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DEFENSE MANAGEMENT

Overarching Organizational  
Framework Could Improve  
DOD's Management of  
Energy Reduction Efforts  
for Military Operations

Statement of William M. Solis, Director  
Defense Capabilities and Management





Highlights of [GAO-08-523T](#), a testimony before the Subcommittee on Readiness, Committee on Armed Services, House of Representatives

## Why GAO Did This Study

The Department of Defense (DOD) is the single largest U.S. energy consumer. About three-fourths of its total consumption consists of mobility energy—the energy required for moving and sustaining its forces and weapons platforms for military operations.

GAO was asked to discuss DOD's efforts to manage and reduce its mobility energy demand. This testimony addresses (1) energy issues that are likely to affect DOD in the future, (2) key departmental and military service efforts to reduce demand for mobility energy, and (3) DOD's management approach to guide and oversee these efforts. This testimony is based primarily on work conducted for a report that GAO issued today ([GAO-08-426](#)) on DOD's management of mobility energy.

## What GAO Recommends

In the report GAO issued today, GAO recommended that DOD establish an overarching organizational framework to improve the department's ability to address mobility energy challenges. The framework should include an executive-level Office of the Secretary of Defense (OSD) official accountable for mobility energy matters, a comprehensive strategic plan, and improvements to DOD's business processes. The military services should designate executive-level focal points to establish effective communication and coordination among OSD and the military services. DOD partially concurred with the recommendations.

To view the full product, click on [GAO-08-523T](#). For more information, contact William M. Solis at (202) 512-8365 or [solisw@gao.gov](mailto:solisw@gao.gov).

## DEFENSE MANAGEMENT

### Overarching Organizational Framework Could Improve DOD's Management of Energy Reduction Efforts for Military Operations

#### What GAO Found

Several issues, such as rising fuel costs, worldwide energy demand, and the high fuel burden during operations, underscore the importance of energy to DOD. Fuel costs for DOD are substantial and the volatility of world oil prices will likely continue to affect the department—which may require DOD to make difficult trade-offs such as redirecting funds from ongoing programs to pay for needed fuel. Other energy issues that are likely to affect DOD in the future are the increased U.S. dependence on foreign oil, projected increases in the worldwide demand for oil, and uncertainties about world oil supplies. Furthermore, DOD's high fuel requirements on the battlefield can place a significant logistics burden on military forces, limit the range and pace of operations, and add to mission risks, including exposing supply convoys to attack. Given these issues, DOD must be well positioned to effectively manage energy demands for military operations.

DOD has initiatives under way to reduce mobility energy demand. At the department level, OSD created a task force to address energy security concerns. In addition, the Deputy Secretary of Defense included energy in DOD's list of the top 25 transformational priorities for the department as part of its initiative to pursue targeted acquisition reforms. Each of the military services also has its own initiatives under way. The Army is addressing fuel consumption at forward-deployed locations by developing foam-insulated tents and temporary dome structures that are more efficient to heat and cool, reducing the demand for fuel-powered generators. The Navy has established an energy conservation program to encourage ships to reduce energy consumption. The Air Force has developed an energy strategy and undertaken initiatives to determine fuel-efficient flight routes, reduce the weight on aircraft, optimize air refueling, and improve the efficiency of ground operations. The Marine Corps has initiated research and development efforts to develop alternative power sources, such as hybrid power, and improve fuel management.

While these and other mobility energy reduction efforts are under way, DOD lacks elements of an overarching organizational framework to guide and oversee these efforts. Specifically, GAO found that DOD's current approach to mobility energy lacks (1) a single executive-level OSD official who is accountable for mobility energy matters, (2) a comprehensive strategic plan for mobility energy, and (3) an effective mechanism to provide for communication and coordination of mobility energy efforts among OSD and the military services as well as leadership and accountability over each military service's efforts. GAO also found that DOD has made limited progress in incorporating fuel efficiency as a consideration in key business processes—which include developing requirements for and acquiring new weapons systems. With a mobility energy overarching organizational framework in place, DOD would be better positioned to reduce its significant reliance on petroleum-based fuel and to address the energy challenges of the 21st century.

