



# INVESTMENT IN PEOPLE AND IDEAS

CHILDREN AND FAMILIES  
EDUCATION AND THE ARTS  
ENERGY AND ENVIRONMENT  
HEALTH AND HEALTH CARE  
INFRASTRUCTURE AND  
TRANSPORTATION  
INTERNATIONAL AFFAIRS  
LAW AND BUSINESS  
NATIONAL SECURITY  
POPULATION AND AGING  
PUBLIC SAFETY  
SCIENCE AND TECHNOLOGY  
TERRORISM AND  
HOMELAND SECURITY

The RAND Corporation is a nonprofit institution that helps improve policy and decisionmaking through research and analysis.

This electronic document was made available from [www.rand.org](http://www.rand.org) as a public service of the RAND Corporation.

Skip all front matter: [Jump to Page 1](#) ▼

## Support RAND

[Browse Reports & Bookstore](#)

[Make a charitable contribution](#)

## For More Information

Visit RAND at [www.rand.org](http://www.rand.org)

Explore the [RAND Investment in People and Ideas Program](#)

View [document details](#)

## Limited Electronic Distribution Rights

This document and trademark(s) contained herein are protected by law as indicated in a notice appearing later in this work. This electronic representation of RAND intellectual property is provided for non-commercial use only. Unauthorized posting of RAND electronic documents to a non-RAND website is prohibited. RAND electronic documents are protected under copyright law. Permission is required from RAND to reproduce, or reuse in another form, any of our research documents for commercial use. For information on reprint and linking permissions, please see [RAND Permissions](#).

This product is part of the RAND Corporation occasional paper series. RAND occasional papers may include an informed perspective on a timely policy issue, a discussion of new research methodologies, essays, a paper presented at a conference, a conference summary, or a summary of work in progress. All RAND occasional papers undergo rigorous peer review to ensure that they meet high standards for research quality and objectivity.

OCCASIONAL PAPER

# The Option of an Oil Tax to Fund Transportation and Infrastructure

---

*Keith Crane • Nicholas Burger • Martin Wachs*



RAND INVESTMENT IN PEOPLE AND IDEAS

This paper results from the RAND Corporation's Investment in People and Ideas program. Support for this program is provided, in part, by the generosity of RAND's donors and by the fees earned on client-funded research. This research was conducted in the Environment, Energy, and Economic Development Program (EEED) within RAND Infrastructure, Safety, and Environment (ISE).

**Library of Congress Cataloging-in-Publication Data**

Crane, Keith, 1953-

The option of an oil tax to fund transportation and infrastructure / Keith Crane, Nicholas Burger, Martin Wachs.

p. cm.

Includes bibliographical references.

ISBN 978-0-8330-5178-3 (pbk. : alk. paper)

1. Petroleum--Taxation--Economic aspects--United States. I. Burger, Nicholas. II. Wachs, Martin. III. Title.

HD9560.8.U52C73 2011

336.2'785532820973--dc22

2011005695

The RAND Corporation is a nonprofit institution that helps improve policy and decisionmaking through research and analysis. RAND's publications do not necessarily reflect the opinions of its research clients and sponsors.

**RAND**® is a registered trademark.

© Copyright 2011 RAND Corporation

Permission is given to duplicate this document for personal use only, as long as it is unaltered and complete. Copies may not be duplicated for commercial purposes. Unauthorized posting of RAND documents to a non-RAND website is prohibited. RAND documents are protected under copyright law. For information on reprint and linking permissions, please visit the RAND permissions page (<http://www.rand.org/publications/permissions.html>).

Published 2011 by the RAND Corporation

1776 Main Street, P.O. Box 2138, Santa Monica, CA 90407-2138

1200 South Hayes Street, Arlington, VA 22202-5050

4570 Fifth Avenue, Suite 600, Pittsburgh, PA 15213-2665

RAND URL: <http://www.rand.org>

To order RAND documents or to obtain additional information, contact

Distribution Services: Telephone: (310) 451-7002;

Fax: (310) 451-6915; Email: [order@rand.org](mailto:order@rand.org)

## Summary

---

The goal of this paper is to raise the key issues associated with using an oil tax to fund U.S. transportation infrastructure, identify the decisions Congress would need to make in designing such a tax, and outline some of the likely implications of adopting an oil tax. In 2009, federal spending on surface-transportation infrastructure outpaced revenues into the federal Highway Trust Fund (HTF) by \$18.6 billion. The HTF is funded through federal taxes on gasoline and diesel fuel. Because these taxes are not indexed to inflation and because U.S. motor vehicles are becoming more efficient, resulting in fewer purchases of gasoline and diesel, real revenue generated from these taxes has declined. Congress is considering ways to address this gap between transportation revenues and expenditures.

