SESSION 5: ACCOUNTABILITY EXAMPLES

The purpose of this session is to illustrate with actual examples the concepts and techniques of oversight and accountability described in Session 4. These examples illustrate (a) the extent to which publicly available accountability information describes *what actually happens* when the executive branch implements congressional legislation, and (b) the large number of publicly available accountability reports that focus on our nation's high-priority programs.

The US Responds To National Crises. The examples focus on some of the most challenging oversight and accountability issues that arise when Congress and the executive branch enact laws that respond to national crises. A working definition of *crisis* is an event that precipitates a dangerous and unstable situation affecting a community, region, or entire society. **Acute** crises such as volcanic eruptions can occur within hours and span regional- to international- geographic scales. **Chronic or slow-onset** crises such as environmental health problems are created over relatively long time-scales. Because acute and chronic crises may affect natural and human-made systems simultaneously, solutions may be very complex and require time-scales ranging from decades to more than a century. For example:

> The March 11, 2011 Great East Japan earthquake and tsunami represent an acute natural crisis resulting in widespread death and destruction on a regional scale. This acute crisis became a contributing cause of the chronic human crisis represented by the Fukushima Daiichi nuclear power plant accident—which will require many decades of remediation of the nuclear reactors, their radioactive fuel and waste, and the surrounding (formerly habitable) region.

It is important to recognize that US legislative responses to national crises frequently embody several attributes:

1. Decisions based on imperfect knowledge and limited time to consult with stakeholders.
2. Creation of federal programs that aim to solve enormously complex challenges.
3. Commitment of significant federal resources to achieve impacts that mitigate the crises.

These attributes may contribute to accountability challenges and public controversy as federal programs try to achieve the ambitious goals established by Congressional legislation. **These challenges and issues embody the "so what" question that is integral to our OLLI course.** Often this "so what" question includes two important and related components:

1. Does the government communicate about accountability in an open and objective manner that also is transparent—that is, easily accessible to the public and relevant stakeholders?
2. Does the government's investment of taxpayer resources <u>actually</u> result in effective programs that achieve the national goals identified in Congressional legislation?

We illustrate these accountability challenges with three examples of the US government response to different national crises. Each example applies an accountability lens to describe a complex

national program in ten pages or less. Each example also includes several common components: (a) a problem statement—that is, a statement about the nature of the crisis and the US response; (b) pertinent information about oversight and accountability information, and (c) discussion of relevant accountability issues.

Example 1: The US response to the global pandemic caused by the SARS-CoV-2 virus.

1.1 Nature of the Crisis and the US Response. This accountability example explores the federal government's response to the current global pandemic. Across the US, this unprecedented crisis affects public health, the economy, employment, travel, the social safety net, and many other aspects of American society.

Most epidemiology experts agree that the SARS-CoV-2 global pandemic originated near Wuhan, China in late 2019. On January 31, 2020, the US Secretary of Health and Human Services declared a public health emergency for the United States. A government-wide US federal response quickly followed the March 10, 2020 declaration by the Director-General of the World Health Organization (WHO) that the global spread of the SARS-CoV-2 virus should be characterized as a pandemic. Congress and the President rapidly enacted four public laws by the end of June 2020, a fifth law in December 2020, and a sixth law in March 2021. These laws aim to protect public health, stimulate the economy, and reduce the pandemic's impact on Americans.[1] The six laws are the:

1. Coronavirus Preparedness & Response Supplemental Appropriations Act of 2020 (PL 116-123, March 6, 2020).
2. Families First Coronavirus Response Act (PL 116-127, March 18, 2020).
3. Coronavirus Aid, Relief, and Economic Security (CARES) Act (PL 116-136, March 27, 2020).
4. Paycheck Protection Program and Health Care Enhancement Act (PL 116-139, April 24, 2020).
5. Consolidated Appropriations Act (PL 116-260, December 27, 2020).
6. American Rescue Plan Act of 2021 (Public Law 117-2, March 11, 2021).

Simply stated, these laws authorize about $5.3 trillion in federal funds for new and existing federal programs to help individuals, businesses, and governments across the country by providing:

- Payments to governments and healthcare providers to prepare for and respond to the pandemic.
- Changes to the "safety net" and enhanced unemployment benefits to help those individuals in need.
- Economic impact payments to households to supplement lost income and encourage spending.
- Loans and grants to small businesses primarily to help them maintain their payroll.
- Educational support primarily for K-12 public schools with some support also for colleges and private schools.

The federal response to the pandemic is government-wide: at least ninety-three federal agencies[2] have implemented the new and existing programs authorized by provisions in these public laws. A partial list of federal agencies with the highest-priority roles includes: the Department of Health and Human Services, especially the National Institutes of Health the Centers for Disease

Control and Prevention, and the Food and Drug Administration; the Federal Reserve; the Departments of the Treasury; Defense, State, Labor, and Transportation; as well as the Congressional Budget Office (CBO), the Government Accountability Office (GAO), and the departmental Offices of Inspectors General (OIGs). The White House Coronavirus Task Force is responsible for coordinating this government-wide response—not only at the federal level but also with state, Tribal, and local governments.

1.2 Oversight and Accountability Information. Because of the unprecedented nature of the pandemic and the legislative response, Congress mandated extensive oversight of and accountability for coronavirus-related spending and programs through both traditional and novel federal oversight entities. In addition, journalists and news organizations are contributing valuable accountability-related information. Traditional federal oversight and accountability organizations include GAO, CBO, and the OIGs. Novel oversight organizations include several *ad hoc* entities:

1. The **Special Inspector General for Pandemic Recovery** oversees the spending by the Department of the Treasury (Treasury). This entity has published its first report to Congress,[3] which communicates the actions it is taking to establish its organization, staff, offices, and infrastructure. The reported actions do not include oversight or accountability findings.
2. The **Congressional Oversight Commission** oversees Treasury's and the Federal Reserve's implementation of their emergency pandemic "lending" programs authorized by the four public laws. This committee has published six reports to Congress through October 29, 2020. The reports describe the actions Treasury and the Federal Reserve are taking to implement their pandemic lending programs. However, the committee's reports do not include oversight or accountability findings.
3. The **Pandemic Response Accountability Committee** (PRAC) is an independent federal entity created by the CARES Act. The PRAC presents COVID-19 funding data from USAspending.gov through a variety of interactive visual displays. The PRAC website is integrated with the website for the Offices of Inspectors General coordinating council, which is known as the Council of Inspectors General for Integrity and Efficiency. This council is an independent entity established within the executive branch to address integrity, economy and effectiveness issues that transcend individual Government agencies.

Because of the limited nature of the reports by these three *ad hoc* entities, the narrative on pages 5-10 focuses on the traditional oversight organizations: GAO, CBO, and OIG. On pages 10-12 we briefly describe accountability-related contributions from journalists and news organizations.

