



BRIDGING THE GAP

Economic Impacts of National Infrastructure Investment, 2024-2043





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EXECUTIVE SUMMARY

Since ASCE last assessed the nation's infrastructure investment gap in January 2021, Congress passed two sweeping packages dedicated to improving the networks that safely move people and goods across the country, provide clean drinking water to millions of Americans, and ensure that our households and businesses have reliable electricity. The Infrastructure Investment and Jobs Act (IIJA) in 2021 and the Inflation Reduction Act (IRA) in 2022 have set a new standard for federal infrastructure spending. However, both bills will expire in 2026 and Congress will be tasked with deciding how these programs will be funded going forward. The funding has provided an initial and consequential step in bridging the funding gap between the nation's infrastructure needs and investment. Though a funding gap remains, this study, *Bridging the Gap*, reflects the potential economic effects of the new funding levels and represents ASCE's first assessment of the impacts that the IIJA and the IRA can be expected to have over the next 10 to 20 years.

The portions of IIJA and IRA incorporated in *Bridging the Gap* are the levels of spending anticipated from 2024-2026. While significant portions of these bills targeted priorities besides the infrastructure addressed in this study and previous *Failure to Act* studies, these funding mechanisms provide about \$344 billion in new funding for pertinent infrastructure in *Bridging the Gap*. These infrastructure categories include surface transportation; aviation; ports and inland waterways; drinking water, wastewater, and stormwater; and energy.

The *Bridging the Gap* analysis stretches across 20 years (2024 – 2043) and includes two scenarios. One scenario assumes that this new level of infrastructure funding represents the baseline for future funding levels - this is called the *Continuing to Act* scenario. The other scenario assumes that, after 2026, infrastructure investment reverts to funding levels from before 2022 – this scenario is called *Snapback*.

This report presents an overall picture of the national economic consequences of failing to bridge the investment gap under each scenario. *Bridging the Gap* finds that recent federal action has halted the rapid growth of the infrastructure investment gap and conveys a clear message that *Continuing to Act* will have significant economic benefits for American families and businesses over the next two decades.

However, the consequences of investment shortfalls differ significantly by each infrastructure system. With deteriorating surface transportation, trips take longer and will be less dependable and safe. Declining airport and seaport infrastructure directly affects our nation's ability to import and export goods efficiently, driving up costs to U.S. consumers. A

lack of reliable and safe energy and water-related services increase direct costs to households and affect production costs of various industries. The long-term effects of underinvestment in infrastructure are having cascading negative impacts to the nation’s economy, reducing business productivity, gross domestic product (GDP), employment, and international competitiveness.

In summary, over the next 10 years, *Continuing to Act* protects U.S. industries from losing more than \$1 trillion in gross output and helps avoid a loss of more than \$600 billion in GDP. These values translate into household and employment benefits nationwide as American families will have an additional \$550 billion in disposable income over the next decade and 237,000 American jobs will be saved. On an individual household level, *Continuing to Act* saves Americans nearly \$700 annually over the next twenty years. These savings will allow Americans to have more disposable income to invest in the goods and services of their choice versus expenses related to failing infrastructure, such as car repair, bottled water, or losses from spoiled food when the power goes out.

As federal, state, and local policymakers look to the future of the nation’s infrastructure, it will be critical to weigh the economic consequence of failing to properly invest in our most vital networks. For decades, our investments at all levels of government and the private sector have failed to keep up with the increasing demands that we have put on our infrastructure networks. As the backlog of needs grew, Americans have suffered the consequences of that underinvestment. However, by *Continuing to Act*, the nation now has the ability to make meaningful progress on our infrastructure investment gap and ensure our networks are built for a 21st century economy.

Key findings for each scenario are summarized in Table ES-1.

Table ES-1. Costs to Americans from Poor Infrastructure by Scenario			
Scenario Timeframes	Industry Impacts (Gross Output)	Gross Domestic Product (GDP)	Disposable Household Income
Continuing to Act			
2024-2033	\$3.1 Trillion	\$1.5 Trillion	\$1.7 Trillion
Snapback			
2024-2033	\$4.4 Trillion	\$2.2 Trillion	\$2.2 Trillion

In 2022 Dollars
 Source: IERF using the LIFT/INFORUM Model, and EBP

PREFACE

Every four years, the American Society of Civil Engineers (ASCE) publishes the *Report Card for America's Infrastructure*, which grades the current state of 17 of the nation's infrastructure categories on a scale of A through F. In 2021, the country's infrastructure earned a C- average across all categories. In 2025, when the next *Report Card* is released, it will provide an updated look at the conditions of our infrastructure. Until then, another question is at stake – **what are the implications of C- infrastructure on America's economic future?**

In 2011 and again in 2021, ASCE published the *Failure to Act* economic study, which assessed the impact of U.S. infrastructure conditions on the nation's economic performance. *Failure to Act* documented the incremental and gradual decline of infrastructure systems under the investment scenarios at the time and the resulting impacts to our nation's economy.

Since the publication of *Failure to Act* in 2021, Congress passed the Infrastructure Investment and Jobs

Act (IIJA) and the Inflation Reduction Act (IRA), which included more than \$580 billion in new infrastructure spending from 2022-2026. The *Bridging the Gap* report focuses on the infusion of these funds into infrastructure categories considered in prior *Failure to Act* studies. The remainder of the funding went to categories that were not previously considered in the *Failure to Act* studies such as dams or broadband, and conveys a clear message important to Americans and the development of ASCE's *Report Card* (Figure 1). Findings compare the impact of *continuing* the levels of investment established through the new spending in IIJA and IRA against a scenario that snaps back to levels seen prior to their passage.

The *Bridging the Gap* report helps to answer the question above and provides an economic analysis of eleven of ASCE's infrastructure categories included in the *Report Card*. (Figure 1.)



Included in *Bridging the Gap*



1. Introduction

Infrastructure is the physical framework of the United States that allows our economy to function and sustains our standard of living. Everything depends on this framework, including transporting goods, powering factories, heating and cooling office buildings, and drinking a glass of clean water.

In 2011 and again in 2021, ASCE compared the current and projected needs for infrastructure investment against funding trends in surface transportation (highways, bridges, rail, transit); the water sector (water, wastewater, and stormwater); energy; airports and water-based transportation sectors (inland waterways and ports). Projections included both the cost of building new infrastructure to service increasing populations and the cost of expanded economic activity. Other costs included those associated with maintaining or rebuilding existing infrastructure that needed repair or replacement. Both reports addressed the drag on the national economy that was projected

as a consequence of the gap between infrastructure needs and the expected investments over 30 years (2011 study) and 20 years (2021 study). These studies were labeled as *Failure to Act*, symbolizing the economic impacts of not investing in sufficient infrastructure to meet U.S. industry and household needs.

In the 2021 *Failure to Act* study, ASCE compared projected needs for infrastructure investment for 2020 to 2039 against the current funding trends and determined the cumulative gap was \$5.6 trillion (in 2019 dollars). The long-term effects of underinvestment in infrastructure are cascading impacts to the nation's economy, impacting business productivity, gross domestic product (GDP), employment, and international competitiveness. Over the same timeline, the study also showed that failing to close the infrastructure investment gap would cost American households, on average, more than \$3,300 per year in disposable income.

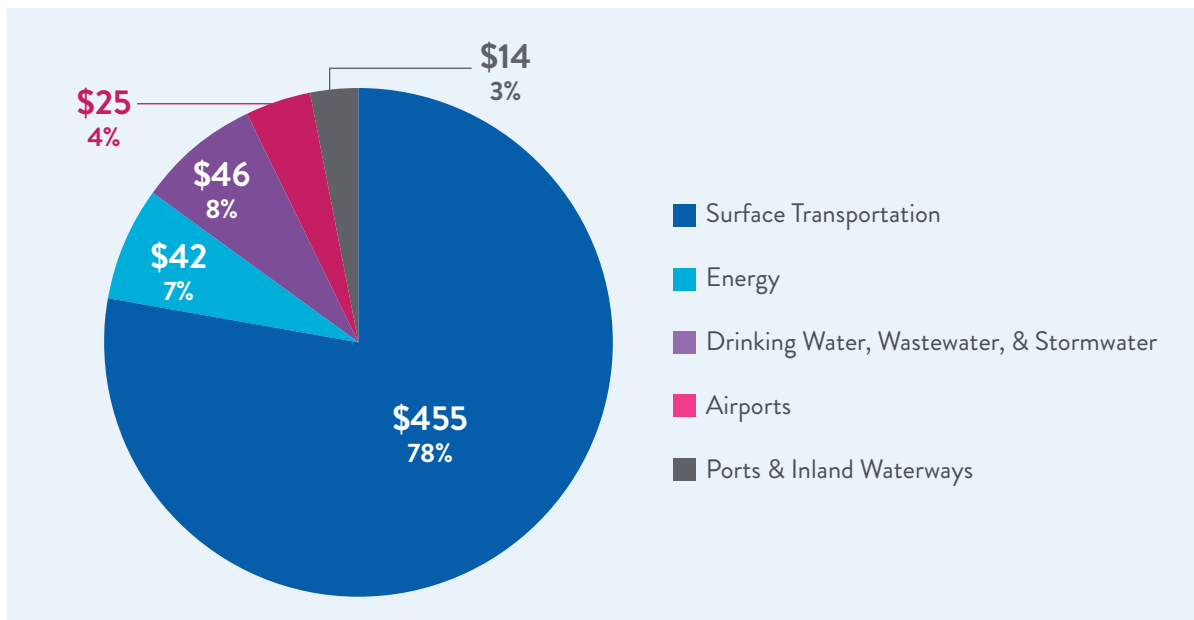
Infrastructure is the physical framework of the United States that allows our economy to function and sustains our standard of living. Everything depends on this framework, including transporting goods, powering factories, heating and cooling office buildings, and drinking a glass of clean water.