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Mr. Chairman and Members of the Subcommittee:

I am pleased to be here today to discuss the Department of Defense's (DOD) efforts to manage and reduce its demand for mobility energy—that is, the energy required for moving and sustaining its forces and weapons platforms for military operations. Mobility energy accounts for about three-fourths of DOD's total energy consumption.<sup>1</sup> U.S. military forces, for example, require vast quantities of fuel to operate combat and support vehicles; generate power at forward-deployed locations; and move troops, equipment, and supplies. As the single largest energy consumer in the United States, DOD incurs billions of dollars each year in fuel costs, and these costs have been rising in recent years as oil prices have increased. DOD recognizes that its high energy demand presents significant risks to its military forces. Moreover, a February 2008 Defense Science Board report concluded that DOD's high fuel demand compromises operational capability and mission success, requires an excessive logistics infrastructure, creates more risk for support operations than necessary, and increases life cycle operations and support costs.<sup>2</sup> In addition, the report notes that changing a culture that considers energy cheap and abundant is one of the most difficult challenges facing the department and the nation.

Today I would like to provide our perspectives on (1) energy issues that are likely to affect DOD in the future, (2) key departmental and military service efforts to reduce demand for mobility energy, and (3) DOD's management approach to guide and oversee these efforts. This statement is based primarily on the work we conducted for a report that we issued today that addresses DOD's management of energy reduction efforts for military operations.<sup>3</sup> As part of this work, we reviewed several DOD-sponsored studies that have recommended actions DOD could take to

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<sup>1</sup>Energy consumed at fixed installations, referred to as facility energy, accounts for most of DOD's remaining energy use.

<sup>2</sup>Defense Science Board Task Force on DOD Energy Strategy, *More Fight—Less Fuel* (February 2008).

<sup>3</sup>GAO, *Defense Management: Overarching Organizational Framework Needed to Guide and Oversee Energy Reduction Efforts for Military Operations*, [GAO-08-426](#) (Washington, D.C.: Mar. 13, 2008).

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better manage its mobility energy challenges.<sup>4</sup> We have also had an opportunity to review the February 2008 Defense Science Board report. We conducted this performance audit from September 2007 through March 2008 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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## Summary

Several issues, such as rising fuel costs, worldwide energy demand, and the high fuel burden during operations, underscore the importance of energy to DOD. Fuel costs for DOD are substantial and the volatility of world oil prices will likely continue to affect the department—which may require DOD to make difficult trade-offs, such as redirecting funds from ongoing programs to pay for needed fuel. In addition, both the Army and Marine Corps have plans to grow their forces over the next several years, which will inevitably require larger amounts of fuel to sustain these forces and their weapons systems. Other energy issues that are likely to affect DOD in the future are the increased U.S. dependence on foreign oil, projected increases in the worldwide demand for oil, and uncertainties about world oil supplies. Furthermore, DOD's high fuel requirements on the battlefield can place a significant logistics burden on military forces; limit the range and pace of operations; and add to mission risks, including exposing supply convoys to attack. Given these issues, DOD must be well positioned to effectively manage energy demands for military operations.

DOD and the military services have several initiatives under way to reduce demand for mobility energy. At the department level, the Office of the Secretary of Defense (OSD) created a task force in 2006 to address energy security concerns. Moreover, in 2007, the Deputy Secretary of Defense included energy in DOD's list of the top 25 transformational priorities for the department as part of its initiative to pursue targeted acquisition reforms. Each of the military services also has its own initiatives under way to reduce mobility energy demand. The Army is addressing fuel

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<sup>4</sup>Defense Science Board Task Force on Improving Fuel Efficiency of Weapons Platforms, *More Capable Warfighting Through Reduced Fuel Burden* (January 2001). The JASONS, *Reducing DOD Fossil-Fuel Dependence*, JSR-06-135 (September 2006). LMI, *Transforming the Way DOD Looks at Energy: An Approach to Establishing an Energy Strategy*, Report FT602T1 (April 2007).

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consumption at forward-deployed locations by developing foam-insulated tents and temporary dome structures that are more efficient to heat and cool, reducing the demand for fuel-powered generators. The Navy has established an energy conservation program to encourage ships to reduce energy consumption. The Air Force has developed an energy strategy and undertaken initiatives to determine fuel-efficient flight routes, reduce the weight on aircraft, optimize air refueling, and improve the efficiency of ground operations. The Marine Corps has initiated research and development efforts to develop alternative power sources, such as hybrid power, and improve fuel management.

