060802_Pendall.pdf) (August 19, 2010).

29. All numbers are based on data from National Association of Realtors, “Median Sales Price of Existing Single-Family Homes for Metropolitan Areas,” at <http://www.realtor.org/wps/wcm/connect/604bab00438911ce9cb7feebde1cdb9c/REL10Q2T.pdf?MOD=AJPERESE&CACHEID=604bab00438911ce9cb7feebde1cdb9c> (August 31, 2010); Demographia, *4th Annual Demographia International Housing Affordability Survey: 2008*, at <http://www.demographia.com/dhi2008.pdf> (August 31, 2010); and Demographia, *5th Annual Demographia International Housing Affordability Survey: 2009*, at <http://www.demographia.com/dhi2009.pdf> (August 31, 2010).

30. Press release, “Foreclosure Activity Increases 81 Percent in 2008,” RealtyTrac, January 15, 2009, at <http://www.realtytrac.com/content/press-releases/foreclosure-activity-increases-81-percent-in-2008-4551> (August 19, 2010).

prices in the rest of the nation with California's stronger land-use regulation. Fischel found that California's higher housing prices since 1970 could not be explained by factors such as higher construction cost increases, population growth, quality of life, amenities, the state's property tax reform initiative (Proposition 13), land supply, or water issues.<sup>32</sup>

#### Theo Eicher—University of Washington Study.

In 2008, Professor Theo Eicher published a comprehensive econometric analysis that attempted to measure how much of the inflation-adjusted home price escalation between 1989 and 2006 was due to usual demand-side influences, such as income and population growth, and how much was attributable to land-use regulation issues, including statewide actions, court actions, and growth management plans. His analysis used data from more than 250 areas. According to Eicher:

Cost-increasing municipal regulations (zoning and permit approval delays) and statewide growth/density regulations are shown to be robustly associated with changes in housing prices. In addition, there is also a highly statistically significant effect of statewide executive, legislative, and judicial land use activities on housing prices. Land use regulations are shown to explain a different dimension of the housing price data than demand factors (income, population growth, and population density). However, the estimated increase in housing prices associated with regulations is, on average (over 250 cities), substantially larger than housing demand effects. While the estimated dollar cost associated with regulations may be sizable at times, the results are

remarkably consistent with previous studies that were based on smaller cross sections.<sup>33</sup>

Eicher provides detailed information for each of the areas studied, including how much of the price increase was due to the usual demand factors and how much was due to regulations. He then ranks each area by the severity with which regulations affected price.

---

***In Fremont, California, the combined regulatory burden added \$354,785 to the price of a house between 1989 and 2006, while demand factors (population and income) added only \$29,925.***

---

Not surprisingly, the 10 worst cities for excessive land-use regulation costs were in California, which has been imposing smart growth-type land-use regulations since the 1970s and is home to some of the nation's most restrictive zoning. For example, in Fremont, California, the combined regulatory burden added \$354,785 to the price of a house between 1989 and 2006, while demand factors (population and income) added only \$29,925.<sup>34</sup>

**Federal Reserve Bank of Dallas Report.** In 2008, the Federal Reserve Bank of Dallas published a review of the housing market collapse that emphasized differences in outcomes between Houston and other major metropolitan areas of the country.<sup>35</sup>

As much of the nation experienced high rates of home price appreciation between 2001 and 2007, prices rose only modestly in Houston, and the market remained highly affordable as the median home price in the area topped out at \$155,000 in 2007 compared to \$825,000 in San Francisco and \$438,000 in Washington, D.C.

- 
31. Lender Processing Services, "LPS Mortgage Monitor: March 2010 Mortgage Performance Observations," at [http://www.lpsvcs.com/NewsRoom/IndustryData/Documents/03-2010%20Mortgage%20Monitor/Pres\\_MM\\_Feb10Data.pdf](http://www.lpsvcs.com/NewsRoom/IndustryData/Documents/03-2010%20Mortgage%20Monitor/Pres_MM_Feb10Data.pdf) (August 19, 2010).
  32. William A. Fischel, *Regulatory Takings, Law, Economics and Politics* (Cambridge, Mass.: Harvard University Press, 1995), pp. 218–252.
  33. Theo S. Eicher, "Housing Prices and Land Use Regulations: A Study of 250 Major US Cities," University of Washington, January 14, 2008, p. 1, at [http://depts.washington.edu/teclass/landuse/housing\\_020408.pdf](http://depts.washington.edu/teclass/landuse/housing_020408.pdf) (August 24, 2010).
  34. *Ibid.*, pp. 28–32, Table 3.
  35. Amber C. McCullagh and Robert Gilmer, "Neither Boom nor Bust: How Houston's Housing Market Differs from Nation's," *Houston Business*, Federal Reserve Bank of Dallas, Houston Branch, January 2008, at <http://www.dallasfed.org/research/houston/2008/hb0801.pdf> (August 19, 2010).