In this paper, we investigate using a percentage tax on crude oil and imported refined petroleum products consumed in the United States to fund the nation's transportation infrastructure. This proposed tax on oil could replace existing gasoline and diesel taxes and, potentially, other transportation taxes, such as taxes on airline tickets. The revenues from this tax could be used to fully fund federal infrastructure expenditures on highways, public transit, and aviation.

A percentage tax on oil would have several advantages over existing transportation funding systems. It could simplify the tax system by replacing several existing taxes used to finance transportation with a single, upstream tax. It could be adjusted automatically to fully fund appropriated expenditures on transportation, regardless of inflation. It could transfer external costs of producing and consuming oil that are currently borne by the general public to be borne only by oil producers and consumers. It would spread the burden of these external costs across all users of petroleum products, not just motorists and truckers. It could help fund national security expenditures employed to safeguard sources and sea-lanes used to import oil. Finally, while the public is generally opposed to most taxes, given the national security concerns associated with oil consumption, an oil tax might be more politically palatable than raising existing motor fuel taxes.

In the paper, we provide revenue estimates based on different potential oil tax rates at various oil prices. We then match potential revenues to estimates of transportation expenditure needs. At mid-summer 2010 prices of \$72 per barrel, an oil tax of 17 percent would generate approximately \$83 billion per year, the projected annual federal appropriation for ground-transit infrastructure over the next six years.<sup>1</sup> The hypothetical oil tax would be collected at

---

<sup>1</sup> As we describe in more detail below, our primary results assume no short-term demand or supply response to higher oil taxes. Long-run revenue-generation potential would need to account for demand reductions due to higher prices; we provide general estimates of the long-run effect of higher oil prices on demand.

refineries, with separate adjustments for imported and exported refined petroleum products. The tax would need to be flexible to balance revenue needs with the economic burden of the tax. One option is to adjust the tax rate quarterly to account for changes in the price of oil, maintaining annual revenues but reducing the percentage tax take if oil prices spike once again.

We also provide an estimate of the aggregate “external” costs associated with producing and consuming oil, costs an oil tax could help to internalize. These external costs include damage to health and the environment from pollution associated with oil, costs associated with climate change, economic declines stemming from disruptions in the supply of oil, and national security–related costs. Because consumers and producers do not face most of these costs—even though society pays them—decisions about consuming refined oil products are not economically efficient. An oil tax could be designed to better price oil resources, leading to more efficient use of this resource.

Some users, including motorists and truckers, would likely see only modest increases in total taxes paid if a tax on oil replaced current taxes on gasoline and diesel. However, other users of refined oil products—such as people who heat their homes with fuel oil—would pay federal taxes on petroleum products where they had paid none before. Because energy taxes are regressive, low-income consumers or consumers in certain geographic regions, such as the Northeast, would likely be affected more by an oil tax than higher-income consumers or those living in more moderate climates.

Congress would have a number of options for choosing how to allocate the revenues of an oil tax to pay for transportation infrastructure. These include using existing mechanisms, such as the HTF, or abandoning the current “user pays” system in favor of general-fund financing. If revenue from an optimal tax were higher than the level required to fund transportation expenditures, Congress could offset the likely regressive effects of an energy tax by reducing other distortionary taxes, such as payroll taxes.<sup>2</sup>

We also acknowledge the paper’s limitations. A full, quantitative analysis of the costs and benefits of an oil tax is beyond our scope, although we do provide quantitative estimates where possible. We also do not attempt to calculate the “optimal” oil tax, one that would balance revenue generation, internalizing external costs, and tax interaction effects. Although we discuss the possible effects of a federal oil tax on oil prices, our analysis does not consider in detail the broader general equilibrium effects of significant changes in the U.S. tax system. The intended audience is national policymakers considering alternative transportation financing options. We acknowledge that additional analysis would be necessary to choose the parameters of an actual tax on oil and assess its implications.

---

<sup>2</sup> Distortionary taxes are taxes that cause people to change their behavior in a socially costly way.