

## Summary

Congressional Democrats and the White House agreed to spend \$2 trillion on public infrastructure but have not specified how it will be spent or how it will be financed. For this analysis, we allocate spending proportional to the proposal in the [2018 Senate Democrats' Jobs and Infrastructure Plan for America's Workers](#) and we consider three financing mechanisms: higher deficits, user fees and an additional federal gas tax. Despite public infrastructure having substantially higher productivity than private capital, we estimate a fall in GDP if financed with larger deficits and slight increases in GDP if financed with user fees or a gas tax.

## Key Points

- Due to various offsets, a \$2 trillion federal investment would increase infrastructure spending across all levels of government between \$440 billion and \$2,033 billion---including the original \$2 trillion---based on evidence of past experience.
- If a gas tax were used to fully fund the \$2 trillion investment, the gas tax would have to rise by \$1.67 per gallon for 10 years, thereby increasing the current federal gas tax from \$0.184 (18.4 cents) per gallon to \$1.854 per gallon.
- If fully deficit-financed, the \$2 trillion infrastructure proposal lowers GDP between 0.1 and 0.5 percent by 2043, relative to current policy. If fully financed with user fees or higher gas taxes it typically boosts GDP, between -0.1 and 0.4 percent by 2043.

---

# The \$2 Trillion Congressional Democrat and White House Infrastructure Proposal

---

## Introduction

The [American Society of Civil Engineers](#) recommends long-term, consistent investment to address the country's infrastructure needs. Additionally, [USA Facts](#) shows that on average, commuters were delayed by [42 hours annually in 2014, up from 30 hours in 1994](#). The Congressional Democrats and White House agreed to [\\$2 trillion in infrastructure spending](#). However, the specific allocation of spending and sources of funding are still being negotiated.

Penn Wharton Budget Model (PWBM) previously projected the potential impact of [additional public infrastructure on the U.S. economy](#). PWBM then [examined](#) the effects of the [White House infrastructure plan](#), which called for \$200 billion in new federal spending over the next decade. We also [examined](#) the [Senate Democrats' Jobs and Infrastructure Plan for America's Workers](#), which calls for \$1,022 billion in new infrastructure spending over the next decade.

This brief analyzes \$2 trillion in proposed spending. For this analysis, we assume that the spending is allocated proportionally to the spending in the \$1,022 billion Senate Democrats' plan. Additionally, PWBM analyzes the proposal funded three ways: with higher deficits, with user fees, and with a gas tax.

## Proposed Infrastructure Spending

Congressional Democrats and the White House agreed to a goal with the intent of "[advancing public health with clean air and clean water, and improving the safety of our transportation system, and addressing climate change with clean energy, clean transportation and resilient infrastructure... \[and includes\] a major investment in expanding broadband to rural, urban and other underserved areas to deliver broadband's benefits for education, health care and commerce.](#)"<sup>1</sup> This language suggests that the final proposal will have elements that are similar to the *Senate Democrats' Jobs and Infrastructure Plan*. Therefore, we evaluate a \$2 trillion proposal with the same mix of programs but with outlays approximately twice as large as those in the Senate Democrats' \$1,022 billion plan.

The five categories of aid that PWBM uses to estimate the total change in its [analysis](#) of the *Senate Democrats' Jobs and Infrastructure Plan* investment are *Block Grants and Matching Grants with Caps*; *Matching Grants with Caps for Distressed Areas*; *Matching Grants with Caps for Deferred Maintenance*; *Credit Programs, Loans and Tax Credits*; and *Direct Federal Spending*. PWBM describes these programs and their effects on state and local infrastructure spending in [our previous analysis](#). We use the same categories to analyze the \$2 trillion Congressional Democrat and White House proposal. Each program has different effects on incentives for state and local governments to invest in public infrastructure. Thus, each program has different effects on the total amount of new infrastructure spending.

## Including Offsets at the State and Local Level

When the federal government awards aid for infrastructure investment, the historical evidence indicates that state and local governments often shift their own spending and revenues. Previously, PWBM reviewed empirical studies about [how states and localities changed their spending and revenues in response to federal aid](#). Those studies indicate that an additional dollar in federal spending typically increases total (federal, state and local) spending by *well less than* one dollar, *including* the federal dollar. In particular, states substitute federal spending for new spending (or new revenues) that they would have otherwise done (or raised) without the federal aid. However, the amount of offset varies across the five types of existing federal aid programs.