While these and other individual efforts are under way to reduce mobility energy demand, we found that DOD does not have an overarching organizational framework to guide and oversee these efforts. Our prior work has shown that an overarching organizational framework is critical to successful transformation in both public and private organizations. Key elements of such a framework include (1) top-level leadership and an implementation team with dedicated resources and funding; (2) a comprehensive strategic plan that includes goals, objectives, methods, timelines, and outcome-oriented performance metrics; and (3) a communication strategy that provides shared expectations and reports related progress. We found that DOD's current approach to mobility energy lacks these elements. For example, while DOD has begun to increase management attention on energy issues, it has not designated a single executive-level OSD official—supported by an implementation team—who is accountable for mobility energy matters across the department, who participates in top policy-making decisions as an advocate for reducing mobility energy demand, and who serves as a stakeholder in interagency discussions about national energy concerns. Currently, DOD's approach to mobility energy is decentralized, with fuel oversight and management responsibilities diffused among several OSD and military service offices as well as working groups. In addition, until DOD fully develops and implements a comprehensive strategic plan for mobility energy, it cannot be certain that mobility energy reduction efforts align with the department's energy mission or strategic goals to ensure that they are appropriately prioritized or to know whether critical gaps or duplication of efforts exist. Finally, without an effective mechanism to facilitate communication of mobility energy reduction efforts among OSD and the military services, DOD cannot be assured that these efforts are consistent with DOD's energy priorities and goals. We also found that DOD has made limited progress in incorporating fuel efficiency as a consideration in key business processes—which include developing requirements for and acquiring new weapons systems—and in

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implementing recommendations from department-sponsored studies on fuel reduction. With a mobility energy overarching organizational framework in place, DOD would be better positioned to reduce its significant reliance on petroleum-based fuel and to address the energy challenges of the 21st century.

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## Several Issues Underscore Importance of Energy to DOD

Several issues, such as rising fuel costs, worldwide energy demand, and the high fuel burden during operations, underscore the importance of energy to DOD. Fuel costs for DOD are substantial and the volatility of world oil prices will likely continue to affect the department. For example, in fiscal year 2007, DOD reported that it consumed almost 4.8 billion gallons of mobility fuel and spent \$9.5 billion. Although fuel costs represent less than 3 percent of the total DOD budget, they have a significant impact on the department's operating costs. DOD has estimated that for every \$10 increase in the price of a barrel of oil, DOD's operating costs increase by approximately \$1.3 billion. Furthermore, during a 2007 military energy security forum, DOD officials discussed the possibility of oil prices rising to as much as \$200 a barrel if a major disruption were to occur. Rising fuel costs may require DOD to make difficult trade-offs, such as redirecting funds from ongoing programs to pay for needed fuel. In addition, both the Army and Marine Corps have plans to grow their forces over the next several years, which will inevitably require larger amounts of fuel to sustain these forces and their weapons systems.

Other energy issues that are likely to affect DOD in the future are the increased U.S. dependence on foreign oil, projected increases in the worldwide demand for oil, and uncertainties about world oil supplies. In 2007, about 67 percent of the oil consumed in the United States was imported, and the increased energy dependence on other countries raises concern about instability in the Middle East and elsewhere.<sup>5</sup> In addition, the Department of Energy projects that worldwide oil demand will continue to grow, reaching 118 million barrels per day in 2030, up from 84 million barrels per day in 2005. Although countries such as China and India will generate much of this increased demand, the United States will remain the world's largest oil consumer. Moreover, more than 60 percent of world oil reserves are in countries where relatively unstable political conditions could constrain oil exploration and production. Furthermore, worldwide

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<sup>5</sup>GAO, *Department of Energy: Oil and Natural Gas Research and Development Activities*, [GAO-08-190R](#) (Washington, D.C.: Nov. 6, 2007).

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supplies of oil from conventional sources remain uncertain. U.S. oil production peaked around 1970, and worldwide production could peak and begin to decline. Although there is great uncertainty about when this might happen, most studies estimate that oil production will peak sometime between now and 2040.<sup>6</sup> These issues, as well as the increasing threat of climate change, may lead to global instabilities that could require DOD to conduct operations in some of these regions and protect oil supply routes and critical infrastructure—all of which would ultimately lead to increased fuel requirements for the department.

