

EXECUTIVE SUMMARY

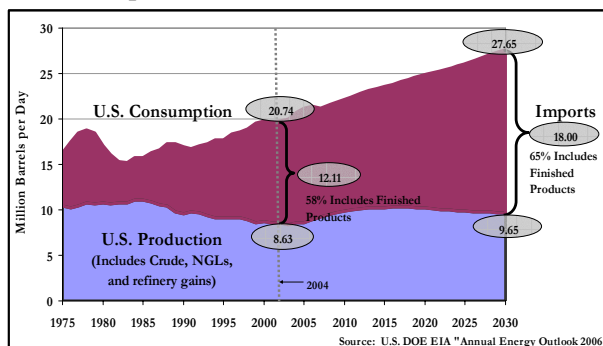
The Energy Policy Act of 2005 (EPACT) directed the Task Force on Strategic Unconventional Fuels to make recommendations and develop an integrated program to coordinate and accelerate the development of fuels from domestic unconventional fuels resources. The Task Force has evaluated the global and domestic oil supply outlook, assessed domestic unconventional fuels resources that could augment supply, analyzed constraints to their development, and crafted an integrated strategy and program plan to expedite development of an unconventional fuels industry.

I. Situation

Global and domestic demand for crude oil and refined products continues to expand, driven by rapid economic growth in developing economies and domestic consumer habits. At the same time, finding and producing oil resources to meet rising demand is increasingly difficult and costly. Companies are failing to replace produced reserves, shrinking the world's conventional oil reserves base. Excess productive capacity is also shrinking, reducing the ability to respond to supply disruptions, increasing price volatility, and driving up prices.

Domestic crude oil production is declining as demand rises, increasing our dependence on imports of oil and refined products. Between 1985 and 2004, U.S. demand for oil and products increased by 25 percent to 20 MMBbl/d and imports more than doubled, reaching over 12 MMBbl/d (58% of demand). The Energy Information Administration projects U.S. oil and refined products imports to increase to 18 MMBbl/d (65% of demand) by 2030. (Figure ES-1)

Figure ES-1. U.S. Liquid Fuels Demand and Imports will Continue to Increase



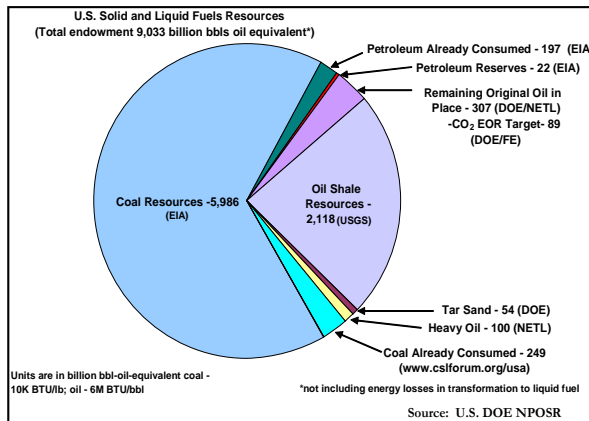
Increasingly, oil and refined products must be imported from nations unfriendly to the United States or threatened by political instability, reducing the security and reliability of supplies critical to our economy, our military, and our national security.

The Task Force finds that America's increasing demand for oil imports in a world of more limited supply from increasingly unstable sources poses strategic risks that the nation can ill afford to ignore. These risks include the reliability of fuels to supply our economy, the availability of assured supplies to fuel our military, and the enormous costs of oil imports to consumers and the economy as a whole. The higher cost and volume of oil and refined product imports combine to exacerbate the nation's trade deficit and weaken the value of the dollar against other currencies. *To address this situation, aggressive action must be taken by government and industry to abate growth in U.S. oil demand and to increase production of fuels from domestic sources.*

II. Potential of Unconventional Fuels Resources

The days of cheap oil are likely over. As discovery and production of conventional oil becomes more difficult and costly, and the

Figure ES-2. America's Original Endowment of Solid and Liquid Fuels Resources



ability of that resource to meet rising global demand becomes less assured, the world and our nation must now begin a transition to the next most economic and energy efficient set of energy resources. As it may take 20 years or more to achieve an industry capable of producing significant volumes of unconventional fuels, urgent action to initiate the transition is needed.