Based on the empirical evidence, Table 1 shows our projected total infrastructure spending by the five types of federal aid. We use the same approach that was used in our estimates of the *Senate Democrats'* and the 2018 [White House infrastructure plan](#) to estimate the effect of federal infrastructure aid on total infrastructure spending. To reflect the wide range of offsets found in the historical evidence, we consider three scenarios---low, medium and high---that are ordered by increasing amounts of state and local spending (fewer offsets). In the low scenario, states respond to federal aid with a substantial reduction in their own infrastructure investments, leading to total new infrastructure investment of about \$440 billion. The middle and high scenarios result in additional infrastructure spending of \$1,237 billion and \$2,033 billion respectively.

## Table 1: Three Options for State and Local Government and Private Sector Response to Federal Aid for Infrastructure

[DOWNLOAD DATA](#)

Type of Federal Spending Program	\$2 Trillion Congressional Democrat and White House Infrastructure Proposal	Net Change in the Value of Infrastructure Spending by Federal, State and Local Governments Under the \$2 Trillion Congressional Democrat and White House Infrastructure Proposal.		
		Low	Medium	High
Block Grants and Matching Grants (with Cap)	\$1,294	\$0	\$646	\$1,294
Matching Grants (with Caps) - Distressed Areas	\$63	\$31	\$47	\$63
Matching Grants (with Caps) - Deferred Maintenance	\$137	\$0	\$35	\$68
Credit and Loan Programs; Tax Credits	\$202	\$100	\$202	\$301
Direct Federal Spending	\$309	\$309	\$309	\$309
<i>Federal Spending</i>	<i>\$2,000</i>	<i>\$2,000</i>	<i>\$2,000</i>	<i>\$2,000</i>
<b>Net Total Spending</b>	<b>\$2,000</b>	<b>\$440</b>	<b>\$1,237</b>	<b>\$2,033</b>

Note: Under each of the above options the federal government spends \$2 trillion. Adding each category of spending may not result in totals because of rounding.

### Three Financing Mechanisms

Although spending may look broadly similar between the 2018 Senate Democrat plan and the \$2 trillion 2019 Congressional Democrat and White House proposal, any final negotiated financing will likely diverge considerably from the 2018 Senate Democrat plan. Therefore, we evaluate the proposal under three alternative financing arrangements similar to those suggested by key policymakers:

- \$2 trillion dollars in additional [deficits](#) as required by increased spending;
- \$2 trillion in [user fees](#), similar to lump-sum taxes over 10 years; and,
- \$2 trillion---before any dynamic effects from total household changes in total consumption<sup>2</sup>, savings, and labor---from an increase in the gas tax<sup>3</sup> equal to about \$1.67 per gallon over 10 years.<sup>4</sup>

### Key Modeling Assumptions

As was the case for PWBM’s analysis of the [White House infrastructure plan](#) and the the [Senate Democrats’ infrastructure plan](#), we use our [dynamic model](#) to evaluate the effects of the *\$2 trillion Congressional Democrat and White House Infrastructure Proposal*. We model investment in public capital as a complement to private capital.<sup>5</sup> In other words, more public capital investment raises the productivity of private capital and labor. Based on past

experience, our analysis assumes that an additional dollar of public infrastructure generates over 10 cents of output *per year*, everything else equal. In contrast, we estimate that an additional dollar of private capital generates around six cents of output *per year*.

Since our previous analysis of infrastructure plans, PWBM has continued making additions to its dynamic model.<sup>6</sup> These model additions prevent a direct comparison of the analysis of the Congressional Democrat and White House proposal with the analyses of the Senate Democrat and the White House plans that we previously released.

The government is assumed to focus spending on "[shovel ready](#)" projects. Therefore, our simulations assume spending and building rates that are twice as fast as previously estimated by the experts at the CBO (2016).<sup>7</sup> In the case of gas tax financing, our projected future gas prices under current law are consistent with estimates from the [U.S. Energy Information Administration](#) and the reduction in the demand for gasoline in response to a higher price is consistent with estimates provided by Coyle, DeBacker and Prisinzano (2012).<sup>8</sup>

### **Economic Impact with Deficit Financing**

Select "Deficit Financed" from the drop down menu in Table 2 to see the effects of the infrastructure proposal if it is financed with higher deficits. Without taxes or fees to fund the infrastructure investment, federal debt is between 6.8 and 7.3 percent larger by 2033 relative to current policy. The increase in federal debt [crowds out](#) private capital services, which are between 0.7 and 1.2 percent lower in 2033. Even though the investment in public capital boosts productivity, less capital leads to lower wages and lower GDP. GDP changes between -0.3 and 0.2 percent in 2033 and is between 0.5 and 0.1 percent lower in 2043 relative to current policy.

