CBO TESTIMONY

Statement of
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Macroeconomic and Budgetary Effects of Hurricanes Katrina and Rita

before the
Committee on the Budget
U.S. House of Representatives

October 6, 2005

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Chairman Nussle, Ranking Member Spratt, and Members of the House Budget Committee, thank you for offering the Congressional Budget Office (CBO) the opportunity to discuss the likely economic and budgetary impacts of Hurricanes Katrina and Rita. Those storms exacted a tragic toll from the people of Louisiana, Mississippi, Alabama, Texas, and Florida and their property. The hurricanes also significantly damaged the nation's near-term energy supply. At this time, the extent of the damage and the costs of recovery are still unclear, but it is evident that recovery in the Gulf region will entail the expenditure of billions of private-sector and taxpayer dollars. That prospect raises important questions about the character and scope of current recovery efforts and about how to prepare and budget for future disasters.

My testimony will make the following points:

- Hurricanes Katrina and Rita have temporarily and significantly reduced the growth of national economic output, but the overall effects that recovery and rebuilding will have on economic activity may more than offset that drag by early next year. Nevertheless, a full recovery in the affected Gulf states will take quite some time.

- Actions pursued thus far by the federal government will push the federal budget further into deficit for the next few years, largely because of the $62 billion appropriated for emergency assistance but also because of various temporary changes to tax rules. The ultimate impact of the hurricanes on the federal budget will be determined largely by the actions of the Congress and the President.

- The scale and scope of the damage from Katrina and Rita are unique, but costly natural disasters are not. The Congress may wish to consider options to incorporate planning for such events in the regular budget process. That planning may help evaluate policies for reducing the costs of future disasters and budgeting in advance for a greater share of those costs.

CBO's estimates of economic losses and impacts continue to evolve as new data and analysis become available. The estimates reported in this testimony are updates of those provided in CBO's letter to the budget committees dated September 29, 2005.

Economic Losses from Hurricanes Katrina and Rita

The economic effects of the hurricanes arise from the loss of life and the destruction of private and government capital stocks in the Gulf states. Hurricane Katrina destroyed considerable numbers of residential structures; consumer durable goods, such as motor vehicles, household furnishings, and appliances; and business structures and equipment, particularly in the energy and

petrochemical industries. Hurricane Rita appears to have had a smaller impact on residential structures and consumer durable goods, but its damage to the energy industry may be as great or greater than Katrina's. The damage to capital stocks has temporarily reduced employment and the growth of income in the affected areas.

Damage Estimates

The damage has not been completely surveyed, but it is widely agreed that Hurricane Katrina alone has caused more economic damage than any recent catastrophe in the United States. Estimates from Risk Management Solutions (RMS), a private-sector company that provides services for the management of insurance catastrophe risk, suggest that total losses—insured and uninsured—from both hurricanes approach $140 billion, the bulk of which is due to Hurricane Katrina. Insured losses are estimated to range from about $40 billion to $67 billion, with recent estimates closer to the lower end of that range.

Losses of physical capital total between $70 billion and $130 billion, in CBO's estimation (see Table 1). That amount is smaller than the total RMS estimate because a portion of both the insured and uninsured losses that RMS reports reflect losses arising from claims under business-interruption policies as well as the costs of demolition, cleanup, and repairable damage.

As time goes on, it may be possible to base estimates on the damage that stricken areas have actually experienced, but at present, such estimates are not available. Using the shares of capital by type (fixed capital and consumer durable goods) for Louisiana as a proxy for shares in the whole stricken area, about 25 percent of the damage will have been in housing, more than 45 percent in business structures and equipment, nearly 20 percent in public infrastructure (roads, bridges, sewer systems, and so forth), and almost 10 percent in consumer durable goods. Nearly half of the losses in business structures and equipment will have been in the energy industry.

Housing. The extent of the damage to the housing stock remains unknown. The National Low Income Housing Coalition estimated the number of housing units damaged by Hurricane Katrina using data from the 2000 census and the Federal Emergency Management Agency (FEMA).[1] The number of housing units were matched by census block to FEMA maps that provided estimates of the proportion of units that suffered at least moderate damage. That calculation indicated that about 287,000 occupied housing units were lost or damaged. Of

1. National Low Income Housing Coalition, Research Note No. 05-02 "Hurricane Katrina's Impact on Low Income Housing Units" (September 20, 2005), available at www.nlihc.org/research/05-02.pdf.

Table 1.

Estimates of the Value of Capital Stock Destroyed by Hurricanes Katrina and Rita

(Billions of 2005 dollars)

	Range
Housing	17 to 33
Consumer Durable Goods	5 to 9
Energy Sector	18 to 31
Other Private-Sector	16 to 32
Government	13 to 25
Total	**70 to 130**

Source: Congressional Budget Office.

that number, 135,000 units in New Orleans were probably damaged by flooding. Hurricane Rita also damaged thousands of homes, but no reliable estimates are as yet available. Some other measures of the effects of the two storms indicate that more than 400,000 units were damaged, but it is uncertain how those estimates were derived.

CBO estimates that the value of the damage to residential structures—not including relatively minor, easily repairable damage—ranges from $17 billion to $33 billion. Under an assumption that about 300,000 units sustained at least moderate damage from the two storms, a comparison of the value of damage estimates with that number of units suggests damage in the range of roughly $58,000 to $108,000 per unit.

