APPENDIX

Exhibit A-1

AGGREGATE FEDERAL SUBSIDIES FOR OIL, BY TYPE
(Millions of 1995$, By Functional Category, Net of Offsetting Collections)

Program/Provision	Type of Intervention	Oil Subsidy Estimate Low	High	Description
RESEARCH AND DEVELOPMENT/ PROVISION OF BASIC MARKET INFORMATION				
Support for OIL R&D				
Tax credits and expensing for research expenditures				
- Expensing of research and experimentation expenditures	TAX	15	25	Allows multi-year R&D spending to be written off in a single year rather than capitalized.
- Credit for increasing research activities	TAX	18	28	Provides additional tax credits for increasing spending on R&D.
R&D for oil exploration and production				
- U.S. Department of Energy, Fossil Energy R&D	PROG	118	118	Direct government support for R&D related to oil exploration, production, and downstream processing
Research on oil contamination				
- United States Geological Survey	PROG	10	19	
- U.S. Minerals Management Service*	PROG	0	0	Financed through Oil Spill Liability Trust Fund.
Provision of Basic Market Information				
Research on oil production and markets				
- U.S. Energy Information Administration	PROG	54	54	Provision of basic information on oil prices, markets, and market structure.
SUBTOTAL		**215**	**243**	
PERCENT OF TOTAL SUBSIDY, excl. Defense		**4.1%**	**2.0%**	
PERCENT OF TOTAL SUBSIDY, incl. Defense		**1.4%**	**0.7%**	
EXPLORATION AND PRODUCTION				
Tax provisions for oil exploration and production activities				
- Expensing of exploration and development costs	TAX	(146)	243	Allows expenses related to multi-year oil well assets to be deducted from taxes in the current year rather than capitalized.
- Excess of percentage over cost depletion	TAX	335	746	Allows firms to deduct more than their investment in oil properties from their taxes.
- Alternative (non-conventional) fuel production credit	TAX	10	27	Provides tax credits for oil extracted from more complicated formations, such as oil shale.
- Exception from passive loss limitation for working interests in oil properties	TAX	31	31	Exempts certain oil properties from standard limitations on offsetting losses from passive investments from other income.
- Enhanced oil recovery credit	TAX	25	25	Provides tax credits for oil recovery using "enhanced" techniques.
- Expensing of tertiary injectants	TAX	25	25	Allows the costs of tertiary recovery to be written off in the year incurred rather than capitalized and depreciated over the life of the oil property.
Credits and deferrals for foreign oil income				
- Deferral of income from controlled foreign corporations	TAX	62	303	Allows oil companies to delay payment of U.S. taxes due on earnings from certain foreign corporations.
- Foreign Tax Credit	TAX	486	1,057	Allows foreign tax payments to be credited against U.S. taxes due, even though these tax payments are sometimes more properly classified as royalties (which can only be deducted from taxable income).
Accelerated depreciation of oil-related capital				
- Accelerated depreciation of buildings other than rental housing	TAX	234	355	Allows buildings owned by the oil industry to be depreciated more quickly than their actual service lives.
- Accelerated depreciation of machinery and equipment	TAX	720	976	Allows machinery and equipment within the oil industry to be depreciated more quickly than their actual service
Provisions for Alaska Native Corporations				

Exhibit A-1

AGGREGATE FEDERAL SUBSIDIES FOR OIL, BY TYPE
(Millions of 1995$, By Functional Category, Net of Offsetting Collections)

Program/Provision	Type of Intervention	Oil Subsidy Estimate Low	High	Description
- Exemptions from net operating loss restrictions for Alaska Native Corporations.	TAX	5	8	Exempts Alaskan Native Corporations (many of whom are involved with oil production or field servicing) to sell their losses to other firms to offset taxable income in those firms. This practice is not generally allowed.
Geologic mapping, energy resource surveys, and research helpful in locating oil				
- U.S. Geological Suvey	PROG	10	24	Development of baseline geologic data on energy resources.
Lending program subsidies for foreign oil				
- U.S. Export-Import Bank	FIN	197	241	Subsidized loans and insurance to support the sale of oil-related equipment and consulting services abroad by U.S. corporations.
- U.S. Overseas Private Investment Corporation	FIN	10	31	Subsidized loans and insurance to support the sale of oil-related equipment and consulting services abroad by U.S. corporations.
SUBTOTAL		**2,005**	**4,093**	
PERCENT OF TOTAL SUBSIDY, excl. Defense		**38.6%**	**34.5%**	
PERCENT OF TOTAL SUBSIDY, incl. Defense		**12.8%**	**11.6%**	

SUPPORT FOR OIL-RELATED TRANSPORTATION

Program/Provision	Type of Intervention	Low	High	Description
Provision and maintenance of transportation infrastructure and services				
- Exclusion of interest on IDBs for seaports and marine terminals	TAX	50	77	Allows certain marine assets, heavily used for oil shipments, to be built with tax-exempt bond issues.
- U.S. Army Corps of Engineers	PROG	239	259	Maintenance of waterways heavily used by oil tankers and barges.
- U.S. Coast Guard	PROG	308	308	Maintenance of coastal shipping; provision of navigational support; ice clearing.
- U.S. National Oceanic and Atmospheric Administration	PROG	NQ	NQ	Develops and improves navigational aids and provides marine predictions.
Financial support for U.S. flag ship operators				
- Deferral of tax on shipping companies	TAX	10	48	Allows payment of taxes to be deferred by certain shipping companies, including some used to transport oil.
- U.S. Maritime Administration	FIN	84	84	Provision of subsidies to U.S. built ships, including oil tankers.
SUBTOTAL		**690**	**776**	
PERCENT OF TOTAL SUBSIDY, excl. Defense		**13.3%**	**6.5%**	
PERCENT OF TOTAL SUBSIDY, incl. Defense		**4.4%**	**2.2%**	

SECURITY OF OIL SUPPLY

Program/Provision	Type of Intervention	Low	High	Description
Defense of Oil Shipments and Infrastructure				
- Department of Defense				
Domestic Supply	PROG	NQ	NQ	Defense operations to protect and secure domestic oil supplies within Alaska.
Foreign Supply	PROG	10,459	23,333	Defense operations to protect and secure oil shipments from the Persian Gulf.
Security from Price Shocks				

Exhibit A-1

AGGREGATE FEDERAL SUBSIDIES FOR OIL, BY TYPE
(Millions of 1995$, By Functional Category, Net of Offsetting Collections)

Program/Provision	Type of Intervention	Oil Subsidy Estimate Low	Oil Subsidy Estimate High	Description
- Department of Energy Strategic Petroleum Reserve	PROG	1,560	5,427	Storage of crude oil to be sold during price shocks and supply disruptions to stablize domestic supply.
SUBTOTAL, excl. defense		**1,560**	**5,427**	
SUBTOTAL, incl. defense		**12,019**	**28,760**	
PERCENT OF TOTAL SUBSIDY, excl. Defense		**30.0%**	**45.8%**	
PERCENT OF TOTAL SUBSIDY, incl. Defense		**76.8%**	**81.7%**	

REGULATORY OVERSIGHT AND RESPONSE TO OIL CONTAMINATION

Program/Provision	Type of Intervention	Oil Subsidy Estimate Low	Oil Subsidy Estimate High	Description
Market Regulation				
- U.S. Federal Energy Regulatory Commission*	REG	(0)	(0)	Oversight of oil pipeline transport. Supported through user fees.
Transportation Oversight				
- U.S. Coast Guard	REG	105	105	Vessel licensing, inspections, plan reviews, and other shipping oversight.
Environmental Oversight				
Industry Regulation				
- U.S. Environmental Protection Agency	REG	NQ	NQ	Regulates oil industry impacts on environmental quality. Oil spill response functions supported through user fees; other activities not quantified.
- U.S. Coast Guard*	REG	0	0	Certifies that vessels can meet their maximum financial responsibility if there is an oil spill. Funded through user fees.
- U.S. Research and Special Programs Administration, Office of Pipeline Safety*	REG	0	0	Oversight of oil pipeline safety. Funded through user fees and the Oil Spill Liability Trust Fund
Oil Spill Response				
- U.S. Environmental Protection Agency*	PROG	0	0	Coordinates response activities for inland oil spills. Funded through Oil Spill Liability Trust Fund.
- U.S. Coast Guard*	PROG	0	0	Coordinates oil spill response for coastal oil spills and administers Oil Spill Liability Trust Fund. Funded through the trust fund.
- U.S. Fish and Wildlife Service	PROG	NQ	NQ	Oil contamination prevention and response; restoration of damaged resources.
- U.S. National Oceanic and Atmospheric Administration	PROG	NQ	NQ	Natural resource damage assessment and restoration. Funded, at least in part, by Oil Spill Liability Trust Fund and settlement money.
- U.S. Army Corps of Engineers*	PROG	0	0	Development of advanced displays, maps, and data management systems to provide rapid information for responding to oil spills. Funded by the Oil Spill Liability Trust Fund.
- U.S. Navy Supervisor of Salvage	PROG	0	18	Maintains inventory of equipment for responding to oil spills, including commercial spills. Low estimate assumes funded through user fees.
Other Environmental Programs				
- U.S. Coast Guard	REG	43	43	Marine environmental protection.
SUBTOTAL		**147**	**166**	
PERCENT OF TOTAL SUBSIDY, excl. Defense		**2.8%**	**1.4%**	
PERCENT OF TOTAL SUBSIDY, incl. Defense		**0.9%**	**0.5%**	

Exhibit A-1

AGGREGATE FEDERAL SUBSIDIES FOR OIL, BY TYPE
(Millions of 1995$, By Functional Category, Net of Offsetting Collections)

Program/Provision	Type of Intervention	Oil Subsidy Estimate Low	Oil Subsidy Estimate High	Description
TRANSFER OF OIL-RELATED LIABILITY TO PUBLIC SECTOR				
Bonding Shortfall for Existing Wells				Annualized shortfall in bonding levels needed to cover existing liabilities on on-going operations. The cost to remediate past problems has not been included.
- On-shore wells	RISK	119	451	
- Off-shore wells and platforms	RISK	53	106	
Residual Liability on Orphaned Wells†	RISK	44	111	
Oil Spills				
- Oil Pollution Act	RISK	ND	ND	Established vessel liability limits for damages from oil spills. Oil Spill Liability Trust Fund absorbs unrecovered federal costs for spill response, damage assessment, restoration, and damage claims.
Decomissioning Pipelines	RISK	ND	ND	Cost to remediate, dismantle, and decommission pipelines no longer in use for moving oil.
SUBTOTAL		**171**	**557**	
PERCENT OF TOTAL SUBSIDY, excl. Defense		**3.3%**	**4.7%**	
PERCENT OF TOTAL SUBSIDY, incl. Defense		**1.1%**	**1.6%**	
COST OF ACCESS TO OIL RESOURCES				
Provision of Property Rights				
- Alaska Native Claims Settlement Act	ACCESS COST	ND	ND	Cash compensation for land claimed by Alaskan natives, including important oil producing areas and transportation corridors. Oil development was a central driver of the timing and speed of the Act's passage.
Royalty Undercollection or Reductions				
- Annualized Losses due to Artificially Low Posted Prices	ACCESS COST	31	130	Under-collection due to use of below market prices in computation of production value by integrated companies.
- Lapses in BLM Royalty Auditing	ACCESS COST	50	75	Under-collection of royalties owed due to lapses in BLM auditing practices.
- Royalty Relief for Deepwater Oil†	ACCESS COST	12	12	Took effect in 1996; not included in totals because it was not in effect in our base year, 1995.
Management of Leases				
- Bureau of Land Management†	REG	47	47	Management of onshore oil leases and rights-of-way on public lands; resource management planning.
- Minerals Management Service†	REG	80	80	Manages leasing operations on Outer Continental Shelf land and receipts from oil production on all public land.
SUBTOTAL		**81**	**205**	
PERCENT OF TOTAL SUBSIDY, excl. Defense		**1.6%**	**1.7%**	
PERCENT OF TOTAL SUBSIDY, incl. Defense		**0.5%**	**0.6%**	
ASSISTANCE FOR ENERGY CONSUMERS				
Department of Health and Human Services	PROG	274	274	Subsidizes home energy costs for low income households.
SUBTOTAL		**274**	**274**	

Exhibit A-1

AGGREGATE FEDERAL SUBSIDIES FOR OIL, BY TYPE
(Millions of 1995$, By Functional Category, Net of Offsetting Collections)

Program/Provision	Type of Intervention	Oil Subsidy Estimate Low	Oil Subsidy Estimate High	Description
PERCENT OF TOTAL SUBSIDY, excl. Defense		**5.3%**	**2.3%**	
PERCENT OF TOTAL SUBSIDY, incl. Defense		**1.8%**	**0.8%**	
CROSSCUTTING TAX PROVISIONS				
Incremental reduction in state taxes taxes due to Federal tax breaks benefiting oil	TAX	56	119	State taxes owed generally use the federal "adjusted gross income" value as the basis for state taxes owed. Thus, federal breaks also reduce state taxes.
SUBTOTAL		**56**	**119**	
PERCENT OF TOTAL SUBSIDY, excl. Defense		**1.1%**	**1.0%**	
PERCENT OF TOTAL SUBSIDY, incl. Defense		**0.4%**	**0.3%**	
SUBSIDY OFFSETS				
Federal subsidy offsets from special taxes on oil	OFF	0	0	Subsidies for federal programs reported above are net of offsetting tax revenues used to fund those programs.
SUBTOTAL		**0**	**0**	
PERCENT OF TOTAL SUBSIDY, excl. Defense		**0.0%**	**0.0%**	
PERCENT OF TOTAL SUBSIDY, incl. Defense		**0.0%**	**0.0%**	
TOTAL, excl. Defense of Oil Shipments		**5,200**	**11,859**	
TOTAL, incl. Defense of Oil Shipments		**15,660**	**35,192**	

NQ Stands for "Not Quantified." Limited data were available, but were either insufficient to develop a reasonable estimate, or suggested the subsidy was relatively minor.
ND Stands for "No Data." Data were not available that would permit a subsidy estimate.
* This program is supported by user fees, not general taxes. This program's net subsidy to oil is zero.
† Not included in subsidy totals.