1.1. FROM FAILURE TO ACT TO BRIDGING THE GAP

Congress passed the Infrastructure Investment and Jobs Act (IIJA) in 2021 and the Inflation Reduction Act (IRA) in 2022. From 2022-2026, more than \$580 billion in new funding supports the infrastructure included in this analysis (Figure 2). From 2024-2026, the federal authorization years covered by this report, the anticipated infrastructure spending across these same sectors is \$344 billion. The remainder of the funding went to categories that were not previ-

ously considered in the *Failure to Act* studies such as dams, broadband, and others, albeit important for Americans and the development of ASCE's Report Card (Figure 1). Though a funding gap remains, this new funding has been a consequential step in *Bridging the Gap* in the nation's infrastructure needs and investments, so this study considers the potential economic effects of the new funding levels under two scenarios.

Figure 2: New Infrastructure Funding for 2022-2026



Dollars in 2022 Billions

1.2. SCENARIOS

In the *Failure to Act* studies, one scenario was considered for each report. The scenario focused on the economic impact of the infrastructure investment gap over time.

Since U.S. policymakers acted by passing the IIJA and IRA, *Bridging the Gap* now considers two scenarios. The scenarios focus on the economic impact of this new level of spending between 2024-2043:

- **Scenario 1 - Continuing to Act:** Assumes that spending appropriated for IIJA from 2022-2026 is the new baseline for annual capital investment through 2043.

- **Scenario 2 - Snapback:** IIJA's authorized spending continues through 2026. In 2027, infrastructure spending reverts to 2019 levels in place prior to passage of the IIJA and other major spending bills (inclusive of the federal surface transportation authorization, or FAST Act, from 2016-2020).

While the *Bridging the Gap* analysis stretches from 2024-2043, the initial years of IIJA spending (2022-2023) are indirectly included in this study through the effects that spending has on mitigating the size of the gap in 2024.

2. Changes in the Infrastructure Ecosystem from 2020 to 2023

In recent years, though funding levels have improved, the infrastructure needs for various sectors have grown and evolved. These changes have effects on the

anticipated investment needs and, therefore, the size of the funding gaps for each sector. These dynamics are reviewed below.

2.1 SURFACE TRANSPORTATION

COVID-19 and ongoing remote and hybrid work arrangements have influenced changes in travel patterns. On average, there has been a 30% reduction in peak hour trips, with some cities showing up to a 40% reduction on average. At the same time, there are 15% more private car trips, such as those occurring by people working from home who use the flexibility to make more afternoon auto trips, lessening peak hour gridlock but increasing vehicle miles traveled (VMT).

Additionally, fewer people are using public transit when they have the option of driving. As of April 2024, nationwide public transit ridership is about 73% of pre-pandemic levels. This decline in ridership has produced financial challenges for transit agencies, which are collecting less fare revenues while continuing to provide critical services. The transit sector supports mobility in

large cities as well as travel to and from smaller cities and towns. In fact, ridership post-COVID recovery has been stronger in transit markets with fewer than 500,000 people than in large metro areas.²

On average, the nation's highway system is improving as measured by roughness.³ Improvements are due, in part, to multiple national legislative authorizations that have occurred over the past decade. These initiatives have supported funding and implementation of state-level Transportation Asset Management Plans (TAMP).⁴ However, the TAMPs are not yielding the same results for every state or within states. Therefore, the 16 states (including Washington, D.C.) that are below the nationwide average for roughness are used in this study to inform the gap analysis to achieve a state of good repair for the entire system.

Improvements are due, in part, to multiple national legislative authorizations that have occurred over the past decade.

1 <https://transitapp.com/APTA>

2 <https://transitapp.com/APTA>

3 The International Roughness Index (IRI) is a standard used by highway professionals worldwide to quantify road surface roughness.

4 MAP-21 – Moving Ahead for Progress in the 21st century Act; FAST – Fixing America's Surface Transportation Act; IIJA – Infrastructure Investment and Jobs Act

5 <https://wmo.int/news/media-centre/past-eight-years-confirmed-be-eight-warmest-record#:~:text=2015%20to%202022%20are%20the,Agreement%20is%20increasing%20with%20time>

6 <https://www.ncei.noaa.gov/access/billions/time-series>

7 <https://www.ipcc.ch/site/assets/uploads/2023/03/IPCC-58-UN-SG-Opening-statement.pdf>

8 <https://cleantechnica.com/2023/09/01/the-energy-technology-revolution-will-drive-renewable-energy-prices-even-lower/#:~:text=Solar%20and%20battery%20costs%20have,%25%20down%2C%20BNEF%20data%20shows>

9 Energy Information Administration Annual Energy Outlook 2020.

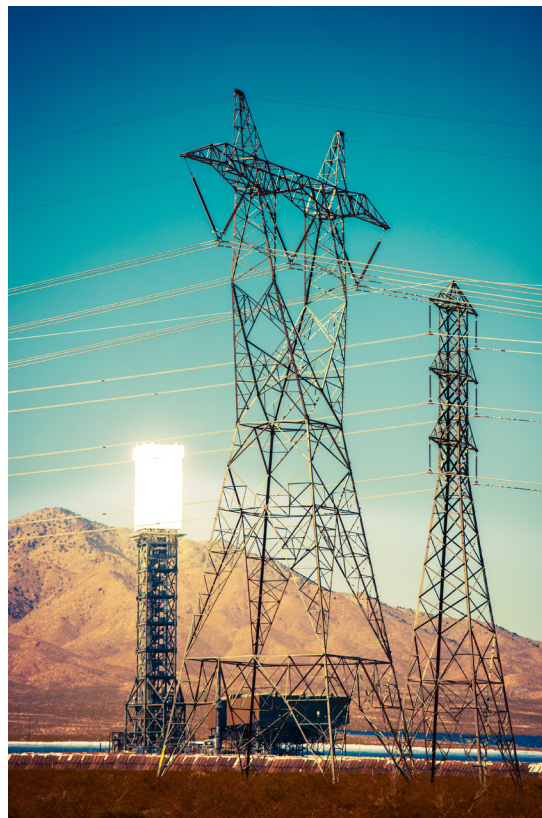
2.2 ENERGY

In the energy sector, much has changed over the past three years, particularly in key areas of climate science, economics, technology, energy demand, and policy. The science of climate change and its impacts have come into sharper focus since 2020, with the last eight years being the hottest on record.⁵ Recent years have also been costly, as extreme weather events between 2016 and 2022 exceeded \$1 trillion in impacts.⁶ These trends have prompted global leaders to increasingly emphasize the need for commitments to reduce carbon emissions to avoid crossing irreversible tipping points and maintain a habitable climate.⁷

In the U.S., alternatives to fossil-based fuels have grown in popularity, so the economics of renewable energy have dramatically improved. Between 2012 and 2022, solar and battery costs declined 80%, while offshore wind and onshore wind costs went down by 73% and 57%, respectively.⁸ In October 2020, the Energy Information Administration (EIA) announced that solar generation had achieved parity in cost with combined cycle natural gas generation, making it the lowest-cost generation available.⁹ Offshore and onshore wind are following comparable paths. At the utility scale, fossil fuels still accounted for about 60% of U.S. energy generation in 2022, but the improving economic landscape for renewables is projected to continue and accelerate the transition away from fossil-based fuels.¹⁰

At the same time, new technology including micro-grids, virtual power plants, smart meters and appliances, grid monitoring and forecasting software, and energy storage devices have started to transform the U.S. energy grid. These technologies accommodate more distributed generation, increase security, reduce congestion, improve affordability, and improve response to weather events.

Another dynamic at play is the projected expansion of the nation's energy grid. Over the next two decades, a dramatic increase in energy generation is anticipated to meet the changing end-use demands in the industrial, building, and transportation sectors. The conversion of industrial processes to clean energy, the transition from fossil fuel heating to heat pump technology, and the replacement of internal combustion engine



vehicles with electric vehicles (EVs) increase pressure to expand the grid. In turn, the increase in annual energy use in the U.S. is projected to jump by 6,000 to 10,000 terawatt hours (TWh), well above the current national demand of 4,300 TWh¹¹.

State and federal policymaking is also influencing the energy sector. Currently, 22 states and the District of Columbia have established net-zero carbon emission goals, while 29 states and the District of Columbia have adopted Renewable Portfolio Standards (RPS). These policies require electric sales from renewable sources to increase over time and the reliability from renewable energy sources to improve. Furthermore, in 2021 and 2022, new federal legislation was the major policy driver of the economy-wide push to decarbonize, with the IJJA, the IRA, and the CHIPS and Science Act. Together, these initiatives represented more than \$2 trillion in federal funding and incentives - the largest investment in decarbonization in America's history. Building out energy infrastructure to support the net-zero goals and state-level RPS will require increased investment.

2.3 DRINKING WATER, WASTEWATER, & STORMWATER

Since 2020, drinking water, wastewater, and stormwater infrastructure needs have continued to evolve. The sectors' capital needs are based on 20-year surveys conducted by the U.S. Environmental Protection Agency (EPA). The new Drinking Water Infrastructure Needs Survey and Assessment, published in 2021, reflects needs estimated from 2021-2040.¹² Notably, the 2021 survey includes new data on the needs for replacing lead service lines and future projections of costs associated with treatment of “forever chemicals” such as per- and polyfluoroalkyl substances (PFAS). Exposure to these chemicals is linked to multiple serious health conditions.¹³ When considering wastewater and stormwater capital needs, the EPA has not published an updated Clean Watershed Needs Survey since 2012. Therefore, the

Bridging the Gap analysis is based on the results from the most recently available analysis.

Additional changes to the landscape of the water sectors include increased federal funding and new regulatory initiatives. From 2018-2021, more than \$500 million in additional spending occurred through the EPA's Clean Water and Drinking Water State Revolving Funds. In November 2023, the EPA proposed new lead and copper rule improvements that require most U.S. cities to replace lead water pipes within ten years. The EPA also announced a proposed National Primary Drinking Water Regulation to establish maximum contaminant levels (MCL) for several PFAS substances in drinking water.¹⁴

From 2018-2021, more than \$500 million in additional spending occurred through the EPA's Clean Water and Drinking Water State Revolving Funds.