Our nation is endowed with a wealth of resources that can be converted to fuels for transportation, home heating, and other uses. These include coal, oil shale, tar sands, heavy oil, and oil producible by carbon dioxide enhanced recovery. (Figure ES-2) The Task Force finds that, if pursued aggressively by government and industry,

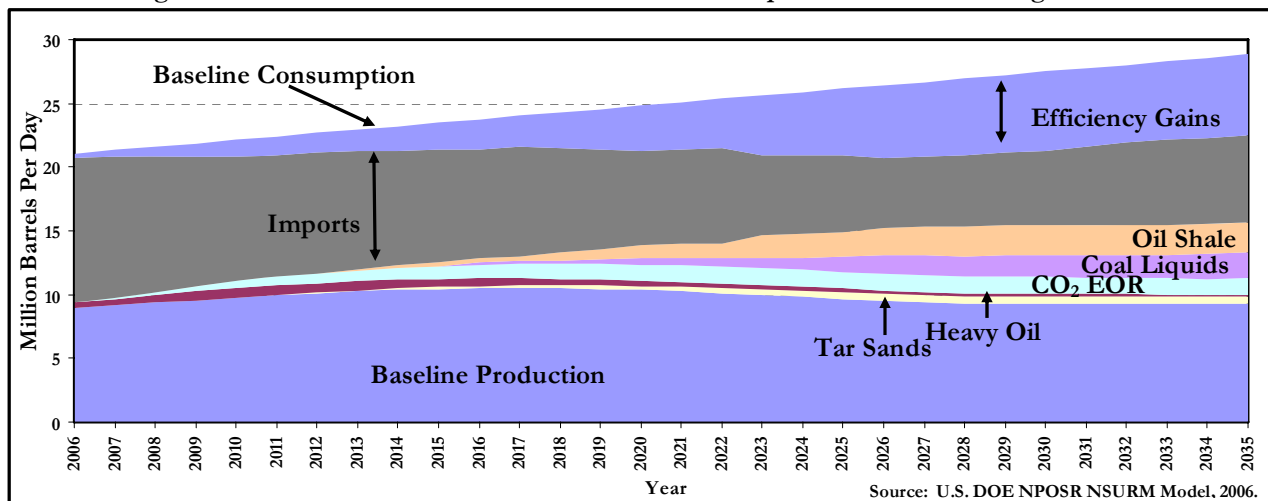
domestic unconventional fuels could exceed 7 MMBbl/d by 2035 (Figure ES-3). However, increased domestic fuels production, alone, will not be sufficient to measurably reduce the volume of imports or our dependence on unreliable foreign sources. Aggressive action by industry, government, and consumers is needed to reduce the growth in America's liquid fuels demand, including enabling more efficient use of fuels and fostering changes in consumer habits. While programs and policies to foster conservation and efficiency improvements exceed the scope of this Task Force's charter, public efforts to achieve these goals are warranted.

III. Factors Constraining Investment

Depending on the resource, commercial development of unconventional resources may be constrained by:

- Access to resources on public lands
- Economics, high capital/operating costs, tax and fiscal regimes, and oil price volatility
- Technologies that require further advancement or demonstration at commercially-representative scale
- Environmental challenges, water supply, air quality, and carbon management

Figure ES-3. Potential U.S. Oil Production and Consumption – Accelerated Program Case



- Uncertain regulation, permitting processes, and timelines that impact planning and increase costs
- Socioeconomic risks/impacts to affected states and communities that must be mitigated before development can begin
- Assured markets and long-term off-take commitments that provide a minimum rate of return to secure project financing
- Infrastructure requirements to support industry development, operations, and population and economic growth

IV. Program Vision and Development Objectives

The Task Force has crafted a commercialization strategy and program plan to:

- Accelerate development of domestic unconventional fuels,
- Promote effective environmental stewardship and impact mitigation,
- Mitigate potential adverse socio-economic impacts on states and localities, and
- Generate substantial public benefits while ensuring government fiscal responsibility.

Three development scenarios involving various levels of government involvement and risk-sharing were analyzed. All of these scenarios yielded net positive fiscal benefits to Federal and state treasuries.