Exhibit A-2

FEDERAL TAX EXPENDITURES BENEFITING OIL, DETAIL
(Millions of Dollars)

	FY1995 Expenditure Estimates*					Oil Share				
Provision	**JCT**	**Treas. Rev Loss**	**Treas. Outlay Equiv.**	**Low**	**High**	**Low**	**High**	**Allocation Base**	**Primary Source of Variance****	**Description**
Tax Provisions Targeted Directly at Oil										
Expensing of exploration and development costs, oil and gas***	500	(300)	(300)	(300)	500	(146)	243	Annual well-feet drilled for oil wells as a percent of total drilled for gas + oil wells.	JCT/Treasury	Allows expensing, rather than amortization, of certain drilling costs. Integrated companies can deduct 70 percent of eligible costs and amortize remaining 30 percent.
Excess of percentage over cost depletion, oil and gas	600	945	1,335	600	1,335	335	746	This provision is based either on actual capital expenses of exploiting a mineral or on sales revenue. It is allocated based on oil's share of oil and gas value of production.	JCT/Treasury & Est. Meth.	Independent fuel producers and royalty owners deduct 15 percent of gross income from oil and gas production. The deduction can be 100 percent of net property income and can exceed cost of investment.
Alternative (non-conventional) fuel production credit	1,100	970	1,370	970	1,370	10	27	Estimated oil share of provision	Est. Meth.	Credit of $3/barrel (1979 dollars) of oil-equivalent production for several alternative fuels. Applies to oil from oil shales and tar sands.
Exception from passive loss limitation for working interests in oil and gas properties	NA	55	55	55	55	31	31	Oil share of oil and gas value of production	NA	Working interest-holder who manages development of wells and incurs operation costs can aggregate negative taxable income with income from other sources.
Enhanced oil recovery credit	25	NA	NA	25	25	25	25	All Oil	NA	15 percent income tax credit for costs of recovering oil using "enhanced recovery" methods (e.g., tertiary injectants, heat).

Exhibit A-2

FEDERAL TAX EXPENDITURES BENEFITING OIL, DETAIL
(Millions of Dollars)

	FY1995 Expenditure Estimates*					Oil Share				
Provision	**JCT**	**Treas. Rev Loss**	**Treas. Outlay Equiv.**	**Low**	**High**	**Low**	**High**	**Allocation Base**	**Primary Source of Variance****	**Description**
Expensing of tertiary injectants	25	NA	NA	25	25	25	25	All Oil	NA	Allows expensing (deductions in current year instead of amortization) of costs of recovery using tertiary injectants.
Subtotal for Direct Provisions	**2,250**	**1,670**	**2,460**	**1,375**	**3,310**	**280**	**1,097**			
Tax Provisions Targeted at Broader Range of Economic Activity that also Benefit Oil										
Deferral of income from controlled foreign corporations (normal tax method)	1,100	1,700	1,700	1,100	1,700	62	303	Based on estimated share (5-7%) of top 7500 companies claiming the deferral in 1992.	JCT/Treasury & Allocation	Allows companies to defer U.S. taxation on earnings from foreign oil operations.
Foreign Tax Credit				5,661	5,661	486	1,057	Data based on actual deductions by integrated energy producers in EIA Form EIA-28, scaled to reflect O&G production share of foreign income. Estimates assume credit is converted to a deduction for production in some countries.	Allocation	Allows oil companies to deduct from U.S. taxes owed, rather than from U.S. taxable income. Many foreign "taxes" are really royalties, overstating taxes paid to the foreign government.
Expensing of research and experimentation expenditures (normal tax method)	1,000	1,635	1,635	1,000	1,635	15	25	Petroleum share of private R&D	JCT/Treasury	
Credit for increasing research activities	NA	1,185	1,820	1,185	1,820	18	28	Petroleum share of private R&D	Est. Meth.	Tax credit of 20 percent of qualified expenditures above each year's threshold amount -- based on ratio of research expenditures to gross receipts in preceeding years.

Exhibit A-2

FEDERAL TAX EXPENDITURES BENEFITING OIL, DETAIL
(Millions of Dollars)

	FY1995 Expenditure Estimates*					Oil Share				
Provision	**JCT**	**Treas. Rev Loss**	**Treas. Outlay Equiv.**	**Low**	**High**	**Low**	**High**	**Allocation Base**	**Primary Source of Variance****	**Description**
Accelerated depreciation of buildings other than rental housing (normal tax method)	4,900	7,440	7,440	4,900	7,440	234	355	Minimum and maximum estimates of oil's share of new capital expenditures for buildings	JCT/Treasury	Allows depreciation calculations to be based on a shorter time period than under the normal tax method.
Accelerated depreciation of machinery and equipment (normal tax method)	25,600	24,460	24,460	24,460	25,600	720	976	Minimum and maximum estimates of oil's share of expenditures for new, non-building capital	Allocation	Allows depreciation calculations to be based on a shorter time period than under the normal tax method.
Treatment of Alaska Native Corporations	NA	30	30	30	30	5	8	Maximum based on share of AK Native Corporation subsidiaries associated with oil. Minimum based on oil's share of subsidiaries weighted by corporations' individual revenues.	Allocation	Alaska Native Corporations have a limited exemption from restrictions on profitable corporations merging or buying corporations with net operating losses (NOLs) to reduce tax liabilities.
Deferral of tax on shipping companies	100	20	20	20	100	10	48	Oil share of shipping ton-miles.	JCT/Treasury	Companies operating U.S. flag vessels can defer income taxes on income used for shipping purposes (e.g., constructing, modernizing, repairing ships).
Exclusion of interest on industrial development bonds for airports, docks, and sports and convention facilities	800	855	1,240	800	1,240	50	77	Seaport and marine terminal share of municipal bonds; Oil share of domestic shipping (by ton-mile).	Est. Meth.	Allows financing of certain government-owned facilities with tax exempt bonds.
Subtotal for Indirect Provisions	**33,500**	**37,325**	**38,345**	**39,156**	**45,226**	**1,599**	**2,876**			
Subtotal for All Provisions	**35,750**	**38,995**	**40,805**	**40,531**	**48,536**	**1,879**	**3,973**			
Additional Benefits from Federal	1,073	1,170	1,224	1,216	1,456	56	119			Most states base state taxable

Exhibit A-2

FEDERAL TAX EXPENDITURES BENEFITING OIL, DETAIL
(Millions of Dollars)

Provision	FY1995 Expenditure Estimates* JCT	Treas. Rev Loss	Treas. Outlay Equiv.	Low	High	Oil Share Low	High	Allocation Base	Primary Source of Variance**	Description
Tax Breaks on State Taxes										income calculations on federal tax returns. Thus, tax breaks at federal level affect state taxes as well. Conservative estimate that state tax "piggybacking" increases total subsidies by 3 percent.
TOTAL	**36,823**	**40,165**	**42,029**	**41,747**	**49,992**	**1,936**	**4,092**			

Breakout of Foreign vs. Domestic Benefits

	Min	Max
Domestic	1,388	2,733
Foreign	548	1,360

NOTES:

* Several tax provisions that may provide subsidies for oil have not been quantified above. These provisions include the exlusion of income earned abroad by U.S. citizens; the exclusion of income of foreign sales corporations; the inventory property sales source rules exception; the exclusion of interest on public purpose state and local debt; and the maximum 28 percent tax rate on long-term capital gains.

** There are three primary sources for variance between the high and low estimates for tax breaks to oil. "JCT/Treasury" indicates that the variance is caused primarily by differences in the tax expenditure estimates reported by the JCT and Treasury. "Est. Meth." indicates the variance is driven by differences between the Treasury's two estimation methods, revenue losses versus outlay equivalents. The third cause, "Allocation," indicates that we have used two different methods for prorating the expenditure to oil, accounting for the majority of the variance.

*** Tax expenditure estimates for some tax provisions are negative, implying that the Treasury is receiving more money with the subsidy than it would have without it. This occurs due to the timing of tax write-offs, where deductions are higher than the baseline early in the asset life, but lower than the baseline later. The net benefit to the firm (and loss to the Treasury) for these provisions is still positive, since the firm can earn interest on the larger than normal early deductions and pay the later taxes back with inflated dollars.

Exhibit A-2

FEDERAL TAX EXPENDITURES BENEFITING OIL, DETAIL
(Millions of Dollars)

	FY1995 Expenditure Estimates*					Oil Share				
Provision	JCT	Treas. Rev Loss	Treas. Outlay Equiv.	Low	High	Low	High	Allocation Base	Primary Source of Variance**	Description

SOURCES:

U.S. Joint Committee on Taxation, 103d Congress, 2nd Session, *Estimates of Federal Tax Expenditures for Fiscal Years 1995-1999*, November 9, 1994.

U.S. Executive Office of the President, Office of Management and Budget, *Budget of the United States Government, Fiscal Year 1997*, Tables 5-1 and 5-4.

U.S. Energy Information Administration, "Analysis of Income Taxes for FRS Companies, 1977-1995," Form EIA-28, 1997.

Wahl, Jenny B., *Oil Slickers: How Petroleum Benefits at the Taxpayer's Expense*, Institute for Local Self-Reliance, August 1996.

Exhibit A-3a

FEDERAL PROGRAMS BENEFITING OIL IN FY1995, GROSS AND NET VALUES
(Millions of 1995 dollars)

	Gross	Offsetting Collection	Net	Primary Oil-Related Activities
Department of Commerce				
National Oceanic and Atmospheric Administration	NQ			Oil spill response; natural resource damage assessment related to oil spills.
Department of Defense				
Army Corps of Engineers				Maintenance of waterways heavily used by oil tankers
Low Estimate	564	325	239	and barges.
High Estimate	584	325	259	
Navy Supervisor of Salvage				Maintainance of inventory of equipment for responding to
Low Estimate	16	16	0	oil spills, including commercial spills.
High Estimate	18	0	18	
All Branches				Defense of oil shipments and Infrastructure
Defense of Alaskan Oil Shipping	NQ			
Defense of Persian Gulf Oil Shipping				
Low Estimate	10,459	0	10,459	
High Estimate	23,333	0	23,333	
Department of Energy				
Energy Information Administration	54	0	54	Development and maintenance of basic information on petroleum markets
Fossil Energy Related Programs	118	0	118	Research and development related to oil.
Federal Energy Regulatory Commission	25	25	0	Oversight of oil pipeline transport; supported through user fees.
Strategic Petroleum Reserve				Storage of crude oil to be sold during price shocks and
Low Estimate	1,560	0	1,560	supply disruptions to stablize domestic supply.
High Estimate	5,427	0	5,427	
Department of Health and Human Services				
Low Income Home Energy Assistance Program	287	13	274	Block grants to assist low-income households in meeting their home energy needs.
Department of the Interior				
Bureau of Land Management	48	1	47	Management of onshore oil leases on public lands.
Fish and Wildlife Service	NQ			Environmental assessments of oil spill areas or areas under consideration for oil leasing.
Mineral Management Service	91	11	80	Management of offshore oil leasing; management of all oil royalties from oil extraction on public lands.
United States Geological Survey				Development of basic geological and hydrogeological information on oil reserves and other parameters of value for oil extraction. Projects related to subsurface oil contamination.
Low Estimate	28	8	20	
High Estimate	66	23	43	
Department of Transportation				
Coast Guard	527	72	455	Maintenance of coastal shipping; provision of navigational support; ice clearing; oil spill response.
Maritime Administration	86	2	84	Provision of subsidies to U.S. built ships, including oil tankers.
Office of Pipeline Safety	6	6	0	Oversight of oil pipeline safety; supported through user fees.
Environmental Protection Agency	NQ			Oversight of oil industry; oil spill response.
Export-Import Bank				Loans, guarantees, and insurance for U.S. exports.
Low Estimate	NQ	NQ	197	
High Estimate	NQ	NQ	241	
Overseas Private Investment Corporation				Loans, guarantees, and insurance for U.S. business abroad.
Low Estimate	NQ	NQ	10	
High Estimate	NQ	NQ	31	
TOTAL, excluding Defense of Oil Shipping				
Low Estimate	**3,410**	**478**	**3,139**	
High Estimate	**7,336**	**477**	**7,132**	
TOTAL, including Defense of Oil Shipping				
Low Estimate	**13,869**	**478**	**13,599**	
High Estimate	**30,670**	**477**	**30,465**	

* Totals differ from Exhibit 3-1 because they include all federal programs, including defense and the Strategic Petroleum Reserve, discussed in Chapter 4, and the Bureau of Land Management and Minerals Management Service, discussed in Chapter 6.

Exhibit A-3b

DEPARTMENT OF DEFENSE
Army Corps of Engineers
(millions of dollars)

PROGRAM	FY95 Obligations	Total Power or Transport	Beneficiary Sector: Hydro	Beneficiary Sector: Inland Transport	Beneficiary Sector: Coastal Transport (1)	Allocation	Inland Oil	Coastal Oil	Total Oil	Allocation	Description	Source
General Construction											Construction and rehabilitation components of water resources projects.	
Navigation Projects												
Channels and Harbors	117	117			117.0	All to coastal	0.0	51.2	51.2	Oil share of coastal shipping		OMB, A-379 / Bitner
Locks and Dams	247	247		247.0		All to inland transport	56.6	0.0	56.6	Oil share of inland shipping		OMB, A-379
Flood Control												
Multiple-Purpose Power Projects	99	99	99			All hydro	0.0	0.0	0.0	No Oil		OMB, A-379
Major Rehab. and Dam Safety Assurance												
Navigation	21	21		21.0		All to inland transport	4.8	0.0	4.8	Oil share of inland shipping		OMB, A-379
Multiple-Purpose Power Projects	40	40	40			All hydro	0.0	0.0	0.0	No Oil		OMB, A-379
Aquatic Plant Control	12	12		4.0	8.0	Inland/coastal mix	0.9	3.5	4.4	Oil share of inland or coastal shipping		OMB, A-379
Subtotal, Construction	**1038**	**536**	**139**	**272.0**	**125.0**		**62.3**	**54.7**	**117.0**		Sum of line items does not equal subtotal b/c not all line items listed here.	
Construction Spending Mix		51.6%	13.4%	26.2%	12.0%							
Employee Compensation	16	8.3	2.1	4.2	1.9	Construction spending Mix	1.0	0.8	1.8	Oil share of inland or coastal shipping		OMB, A-379
Project Modification for Envir. Restor.	11	5.7	1.5	2.9	1.3	Construction spending Mix	0.7	0.6	1.2	Oil share of inland or coastal shipping		OMB, A-379
Reimbursable Program	350	180.7	46.9	91.7	42.1	Construction spending Mix	21.0	18.4	39.5	Oil share of inland or coastal shipping		OMB, A-379
Total Construction	**1415**	**730.7**	**189.5**	**370.8**	**170.4**		**85.0**	**74.6**	**159.6**		Not all line items listed here. Total is reported in OMB source.	OMB, A-379
Operation and Maintenance											Activities include dredging, repair, operation of structures and facilities, collection of waterborne commerce statistics, aquatic plant control, project monitoring, and removal of sunken vessels.	OMB, A-381
Navigation Projects												
Channels and Harbors	532	532			532.0	All to coastal	0.0	232.9	232.9	Oil share of coastal shipping	This item consists of coastal and Great Lakes navigation projects.	OMB, A-381 / Bitner
Locks and Dams	349	349		349.0		All to inland	80.0	0.0	80.0	Oil share of inland shipping	This item consists of inland navigation projects.	OMB, A-381
Flood Control Projects												
Channel Improvements, Inspections, and Miscellaneous Maintenance	26	26		26.0		All to inland	6.0	0.0	6.0	Oil share of inland shipping		OMB, A-381
Multiple-Purpose Power Projects	409	409	409			All to hydro	0.0	0.0	0.0	Oil share of inland or coastal shipping		OMB, A-381
Protection of Navigation	34	34		11.4	22.6	Inland/coastal mix	2.6	9.9	12.5	Oil share of inland or coastal shipping		OMB, A-381
Subtotal, O&M	1665	1350.0	409.0	386.4	554.6						Sum of line items does not equal subtotal b/c not all line items listed here.	
O&M Spending Mix		81.1%	24.6%	23.2%	33.3%							

