# Major US City Preparedness
# For an Oil Crisis

Which Cities and Metro Areas are Best Prepared for $4 a Gallon Gas and Beyond?

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# 1. Executive Summary

For the first time in history, the United States faces continued prices of $100+ barrel oil. The price of oil has risen to its highest level ever on an inflation-adjusted basis; crude oil on March 3, 2008, reached $103.95 a barrel (in 1980 oil reached $39.50 a barrel, which translates in inflation-adjusted 2008 dollars to $103.76)[1]. Average vehicle miles driven have risen steadily on a national basis since the 1970s (rates rose more than 150% between 1977 and 2001, according to *The Wall Street Journal*[2]), thus the effect of these high prices are likely to reverberate throughout the economy, despite greater fuel efficiency.

The growing use of oil in developing nations, particularly in China and India, has put a strain on the ability of global oil suppliers to meet growing demand. A major automotive manufacturer (BMW[3]) and oil analysts[4] are predicting that global oil supplies may be peaking within the next 3 to 20 years. Should this happen, the overall global oil supply will not be able to meet increasing global demand, thus forcing up oil prices to levels impossible to currently predict.

This study was made under the hypothesis that certain U.S. cities and metro areas are currently better prepared for higher oil prices--or potential oil supply disruptions--than are other cities and regions. A further assumption is made. Cities or regions that have existing significant alternatives to reliance on oil for transportation and alternatives to oil for building heating and electricity generation will fare better economically if oil prices remain above the barrier of $100 a barrel oil.

The main area of impact rising oil prices have in the US economy are on transportation, namely primary mobility, or the way in which people go about life's daily needs: commuting to work or school, driving to shopping, health care, recreation and entertainment.

Using public transit and carpooling, or using alternative forms of mobility such as walking or biking, or telecommuting to work all help offset the need for exclusively relying on personal automotive transport and its attendant fuel needs. Such city mobility factors for this study were measured through public data available through the US Bureau of the Census. The way in which cities or metro areas are planned and developed also impacts fuel use and the degree of dependence on auto transport. Data on how

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comparatively "sprawled" metro areas are in terms of a ranking was also used to determine vulnerability to an oil crisis.

Finally, the use of heating oil or use of oil to generate electricity in metro areas was analyzed to determine vulnerability to an oil crisis for non-transport related oil uses. It should be noted that in the United States the use of heating oil or the use of oil to generate electricity had little or no impact on most cities or metro areas, thus the ranking data was included in the overall score but was not published as a separate category. Only Boston and New York use significant amounts of heating oil for buildings, though that amount is under 25% of all heating energy used and is decreasing as a percentage of the whole; only Honolulu uses a significant amount of oil to generate electricity (as of 2006, almost 80% of the city's energy came from the combustion of oil.[3])

# 2. Study Methodology

"Major US City Preparedness for an Oil Crisis" examines how the largest 50 cities (by population) will fare with oil prices above $100 a barrel. The study, which was researched and written by Warren Karlenzig, President of Common Current (San Anselmo, CA) and author of *How Green is Your City?* (New Society Publishers, 2007). The study examines key data variables across public and primary research sources. Common Current is a private consulting firm working with government, business and non-governmental organization clients globally in the area of public-private partnerships.

The study was researched in January through March 2008. For author's biography, see "Biography".

Data sources and weighting were as follows:

*Double Weighting (x2)*
- City public transit use; telecommuting; and bike-or-walk-to-work rates data is from US Bureau of the Census 2006 American Community Survey: http://factfinder.census.gov/home/saff/main.html?_lang=en

- National metro transit use data is from 2005 Texas Transportation Institute/ Texas A&M University system: http://tti.tamu.edu/

*Single Weighting (x1)*
- Metro sprawl data is from Smart Growth America 2002 study, "Measuring Sprawl and Its Impact": http://www.smartgrowthamerica.org/

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> (*Note:* five cities that were unranked in "Measuring Sprawl and its Impact": Charlotte, NC; Louisville, KY; Nashville, TN; Virginia Beach, VA and San Antonio were also not ranked in this category for this study—overall scores took this omission into account)

- Heating oil use came from primary research conducted in 2007 and oil use for generating electricity in Honolulu came from *How Green is Your City? The SustainLane US City Rankings* (New Society Publishers, 2007): http://www.amazon.com/Green-Your-City-SustainLane-Rankings/dp/0865715955/ref=sr_1_1/103-7631200-1144617?ie=UTF8&s=books&qid=1184343530&sr=1-1

*Half Weighting (x.5)*
- Carpooling, from the 2006 American Community Survey, was the least weighted.