The Energy Industry. Currently, about 90 percent of crude oil production and roughly 70 percent of natural gas production from the Gulf of Mexico are shut down because of damage to platforms and pipelines that bring those products to shore. (The Gulf's production of crude oil makes up about 2 percent of the world's supply.) After Katrina, the Minerals Management Service reported that the storm destroyed or caused extensive damage to 66 producing structures; initial reports indicate that Rita destroyed or damaged 41 more. Fortunately, most of the high-volume platforms that operate in deep waters and account for nearly half of the Gulf's offshore oil production appear to have escaped significant damage. However, one large platform, the Mars facility, which on its own accounts for 10 percent of Gulf oil production, was damaged badly enough by Katrina to be out of service until early 2006.

In the petroleum-refining sector, damage from the hurricanes has resulted in the loss of 3 million barrels a day of refining capacity (or nearly 20 percent of the nation's total capacity), but much of that disruption of activity seems to be related

to flooding and power outages. Onshore losses of capital for refineries, petrochemical plants, natural gas plants, bulk terminals, and pipelines appear to be smaller than the offshore losses.

The electric power industry in Texas and Louisiana incurred significant damage as a result of the two storms. Although power has been restored to millions of customers, nearly 400,000 in those states remain without power. The industry has already reviewed its losses and claims that the costs of repairing downed transmission towers, substations, and local power lines, as well as recouping lost sales revenues during the period, will total $2.5 billion.

By CBO's estimate, capital losses in the energy-producing industries will range from $18 billion to $31 billion. Those estimates are based on a rough assessment of the value of firms' damaged structures. Capital losses in the energy sector appear to constitute about a fourth of total losses from the two hurricanes.

Government Capital. It is difficult to estimate the storms' toll in damage to government capital, which includes drinking water and sewage treatment facilities, roads and bridges, airports, schools, courthouses, and other public buildings. The status of water systems in the affected areas is not well known, and there are no reliable estimates of the cost of repairing those systems. Similarly, estimates for the repair and reconstruction of other public infrastructure—such as major highways and bridges, locally maintained roads and bridges, and port infrastructure—range in the vicinity of $10 billion but are highly uncertain.

Because estimates of losses of government capital are lacking, CBO has assumed that about 20 percent of the capital destroyed as a result of the hurricanes was government capital. (That percentage was chosen because it reflects the government share of the total capital stock in Louisiana in 2003.) CBO has estimated the value of the losses in government capital at between $13 billion and $25 billion.

Losses Sustained in Previous Catastrophes

The combined losses of Hurricanes Katrina and Rita are likely to surpass those from the costliest hurricane previously on record (Andrew) and the three costliest disasters in recent history (Hurricane Andrew, the September 2001 terrorist attacks, and the Northridge earthquake). The extent of the damage done by the two recent hurricanes suggests that recovery will also take longer than the recoveries from those other large catastrophes.

- Losses from Hurricane Andrew, a Category 5 hurricane that struck about 20 miles south of Miami on September 24, 1992, totaled $38.5 billion in today's dollars, $19.2 billion of which was insured. (Those losses include destroyed capital as well as other losses.) About two-thirds of the dollar

amount of all claims—approximately $12.5 billion—was paid to holders of homeowner's policies. Commercial policies accounted for most of the remaining one-third of insured losses.

- The losses from the terrorist attacks on September 11, 2001, are estimated at $87 billion in today's dollars. Privately insured losses are estimated to total $35.2 billion and include $11.9 billion in business-interruption losses, $10.4 billion in property losses, $3.8 billion in aviation liability, $1.9 billion in workers' compensation benefits, and $1.1 billion in life insurance payments. (Another $1.1 billion in property losses remains in dispute.)

- The earthquake that struck Northridge, California, on January 17, 1994, measured 6.7 on the Richter scale and resulted in damages of $48.7 billion in today's dollars. Of that amount, $18.8 billion was insured. Claims under homeowner's policies constituted more than three-quarters of the total dollar value of the insured claims. Those claims might have been far more extensive, but only 40 percent of homeowners carried insurance coverage for earthquake damage.

Income Losses in the Gulf States

The losses in the capital stock have largely shut down economic activity in New Orleans and have hampered activity in parts of the other states affected by the hurricanes. Employment and wage income have fallen as have state and local tax revenues. As rebuilding efforts gain force and economic activity begins to recover, employment, incomes, and state and local revenues will also recover.

Employment and Wage Income. Excluding people whose work was disrupted only for a few days, the combined direct effect of Hurricanes Katrina and Rita on employment was probably the loss of between 293,000 and 480,000 jobs. Moreover, the two storms' effects on general economic activity mean that employment will be temporarily depressed—for the nation as a whole as well as in the stricken areas.

Measuring the effects of the hurricanes on employment will remain difficult, even after the Bureau of Labor Statistics begins to publish data for September later this month. In particular, the bureau faces considerable problems in measuring employment in the storm-damaged areas. The effects of Rita will not be reflected in the data for September but should appear in those for October (which will be published in November).

Direct Effects of Katrina. Between about 280,000 and 400,000 people lost jobs directly because of Hurricane Katrina. The lower bound for those job losses comes from the number of storm-related claims for unemployment insurance filed

to date. The Department of Labor estimates that by September 24, a total of 279,000 such claims had been filed, but that number could go higher. (One potential source of future claims is workers who have so far remained on their employer's payroll, even though unable to work, but who may be dropped if the business does not recover quickly enough.)

CBO based the upper bound of the job-loss total on information from the Bureau of Labor Statistics' report of data for 2004 (using the Quarterly Census of Employment and Wages). That report includes the number of establishments, total employment, and total wages in areas affected by Katrina, which can be used to estimate the jobs potentially at risk because of flooding and other damage and thus an upper bound of the storm's possible effect on employment. In the 86 counties or parishes designated by FEMA as eligible for both individual and public disaster assistance, employment before the storm totaled 2.4 million jobs (1.9 percent of the national total). In 2004, the wage bill for those counties, in which people may have missed a week or more of work, was $76.7 billion (1.5 percent of the national total).