2.4 AIRPORTS

Airports endured an exceptionally rough ride during the COVID-19 pandemic. Enplanements in April 2020 were only 4% of what they were at the same time in 2019. From 2020 to 2022, a steady rebound to the 2019 national benchmark for enplanements was seen as levels steadily climbed from 40% to 72% to 92% of the 2019 enplanement values. As passenger volumes increased, capital needs also grew. Airports Council International-North America's (ACI-NA) survey shows the need for terminal improvements is increasing by roughly 50% across two timeframes, 2021-2025 and 2023-2027.

Federal legislation in 2020 and 2021 helped to sustain airport facilities and preserve the system's work-

force. In March 2020, the Coronavirus Aid, Relief, and Economic Security (CARES) Act contained \$10 billion in economic relief to eligible U.S. airports to continue planned safety and capacity projects regardless of airport sponsors' financial circumstances. Furthermore, in December 2020, the Coronavirus Response and Relief Supplemental Appropriation Act (CRRSAA) included nearly \$2 billion, while the American Rescue Plan Act (ARPA) of 2021 included \$8 billion for costs related to the operations, personnel, cleaning, sanitization, and janitorial services necessary for combating the spread of pathogens at airport facilities as well as debt service payments.

10 <https://www.eia.gov/tools/faqs/faq.php?id=427&t=3>

11 [https://www.utilitydive.com/news/industrial-electrification-renewable-climate-energy-innovation/651572/#:~:text=But%20switching%20industrial%20processes%20to,electric%20vehicles%20\(2%2C000%20TWhs\)](https://www.utilitydive.com/news/industrial-electrification-renewable-climate-energy-innovation/651572/#:~:text=But%20switching%20industrial%20processes%20to,electric%20vehicles%20(2%2C000%20TWhs))

12 <https://www.epa.gov/dwsrf/epas-7th-drinking-water-infrastructure-needs-survey-and-assessment>

13 <https://www.epa.gov/pfas/our-current-understanding-human-health-and-environmental-risks-pfas>

14 <https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas>

2.5 PORTS & INLAND WATERWAYS

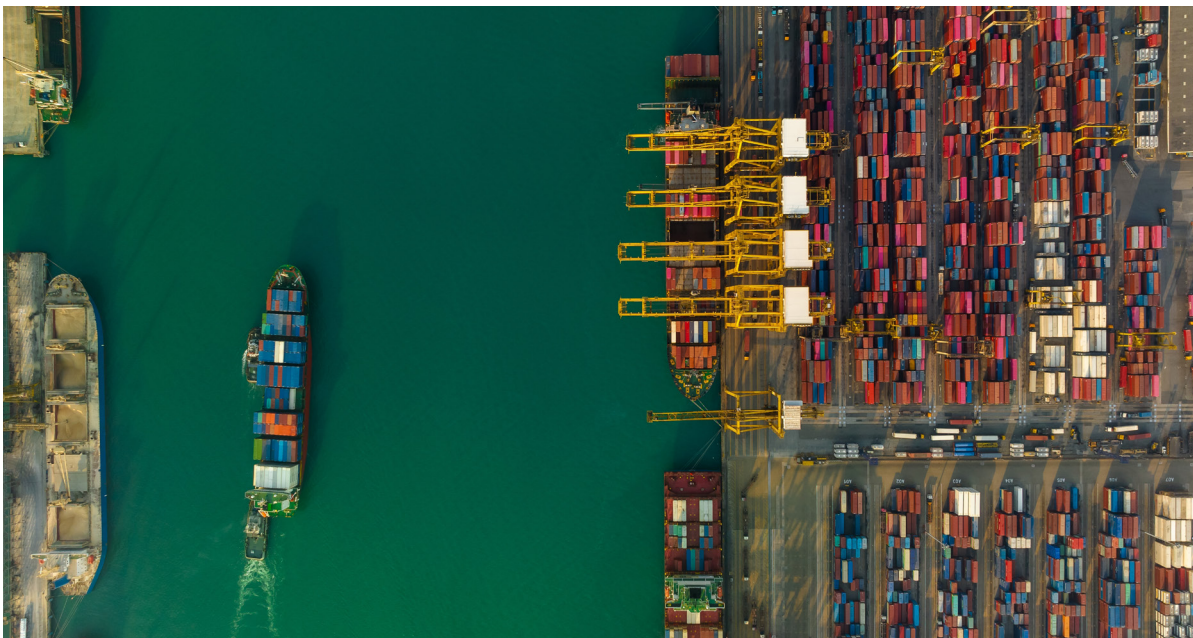
Since the earliest *Failure to Act* (2011), the widening and deepening of the Panama Canal and the widening of the Suez Canal have led to bigger ships and more goods passing through major U.S. ports. Additional factors that have contributed to the need for ongoing and future capital investments include the formation of shipping alliances, emerging trade patterns and trade agreements, technological advances in port operations and management as well as environmental regulations, climate change impacts, and supply chain instability.

The IIJA and ARPA both included significant resources for U.S. marine port infrastructure improvements. The IIJA allocated \$17 billion specifically for ports and inland waterways over five years, while the ARPA provided \$1.5 billion for port infrastructure grants.

The funds provided by the IIJA will be allocated to a variety of improvements, including dredging and maintenance of navigation channels, construction and rehabilitation of berths and docks, and landside improvements such as on-dock rail facilities and intermodal yards. These investments are expected to increase the capacity and efficiency of U.S. ports, enabling them to handle higher volumes of trade and larger vessels. In turn, this economic activity is expected to support increased trade volumes in other key sectors, such as agriculture, energy, and manufacturing.

Some specific U.S. ports are expected to be beneficiaries of these investments. For example, the Port of Los Angeles and the Port of Long Beach, which together handle approximately 40% of U.S. container traffic, are expected to receive significant funding for infrastructure improvements. This includes funding for the redevelopment of the Port of Los Angeles' Pier 400, which is expected to increase capacity and efficiency for container shipping. Ports in other regions of the country, such as the Port of Savannah, the Port of Virginia, and the Port of Houston, are also expected to receive significant funding for infrastructure improvements.

The IIJA and ARPA both included significant resources for U.S. port infrastructure improvements. The IIJA allocated \$17 billion specifically for ports and inland waterways over five years, while the ARPA provided \$1.5 billion for port infrastructure grants.



3. Gaps Between the Infrastructure Investment Needed and Projected Spending

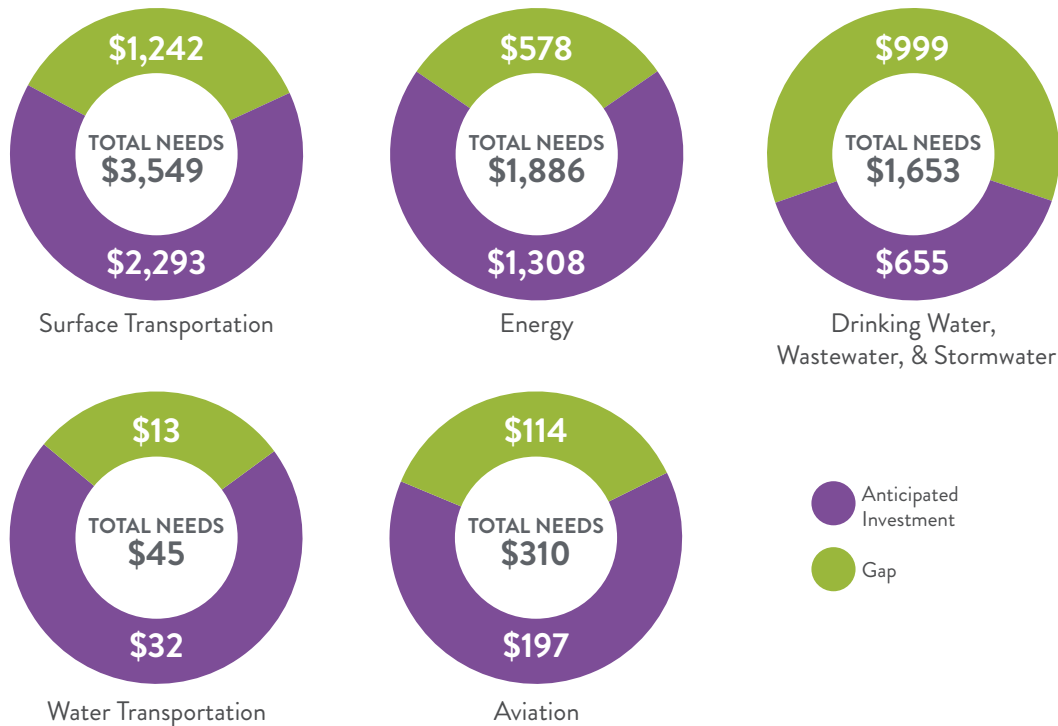
From 2024 through 2043, our analysis indicates that \$15.2 trillion in infrastructure investment is needed for *Bridging the Gap* across all five sectors. The first 10-year and full 20-year investment gaps are presented in Figure 3 and Appendix 3, respectively.

From 2024-2033, \$7.4 trillion in infrastructure needs are projected. Under the *Continuing to Act* scenario, approximately \$4.5 trillion in investment is anticipated which covers approximately 60% of the total needs, leaving a gap of \$2.9 trillion. Under the *Snapback* scenario, \$3.7 trillion in investment is anticipated, which will cover slightly less than 50% of the total needs, leaving a gap of more than \$3.7 trillion. The difference between the investment gap

for *Snapback* and *Continuing to Act* is almost \$800 billion which accumulates over the seven years from 2027 through 2033 after the IIJA-authorized spending expires.