# 3. Overall Ranking

The cities with highest overall ranking in "Major US Cities Preparedness for an Oil Crisis" were as follows:

1. San Francisco
2. New York
3. Chicago
4. Washington, DC
5. Seattle
6. Portland, OR
7. Boston
8. Philadelphia
9. Oakland, CA
10. Denver

Ranking highest were cities with strong public transit system ridership, well-organized and dense city centers, a high degree of mixed real estate uses (retail, commercial, residential), and medium to high population density. Some cities, such as Honolulu, were reduced in the overall ranking by their use of oil for electricity, while Boston and New York were slightly reduced in their ranking because of their use of oil for heating.

The highest-scoring cities had strong public transit ridership commute-to-work rates both by their city residents and by those within their metro area.

Additionally, cities ranking high overall in this study had some of the nation's highest rates of telecommuting to work. San Francisco had the highest rate, at 6.3% in 2005, while Portland, OR and Seattle also had more than 5% of their total workforce working from home. The exceptions in the top ten overall were Chicago and Boston (tied for #30 in telecommuting); and Philadelphia (#41 in telecommuting).

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Sprawl, which is defined by factors including density, mixed real-estate uses, street connectivity and city centeredness, was ranked relatively low in the highest-ranking metro areas, with the exception of Washington, DC (ranked #39); Oakland (ranked #30) and Seattle, which ranked #28 of the metro areas studied, and thus had greater than average sprawl of the cities in the study.

While mostly older port cities made the top ten, Denver, ranked #10 overall, was a notable inland exception. The city has been undergoing since 2004 a massive public transportation infrastructure development initiative, and is experiencing increasing public transit ridership rates as a result.

The cities ranked the lowest overall were the following:

41. Virginia Beach, VA
42. Forth Worth, TX
43. Nashville, TN
44. Arlington, TX
45. Jacksonville, FL
46. Indianapolis, IN
47. Memphis, TN
48. Louisville, KY
49. Tulsa, OK
50. Oklahoma City, OK

All ten of the lowest ranking cities in this study were based in the South or lower Midwest. With the exception of Indianapolis, all ten of these cities lie within what has been called the nation's Sunbelt. The region experienced tremendous population growth during the 1960s and 1970s with development that can often be characterized as urban or exurban sprawl. Most of the lowest ten ranking cities in the study, with the exception of Virginia Beach, Virginia and Jacksonville, Florida, were based inland and do not have a major port—though such factors have not been correlated for this study.

Of the ten lowest ranking cities overall, none except Nashville ranked in the top of half of the largest 50 cities for telecommuting rates. Nashville ranked #22 of the largest 50 in telecommuting rates, according to the US Bureau of Census American Community Survey data.

Other overall city rankings in the study were as follows:


11. Baltimore
12. Los Angeles
13. Minneapolis, MN
14. New Orleans
15. Atlanta
16. Miami
17. Long Beach, CA
18. Honolulu

19. Sacramento, CA
20. Austin, TX
21. Milwaukee, WI
22. San Diego, CA
23. Tucson, AZ
24. Phoenix, AZ
25. Mesa, AZ
26. Houston, TX
27. Cleveland, OH
28. Dallas, TX
29. Detroit, MI
30. Albuquerque, NM
31. Charlotte, NC
32. Fresno, CA
33. Colorado Springs, CO
34. Las Vegas, NV
35. San Jose, CA
36. El Paso, TX
37. San Antonio, TX
38. Kansas City, MO
39. Omaha, NE
40. Columbus, OH