Exhibit A-3b

DEPARTMENT OF DEFENSE
Army Corps of Engineers
(millions of dollars)

	FY95 Obligations	Total Power or Transport	Beneficiary Sector: Hydro	Beneficiary Sector: Inland Transport	Beneficiary Sector: Coastal Transport	Allocation	Inland Oil	Coastal Oil	Total Oil	Allocation	Description	Source
Reimbursable Program	8	6.5	2.0	1.9	2.7	O&M Spending Mix	0.4	1.2	1.6	Oil share of inland or coastal shipping		OMB, A-381
Total O&M	**1673**	**1356.5**	**411.0**	**388.2**	**557.3**		**89.0**	**243.9**	**332.9**		Not all line items listed here. Total is reported in OMB source.	OMB, A-381
Oil Spill Research	1	1		0.3	0.7	Inland/coastal mix	0.3	0.7	1.0	All oil	Development of management tools for use by on-scene oil spill coordinators.	OMB, A-389
Total Direct Spending for Power or Navigation		**2,088.2**	**600.4**	**759.4**	**728.3**		**174.3**	**319.2**	**493.5**			
Total Army Corps Spending	**3123**										Total spending, reported in OMB, less the budget areas allocated below.	OMB, A-377 - A-385
Percentage of Program Spending		66.9%	19.2%	24.3%	23.3%							
General Investigations											Activities to "determine the need, engineering feasibility, economic justification, and the environmental and social suitability of solutions to water and related land resource problems."	OMB, A-378
Surveys and Planning												
Navigation, flood damage prevention, and shoreline protection studies	46	30.8	8.8	11.2	10.7	Share of Corps direct spending	2.6	4.7	7.3	Oil share of inland or coastal shipping		OMB, A-378
Comprehensive Basin Studies	0	0.0	0.0	0.0	0.0	Share of Corps direct spending	0.0	0.0	0.0	Oil share of inland or coastal shipping		OMB, A-378
Special Studies	7	4.7	1.3	1.7	1.6	Share of Corps direct spending	0.4	0.7	1.1	Oil share of inland or coastal shipping		OMB, A-378
Review of Authorized Projects	11	7.4	2.1	2.7	2.6	Share of Corps direct spending	0.6	1.1	1.7	Oil share of inland or coastal shipping		OMB, A-378
Cooperation with other Fed. agencies and non-Federal Interests	9	6.0	1.7	2.2	2.1	Share of Corps direct spending	0.5	0.9	1.4	Oil share of inland or coastal shipping		OMB, A-378
Preconstruction Engineering and Design	67	44.8	12.9	16.3	15.6	Share of Corps direct spending	3.7	6.8	10.6	Oil share of inland or coastal shipping		OMB, A-378
Collection and Study of Basic Data												
Flood Plain Management Services	9	6.0	1.7	2.2	2.1	Share of Corps direct spending	0.5	0.9	1.4	Oil share of inland or coastal shipping		OMB, A-378
Other Programs	8	5.3	1.5	1.9	1.9	Share of Corps direct spending	0.4	0.8	1.3	Oil share of inland or coastal shipping		OMB, A-378
Research and Development	35	23.4	6.7	8.5	8.2	Share of Corps direct spending	2.0	3.6	5.5	Oil share of inland or coastal shipping		OMB, A-378
Reimbursable Program	2	1.3	0.4	0.5	0.5	Share of Corps direct spending	0.1	0.2	0.3	Oil share of inland or coastal shipping		OMB, A-378
Total General Investigations	**194**	**129.7**	**37.3**	**47.2**	**45.2**		**10.8**	**19.8**	**30.6**			
Regulatory Program	100	**66.9**	**19.2**	**24.3**	**23.3**	Share of Corps spending	**5.6**	**10.2**	**15.8**	Oil share of inland or coastal shipping	Costs of administering laws that regulate activities affecting navigable waters and wetlands.	OMB, A-382
General Expenses												
Executive Direction and Management												
Chief of Engineers Office	53	35.4	10.2	12.9	12.4	Share of Corps spending	3.0	5.4	8.4	Oil share of inland or coastal shipping	Supervise work in 36 district offices.	OMB, A-384

Exhibit A-3b

DEPARTMENT OF DEFENSE
Army Corps of Engineers
(millions of dollars)

	FY95 Obligations	Total Power or Transport	Beneficiary Sector: Hydro	Beneficiary Sector: Inland Transport	Beneficiary Sector: Coastal Transport	Allocation	Inland Oil	Coastal Oil	Total Oil	Allocation	Description	Source
Division Offices	79	52.8	15.2	19.2	18.4	Share of Corps spending	4.4	8.1	12.5	Oil share of inland or coastal shipping	Supervise work in 36 district offices.	OMB, A-384
Engineer Strategic Studies Center	1	0.7	0.2	0.2	0.2	Share of Corps spending	0.1	0.1	0.2	Oil share of inland or coastal shipping	Conducts studies of engineering management functions.	OMB, A-384
Support Centers												
Humphreys Engineer Center Support Activity	14	9.4	2.7	3.4	3.3	Share of Corps spending	0.8	1.4	2.2	Oil share of inland or coastal shipping	Administrative and logistical support.	OMB, A-384
Water Resources Support Center	5	3.3	1.0	1.2	1.2	Share of Corps spending	0.3	0.5	0.8	Oil share of inland or coastal shipping	Develops planning techniques for management and development of water resources.	OMB, A-384
Total General Expenses	152	**101.6**	**29.2**	**37.0**	**35.4**		**8.5**	**15.5**	**24.0**			
TOTAL SPENDING		**2,386.4**	**686.2**	**867.9**	**832.3**		**199.1**	**364.7**	**563.9**			
OFFSETTING COLLECTIONS												
General Construction												
Inland Waterway Trust Funds	88	88		88.0		All to inland transport	20.2	0.0	20.2	Oil share of inland shipping	Derived from taxes on fuel in vessels engaged in commercial waterway transportation.	OMB, A-378, A-387
Rivers and Harbors Contributed Funds	77	77		25.8	51.2	Inland/coastal mix	5.9	22.4	28.3	Oil share of inland or coastal shipping	Funds contributed by non-Federal interests	OMB, A-378, A-387
Reimbursable Program	350	180.7	46.9	91.7	42.1	Construction spending mix	21.0	18.4	39.5	Oil share of inland or coastal shipping	$348 million collected from federal sources, and $2 million from non-federal sources.	OMB, A-379 - A-380
Operation and Maintenance												
Harbor Maintenance Trust Funds	521	521			521.0	All to coastal	0.0	228.1	228.1	Oil share of coastal shipping	Derived from user fee charged to commercial users of specific U.S. ports	OMB, A-380, A-387
Rivers and Harbors Contributed Funds	7	7		2.3	4.7	Inland/coastal mix	0.5	2.0	2.6	Oil share of inland or coastal shipping	Funds contributed by non-Federal interests	OMB, A-380, A-387
Reimbursable Program	8	6.5	2.0	1.9	2.7	O&M Spending Mix	0.4	1.2	1.6	Oil share of inland or coastal shipping		OMB, A-381
General Investigations												
Rivers and Harbors Contributed Funds	19	12.7	3.7	4.6	4.4	Share of Corps direct spending	1.1	1.9	3.0	Oil share of inland or coastal shipping	Funds contributed by non-Federal interests	OMB, A-377, A-387
Reimbursable Program	2	1.3	0.4	0.5	0.5	Share of Corps direct spending	0.1	0.2	0.3	Oil share of inland or coastal shipping		OMB, A-378
Oil Spill Research	1	1		0.3	0.7	Inland/coastal mix	0.3	0.7	1.0	All oil	Financed through Oil Spill Liability Trust Fund	OMB, A-389
TOTAL OFFSETS	**1073**	**895.3**	**52.9**	**215.2**	**627.2**		**49.6**	**274.9**	**324.5**			
GROSS SUBSIDYminimum							**199.1**	**364.7**	**563.9**		Note 2	
GROSS SUBSIDYmaximum							**206.1**	**377.5**	**583.6**		Note 2	
OFFSETTING COLLECTIONS							**49.6**	**274.9**	**324.5**			

Exhibit A-3b

DEPARTMENT OF DEFENSE
Army Corps of Engineers
(millions of dollars)

			Beneficiary Sector									
	FY95 Obligations	Total Power or Transport	Hydro	Inland Transport	Coastal Transport	Allocation	Inland Oil	Coastal Oil	Total Oil	Allocation	Description	Source
NET SUBSIDYminimum							**149.6**	**89.8**	**239.3**		Note 3	
NET SUBSIDYmaximum							**156.5**	**102.5**	**259.1**		Note 3	

Breakout by Type of Benefit to Oil	**Gross Subsidy**	**Offsetting Collections**	**Net Subsidy to Oil**
Subtotal, Transportation			
Low Estimate	563.9	324.5	239.3
High Estimate	583.6	324.5	259.1

NOTES

1) Coastal/harbor includes coastal and harbor transport and transport on the Great Lakes and St. Lawrence River. This definition is based on Army Corps of Engineers distinctions between inland and coastal projects.
2) The minimum estimate gross subsidy equals gross obligations. The maximum estimate approximates the value of the gross subsidy if it were provided by a private company because the effective size of the subsidy equals not only net government spending on water infrastructure, but the forgone profit margin that would otherwise be included in the costs if the same services were provided privately.
A profit margin of 3.5 percent is applied to the minimum gross subsidy estimate (i.e. total spending) to calculate the maximum estimate. This profit margin is based on the return on sales for industry number SIC-1629, Heavy Construction, Not Elsewhere Classified. This industry group composes general and special trade contractors for dam, dike, dock, drainage project, and flood control project construction as well as dredging.
3) Net subsidies equal the minimum or maximum gross subsidy values minus offsetting collections.

SOURCES

Dun and Bradstreet Information Services, *Industry Norms & Key Business Ratios: Desk-Top Edition 1995-96 -- Statistics in Over 800 Lines of Business*, p. 19.
Dun and Bradstreet Information Services, *Industry Norms & Key Business Ratios: Desk-Top Edition 1996-97 -- Statistics in Over 800 Lines of Business*, p. 19.
Bitner, Joseph, Programs Management, U.S. Army Corps of Engineers, Personal Communication, August 5, 1997.
U.S. Executive Office of the President, Office of Management and Budget. *Budget of the U.S. Government, FY 1997*, A-377 - A-389.
U.S. Executive Office of the President, Office of Management and Budget, *Standard Industrial Classification Manual*, 1987, p. 59.

Exhibit A-3c

DEPARTMENT OF DEFENSE
Navy Supervisor of Salvage and Diving
(millions of dollars)

Part 1: Oil Spill Cleanup Equipment Held by Navy But Available for Commercial Spills

	Source
24 Skimming systems	
18 Storage bladders	GAO/RCED-91-68, pp. 19-20
21 Submersible pumping systems	

Part 2: Estimate of Benefits Accruing to the Commercial Oil Sector

	Low Est.	High Est.	
Estimated Value:	240.2	240.2	GAO/RCED-91-68, pp. 19-20, scaled to 1995$ (Note 1)
1995 Financing rate (Note 2)	6.6%	7.6%	U.S. Department of Commerce, *Statistical Abstract of the United States: 1996* , Table 804.
Annual holding cost on equipment	15.8	18.2	
Pct. of Capital Cost Assumed Recovered Through Charges to Industry (Note 3)	100.0%	0.0%	
Gross Estimated Subsidy	15.8	18.2	
Estimated Collections from User Fees	15.8	0.0	
Net Estimated Subsidy	0.0	18.2	

Note

1) Low and high estimates are inflated to 1995 dollars using the GDP Implicit Price Deflator.

2) Long-term financing rates are used to reflect the long-term nature of these capital purchases. The low estimate uses a 10-year Treasury bond rate, since oil spill equipment is unlikely to last the 30 years necessary to justify using a 30-year rate. The high estimate uses a Corporate Aaa bond, assuming that the petroleum companies would fall into this highest category and that they would have to purchase the equipment if the service were not provided by the government.

3) The low estimate assumes the private sector repays the Navy the full capital holding charges when relying on Navy stock during spills. The high estimate assumes the private sector can avoid purchasing equipment by relying on Navy stock during spills. The estimate should be scaled up to reflect avoided training and manpower costs as well, but data were not available.

Sources:

U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States: 1996* , Table 804.
U.S. General Accounting Office, "Coast Guard: Coordinating and Planning for National Oil Spill Response," Sept. 1991. GAO/RCED-91-212.

Exhibit A-3d

DEPARTMENT OF ENERGY
Energy Information Administration
(millions of dollars)

Program	1995 Budget Authority		Oil Total	Allocation	Description
Oil and Gas	13.9				
Petroleum Supply		5.3	5.3	All Oil	Provide information on supply of crude oil and refined petroleum products.
Petroleum Marketing		5.1	5.1	All Oil	Provide information on crude oil and petroleum product sales and prices.
Reserves and Natural Gas		3.5	1.7	1/2 oil; 1/2 gas (arbitary)	Provide information on reserves and production of crude oil and natural gas.
Coal, Nuclear, Electric, and Alternate Fuels	4.9		0.0	No Oil	Provide statistical information on coal, electric power, nuclear, and renewable energy.
Energy Markets and End Use	5.8				
Energy Markets and Contingency Information		1.2	0.8	Spending Mix	Provide information on international energy markets.
Energy End Use and Integrated Statistics		4.6	3.0	Spending Mix	Provide statistical information on energy prices and end use consumption.
Integrated Analysis and Forecasting	6.9				
Investment/Global Climate Change		1.6	---		Greenhouse gas reductions program
Energy Demand and Integration		2.6	1.7	Spending Mix	Maintain macroeconomic, international, demand, and integrating components of National Energy Modeling System.
Energy Supply and Conversion		2.7	1.8	Spending Mix	Maintain energy supply and conversion model components of National Energy Modeling System.
ADP Services	8.2		5.3	Spending Mix	Operate EIA computer facility.
Information Services	0.7		0.4	Spending Mix	Operate National Energy Information Center.
Statistical Standards	1.0		0.6	Spending Mix	Develop and maintain stastical standards and monitor EIA's conformance with standards.
Program Direction	43.4		28.1	Spending Mix	

Gross	**84.6**	**53.7**
Offsetting Collections	**0.0**	**0.0**
Net Subsidy to Oil		**53.7**

Breakout by Type of Benefit to Oil	Gross Subsidy	Offsetting Collections	Net Subsidy
Subtotal, Provision of Basic Market Information	53.7	0.0	53.7

NOTES

1) The figures above are for EIA's FY95 Net Budget Authority, which was $85 million. In FY95, EIA incurred new obligations worth $82 million and had outlays worth $86 million.
2) Page numbers or unique table identifiers are not provided in the source.