Workers in the areas that FEMA has identified as flooded and storm damaged are the most likely to experience an extended absence from work (or even to lose their old jobs permanently). According to the Bureau of Labor Statistics, in the fourth quarter of 2004, about 22,500 business establishments within those areas employed roughly 373,000 workers and paid $3.5 billion in wages and salaries. (Those wage data are also quarterly, not annualized.) Most of the at-risk employment in Louisiana is in flooded areas, whereas in Mississippi, virtually all of the potential job losses are likely to be attributable to damage rather than flooding. In addition, jobs located at some distance from storm-damaged areas may also be at risk: about 265,000 workers were employed within half a mile of such areas in Louisiana and Mississippi—184,000 of them in Louisiana. The upper-bound estimate of job losses of 400,000 assumes that most of the roughly 300,000 jobs in flooded areas plus a fraction of those either in nonflooded areas or within half a mile of flooded areas will be lost.

Direct Effects of Rita. Hurricane Rita's impacts on employment appear to have been considerably smaller than those of Hurricane Katrina. Within areas identified by FEMA as having been damaged by Rita, employment in the fourth quarter of 2004 totaled about 12,600 jobs, with a wage bill for the quarter of about $115 million (not an annualized figure). Because information on unemployment insurance claims attributable to Hurricane Rita is not available, the 12,600 figure represents a lower bound on the number of jobs at risk of prolonged disruption (although some of those workers are probably still being paid by their regular employers and others may have been hired to participate in cleanup activities). However, nearly 140,000 people were employed within half a mile of those damaged areas; under the assumption that half of those jobs are also

at risk of prolonged disruption, CBO estimates an upper-bound impact on employment of roughly 80,000 jobs.

Aside from those effects, the evacuation of more than 2 million residents from the Houston metropolitan area probably resulted in the loss of a few days' pay for some workers and reduced profits for employers who continued to pay their workers. (Such effects will not show up in the October employment data.) In addition, renewed flooding in portions of New Orleans and St. Bernard Parish might slightly delay the recovery from job losses attributable to Katrina, although it should have no impact on employment totals by the end of the year.

Revenues of State and Local Governments. Data from the state of Louisiana are especially difficult to acquire, but that state is expected to face the most severe revenue problems of all of those affected by the hurricanes. Early information from Mississippi, Alabama, and Texas indicates that state general fund revenues may not suffer significantly as a result of the storms. Some local governments may confront more-serious difficulties because they face significant losses in their property tax bases—a development that also raises the risk of defaults on their municipal bonds. Louisiana and Mississippi are working to help local governments make payments on their bonds.

Louisiana officials are still gathering information about the storms' effects on the state's budget. Most unofficial estimates of lost revenues have ranged from $1 billion to $3 billion, a significant shortfall given that the governor's budget recommendation for 2006 was based on the assumption that state revenues would total about $12 billion. Local governments, particularly that of New Orleans, have lost significant portions of their tax bases—notably, revenues from property taxes. About two-thirds of the population of Louisiana lives in areas that are now officially declared disaster areas. In the affected parishes, annual property taxes totaled about $1.3 billion and local sales taxes, about $1.8 billion; together, they accounted for about 70 percent of statewide tax collections.

In Mississippi, the storms' net effect on the state's general fund over time is likely to be negligible. Despite the fact that about two-thirds of the Mississippi population lived in an area that has now officially been declared a disaster area, initial reductions in revenue resulting from lost income and wages and some decrease in gaming activities are not expected to be as large as in Louisiana. Moreover, those reductions will be balanced by increased collections from income taxes, as cleanup continues and rebuilding efforts begin. Affected counties in Mississippi collect about $1 billion in property taxes.

Although the Gulf coasts of Alabama and Texas were hit by both hurricanes, those states are not anticipating any long-term effect on revenues. The 10 counties in Alabama affected by the storms hold about 18 percent of the state's population;

in Texas, the affected areas hold about 4 percent. In those states, the primary effect on revenues will be reductions (if any) in income taxes as a result of lost wages.

The Scale and Pace of Reconstruction Spending

The overall pace of reconstruction after the hurricanes is likely eventually to be quite rapid, although significant delays and bottlenecks could occur in the rebuilding effort and insurance settlements in some affected areas could be somewhat slower than they have been in past disasters. Spending for rebuilding and replacing privately owned structures, equipment, housing, and consumer durable goods (that is, total private replacement and rebuilding) could rise to between $20 billion and $40 billion (in 2005 dollars, measured annually) by the first half of 2006. Almost a third of such spending would be in the energy sector; another third would be in residential construction. The rebuilding of government capital facilities would add to that reconstruction activity.

Housing

The scale of the devastation from the two storms suggests that a substantial demand for construction services will emerge, but the problems associated with rebuilding in New Orleans will delay and perhaps mute that response. Although the speed of repair and rebuilding is always constrained by the availability of funds and workers, residential construction is likely to add about $2 billion (measured annually) to economic activity in the last half of 2005, CBO forecasts, and about $10 billion in the first half of 2006. Those numbers, which represent the midpoints of the range of CBO's estimates, cover all construction associated with the storms, regardless of where it takes place. (Some homeowners may not rebuild on their original site but instead use the insurance payments they receive to build or buy a home elsewhere.)