In addition, DOD's high fuel requirements on the battlefield can place a significant logistics burden on military forces, limit the range and pace of operations, and add to mission risks. For example, for current operations, the fuel logistics infrastructure requires, among other things, long truck convoys that move fuel to forward-deployed locations while being exposed to potential enemy attacks. Combatant commanders may also face additional risks related to fuel disruptions in operations. For instance, according to a U.S. Central Command official, changes in customs procedures, truck driver strikes, refinery maintenance, road construction, and holiday periods may close border crossings for long periods of time, possibly resulting in the interruption of fuel supplies to forward-deployed locations. Moreover, a 2007 LMI report stated that the department's increasing fuel demand limits its ability to establish a more mobile and agile force.

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## DOD and the Military Services Have Made Efforts to Reduce Mobility Energy Demand

DOD and the military services have made efforts to reduce mobility energy demand for their forces and in their weapons systems. At the department level, OSD created the DOD Energy Security Task Force in 2006—consisting of an integrated product team, several working groups, and a senior steering group—to address long-term energy security concerns. Among other activities, the task force is monitoring the progress of selected military service-led research and development projects (see table 1) that have the potential for reducing mobility energy demand.

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<sup>6</sup>For a discussion of issues surrounding peak oil production, see GAO, *Crude Oil: Uncertainty about Future Oil Supply Makes It Important to Develop a Strategy for Addressing a Peak and Decline in Oil Production*, [GAO-07-283](#) (Washington, D.C.: Feb. 28, 2007).

**Table 1: Selected Energy-Related Research and Development Projects Being Monitored by DOD’s Energy Security Task Force**

Category	Project name	Description
Air platforms	Highly Efficient Embedded Turbine Engine	Develop a variable core engine to reduce fuel consumption in unmanned aerial vehicles, transport aircraft, and other aircraft.
	Small Heavy Fueled Engine	Extend the duration of unmanned aerial vehicle engines from 3-4 to 6-8 hours to increase fuel efficiency and reduce the logistics tail by using a single battlefield fuel; plan to apply to mobile ground power generators.
	Long-Range Unmanned Aerial Vehicles	Extend flight time of unmanned aerial vehicles for up to 6-7 days for increased fuel efficiency and savings over conventional surveillance and reconnaissance platforms.
Ground vehicles	Fuel-Efficient Ground Vehicle Demonstrator	Identify opportunities in fuel-efficient technologies to build a virtual vehicle that will demonstrate decreased fuel consumption in a tactical vehicle without decreasing performance or capability.
Power systems	Fuel Cell Research	Develop and demonstrate compact and mobile fuel cell systems to provide onboard power generation for increasing power demands and to reduce battery weight.
	Transportable Hybrid Electric Power Supply	Provide hybrid electric power generators to reduce diesel fuel usage and resupply requirements.
	Hybrid Intelligent Power	Automate generators on the battlefield to turn on and off as needed to minimize fuel use and reduce maintenance needs, personnel requirements, and power interruptions.

Source: DOD.

In addition to focusing on research and development initiatives, DOD has recognized a need to factor energy efficiency considerations into its acquisition process. In 2007, the Deputy Secretary of Defense included energy in DOD’s list of the top 25 transformational priorities for the department as part of its initiative to pursue targeted acquisition reforms. Also in 2007, the Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics established a DOD policy to include the fully burdened cost of fuel—that is, the total ownership cost of buying, moving, and protecting fuel in systems during combat—for the acquisition of all tactical systems that create a demand for energy.<sup>7</sup> To incorporate the fully burdened cost of energy into acquisition decisions, OSD initiated a pilot program that includes three systems: the Army and Marine Corps’ Joint Light Tactical Vehicle, the Navy’s new CG(X) cruiser, and the Air Force’s Next-Generation Long-Range Strike aircraft.

<sup>7</sup>Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics Memorandum, “Fully Burdened Cost of Fuel Pilot Program,” April 10, 2007.