SOURCE

U.S. Department of Energy, Energy Information Administration, *FY1997 Congressional Budget Request*.

Exhibit A-3e

DEPARTMENT OF ENERGY
Fossil Energy Research and Development
(millions of dollars)

Program	FY95 Obligations	Estimated FY95 Obligations (Note 1)	Oil Share	Allocation Base	Description	Source
Fossil Energy R & D						
Coal	147		0.0	No Oil		OMB, A-443
Oil, gas, and shale research and development	226					OMB, A-443
Natural Gas		134.0	0.0	No Oil		
Oil Technology		92.0				
Processing Research and Downstream Operations		8.3	8.3	All Oil	Research on petroleum processing technology and environmental effects.	
Exploration & Production Environmental Research		5.7	5.7	All Oil	Research on environmental effects of oil production. Promotion of environmentally sound practices and policies.	
Exploration & Production Supporting Research and Recovery Field Demonstrations		78.0	78.0	All Oil	Maintain information on oil resources and reservoir producibility; research to advance oil recovery; funding for field demonstration projects	
Program Direction and Management	73		17.9	Program Spending Mix		OMB, A-443
Plant & Capital Equipment	6		1.5	Program Spending Mix		OMB, A-443
Environmental Restoration	16		3.9	R&D Spending Mix	Clean-up contamination and ensure environmental compliance at past and current sites and operations.	OMB, A-443
Cooperative R&D	9		2.2	R&D Spending Mix	Funding for fossil energy research of relevance to the U.S. market.	OMB, A-443
Fuels Program (Regulatory)	3		0.0	No Oil	Provides oversight and regulatory reviews of natural gas and electricity activities	OMB, A-443
Clean Coal Technology	328		0.0	No Oil		OMB, A-451

Gross	117.6
Offsetting Collections	0.0
Net Subsidy to Oil	117.6

Breakout by Type of Benefit to Oil	Gross Subsidy	Offsetting Collections	Net Subsidy
Subtotal, Research and Development	117.6	0.0	117.6

NOTES

1) Estimated obligations for the natural gas and oil technology programs are based on their relative FY1995 bugdet authorities, as reported in DOE's *Congressional Budget Request*.

SOURCES

U.S. Department of Energy, Office of Chief Financial Officer, *FY1997 Congressional Budget Request*, Volume 4, March 1996.
U.S. Executive Office of the President, Office of Management and Budget, *Budget of the United States Government, Fiscal Year 1997*, A-443.

Exhibit A-3f

DEPARTMENT OF ENERGY
Federal Energy Regulatory Commission (FERC)
(millions of dollars)

	1995 Obligations	Oil	Allocation	Notes	Source
PROGRAM SPENDING					
Natural Gas and Oil Pipelines	69	25.0	Oil share of total O&G filings		OMB, A-450
Hydropower Licensing and Regulation	57	0.0	No Oil		OMB, A-450
Electric Power Regulation	38	0.0	No Oil		OMB, A-450
Total Expenditures	164	25.0			
OFFSETTING COLLECTIONS					
Annual Charges and Fees					
Natural Gas and Oil Pipelines	69.8	25.3	Oil share of total O&G filings	Note 1	
Hydropower Licensing and Regulation	57.7	0.0	No Oil	Note 1	
Electric Power Regulation	38.5	0.0	No Oil	Note 1	
Total User Fees	166	25.3			OMB, A-450

Gross Subsidy to Oil	25.0
Offsetting Collections	25.3
Net Subsidy to Oil	-0.3

Breakout by Type of Subsidy	**Gross**	**Offsets**	**Net**
Regulatory Oversight	25.0	25.3	-0.3

NOTES

1) The program's share of FERC's annual charges and fees is estimated based on the program's share of FERC's total 1995 obligations.

SOURCES

U.S. Department of Energy, Federal Energy Regulatory Commission, *FY98 Congressional Budget Request*, p. 10.
U.S. Executive Office of the President, Office of Management and Budget, *Budget of the United States Government, FY 1997*, A-450.

Exhibit A-3g

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Low Income Home Energy Assistance Program (LIHEAP)
(millions of dollars)

Part 1: 1995 Federal Program Support ($Millions)

	1995
LIHEAP Funds Used for Energy Support	
Heating benefits	880
Cooling benefits	44
Crisis benefits	213
Weatherization Benefits	159
Program Admin.	133
Total	**1,429**
LIHEAP Funds Not Used For Energy Purposes (not counted in totals)	
HHS Block Grant Transfers	NA

Notes:

(1) Grantees were previously allowed to transfer up to 10 percent of the LIHEAP funds payable to them to one or more of five other HHS social and community service block grants. Starting in FY1994, such transfers were no longer permitted.

(2) Grantees have statutory authority to transfer up to 10 percent of their Social Services Block Grant funds and up to five percent of their Community Services Block Grant funds into LIHEAP; none did so in FY95. (Report to Congress, p. ii)

(3) Weatherization assistance is limited to a maximum of 15 percent of the LIHEAP funds available to a grantee, unless grantees request and HHS approves a waiver to increase the maximum amount to 25 percent. (Report to Congress, p. iii)

Source:

U.S. Department of Health and Human Services, Administration for Children and Families, Low Income Home Energy Assistance Program. Report to Congress for Fiscal Year 1995. Table 2: Annual Report Statistics on HHS Energy Assistance Programs, Fiscal Years 1981-1995."

Part 2: 1993 Energy Mix of Particular Uses

	1995 Shares (Note 1)	**Heating Benefits (Note 2)**	**Cooling Benefits (Note 2)**	**Weather-ization**
Natural Gas		45.6%	0.0%	
Electricity		27.6%	97.8%	
Coal	55.2%	15.2%	54.0%	
Natural Gas	10.3%	2.8%	10.0%	
Petroleum	2.0%	0.6%	2.0%	
Hydroelectric	9.8%	2.7%	9.6%	
Fission	22.5%	6.2%	22.0%	
Renewable Geothermal and Other (Note 4)	0.2%	0.1%	0.2%	
Oil		23.2%	0.0%	
Fuel Oil		13.2%		
Kerosene		2.7%		
LPG		7.3%		
Efficiency			0.0%	100.0%
Other (Note 5)		3.6%	0.0%	
None (Note 6)			2.3%	
Oil Share		23.8%	2.0%	
Total, All Energy Types (Note 7)		100.1%	100.1%	100.0%

Notes:

Exhibit A-3g

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Low Income Home Energy Assistance Program (LIHEAP)
(millions of dollars)

1) Electricity is allocated to base fuels using the national electricity mix in 1995 (*Annual Energy Review*, Table 8.3)
2) Energy mix data is based on LIHEAP recipient households only.
3) Energy crisis intervention provides relief for household-level energy emergencies, and is allocated on the same basis as heating benefits.
4) Includes geothermal, wood, waste, wind, photovoltaic, and solar thermal energy. (*Annual Energy Review*, Table 8.3) Electricity from renewables in 1989 was 9.0% biomass, 8.4% waste-to-energy, 82.6% geothermal; and 0.02% solar. (EIA, Powerplant).
5) "Other" fuels refer to wood, coal, and other minor fuels.
6) Households do not use air conditioning, evaporative coolers, whole house cooling fans, or window or ceiling fans.
7) Totals do not add due to rounding.

Sources:
U.S. Department of Health and Human Services, Administration for Children and Families, Low Income Home Energy Assistance Program. Report to Congress for Fiscal Year 1995, pp. 22, 25.
U.S. Department of Energy, Energy Information Administration. *Annual Energy Review: 1996*, Table 8.3.
U.S. Department of Energy, Energy Information Administration. *Monthly Powerplant Report*. Data provided by Melvin Johnson, EIA, 6/91.

Part 3: Allocation to Oil, FY 1995

	Heating Benefits	Cooling Benefits	Weather-ization	Crisis	Direct Total	Percent Share	Program Admin.	Gross Total	Offset (Note 1)	Net Total
Total Funding	880	44	159	213	1,296		133	0		
Electricity										
Petroleum	5	1	0	1	7	0.54%	1	8		
Oil	204	0	0	49	254	19.57%	26	280		
Total Oil Spending	209	1	0	51	261	20.11%	27	**287**	**13**	**274**

Note:
1) DOE holds funds in escrow from settlements of oil price overcharge cases under the Emergency Petroleum Allocation Act of 1973. DOE distributes part of these funds to states and other areas, which obligated $13 million of such funds for LIHEAP in 1995 (*Report to Congress*, p. ii).

Exhibit A-3h

DEPARTMENT OF THE INTERIOR
United States Geological Survey
(millions of dollars)

	FY95 Net Budget Authority (Note 1)	Estimated 1995 Budget Authority (Note 2)	Oil Share	Allocation	Description	Sources
National Mapping, Geography, and Surveys	124.0				Make map and geographic data available to the public and private sectors. Maps used for resource management and other purposes.	USGS, 4
National Map and Digital Data Production	56.0		1.4	Spending Mix	Ensures availability of current and accurate cartographic data and maps.	USGS, 38
Information and Data Systems	21.6		0.5	Spending Mix	Manage and distribute geographic data in digital and graphic databases for use by the public and private sector.	USGS, 38
Research and Technology	22.0		0.6	Spending Mix	Conduct research to enhance data collection and mapping techniques.	USGS, 38
Advanced Cartographic Systems	24.3		0.6	Spending Mix	Advance data production and dissemination methods and maintain existing map production and distribution systems.	USGS, 38
Geologic and Mineral Resource Surveys and Mapping	213.5				Provides information about geologic hazards, resources, and processes.	USGS, 4
Geologic Framework and Processes	26.5					USGS, 38
National Geologic Mapping Program		21.9	0.5	Spending Mix	Provides geologic maps for the U.S.	USGS, 143
Continental Surveys		2.8	0.3	Equal split of program functions; oil share of oil and gas	Activities include assessing petroleum energy resources.	USGS, 143
Geomagnetism		1.8	0.0	Spending Mix	Provide geomagnetic information. Uses for this data include oil exploration.	USGS, 143
Marine and Coastal Geologic Surveys	36.4		0.5	Program spending mix; oil share of oil and gas.	Activities include surveying offshore resources.	USGS, 38
Mineral Resource Surveys	44.6		0.0	No Oil	Provide information concerning mineral resource supplies, environmental impacts, and management. This program does not appear to be linked to petroleum resources, but some of the geologic information may be useful for oil EDT.	USGS, 38
Energy Resource Surveys	25.2		5.0	Energy Resource Surveys spending mix by commodity	Provides information that includes assessments and estimates of the quality, quanitity, and location of natural gas, coal, and oil resources.	USGS, 38
Water Resources Investigations	185.9				Provides scientific information about surface and ground water supply, hazards, pollution, and remediation.	USGS, 4
National Water Resources Research and Information System - Federal Program	119.2					USGS, 38
Data Collection and Analysis		19.5	0.6	Water resources spending mix	Provides information about surface and groundwater quantity and quality. One application for this information is land use and resource planning on public land.	USGS, 222
Core Program Hydrologic Research		10.0	0.3	Water resources spending mix	Research that advances the state of water-resource studies and understanding by the USGS.	USGS, 232
Toxic Substances Hydrology		13.4	2.7	Toxic substances project breakout	Produces information needed to treat resources affected by toxic substances. One study focuses on how crude oil travels In the subsurface.	USGS, 239
Scientific and Technical Publications		2.1	0.1	Water resources spending mix		USGS, 251
National Water Resources Research and Information System - Federal/State Cooperative Program	62.1					USGS, 38
Data Collection and Analysis		58.1	5.3	Oil share of project breakout	Provides matching funds for studies of the quantity, quality, and use of surface-water and ground-water resources.	USGS, 274
Water Use		4.0	0.0	No Oil	Compiles, analyzes, and disseminates information on water use to supplement information on available water supplies.	USGS, 285
National Water Resources Research and Information System - State Research Institutes and Research Grants Program	4.6		0.7	Oil share of project breakout	Funding for research into water quality problems, some of which may be oil related. None allocated to oil in this study.	USGS, 38
General Administration	24.3		0.6	Spending Mix		USGS, 4

Exhibit A-3h

DEPARTMENT OF THE INTERIOR
United States Geological Survey
(millions of dollars)

	FY95 Net Budget Authority (Note 1)	Estimated 1995 Budget Authority (Note 2)	Oil Share	Allocation	Description	Sources
Facilities	22.8		0.6	Spending Mix		USGS, 4
Reimbursable Program	304		7.6	Spending Mix		OMB A-577
Total Spending Authority	874.5		27.9			
OFFSETTING COLLECTIONS						
Reimbursable Program	304		7.6	Spending Mix		OMB A-577
Total Offsetting Collections	304		7.6			
GROSS SUBSIDY -- low estimate			**27.9**		Note (3)	
GROSS SUBSIDY -- high estimate			**65.6**		Note (3)	
OFFSETTING COLLECTIONS -- low estimate			**7.6**			
OFFSETTING COLLECTIONS -- high estimate			**22.8**		Note (3)	
NET SUBSIDY -- low estimate			**20.2**			
NET SUBSIDY -- high estimate			**42.8**		Note (3)	

Breakout by Type of Subsidy	Gross	Offset	Net	
USGS R&D related to oil contamination				
Low Estimate	14.0	3.8	10.2	Water resources program and proportionate share of general expenses and reimbursable program.
High Estimate	29.2	10.1	19.0	Product of USGS budget or offsetting collections and an estimate of the percentage of its work related to oil contamination.
USGS mapping, resource surveys, and research supporting oil exploration and development				
Low Estimate	13.8	3.8	10.1	Mapping and resource survey programs and proportionate share of general expenses and reimbursable program.
High Estimate	36.4	12.7	23.8	Product of USGS budget or offsetting collections and an estimate of oil's share of the natural resources with which USGS works.