The report attributes this difference to the rigid land-use regulations in many metropolitan areas, compared with the absence of any government zoning in the Houston area. As the report notes:

Many large cities (primarily on the East and West coasts) saw a prolonged run-up in prices. Demand for housing, driven by low interest rates and a growing economy, combined with supply restrictions—such as zoning laws, high permitting costs and “not in my backyard regulations”—to contribute to rapid price appreciation.<sup>36</sup>

Noting the rapid decline in affordability in most areas during this decade, the study acknowledges that fast-growing areas—such as Atlanta, Dallas–Fort Worth, and Houston—experienced only modest price appreciation and maintained their affordability for middle-class families. The reason for this was the limited land-use regulations imposed in these communities:

These markets have weathered increased demand largely with new construction rather than price appreciation because of the ease of building new homes. While some are dismissive of this developer-friendly attitude that allows such rapid construction, the approach clearly carries significant benefits for the homebuyer, both in selection and in price....

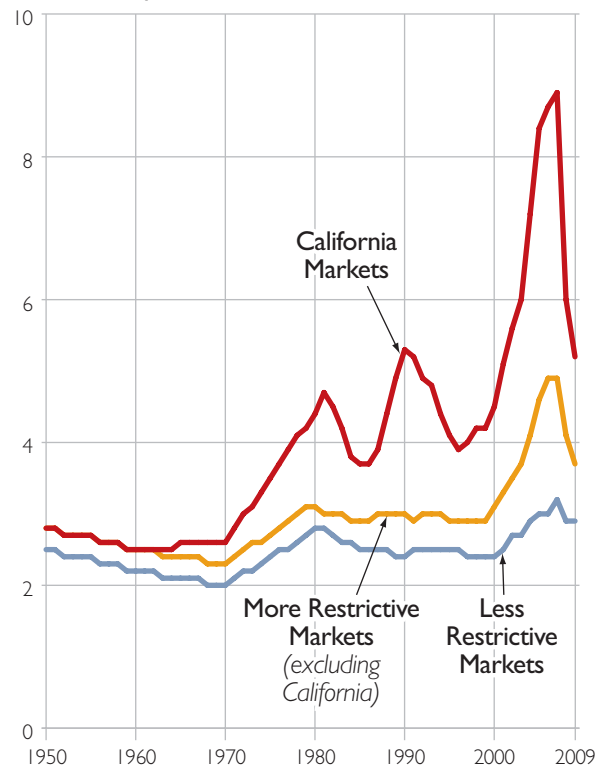
Unlike all other U.S. cities, Houston lacks zoning laws restricting industrial, commercial and residential construction to specific neighborhoods. Many inner-city Houston neighborhoods protect property values through deed restrictions diligently enforced by private neighborhood associations, and the large planned suburban communities operate similarly. But much of the land in metro Houston is not assigned to a specific use.<sup>37</sup>

Although Houston is unique in its absence of zoning and its reliance on private contracts to estab-

lish land-use patterns, many cities have less intrusive zoning laws and policies, including Atlanta, Dallas, Fort Worth, and Indianapolis. These cities and others maintain high degrees of affordable housing, and their median home prices remained below \$200,000 throughout this decade. The differing trends in housing affordability are illustrated in Chart 1.

## Housing Affordability in Major Metropolitan Areas

Median Multiple



Sources: U.S. Census, 1950, 1960, and 1970; Harvard University, Joint Center for Housing Studies, “The State of the Nation’s Housing,” 2007 and 2009, at [http://www.jchs.harvard.edu/publications/markets/son\\_archive.html](http://www.jchs.harvard.edu/publications/markets/son_archive.html) (September 26, 2010); and Demographia, “6th Annual Demographia International Housing Affordability Survey,” January 25, 2010, at <http://www.demographia.com/dhi.pdf> (September 26, 2010).

Chart 1 • B 2470 heritage.org

36. *Ibid.*, p. 2.

37. *Ibid.*, pp. 2–3.

**Raven Saks Study.** Raven Saks's 2005 study<sup>38</sup> focused largely on how an area's housing market affects employment growth and how high housing costs may also discourage workers from moving to or remaining in high-cost areas. Saks also investigated how land-use regulations affect housing supply and housing costs.

In her econometric analysis, Saks created a single measure of housing supply regulation from six independent surveys of such regulations. For the 83 metropolitan areas for which sufficient data were available or could be reasonably imputed, Saks analyzed the relationships between regulations, home prices, and labor markets. She concluded:

Differences in the supply of housing generate substantial variation in housing prices across the United States. Because housing prices influence migration, the elasticity of housing supply also has an important impact on local labor markets. Specifically, an increase in labor demand will translate into less employment growth and higher wages in places where it is relatively difficult to build new houses....