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In another initiative, the Joint Staff added language to its guidance in May 2007 requiring that an energy efficiency key performance parameter be selectively considered in the development of capability needs for new systems.<sup>8</sup> The guidance defines a key performance parameter as an attribute or characteristic of a system that is considered critical or essential to the development of an effective military capability.

In addition, each of the military services has its own initiatives under way to reduce mobility energy demand. The following highlights several key efforts and is not intended to be a comprehensive listing of all fuel reduction efforts.

**Army.** The Army is addressing fuel consumption at forward-deployed locations by developing foam-insulated tents and temporary dome structures that are more efficient to heat and cool and therefore could reduce the demand for fuel-powered generators at these locations. Another initiative is the development of a transportable hybrid electric power station, which uses wind, solar energy, a diesel generator, and storage batteries to provide reliable power with fewer fuel requirements.

**Navy.** The Navy has established an energy conservation program aimed at encouraging ships to reduce energy consumption. The energy conservation program provides training materials, such as a shipboard energy conservation manual and a pocket guide to assist commanders with energy-saving activities. The program also gives quarterly awards to ships that use less than the Navy's established baseline amount of fuel. The Navy has also made ship design alterations to reduce fuel demand.

**Air Force.** The Air Force has identified and begun to implement initiatives aimed at reducing mobility energy demand and increasing fuel efficiency, aligning these initiatives with its energy strategy. These initiatives include determining fuel-efficient flight routes, reducing the weight on aircraft, optimizing air refueling, and improving the efficiency of ground operations. In addition, it is testing synthetic fuels in its aircraft that could partly displace the use of petroleum-based fuel.

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<sup>8</sup>Joint Chiefs of Staff Instruction 3170.01F, *Joint Capabilities Integration and Development System* (May 1, 2007) and Joint Chiefs of Staff Manual 3170.01C, *Operation of the Joint Capabilities Integration and Development System* (May 1, 2007).

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**Marine Corps.** The Marine Corps has initiated efforts to develop alternative power sources and improve fuel management. For example, it is testing the use of hybrid power—by combining solar panel, generator, and battery energy sources—at remote sites to lessen its fuel transportation demands to forward-deployed locations. In addition, the Office of Naval Research is leading efforts for the Marine Corps to develop decision support tools that process and analyze data and improve fuel management in combat.

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## DOD Has Not Established an Overarching Organizational Framework to Guide and Oversee Mobility Energy Reduction Efforts

While DOD and the military services have several efforts under way to reduce mobility energy demand, DOD has not established an overarching organizational framework to guide and oversee these efforts. In the absence of a framework for mobility energy, we also found that DOD has made limited progress in incorporating fuel efficiency considerations into its key business processes and in implementing recommendations from department-sponsored studies on fuel reduction. In the report that we issued today, we made recommendations that DOD establish an overarching organizational framework for mobility energy. Without such a framework, DOD cannot be assured that its current mobility energy reduction efforts will be fully implemented and will significantly reduce its reliance on petroleum-based fuel.

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## DOD Lacks Key Elements of an Overarching Organizational Framework

Our prior work has shown that an overarching organizational framework is critical to successful transformation in both public and private organizations. The key elements of such a framework include (1) top-level leadership and an implementation team with dedicated resources and funding; (2) a comprehensive strategic plan, including goals and objectives, methods and timelines for evaluating progress, and outcome-oriented performance metrics; and (3) a communication strategy that involves creating shared expectations and reporting related progress.<sup>9</sup> We found that DOD's current approach to mobility energy lacks these elements.

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<sup>9</sup>GAO, *Results-Oriented Cultures: Implementation Steps to Assist Mergers and Organizational Transformations*, GAO-03-669 (Washington, D.C.: July 2, 2003), and *Agencies' Strategic Plans Under GPRA: Key Questions to Facilitate Congressional Review*, GAO/GGD-10.1.16 (Washington, D.C.: May 1997).