In the 20-year analysis, under the *Continuing to Act* scenario, \$9.6 trillion of cumulative investment is anticipated which covers approximately 63% of the total infrastructure needs. Under the *Snapback* scenario, \$7.5 trillion of funding is anticipated, which will cover slightly less than 50% of the total needs. In both scenarios, a funding gap remains, at approximately \$7.7 trillion for *Snapback* as compared to \$5.6 trillion for *Continuing to Act*, a difference of more than \$2 trillion by 2043.

Figure 3. Ten-Year Gaps with Continue to Act Scenario, 2024-33



Total Needs - Anticipated Investment = Gap
 Dollars in 2022 Billions
 Columns may not add due to rounding.

4. Costs Due to Inefficient Infrastructure Systems

Infrastructure investment gaps slow down U.S. economic performance. However, the cumulative gap in infrastructure sector needs versus anticipated investment is much more pronounced in the *Snapback* scenario than the *Continuing to Act* scenario. Due to the infrastructure investment gaps in each scenario, businesses and households will face higher costs due to factors including unreliable transportation services, less dependable water and energy services, as well as unmet maintenance needs and outdated facilities at airports, marine ports, and inland waterways. The ripple effects in the economy include higher costs of production and transportation for industries, thereby increasing prices and/or absorbing funds from businesses and households.

If money was not being spent on issues associated with deficient infrastructure, businesses could otherwise direct their funds to, for example, research and development while households could use the additional money for discretionary consumer purchases. Higher costs incurred by businesses will make products more expensive for business-to-business transactions and for American households, thereby reducing net income. These dynamics will have a cascading effect on the

national economy, including reducing business sales, lowering income and profits, and rendering imported products more attractive to purchase rather than the more expensive domestic products. Not only will business and personal income be lower, but more of that income will need to be spent on costs linked to poor infrastructure. These dynamics are illustrated in Figure 1.

The costs associated with these deficiencies impact U.S. economic sectors in a myriad of ways depending on the sector's reliance on various types of infrastructure. For example, chemicals and food processing are significantly more reliant on sufficient and predictable water and wastewater services than many retail sectors. In addition, poorly maintained and congested highways will lengthen delivery time and increase costs. In this example, the cost of chemicals and processed foods are compounded by deficiencies in roadways and water services. Now, imagine a further compounding by costs incurred by unreliable energy service or blackouts, and products being stuck in long lines at overwhelmed ports. These additional costs impact consumers having to pay more for goods and services.

Figure 4. Impacts of Deficient Infrastructure

WHEN INFRASTRUCTURE IS DEFICIENT...



Unreliable energy and water services increase cost of production and impact public health and safety



Poorly maintained and congested roadways add to the cost of transporting products, business travel, commuting and household expenses



Inadequate facilities at airports and water ports slow cargo movements. Deficiencies at airports also affect business travel, and traveler costs



Unreliable transit extends commuting and personal traveling times, which add to the costs of local travel



Deficient and insufficient infrastructure systems impede economic growth and impact quality of life

5. Impacts to the U.S. Economy from *Continuing to Act* and *Snapback* Scenarios

Inadequate infrastructure will continue to cost Americans a great deal of money and create negative effects for the economy. However, the impacts

will be less severe if the country proceeds with a level of investment demonstrated in the past several years (portrayed in the *Continuing to Act* scenario).

5.1. HOUSEHOLDS

From 2024 – 2033, the nationwide impact of inadequate infrastructure to U.S. households from the *Continuing to Act* scenario totals \$1.7 trillion, while *Snapback* is more than \$2.2 trillion. Over the following decade, the difference between the scenarios more than doubles as impacts from *Continuing to*

Act grow to \$4.0 trillion while *Snapback* increases to over \$5.4 trillion. The nationwide loss to households' disposable income continues to diverge, as nearly \$2 trillion separates the total impact between the scenarios over 20 years.

Table 1. Impacts of the Infrastructure Investment Gap on Disposable Income Across U.S. Households by Scenario

Scenario	2024-2033	2034-2043	2024-2043
Continuing to Act	\$1.7 Trillion	\$4.0 Trillion	\$5.7 Trillion
Snapback	\$2.2 Trillion	\$5.4 Trillion	\$7.6 Trillion
Difference from the Scenarios	\$550 Billion	\$1.3 Trillion	\$1.9 Trillion

Columns may not add up due to rounding. In 2022 dollars. Source: IERF using the LIFT/INFORUM Model, and EBP

Figure 5 shows the impact for individual U.S. households will be an average loss in disposable income of more than \$2,000 and \$2,700 per year through 2043 under the *Continuing to Act* and *Snapback* scenarios, respectively. This means that *Continuing to Act* saves U.S. households around \$700 annually. From 2024 – 2043, total average impacts to disposable income per household are expected to be more than \$40,100 (*Continuing to Act*) and nearly \$53,500 (*Snapback*). These losses are due to, among other things, job cut-

backs and declining business productivity, which result in lower household incomes.

Income lost due to poor infrastructure will result in a drop in household spending for Americans.¹⁵ The lost income will lead to about a \$5.1 trillion decline in personal consumption across U.S. industries by 2043 in the *Continuing to Act* scenario and a \$7.0 trillion decline if we *Snapback*. Figure 6 shows that 41% - 45% of these foregone purchases will be in durable

¹⁵ Personal consumption is used interchangeably with the phrase household spending.

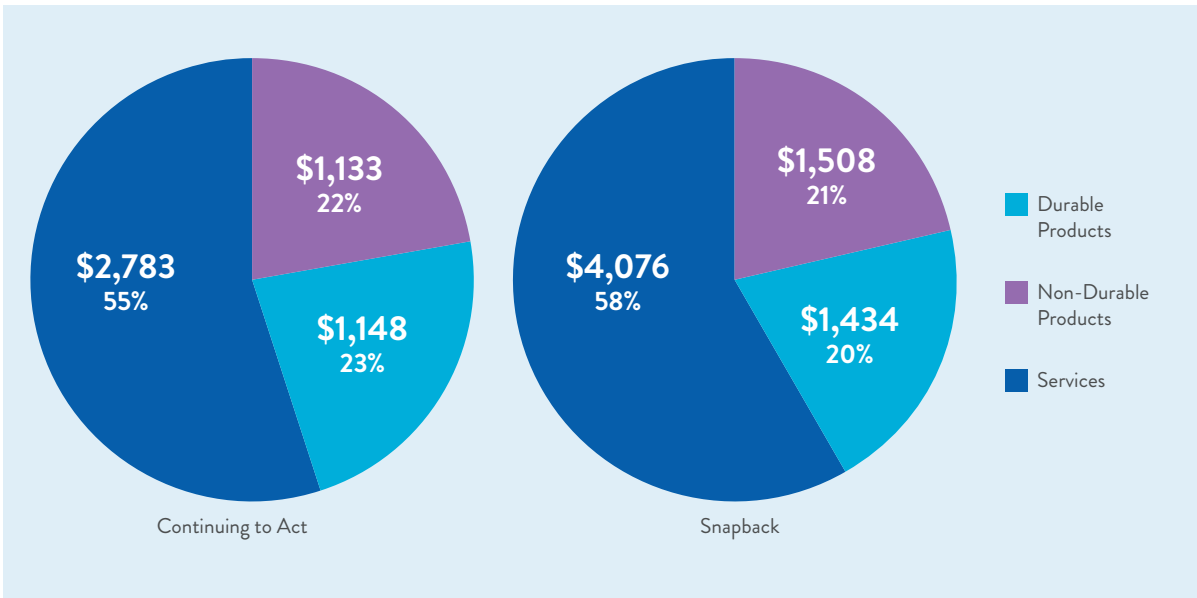
and non-durable manufactured goods and about 55% - 58% will be for services. Durable goods are those with long periods between purchases like household furniture or a vehicle; nondurable goods are one-use items such as toothpaste or items with a relatively short lifespan like shoes.¹⁶ The difference in *Snapback* rather than *Continuing to Act* is a loss of nearly \$2.0 trillion in household spending in the U.S. economy.

Reduced household expenditures will be particularly acute in housing, health care, and quality of life sectors such as food services, accommodations, and recreation. Simply stated, people will be less able to afford health care, housing, food, and vacations if the nation “snaps back” in its infrastructure support. Figure 7 shows selected industries based on cumulative changes in consumption expenditures expected from 2024-2043.