The oversight and accountability challenge for GAO, CBO, and OIG is best illustrated by the broad scope and magnitude of the financial provisions in the six public laws. The following summary is based on analysis and reports by CBO[4] [5] and the Peter G. Petersen Foundation.[6] The simple summary (pages 4-5) and table (page 6), highlight the key elements from many thousands of pages of text from the enacted legislation:

1. "The **Coronavirus Preparedness and Response Supplemental Appropriations Act** provided $8.3 billion in emergency funding for public health agencies and coronavirus vaccine research. That bill appropriated $7.8 billion in discretionary funding to federal, state, and local health agencies and authorized $500 million in mandatory spending through a change in Medicare.
2. The **Families First Coronavirus Response Act** provided economic support to those in need. That legislation, totaling $192 billion, included a number of key components, including:
   - Enhancing unemployment insurance benefits
   - Increasing federal Medicaid and food-security spending
   - Requiring certain employers to provide paid sick leave as well as family and medical leave (and expanding tax credits for employers to offset the cost of providing such leave)
   - Providing free coverage for coronavirus testing under government health programs
3. The **CARES Act** provided economic support in seven general areas:
   - Financial Assistance to Large Companies and Governments. Approximately **$500 billion** will be used to assist companies that are critical to national security and distressed sectors of the economy. Of that sum, about $450 billion will support loans to businesses, states, and municipalities through a new Federal Reserve lending facility. That support is not expected to increase federal deficits.
   - Economic support for small businesses. Totaling about **$380 billion**, that support is largely for the creation of the Paycheck Protection Program (PPP), which allocated $349 billion in funding through the CARES Act to offer as loans to small businesses to help them avoid laying off their workers. Additionally, portions of the loans spent on payroll, rent, or utilities are eligible for forgiveness.
   - Direct payments to taxpayers**.** Taxpayers with annual incomes up to $75,000 (or $150,000 for married couples) will receive payments of $1,200; that payment amount will gradually phase out for higher income earners with a cap at an annual salary of $99,000 (or $198,000 for married couples). Families would also receive an additional $500 per qualifying child. The Joint Committee on Taxation estimates that this provision would require about **$290 billion** in funding.
   - Further expansion of unemployment benefits**.** Such benefits would be significantly expanded under the legislation — extending unemployment insurance by 13 weeks, boosting benefits by up to $600 per week for four months, and expanding eligibility requirements to include more categories of workers. CBO estimates that such an expansion would cost about **$270 billion.**
   - Federal aid to hospital and healthcare providers**.** About **$150 billion** would be provided to help hospitals, community health centers, and other healthcare providers prepare for and respond to the pandemic.
   - Various tax incentives (about **$300 Billion**). Businesses will be allowed to defer payroll taxes, which fund Social Security and Medicare. A number of other tax benefits will also be provided; the largest effect would stem from the ability of individual taxpayers to use business losses in recent years to offset nonbusiness income.
   - Support to state, local, and territorial governments. About **$150 billion** provides aid to governments to help them respond to the pandemic.
4. The **Paycheck Protection Program and Healthcare Enhancement Act** provided more economic support **($483 billion in total**) for small businesses. The Act provides an additional $383 billion in economic support for small businesses ($321 billion to replenish the PPP, $60 billion for emergency lending for small businesses, and $2 billion for salaries and expenses to administer such programs), another $75 billion in funding for hospitals, and about $25 billion to fund more testing for the pandemic."
5. The **Consolidated Appropriations Act** included $868 billion in six general categories of federal support to help mitigate the economic impact of the COVID-19 pandemic:
   - **Aid to small businesses ($302 billion)**. The CARES Act created the Paycheck Protection Program (PPP), which provided loans to small businesses that were impacted by the broad economic shutdowns that were meant to mitigate the spread of the pandemic. The latest package allows small

businesses to receive a second round of PPP loans and ensures that such assistance will not be taxed. This category also includes Economic Injury Disaster Loan advances and emergency grants to entertainment venues.

- **Direct payments to individuals ($164 billion)**. Individuals making up to $75,000 per year will receive a payment of $600, with an additional $600 for each dependent child. All payments phase out at higher incomes
- **Increased unemployment benefits ($119 billion)**. The earlier relief legislation provided several enhancements to unemployment insurance benefits that were ultimately allowed to expire. The current package restores those enhancements, albeit at more modest levels. It adds $300 per week to unemployment benefits, continues "gig" worker eligibility for unemployment benefits, and lengthens the maximum period that a worker can collect unemployment to 50 weeks.
- **Aid for schools ($82 billion)**. About two-thirds of the total amount is for grants to public K-12 schools, and most of the remainder is for grants to higher education.
- **Health-specific measures ($78 billion)**. Included in this category is $29 billion designated for the procurement and distribution of coronavirus vaccines and treatments and $22 billion for testing, tracing, and mitigation of coronavirus. An additional $14 billion will support healthcare providers and bolster mental health services, and the National Institutes of Health will receive $1 billion to engage in further coronavirus research.
- **Other measures ($123 billion)**. The legislation also includes funding for transportation, increased food stamp benefits, additional childcare assistance, rental assistance, and other programs.

6. The **American Recue Plan of 2021** provides an additional **$1.9 trillion** of federal relief in a variety of areas. Some of the key provisions in this law include:
   - **Funds for small business ($59 billion)**.
   - **Direct payments to individuals ($411 billion**). Payments of $1,400 will be sent to individual taxpayers earning up to $75,000 ($2,800 for married couples earning up to $150,000), plus an additional $1,400 per qualified child. The payment will phase out for incomes up to $80,000 ($160,000 for married couples).
   - **Direct aid to state, local, and tribal governments ($362 billion).** The law includes additional support to such governments to help them respond to the pandemic.
   - **Extension of unemployment benefits ($203 billion).** The unemployment programs currently in place, including the additional $300 weekly unemployment benefit, will be extended through September 6, 2021.
   - **Tax incentives ($176 billion).** The legislation significantly enhances existing tax credits, mostly for one year. The Child Tax Credit will increase from $2,000 per child to $3,000 ($3,600 for children under 6) and the maximum benefit for childless households under the Earned Income Tax Credit will grow from $543 to $1,502 and be extended so more individuals can claim the benefit. Other tax credits, such as the Employee Retention Credit, are also extended or enhanced.
   - **Public health-specific measures ($174 billion).** The law provides funding for vaccine distribution, COVID-19 testing, contact tracing, and other public health measures. It also includes provisions to lower healthcare premiums and expand coverage for certain workers.
   - **Educational support ($170 billion).** The majority of the support is to help K-12 schools safely reopen; colleges and other higher-education institutions will also receive funding.
   - **Other Programs ($301 Billion).** The legislation also includes additional funding for small businesses, emergency rental assistance, mortgage assistance, and relief to prevent homelessness.

Table 1

Cost of Six Laws Enacted to Provide COVID-19 Relief [7]

(Data for FY2021 is through March 31, 2021)

	Category of COVID-19 Relief	Cost of COVID-19 Relief Provided So Far	Cost of American Rescue Plan	Total Cost of COVID-19 Relief (2020-21)
1	Support for Small Businesses	$ 909 Billion	$ 59 Billion	$ 968 Billion
2	Economic Stimulus Payments	$ 456 Billion	$ 411 Billion	$ 867 Billion
2	Expanded Unemployment Compensation	$ 561 Billion	$ 203 Billion	$ 764 Billion
3	Public Health and Related Spending	$ 483 Billion	$ 174 Billion	$ 657 Billion
4	Tax Incentives	$ 390 Billion	$ 176 Billion	$ 566 Billion
6	Direct Aid to Governments	$ 150 Billion	$ 362 Billion	$ 512 Billion
7	Educational Support	$ 112 Billion	$ 170 Billion	$ 282 Billion
8	Other Relief	$ 418 Billion	$ 301 Billion	$ 719 Billion
9	**TOTAL COST**	**$3,479 Billion**	**$1,856 Billion**	**$5,335 Billion**

GAO Oversight & Accountability. The CARES Act directs GAO to: (a) provide oversight support to Congress on the pandemic and its effects while the executive branch implements provisions of the four pandemic-related public laws, (b) submit a report within 90 days of enactment about ongoing GAO pandemic monitoring and oversight efforts, and (c) report bimonthly on its ongoing monitoring and oversight efforts[8] including review of spending data to identify potential waste, fraud, and abuse, and (d) report about the effect of the pandemic on public health and the economy.