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## Top-Level Leadership and Implementation Team

While DOD has begun to increase management attention and has identified energy as a transformational priority, it has not designated a single executive-level OSD official whose primary focus is on mobility energy and who is accountable for these matters across the department. Our prior work has stated that leadership must set the direction, pace, and tone and provide a clear, consistent rationale that brings everyone together behind a single mission.<sup>10</sup> Currently, DOD's approach to mobility energy is decentralized, with fuel oversight and management responsibilities diffused among several OSD and military service offices as well as working groups. DOD directives designate the Under Secretary of Defense for Acquisition, Technology, and Logistics as the department's senior energy official, with responsibility for establishing policies, granting waivers, and approving changes in the management of energy commodities, including petroleum.<sup>11</sup> However, it is unclear the extent to which the Under Secretary or any official from this office provides comprehensive guidance and oversight and sets a direction for mobility energy reduction efforts across the department. In addition, the Under Secretary has a broad range of other responsibilities that include, among other things, matters relating to the DOD acquisition system, research and development, systems engineering, logistics, installation management, and business management modernization. Therefore, the Under Secretary's primary focus has not been on the management of mobility energy.

In addition, DOD's Energy Security Task Force was formed to address long-term energy security concerns, such as DOD's reliance on fossil fuels, but we found that the task force has been unable to develop policy or provide guidance and oversight of mobility energy issues across the department. As indicated in its charter, the task force is required to develop a comprehensive DOD energy strategy and an implementation plan. Among other deliverables, the charter also requires it to define DOD's energy challenge, create a compendium of energy-related works, and perform a strategic assessment of energy. While the task force has taken steps to identify and monitor the progress of selected mobility energy reduction projects across the department, it has not yet completed an energy strategy or implementation plan, as well as other responsibilities. Furthermore, OSD officials told us that while the task

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<sup>10</sup>GAO-03-669.

<sup>11</sup>DOD Directive 4140.25, *DOD Management Policy for Energy Commodities and Related Services* (Apr. 12, 2004), and DOD Directive 5134.01, *Under Secretary of Defense for Acquisition, Technology, and Logistics* (Dec. 9, 2005).

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force has briefed the Deputy Secretary of Defense's advisory group on its recommended projects, it does not have a "seat at the table" in departmental discussions at the Deputy Secretary of Defense level or at other executive levels, such as the Joint Requirements Oversight Council, the Defense Acquisition Boards, or the 3-Star Group within DOD's Planning, Programming, Budgeting, and Execution process, as an advocate for reducing mobility energy demand.<sup>12</sup>

DOD also does not have an implementation team in place, with dedicated resources and funding, to address mobility energy issues. For example, the officials who lead DOD's Energy Security Task Force's integrated product team do so as an extra responsibility outside of their normal work duties. Other DOD officials said that the task force provides a good forum for sharing energy ideas across the department but lacks adequate staff to carry out specific actions. Furthermore, a task force participant told us that it can be difficult to find time to attend meetings while balancing other duties. The task force also does not receive any dedicated funding to pursue department-level energy priorities. Without a long-term funding mechanism, DOD may not be able to ensure that mobility energy reduction efforts receive sustained funding over a period of years.

Moreover, DOD may not be well positioned to serve as a focal point on mobility energy within the department, with Congress, and with the Department of Energy or other interagency partners. During a military energy security forum held at the National Defense University in November 2007, representatives from various DOD offices presented energy as an area that is significant to a breadth of issues ranging from force protection to global stability to the security of DOD's critical infrastructure. They also noted that DOD has the potential to play multiple roles with respect to energy, including consumer, market leader, educator/motivator, oil infrastructure protector, and warfighter supporter. These concerns, coupled with an increased national and congressional interest in reducing fossil fuel dependence and exploring alternative energies, will likely necessitate an increased leadership focus on long-term energy issues, both within DOD and in its role as a stakeholder in interagency and national dialogues.

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<sup>12</sup>The 3-Star Group within DOD's Planning, Programming, Budgeting, and Execution process includes members from OSD's Director of Program Analysis and Evaluation; OSD's under secretaries of defense; the Joint Staff Director for Structure, Resources, and Assessment; and the military services' 3-Star programmers. This group addresses major issues and presents decision options to the Secretary of Defense.