Figure 5. Annual Losses in Disposable Income Per Household by Scenario

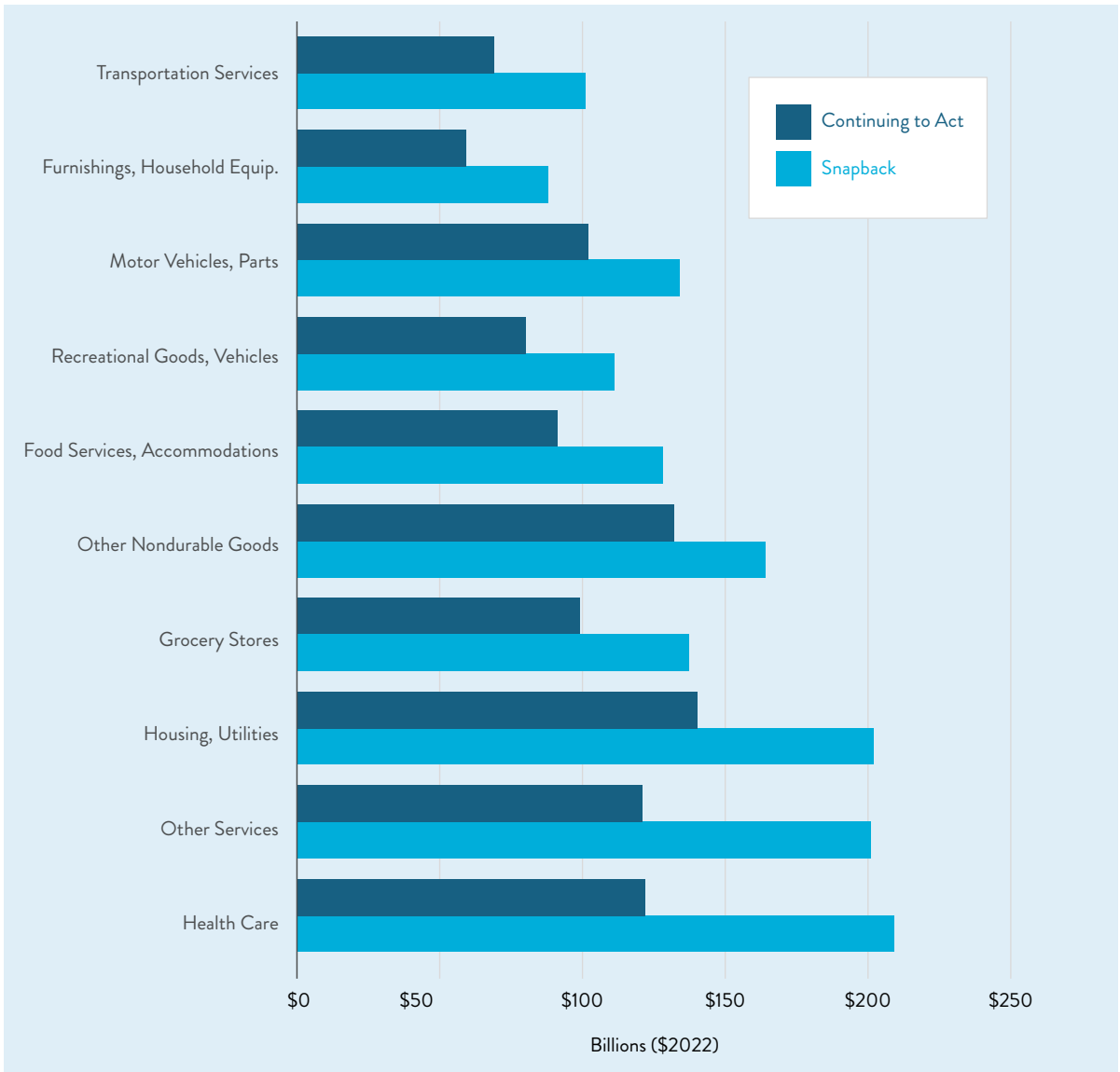


Figure 6. Cumulative Impacts of the Infrastructure Investment Gap on Consumption Categories by Scenario



16 <https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/nondurable-goods-product-specific-data>

Figure 7. Personal Consumption Losses by Selected Industries and Scenarios, 2024-2033



Notes: Cumulative losses represent the consumption declines against national baseline projections, and do not indicate changes from 2024 levels. Columns may not add up due to rounding. Dollars in 2022 billions

Sources: IERF using the LIFT/INFORUM Model, and EBP

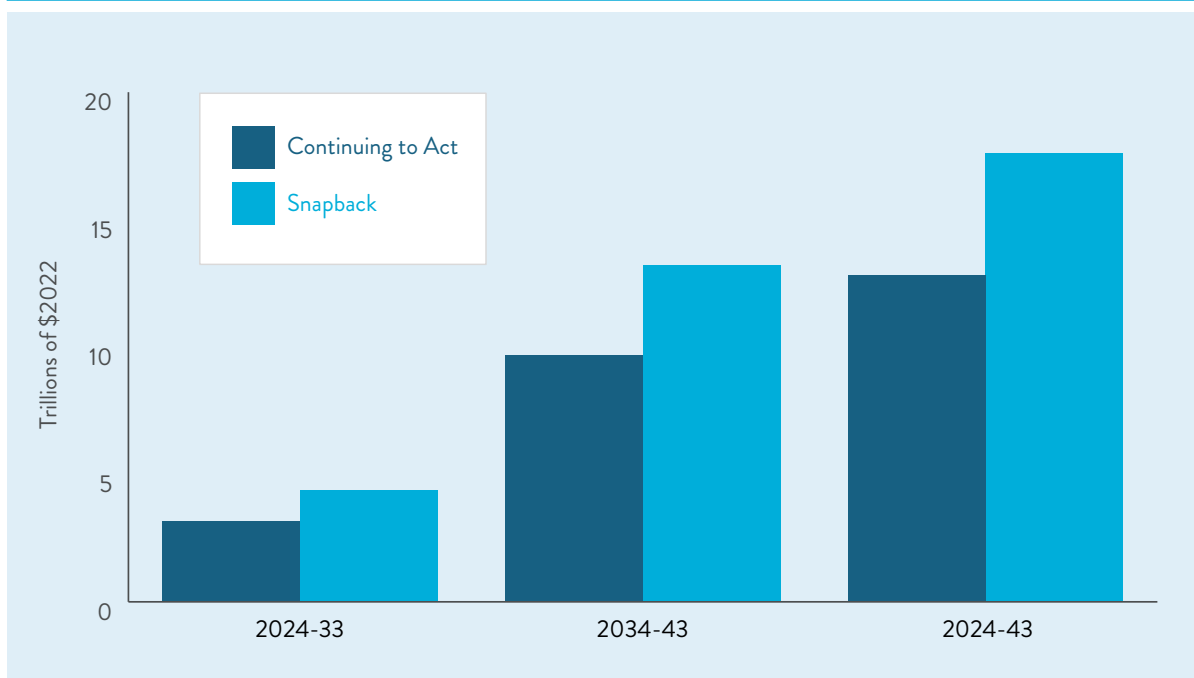
5.2. INDUSTRY IMPACTS – GROSS OUTPUT

Gross output represents total economic activity in producing and providing goods and services. Output represents the gross production of U.S. industries. According to the U.S. Bureau of Economic Analysis, gross output consists of both the value of what is produced and then used by others in their production processes as well as the value of what is produced and sold to final users.

From 2024 - 2033, there is a more than \$1 trillion difference in the projected impacts to gross output

between the *Continuing to Act* and *Snapback* scenarios, with industry losses of more than \$3.1 trillion and nearly \$4.4 trillion, respectively. Over the 20-year span of this study, the investment gap represented by the *Continuing to Act* scenario will cost the U.S. economy almost \$13 trillion in gross output, while the *Snapback* scenario will cost nearly \$18 trillion. Thus, “snapping back” is expected to cost the U.S. economy almost \$5 trillion, as illustrated in Figure 8.

Figure 8. Projected Output Losses by Scenario in 10- and 20-Year Durations



Notes: Cumulative losses represent output declines against national baseline projections, and do not indicate changes from 2024 levels. Dollars in 2022 billions.

Sources: IERF using the LIFT/INFORUM Model, and EBP

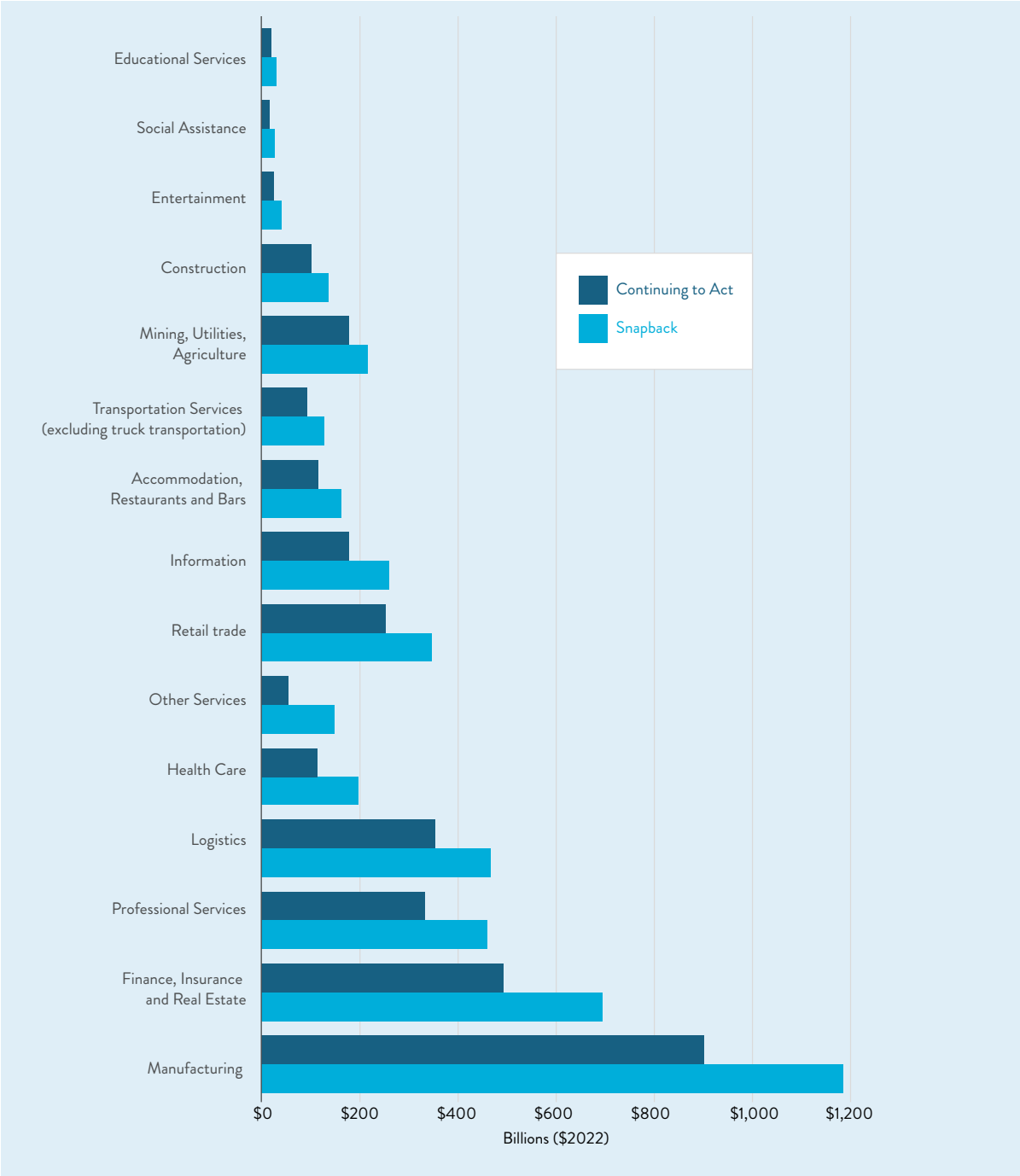
Figure 9 depicts output losses by industry sector due to underinvestment in infrastructure from 2024 to 2033 (see Appendix 3 for 2034-2043 and 2024-2043 outputs). The 15 sectors shown are consolidated from 64 industries within the economic model and are presented in order of lost output over 20 years under the *Snapback* scenario compared to *Continuing to Act*.