Applying the more aggressive “accelerated” development scenario could enable industry to achieve incremental production beyond 7 MMBbl/d by 2035. However, government must *share* in the early development risk to

Incremental Production Objectives (2035)

- Oil Shale – 2.5 MMBbl/d
- Tar Sands – 0.53 MMBbl/d
- Coal Liquids – 2.6 MMBbl/d
- Heavy Oil – 0.75 MMBbl/d
- CO₂ EOR – 1.3 MMBbl/d*

* Production goals for CO₂ EOR assume expanded use of current state-of-the-art technology. If more advanced technology is developed, the CO₂ objective could increase to 3 MMBbl/d.

achieve the significantly greater public benefits of the accelerated development case.

V. Major Strategies

The overarching strategy for the Strategic Unconventional Fuels Program is to work collaboratively with private industry, affected states and communities, and other stakeholders to overcome the impediments to private investment in industry development and to achieve public and private goals. Oil sands development success in the Province of Alberta, Canada provides a laudable example of industry, government, and stakeholder collaboration that could be emulated. The Strategy reflects the full spectrum of crosscutting socioeconomic and environmental issues. Community involvement will enhance and accelerate industry development while assuring community needs and concerns are addressed.

The Task Force recommends adoption of the following strategies to address major development challenges:

Resource Access: Make unconventional fuels resources on public lands available to industry for sustainable development by leasing of resources on state or Federal lands, land exchanges, and resolving conflicting-use issues.

Technology: Facilitate accelerated private-sector development, demonstration and commercialization of efficient 1st generation and next-generation technologies. The Federal government will work with industry to craft a fast-track technology development and commercialization effort that includes: (1) Assessment of unconventional fuels resources and technologies, (2) Technical assistance to help industry resolve critical issues (3) Cost-shared demonstrations of promising existing technologies; and (4) Other RD&D and outreach efforts aimed at accelerating the advancement of first or next-generation technologies.

Development Economics: Federal and state governments should create a fiscal regime that attracts needed private development capital. Such a fiscal regime should provide incentives that reduce investment risk, accelerate return on investment, and stimulate private investment while minimizing public-sector risks/outlays.

Environmental Protection: The Program will encourage design and demonstration of commercial-scale plants to adopt and advance best available control technologies and apply best management practices to limit or mitigate environmental impacts. Cross-cutting outreach efforts will help solicit and address views and concerns of stakeholders. Basin and resource-specific environmental R&D will include development of effective strategies for carbon management and water management.

Socio-Economic Impacts: The Program will help states and communities prepare to support industry development, operation, and associated growth while mitigating against potential adverse impacts. It will help fund and support impact assessment, development planning, and education and training to maximize state and local employment opportunity, economic growth, and revenue-sharing with affected communities.

Regulatory/Permitting: The Program will help Federal and state agencies establish an inclusive regulatory system and review process that allows expeditious industry development and provides a predictable schedule for permitting approvals, consistent with Section 369(K) and other provisions of EPACT.

Public Infrastructure: The Program will help facilitate the availability of public infrastructure and resources sufficient to support unconventional fuels industry development and associated growth. This will entail crafting an integrated regional and local plan to support efficient development, realize synergies among various unconventional fuels, and reduce duplicative efforts/investments.

Water Resource Stewardship: The Program seeks to assure adequate water supplies to support industry development, community needs, and future water demand, to protect surface and groundwater quality, and to protect existing water rights. The Program will prepare an integrated assessment of water requirements, supplies, infrastructure needs, and water resource management approaches.

Markets: Industry must develop fuels that satisfy market demand. Assured markets for produced fuels are essential to project financing. The Program will identify and implement strategies for expanding the markets for unconventional fuels to public fleets, commercial aviation, trucking, and passenger vehicle use. The Department of Defense (DOD) could serve as a market initiator, if authorized to implement long-term purchase agreements for unconventional fuels that are fit for DOD needs. The Program will analyze expected markets for heavy oil, bitumen, and shale oil feedstocks and coal-derived liquid fuels, and potential impacts on markets for domestic crude oils.

Government Organization: A coordinated government approach to expedite rather than impede industry development will be essential to achieve program goals. The Program will assess the merits of several options for structuring an organization to stimulate industry development, manage and coordinate state, Federal, and local government efforts, provide a “one-stop shop” for permitting, and resolve key issues and impediments. Among the available options, establishing a government-chartered corporation should be given serious consideration.