GAO is able to monitor, assess, and oversee actions of the White House Coronavirus Task Force and federal agencies by using a hybrid approach that integrates information from: (1) the strategic goals and objectives for the six public laws (e.g., to protect public health, stimulate the economy, and reduce the pandemic's impact on Americans); (2) direct interactions with and monitoring of data from the White House Coronavirus Task Force and from federal agencies; and (3) lessons learned from previous federal crises, emergencies, and disasters. GAO's ability to draw on previous experience with federal crises is particularly valuable and enables it to pursue an approach similar to the *formative evaluation* method (discussed in our narrative for Session 4). This GAO hybrid approach results in feedback during early stages of program implementation and can compare early actions with important lessons learned to help improve federal programs and their progress to achieve performance goals and outcomes.

The GAO coronavirus website identifies eighteen coronavirus reports published through the end of March 2021; these reports include recommendations to Congress about improving oversight and accountability for many of the largest coronavirus-pandemic-related programs.[9] Among these reports, GAO has published six bi-monthly reports required by the CARES Act (through March 31, 2021). These bi-monthly reports[10] and accompanying testimony by the US Comptroller General[11] make a total of seventy-two recommendations for Congressional

consideration to improve the federal pandemic response and recovery efforts. Only six of these recommendations have been implemented as of March 31, 2021. Ten important highlights from the bi-monthly reports are described below:

1. The five public laws enacted in FY2020 required federal agencies and their employees to provide immediate assistance. This resulted in an unprecedented level of dedication, resilience, and agility among the federal workforce, including those serving on the front lines, to quickly establish services. Consistent with the urgency of responding to serious and widespread pandemic health and economic disruptions, agencies have given priority to moving swiftly where possible to distribute funds and implement new programs. In moving quickly, however, agencies made trade-offs, and thus have made only limited progress so far to achieve transparency and accountability goals and to reduce systemic risk for fraud, waste, and abuse.

2. Clear, consistent communication by federal leaders—among all levels of government, with health care providers, and to the public—is key to responding effectively to the pandemic.

3. Measuring, collecting, and analyzing adequate and reliable data are essential actions that will inform decision-making, future preparedness, and midcourse changes—during future waves of pandemic infections, for example.

4. The Centers for Disease Control and Prevention (CDC) encountered problems in developing (a) a standard COVID-19 detection method for use across the nation, and (b) standard guidance for analyzing and reporting test data from federal, state, local, and Tribal health organizations. As a result, it was difficult to track and understand the number of infections especially during the vital early stage of virus transmission in the US, to mitigate effects, and to inform decisions on closing or reopening communities.

5. The nation was not prepared to meet the need for essential supplies to respond to COVID-19 infections. As the pandemic spread across the US, the demand for these supplies quickly exceeded even the quantity contained in the Strategic National Stockpile, which is designed to supplement federal, state, and local supplies during public health emergencies. Although HHS has worked with the Federal Emergency Management Agency and the Department of Defense to increase the availability of essential supplies, serious concerns remain about the distribution, acquisition, and adequacy of supplies now and in the future.

6. Federal agencies should take a number of actions to improve transparency and accountability— and to reduce systemic risk for fraud, waste, and abuse—related to federal government funds distributed through grants and guaranteed federal loans to small business, economic impact payments to individuals, and unemployment insurance.

7. The CARES Act created three federally funded temporary programs that expanded eligibility and benefits for unemployment insurance (UI). These programs involve a federal-state partnership that provides temporary financial assistance to eligible workers who become unemployed through no fault of their own. For many reasons, States face many challenges in providing benefits to individuals who file UI claims because of backlogs in processing a historic large volume of claims as well as other data issues. Although the US Department of Labor (DOL) is helping state agencies with this challenge, the number of UI claims

reported by DOL has not accurately represented the number of individuals claiming benefits. Until DOL and states are able to develop an accurate methodology, DOL should revise its weekly news releases to communicate that its unemployment information does not accurately estimate the number of unique individuals claiming benefits.

8. GAO recommends that Congress take legislative action to require appropriate federal agencies and stakeholders to develop a national aviation-preparedness plan with safeguards that limit the spread of communicable disease threats from abroad while simultaneously minimizing any unnecessary interference with travel and trade.

9. GAO describes the indicators it is developing in collaboration with the National Academies of Sciences, Engineering, and Medicine (National Academies) to monitor and assess areas of the public health care system and the economy impacted by the pandemic. **GAO identifies four elements of the public health care system affected by the pandemic and describes potential indicators needed to monitor each element**: (1) population health effects of COVID-19 (indicators: mortality specifically attributed to COVID-19, and mortality from all causes compared to historical norms); (2) the public health system's ability to help reduce disease transmission (indicators: the COVID-19 test positivity rate, contact tracing performance, and COVID-19 testing turnaround time); (3) the health care system's capacity to provide needed care (indicators: the proportion of staffed intensive care unit (ICU) beds available to treat patients, and the provision of health services unrelated to COVID-19); and (4) health care sector economic effects of COVID-19 (indicators: hospital operating margin, hospital financial reserves and investments set aside for emergencies, health care employment, health care personal consumption expenditures, and volume of elective procedures). **GAO also identifies six elements of the economy affected by the pandemic and describes indicators needed to monitor each element**: (1) labor market stress (indicators: initial unemployment insurance claims, employment-to-population ratio); (2) household financial stress (indicators: serious delinquency rates for single family mortgage loans, the Consumer Credit Default Composite Index, Supplemental Nutrition Assistance Program household participation); (3) small business financial and credit markets (indicators: the Small Business Health Index, underwriting standards on small business loans); (4) corporate credit markets (indicators: spreads on investment grade corporate bonds); (5) state and local government finances (indicators: spreads on municipal bonds, changes in state and local government employment), and (6) the financial condition of the health sector (indicators: changes in health care sector employment, changes in employment in nursing and residential care facilities, volume of elective procedures, hospital operating margins, personal consumption expenditures for health care services, gross domestic product in health care services).

   GAO points out that use of these indicators to monitor the public health care system and the economy can help leaders and policymakers frame strategic issues, support public policy choices, and enhance accountability.