# 4. Ranking by Category

## 4.1. Carpooling

| City | Carpooling Rank |
|---|---|
| Mesa, AZ | 1 |
| Phoenix | 2 |
| Sacramento | 3 |
| Honolulu | 4 |
| Fresno | 5 |
| Dallas | 6 |
| Tucson | 7 |
| Houston | 8 |
| Charlotte, NC | 9 |
| Fort Worth | 10 |

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| | |
|---|---|
| Minneapolis | 11 |
| Albuquerque | 12 |
| Oklahoma City | 12 |
| San Jose | 14 |
| New Orleans | 15 |
| San Antonio | 16 |
| Jacksonville | 17 |
| *Oakland | 18 |
| *Los Angeles | 18 |
| El Paso | 20 |
| *Baltimore | 21 |
| *Cleveland | 21 |
| Austin | 23 |
| *Chicago | 24 |
| *Colorado Springs | 24 |
| *Indianapolis | 24 |
| *Denver | 28 |
| *Milwaukee | 28 |
| Memphis | 30 |
| Portland, OR | 31 |
| Seattle | 32 |
| *Las Vegas | 33 |
| *Nashville | 33 |
| *Virginia Beach | 33 |
| Arlington, TX | 33 |
| *Philadelphia | 37 |
| *Detroit | 37 |
| *Omaha | 37 |
| Miami | 40 |
| San Diego | 41 |
| Atlanta | 42 |
| Tulsa | 43 |
| Columbus, OH | 44 |
| Louisville, KY | 45 |
| San Francisco | 46 |
| Kansas City, MO | 47 |
| *Washington, DC | 48 |
| *Long Beach | 48 |
| Boston | 49 |
| New York | 50 |

* Indicates tie

# 4.2. City Telecommuting Rate

| City | Telecommute Rank |
|---|---|

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| City | Rank |
|------|------|
| San Francisco | 1 |
| Portland, OR | 2 |
| Seattle | 3 |
| Austin | 4 |
| Colorado Springs | 5 |
| *Denver | 6 |
| *Los Angeles | 6 |
| *Atlanta | 6 |
| San Diego | 9 |
| Washington, DC | 10 |
| Sacramento | 11 |
| Oakland | 12 |
| Charlotte, NC | 13 |
| Long Beach | 14 |
| *Mesa, AZ | 15 |
| *Fresno | 15 |
| *New York | 17 |
| *New Orleans | 17 |
| *Honolulu | 17 |
| *Tucson | 17 |
| *Albuquerque | 17 |
| *Phoenix | 22 |
| *Dallas | 22 |
| *Kansas City, MO | 22 |
| *Nashville | 22 |
| *San Jose | 26 |
| *Omaha | 26 |
| Las Vegas | 28 |
| San Antonio | 29 |
| *Chicago | 30 |
| *Boston | 30 |
| *Minneapolis | 30 |
| *Virginia Beach | 30 |
| *Arlington, TX | 30 |
| *Oklahoma City | 30 |
| *Columbus, OH | 36 |
| *Indianapolis | 36 |
| *Houston | 38 |
| *Detroit | 38 |
| *Fort Worth | 38 |
| *Philadelphia | 41 |
| *Tulsa | 41 |
| *Baltimore | 43 |
| *Milwaukee | 43 |
| *Jacksonville | 43 |
| *El Paso | 46 |
| *Louisville, KY | 46 |
| Miami | 48 |
| Memphis | 49 |
| Cleveland | 50 |