The midpoints of CBO's estimates incorporate the assumption that it will take three years to fully rebuild the housing stock. A two-year rebuilding period is commonly used in such estimates, but CBO used a more conservative time frame because the rebuilding of New Orleans poses unique problems. It appears that property insurance compensation (private and flood insurance) and various grants and low-cost loans will be timely enough to support such a pace of rebuilding.

The Energy Sector

Levels of oil and natural gas extraction may be lower than usual through the middle of 2006, but the bulk of the Gulf coast's pipeline and refinery operations will probably be repaired by the end of this year. The pace and scale of repairs will become clearer in the near future as assessments of damages to Gulf drilling and undersea pipelines become available. The largest offshore facilities may be

able to resume operations in the next few weeks; if they can, oil and natural gas production from the Gulf of Mexico may average half its normal level for the rest of this year. Other offshore facilities will probably return to production during the first half of 2006.

Operators of refineries anticipate that damage from the storms can be repaired within a few weeks, but that recovery will depend on the speed of the restoration of electric power. (Complete restoration of electricity service may require another month or more.) National refinery production may be reduced by roughly 10 percent, on average, for the rest of this year, but it is likely to be at 100 percent capacity by year's end. A similar pace of recovery is likely for the region's large number of petrochemical complexes, natural gas processing plants, and natural gas pipelines.

Other Industries

Restoration of damaged structures and equipment—known as business fixed investment—in industries other than energy is also likely to stimulate economic activity. If the private capital stock is rebuilt in an average of three to four years (a standard assumption), such spending will add $5 billion to $10 billion to business fixed investment in 2006, the bulk of which is likely to be purchased from domestic suppliers.

Government

Much of the repair work to public-sector capital, such as the work on the I-10 Twin Spans Bridge across Lake Pontchartrain and the pumps for New Orleans, started immediately after Hurricane Katrina in order to facilitate rescue and recovery operations. Federal funding will contribute to the repair of roads and water treatment facilities, although the scale of public rebuilding will be much smaller than that of the private sector.

Effects on National Output, Employment, and Inflation

The economic effects of the destruction wrought by the two recent Gulf hurricanes will be more pervasive than those of previous hurricanes and will affect the nation's economic activity for the balance of this year and all of next year. Hurricanes Katrina and Rita were unique in the scope of their destruction, the disruption of energy supplies, and the dislocation of workers. The storms have temporarily reduced the growth of economic output, but the effects of rebuilding on economic activity may more than offset that drag by early next year.

At this time, it is still too early to know the degree to which economic activity will slow this year and how quickly it may recover. Factors that will affect the speed of recovery are how quickly insurance and government payments are distributed, how

quickly consumer energy prices decline, and how quickly rebuilding starts, in New Orleans and elsewhere. For example, if, during 2005, about half of the private insurance claims are paid out; if federal relief and recovery spending totals about $10 billion (in the form of transfer payments and outlays for goods and services); if gasoline prices fall back to levels only about 10 percent higher than their pre-Katrina levels; and if rebuilding is only slightly delayed relative to the timing experienced in previous hurricanes, then the economic dislocation of the hurricanes is likely to be offset by the reconstruction effort by early next year.

Effects on the Growth of Gross Domestic Product

The hurricanes' initial effects on economic output stem from lost production in the affected regions and the temporary spike that has occurred in energy costs. Looking forward, however, the impact of the hurricanes on the pace of production and income will depend on what happens to four major categories of spending: investment (in business structures and equipment, commercial structures, and housing); spending on consumer durable goods; government spending for goods and services; and other household consumption expenditures (see Table 2).

CBO estimates that the hurricanes may reduce real (inflation-adjusted) growth of GDP in the third quarter of 2005 by between 1 and 1½ percentage points, but as cleanup and repair begin, the economy in the fourth quarter is likely to grow at a rate not much different from what it would have been without the hurricanes and possibly even a little higher. Real GDP growth for the two quarters together—that is, for the second half of 2005 as a whole—is likely to be dampened by about half a percentage point. By the first quarter of 2006, though, spending to repair or replace the capital stock (homes, business structures, and equipment) is likely to drive the level of output back roughly to its previous trend and to continue to add slightly to growth during the rest of that year.

CBO's analysis does not include any dynamic feedback effects—that is, the tendency of increased spending in one area of the economy to increase incomes, and consequently spending, elsewhere. Such effects are likely to be small, particularly if the Federal Open Market Committee of the Federal Reserve does not alter its apparent plan to raise interest rates. (The Federal Reserve increased rates by 25 basis points, or a quarter of a percentage point, on September 20, as had been expected before Hurricane Katrina.)

Effects on Employment

The storms' effects on employment include not only their direct effects (the loss of between 293,000 and 480,000 jobs in the areas struck by the hurricanes) but also the negative impact of the energy shock-induced reduction in consumer demand

Table 2.

Estimated Net Effect of Hurricane Katrina on Real Gross Domestic Product

(Billions of 2005 dollars at annual rates)

	2005	2006		2007	
	2nd Half	1st Half	2nd Half	1st Half	2nd Half
Energy Production	-18 to -28	-8 to -10	-5 to -7	-5 to -7	-5 to -7
Housing Services	-1 to -2	-2 to -4	-1 to -3	0 to -2	0 to -2
Agricultural Production	-1 to -2	0	0	0	0
Replacement Investment	6 to 12	16 to 34	16 to 35	16 to 35	12 to 25
Government Spending on Goods and Services	6 to 10	12 to 18	14 to 20	10 to 16	7 to 11
Effect of Higher Energy Prices on Nonenergy Consumption	-6 to -10	-5 to -7	-2 to -5	-1 to -3	0 to -2
Other Consumption	-8 to -12	-2 to -4	-1 to -3	-1 to -3	0 to -2
Real GDP	**-22 to -32**	**11 to 27**	**21 to 37**	**19 to 36**	**14 to 23**

Source: Congressional Budget Office.