10. Through the publication of its January 28, 2021 report, GAO has made 44 recommendations to federal agencies and identified four matters for Congressional consideration to improve the federal response to COVID-19.[12] GAO indicates that "As of January 2021, 27 of GAO's 31 previous recommendations remained unimplemented."[13] … "GAO remains deeply troubled that agencies have not acted on recommendations to more fully address critical gaps in the medical supply chain. . . . GAO underscores the importance of developing a well-formulated plan to address critical gaps for the remainder of the pandemic, especially in light of the recent surge in cases."[14] . . . "In September 2020, GAO stressed the

> importance of having a plan that focused on coordination and communication and recommended that HHS, with the support of the Department of Defense, establish a timeframe for documenting and sharing a national plan for distributing and administering COVID-19 vaccine, and among other things, outline an approach for how efforts would be coordinated across federal agencies and nonfederal entities. To date, this recommendation has not been fully implemented. GAO reiterates the importance of doing so. Effective coordination and communication among federal agencies, commercial partners, jurisdictions, and providers is critical . . . ."[15]

CBO Oversight & Accountability. The Congressional Budget Office (CBO) coronavirus website[16] provides information about the support it is providing to Congress on (a) the economic aspects of the four public laws and (b) the rapidly evolving economic and budgetary consequences of the COVID-19 pandemic. The CBO reports and analyses also support the legislative process as Congress continues to respond to the pandemic. For example, CBO is analyzing pandemic-related impacts on the budget, discretionary outlays from appropriations, impacts on mandatory spending, impacts on revenues, and impacts on the workforce and the economy. The CBO's ability to project financial, labor, and economic impacts provides essential information for Congress about the strategic national impacts of the draft legislation it develops and ultimately enacts. The five highlights below describe CBO projections and financial analysis from several of its 2020 reports[17] available from the CBO website:

1. The 2020 coronavirus pandemic has brought about widespread economic disruption. For example, as a result, during the second quarter of 2020 real Gross Domestic Product (GDP) contracted at an annual rate of 31.7%, the largest decline on record. Between January and April 2020, the unemployment rate increased from 4.4% to 14.7% (the highest level since data were first collected in 1948) and sixty-five million claims for unemployment insurance were filed by the end of April 2020, the largest number of claims on record.

2. In the near-term, the five public laws enacted in FY2020 in response to the pandemic—which provide financial support to households, businesses, and state and local governments—will add $3.1 trillion to the deficit in fiscal year 2020 and at least $0.6 trillion in 2021. The $ 3.1 trillion deficit is more than triple the shortfall recorded in FY2019. The FY2020 deficit is 14.9 percent of GDP and the largest since 1945. The four public laws enacted in FY2020 also include credits and incentives that will reduce future federal revenue by about $ 500 billion annually from 2020-2030. As a result of the $ 3.1 trillion deficit, CBO projects that debt held by the public will reach 100.1% of GDP by the end of FY2020—the highest level since immediately after World War II. By 2023, debt held by the public is projected to reach 107% of GDP, which would be the highest ratio ever recorded in the United States.

3. In the near-term, despite these adverse near-term impacts on the deficit and national debt, the financial provisions of the four laws will offset a significant part of the deterioration in economic conditions brought about by the pandemic. For example, CBO estimates that *absent* the four public laws enacted in FY2020, the FY2020 real GDP would have contracted by 46.2% instead of the actual rate of 31.7%. In other words, from fiscal year 2020 through 2023, for every dollar that the four public laws add to the deficit, the laws are projected to increase GDP by about fifty-eight cents.

4. In the near-term, CBO projects that if current laws generally remain in place, the economic recovery will be relatively rapid in 2020: during the third quarter of FY2020, real (inflation-adjusted) GDP is expected to grow

at a 12.4 percent annual rate in the second half of 2020. Following this initial rapid recovery, the economy continues to expand in CBO's projections, but it does so at a more moderate rate that is similar to the pace of expansion over the past decade.

5. In the long-term, CBO estimates that, as a result of the four public laws and pandemic-related economic disruption, annual real GDP will be 3.4 percent lower in 2030 on average than CBO projected in January 2020 for 2020-2030. This means that the predicted size of the US economy will decline by $ 8 trillion during this 10-year period. The annual unemployment rate, which was projected to average 4.2 percent, is now projected to average 6.1 percent from 2020-2030. CBO projections indicate that in 2030 the unemployment rate will return to 4.4%. Additional long-term impacts include an increase in the federal debt, increased costs for American households and businesses, and a reduction by 1-2 years in the 2035 date by which the social security trust fund is projected to become insolvent. Although the federal debt will increase, interest rates on federal borrowing throughout the decade will remain well below the average compared to rates in recent decades.

OIG Oversight & Accountability. The CARES Act directed OIGs to conduct pandemic-related audits and investigative activities to prevent and detect fraud, waste, abuse, and mismanagement; and to mitigate major risks that cut across pandemic-related program and agency boundaries. Findings from individual OIG reports have been integrated by the Pandemic Response Accountability Committee and published in two reports to Congress.[18] [19] These two reports describe results from eighty-nine pandemic oversight investigations published in reports from twenty-six Office of Inspectors General through September 30, 2020.

These reports focus on top management and performance challenges for agencies implementing pandemic-related programs and funds. Because of the magnitude of federal aid that will be distributed rapidly under emergency conditions—and the extensive use of grants and loans to disburse funds—effectively managing the programs funded by the four coronavirus laws presents a challenge for many executive branch agencies. Of course, these factors also increase the potential risk for fraud, waste, and misuse of funds. Across federal agencies and programs, the common challenges identified by agency managers and the OIGs are: (a) financial management of federal aid awarded through CARES Act programs, (b) management of grants, (c) information technology security and management, and (d) protecting the health and safety of federal employees while ensuring effective program management. More information about each management and performance challenge is described in the OIG report to Congress published in June 2020.[20]

Accountability Contributions from Journalists & News Organizations. Because of the unprecedented nature of the pandemic, investigations by journalists and news organizations have made a number of significant accountability contributions. Several are presented in the following bullets:

1. What caused the SARS-CoC-2 pandemic? From a scientific perspective, the disease caused by the SARS-CoV-2 virus (COVID-19) is a zoonotic disease—that is, a disease capable of being transmitted from animals to humans. Since the 1940's, scientists have been aware that zoonotic pathogens represent a

potentially significant threat to human health. When disease and health effects from a particular pathogen are serious or fatal, the lack of prior human exposure to this pathogen means humans have no existing antibodies to defend against the disease. Scientists also know that epidemics caused by zoonotic disease are occurring with increasing frequency[21] [22] because human population growth has altered the land and ecosystems around us. For example, humans have cleared forests and other natural areas in the developing world to create spaces for urban areas and settlements, agriculture, and industries. When human activities reduce the diversity, health, and resilience of habitats and ecosystems, space for wildlife populations is reduced and natural buffers between human and animal species may be eliminated. Scientists agree that humans and their impact on the natural world represent a principal cause of zoonotic diseases, epidemics, and pandemics.[23] [24]

2. Was the US prepared to respond to a global pandemic? Recognizing the increasing numbers of emerging zoonotic diseases during the twentieth century, international scientists, philanthropies, and government leaders concluded that zoonotic diseases represent a high-risk threat to national and international health security. For this reason, government leaders and leading global health philanthropies supported an evaluation of government preparedness to identify and respond to emerging zoonotic diseases and pandemics. This evaluation began in 2015-16 and resulted in the October 2019 publication of a Global Health Security (GHS) Index.[25] This index represents the first comprehensive assessment and benchmarking of health security and related capabilities across 195 countries. Among its one hundred forty questions, the GHS Index evaluates not only countries' capacities, but also the existence of functional, tested, proven capabilities for stopping outbreaks of zoonotic disease at their source. Among the countries participating in the GHS Index evaluation, the US ranked first overall[26] as the most prepared nation, with an index score of 83.5/100. The US also ranked first in five of the six index categories for health security and the capability to respond to a high-risk threat to health security. In the context of the average score (40.2/100) among the 195 countries ranked in the GHS Index, the report emphasizes an important overall finding: "National health security is fundamentally weak around the world. No country is fully prepared for epidemics or pandemics, and every country has important gaps to address."[27]