In places with relatively few barriers to construction, an increase in housing demand leads to a large number of new housing units and only a moderate increase in housing prices. In contrast, for an equal demand shock, places with more regulation experience a 17 percent smaller expansion of the housing stock and almost double the increase in housing prices.

Furthermore...housing supply regulations have a significant effect on local labor market dynamics. Whereas a 1 percent increase in labor demand generally leads to a 1 percent increase in the long-run level of employ-

ment, the employment response is less than 0.8 percent in places where the housing supply is highly constrained.<sup>39</sup>

Saks's report ranks the 83 metropolitan areas from the least regulated to the most regulated. Not surprisingly, six of the 10 most regulated are in California.<sup>40</sup>

### Putting It All Together

The evidence cited in this paper came from a variety of sources—academics, central banks, think tanks, and consultants—reflecting a cross-section of the ideological spectrum. Paul Krugman nicely summarized the relationship between house prices and zoning in 2005, just as the housing price bubble burst:

When it comes to housing...the United States is really two countries, Flatland and the Zoned Zone. In Flatland, which occupies the middle of the country, it's easy to build houses. When the demand for houses rises, Flatland metropolitan areas, which don't really have traditional downtowns, just sprawl some more. As a result, housing prices are basically determined by the cost of construction. In Flatland, a housing bubble can't even get started. But in the Zoned Zone, which lies along the coasts, a combination of high population density and land-use restrictions—hence “zoned”—makes it hard to build new houses. So when people become willing to spend more on houses, say because of a fall in mortgage rates, some houses get built, but the prices of existing houses also go up. And if people think that prices will continue to rise, they become willing to spend even more, driving prices still higher, and so on. In other words, the Zoned Zone is prone to housing bubbles.<sup>41</sup>

38. Raven E. Saks, “Job Creation and Housing Construction: Constraints on Metropolitan Area Employment Growth,” Federal Reserve Board, Divisions of Research & Statistics and Monetary Affairs *Finance and Economics Discussion Series Paper No. 2005-49*, September 22, 2005, at <http://www.federalreserve.gov/pubs/feds/2005/200549/200549pap.pdf> (August 19, 2010).

39. *Ibid.*, abstract (paraphrasing added).

40. *Ibid.*, p. 43.

41. Paul Krugman, “That Hissing Sound,” *The New York Times*, August 8, 2005, at <http://www.nytimes.com/2005/08/08/opinion/08krugman.html> (August 19, 2010).

Notwithstanding the impressive evidence to support this view, the federal government is silent on the impact of these land regulations. In some cases, it has rewarded states that have imposed the worst land regulations with extra federal housing subsidies. In February 2010, President Obama announced a \$1.5 billion program to assist troubled homebuyers, but only in five states—four of which (California, Nevada, Arizona, and Florida) had caused much of the problem by imposing abusive land-use regulations. Of course, the role these regulations played in creating the problem was not mentioned, and no land regulation reform was required as a condition of receiving the federal subsidy.<sup>42</sup>

Congress has not done any better, and both parties have been remarkably silent on these abuses. State governments are also complicit in these efforts that make housing less affordable. Even the Republican-controlled Virginia legislature has required counties with large and growing populations to impose smart growth land regulations to coerce

households into higher-density tracts clustered around interstate highways. These types of requirements help to explain why the Virginia suburbs of Washington, D.C., have some of the least affordable housing in the country and experienced some of the largest declines in house prices during the housing bust.<sup>43</sup>

Ironically, the Kerry–Lieberman bill and the proposed surface transportation reauthorization bills would impose heavy housing costs in a vain attempt (at least with respect to transportation and land use) to reduce greenhouse gas emissions at the same time that their smart growth policies would render households less able to pay the higher costs.

—Wendell Cox, *Principal of the Wendell Cox Consultancy in St. Louis, Missouri, is a Visiting Fellow in the Thomas A. Roe Institute for Economic Policy Studies at The Heritage Foundation. Ronald D. Utt, Ph.D., is Herbert and Joyce Morgan Senior Research Fellow in the Roe Institute.*

---

42. Ronald D. Utt, “How Goldman Sachs Helped Paulson and Company Short Housing in Smart Growth States,” Heritage Foundation *WebMemo* No. 2886, May 4, 2010, at <http://www.heritage.org/Research/Reports/2010/05/How-Goldman-Sachs-Helped-Paulson-and-Company-Short-Housing-in-Smart-Growth-States>.

43. Wendell Cox, “The Housing Downturn in the United States: 2009 First Quarter Update,” *Demographia*, May 2009, at <http://demographia.com/db-ushsg2009q1.pdf> (August 19, 2010).