Figure 9 shows that manufacturing output is especially vulnerable to underinvestment in infrastructure, as it totals more than 20% of the losses occurring across all industries. The production and marketing of manufactured goods – everything from paper, paints, rubber, and asphalt to electronics, automobiles, and appliances – requires many of the infrastructure sectors assessed in this study including energy, transportation, and at times water.

Within the manufacturing industry, this analysis includes 19 sectors. The three most vulnerable sectors are motor vehicles, food processing, and chemical manufacturing, which together account for more

than 40% of the manufacturing output jeopardized by underinvestment. The manufacturing sectors are shown in Table 10 in order of the risk to gross output over 20 years.

Figure 9. Output Losses from 2024-2033 by Industry



Notes: Cumulative losses represent the consumption declines against national baseline projections, and do not indicate changes from 2024 levels. Columns may not add up due to rounding. Dollars in 2022 billions

Sources: IERF using the LIFT/INFORUM Model, and EBP

5.3. EMPLOYMENT

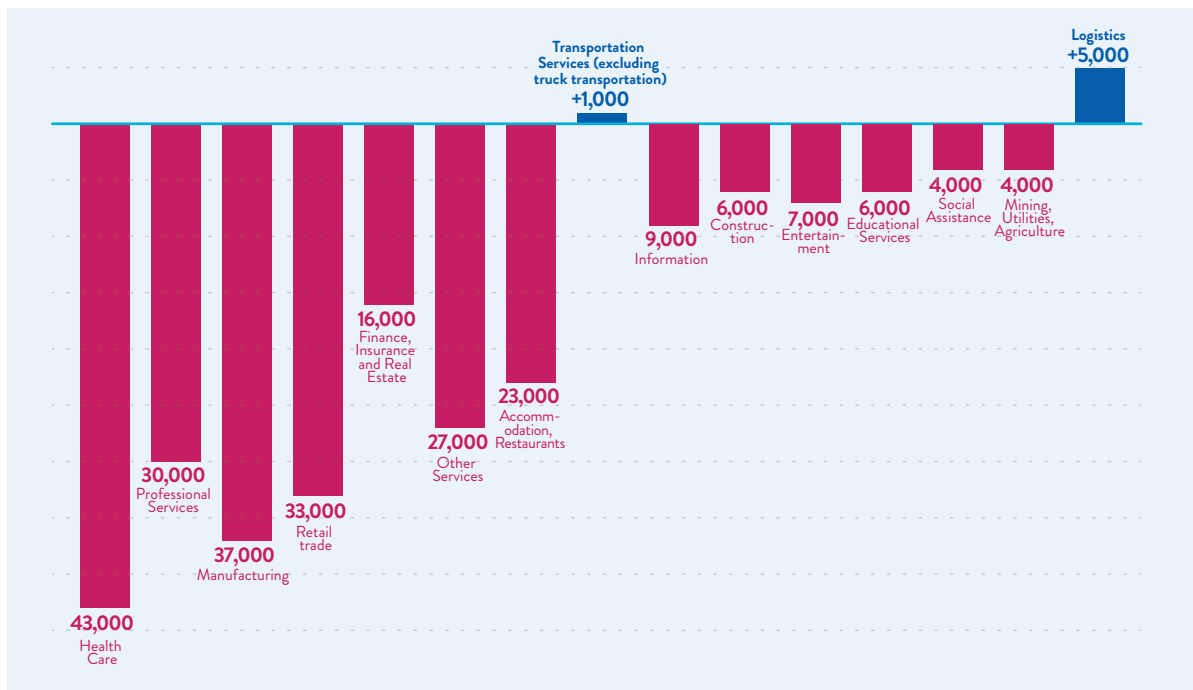
Underinvestment in infrastructure will increase production costs, and therefore prices. This leads to a reduction in domestic demand, presents implications on foreign demand, and reduces U.S. competitiveness. In turn, domestic production volumes fall, leading to lower levels of employment. Lower profits lead to fewer people employed and lower wages paid to those still working. Such dynamics result in lower consumption by households and fewer jobs supported by the economy. Figure 10 shows impacts to U.S. jobs by sector in 2033 where values below the line indicate job losses and values above the line show gains.¹⁷

Another effect from underinvestment in infrastructure is deteriorating roads, for example, which extend the time it takes to drive long distances. To accommodate longer drive times, ensure drivers' safety, and minimize logistical delays, more drivers will be required. Thus, job declines for the logistics sectors are predicted to be greater in *Continuing to Act* than *Snapback* because, as transportation facilities operate more efficiently,

they will require less labor to support drivers making long-distance hauls or waiting for containers at ports and inland waterways. Overall, the logistics sector is expected to lose 89,000 jobs in 2033 and 134,000 in 2043 under *Continuing to Act* and 84,000 jobs in 2033 and 118,000 jobs in 2043 in the *Snapback* scenario. Aside from this tradeoff, most employment sectors abide by the trend of more job losses associated with *Snapback* rather than *Continuing to Act*.

In fact, across the U.S. economy, employment sectors that are most affected by infrastructure investment gaps include health care, professional services, manufacturing, and retail trade. The health care sector displays the largest employment difference between the two scenarios, with 130,000 more jobs lost in 2043 with *Snapback* than *Continuing to Act*. Health care is followed by professional services and manufacturing as sectors with the largest differences in forecasted job losses in 2043, at 58,000 jobs and 48,000 jobs, respectively.

Figure 10. Jobs Losses from Snapback Compared to Continuing to Act for 2033



Values determined by taking the difference between *Snapback* and *Continuing to Act* scenarios; representing jobs saved in *Continuing to Act* scenario and additional jobs lost for *Snapback* scenario in 2033

¹⁷ Note that employment is presented by single year snapshots and not in cumulative totals across years due to a simplification in the way this study represents impacts on employment within the U.S. labor market.

5.4. INTERNATIONAL TRADE

Extended trucking time required to move commodities to and from ports, rising occurrences of unreliable water delivery and wastewater services, voltage surges, blackouts, and brownouts all disrupt production and add costs to businesses. Without addressing these concerns, U.S. manufactured products will be less competitive in international markets. The exported goods and service sectors most impacted by underperforming infrastructure through the next 20 years include wholesale trade, aerospace products, motor vehicles, agricultural, and engineering sectors (see Appendix 3).

Overall, from 2024 - 2033, there is a more than \$45 billion difference in impacts to U.S. exports between the *Continuing to Act* and *Snapback* scenarios, ranging from nearly \$359 billion to almost \$404 billion, respectively. Between 2024 - 2043, U.S. businesses are forecast to lose \$1.2 trillion in the value of their exports under the *Continuing to Act* scenario and \$1.4 trillion under *Snapback*. At the same time, households and businesses will be purchasing less due to reduced personal and business income, and imports will decline by \$617 billion and \$760 billion under *Continuing to Act* and *Snapback*, respectively (Table 2). The

decline in international trade directly contributes to the employment impacts noted above.

The competitiveness of all American businesses is affected by infrastructure conditions. Exports are reduced for major manufacturing industries, including aerospace, motor vehicles, and chemicals as well as high-value services, including architectural and engineering, financial, scientific, and other technical services. Infrastructure deficiencies affect costs for producing services and costs of American-produced services relative to foreign-produced services. Higher production costs due to poor infrastructure tend to reduce sales of U.S. services to foreign parties because the U.S.-to-foreign price ratio moves in an unfavorable direction. At the same time, imports of services become less expensive relative to domestic alternatives, so American service providers face greater difficulty in both domestic and foreign markets.

Table 2 shows the cumulative trade effects by quantifying the degree to which trade is expected to decrease. Note, in both scenarios the decreases in exports greatly exceed the projected decreases of imports, which indicates that the national trade deficit will worsen.





Table 2: Cumulative Trade Effects by Scenario, 2024-2043

Scenario	Years	Cumulative Export Decreases	Cumulative Import Decreases	Cumulative Trade Decreases
Continuing to Act	2024-2033	\$359	\$174	\$532
	2034-2043	\$846	\$443	\$1,289
	2024-2043	\$1,204	\$617	\$1,821
Snapback	2024-2033	\$404	\$223	\$627
	2034-2043	\$1,044	\$538	\$1,582
	2024-2043	\$1,448	\$760	\$2,209

Notes: Trade declines represent annual losses against national baseline projections from 2024 to 2043, and do not indicate changes from 2024 levels. Rows may not add up due to rounding. Dollars in 2022 billions.

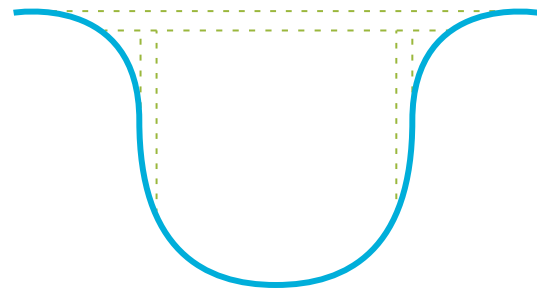
Source: IERF using the LIFT/INFORUM Model, and EBP

6. Conclusion

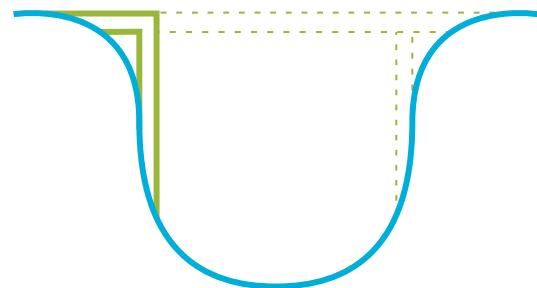
The U.S. economy relies on efficient transportation systems and the reliable delivery of water and energy. However, allowing the nation's surface transportation systems to worsen, ports and inland waterways to grow more outdated and congested, and water, wastewater, stormwater, and energy infrastructure systems to deteriorate, affects American businesses and households through impacts to sales, GDP, disposable household income, consumer spending, and jobs.