NOTES

1) USGS numbers are for budget authority. Gross FY1995 budget authority was $874.5 million, compared to FY1995 obligations of $885 million.
2) Estimated 1995 budget authority is calculated based on the breakdown of spending between program elements in 1996.
3) The low estimate is based on detailed budgetary information that is specifically labeled as relating to oil. Many of the agency's activities may help the oil industry without directly targeting that industry. We expect that the low estimate does not account for the agency's full contribution to oil activities. For our high estimate we used an alternative approach. Based on information provided in the source below, USGS has four primary areas of work: natural hazards, resources, environment, and information management. The latter supports the other three work areas. To reach our estimate, we divided the agency's budget authority and offsetting collections equally among those three areas. We then divided the resources portion of spending equally among the resources with which USGS works: land, surface water, ground water, metallic minerals, non-metallic minerals, coal, oil, and gas. Thus, 12.5 percent of one third of the budget (4.2 percent) goes to oil. Based on descriptions of projects in the Water Resources Investigations program, we also estimate that approximately 10 percent of USGS's environmental work (or 3.3 percent of the total budget) is related to oil contamination. Using these estimates, we allocated 7.5 percent of the USGS budget authority and offsetting collections to oil.

SOURCE: U.S. Department of the Interior, United States Geological Survey, *Budget Justifications, F.Y. 1997.*

Exhibit A-3i

DEPARTMENT OF TRANSPORTATION
U.S. Coast Guard
(millions of dollars)

	Total FY95 Obligations (a)	Est. Merchant Marine Share (1)	Energy Share of Merchant Shipping (2)	Net Share to Energy (3)=(1*2)	Subsidy to Energy (a*3)	Oil Share	Allocation	Description	Source
Operating Expenses									
Search and Rescue	387	40%	55.3%	22.1%	85.6	73.2	Petroleum fuels share of coastal energy shipments	Operations to save lives and prevent personal injury and property damage in the maritime regions of the U.S.	OMB, A-751
Aids to Navigation	526	60%	55.3%	33.2%	174.5	149.3	Petroleum fuels share of coastal energy shipments	Lighthouse automation and buoys to help ocean shipping.	OMB, A-751
Marine Safety	331	60%	55.3%	33.2%	109.8	94.0	Petroleum fuels share of coastal energy shipments	Vessel inspections, review of plans and specifications for construction or alteration of merchant vessels, and merchant mariner licensing.	OMB, A-751
Marine Environmental Protection	236	80%	55.3%	44.2%	104.4	89.3	Petroleum fuels share of coastal energy shipments	Prevention of marine environmental degradation, enhancing environmental quality, approving oil spill response plans, and responding to pollution incidents.	OMB, A-751
Enforcement of Laws and Treaties	951	N/A		N/A				Assume not related to oil	OMB, A-751
Ice Operations	91	80%	55.3%	44.2%	40.2	34.4	Petroleum fuels share of coastal energy shipments	Ice clearing activities.	OMB, A-751
Defense Readiness	111	N/A		N/A				Assume not related to oil	
Subtotal	2633				514.4	440.3			
Operating Expenses Spending Mix					19.5%	16.7%		Percentage of Subtotal	
Reimbursable Program	53				10.4	8.9	Operating Expenses Spending Mix		OMB, A-751
Total Operating Expenses	2686				524.8	449.1			
Acquisition, Construction and Improvements								Acquisition, construction, rebuilding, and improvement of navigation aids, facilities, vessels, and aircraft.	
Search and Rescue	43	40%	55.3%	22.1%	9.5	8.1	Petroleum fuels share of coastal energy shipments		OMB, A-752
Aids to Navigation	100	60%	55.3%	33.2%	33.2	28.4	Petroleum fuels share of coastal energy shipments		OMB, A-752
Marine Safety	30	60%	55.3%	33.2%	10.0	8.5	Petroleum fuels share of coastal energy shipments		OMB, A-752
Marine Environmental Protection	35	80%	55.3%	44.2%	15.5	13.2	Petroleum fuels share of coastal energy shipments		OMB, A-752
Enforcement of Laws and Treaties	90	N/A		N/A				Assume not related to oil	OMB, A-752

Exhibit A-3i

DEPARTMENT OF TRANSPORTATION
U.S. Coast Guard
(millions of dollars)

	Total FY95 Obligations (a)	Est. Merchant Marine Share (1)	Energy Share of Merchant Shipping (2)	Net Share to Energy (3)=(1*2)	Subsidy to Energy (a*3)	Oil Share	Allocation	Description	Source
Ice Operations	30	80%	55.3%	44.2%	13.3	11.4	Petroleum fuels share of coastal energy shipments		OMB, A-752
Defense Readiness	7	N/A		N/A				Assume not related to oil	
Subtotal	335				81.4	69.6			
Acquisition, Construction, and Improvements Spending Mix					24.3%	20.8%		Percentage of subtotal	
Reimbursable Program	0				0.0	0.0	Acquisition, Construction, and Improvements Spending Mix		OMB, A-752
Total Acquisition, Construction, and Improvements	335				81.4	69.6			
Envir. Compliance and Restoration	24				3.8	3.2	Oil share of total budget	Funds for environmental compliance and restoration related obligations.	OMB, A-753
Alteration of Bridges	0	60%	55.3%	33.2%	0.0	0.0	Petroleum fuels share of coastal energy shipments	Costs of altering or removing railroad bridges that obstruct navigation.	OMB, A-754
Research, Development, Test, and Evaluation								Development of techniques and technology that contribute to the Coast Guard's operating missions.	
Search and Rescue	3	40%	55.3%	22.1%	0.7	0.6	Petroleum fuels share of coastal energy shipments		OMB, A-755
Aids to Navigation	3	60%	55.3%	33.2%	1.0	0.9	Petroleum fuels share of coastal energy shipments		OMB, A-755
Marine Safety	6	60%	55.3%	33.2%	2.0	1.7	Petroleum fuels share of coastal energy shipments		OMB, A-755
Marine Environmental Protection	3	80%	55.3%	44.2%	1.3	1.1	Petroleum fuels share of coastal energy shipments		OMB, A-755
Enforcement of Laws and Treaties	3	N/A		N/A				Assume not related to oil	OMB, A-755
Ice Operations	1	80%	55.3%	44.2%	0.4	0.4	Petroleum fuels share of coastal energy shipments		OMB, A-755
Defense Readiness	1	N/A		N/A				Assume not related to oil	
Subtotal	20				5.4	4.6			

Exhibit A-3i

DEPARTMENT OF TRANSPORTATION
U.S. Coast Guard
(millions of dollars)

	Total FY95 Obligations (a)	Est. Merchant Marine Share (1)	Energy Share of Merchant Shipping (2)	Net Share to Energy (3)=(1*2)	Subsidy to Energy (a*3)	Oil Share	Allocation	Description	Source
Research, Development, Test, and Evaluation Spending Mix					27.1%	23.2%			
Reimbursable Program	1				0.3	0.2	Research, Development, Test, and Evaluation Spending Mix		OMB, A-755
Total Research, Development, Test, and Evaluation	21				5.7	4.9			
Spending, Partially Energy-Related	**3,066**				**616**	**527**			
Spending, All Coast Guard	**3,888**	Not all items are listed above.							
OFFSETTING COLLECTIONS									
Operating Expenses									
Oil Spill Liability Trust Fund	25				25	25	All to Oil		OMB, A-758
Reimbursable Program	53				10.4	8.9	Operating Expenses Spending Mix		OMB, A-751
Acquisition, Construction and Improvements									
Oil Spill Liability Trust Fund	33				33	33	All to Oil		OMB, A-758
Reimbursable Program	7				1.7	1.5	Acquisition, Construction, and Improvements Spending Mix		OMB, A-752
Research, Development, Test, and Evaluation									
Oil Spill Liability Trust Fund	3				3	3	All to Oil		OMB, A-758
Reimbursable Program	1				0.3	0.2	Research, Development, Test, and Evaluation Spending Mix		OMB, A-755
Total Offsetting Collections	**122.0**				**73.3**	**71.5**			

Exhibit A-3i

DEPARTMENT OF TRANSPORTATION
U.S. Coast Guard
(millions of dollars)

	Total FY95 Obligations (a)	Est. Merchant Marine Share (1)	Energy Share of Merchant Shipping (2)	Net Share to Energy (3)=(1*2)	Subsidy to Energy (a*3)	Oil Share	Allocation	Description	Source
GROSS SUBSIDY TO OIL						**526.9**			
OFFSETTING COLLECTIONS						**71.5**			
NET SUBSIDY TO OIL						**455.3**			

Breakout by Type of Benefit to Oil

	Gross	Offsets	Net	
Transportation Infrastructure and Services	314.0	6.3	307.7	Search and Rescue, Aids to Navigation, Ice Operations, and proportionate share of Environmental Compliance, Reimbursable Program
Regulatory Oversight				
Transportation	106.7	2.1	104.5	Marine Safety and proportionate share of Environmental Compliance and Reimbursable Program.
Environmental	106.2	63.1	43.1	Marine Environmental Protection and proportionate share of Environmental Compliance and Reimbursable Program.

Notes:

(1) These fractions follow the methodology used in earlier studies (Heede, Koplow). A better allocation would be based on the share of port calls by coastal ships. Lower shares for search and rescue reflect the likelihood of larger merchant ships having better navigational equipment and more skilled captains. The higher share for marine environmental protection reflects the magnitude of oil spill problems. 20% is assumed to account for other hazardous substances. Similarly, a higher allocation for ice operations accounts for the heavy use of Arctic shipping lanes for oil movemer

(2) Reflects energy shares of shipments in waters overseen by the Coast Guard, including ocean shipping (imports plus exports) and coastwise shipping. Shipments by tonnage rather than value are used since value is not a strong indicator of the need for marine support services.

Sources:

Heede, Rick, *Federal Energy Subsidies, Agency Obligations*, 1986, pp. 96-99, Rocky Mountain Institute.
Koplow, Douglas N., *Federal Energy Subsidies: Energy, Environmental, and Fiscal Impacts*, 1993, The Alliance to Save Energy.
U.S. Executive Office of the President, Office of Management and Budget. *Budget of the United States Government, Fiscal Year 1997*, A-751 - A-759.

Exhibit A-3j

DEPARTMENT OF TRANSPORATION
Maritime Administration
(millions of dollars)

PROGRAM	FY95 Spending	Oil Share	Allocation	Description	Source
Operating Differential Subsidies	209	86.3	Petroleum share of imports and exports	Funds operating subsidies to U.S.-flag ship operators engaged in foreign commerce to offset differences in U.S. and foreign operating costs.	MARAD, MA-9 / OMB A-760
Construction Differential	0	0.0	70% (percentage of U.S. fleet capable of transporting oil)	Account is inactive except for closing costs and other lingering expenses. Subsidized certain construction costs for merchant ships when U.S. costs exceeded foreign.	OMB, A-760
Ocean Freight Differential	63	0.0	No Oil	Funds agricultural commodities only	OMB, A-760
OFFSETTING COLLECTIONS					
Construction Differential	3	2.1	70% (percentage of U.S. fleet capable of transporting oil)		OMB, A-760

GROSS SUBSIDY TO OIL	86.3
OFFSETTING COLLECTIONS	2.1
NET SUBSIDY TO OIL	84.2

Breakout by Type of Benefit to Oil

	Gross	Offset	Net
Transportation	86.3	2.1	84.2

SOURCES

U.S. Office of Management and Budget, *Budget of the U.S. Government, FY 1997*, A-760 - A-766.
U.S. Department of Transportation, Maritime Administration, *Budget Estimates, F.Y. 1997*.

Exhibit A-3k

DEPARTMENT OF TRANSPORTATION
Research and Special Programs Administration
Office of Pipeline Safety
(millions of dollars)

The Office of Pipeline Safety oversees the transportation of natural gas, petroleum, and other hazardous liquids. The office's activities involve data collection and analysis, risk assessment, regulation, enforcement, research and development, and grants for state pipeline safety programs. Its programs are funded by two special funds, the Pipeline Safety Fund and the Oil Spill Liability Trust Fund. Pipeline operators are charged a user fee based on pipeline mileage and the amount of the office's annual appropriation.

EXPENDITURES

	FY1995 Obligations	Oil Share	Allocation Base	Source
Pipeline Safety				
Operations	21.001	2.0	Oil Share of Pipeline M	RSPA, 115
Research and Development	2.157	0.2	Oil Share of Pipeline M	RSPA, 115
Grants	11.9	1.1	Oil Share of Pipeline M	RSPA, 115
Oil Spill Liability Trust Fund	2.433	2.4	All Oil	RSPA, 119
Total Spending	37.491	5.7		

REVENUE

Collections from Pipeline User Fees	34.682	3.2	Oil Share of Pipeline M	RSPA, 114
and the Oil Spill Liability Trust Fund	2.433	2.4	All Oil	RSPA, 119
Total Offsets	37.115	5.7		

GROSS SUBSIDY	**5.7**
OFFSETTING COLLECTIONS	**5.7**
NET SUBSIDY	**0.0**

Breakout by Subsidy Category	Gross	Offset	Net
Subtotal, Transportation	5.7	5.7	0.0

SOURCE

U.S. Department of Transportation, Research and Special Programs Administration, Budget Estimates: Fiscal Year 1997.

Exhibit A-4a
BACKGROUND INFORMATION ON SOURCES OF DEFENSE ESTIMATES

Ravenal, 1991
(1992 Dollars)

Ravenal derived an estimate for defense spending in the Persian Gulf by allocating DoD's budget for general purpose forces according to the geographic distrubution of the military's active force structure. He derived separate estimates for the peacetime deployment in the region, and separate risk premiums for the expected costs (based on estimated costs and probabilities) of both conventional war and a nuclear war. The risk premium for conventional war is based on the estimated incremental defense cost, above peacetime spending, that would result. The risk premium for a nuclear war is calculated based on the estimated impacts on the national economy. Exhibit 1 reports the peacetime estimate and the sum of the peacetime and risk premium estimates. We do not include this portion of Ravenal's risk premium for nuclear war because it does not represent DoD spending.

	1992 Defense Budget (Billions of Dollars)	Share
Strategic Nuclear Forces	63	22.7%
General Purpose (Conventional and Tactical Nuclear) Forces	215	77.3%

Peacetime Estimate

	Peacetime Deployment of Active Land Divisions	Share of Divisions	Notes
Europe	7.3	43.1%	
East Asia	3	17.6%	
Other Regions and Strategic Reserve	6.7	39.2%	Includes the Persian Gulf
Worldwide	17		
Persian Gulf share of Other Regions and Strategic Reserve	60%		
Persian Gulf share of total General Purpose Budget	23.5%	(=39.2%*60%)	
Persian Gulf Defense	$50 billion	The calculation actually yields a cost of $50.6 billion. Ravenal rounded the percentage of divisions in Other Regions and Strategic Reserve to 39 percent from 39.2, which lowers the estimate to $50.3 billion. He then rounded to the nearest billion.	

Risk Premium for Conventional War

Ravenal calculates a risk premium to account for the incremental costs of a conflict in the region. His calculation is based on assumptions about the cost and probability of a conventional war in the region.

Cost Assumption

Conflict would be half the size of the Vietnam War. Size is based on the length and intensity of the conflict.

