

# Future Oil Supply Uncertainty and Impacts on Transportation/Land Use Planning



Rex Burkholder  
 Metro Councilor  
 Portland, Oregon, USA

# U.S.: Price at the pump jumps 10 cents



Apr 17: 5:02  
Retail price  
over the las  
\$2.78 a galle  
climbing, EIA



## LATEST OIL PRICES Oil claws its way

Apr 18: 1:44p

Iran worries, and Nigeria supply

### Bloomberg

#### Oil Rises Above \$70 a Barrel in New York on Iran Supply Concern

April 17 (Bloomberg) -- Crude oil rose above \$70 a barrel in New York for the first time since Hurricane Katrina on concern the dispute over Iran's nuclear program may disrupt shipments.

"The Iranian situation is getting no better and any combination of events could lead to a conflagration," said Michael Fitzpatrick, vice president of energy risk management at Fimat USA Inc. in New York. "China's GDP is growing at over 10 percent so demand for oil will stay strong."

### International Economy / Oil

## World's thirst for oil makes falling output worse

By Javier Blas

Published: March 15 2005 19:12 | Last updated: March 15 2005 19:12

Last year's surge in oil prices was driven by the biggest yearly increase in demand since 1976. But analysts say today's high prices are the result of strong demand on oil supply growth from non-Opec countries.

that non-Opec supply outside the former Soviet Union between 1990 and 2000. But since then growth had been

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## Bank says Saudi's top field in decline

by Adam Porter in Perpignan, France  
Tuesday 12 April 2005 10:10 AM GMT

Speculation over the actual size of Saudi Arabia's oil reserves is reaching fever pitch as a major bank says



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### CNN Presents Classroom: We Were Warned: Tomorrow's Oil Crisis

(CNN Student News) — Set your VCR to record the CNN Presents Classroom Edition: We Were Warned: Tomorrow's Oil Crisis when it airs commercial-free on Monday, April 3, 2006, from approximately 4:10 - 5:00 a.m. ET on CNN.

It is September 2009. A Category 5 hurricane roars through Houston, destroying oil refineries, drilling platforms and pipelines--the complex system that provides a quarter of our nation's daily fuel supply. Three days later, terrorists attack two key oil installations in Saudi Arabia, the world's largest supplier. In the days and weeks that follow, gasoline prices hit record highs, food prices soar as trucks cannot afford to make deliveries, and Americans begin to realize that their very way of life is in peril.

# Different Approaches



- “Energy Security” →

“...[E]nergy is the albatross of U.S. national security...”

–Sen. Richard G. Lugar (R-IN), March 13, 2006.

- “Energy Vulnerability” →

“Oil makes it possible to transport food to the totally non-self-sufficient megacities of the world.”

–Daniel Yergin, *The Prize: The Epic Quest for Oil, Money, & Power*.

- “Peak Oil” →

“One thing is clear: the era of easy oil is over...”

–From Chevron’s “Will You Join Us?” campaign, February 2006.

# The Issue



- The factors of oil supply and demand are changing.

“The days of inexpensive, convenient, abundant energy resources are quickly drawing to a close.”

–Rep. Roscoe Bartlett (R-MD), March 14, 2006.

(FORESEEABLE)  
DEMAND

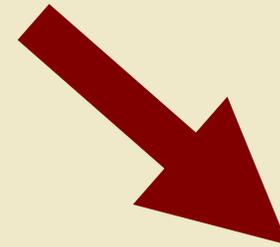
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- Industrialization in the less-developed world

(EASY)  
SUPPLY

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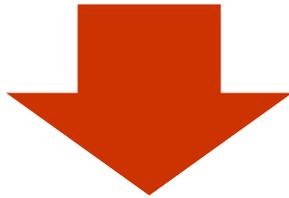


- The “easy oil” has been tapped

# The Issue



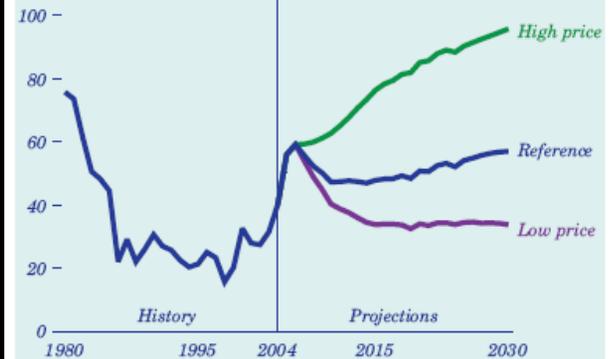
- We are likely entering a period of increasingly frequent and large fluctuations in oil prices and supply.
  - Changing demand and supply factors
  - Instability in oil-producing regions
  - Inherent difficulties in forecasting oil production



*“Oil Supply Uncertainty”*

## Oil Price Cases Show Uncertainty in Prospects for World Oil Markets

Figure 29. World oil prices in three cases, 1980-2030 (2004 dollars per barrel)



World oil price projections in the AEO2006 reference case, in terms of the average price of imported low-sulfur crude oil to U.S. refiners, are considerably higher than those presented in the AEO2005 reference case. The higher price path in the reference case does not result from different assumptions about the ultimate size of world oil resources but rather anticipates a lower level of future investment in production capacity in key resource-rich regions and a reassessment of the willingness of OPEC to produce at higher rates than projected in last year's outlook.