The good news is that U.S. infrastructure investment has improved in recent years. This is not only due to the passage of the IIJA and IRA, which led to significant infrastructure investments in 2022 and 2023, but other investments as well. *Bridging the Gap* clearly demonstrates that these smart investments can halt the rapid growth of the infrastructure investment gap and that they will have long-term benefits for American taxpayers and businesses. However, when investments are deferred, American families and businesses can expect to pay more.

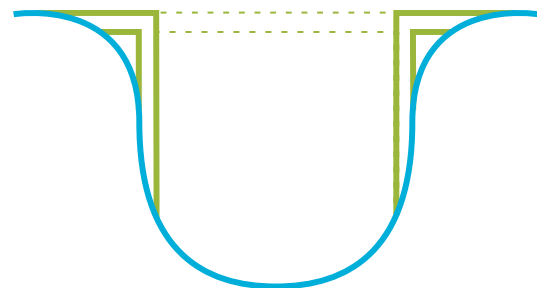
While *Bridging the Gap* and its preceding *Failure to Act* studies serve as analytical tools rather than policy or funding prescriptions, it is important to note that funding for infrastructure traditionally comes from multiple sources, including private investments from businesses and rate payers as well as public sources such as federal, state, and local governments. Recent federal investments have slowed the growth of our national infrastructure deficit, however the gap has grown too large to single-handedly eliminate with any one source. Feasible, forward-looking policies paired with collaboration across all levels of government and the private sector will be necessary to further support the nation's vital infrastructure systems and ensure they can provide service for families and businesses now and well into the future.



FAILURE TO ACT



SNAP BACK



CONTINUE TO ACT

Acknowledgements

ABOUT THIS REPORT

The research and findings of this report follows on economic studies released by ASCE in 2011-2012 and 2020-2021 under the umbrella title Failure to Act. This series includes analysis on the nation's water, wastewater and stormwater systems, surface transportation, airports, energy, ports, and inland waterways. This report examines the implications for the national economy based on infrastructure needs and investment trends following the passage of the Infrastructure Investment and Jobs Act in 2021.

A research team comprised of EBP, Daymark Energy Advisors, Downstream Strategies, and Inforum worked with ASCE to develop these studies.



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ABOUT EBP

EBP is a firm dedicated to advancing the state-of-the-art in economic evaluation and analysis to support planning and policy in the areas of transportation, energy resources, urban development, and economic growth strategy. Since its founding in 1996, EBP has helped state and local governments make infrastructure investment and economic development decisions that support broad-based job creation, income generation, and overall prosperity. The work of the firm centers on improving the state of the art in objective analysis to help empower public and private clients to better plan and implement actions that are efficient, sustainable and serve to grow jobs, increase incomes, reduce disparities, and enhance quality of life. ASCE contracted with EBP to conduct this study.

To learn more, please see the firm's website: www.ebp-us.com/en.

ACKNOWLEDGEMENTS

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Appendix 1: About the LIFT Model

ABOUT THE LONG-TERM INTERINDUSTRY FORECASTING TOOL

To estimate long-term national economic impacts, EBP relied on the Long-term Interindustry Forecasting Tool (LIFT) that is developed and maintained by Inforum, an independent research group that originally was formed in 1967 at the University of Maryland. LIFT is a dynamic interindustry-macro model that combines macroeconomic and industry detail to examine how developments in one industry will affect other industries and the national economy.

The LIFT model captures the impacts of industry costs and productivity on industry prices and output, as well as variables such as real gross domestic product (GDP) and real disposable income. Baseline projections include population, household and labor force details.

- Projections of population by age group are based on projections by the U.S. Census Bureau and the Social Security Administration (SSA).
- Projections of labor force are based on population and demographic details, together with labor force participation projections made by the Congressional Budget Office (CBO) 10-year and long-term outlooks.

Projections of federal and state and local consumption and investment also are important to the baseline scenario, and these are developed using information from CBO, other federal agencies, and consensus forecasts. Personal and corporate tax rates and social insurance contribution rates are an important influence on personal disposable income and to government surpluses or deficits. Various sources, including CBO, are consulted in specifying these tax and contribution rates. Also important are the large transfer payment programs, especially Social Security and Medicare, which typically are projected in terms of real benefits per qualified recipient. These assumptions rely on projections by CBO, SSA and Centers for Medicare & Medicaid Services (CMS).

The global economic outlook is important for determining demand for U.S. exports, and the prices of US imports. Baseline projections are developed from examination of historical developments in the trade of specific goods and services, together with an assessment of global conditions and consensus views on U.S. imports and exports. Trade in fossil fuels, for example, is informed by projections by the Energy Information Administration.

The LIFT model provides the means to assemble historical data with these and a variety of additional assumptions and information about the forecast period to form a consistent portrayal of the American economy through each year of the forecast period.

Appendix 2: Primary Sector Definitions

Primary Sector	Sub-sectors
Manufacturing	Food and beverage and tobacco products, textile mills and textile product mills, apparel and leather and allied products, wood products, paper products, printing and related support activities, petroleum and coal products, chemical products, plastics and rubber products, nonmetallic mineral products, primary metals, fabricated metal products, machinery, computer and electronic products, electrical equipment, appliances and components, motor vehicles, bodies and trailers and parts, other transportation equipment, furniture and related products, miscellaneous manufacturing
Health Care	Ambulatory health care services, hospitals, nursing, and residential care facilities
Professional Services	Legal services, miscellaneous professional, scientific, and technical services, computer systems design and related services, management of companies and enterprises
Other Services	Administrative and support services, waste management and remediation services, other services, except government, civilian government
Logistics	Wholesale trade, truck transportation, warehousing, and storage
Finance, Insurance and Real Estate	Federal reserve banks, credit intermediation, and related activities, securities, commodity contracts, and investments, insurance carriers and related activities, funds, trusts and other financial vehicles, housing services, other real estate, rental and leasing services and lessors of intangible assets
Accommodation, food, and Drinking Places	Accommodation, food services and drinking places
Transportation Services (excluding truck transportation)	Air transportation, rail transportation, water transportation, transit and ground passenger transportation, pipeline transportation, other transportation, and support activities
Mining, Utilities, Agriculture	Farms, forestry, fishing and related activities, oil and gas extraction, mining, except oil and gas, support activities for mining, utilities
Information	Publishing industries, except internet (includes software), motion picture and sound recording industries, broadcasting and telecommunications, data processing, internet publishing and other information services
Entertainment	Performing arts, spectator sports, museums and related activities, amusements, gambling, and recreation industries

Appendix 3: Additional Information

Table 1. Infrastructure Funding for *Bridging the Gap*¹

Major Infrastructure Sector	Additional Funding 2022-2026	Estimated Expenditures 2024-2026
Surface Transportation	\$455	\$270
Energy ²⁻⁹	\$42	\$25
Drinking Water, Wastewater, & Stormwater	\$46	\$30
Airports	\$25	\$10
Ports & Inland Waterways	\$14	\$9
TOTALS	\$582	\$344

Dollars in 2022 Billions

Table 2. Ten-Year Gaps by Scenario, 2024-2033

Scenario		Continuing to Act		Snapback	
Major Infrastructure Sector	Needs	Anticipated Investment	Gap	Anticipated Investment	Gap
Surface Transportation	\$3,549	\$2,293	\$1,242	\$1,710	\$1,839
Energy	\$1,886	\$1,308	\$578	\$1,184	\$702
Drinking Water, Wastewater, & Stormwater	\$1,653	\$655	\$999	\$627	\$1,026
Water Transportation	\$45	\$32	\$13	\$26	\$19
Aviation	\$310	\$197	\$114	\$162	\$148
TOTALS	\$7,444	\$4,485	\$2,945	\$3,709	\$3,735

Dollars in 2022 Billions

Columns may not add due to rounding.

Table 3. Twenty-Year Gaps by Scenario 2024-2043

Scenario		Continuing to Act		Snapback	
Major Infrastructure Sector	Needs	Anticipated Investment	Gap	Anticipated Investment	Gap
Surface Transportation	\$6,718	\$4,450	\$1,768	\$3,481	\$3,237
Energy	\$4,101	\$2,686	\$1,415	\$2,345	\$1,756
Drinking Water, Wastewater, & Stormwater	\$3,587	\$1,469	\$2,118	\$1,344	\$2,243
Water Transportation	\$110	\$79	\$31	\$61	\$49
Aviation	\$675	\$394	\$281	\$310	\$365
TOTALS	\$15,190	\$9,578	\$5,612	\$7,541	\$7,650

Dollars in 2022 Billions
Columns may not add due to rounding.

Table 4. Impacts of the Infrastructure Investment Gap on Disposable Income Per Household by Scenario

Scenario	Average per Household 2024-2033	Average Per Household Annually	Average Per Household in the Year 2043
Continuing to Act	\$40,100	\$2,000	\$3,400
Snapback	\$53,500	\$2,700	\$4,500
Difference from the Scenarios	\$13,400	\$700	\$1,100

Columns may not add up due to rounding. In 2022 dollars.
Source: IERF using the LIFT/INFORUM Model, and EBP

Table 5. Cumulative Impacts of the Infrastructure Investment Gap on Consumption Categories by Scenario

Consumption Category	Continuing to Act		Snapback		Difference
	Dollars	Percent	Dollars	Percent	Dollars
Durable Products	\$1,133	22%	\$1,508	21%	\$376
Non-Durable Products	\$1,148	23%	\$1,434	20%	\$287
Services	\$2,783	55%	\$4,076	58%	\$1,293
Total	\$5,063	100%	\$7,019	100%	\$1,955

Notes: Cumulative declines in personal consumption represent total consumption declines from 2024 through 2043. Losses reflect impacts against national baseline projections and do not indicate declines from 2024 levels. Columns may not add up due to rounding. Dollars in 2022 billions.