	Cost ($Billions)
Nominal cost of the Vietnam War	350
Estimate of the cost of the Vietnam War if it occurred at the current time	1,050

Exhibit A-4a
BACKGROUND INFORMATION ON SOURCES OF DEFENSE ESTIMATES

Cost of a 1/2 Vietnam-size war	525

Probability Assumption

Probability of a war over ten year period	10%

Risk Premium

Cost	525
Probability	10%
Risk Premium over 10yr period	52.5

Annualized Risk Premium	5.3

Source: Ravenal, Earl C. *Designing Defense for a New World Order: The Military Budget in 1992 and Beyond*. Washington, D.C.: Cato Institute. 1991.

Ravenal, 1995
(1995 dollars)

Ravenal derived an estimate for defense spending in the Persian Gulf using the same methodology as he used for his 1991 analysis (see above). His updated numbers indicate that the military's strategic nuclear forces had declined since the 1992 budget. Whereas general purpose forces previously accounted for about 78 percent of DoD's budget, in 1995 they accounted for 84 percent. The geographic distribution of combat units also shifted between the 1992 and 1995 budgets. The number of land divisions in the Persian Gulf stayed increased from four to five, but the total number of active land divisions declined from 17 to 15. Thus, the Persian Gulf's share of military resources increased from 24 percent to 33 percent.

	1992 Defense Budget (Billions of Dollars)	**Share**
Strategic Nuclear Forces	40	16%
General Purpose (Conventional and Tactical Nuclear) Forces	212	84%

Estimate

	Deployment of Active Land Divisions	**Share of Divisions**
Europe	4	26.67%
Pacific	6	40.00%
Persian Gulf	5	33.33%
Worldwide	15	

Persian Gulf Defense	$70 billion

The calculation actually yields a cost of $70.67 billion. Ravenal rounded the Persian Gulf's share of land divisions to 33 percent, yielding a cost estimate of $69.96 billion. He then rounded that figure to $70 billion.

Source: Ravenal, Earl C. Personal Communication. March 6, 1998.

Ravenal, 1997

Exhibit A-4a
BACKGROUND INFORMATION ON SOURCES OF DEFENSE ESTIMATES

(1997 dollars)

Ravenal derived an estimate for defense spending in the Persian Gulf using the same methodology as he used for his 1991 analysis (see above). His updated numbers indicate that the military's strategic nuclear forces had declined since the 1992 budget. Whereas general purpose forces previously accounted for about 78 percent of DoD's budget, in 1997 they accounted for 89 percent. The geographic distribution of combat units also shifted between the 1992 and 1997 budgets. The number of land divisions in the Persian Gulf stayed increased from four to five, but the total number of active land divisions declined from 17 to 13. Thus, the Persian Gulf's share of military resources increased from 24 percent to 39 percent.

	1992 Defense Budget (Billions of Dollars)	**Share**
Strategic Nuclear Forces	26	10.7%
General Purpose (Conventional and Tactical Nuclear) Forces	217	89.3%

Estimate

	Deployment of Active Land Divisions	**Share of Divisions**
Europe	3	23.08%
Pacific	5	38.46%
Persian Gulf	5	38.46%
Worldwide	13	

Persian Gulf Defense	$82 billion	The calculation actually yields a cost of $83.5 billion. Ravenal rounded the Persian Gulf's share of land divisions to 38 percent, yielding a cost estimate of $82.46 billion. He then rounded that figure to $82 billion.

Source: Ravenal, Earl C. *The 1998 Defense Budget*. Chapter 7 in *The Cato Handbook for Congress*. Washington, D.C.: The Cato Institute. 1997. Obtained from http://www.cato.org/pubs/handbook/hb105-7.html, February 20, 1998.

Kaufmann and Steinbruner
(1992 Dollars)

Kaufmann and Steinbruner base their estimate on FY1990 defense budget authority and the geographic distribution of the military's force structure. Like Ravenal, they do not include strategic nuclear forces in their estimate. However, unlike Ravenal, they exclude tactical nuclear forces as well. Although they provide a qualitative analysis of the military's major strategic considerations worldwide, they give little data on the distribution of U.S. forces or the steps they took to arrive at their estimate of the Middle East's share of spending ($64.5 billion). In their report, they indicate that the U.S. had deployed three carrier battle groups and one Marine amphibious force in the Persian Gulf. Ravenal also reported a deployment of three carrier battle groups in his description of the FY1992 peacetime deployment, compared to the six carrier groups in the area during the Persian Gulf war. Thus, Kaufmann and Steinbruner's estimate may also be for routine peacetime spending.

Source: Kaufmann, William W. and John D. Steinbruner. *Decisions for Defense: Prospects for a New World Order*. Washington, D.C.: The Brookings Institution. 1991.

Copulus
(1988 Dollars)

In his analysis of oil-related military spending in the Persian Gulf, Copulus wrote, "According to the Pentagon, in 1988 some $40 billion was included under the category 'Gulf Contingencies' in the Defense Department's budget." (p. 26) He does not identify the source of his data.

Exhibit A-4a
BACKGROUND INFORMATION ON SOURCES OF DEFENSE ESTIMATES

Source: Copulus, Milton R. *Answering America's Energy and Environmental Dilemma*. The National Defense Council Foundation. 199

GAO / CRS
(1990 Dollars)

The General Accounting Office reports DoD's estimates for defense spending related to Southwest Asia during the period 1980 through 1990. The definition of Southwest Asia used in the report comprises the Middle East, Kenya, Somalia, and Sudan. DoD classifies spending in three categories: dedicated, oriented, and contingency programs. Dedicated programs were driven by objectives in Southwest Asia. Oriented programs were motivated by objectives in that region as well as other regions. Contingency programs were motivated by interests outside of Southwest Asia, but are useful for meeting objectives in that region.

In its report, CRS uses GAO's findings to develop a marginal cost estimate by summing only those costs that DoD said would not occur in the absence of objectives in Southwest Asia. CRS also includes an estimate of incremental costs for conflicts that occurred during the decade of analysis, but these costs are excluded from the figure we report because they do not represent baseline. We then annualize the remaining costs.

The total cost estimate is the annualized sum of all dedicated, oriented, and contingency programs related to Southwest Asia that are included in the GAO report. DoD acknowledges that all of these programs have been useful for fulfilling its mission in Southwest Asia, although it claims many of the programs would still exist in the absence of that mission.

Marginal Costs for Meeting Southwest Asia Objectives

	Cost ($Billions)
- Military construction in Bahrain, Kenya, Oman, and Somalia	0.4
- Afloat prepositioned ships	1.6
- Air Force prepositioning and bare-base support	1.0
- Central Command headquarters	0.6
- Training	0.6
- Joint combined exercises	0.3
11yr total	**4.5**
Annualized marginal cost	0.4

Other Costs Related to Southwest Asia (DoD claims would occur even if no mission in Southwest Asia)

	Cost ($Billions)
Dedicated Programs	
- Maritime prepositioned squadron at Diego Garcia	0.8
- Aircraft carrier battle group in Indian Ocean	16.1
11yr Subtotal	16.9
Oriented Programs	
- Military construction in Diego	0.7
Garcia, the Azores, and Morocco	1.2
- Fast sealift ships	
- Ready Reserve Force	1.0
- Flat racks and sea sheds	0.4
- Logistics over shore	0.8
- Maritime prepositioned squadron	1.7
11yr Subtotal	5.8

Exhibit A-4a
BACKGROUND INFORMATION ON SOURCES OF DEFENSE ESTIMATES

Contingency and Mobility Programs	
- Marine Corps aviation support ships	0.1
- Hospital Ships	0.7
- Strategic airlift	49.5
- Conventional B-52s	2
- Forces available to the Central Command	220.3
11yr Subtotal	272.6
Total of all categories of programs, including marginal costs	299.8
Annualized total cost	27.3

Military and Economic Assistance Costs for Southwest Asia (not counted in our oil-defense estimate)

	Cost ($Billions)	
- Foreign military financing program expenditures	30.3	(grant funds and forgiven, canceled, and concessional loans)
- Military assistance program	0.5	
- International military and education training program expenditures	0.1	
- Bilateral economic assistance expenditures	28.3	(Economic Support Fund and Development Assistance administered by the Agency for International Development and food assistance)
- Multilateral assistance	6.6	
11yr Subtotal	65.8	
Annualized assistance cost	6.0	

Sources: U.S. Congressional Research Service. *The External Costs of Oil Used in Transportation*. CRS Report for Congress. 92-574 ENR. June 17, 1992.
U.S. General Accounting Office. *Southwest Asia: Costs of Protecting U.S. Interests*. GAO/NSIAD-91-250. August 1991.

Exhibit A-4b

DEPARTMENT OF ENERGY
Strategic Petroleum Reserve
(millions of dollars)

Year	Constants	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985	1984	1983	1982	1981	1980	1979	1978	1977	1976
I. SPR Annualized Cost of Operations - Assuming Annual Interest Write-off																					
High Estimate: Value to Private Sector																					
Management Costs		16.8	15.8	14.2	13.4	12.8	13.0	13.4	12.3	13.4	13.5	17.9	16.4	19.6	20.1	19.4	22.3	18.1	14.7	7.8	14.0
Operating Costs on Facilities Acct.		68.1	57.3	48.6	51.5	56.3	53.9	48.0	45.6	40.2	32.1	132.4	42.7	66.8	52.7	32.5	0.0	189.8	139.2	0.0	90.0
Capital Depreciation (25-year)		113.3	107.4	102.5	97.8	92.8	87.6	82.9	78.5	74.5	71.1	63.4	55.3	50.2	44.6	40.6	39.1	30.2	14.9	8.4	4.2
Imputed interest charge on capital at private sector rates		303.7	304.5																		
Loss (Gain) on Oil Sales		0.0	0.0	0.0	0.0	146.5	0.0	0.0	0.0	0.0	15.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Imputed interest charge for working capital to finance oil inventory at private sector rates		1,736.7	1,842.8																		
Total		**2,238.5**	2,327.9																		
Low Estimate: Cost to Government																					
Management Costs		16.8	15.8	14.2	13.4	12.8	13.0	13.4	12.3	13.4	13.5	17.9	16.4	19.6	20.1	19.4	22.3	18.1	14.7	7.8	14.0
Operating Costs on Facilities Acct.		68.1	57.3	48.6	51.5	56.3	53.9	48.0	45.6	40.2	32.1	132.4	42.7	66.8	52.7	32.5	0.0	189.8	139.2	0.0	90.0
Capital Depreciation (35-year)		80.9	76.7	73.2	69.8	66.3	62.6	59.2	56.1	53.2	50.8	45.3	39.5	35.8	31.8	29.0	27.9	21.6	10.6	6.0	3.0
Imputed interest charge on capital at government rates		207.5	206.1	202.2	204.5	198.3	185.7	184.7	190.5	189.0	195.3	192.2	168.8	145.3	123.2	102.0	86.8	62.6	29.6	16.1	8.0
Loss (Gain) on Oil Sales		0.0	0.0	0.0	0.0	146.5	0.0	0.0	0.0	0.0	15.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Imputed interest charge for working capital to finance oil inventory at government rates		1,187.0	1,247.1	1,287.2	1,366.0	1,387.7	1,355.6	1,398.0	1,489.1	1,535.0	1,661.8	1,710.0	1,558.7	1,321.0	941.7	510.5	398.6	357.9	142.4	16.9	0.0
Total		**1,560.2**	1,603.0	1,625.3	1,705.3	1,867.9	1,670.7	1,703.2	1,793.5	1,830.8	1,968.8	2,097.8	1,826.1	1,588.5	1,169.5	693.3	535.6	650.0	336.6	46.8	115.0
II. Data Inputs to Annualized Cost Estimate																					
A. Invested Capital																					
New Funding: Storage Facility Development & Ops.		226.9	191.0	161.9	171.7	187.7	179.5	160.0	151.9	134.0	107.0	441.3	142.4	222.5	175.7	108.2	0.0	632.5	463.9	0.0	300.0
Est. Operating Share	30%	68.1	57.3	48.6	51.5	56.3	53.9	48.0	45.6	40.2	32.1	132.4	42.7	66.8	52.7	32.5	0.0	189.8	139.2	0.0	90.0
Est. Capital Share	70%	158.9	133.7	113.4	120.2	131.4	125.7	112.0	106.3	93.8	74.9	308.9	99.6	155.8	123.0	75.7	0.0	442.8	324.8	0.0	210.0
Total Invested Capital		2,910.7	2,751.9	2,618.2	2,504.8	2,384.6	2,253.2	2,127.5	2,015.5	1,909.2	1,815.4	1,740.5	1,431.6	1,332.0	1,176.2	1,053.2	977.5	977.5	534.8	210.0	210.0
Mid-year Gross Capital Base for (F) calculation of interest charges		2,831.3	2,685.0	2,561.5	2,444.7	2,318.9	2,190.4	2,071.5	1,962.4	1,862.3	1,778.0	1,586.1	1,381.8	1,254.1	1,114.7	1,015.4	977.5	756.1	372.4	210.0	105.0
Depreciation Period	High Estimate 25	years																			
	Low Estimate 35	years																			
Gross PPE, mid-year new investment		146.3	123.5	116.8	125.8	128.5	118.8	109.2	100.1	84.3	191.9	204.3	127.7	139.4	99.3	37.9	221.4	383.8	162.4	105.0	105.0
Depreciation																					
High Estimate																					
Start-of-year net PPE		1,539.1	1,523.0	1,508.7	1,480.7	1,444.9	1,413.7	1,387.3	1,365.8	1,355.9	1,235.1	1,094.3	1,021.9	932.7	877.9	880.7	698.4	344.9	197.4	100.8	0.0
Mid-year net PPE, including new investment		1,685.4	1,646.5	1,625.4	1,606.5	1,573.4	1,532.5	1,496.5	1,465.8	1,440.3	1,427.0	1,298.6	1,149.6	1,072.0	977.2	918.5	919.8	728.6	359.8	205.8	105.0
Depreciation Charge for New Investments		5.9	4.9	4.7	5.0	5.1	4.8	4.4	4.0	3.4	7.7	8.2	5.1	5.6	4.0	1.5	8.9	15.4	6.5	4.2	4.2
Depreciation Charge for Past Investments		107.4	102.5	97.8	92.8	87.6	82.9	78.5	74.5	71.1	63.4	55.3	50.2	44.6	40.6	39.1	30.2	14.9	8.4	4.2	0.0
Total Annualized Depreciation		113.3	107.4	102.5	97.8	92.8	87.6	82.9	78.5	74.5	71.1	63.4	55.3	50.2	44.6	40.6	39.1	30.2	14.9	8.4	4.2
Net PPE, End-of-Year		1,572.2	1,539.1	1,523.0	1,508.7	1,480.7	1,444.9	1,413.7	1,387.3	1,365.8	1,355.9	1,235.1	1,094.3	1,021.9	932.7	877.9	880.7	698.4	344.9	197.4	100.8
Low Estimate																					
Start-of-year net PPE		1,866.5	1,819.7	1,776.1	1,720.2	1,657.9	1,601.6	1,551.6	1,507.6	1,476.5	1,335.4	1,176.4	1,088.2	984.7	917.2	908.3	714.9	352.7	201.0	102.0	0.0