The historical record shows substantial variability in world oil prices, and there is arguably even more uncertainty about future prices in the long term.

– Energy Information Administration, United States.  
“Annual Energy Outlook 2006.”

# The Problem



## Why is this a problem?

- **Essential input:**  
We are dependent on oil as a raw material.
- **Assumed input:**  
Systems assume stability in oil supplies and prices.
- **Non-interchangable input**  
(short-term):  
Alternatives are still marginal.

“Oil (and natural gas) are the essential components in the fertilizer on which world **agriculture** depends;

“Oil makes it possible to **transport food** to the totally non-self-sufficient megacities of the world.

“Oil also provides the **plastics and chemicals** that are the bricks and mortar of contemporary civilization...”

–Daniel Yergin, *The Prize: The Epic Quest for Oil, Money, and Power*. 1991.

# Mitigating Factors



## Mitigating Factors

- **Oil Production System Resilience**
- **Economic System Resilience**
- **Alternatives will become more feasible**

*HOWEVER...*

Mitigating factors are **price-driven**.

They will contribute to future outcomes in ways that may be different than long-range planning efforts that comprehensively consider **economic, environmental and social equity goals**.

# Need for a Response



## An Issue for Government

“Peaking will result in dramatically higher oil prices, which will cause **protracted economic hardship** in the United States and the world...”

“**Timely, aggressive mitigation initiatives** addressing both the supply and the demand sides of the issue will be required...”

“Mitigation will require a **minimum of a decade** of intense, expensive effort...”

“**Intervention by governments will be required**, because the economic and social implications of oil peaking would otherwise be chaotic.”

- Hirsch, Robert. et al. “Peaking of World Oil Production: Impacts, Mitigation, & Risk Management”. Report for the U.S. Department of Energy, February 2005. (emphasis added)

# Need for a Response



## A Risk Management Problem

We increasingly face the **potential for economic crisis** brought about by uncertainty in our supply of oil, but we are **unable to accurately predict** in what way that supply may be threatened and how severe that threat may be.

Although the resilience of the world economic system in general –and the oil production system in particular– may sufficiently mitigate a crisis with ample time, they **may not be able to respond adequately to sudden and severe periods of instability.**

# Oil Uncertainty & Metro



1. Defining the issue.
2. Approaching the issue.
3. Addressing the issue.

PEOPLE PLACES  
OPEN SPACES

# 1. Defining the issue



## Charter Responsibilities

**Table 1. Metro Charter Responsibilities and Considerations for Oil Supply Uncertainty**

Charter Responsibility	Long-range Considerations	Short-term Considerations
<b>land-use and transportation planning</b> (primary responsibility)	<ul style="list-style-type: none"> <li>▪ transportation infrastructure</li> <li>▪ regional land use patterns</li> <li>▪ regional transportation patterns</li> <li>▪ transportation options (modal split)</li> <li>▪ implications for RTP</li> </ul>	<ul style="list-style-type: none"> <li>▪ planning assumptions</li> </ul>
<b>solid waste disposal system</b>	<ul style="list-style-type: none"> <li>▪ kinds and quantities of disposed materials</li> </ul>	<ul style="list-style-type: none"> <li>▪ fuel for vehicles (consider implications of possible fuel price instability in long-term contract negotiations with haulers)</li> </ul>
<b>regional facilities</b> (Zoo, OCC, PCPA, Expo)	<ul style="list-style-type: none"> <li>▪ OCC dependence on national travel trends</li> </ul>	<ul style="list-style-type: none"> <li>▪ stable energy supplies for facilities</li> </ul>
<b>parks and open spaces</b>	<ul style="list-style-type: none"> <li>▪ land prices as affected by transportation patterns and modal split</li> </ul>	<ul style="list-style-type: none"> <li>▪ fuel for vehicles</li> </ul>
<b>planning and response coordination for natural disasters</b>	<ul style="list-style-type: none"> <li>▪ emergency response planning (i.e., for a protracted energy shortage?)</li> </ul>	<ul style="list-style-type: none"> <li>▪ emergency response planning (i.e., for a sudden energy shortage?)</li> </ul>
<b>development and marketing of data</b>	<ul style="list-style-type: none"> <li>▪ scenario forecasting</li> </ul>	<ul style="list-style-type: none"> <li>▪ scenario forecasting</li> </ul>

## 2. Approaching the issue



### Activities Analysis

- Metro's primary responsibilities of land use and transportation planning are broken down into the following **specific activities**, each of which may relate to oil supply uncertainty in a different manner.

