

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 (BMW³) and oil analysts⁴ 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 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/>
(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).

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.

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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 | 27. Cleveland, OH |
| 12. Los Angeles | 28. Dallas, TX |
| 13. Minneapolis, MN | 29. Detroit, MI |
| 14. New Orleans | 30. Albuquerque, NM |
| 15. Atlanta | 31. Charlotte, NC |
| 16. Miami | 32. Fresno, CA |
| 17. Long Beach, CA | 33. Colorado Springs, CO |
| 18. Honolulu | 34. Las Vegas, NV |
| 19. Sacramento, CA | 35. San Jose, CA |
| 20. Austin, TX | 36. El Paso, TX |
| 21. Milwaukee, WI | 37. San Antonio, TX |
| 22. San Diego, CA | 38. Kansas City, MO |
| 23. Tucson, AZ | 39. Omaha, NE |
| 24. Phoenix, AZ | 40. Columbus, OH |
| 25. Mesa, AZ | |
| 26. Houston, TX | |

4. Ranking by Category

4.1. Carpooling

City	Carpooling Rank	City	Carpooling Rank
Mesa, AZ	1	*Indianapolis	24
Phoenix	2	*Denver	28
Sacramento	3	*Milwaukee	28
Honolulu	4	Memphis	30
Fresno	5	Portland, OR	31
Dallas	6	Seattle	32
Tucson	7	*Las Vegas	33
Houston	8	*Nashville	33
Charlotte, NC	9	*Virginia Beach	33
Fort Worth	10	Arlington, TX	33
Minneapolis	11	*Philadelphia	37
Albuquerque	12	*Detroit	37
Oklahoma City	12	*Omaha	37
San Jose	14	Miami	40
New Orleans	15	San Diego	41
San Antonio	16	Atlanta	42
Jacksonville	17	Tulsa	43
*Oakland	18	Columbus, OH	44
*Los Angeles	18	Louisville, KY	45
El Paso	20	San Francisco	46
*Baltimore	21	Kansas City, MO	47
*Cleveland	21	*Washington, DC	48
Austin	23	*Long Beach	48
*Chicago	24	Boston	49
*Colorado Springs	24	New York	50

* Indicates tie

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4.2. City Telecommuting Rate

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

*Indicates tie

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4.3. City Public Transit Commute Use

City	City Commute Transit Use	City	City Commute Transit Use
New York	1	San Diego	26
San Francisco	2	Phoenix	27
Boston	3	*Charlotte, NC	28
Washington, DC	4	*Las Vegas	28
*Chicago	5	Tucson	30
*Philadelphia	5	Louisville, KY	31
Baltimore	7	San Jose	32
Seattle	8	Columbus, OH	33
Oakland	9	San Antonio	34
Portland, OR	10	Kansas City, MO	35
Minneapolis	11	El Paso	36
New Orleans	12	Memphis	37
Atlanta	13	*Fresno	38
Los Angeles	14	*Indianapolis	38
Honolulu	15	Omaha	40
Miami	16	Mesa, AZ	41
Long Beach	17	*Albuquerque	42
Cleveland	18	*Jacksonville	42
Milwaukee	19	Nashville	44
Detroit	20	Colorado Springs	45
Denver	21	Fort Worth	46
Houston	22	Tulsa	47
Austin	23	Oklahoma City	48
Dallas	24	Virginia Beach	49
Sacramento	25	Arlington, TX	50

* Indicates tie

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4.4. City Walk/ Bike Commute Rate

City	Walk/ Bike Commute	City	Walk/ Bike Commute
Boston	1	Detroit	26
Washington, DC	2	San Diego	27
San Francisco	3	Long Beach	28
New York	4	El Paso	29
Seattle	5	Fresno	30
Philadelphia	6	Columbus, OH	31
Honolulu	7	Kansas City, MO	32
Minneapolis	8	Omaha	33
Portland, OR	9	Tulsa	34
Denver	10	Phoenix	35
Chicago	11	Houston	36
Baltimore	12	*Las Vegas	37
Sacramento	13	*Virginia Beach	37
Tucson	14	Jacksonville	39
Miami	15	Memphis	40
New Orleans	16	Nashville	41
Cleveland	17	Dallas	42
Milwaukee	18	Indianapolis	43
Oakland	19	San Jose	44
Atlanta	20	Charlotte, NC	45
Los Angeles	21	Louisville	46
Colorado Springs	22	San Antonio	47
Austin	23	Oklahoma City	48
Albuquerque	24	Fort Worth	49
Mesa, AZ	25	Arlington, TX	50

* Indicates tie

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4.5. Metro Area Public Transit Use

City	Metro Transit Use	City	Metro Transit Use
New York	1	Milwaukee	26
Chicago	2	Austin	27
Boston	3	*Honolulu	28
**San Francisco	4	*San Antonio	28
**Oakland	4	Virginia Beach	30
Washington, DC	6	New Orleans	31
Philadelphia	7	Jacksonville	32
Los Angeles	8	Sacramento	33
Atlanta	10	Charlotte, NC	34
Seattle	11	San Jose	35
Houston	12	Kansas City, MO	36
Miami	13	Memphis	37
Baltimore	14	*Las Vegas	38
**Dallas	15	*Columbus, OH	38
**Fort Worth	15	*Tucson	40
**Arlington, TX	15	*Indianapolis	40
*Minneapolis	18	*El Paso	42
*Long Beach	18	*Nashville	42
Denver	19	Louisville	44
Portland, OR	20	Oklahoma City	45
Cleveland	21	Fresno	46
San Diego	22	Albuquerque	47
Detroit	23	*Colorado Springs	48
**Phoenix	24	*Tulsa	48
**Mesa, AZ	24	Omaha	50

* Indicates tie

** Indicates same Metro area

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4.6. Metro Area Sprawl

City	Metro Area Sprawl	City	Metro Area Sprawl
New York	1	**Los Angeles	26
San Francisco	2	**Long Beach	26
Honolulu	3	Seattle	28
Omaha	4	Tulsa	29
Boston	5	Oakland	30
Portland, OR	6	Minneapolis	31
Miami	7	Indianapolis	32
New Orleans	8	Houston	33
Denver	9	Memphis	34
Albuquerque	10	Cleveland	35
Colorado Springs	11	Kansas City, MO	36
Chicago	12	Jacksonville	37
Milwaukee	13	Columbus, OH	38
El Paso	14	Washington, DC	39
Baltimore	15	Oklahoma City	40
Philadelphia	16	Detroit	41
**Phoenix	17	**Dallas	42
**Mesa	17	**Fort Worth	42
Fresno	19	**Arlington, TX	42
Austin	20	Atlanta	45
San Jose	21	Nashville	N/A
Tucson	22	Charlotte, NC	N/A
Las Vegas	23	Virginia Beach	N/A
Sacramento	24	San Antonio	N/A
San Diego	25	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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5. Karlenzig, Warren, *How Green Is Your City? The SustainLane US City Rankings*, New Society Publishers, Gabriola Island, British Columbia, 2007: p. 70)