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## Comprehensive Strategic Plan

DOD has not yet developed a comprehensive strategic plan for mobility energy, although it has taken some steps to lay the foundation for mobility energy strategic planning. According to OSD officials, DOD has begun to incorporate mobility energy issues into its *Guidance on the Development of the Force*, a department-level strategic planning document. In addition, the Office of the Deputy Assistant Secretary of Defense for Policy Planning, within the Office of the Under Secretary of Defense for Policy, is analyzing future energy concerns for the United States and the international security environment and highlighting their implications for the department. DOD officials said that the analysis is expected to provide information for consideration in the development of future strategic planning documents. We also observed that the DOD Energy Security Task Force has begun efforts to define goals that eventually may be incorporated into a DOD energy security strategic plan. OSD officials told us that the task force's intent is to complete this strategic plan by May 2008. However, current DOD strategic planning documents, such as the *National Military Strategy* and the most recent *Quadrennial Defense Review*, do not address mobility energy reduction.<sup>13</sup> Furthermore, until DOD fully develops and implements a comprehensive strategic plan for mobility energy, it cannot be certain that mobility energy reduction efforts align with the department's energy mission or strategic goals, ensure that they are appropriately prioritized, or know whether critical gaps or duplication of efforts exist.

## Communication Strategy

DOD does not have an effective mechanism to facilitate communication and coordination of mobility energy reduction efforts among OSD and the military services. In addition, we found a lack of cross-service coordination concerning mobility energy reduction initiatives. While DOD's Energy Security Task Force aims to identify key players within the energy field, its current structure does not ensure departmentwide communication of fuel reduction efforts, particularly among the military services, which are responsible for most of these efforts. More specifically, during our observation of a task force monthly meeting, we found that although this venue provides for some sharing of information, the generally less than 2 hours allotted for each monthly meeting does not

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<sup>13</sup>The *National Military Strategy*, signed by the Chairman of the Joint Chiefs of Staff, is guided by the goals and objectives contained in the present *National Security Strategy* and serves to implement the Secretary of Defense's *National Defense Strategy*. The *Quadrennial Defense Review*, prepared by the Secretary of Defense every 4 years, assesses the nature and magnitude of the political, strategic, and military risks associated with executing the missions called for under the *National Defense Strategy*.

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allow for effective coverage of the spectrum of DOD's mobility energy issues. Moreover, we noted in our report that although the task force's senior steering group includes, among others, the service under secretaries and assistant secretaries; the Director, Defense Research and Engineering; and several principal deputy under secretaries of defense, it only meets two to three times a year. Additionally, with the exception of the Air Force, none of the other military service members on the senior steering group have primary responsibility for mobility energy efforts within their services. Without executive-level focal points, the military services may not be well positioned to effectively coordinate on mobility energy efforts across the department or provide leadership or accountability for efforts within their services. Furthermore, DOD cannot be assured that energy reduction efforts are consistent with DOD's energy priorities and goals.

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### DOD Has Made Limited Progress in Incorporating Fuel Efficiency into Key Business Processes and in Implementing Recommendations from Department-Sponsored Studies

In the absence of an overarching organizational framework, DOD has made limited progress in incorporating fuel efficiency as a consideration in key business processes—which include developing requirements for and acquiring new weapons systems—and in implementing recommendations made in department-sponsored studies on fuel reduction.

### DOD Has Not Yet Fully Incorporated Fuel Efficiency Considerations into Its Key Business Processes

While DOD has recently begun to take some steps to integrate fuel considerations into its key departmental business processes, such as its requirements development and acquisition processes for new weapons platforms and other mobile defense systems, these considerations are not factored in a systematic manner and cannot be fully applied. For example, DOD's requirements development process does not systematically include energy efficiency considerations, and the capability gap assessments associated with the process do not include fuel-related logistics, thus leaving these types of issues to be resolved after systems are fielded. In May 2007, the Joint Staff established an energy efficiency key performance parameter that would require fuel considerations during capabilities development. However, because DOD has not developed a methodology to determine how best to employ the energy efficiency key performance parameter, its implementation remains uncertain.

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DOD has also taken steps to inform its acquisition process with its pilot program to determine the fully burdened cost of fuel for three mobile defense systems. While the pilot program represents a step toward providing visibility over the total logistics costs associated with delivered fuel and DOD has set a fall 2008 deadline to issue guidance for applying the fully burdened cost of fuel in acquisition programs, DOD has not yet developed an approach for determining how it would incorporate this information into its acquisition decision-making process. Until the pilot program is completed and the results are assessed, DOD is not in a position to apply a fully burdened cost analysis to its acquisition process. Thus, the department is unable to promote greater visibility over its acquisition decisions or more fully consider the operational and cost consequences of the fuel burden on the logistics infrastructure.