*Indicates tie

## 4.3. City Public Transit Commute Use

| City | City Commute Transit Use |
|---|---|
| New York | 1 |
| San Francisco | 2 |
| Boston | 3 |
| Washington, DC | 4 |
| *Chicago | 5 |
| *Philadelphia | 5 |
| Baltimore | 7 |
| Seattle | 8 |
| Oakland | 9 |
| Portland, OR | 10 |
| Minneapolis | 11 |
| New Orleans | 12 |
| Atlanta | 13 |
| Los Angeles | 14 |
| Honolulu | 15 |
| Miami | 16 |
| Long Beach | 17 |
| Cleveland | 18 |
| Milwaukee | 19 |
| Detroit | 20 |
| Denver | 21 |
| Houston | 22 |
| Austin | 23 |
| Dallas | 24 |
| Sacramento | 25 |
| San Diego | 26 |
| Phoenix | 27 |
| *Charlotte, NC | 28 |
| *Las Vegas | 28 |
| Tucson | 30 |
| Louisville, KY | 31 |
| San Jose | 32 |
| Columbus, OH | 33 |
| San Antonio | 34 |
| Kansas City, MO | 35 |
| El Paso | 36 |
| Memphis | 37 |
| *Fresno | 38 |
| *Indianapolis | 38 |
| Omaha | 40 |
| Mesa, AZ | 41 |
| *Albuquerque | 42 |
| *Jacksonville | 42 |
| Nashville | 44 |

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| City | |
|---|---|
| Colorado Springs | 45 |
| Fort Worth | 46 |
| Tulsa | 47 |
| Oklahoma City | 48 |
| Virginia Beach | 49 |
| Arlington, TX | 50 |

* Indicates tie

## 4.4. City Walk/ Bike Commute Rate

| City | Walk/ Bike Commute |
|---|---|
| Boston | 1 |
| Washington, DC | 2 |
| San Francisco | 3 |
| New York | 4 |
| Seattle | 5 |
| Philadelphia | 6 |
| Honolulu | 7 |
| Minneapolis | 8 |
| Portland, OR | 9 |
| Denver | 10 |
| Chicago | 11 |
| Baltimore | 12 |
| Sacramento | 13 |
| Tucson | 14 |
| Miami | 15 |
| New Orleans | 16 |
| Cleveland | 17 |
| Milwaukee | 18 |
| Oakland | 19 |
| Atlanta | 20 |
| Los Angeles | 21 |
| Colorado Springs | 22 |
| Austin | 23 |
| Albuquerque | 24 |
| Mesa, AZ | 25 |
| Detroit | 26 |
| San Diego | 27 |
| Long Beach | 28 |
| El Paso | 29 |
| Fresno | 30 |
| Columbus, OH | 31 |
| Kansas City, MO | 32 |
| Omaha | 33 |
| Tulsa | 34 |

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| | |
|---|---|
| Phoenix | 35 |
| Houston | 36 |
| *Las Vegas | 37 |
| *Virginia Beach | 37 |
| Jacksonville | 39 |
| Memphis | 40 |
| Nashville | 41 |
| Dallas | 42 |
| Indianapolis | 43 |
| San Jose | 44 |
| Charlotte, NC | 45 |
| Louisville | 46 |
| San Antonio | 47 |
| Oklahoma City | 48 |
| Fort Worth | 49 |
| Arlington, TX | 50 |

* Indicates tie

# 4.5. Metro Area Public Transit Use

| City | Metro Transit Use |
|---|---|
| New York | 1 |
| Chicago | 2 |
| Boston | 3 |
| **San Francisco | 4 |
| **Oakland | 4 |
| Washington, DC | 6 |
| Philadelphia | 7 |
| Los Angeles | 8 |
| Atlanta | 10 |
| Seattle | 11 |
| Houston | 12 |
| Miami | 13 |
| Baltimore | 14 |
| **Dallas | 15 |
| **Fort Worth | 15 |
| **Arlington, TX | 15 |
| *Minneapolis | 18 |
| *Long Beach | 18 |
| Denver | 19 |
| Portland, OR | 20 |
| Cleveland | 21 |
| San Diego | 22 |
| Detroit | 23 |