Exhibit A-4b

DEPARTMENT OF ENERGY
Strategic Petroleum Reserve
(millions of dollars)

Year	Constants	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985	1984	1983	1982	1981	1980	1979	1978	1977	1976
Mid-year net PPE, including new investment		2,012.8	1,943.2	1,892.9	1,846.0	1,786.4	1,720.5	1,660.8	1,607.7	1,560.8	1,527.3	1,380.7	1,215.9	1,124.0	1,016.5	946.2	936.3	736.5	363.4	207.0	105.0
Depreciation Charge for New Investments		4.2	3.5	3.3	3.6	3.7	3.4	3.1	2.9	2.4	5.5	5.8	3.6	4.0	2.8	1.1	6.3	11.0	4.6	3.0	3.0
Depreciation Charge for Past Investments		76.7	73.2	69.8	66.3	62.6	59.2	56.1	53.2	50.8	45.3	39.5	35.8	31.8	29.0	27.9	21.6	10.6	6.0	3.0	0.0
Total Annualized Depreciation		80.9	76.7	73.2	69.8	66.3	62.6	59.2	56.1	53.2	50.8	45.3	39.5	35.8	31.8	29.0	27.9	21.6	10.6	6.0	3.0
Net PPE, End-of-Year		1,931.9	1,866.5	1,819.7	1,776.1	1,720.2	1,657.9	1,601.6	1,551.6	1,507.6	1,476.5	1,335.4	1,176.4	1,088.2	984.7	917.2	908.3	714.9	352.7	201.0	102.0
Imputed Interest Charges on PPE Investment																					
Actual Capital Charge Levied on SPR	(H)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
High Estimate																					
Interest Rate Subsidy at Private Sector Cost of Capital	(G)	10.73%	11.34%																		
Annual Imputed Interest Charge	(=G*F)	303.7	304.5																		
Low Estimate																					
Interest Rate Subsidy at Government Cost of Capital	(E)	7.33%	7.68%	7.89%	8.37%	8.55%	8.48%	8.91%	9.71%	10.15%	10.98%	12.12%	12.21%	11.59%	11.05%	10.05%	8.88%	8.28%	7.95%	7.68%	7.61%
Annual Imputed Interest Charge	(=E*F)	207.5	206.1	202.2	204.5	198.3	185.7	184.7	190.5	189.0	195.3	192.2	168.8	145.3	123.2	102.0	86.8	62.6	29.6	16.1	8.0
B. Inventory																					
Cost Basis																					
Petroleum Acquisition & Transport, net of sales proceeds		(107.8)	0.0	(125.6)	88.413	108.5	371.9	242.0	438.7	0.0	(13.0)	2,049.6	650.0	2,074.1	3,679.7	3,205.1	(2,022.3)	2,356.5	2,703.5	440.0	0.0
Cumulative Cost of Purchases, net of sales proceeds	(A)	16,139.2	16,247.0	16,247.0	16,372.6	16,284.2	16,175.8	15,803.8	15,561.8	15,123.1	15,123.1	15,136.1	13,086.5	12,436.5	10,362.4	6,682.7	3,477.7	5,499.9	3,143.5	440.0	0.0
Mid-year cost basis, for calculation of imputed interest	(B)	16,193.1	16,247.0	16,309.8	16,328.4	16,230.0	15,989.8	15,682.8	15,342.5	15,123.1	15,129.6	14,111.3	12,761.5	11,399.5	8,522.6	5,080.2	4,488.8	4,321.7	1,791.7	220.0	0.0
Year-End Inventory (million bbls)	(C)	591.7	591.7	585.7	571.4	568.5	589.6	577.1	554.7	533.9	506.4	489.3	431.1	361	277.9	199.2	92.8	91.2	49.1	1.1	
Average Acquisition Cost/bbl	(=A/C)	27.3	27.5	27.7	28.7	28.6	27.4	27.4	28.1	28.3	29.9	30.9	30.4	34.5	37.3	33.5	37.5	60.3	64.0	400.0	
Market Basis																					
Average Refinery Acquisition Cost/bbl	(D)	17.2	15.6	16.4	18.4	19.1	22.2	18.0	14.7	17.9	14.6	26.8	28.6	29.0	31.9	35.2	28.1	17.7	12.5	12.0	10.9
Market Value of SPR Inventory	(=C*D)	10,195.0	9,224.6	9,611.3	10,530.9	10,835.6	13,100.9	10,370.5	8,137.4	9,556.8	7,368.1	13,088.8	12,342.4	10,465.4	8,856.7	7,019.8	2,604.9	1,616.1	611.8	13.2	
Capital Gain (Loss) on Inventory	(=C*D-A)	(5,944.2)	(7,022.4)	(6,635.7)	(5,841.7)	(5,448.6)	(3,074.8)	(5,433.4)	(7,424.4)	(5,566.3)	(7,755.0)	(2,047.3)	(744.1)	(1,971.1)	(1,505.8)	337.1	(872.8)	(3,883.9)	(2,531.7)	(426.8)	
Gain (Loss) Realized on Sales																					
Barrels Sold (millions)		0.0	0.0	0.0	0.0	21.1	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Sale Proceeds		0.0	0.0	0.0	0.0	457.9	0.0	0.0	0.0	0.0	14.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Avg. Sale Price per Barrel						21.7					14.6										
Realized Gain (Loss) in Millions		0.0	0.0	0.0	0.0	(146.5)	0.0	0.0	0.0	0.0	(15.3)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Imputed Interest Charges on Working Capital Used in Inventory																					
Actual Capital Charge Levied on SPR	(H)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
High Estimate																					
Financing Subsidy at Private Sector Cost of Capital	(G)	10.73%	11.34%																		

Exhibit A-4b

DEPARTMENT OF ENERGY
Strategic Petroleum Reserve
(millions of dollars)

Year	Constants			1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985	1984	1983	1982	1981	1980	1979	1978	1977	1976
Annual Interest Charge	(=B*G)			1,736.7	1,842.8																		
Low Estimate																							
Financing Subsidy at Government Cost of Capital	(E)			7.33%	7.68%	7.89%	8.37%	8.55%	8.48%	8.91%	9.71%	10.15%	10.98%	12.12%	12.21%	11.59%	11.05%	10.05%	8.88%	8.28%	7.95%	7.68%	7.61%
Annual Interest Charge	(=B*E)			1,187.0	1,247.1	1,287.2	1,366.0	1,387.7	1,355.6	1,398.0	1,489.1	1,535.0	1,661.8	1,710.0	1,558.7	1,321.0	941.7	510.5	398.6	357.9	142.4	16.9	0.0
			Cumulative	20,872.3																			
III. Cost of SPR as a Formal Enterprise - Including Compounded Interest																							
A. Aggregate																							
New Costs																							
New Management Costs				16.8	15.8	14.2	13.4	12.8	13.0	13.4	12.3	13.4	13.5	17.9	16.4	19.6	20.1	19.4	22.3	18.1	14.7	7.8	14.0
New Capital Invested				226.9	191.0	161.9	171.7	187.7	179.5	160.0	151.9	134.0	107.0	441.3	142.4	222.5	175.7	108.2	0.0	632.5	463.9	0.0	300.0
New Oil Transport and Acquisition				(107.8)	0.0	(125.6)	88.4	108.5	371.9	242.0	438.7	0.0	(13.0)	2,049.6	650.0	2,074.1	3,679.7	3,205.1	(2,022.3)	2,356.5	2,703.5	440.0	0.0
Total New Costs				136.0	206.8	50.5	273.5	309.0	564.4	415.4	602.9	147.4	107.5	2,508.7	808.8	2,316.2	3,875.4	3,332.7	(2,000.0)	3,007.1	3,182.1	447.8	314.0
Interest Rates																							
Nominal Rate (5-yr rolling average)			7.04%	7.33%	7.68%	7.89%	8.37%	8.55%	8.48%	8.91%	9.71%	10.15%	10.98%	12.12%	12.21%	11.59%	11.05%	10.05%	8.88%	8.28%	7.95%	7.68%	7.61%
Effective annual rate, monthly accrual		12	7.28%	7.58%	7.95%	8.18%	8.69%	8.89%	8.82%	9.29%	10.15%	10.64%	11.55%	12.81%	12.92%	12.22%	11.63%	10.52%	9.25%	8.60%	8.25%	7.96%	7.88%
Starting Principal + accrued interest				69,335	64,029	59,137	54,146	49,428	44,885	40,674	36,354	32,720	29,229	23,558	20,104	15,737	10,445	6,292	7,667	4,183	815	325	0
Interest on Starting balance				5,257	5,092	4,840	4,708	4,396	3,957	3,778	3,690	3,480	3,377	3,019	2,598	1,924	1,214	662	709	360	67	26	0
Total New Investment				136	207	51	273	309	564	415	603	147	108	2,509	809	2,316	3,875	3,333	(2,000)	3,007	3,182	448	314
Interest on New Costs				5	7	2	11	12	22	17	28	7	6	144	47	127	202	158	(83)	117	119	16	11
End-of-year principal + interest				74,732	69,335	64,029	59,137	54,146	49,428	44,885	40,674	36,354	32,720	29,229	23,558	20,104	15,737	10,445	6,292	7,667	4,183	815	325
Incremental Debt				5,397	5,306	4,892	4,992	4,717	4,544	4,210	4,320	3,634	3,490	5,672	3,453	4,367	5,292	4,153	(1,374)	3,484	3,368	490	325
Total Investment through 1995		20,606																					
Total Accrued interest through 1995		54,126																					
Compounded value of investment, as of 1995	(J)			74,732																			
Value of SPR in 1995																							
Market value of oil inventory, 1995				10,195																			
Price premium allowance on oil sales to reflect change in oil prices and/or premium for selling during times of unrest		50%		5,097	Assumes that oil will be sold during times of market unrest when crude oil prices rise 50 percent higher than now.																		
Maximum book value of assets (assuming 40-year capital life)				1,932																			
Estimated total value of SPR	(K)			17,224																			
Net Value																							
Net losses of SPR if treated as a formal enterprise, including compounded interest	(=J-K)			57,508																			
Net "price" paid for oil security if spread evenly from 1976-1995, inclusive		20 years		2,875																			
B. Annual Cost of Operating SPR, including Compound Interest																							
Management Costs				16.8	15.8	14.2	13.4	12.8	13.0	13.4	12.3	13.4	13.5	17.9	16.4	19.6	20.1	19.4	22.3	18.1	14.7	7.8	14.0

Exhibit A-4b

DEPARTMENT OF ENERGY
Strategic Petroleum Reserve
(millions of dollars)

Year	Constants	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985	1984	1983	1982	1981	1980	1979	1978	1977	1976
Operating Costs on Facilities Acct.		68.1	57.3	48.6	51.5	56.3	53.9	48.0	45.6	40.2	32.1	132.4	42.7	66.8	52.7	32.5	0.0	189.8	139.2	0.0	90.0
Capital Depreciation (25-year)		80.9	76.7	73.2	69.8	66.3	62.6	59.2	56.1	53.2	50.8	45.3	39.5	35.8	31.8	29.0	27.9	21.6	10.6	6.0	3.0
Loss (Gain) on Oil Sales		0.0	0.0	0.0	0.0	-146.5	0.0	0.0	0.0	0.0	-15.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incremental Interest Charge on New Investment		4.7	7.4	1.9	10.7	12.4	22.5	17.4	27.6	7.1	5.6	144.1	46.8	127.1	202.4	157.8	-83.4	116.8	118.5	16.1	11.2
Incremental Compounded Interest on Principal and Accrued Interest		5,256.5	5,091.6	4,839.7	4,707.6	4,395.7	3,956.7	3,777.6	3,689.8	3,480.0	3,377.2	3,018.7	2,597.8	1,923.7	1,214.5	662.2	709.2	359.9	67.2	25.9	0.0
Total		5,427.0	5,248.8	4,977.6	4,853.1	4,397.0	4,108.6	3,915.6	3,831.3	3,593.9	3,463.9	3,358.5	2,743.2	2,172.9	1,521.5	900.9	676.0	706.2	350.3	55.8	118.2

IV. Cost of Capital Data

			1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985	1984	1983	1982	1981	1980	1979	1978	1977	1976
High Est. - Corporate Cost of Financing																						
Wgtd. Ave. Large Composite Rate for Petroleum Refining (SIC 291)		10.64%	10.73%	11.34%																		
Effective Financing Subsidy Rate		10.64%	10.73%	11.34%																		
Low Est. - Gov't Cost of Capital																						
Gov't Cost of Borrowing (30 yr T-bond)	(I)	6.71%	6.88%	7.37%	6.59%	7.67%	8.14%	8.61%	8.45%	8.96%	8.59%	7.78%	10.79%	12.41%	11.18%	12.76%	13.45%	11.27%	9.28%	8.49%	7.75%	7.61%
Interest Rate Subsidy	(=I-H)	6.71%	6.88%	7.37%	6.59%	7.67%	8.14%	8.61%	8.45%	8.96%	8.59%	7.78%	10.79%	12.41%	11.18%	12.76%	13.45%	11.27%	9.28%	8.49%	7.75%	7.61%
Five-year rolling average cost of capital (to allow for refinancing)		7.04%	7.33%	7.68%	7.89%	8.37%	8.55%	8.48%	8.91%	9.71%	10.15%	10.98%	12.12%	12.21%	11.59%	11.05%	10.05%	8.88%	8.28%	7.95%	7.68%	7.61%

Sources:

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Write-off of Weeks Island Storage Facility

Facility	Capacity (mil bbls)	% of total
Bryan Mound	226	30.1%
West Hackberry	219	29.2%
Bayou Choctaw	75	10.0%
Big Hill	160	21.3%
Weeks Island	70	9.3%
Total	750	100.0%

Source: U.S. Department of Energy, *Strategic Petroleum Reserve Annual Report,* February 15, 1996, pp. 6-10.