3. The US ranking as the most prepared nation in the world is a direct result of the US national pandemic strategy for influenza in 2005 by President George W. Bush. The President was concerned about the potential for a zoonotic pathogen caused by the influenza virus (the H5N1 avian flu) to infect humans and cause a global pandemic. In response to this threat, President Bush directed the Homeland Security Council to coordinate research with appropriate federal agencies and develop a national strategy for pandemic influenza. He announced the strategy on November 1, 2005 during an address to scientists at the National Institutes of Health.[28] During this talk, the President indicated that, in creating the strategy, his number one priority was to save American lives in the event of a pandemic. To save lives, the President emphasized that health communication was important to ensure "participation of, and coordination by, all levels of government and segments of society." He pointed out that "To respond to a pandemic, the American people need to have information to protect themselves and others. In a pandemic, an infection carried by one person can be transmitted to many other people, and so every American must take personal responsibility for stopping the spread of the virus." When this national pandemic strategy was published in May 2006, it emphasized that "The need for timely, accurate, credible, and consistent information that is tailored to specific audiences cannot be overstated."[29]

4. Does the White House pandemic communication focus on what is actually happening during the federal response to the SARS-CoC-2 pandemic? A recent White House healthcare fact sheet entitled "President Trump's Historic Coronavirus Response" begins with a prominent quote from the President: "My Administration will stop at nothing to save lives and shield the vulnerable."[30] However, journalists and

> news organizations have documented a number of instances during the pandemic when President Trump's communication and accountability actions undermine credible and consistent communication as well as the system of independent oversight and public accountability. For example, despite knowing in early February 2020 that the coronavirus was highly contagious and potentially deadly, the President publicly minimized its risks.[31] Moreover, repeated actions and comments by the President that he does not wear face masks undercut recommendations from the Centers for Disease Control and Prevention and created public confusion about whether masks are needed.[32] From an oversight perspective, the President fired Glenn Fine, a respected career Inspector General who was selected by a council of inspectors general to be the Special Inspector General of the Pandemic Response Accountability Committee[33] created by Congress. The President also indicated that he would not permit the new Special Inspector General to issue certain oversight reports to Congress "without presidential supervision."[34]

1.3 Accountability Issues. There are two oversight and accountability concerns associated with this example. The first concern is that the scope and rapid pace of the US pandemic response create significant challenges for the federal government's multi-year planning, budgeting, and accountability framework. Typically, at least a year is required for federal agencies to develop program design and accountability information for new and expanded programs. This information includes program plans, program performance measures, program performance reports, and agency budget requests. In contrast, the six pandemic-related public laws Congress developed from March 2020 through March 2021 require federal agencies to begin expending hundreds of billions of dollars within months after the laws were enacted.

These circumstances create major oversight and accountability challenges for the federal agencies themselves and for CBO, GAO, and OIG: without accountability information from the White House Coronavirus Task Force and federal agencies, how should new and expanded coronavirus programs be monitored and evaluated during the early stages of implementation—especially without established performance metrics? Despite these challenges CBO, GAO, and OIG are able to provide valuable oversight and accountability information. For example, (a) CBO prepares projections about the national economic and budget impacts of draft legislation or enacted laws and (b) GAO monitoring of federal programs identifies recommendations, similar to formative evaluations, to strengthen these programs. Of course, Congress and its oversight committees are well aware of these challenges when creating pandemic-related legislation—and typically assume that the executive branch is able to meet the challenges without supplemental guidance or resources from Congress.

The second oversight and accountability concern associated with this example is related to a foundational accountability principle that national leaders should communicate openly and transparently about what actually happens when the executive branch implements the laws and programs authorized by Congress. However, during the SARS-CoV-2 pandemic, a number of interviews (described on the previous page) indicate that the President has not followed this principle—and that his actions have undermined objective, open, and transparent communication

as well as the federal system of independent oversight and accountability.

EXAMPLE 2: The US response to the Al Qaeda terrorist attacks on 9/11.

2.1 Nature of the Crisis and the US Response. The second example focuses on the acute domestic crisis created by the four terrorist attacks on the US by Al Qaeda on September 11, 2001. Initially, the goals of the US military response to the terrorist attacks described by President George W. Bush were to (a) defeat Al Qaeda and the Taliban regime in Afghanistan that harbored it and (b) destroy Osama bin Laden's terrorist network.

Legislation was enacted on September 18, 2001 (the Authorization for Use of Military Force, PL 107-40) which granted the President the authority to use all "necessary and appropriate force" against those whom the President determined "planned, authorized, committed or aided" the September 11 attacks. On October 7, 2001 President George W. Bush announced that airstrikes in Afghanistan targeting Al Qaeda and the Taliban had begun. Within a year of this announcement, the United States had largely accomplished the goals the President established: leaders of al-Qaeda and the Taliban were dead, captured or in hiding; and the Taliban-led Afghanistan government had been removed forcibly. Almost ten years after the September 11th terrorist attack, President Obama announced on May 2, 2011, that Osama bin Laden had been killed in a raid on a Pakistani compound.

In contrast to the swift achievement of President Bush's goals, subsequent actions by Congress and the President created significant long-term foreign policy and accountability challenges in Afghanistan for the US and its international partners. Specifically, the Afghanistan Freedom Support Act of 2002 (PL 107-347, December 2002) authorized assistance and funds for US civilian and military agencies to help the new Afghanistan government rebuild a secure, stable, and democratic society. To help implement the programs authorized by this public law, the US committed significant military, diplomatic, humanitarian, and financial resources over eighteen years in an attempt to achieve the Afghanistan goals articulated in this legislation.

2.2 Oversight and Accountability Information. To ensure independent and objective oversight of executive branch military and civilian programs related to Afghanistan, Congress provided direction to GAO in the Afghanistan Freedom Support Act of 2002. Congress subsequently created the federal Office of the Special Inspector General for Afghanistan Reconstruction (SIGAR) in the National Defense Authorization Act for FY 2008 (PL 110-181). Among their many Afghanistan-related activities, these two agencies examined the accountability frameworks[35] developed to implement the national goals identified by Presidents Bush and Obama—that is, the strategies, plans, and reports to Congress which translated Presidential goals into a framework for the war in Afghanistan and the military and civilian components of Operation Enduring Freedom:

- **Strategies** developed by the US Department of Defense (DOD) include: the Afghan National Development Strategy, the U.S. Strategy for Afghanistan and Pakistan, and the Afghanistan and Pakistan Regional Stabilization Strategy.
- **Plans** developed by the US Department of Defense (DOD) include: the Operation Enduring Freedom campaign plan, the National Security Council Strategic Implementation Plan, and the U.S. Integrated Civilian-Military Campaign Plan (ICMCP). The ICMCP, describes three lines of effort—security, governance, and development—that will be implemented by U.S. civilian and military personnel.
- **Reports to Congress** prepared by DOD were limited to semiannual reports with a focus on "Enhancing Security and Stability In Afghanistan," from 2016 through 2020.

With the exception of the reports to Congress, these strategies and plans have a security designation as classified documents and are not publicly available. It is important to emphasize one implication of this classified status: at a minimum, the security-related actions taken by DOD and national security agencies to prevent new terrorist threats within the United States after September 11th are not identified for reasons of national security. This means that the benefits to American society of these actions also are not identified.