Sources: IERF using the LIFT/INFORUM Model, and EBP

Table 6. Cumulative Personal Consumption Decreases by Selected Industries and Scenarios, 2024-2043

Sector	Continuing to Act			Snapback		
	2024-33	2034-43	Total	2024-33	2034-43	Total
Health Care	\$122	\$448	\$570	\$209	\$821	\$1,030
Other Services	\$121	\$465	\$586	\$201	\$643	\$844
Housing, Utilities	\$140	\$450	\$590	\$202	\$595	\$797
Grocery Stores, Other Food Shops	\$99	\$321	\$420	\$137	\$416	\$553
Other Nondurable Goods	\$132	\$315	\$448	\$164	\$378	\$542
Food Services, Accommodations	\$91	\$305	\$396	\$128	\$406	\$535
Recreational Goods, Vehicles	\$80	\$297	\$378	\$111	\$386	\$497
Motor Vehicles, Parts	\$102	\$270	\$372	\$134	\$340	\$473
Furnishings, Household Equip.	\$59	\$233	\$292	\$88	\$303	\$391
Transportation Services	\$69	\$204	\$274	\$101	\$288	\$388
Other Sectors	\$188	\$550	\$738	\$264	\$705	\$970
Totals	\$1,204	\$3,859	\$5,063	\$1,739	\$5,280	\$7,019

Notes: Cumulative losses represent the consumption declines against national baseline projections, and do not indicate changes from 2024 levels. Columns may not add up due to rounding. Dollars in 2022 billions

Sources: IERF using the LIFT/INFORUM Model, and EBP

Table 7. Aggregated Output Losses by Industry

Sector	Continuing to Act			Snapback			Additional Lost Output by Snapping Back		
	2024-2033	2034-2043	2024-2043	2024-2033	2034-2043	2024-2043	2024-2033	2034-2043	2024-2043
Manufacturing	\$877	\$2,369	\$3,245	\$1,153	\$3,137	\$4,290	\$276	\$768	\$1,045
Finance, Insurance and Real Estate	\$479	\$1,469	\$1,948	\$677	\$1,993	\$2,670	\$198	\$524	\$722
Professional Services	\$324	\$1,063	\$1,387	\$448	\$1,463	\$1,911	\$124	\$400	\$524
Logistics	\$345	\$1,004	\$1,348	\$455	\$1,320	\$1,775	\$111	\$316	\$427
Health Care	\$111	\$407	\$518	\$193	\$746	\$938	\$81	\$339	\$420
Other Services	\$53	\$434	\$487	\$145	\$678	\$823	\$92	\$244	\$336
Retail trade	\$247	\$788	\$1,035	\$338	\$1,028	\$1,366	\$92	\$240	\$332
Information	\$174	\$613	\$787	\$253	\$834	\$1,087	\$79	\$220	\$299
Accommodation, Restaurants and Bars	\$113	\$376	\$490	\$159	\$509	\$668	\$46	\$133	\$179
Transportation Services (excluding truck transportation)	\$91	\$298	\$389	\$125	\$396	\$521	\$34	\$98	\$132
Mining, Utilities, Agriculture	\$173	\$425	\$598	\$210	\$524	\$735	\$37	\$99	\$136
Construction	\$99	\$220	\$320	\$134	\$294	\$427	\$35	\$73	\$108
Entertainment	\$25	\$95	\$119	\$39	\$133	\$172	\$14	\$38	\$53
Social Assistance	\$16	\$62	\$78	\$26	\$88	\$114	\$10	\$25	\$36
Educational Services	\$19	\$61	\$80	\$29	\$82	\$111	\$10	\$21	\$31
Totals	\$3,145	\$9,684	\$12,829	\$4,384	\$13,224	\$17,608	\$1,239	\$3,540	\$4,779

Notes: Cumulative losses represent the output declines against national baseline projections, and do not indicate changes from 2024 levels. Columns may not add up due to rounding. Dollars in 2022 billions

Sources: IERF using the LIFT/INFORUM Model, and EBP.

Table 8. Output in U.S. Manufacturing Sectors at Risk from Underinvestment in Infrastructure, 2024-2043

Sector	Continuing to Act	Snapback
Motor vehicles, bodies and trailers, and parts	\$560	\$742
Food and beverage	\$422	\$534
Chemical products	\$415	\$522
Fabricated metal products	\$201	\$267
Petroleum and coal products	\$248	\$266
Machinery	\$191	\$260
Other transportation equipment	\$156	\$240
Computer and electronic products	\$181	\$225
Primary metals	\$158	\$224
Miscellaneous manufacturing	\$164	\$220
Plastics and rubber products	\$140	\$193
Electrical equipment, appliances, and components	\$66	\$123
Furniture and related products	\$81	\$111
Paper products	\$65	\$86
Wood products	\$61	\$84
Nonmetallic mineral products	\$59	\$80
Textile mills and textile product mills	\$38	\$51
Printing and related support activities	\$24	\$35
Apparel and leather and allied products	\$17	\$29
TOTALS	\$3,247	\$4,292

Notes: Cumulative losses represent the output declines against national baseline projections, and do not indicate changes from 2024 levels. Columns may not add up due to rounding. Dollars in 2022 billions

Source: IERF using the LIFT/INFORUM Model, and EBP

Table 9. Job Losses Forecasted for 2033 and 2043 by Scenario

Sector	Continuing to Act		Snapback		More Jobs at Risk from Snapback Compared to Continuing to Act	
	2033	2043	2033	2043	2033	2043
Professional Services	77,000	156,000	107,000	214,000	30,000	58,000
Manufacturing	93,000	149,000	130,000	197,000	37,000	48,000
Retail trade	152,000	303,000	185,000	327,000	33,000	24,000
Finance, Insurance and Real Estate	50,000	90,000	66,000	113,000	16,000	23,000
Other Services	52,000	214,000	79,000	233,000	27,000	19,000
Accommodation, food and Drinking Places	25,000	103,000	48,000	118,000	23,000	15,000
Transportation Services (excluding truck transportation)	29,000	69,000	28,000	81,000	+1,000	12,000
Information	24,000	39,000	33,000	50,000	9,000	11,000
Construction	51,000	84,000	57,000	91,000	6,000	7,000
Entertainment	9,000	26,000	16,000	32,000	7,000	6,000
Educational Services	12,000	39,000	18,000	44,000	6,000	5,000
Social Assistance	13,000	24,000	17,000	26,000	4,000	2,000
Mining, Utilities, Agriculture	12,000	23,000	16,000	24,000	4,000	1,000
Logistics	89,000	134,000	84,000	118,000	+5,000	+16,000
Totals	698,000	1,557,000	935,000	1,901,000	237,000	344,000

Notes: Job losses represent annual losses against national baseline projections for the years 2033 and 2043, and do not indicate changes from 2024 levels. Columns may not add up due to rounding. Rounded to thousands.

Sources: IERF using the LIFT/INFORUM Model, and EBP.

Table 10. Reduction in U.S. Export of Goods and Services by 2033 and 2043, Ten Largest Affected Sectors by Scenario

Sector	Continuing to Act			Snapback			Differences		
	2024-2033	2034-2043	2024-2043	2024-2033	2034-2043	2024-2043	2024-2033	2034-2043	2024-2043
Wholesale trade	\$42,608	\$92,596	\$135,205	\$48,490	\$118,270	\$166,761	\$5,882	\$25,674	\$31,556
Aerospace products and parts	\$27,218	\$74,993	\$102,211	\$31,145	\$91,978	\$123,122	\$3,927	\$16,984	\$20,911
Motor vehicles	\$21,893	\$59,673	\$81,556	\$25,234	\$73,253	\$98,487	\$3,341	\$13,581	\$16,921
Architectural, engineering and related services	\$15,180	\$38,063	\$53,243	\$17,250	\$48,247	\$65,497	\$2,070	\$10,184	\$12,254
Other financial investment activities	\$14,801	\$35,038	\$49,839	\$16,802	\$44,507	\$61,308	\$2,001	\$9,468	\$11,469
Other professional, scientific and technical services	\$13,514	\$31,804	\$45,318	\$15,337	\$40,476	\$55,813	\$1,823	\$8,672	\$10,495
Royalties	\$13,998	\$31,253	\$45,250	\$15,859	\$39,454	\$55,313	\$1,861	\$8,201	\$10,063
Other chemicals	\$17,751	\$43,553	\$61,304	\$20,049	\$51,201	\$71,250	\$2,298	\$7,648	\$9,947
Scientific research and development services	\$11,760	\$30,689	\$42,449	\$13,339	\$38,793	\$52,132	\$1,579	\$8,104	\$9,684
Petroleum and coal products	\$21,996	\$50,789	\$72,784	\$23,968	\$58,492	\$82,460	\$1,973	\$7,703	\$9,676
Other Sectors	\$157,993	\$357,317	\$515,310	\$176,454	\$439,571	\$616,025	\$18,461	\$82,254	\$100,715
Totals	\$358,710	\$845,769	\$1,204,478	\$403,927	\$1,044,243	\$1,448,170	\$45,218	\$198,474	\$243,692

Notes: Declines in exports represent annual losses against national baseline projections from 2024 - 2043, and do not indicate changes from 2024 levels. Columns may not add up due to rounding. Dollars in 2022 millions.

Sources: IERF using the LIFT/INFORUM Model, and EBP