Exhibit A-6a

DEPARTMENT OF THE INTERIOR
Bureau of Land Management
(millions of dollars)

Program	FY95 Obligations	Estimated FY95 Obligations (Note 1)	Oil & Gas Share	Allocation	Oil Share	Allocation	Description	Source
Management of Land and Resources								
Energy and Minerals	72						Management of onshore oil, gas, coal, and geothermal resources, including resource assessments, use authorization, compliance, and post-use reclamation.	OMB A-549
Oil & Gas		54.7	54.7	All oil and gas	24.2	Oil share of oil and gas value of onshore production from mineral leases		BLM III-4
Other		17.3	0.0	No oil or gas	0.0			BLM III-4
Land Resources	118						Management of rangeland and forest services.	OMB A-549
Soil, Water, & Air		17.9	4.0	Land use spending mix	1.8	Oil share of oil and gas value of onshore production from mineral leases		BLM III-4
Automated Land & Min Records System	76	69.2	15.6	Land use spending mix	6.9	Oil share of oil and gas value of onshore production from mineral leases	Development and implementation of the system	OMB A-549
Workforce and Organizations Support	130						General operations support activities	OMB A-549
Information Systems Operators		16.2	1.8	Management of Land and Resources spending mix	0.8	Oil share of oil and gas value of onshore production from mineral leases		BLM III-4
Administrative Support		50.4	5.5	Management of Land and Resources spending mix	2.4	Oil share of oil and gas value of onshore production from mineral leases		BLM III-4
Bureauwide Fixed Costs		63.4	6.9	Management of Land and Resources spending mix	3.0	Oil share of oil and gas value of onshore production from mineral leases		BLM III-4
Alaska Mineral Assessment	0	0.0	0.0		0.0		Identification, inventory, and evaluation of mineral resources on Federal land in Alaska.	OMB A-549
Realty and Ownership Management	75						Management and processing of authorizations and compliance for realty actions, rights-of-way, surveys, and other land administration.	OMB, A- 549 - A-550
Alaska Conveyance Land		32.4	---	unquantified			Federal land transfers to Alaska natives, native corporations, and the state. (Note 2)	BLM III-4
Cadastral Survey		12.7	2.9	Land use spending mix	1.3	Oil share of oil and gas value of onshore production from mineral leases		BLM III-4
Land & Realty		29.8	6.7	Land use spending mix	3.0	Oil share of oil and gas value of onshore production from mineral leases	Processes land use authorizations (rights-of-way) and land exchanges; manages information on public lands; completes land disposal actions.	BLM III-4
Resource Protection and Maintenance	69						Management of land use planning to balance competing uses	OMB A-549

Exhibit A-6a

DEPARTMENT OF THE INTERIOR
Bureau of Land Management
(millions of dollars)

Program	FY95 Obligations	Estimated FY95 Obligations (Note 1)	Oil & Gas Share	Allocation	Oil Share	Allocation	Description	Source
Resource Management Planning		9.5	2.1	Land use spending mix	0.9	Oil share of oil and gas value of onshore production from mineral leases		BLM III-4
Facilities Maintenance		32.4	1.5	BLM spending mix; Oil and gas share of Land and Resources Management	0.7	Oil share of oil and gas value of onshore production from mineral leases	Maintenance of BLM facilities and infrastructure on public lands. (Includes water, sewers, roads, trails, bridges) (Note 3)	BLM III-4
Resource Protection & Law Enforcement		10.1	2.3	Land use spending mix	1.0	Oil share of oil and gas value of onshore production from mineral leases	Includes investigations of oil and gas theft.	BLM III-4
Hazardous Materials		17.0	3.8	Land use spending mix	1.7	Oil share of oil and gas value of onshore production from mineral leases	Environmental enforcement and compliance activities associated with hazardous materials on public lands. (Note 4)	BLM III-4
Mining Law Administration	27		0.0	No Oil and Gas	0.0	Oil share of oil and gas value of onshore production from mineral leases	Administration of the General Mining Law of 1872, which provides for locating and patenting mining claims for minerals such as gold, silver, copper, nickel, zinc, and lead.	OMB A-549
Reimbursable Program	14							OMB A-549
Subtotal, Management of Land and Resources	**668**		**107.7**		**47.6**		Note: Items don't sum to total because not all programs listed here.	OMB A-549
Construction	17		0.8	BLM spending mix; Oil and gas share of Land and Resources Management	0.3	Oil share of oil and gas value of onshore production from mineral leases	Construction of buildings, recreation facilities, roads, trails, and other facilities	OMB A-551
Total Spending	685		108.5		47.9			
OFFSETTING COLLECTIONS								
Management of Lands and Resources								
Mining Law Administration Fees	27		0.0	No Oil and Gas	0.0	Oil share of oil and gas value of onshore production from mineral leases		OMB A-549
Other Collections	14		3.2	Land use spending mix	1.4	Oil share of oil and gas value of onshore production from mineral leases		OMB A-549
Total Offsets	41		3.2		1.4			

Exhibit A-6a

DEPARTMENT OF THE INTERIOR
Bureau of Land Management
(millions of dollars)

Program	FY95 Obligations	Estimated FY95 Obligations (Note 1)	Oil & Gas Share	Allocation	Oil Share	Allocation	Description	Source
GROSS SUBSIDY TO OIL					**47.9**			
OFFSETTING COLLECTIONS					**1.4**			
NET SUBSIDY TO OIL					**46.6**			

Breakout by Subsidy Category	Gross	Offsets	Net
Access to resources	47.9	1.4	46.6

NOTES

1) Obligations for sub-categories of certain line items are based on the share of the main line item's FY95 budget authory for which the sub-category accounts.
2) Although the primary focus is on land transfer initiatives, this item includes much of BLM's other activities in Alaska (e.g., land use authorizations; management of Alaska native corporation easements; and issuance of leases, sales, and permits). It is difficult to precisely quantify the extent to which activities in this program may support oil production and transportation because specific activities are not broken out in BLM's Budget Justifications. Further, it is difficult to distinguish between activities supporting BLM's land conveyance responsibilties and its normal program activities.
3) This item appears to involve maintenance operations for all BLM facilities. It was allocated based on all BLM spending, not just the Land and Resources Management division.
4) The allocation of hazardous materials activities may underestimate the proportion for oil because it is based solely on spending for different land use activities and does not factor relative risks. Oil and other energy and mineral activities are more likely to pose hazards than grazing, forestry, and other land uses.
4) Spending for threatened and endangered animals was allocated to oil activities.

SOURCES

United States Department of the Interior, Bureau of Land Management, *Budget Justifications, FY 1997*.
United States Executive Office of the President, Office of Management and Budget, *Budget of the United States Government, Fiscal Year 1997*.

Exhibit A-6b

DEPARTMENT OF THE INTERIOR
Mineral Management Service
(millions of dollars)

PROGRAM	1995 Obligations	Oil Share	Allocation	Description	Source
Royalty and Offshore Minerals Management					
Outer Continental Shelf Lands	87	39.1	Oil and gas share of 1994 OCS production; oil share of 1995 OCS oil and gas production.	Manages leasing operations and regulates exploration, development, and production on OCS land .	OMB A-559
Royalty Management	68	27.2	Oil and gas share of 1996 receipts; oil share of 1995 oil and gas production on Federal lands.	Activities associated with royalties, rentals, and bonuses due from production on Federal, Indian, alotted, and OCS lands.	OMB A-559
General Administration	33	14.1	Oil share of obligations for direct program spending.		OMB A-559
Reimbursable Program	12	5.1	Oil share of obligations for direct program spending.		
Oil Spill Research	6	6.0	All Oil	Oil pollution research and duties related to spill prevention. Funds appropriated from the Oil Spill Liability Trust Fund.	OMB A-562
Total Spending	206	91.4			
OFFSETTING COLLECTIONS					
Royalty and Offshore Minerals Management					
Reimbursable Program	12	5.1	Oil share of obligations for direct program spending.	Offsetting collections do not include leasing receipts, which reflect the return on the sale of resources.	OMB A-562
Oil Spill Research					
Oil Spill Liability Trust Fund	6	6.0	All Oil		OMB A-562
Total Offsets	18	11.1			

GROSS SUBSIDY TO OIL	**91.4**
OFFSETTING COLLECTIONS	**11.1**
NET SUBSIDY TO OIL	**80.3**

Breakout by Subsidy Category	Gross	Offsets	Net Subsidy to Oil
Access to Resources	85.4	5.1	80.3
Response to Oil Contamination	6.0	6.0	0.0

NOTES

1) Net outlays for Royalty and Offshore Minerals Management were $181 million in FY95.
2) Royalties are counted as a return on asset sales and are not an offset to Mineral Management Service program costs.

SOURCE

United States Department of the Interior, Minerals Management Service, *Budget Justifications, F.Y. 1997*.

Exhibit A-7a

OIL SUBSIDIES IN CONTEXT

	Scenario 1 Domestic Subsidies Only (Note 1)	Scenario 2 Domestic and Pro-rated Share of Foreign Subsidies (Note 2)	Scenario 3 Total U.S. Subsidies for Domestic and Foreign Oil (Note 3)
Domestic Subsidies	$4,445 - $10,226	$4,445 - $10,226	$4,445 - $10,226
Pro-rated share of foreign tax deferral	$0 - $0	$8 - $40	$62 - $303
Pro-rated share of foreign tax credit	$0 - $0	$63 - $138	$486 - $1,057
Pro-rated share of Eximbank	$0 - $0	$26 - $32	$197 - $241
Pro-rated share of OPIC	$0 - $0	$1 - $4	$10 - $31
Pro-rated share of Persian Gulf defense	$0 - $0	$887 - $1,978	$10,459 - $23,333
Adjusted Subsidy Value	**$4,445 - $10,226**	**$5,430 - $12,417**	**$15,660 - $35,192**
Per Barrel of Consumption ($/bbl)	1.2 - 2.8	0.8 - 1.9	2.4 - 5.4
As % of U.S. consumer expenditures, net of user fees	2.9% - 6.6%	2.7% - 6.1%	7.7% - 17.3%
Per Btu ($/mmBtu)	0.25 - 0.57	0.16 - 0.36	0.45 - 1.02
Per Metric Ton of Carbon	7.41 - 17.06	9.06 - 20.71	26.12 - 58.70

Notes:

1) Does not include subsidies for foreign oil (i.e., foreign lending, foreign tax breaks, and Persian Gulf defense). Consumption data (both barrels and Btus) were adjusted to exclude net imports since they do not benefit from domestic subsidies. Consumer expenditure data were adjusted to exclude the value of net imports upon arrival to U.S. refineries, again because that value is not impacted by domestic subsidies.
2) Subsidy value includes the pro-rated share of foreign subsidies that benefit net imports. Foreign tax breaks and lending subsidies are pro-rated by U.S. net imports' share of total foreign petroleum products supplied. Persian Gulf defense spending is pro-rated by the percentage of total Persian Gulf production imported by the U.S.
Total U.S. consumption and expenditure figures are used.
3) Includes all subsidies for domestic and foreign oil. Total U.S. consumption and expenditure figures are used

1995 Petroleum Consumption (Note 1)

	Million Barrels/ Day	Total Barrels (mmbbl) (Note 2)	Btu (quadrillion)	Carbon Content (mill. metric tons)	Source
U.S. Consumption	17.73	6,470	34.66	600	(1,2,4)
U.S. Net Imports (Note 3)	7.89	2,878	16.87		(1,2)
World Consumption	70.19	25,620	141.15		
U.S. Consumption, net of imports	9.84	3,591	17.79	600	(3)
Foreign Petroleum Products Supplied	60.35	22,029	123.36		
U.S. Net Import Share of Foreign Consumption		13.1%			
Persian Gulf Petroleum Supply (Note 4)	18.44	6,730			(1)
U.S. Net Petroleum Imports from the Persian Gulf (Note 3)	1.56	570			(1)
U.S. Net Import Share of Persian Gulf Production		8.5%			

Carbon Content

1995 Crude Oil Carbon Coefficient (Note 3)	20.23	million metric tons carbon / quadrillion Btu	(4)

Notes:

(1) Consumption is the same as total demand and as total petroleum products supplied. Btu consumption figures are for the heat content of petroleum products supplied. They include Btu losses incurred in the generation, transmission, and distribution of electricity, power plant electricity use, and other unaccounted losses that are not counted in end-use consumption figures.

(2) Total barrels is the product of barrels per day and 365 days per year.

(3) Total U.S. carbon emissions from petroleum consumption are reported in EIA, *Emissions of Greenhouse Gases in the United* States: 1996. This statistic is based on the carbon content of crude oil entering U.S. refineries (tons carbon per Btu). Because foreign oil only benefits from domestic subsidies for part of its fuel cycle (i.e., once it has arrived to the U.S.), the carbon emissions are only partially subsidized. We have not adjusted for this factor in our domestic only scenario. Thus the subsidy per ton of carbon is understated.

(4) Includes crude oil, natural gas liquids, and refined products. Persian Gulf countries are Bahrain, Iran, Iraq, Kuwait, Qatar, Saudi Arabia, and the United Arab Emirates.

Sources:

(1) EIA, International Petroleum Statistics Report, 9/27, T. 4.4, 4.6, 4.7, 4.9
(2) EIA, Annual Energy Review: 1996, Table 1.3, 1.4
(3) EIA, International Energy Annual: 1995, December 1996, Table E2.
(4) EIA, Emissions of Greenhouse Gases in the United States 1996, October 1997, Tables 5 and B1.

1994 Petroleum Expenditures

A. Total Consumer Expenditures

	Expenditures (Millions)	
Distillate Fuel	47,235	
Jet Fuel	12,474	
Liquid Petroleum Gas	15,286	
Motor Gasoline	129,900	
Residual Fuel	5,289	
Other	18,856	
Total Consumer Expenditure Estimates for Petroleum	229,040	EIA, *Annual Energy Review: 1996*, Table 3.4
Adjusted to 1995 Dollars	234,859	Adjusted using GDP implicit deflator

B. User Fees on Oil (Note 1)

User Fees Already Evaluated	**Fee**	**Pro-rated to Oil**	
Motor Fuels Excise Tax			
Leaking Underground Storage Tank Trust Fund	165	165	
Aquatic Resources Trust Fund	334	334	
Highway Trust Fund	23,528	23,528	
Airport & Airway Trust Fund	5,571	5,571	
Crude Oil Windfall Profits Tax	0	0	
Superfund Feedstock Fee	1,479	1,479	
Oil Spill Liability Trust Fund	113	113	
Inland Waterway Fund	103	20	See Exhibit A-3b for allocation to oil.
TAPS Liability Fund	119	119	
Harbor Maintenance Trust Fund	671	228	See Exhibit A-3b for allocation to oil.
Rivers and Harbors Contributed Funds	103	34	See Exhibit A-3b for allocation to oil.
Deep Water Port Liability Fund	0	0	
Total User Fees on Oil	32,186	31,591	

Total Consumer Expenditures for Petroleum Products, net of user fees (Note 2)	203,268

C. Value of Net Imports

U.S. Net Petroleum Imports (mmbbl)	2.88E+03	
Refinery Acquisition Cost for Improrts ($/bbl)	17.14	EIA, *Annual Energy Review: 1996* , Table 5.19
Value of Net Imports ($million)	49,336	

Total Consumer Expenditures for Petroleum Products, net of user fees and imports	153,932

Notes:

(1) These fees on oil would be factored into the prices of petroleum products. We deduct them from total consumer expenditures because our subsidy totals are net of user fees.

(2) Assumes 100 percent of user fees are passed on to consumers.