GAO reports to Congress include "Afghanistan: Key Issues for Congressional Oversight" (April 2009) and "The Strategic Framework for U.S. Efforts in Afghanistan" (June 2010). In preparing the second of these reports, GAO reviewed the executive branch strategies and plans for Afghanistan[36] and created a simplified strategic framework that included an easy-to-understand interactive graphic. This graphic communicates an executive summary of oversight issues related to the strategic goals and programs for securing, stabilizing, and rebuilding Afghanistan. GAO identifies many of the US programs in Afghanistan as high-risk programs in other reports to Congress.

Acting on some of the GAO oversight issues, in 2014 the SIGAR Inspector General decided to add a "lessons learned" component[37] to the SIGAR oversight activities, in part at the urging of DOD General John Allen, State Department Ambassador Ryan Crocker, and other career military and civilian leaders who had served in Afghanistan. From 2014 through 2018, SIGAR prepared lessons learned reports based on reviews of thousands of documents and interviews with more than 400 military and civilian leaders in Afghanistan, Europe, and the United States. When these SIGAR reports were prepared, none was determined to be confidential. These reports identified 130 specific policy findings and lessons and made 90 recommendations to Congress, executive branch leaders, and the Afghan government. SIGAR also identified many of the US programs in Afghanistan as high-risk programs.

Overall, the SIGAR interviews and policy findings indicate that, by adding goals based on the 2002 legislation that include the rebuilding of Afghanistan, the President and Congress set the US on a path toward a slow-onset crisis. As described in the following paragraphs, this crisis emerged as a very public accountability debate during 2019-2020, when the public became

aware of actual costs to American society of the US investments in Afghanistan. In December 2019, the Washington Post published a series of articles[38] [39] [40] [41] that synthesized key policy findings from SIGAR's reports--including 428 interviews and 2,000 pages of documents. The Washington Post also made this information available to the public on-line.[42] The Washington Post's articles were followed by related articles from the New York Times.[43] [44] [45] [46]

In a report issued in 2020, the Congressional Research Service indicates that "In the intervening 18 years [since 2001], the United States has suffered around 2,400 military fatalities in Afghanistan … and Congress has appropriated approximately $137 billion for reconstruction there.[47] When adjusted for inflation, this US reconstruction investment exceeds its investment in the Marshall Plan to rebuild Western Europe after World War II and it represents the largest investment to rebuild a single country in US history.[48] The Washington Post articles identify very serious questions about federal accountability for this $137 billion investment of American taxpayer dollars:[49]

> "The scale of the corruption [in Afghanistan] was the unintended result of swamping the war zone with far more aid and defense contracts than impoverished Afghanistan could absorb. There was so much excess, financed by American taxpayers, that opportunities for bribery and fraud became almost limitless, according to the interviews. . . . Gert Berthold, a forensic accountant who served on a military task force in Afghanistan during the height of the war, from 2010 to 2012, said he helped analyze 3,000 Defense Department contracts worth $106 billion to see who was benefiting. The conclusion: About 40 percent of the money ended up in the pockets of insurgents, criminal syndicates or corrupt Afghan officials. . . . Berthold said the evidence was so damning that few U.S. officials wanted to hear about it."

Among the SIGAR interviews, officials who served under Presidents Bush and Obama said that both leaders failed in their most important task as commanders in chief — to devise clear strategies with concise, attainable objectives.[50] Because of these failures, military commanders and diplomats acknowledged they struggled to answer simple but crucial questions such as '*Who is the enemy? Whom can we count on as allies? How will we know when we have won?'* For example, during one lesson learned interview, General Douglas Lute,[51] (who served as the White House's Afghan war czar during the Bush and Obama administrations) indicated:

> "We were devoid of a fundamental understanding of Afghanistan — we didn't know what we were doing," … "What are we trying to do here? We didn't have the foggiest notion of what we were undertaking."

Because of its limited staff and budget, SIGAR encountered delays in completing the federal reviews required for clearance before it could publish its lessons learned reports and then share them with Congress. Ultimately SIGAR published seven lessons learned reports from 2016-2019.

2.3 Accountability Issues. This example illustrates the significant contributions that journalists and their organizations occasionally make to a public discussion about accountability. In 2019, the Washington Post published the results of an Afghanistan investigation it undertook.

This investigation was based on SIGAR documents and interviews which the Washington Post requested under the Freedom of Information Act (and ultimately acquired after two federal suits).

The Washington Post's analysis of the SIGAR documents concluded that senior U.S. officials—including several Presidents, their political appointees in the Departments of State and Defense, and a few military generals—failed to communicate accurately about the war in Afghanistan over a time frame of decades. The Washington Post's analysis also concluded that federal leaders even made false pronouncements about supposed progress and concealed unmistakable evidence that the war had become unwinnable. Moreover, U.S. leaders and allied officials admitted the war and reconstruction mission had no clear strategy and poorly defined objectives. Even John Sopko, the Special Inspector for Afghanistan, acknowledged to the Washington Post that the SIGAR documents show "the American people have constantly been lied to."[52]

The Washington Post articles underscored, from an accountability context, why the SIGAR reports, interviews, and documents should matter to the American people—and to their representatives in Congress:

- The US has invested more than $1 trillion in taxpayer funding in the eighteen years since the war and reconstruction began. During this time, more than 775,000 American troops deployed to Afghanistan; about 2,400 American soldiers were killed; and more than 20,000 Americans were wounded. If the lifetime medical costs of these injured and disabled American soldiers are considered, the projected US taxpayer costs for the war will increase by another $1 trillion during the next forty years as these wounded and disabled veterans age and need more medical support.

- More than 38,000 Afghan civilians have died during the war, with many more injured. Some sources estimate that nearly 115,000 civilians, members of military forces, humanitarian aid workers and journalists have died during the war.

- The Taliban now controls much of Afghanistan and the expanding Taliban control has produced a very large number of refugees that disrupt or overwhelm the limited Afghan infrastructure throughout the country.

- As one consequence of US aid to Afghanistan, "The scale of the corruption [in Afghanistan] was the unintended result of swamping the war zone with far more [American] aid and defense contracts than impoverished Afghanistan could absorb. There was so much excess, financed by American taxpayers, that opportunities for bribery and fraud became almost limitless, … ."[53]

- Finally, to finance war and reconstruction spending, the United States borrowed heavily and will pay more than $600 billion in interest on those loans through 2023.

In a December 10, 2019 editorial[54] about these articles, the New York Times Editorial Board shared reactions by members of Congress to these reports:

- "This is truly shocking. Years and years of half-truths and outright falsehoods," said Josh Hawley, a senator from Missouri, in a tweet about the documents. Mr. Hawley is a member of the Armed Services Committee."

- "It is deeply troubling to read a report of interviews with U.S. government officials that appear to contradict the many assurances we have heard at committee hearings that the continuing war in Afghanistan has a coherent strategy and an end in sight," Kirsten Gillibrand, a senator from New York, wrote in a letter to the head of the Armed Services Committee, of which she is a member."

The same New York Times editorial pointedly observed that

"America's failure in Afghanistan may come as a surprise to some Americans. But the Americans who should not be at all surprised are the members of Congress who voted to launch the war, repeatedly voted to continue funding it and have been absent without leave in their duty to oversee its progress. … It is both truly shocking and deeply troubling that members of Congress, who oversee the military and are privy to classified assessments like those published by The Post, were surprised by [these] revelations … ."