VI. Program Benefits and Outlays

The Task Force has evaluated the potential production and associated benefits resulting from public actions to stimulate unconventional fuels development under three scenarios. Benefits evaluated include fuels production, net public revenue, value of

imports avoided, jobs, and contributions to gross domestic product (GDP). In all cases analyzed the net public benefits yielded positive results. The accelerated development scenario yields the greatest benefits in all cases analyzed. (Figures ES-4 – ES-6).

Figure ES-4. Annual Total Direct Public Sector Revenues

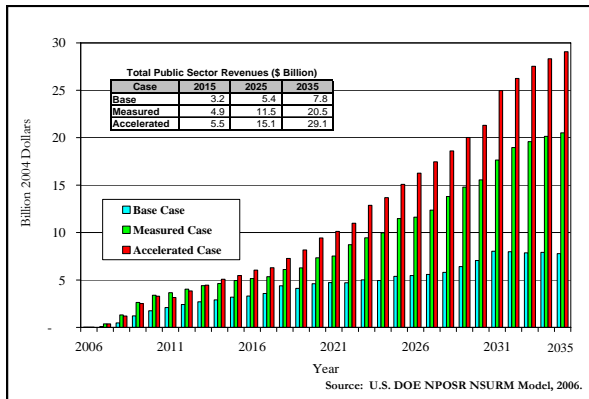


Figure ES-5. Annual Value of Imports Avoided and Direct Contribution to GDP

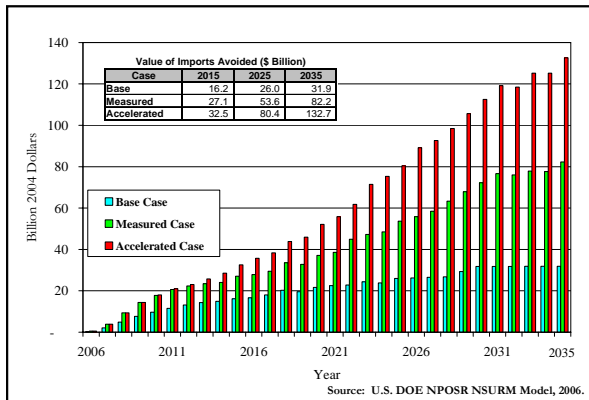
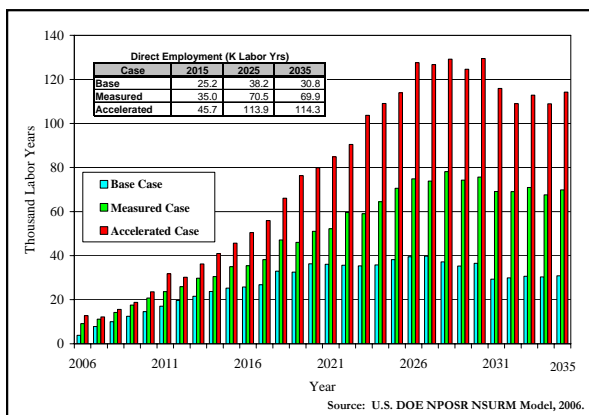


Figure ES-6. Annual Direct Petroleum Sector Employment



By 2035, incremental production of 7 million barrels per day would reduce the annual cost of imported oil and refined products and increase gross domestic product by \$133 billion. Net annual direct public sector revenues (from rents, royalties, and corporate and individual taxes) would exceed \$29 billion. In 2035, more than 114,000 direct petroleum sector jobs would exist; total jobs could exceed 260,000. Expected direct program outlays are estimated to be on the order of \$3 billion.

VII. Conclusions

Based on our analysis, the Task Force concludes that the domestic and global fuels supply situation and outlook is urgent. The Nation is substantially at risk, from an economic and national security perspective, to warrant development of an aggressive integrated unconventional fuels development program, supported by attendant policies to promote expeditious development of these resources.

Responsible development of America's oil shale, tar sands, heavy oil, coal, and oil resources amenable to recovery by carbon dioxide injection, by private industry, supported and encouraged by government actions to reduce uncertainties and stimulate investment, could supply all of the Department of Defense's domestic fuels demand by 2016, and supply upwards of 7 million barrels of domestically produced liquid fuels to domestic markets by 2035.

The challenges to domestic unconventional fuels development are significant, but not insurmountable. Coupled with focused efforts to stimulate improvements in fuel use efficiency and changes in consumer habits, demand growth can be slowed and America's dependence on oil imports can be significantly reduced to the benefit of our economy, our security, and our standard of living.