Other key DOD business processes, such as those that address repair, recapitalization, and replacement of mobile defense systems, also present opportunities to incorporate fuel efficiency measures during system upgrades. However, OSD officials told us that the department generally makes decisions about system upgrades without regard to fuel efficiency, including the fully burdened cost of fuel, in part because such decisions require greater up-front costs. Although DOD recognizes that by reducing energy demand it can provide its forces greater flexibility and reduce their dependency on the logistics infrastructure, some OSD officials told us that DOD's budget process promotes a short-term outlook and does not encourage the purchase of fuel-efficient systems or upgrades that may initially cost more but could reduce life cycle and logistics costs over the long term. Moreover, the 2008 Defense Science Board report noted that DOD's lack of tools to assess the operational and economic benefits of fuel efficiency technologies is a major reason why DOD underinvests in the development and deployment of these technologies.

### DOD Has Been Slow to Implement Recommendations from Department-Sponsored Studies on Fuel Reduction

In the absence of an overarching organizational framework, DOD has made limited progress in implementing recommendations from department-sponsored studies by organizations such as the Defense Science Board, The JASONs, and LMI that have urged an expansion of efforts to reduce dependency on petroleum-based fuel. These studies confirmed that for many reasons, continued heavy reliance on petroleum-based fuel poses a significant problem for DOD. For example, LMI reported that DOD's increasing fuel demand furthers the nation's reliance on foreign energy sources and, as we mentioned previously, limits the department's ability to establish a more mobile and agile force. The studies found a need to focus more DOD management attention on mobility energy matters and recommended actions aimed at, among other things,

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improving the fuel efficiency of weapons platforms, eliminating institutional barriers that bear upon the department's decisions regarding fuel efficiency, and developing a long-term mobility energy strategy that would lead to reduced consumption of petroleum-based fuel.

DOD has not taken a formal position on these recommendations, and implementation, in some cases, would require significant changes throughout the department that could generate institutional resistance. One study, for example, called for creating a unified energy governance structure in order to alter DOD's "energy culture." During our review, we found that DOD had taken some steps toward implementing some of the recommendations, such as initiating a pilot program for determining the fully burdened cost of delivered fuel and adding a requirement for a fuel efficiency key performance parameter in its Joint Staff policy manual. However, other recommendations, such as establishing a governance structure for mobility energy, have not been implemented. Furthermore, the 2008 Defense Science Board report noted that the recommendations made by the 2001 Defense Science Board report are still open and remain viable. Our report, which was issued today, presented the recommendations from these department-sponsored studies and actions DOD has taken in more detail. We also concluded that an overarching organizational framework could better position DOD to address these and other fuel reduction recommendations in a more timely and effective manner.

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## Overarching Organizational Framework Needed to Better Position DOD to Address Mobility Energy Challenges

In the report we issued today, we recommended that DOD establish an overarching organizational framework for mobility energy to improve the department's ability to guide and oversee mobility energy reduction efforts.<sup>14</sup> To establish such a framework, DOD should designate an executive-level OSD official who is accountable for mobility energy matters; develop a comprehensive, departmentwide strategic plan; and improve DOD's business processes to incorporate energy efficiency considerations. In addition, we recommended that the military services designate executive-level focal points to establish effective communication and coordination among OSD and the military services on departmentwide mobility energy reduction efforts as well as to provide leadership and accountability over their own efforts. With a mobility energy overarching organizational framework in place, DOD would be

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<sup>14</sup>GAO-08-426.



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better positioned to reduce its significant reliance on petroleum-based fuel and to address the energy challenges of the 21st century. In commenting on a draft of our report, DOD partially concurred with our recommendations.

Mr. Chairman and Members of the Subcommittee, this concludes my prepared statement. I would be happy to answer any questions that you may have at this time.

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## Contact and Acknowledgments

For further information regarding this testimony, please contact William Solis at (202) 512-8365 or [solisw@gao.gov](mailto:solisw@gao.gov). In addition, contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this statement. Individuals who made key contributions to this testimony are Thomas Gosling, Assistant Director; Karyn Angulo; Alissa Czyz; and Marie Mak.

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