Note: This table is an updated version of a similar table published by CBO on September 29, 2005. The estimates for "Replacement Investment" have changed slightly since that time.

and the positive impact that will accompany cleanup and rebuilding. The boost in energy prices that arose largely in the storms' wake is tempering the growth of consumption and GDP nationwide. Higher energy prices will dampen employment growth as well, compared with what it would have been in the absence of Katrina and Rita. By contrast, the reconstruction activity, which has already begun, will spur a huge demand for workers by early next year.

On balance, it is likely that the pattern of employment over the next year and a half will follow the pattern forecast above for GDP. The storms' initial adverse impact on the national level of employment will fade over the next few months, as many employees return to their former jobs or find new ones. By early next year, the pace of reconstruction will probably cause the net effect of the hurricanes on jobs nationwide to be minimal. If, as appears likely, output bounces back by early next year to equal or exceed its previous trend, total employment will be similar to what it would have been if the hurricanes had not occurred, even though some of the people who lost jobs may remain unemployed for some time.

Effects on Inflation

Consumer prices will grow at a faster rate during the second half of this year than had previously been expected, CBO forecasts, primarily because of the increase in energy prices. However, inflation should revert to pre-Katrina rates in the first half of 2006, provided—as most analysts anticipate—energy prices ease and drop part

of the way back to their levels before the hurricane. Higher prices for construction materials and higher energy prices, through transportation costs, will tend to temporarily increase growth in the prices of many non-energy-related goods as well as in airline, bus, and railroad fares.

The direct, short-term effects of the hurricanes on the rise in the consumer price index for urban consumers (CPI-U)—that is, the effects stemming from the increase in energy prices—will be substantial. As a result of those direct effects alone, growth of the CPI-U between the fourth quarter of 2004 and the fourth quarter of 2005 may be almost 1 percentage point higher than it would have been in the absence of the hurricanes. Nevertheless, inflation as measured by the CPI-U may be slightly lower than previously anticipated during 2006, as the effect of the hurricanes on energy prices dissipates.

Government Activity and Authority for Disaster Relief and Recovery

The public-sector response to disasters such as Hurricanes Katrina and Rita involves a mix of funding and personnel from government agencies at the federal, state, and local levels. Federal agencies respond to natural disasters under both standing authority and specific legislative direction.

The Federal Emergency Management Agency

FEMA is the federal government's lead agency in responding to natural disasters. When emergencies occur, local jurisdictions are generally the first responders. But when a hurricane or other catastrophe overwhelms both the local and state governments, the governor can request that the President declare a "disaster" or a "major disaster." The President's declaration puts into motion long-term recovery programs to help individuals, businesses, and public entities that are victims of the disaster. Authority to declare a disaster and provide relief is provided by the Robert T. Stafford Disaster Relief and Emergency Assistance Act (the Stafford Act).

FEMA identifies two main categories of disaster aid under the Stafford Act: individual and public assistance. Individual assistance begins immediately after the President declares a major disaster. It may include providing housing, food, and other basic needs for survival and distributing funds to meet needs that insurance companies and other aid programs do not cover. Those may include the repair of homes, replacement of personal property, transportation, medical care, and funeral expenses. FEMA may also provide unemployment benefits and reemployment services to people who are not covered by other unemployment compensation programs, as well as assistance with rental or mortgage payments for as long as 18 months. The Stafford Act currently limits cash assistance to an individual or a household to $26,200, an amount that is adjusted annually for inflation.

Public assistance consists of grants to state and local governments to help cover the cost of repairing, rebuilding, or replacing infrastructure. It may also support debris removal, emergency protective measures, and the provision of public services. Certain types of nonprofit organizations may also qualify for public assistance if they provide education, utilities, irrigation, emergency care, or other essential services to the general public.

FEMA performs much of its work on a reimbursable basis; that is, it arranges for other agencies to provide goods or services and reimburses them for their costs. For example, state agencies usually administer disaster unemployment assistance, and FEMA often works closely with the Department of Defense and the Army Corps of Engineers to address a community's infrastructure needs.

Over the past 50 years, the Congress has gradually expanded FEMA's authority under the Stafford Act, sometimes as a result of a specific event. For example, following the terrorist attacks on the World Trade Center of September 11, 2001, the Congress authorized FEMA to reimburse New York City for economic losses from reduced tourism, a cost that would not ordinarily qualify for reimbursement. FEMA also has broad discretion in how it administers programs under the Stafford Act, and after September 11, the agency expanded the eligibility guidelines for many of its programs.

To date, the President has requested and the Congress has appropriated $62.3 billion in emergency assistance in response to Katrina. Almost all of that amount—$60 billion—was provided to FEMA's disaster relief account; as a result, some of those funds may be used if necessary for assistance in response to Hurricane Rita or other disasters. (That account also held about $2 billion in unobligated funds provided in previous appropriations.) CBO estimates that outlays from those supplemental appropriations will total about $30 billion in fiscal year 2006 and that most of the remaining money will be spent over the following three years. Although billions of dollars were obligated in September (that is, during fiscal year 2005), most of the checks are likely to be written in subsequent months. The bulk of the spending on reconstruction activities will occur over a period of several years.