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| | |
|---|---|
| **Phoenix | 24 |
| **Mesa, AZ | 24 |
| Milwaukee | 26 |
| Austin | 27 |
| *Honolulu | 28 |
| *San Antonio | 28 |
| Virginia Beach | 30 |
| New Orleans | 31 |
| Jacksonville | 32 |
| Sacramento | 33 |
| Charlotte, NC | 34 |
| San Jose | 35 |
| Kansas City, MO | 36 |
| Memphis | 37 |
| *Las Vegas | 38 |
| *Columbus, OH | 38 |
| *Tucson | 40 |
| *Indianapolis | 40 |
| *El Paso | 42 |
| *Nashville | 42 |
| Louisville | 44 |
| Oklahoma City | 45 |
| Fresno | 46 |
| Albuquerque | 47 |
| *Colorado Springs | 48 |
| *Tulsa | 48 |
| Omaha | 50 |

  * Indicates tie
** Indicates same Metro area

## 4.6. Metro Area Sprawl

| City | Metro Area Sprawl |
|---|---|
| New York | 1 |
| San Francisco | 2 |
| Honolulu | 3 |
| Omaha | 4 |
| Boston | 5 |
| Portland, OR | 6 |
| Miami | 7 |
| New Orleans | 8 |
| Denver | 9 |
| Albuquerque | 10 |
| Colorado Springs | 11 |
| Chicago | 12 |
| Milwaukee | 13 |
| El Paso | 14 |

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| City | Score |
|---|---|
| Baltimore | 15 |
| Philadelphia | 16 |
| **Phoenix | 17 |
| **Mesa | 17 |
| Fresno | 19 |
| Austin | 20 |
| San Jose | 21 |
| Tucson | 22 |
| Las Vegas | 23 |
| Sacramento | 24 |
| San Diego | 25 |
| **Los Angeles | 26 |
| **Long Beach | 26 |
| Seattle | 28 |
| Tulsa | 29 |
| Oakland | 30 |
| Minneapolis | 31 |
| Indianapolis | 32 |
| Houston | 33 |
| Memphis | 34 |
| Cleveland | 35 |
| Kansas City, MO | 36 |
| Jacksonville | 37 |
| Columbus, OH | 38 |
| Washington, DC | 39 |
| Oklahoma City | 40 |
| Detroit | 41 |
| **Dallas | 42 |
| **Fort Worth | 42 |
| **Arlington, TX | 42 |
| Atlanta | 45 |
| Nashville | N/A |
| Charlotte, NC | N/A |
| Virginia Beach | N/A |
| San Antonio | N/A |
| Louisville, KY | N/A |

** Indicates same
Metro area

# 5. Author's Biography

**Warren Karlenzig**, Common Current founder and president, has worked with the federal government, the State of California, major cities, and the world's largest corporations developing policy, strategy and critical operational capacities for 20 years. Current and recent clients include the US Department of State; the counties of Riverside and San Bernardino, California; a major

mixed-use real estate development corporation; an educational sustainability non-profit; and a product design corporation.

Karlenzig has appeared in media including *The Wall Street Journal*, CNN, CNBC, *Forbes*, *The New York Times* and *The Washington Post*.

The former Chief Strategy Officer of SustainLane, he planned, designed and directed both the SustainLane US City Rankings and the SustainLane Government knowledge base for sustainability best practices in state and local governments. He also led consulting engagements with the State of California focused on green city performance metrics for a pilot program being rolled out in 2008.

As Lead Strategist for Dimension Data/ Proxicom, Karlenzig led strategy engagements for clients including General Electric and Chevron. His areas of expertise included planning portals, complex information and data systems, and communications. He has been a consultant with clients including the White House Office of Science and Technology, for which he helped plan an eco-industrial park; the US EPA Futures Group and the US Dept. of Energy. He authored *A Blueprint for Greening Affordable Housing*, the first substantial work on the subject (Global Green USA, 1999) and he co-authored San Francisco's influential Sustainability Plan, which was adopted by the city in 1997. The section he co-authored ("Economy and Economic Development") was directly cited in San Francisco's 1999 and 2003 green building ordinances.

*How Green is Your City?*, which Warren authored, was published in 2007 by New Society Publishers. He has an MFA from Naropa University and a Bachelor of Science degree from University of Illinois at Urbana-Champaign.

6. Notes

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