EXAMPLE 3: The US response to the public health crisis created by air pollution, deteriorating air quality, and adverse human health impacts.

3.1 Nature of the Crisis and the US Response. The third and final accountability example focuses on the slow-onset public health crisis created by air pollution, deteriorating air quality, and their effects on human health in cities and communities across the US.

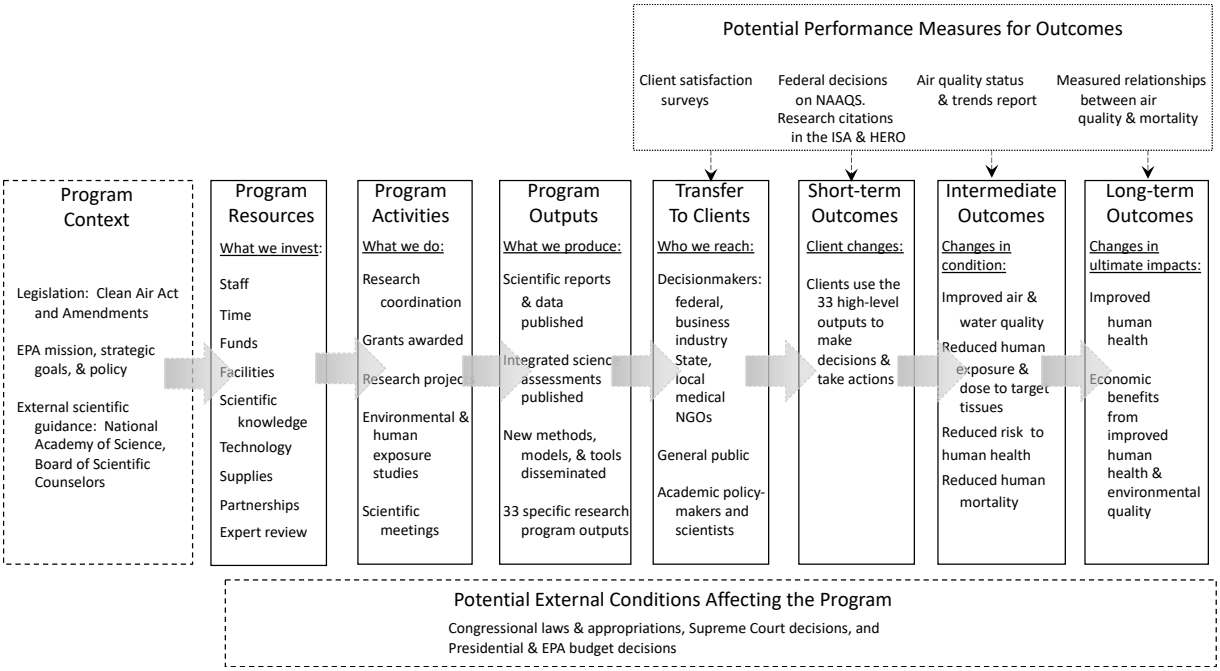
In response to growing bipartisan concerns about this crisis in the 1960's, Congress and the President enacted the Clean Air Act of 1970 (42 U.S.C. 7401 et seq.). A principal goal of this law is to ensure that the air in American communities is safe and healthy to breathe. Regarded as one of the most bipartisan and effective public laws of the 20th century, the Clean Air Act (CAA) helped the US make substantial progress in improving air quality and human health—even while millions of people still reside in areas that do not meet national ambient air quality standards (NAAQS) and while air pollutants continue to damage health and our environment.

Among other requirements, the CAA directs EPA to conduct research and scientific assessments on the causes and effects of air pollution on human health-–and directs EPA to formally consider new scientific knowledge every five years when it determines if its protective health standards are "requisite" to protect human health.[55] **This accountability example focuses on the federal research program[56] which informs air quality decisions required by the CAA**. Because of the significance of these related programs and their impacts, substantial accountability information has been developed over the decades by the federal government and many stakeholders—including federal performance measures, multi-year plans, program evaluations, and independent expert reviews.

3.2 Oversight and Accountability Information. When developing the CAA, Congress recognized that its traditional approach to oversight would not suffice to evaluate complex scientific issues. For this reason, Congress included provisions for systematic, science-based evaluation in the CAA and its 1977 amendments. Specifically, these provisions required (1) periodic assessments about the state of scientific knowledge, now known as "integrated science assessments," every five years, and (2) independent advice from the Clean Air Scientific Advisory Committee to inform the EPA Administrator about the results of these integrated science assessments. Congress indicated this evaluation approach is intended to inform decisions by the EPA Administrator and by the executive, legislative, and judicial branches of government.[57]

Given the importance of the CAA legislation and the NAAQS, it is not surprising that a number of publicly available, evaluation-relevant reports are available on-line[58] [59] [60] [61] [62] [63] [64] [65] to help describe and understand the systematic relationships among this federal research program's resources, activities, outputs, clients, outcomes, and impact. One of these reports[66] even includes a program logic model that the National Research Council developed to describe and evaluate research programs at EPA. We have adapted this logic model to illustrate and describe the evaluation aspects of this research program in Figure 1.

Figure 1
Program Logic Model for the *Air and Energy National Research Program*



In the following paragraphs, we apply this logic model to organize and discuss (on pages 19-23) a portion of the relevant evaluation aspects of this research program: its context; outputs;

transfer to clients; short-term, intermediate, and long-term outcomes; and performance measures for outcomes.

Program Context: From a legislative context, important CAA requirements for research, air quality, and human health include:

- The EPA Administrator shall make decisions and promulgate national ambient air quality standards (NAAQS) which are "requisite to protect the public health with an adequate margin of safety."
- These standards "shall accurately reflect the latest scientific knowledge" about "the kind and extent of all identifiable effects on public health."
- EPA shall conduct research "related to the causes, effects (including health and welfare effects), extent, prevention, and control of air pollution."
- EPA shall evaluate, every five years, advances in scientific and research knowledge on the effects of air pollutants on public health and welfare.
- EPA shall create a Clean Air Scientific Advisory Committee to provide independent advice to the agency's Administrator on the scientific bases for the standards.

From a strategic planning context, this research program contributes to the mission of EPA (protect human health and environmental health) and to its strategic goal and objective of creating a cleaner, healthier environment for all Americans by improving air quality. In addition, the program contributes to two other EPA strategic goals and four strategic objectives. Finally, this research program also has some additional responsibilities under the Energy Independence and Security Act (EISA) of 2007, the Global Change Research Act (GCRA) of 1990, the Federal Water Pollution Control Act (FWPCA), and the National Environmental Policy Act (NEPA).

From a scientific context, this research program focuses on air pollution, which adversely affects people's health and the environment and harms the economy. One component of air pollution, particulate matter (PM), is recognized as a serious public health concern at levels encountered in many cities in the United States. Research has shown that human exposure to PM air pollution is linked to increases in respiratory health problems, hospitalization for heart or lung disease, and premature death—even while overall air quality has improved in many areas of the nation. The 1970 CAA stated that EPA shall conduct research "related to the causes, effects (including health and welfare effects), extent, prevention, and control of air pollution." It specifies inclusion of "research, testing, and development of methods for sampling, measurement, monitoring, analysis, and modeling of air pollutants" and research on "the short-term and long-term effects of air pollutants … on human health." Additional research requirements specified in the CAA include improving "understanding of the short-term and long-term causes, effects, and trends of ecosystems damage from air pollutants on ecosystems." Recognizing the importance of the scientific context for this program, it periodically solicits expert scientific advice from independent expert entities such as the National Academies of Science, Engineering, and Medicine.