As of September 27, FEMA had obligated about $14.5 billion for activities related to Hurricane Katrina and had allocated another $3.8 billion for obligation in the future. Of that $18.3 billion, $8.0 billion has been allocated to housing assistance and the acquisition of manufactured housing, $3.5 billion has been committed to states in the form of goods and services for relief activities, and $3.5 billion will be used to reimburse other federal agencies—in particular, the Army Corps of Engineers and the Department of Defense (DoD)—for their disaster relief efforts. (Those agencies have also received funding of their own: the Congress provided $400 million to the Corps and $1.9 billion to DoD for costs associated with the

deployment of military personnel in support of relief efforts, for the evacuation of military personnel and their families, and for short-term repairs to military facilities.)

In addition to the disaster relief fund, FEMA also administers the National Flood Insurance Program. Premiums provide most of the resources to pay claims under that program, which also has the authority to borrow from the Treasury if those amounts are not sufficient. Shortly after Hurricane Katrina, the Congress increased the program's borrowing authority by $2 billion, bringing the total authority to $3.5 billion. Although CBO does not have sufficient information at this time to estimate the total value of the hurricane-related claims that FEMA is likely to face, information from the agency about the amount of flood insurance in force in affected areas suggests that those losses will significantly exceed the sums currently available to pay claims. CBO expects that the agency will exhaust its existing resources quickly, bringing net outlays for the program to almost $4 billion. At that point, additional funding is likely to be necessary to enable the program to quickly pay outstanding claims.

By one measure, the federal government has committed a historically high level of resources for relief and recovery from Hurricanes Katrina and Rita. The recent emergency supplemental appropriation of more than $60 billion is almost double the emergency supplemental appropriation provided for the September 11, 2001, terrorist attacks and more than 10 times the emergency appropriation after Hurricane Andrew.

Other Congressional Action to Date

In addition to supplemental appropriations for disaster relief, the Congress and the President have enacted a number of other laws to assist those affected by the hurricanes. The TANF Emergency Response and Recovery Act of 2005 (Public Law 109-68) provides additional funds to states that were damaged by Hurricane Katrina and those that are hosting evacuees from the hurricane to provide benefits to needy people. That legislation will cost about $400 million, CBO estimates, mostly in 2006. The Congress and the President have also enacted laws authorizing flexibility in the use of disaster aid for displaced workers, changes to student loan programs, and priority funding for programs to aid individuals with disabilities. Much of the costs of those activities will be paid for with previously appropriated funds, but about $260 million will flow from the reappropriation of funds that otherwise would not have been spent.

The Katrina Emergency Tax Relief Act of 2005 (Public Law 109-73), which was enacted on September 23, provides tax relief in a number of ways to businesses and individuals. The Joint Committee on Taxation estimates that the law will reduce revenues by about $6 billion, almost entirely over fiscal years 2006 and 2007. The provisions with the biggest effects on revenues allow taxpayers to deduct more

personal property losses from taxable income, allow taxpayers more time to replace damaged property without being assessed income taxes on the insurance proceeds, and allow businesses and individuals to deduct more charitable donations from taxable income.

The Role of Other Federal Departments and Agencies
A number of other federal agencies can and do assist individuals, businesses, and local governments affected by a disaster.

Loans to Individuals and Businesses. The Small Business Administration (SBA) makes subsidized loans to residents and businesses in a disaster area. Homeowners may borrow up to $200,000 to repair or replace their home, and SBA provides loans of up to $40,000 to renters and homeowners to cover losses to personal property, such as clothing, appliances, and furniture. SBA provides loans of up to $1.5 million to businesses to cover damages to their physical property, and the agency also lends money to businesses that have suffered economic injury as a result of a disaster and need help paying their bills or meeting operating expenses.

In 2005, SBA's disaster loan program received a supplemental appropriation of $501 million, and the President requested $83 million for fiscal year 2006. In the federal budget, entries for such funds reflect the net value of the federal subsidy over the life of the loans. CBO estimates that the appropriated credit subsidy provided for 2005 will support a total loan level of $3.9 billion.

Temporary and Permanent Housing. Following past disasters, the Congress has transferred FEMA resources or appropriated new funding for the Department of Housing and Urban Development (HUD) to assist individuals in their transition from emergency shelter to permanent housing options using existing HUD programs. Individuals may receive direct assistance through the Section 8 housing choice voucher program or through public housing, and states may use funds from the community development block grant (CDBG) and the HOME Investment Partnership programs to repair damaged homes and finance long-term redevelopment. After the five hurricanes in August and September 2004, for example, HUD provided $26 million in emergency funds to repair public housing units, $10 million to repair housing units for the elderly and the disabled, $40 million in additional Section 8 vouchers, and $16 million to relocate displaced families. In addition, the Congress appropriated $150 million in additional CDBG funds for states.

A presidential disaster declaration allows the Federal Housing Administration (FHA) to call for a 90-day moratorium on foreclosures of FHA-insured mortgages. The agency may also encourage FHA mortgage lenders to offer special forbearance to affected borrowers and may relax its underwriting guidelines to permit disaster victims to qualify for certain loan programs that provide 100 percent financing for

the cost of reconstruction or for replacement residences when residences have been destroyed or severely damaged by the disaster.