#### Land Use

- "New Look" at regional choices
- 2040 Growth Concept
- Urban growth boundary
- Guides and Plans for Building Livable Communities
- New area planning
- Affordable housing

#### Transportation

- Regional Transportation Plan
- High-priority transportation projects
- Funding transportation projects (MTIP, TPP)
- Transportation research and modeling services
- Transit-oriented development implementation
- Transportation demand management

# 3. Addressing the issue



## Strategies and Suggestions

- **Goal definition:** What exactly are our objectives?
- **Previous actions:** Past planning has provided for more mobility and land use options than most other major US cities. Ongoing 2040 Concept.
- A **vulnerability assessment** would help determine which of Metro's activities within its specific Charter responsibilities may be most significantly impacted by oil supply (and price) instability.

# 3. Addressing the issue



## Strategies and Suggestions

- **Clear opportunities:**
  - “New Look” study and evaluation process
    - MetroScope evaluation oil cost increase scenarios.
  - RTP update
    - Assess RTP for how it addresses the potential for oil supply uncertainty
    - Consider alternative projects, or processes for developing them.
    - Develop indicators to signal when assumptions need to be changed.
    - Determine how to minimize the risk in selecting and developing RTP projects.
  - Internal activities
    - “Ag/Urban Study”
    - Solid Waste and Recycling: hauling contracts, recycling markets, etc.
    - Enterprise operations (Zoo, OCC, etc.)
  - External forums
    - Economic Advisory Board, JPACT, TPAC, MPAC, MTAC, SWAC

# Other Jurisdictions



City (2004 pop.)	State	Contact	Actions
<b>Denver</b> 556,835	CO	Beth Conover Mayor's Sustainable Development Initiative 720-865-9000 beth.conover@ci.denver.co.us	<ul style="list-style-type: none"> <li>Mayor hosted World Oil Forum last year.</li> <li>Press conferences on Peak Oil.</li> <li>Efficiency measures in City infrastructure, fleet.</li> </ul>
<b>Portland</b> 533,492	OR	Brendan Finn Chief of Staff, Cmmr. Dan Saltzman 503-823-4151 bfinn@ci.portland.or.us	<ul style="list-style-type: none"> <li>Considering Council resolution to establish Task Force.</li> </ul>
<b>Oakland</b> 397,976	CA	Carol Misseldine Mayor's Sustainability Program 510-238-6808 cmisseldine@oklandnet.com	<ul style="list-style-type: none"> <li>Project to supply 50% of food from within 50 miles by 2015.</li> </ul>
<b>Burnaby</b> 197,292	BC		<ul style="list-style-type: none"> <li>Staff report completed Jan. 4, 2006, "Global Peak in Oil Production: The Municipal Context". (see Appendix)</li> </ul>
<b>Humboldt County</b> 128,529	CA		<ul style="list-style-type: none"> <li>Humboldt County General Plan 2025, Energy Element Background Technical Report. (<a href="http://www.redwoodenergy.org/uploads/Tech%20Report%20Public%20Draft.pdf">http://www.redwoodenergy.org/uploads/Tech%20Report%20Public%20Draft.pdf</a>)</li> </ul>
<b>Sebastopol</b> 7,685	CA	Larry Robinson City Councilor 707-823-1708 lrobpoet@sbcglobal.net	<ul style="list-style-type: none"> <li>Council-sponsored Town Hall meeting on Peak Oil in fall 2005, resulting in an ad hoc "Energy Vulnerability" Citizen's Committee to develop Contingency Plans for municipal services (to Council in summer 2006).</li> </ul>
<b>Willits</b> 5,098	CA	Alan Falleri Community Development	<ul style="list-style-type: none"> <li>City signed a declaration supporting "sustainable localization" in response to local group (WELL) energy audit.</li> </ul>
<b>Franklin</b> 2,543	NY	Gene Marner Citizens' Commission 607-829-8451	<ul style="list-style-type: none"> <li>Citizens' Commission established.</li> </ul>

# Resources for You



## White Paper: Future Oil Supply Uncertainty and Metro

<http://www.metro-region.org/article.cfm?ArticleID=18951>

QuickTime™ and a  
TIFF (LZW) decompressor  
are needed to see this picture.

<http://postcarbon.org/node/4174>

# Thanks and Good Luck!



QuickTime™ and a  
TIFF (Uncompressed) decompressor  
are needed to see this picture.

Rex Burkholder

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Metro-region.org