Program Outputs: The program's strategic research plan[67] identifies and describes 33 high-level strategic research outputs (e.g., grants, research reports) that will be transferred to clients during FY2019 – FY2022. These 33 outputs have been designed and coordinated with clients and partners and, when completed, are transferred to clients.

Transfer to Clients: A partial list of the research program's "client users" includes scientists, policymakers, and decisionmakers in: EPA, federal, Tribal, state, and local governments; in business and industry enterprises; in medical organizations and practices; in academic organizations; and in the general public.

Short-term Outcomes: When delivered to clients, the program's 33 high-level research outputs are used by the clients to achieve four research objectives (short-term outcomes):

- Assess human and ecosystem impacts.
- Expand approaches to prevent and reduce emissions.
- Advance measurement and modeling.
- Inform decisions to protect human health and the environment.

In many cases, client use of these 33 outputs extends over several years; in one instance, client use in state implementation planning procedures extends over a seventeen-year cycle.

Intermediate Outcomes: The research program's intermediate outcomes result from actions and decisions by the program's clients. These client actions and decisions impact both public and environmental health by contributing to changes in conditions such as reduced emissions of pollutants, improved air and water quality, reduced human exposure and dose to target tissues, reduced risk to human health, and reduced human morbidity and mortality. These intermediate outcomes may be achieved during a timeframe that extends more than a decade after the program's short-term outcomes have been achieved.

Long-term Outcomes: The research program's long-term outcomes include: improved human health, economic benefits resulting from improved human health, and improved environmental quality. The first of these long-term outcomes is directly related to both the mission of EPA and to two of its strategic goals: to protect human and environmental health and to create a cleaner, healthier environment for all Americans by improving air quality. Demonstrating that intermediate outcomes actually result in improved human health also may require a decade after the program's intermediate outcomes have been achieved.

Performance Measures for Outcomes: The research program's high-level research outputs and its four short-term outcomes comprise the program's formal performance-management measures. EPA assesses the research program's performance using an ambitious approach—through the distribution of research evaluation surveys to key client entities that are users of its research products. This approach provides evidence of how research products are being used, by

whom, and the degree of satisfaction clients have with research product quality, usability and timeliness of delivery. Through this evaluation process, EPA identifies strengths and finds targeted areas for improvement to its research programs. Because of the burden and complexity associated with client surveys, the results of EPA client surveys are presented for the entire EPA portfolio of six national research programs. On page 54 of its Congressional budget justification,[68] EPA indicates that: "In FY 2019, 79 percent of EPA's research products met customer needs, exceeding its performance target of 77 percent. The customers surveyed currently include EPA program offices, regions and partner federal agencies (including Army Corps of Engineers, the National Parks Service, DoD, Department of Agriculture, and more)." Very few federal research programs have developed rigorous program designs such as this, which use performance-management measures that survey a program's customers. Instead, most federal research programs focus generally on their contributions to the "knowledge pool" as measured by bibliometric analysis of scientific publications in peer-reviewed journals. This more general focus does not measure whether, when, or how the new knowledge actually is used.

In addition to these formal performance metrics, the research program collects other information and data that may be used to provide a more robust understanding of program performance across the entire chain of outcomes. For example, available data help the research program identify use of its outputs in the EPA Integrated Science Assessment (ISA), in decisions about the NAAQS by the EPA Administrator, and in citations in the Health and Environmental Research Online (HERO) database of research knowledge and publications used in the ISA.

Finally, because this research program has identified the scientific relationships between air pollution, air quality, and human health, it has contributed (through its research in the 1990's and 2000's) to developing a quantifiable measure that demonstrates a improvement in human health (life expectancy in the US) when fine-particulate air pollution decreases and air quality improves.[69] This measure is a strategic outcome for the Environmental Protection Agency that is directly relevant to its mission of protecting human health. This measure, in turn, contributed to the quantification of benefits that result from the health-based NAAQS—that is, life-years saved and the economic value of these life-years.[70]

3.3 Accountability Issues. Three accountability issues related to this example have emerged in the five decades since the Clean Air Act was enacted. The first issue is actually a "success story" that arises because of the sustained support for the federal research program—which has enabled it to create scientific knowledge that actually quantifies the public health and economic benefits resulting from the NAAQS and related CAA programs that reduce air pollution for particulate matter. For example:

> Since the CAA was enacted in 1970, the NAAQS have contributed to an overall 66 percent decline in air pollutants. As a result, Americans are living healthier and longer lives. Researchers at the University of Chicago estimate that reductions in particulate air pollution alone have added 1.6 years to the life

> expectancy of the average American since 1970.[71] These researchers developed an Air Quality Life Index which estimates that, if we evaluate the improvements in air quality only for the 214 million Americans who currently live in communities monitored for particulate matter in 1970 and today, the additional 1.6 additional years in life expectancy is equivalent to a total benefit of about 332 million life-years.[72] By applying even the most conservative economic estimate for the value of a statistical life-year in the US,[73] the 332 million life-years is equivalent to an economic benefit in the range of hundreds of trillions of dollars.

It is very unusual for a research program to develop knowledge that helps scientists quantify such mission-level, long-term outcomes. Thus, this concern about the need to quantify mission-level impacts motivated the public health and environmental economics research communities to verify the immense benefits of the CAA provisions for particulate matter health standards.

The second accountability issue is an important scientific and public policy issue identified in the 1990's. It was based on potential health effects of very fine airborne particles with a diameter less than 2.5 microns (known as $PM_{2.5}$) and the extent to which the level of future NAAQS should be revised to protect the public health against the effects of these fine particles with an adequate margin of safety. This scientific and public policy issue was considered to be so important that the President of the United States formally announced his decision in July 1997 to expand the federal particulate matter research program to develop additional scientific knowledge related to the issue.[74] The resulting research did provide strong scientific support for revising the $PM_{2.5}$ standard to provide increased public health protection. EPA announced a revised NAAQS in October 2006.[75] Simply stated, this revision significantly tightened the level of the 24-hour standard for $PM_{2.5}$ from 65 to 35 ug/m^3.

A third accountability concern was created in the past few years when Scott Pruitt, the EPA Administrator appointed by President Trump, made decisions that undermined the scientific integrity of systematic agency-level scientific procedures. For example, he changed the membership of the Clean Air Scientific Advisory Committee (CASAC) during 2017 and 2018. A number of the new CASAC members appointed by Administrator Pruitt had direct ties to industries regulated by EPA and had very little knowledge of air pollutant health effects. In addition, Administrator Pruitt dismissed all members of CASAC's Particulate Matter (PM) Review Panel on October 12, 2018--immediately after the panel completed a report that identified new research and scientific knowledge that supported the need for a more stringent standard. By dismissing all members of this panel, Administrator effectively disbanded it.[76] This panel had provided expert scientific advice about health effects of PM human exposure to CASAC for over four decades. Collectively, these actions undermine not only scientific integrity but also statutory requirements for a thorough and accurate scientific review and evaluation of the scientific evidence required for NAAQS decision-making.

1

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