Rebuilding or Repair of Roads and Bridges. State and local governments receive assistance for rebuilding roads and bridges that are part of the Federal-Aid Highway system through the Emergency Relief (ER) program of the Federal Highway Administration (FHWA). The ER program has direct spending authority of $100 million per year; however, the FHWA currently reports about $124 million of unfunded requests for aid through the program and anticipates that additional requests—not including those related to Hurricanes Katrina or Rita—will total more than $500 million. Currently, the FHWA has no estimate of how much the damage caused by those hurricanes will add to its backlog. The recent highway act (Public Law 109-59) authorized the appropriation of additional sums as necessary for the ER program, although to date, no additional funds have been appropriated. In 2005, the Congress appropriated $1.2 billion for that program for emergency expenses resulting from the 2004 hurricanes.

Restoration of Public Water Systems. The Department of Agriculture has two programs for rebuilding public water systems after disasters. The Emergency Watershed Protection Program provides funds to state and local governments to remedy emergency situations in local watersheds that present substantial danger to the public health. Spending is dependent on emergency supplemental legislation. In 2005, Florida received $120 million to repair damage and remove watershed debris caused by the 2004 hurricanes. Funds from the Emergency and Imminent Community Water Assistance Grant Program are available only to rural areas; the Congress appropriated $23 million in 2005 for such grants. In addition, public water facilities receive loans from state revolving funds that are eligible for grants from the Environmental Protection Agency, and some of those loans may be available to repair hurricane damage.

Cash Benefits and Other Assistance. The federal government operates assistance programs that automatically respond in emergencies to the loss of income and other services, and many agencies have the authority to waive certain program requirements in the event of disasters. The loss of employment in areas affected by the hurricanes will result both in emergency unemployment benefits paid through FEMA (as mentioned above) and increased claims for regular state unemployment benefits, which CBO expects could reach $600 million in the coming months. Likewise, emergency Food Stamp assistance is available through at least October, and school children dislocated by the storms will receive free school lunches and breakfasts through the child nutrition program regardless of whether they had to pay some or all of the costs of meals before the storms. Higher expenditures for Medicaid in the coming months can also be expected because the employment and income losses resulting from the storms will increase the eligible population.

Some federal agencies can waive program rules for a limited period after a disaster. For example, in 2004, the Secretary of Education announced a policy of forbearance regarding interest on student loans for borrowers affected by hurricanes and other catastrophic events. For some assistance programs, rules for documenting and verifying the income and resources of applicants have been loosened pursuant to existing administrative authority.

The effects of the hurricanes will also be felt by recipients of the major cash benefit programs. The surge in energy prices will increase consumer inflation for September and as a result boost the annual cost-of-living adjustments to those programs' benefits in January 2006 by perhaps 0.3 percentage points. Such an increase would increase spending in 2006 by $1.6 billion.

States' Emergency Resources

Like most states, those affected by Hurricanes Katrina and Rita have procedures for funding disaster assistance programs that parallel current federal practices; that is, state legislatures typically appropriate small sums to emergency-response accounts annually. None of the states provides funding in advance for those accounts at a level sufficient to cover large-scale emergencies, a practice that reflects the expectation that the federal government will step in to help when large-scale disasters occur.

States tend to plan for two types of fiscal emergencies: economic downturns and natural disasters. States establish a variety of contingency and emergency accounts (referred to in one state as the Stormy Day Fund) to prepare for unforeseen disasters, either natural or man-made, which can occur at any time. The purpose of those accounts is to earmark money for emergencies or other unanticipated or hard-to-estimate one-time expenditures that may occur within a given fiscal year. For the most part, the amounts allocated are relatively small, requiring the governor to go to the state legislature in the event of a large-scale emergency. Occasionally, a governor has the emergency authority to bypass the legislature entirely and borrow from almost any other state budget account. In Louisiana, for example, policy states that funds for disasters and emergencies are always to be available; the governor, in effect, has the authority to borrow from any appropriated funds to address an emergency.

The amount of money that states commit to emergency accounts varies greatly, ranging from a few hundred thousand dollars to several hundred million dollars. Louisiana has an Interim Emergency Board fund into which up to 0.1 percent of total state revenue collections can be appropriated. For fiscal year 2005, the fund contained $15.5 million. The state also has an Oilfield Site Restoration Fund, which contained $8.4 million in 2005, and an Environmental Trust Fund, which contained $69 million.

Mississippi does not have a statutorily created emergency fund; it does, however, have an Emergency Management Agency that administers a disaster relief fund. In fiscal year 2005, the Emergency Management Agency's budget was just under $1 million, and the Disaster Relief fund contained about $1.6 million. The goal in most states is to have enough money in those types of emergency accounts to provide the necessary match for federal disaster assistance.

Government Policy and the Response to Disaster

September's hurricanes inflicted tragic amounts of human misery and loss of life. Together, they were unique in the scale and scope of dislocation, destruction of physical capital, and loss of income. However, investing in new capital and raising the standard of living are things that the U.S. economy does as a matter of course. The financial markets, as they always do, will steer debt and equity investments to profit-making opportunities. In addition, payouts on insurance contracts will serve as a source of funding for new investment as well as provide compensation for some of the lost capital. And given government support for necessary public infrastructure, as discussed above, many of those attractive investment opportunities will be found in the affected areas of the nation's Gulf coast. The effects of Katrina and Rita do not require a major reexamination of federal policy toward national or regional economic growth.

The magnitude of the federal response to Katrina and Rita and the recurrent nature of natural disasters do raise related policy issues: the financing of current federal assistance and budgeting for future disaster aid, and options for reducing the costs of future disasters.

Budgeting for Recent and Future Disasters

The federal government's additional spending for disaster assistance in the wake of Hurricanes Katrina and Rita will ultimately be paid for through some combination of reductions in other federal spending and increases in tax revenues, either now or in the future. An important issue for policymakers is the extent to which payment for the current assistance should be made now rather than postponed through an increase in the deficit.

Beyond that decision lies the question of how to budget for the costs of future disasters. Under current practice, most federal funding of disaster assistance is provided through supplemental appropriations that are enacted as emergencies arise. Emergency supplementals require no offsetting rescissions (cancellations of previously provided budget authority) and are typically provided without lengthy legislative delays. Consequently, federal assistance can be quickly provided to disaster victims and state and local governments. However, many analysts believe that current federal budget procedures can lead to inappropriate evaluations of the trade-offs involved in providing assistance and can reduce incentives for mitigation

and recovery efforts by state and local governments. Encompassing disaster aid within the regular budget process of weighing federal spending priorities could lead to more-deliberate evaluation of standards of need and more consistent incentives for state and local governments and businesses to cover their losses.

Federal budget procedures could make the real costs of current disaster policy clearer. One option—similar to the approach the Congress uses to fund federal firefighting programs—would be to appropriate money for disaster programs in regular appropriation bills in amounts equal to the expected funding need for each program. (As a string of expensive emergency supplemental bills for natural disasters over the past 15 years demonstrates, spending on disasters has a predictable component.) Under such an option, unused funds would be available with no further action by the Congress when needs arose. Increasing regular appropriations would reduce, but certainly not eliminate, the need for emergency supplemental appropriations.

Another option would be to use annual appropriations to create a rainy-day fund to cover future expenses for federal disaster relief. Spending from such a fund could be made subject to further Congressional action when a need arose—an important difference from the preceding option. Thus, the Congress could retain greater control over the use of the funds.

Almost all states have some kind of contingency or emergency account; however, few provide funding in advance for those accounts at a level sufficient to cover large-scale emergencies. Furthermore, most states count on the fact that the federal government will step in with assistance when large-scale disasters occur. A major hurdle for the success of a rainy-day fund at the federal level therefore would be to preclude the use of the fund for other purposes, as has happened at the state level.

Reducing the Budgetary and Economic Costs of Future Disasters

Policymakers may also wish to consider options to reduce the costs of future disasters. Although the underlying natural forces cannot always be controlled, it is possible to adapt investment strategies and economic activities to reduce the financial and personal toll such forces may exact.

One goal calls for minimizing the sum of four types of costs associated with disaster risks: disaster losses, the costs of reducing those losses through mitigation (used broadly here to include preparedness and “passive mitigation” that simply forgoes risky activities), the administrative costs of reducing uncertainty through insurance, and the psychic costs of the remaining uncertainty. A second objective is to allocate disaster costs fairly.

The two basic approaches for controlling the costs of future disasters—mitigation and insurance—work in different ways. Mitigation seeks to reduce injuries, deaths,

and physical destruction by avoiding exposure to hazards, improving disaster resistance, and making plans to minimize losses after the event through timely and effective responses.[2] By contrast, insurance does not reduce the damage caused by an event but spreads the costs of that damage to reduce the financial burden on the victims. To some degree, the two approaches are substitutes for each other: the more mitigation reduces exposure to risk, the lower the demand for insurance; conversely, the more complete the insurance coverage, the lower the incentive to undertake mitigation and avoid risky activity. The two approaches work best together when insurance premiums can be finely tailored to individual risks. In that case, policyholders who take effective mitigating action see the full financial benefit of their efforts through discounts in their premiums. Conversely, insurance prices that poorly reflect actual risks—especially insurance that is subsidized, or even free—undermine mitigation incentives the most.

Implicit or explicit insurance subsidies are a major feature of current federal disaster programs. In the National Flood Insurance Program (NFIP), explicit subsidies are given to policies on structures built before the issuance of a participating community's flood rate map or before 1975, whichever is later (and not "substantially damaged" or "substantially improved" since then). Although those subsidies are not a factor in encouraging new development in flood-prone areas, they probably do tend to retard the rate at which residents and businesses move out of existing structures, thus keeping the level of risk and the likely cost of future disasters higher than they would be otherwise.

Other federal subsidies for disaster insurance are implicit, but they still have the effect of supporting risky behavior and discouraging mitigation. One example is assistance to individuals and businesses beyond payouts on flood insurance claims—for example, low-interest reconstruction loans from the Small Business Administration. Another example is FEMA's Public Assistance program, in which the federal government pays a minimum of 75 percent of the eligible cost to rebuild public facilities owned by state and local governments, Indian tribes, and certain nonprofit organizations. Both of those programs effectively provide a form of unpriced insurance.

A detailed analysis of the incentive effects and implications for efficiency and equity of current federal programs and alternative policy options is beyond the scope of this testimony. However, three categories of available options can be sketched out.

- The government could try to promote efficient mitigation and risk sharing by looking for ways to strengthen the market for private insurance. Current

2. However, mitigation can never eliminate all risks of loss from all sources, and a particular project may be counterproductive if the residual risk is not acknowledged and taken fully into account.

regulation at the state level often keeps premiums below actuarially expected losses in high-risk areas to keep insurance "affordable." In addition, federal tax laws discourage the private provision of disaster insurance by not allowing the accumulation of reserves in advance of catastrophic events.

- The government could try to lessen the incentives it now provides for risky behavior. For example, it could phase out the NFIP subsidies on grandfathered properties, charge user fees for the implicit insurance it now provides to individuals and businesses in high-risk areas, or reduce the federal share of costs in the Public Assistance program, particularly for projects to rebuild structures that would remain exposed to the high risk of damage in future disasters.

- The government could go beyond reducing disincentives to mitigation in its own disaster programs by providing more funding for mitigation or by imposing new mitigation requirements.