## **Table 2: The Economic Effects of the Congressional Democrat / White House Infrastructure Proposal on Key Variables Relative to Current Policy in Year Shown**

[DOWNLOAD DATA](#)

Source of funding

**Deficit Financed**

<b>Year</b>	<b>Net Change to Infrastructure Spending by Federal, State and Local Governments</b>	<b>Debt (% Change)</b>	<b>GDP (% change)</b>	<b>Hours Worked (% change)</b>	<b>Average Hourly Wages (% change)</b>	<b>Public Capital Services (% change)</b>	<b>Private Capital Services (% change)</b>
2033	Low	7.3	-0.3	0.0	-0.3	2.0	-1.2
	Medium	7.0	-0.1	0.0	-0.1	5.7	-1.0
	High	6.8	0.2	0.0	0.2	9.3	-0.7
2043	Low	6.2	-0.5	-0.1	-0.5	1.1	-1.6
	Medium	5.7	-0.3	-0.1	-0.3	3.2	-1.3
	High	5.3	-0.1	-0.1	0.0	5.2	-0.9

Note: The \$2.0 trillion in federal infrastructure investment is proportional to the investment allocation in the 2018 Senate Democrats' Jobs and Infrastructure Plan for America's Workers and is financed with \$2 trillion in additional deficits. Consistent with our previous dynamic analysis and the empirical evidence, the projections above assume that the U.S. economy is 40 percent open and 60 percent closed. Specifically, 40 percent of new government debt is purchased by foreigners. The government is assumed to focus spending on "shovel ready" projects and so, the above projections assume double the spending rates and building rates applied by CBO (2016). Consistent with empirical evidence, the projections above assume that the elasticity of output to a change in public capital is 0.05. Revenue estimates change with the distribution of taxable income that reflect a dynamic economy.

**User Fee Financed**

<b>Year</b>	<b>Net Change to Infrastructure Spending by Federal, State and Local Governments</b>	<b>Debt (% Change)</b>	<b>GDP (% change)</b>	<b>Hours Worked (% change)</b>	<b>Average Hourly Wages (% change)</b>	<b>Public Capital Services (% change)</b>	<b>Private Capital Services (% change)</b>
2033	Low	0.7	-0.1	0.1	-0.1	2.0	-0.6
	Medium	0.4	0.2	0.1	0.1	5.7	-0.3
	High	0.1	0.5	0.1	0.4	9.3	-0.1
2043	Low	0.6	-0.1	0.0	-0.1	1.1	-0.4
	Medium	0.1	0.2	0.0	0.1	3.2	-0.1
	High	-0.4	0.4	0.1	0.3	5.2	0.3

Note: The \$2.0 trillion in federal infrastructure investment is proportional to the investment allocation in the 2018 Senate Democrats' Jobs and Infrastructure Plan for America's Workers and is financed with \$2 trillion from user fees. Consistent with our previous dynamic analysis and the empirical evidence, the projections above assume that the U.S. economy is 40 percent open and 60 percent closed. Specifically, 40 percent of new government debt is purchased by foreigners. The government is assumed to focus spending on "shovel ready" projects and so, the above projections assume double the spending rates and building rates applied by CBO (2016). Consistent with empirical evidence, the projections above assume that the elasticity of output to a change in public capital is 0.05. Revenue estimates change with the distribution of taxable income that reflect a dynamic economy.

**Gas Tax Financed**

Year	Net Change to Infrastructure Spending by Federal, State and Local Governments	Debt (% Change)	GDP (% change)	Hours Worked (% change)	Average Hourly Wages (% change)	Public Capital Services (% change)	Private Capital Services (% change)
2033	Low	1.6	0.0	0.0	0.0	2.0	-0.4
	Medium	1.3	0.2	0.0	0.2	5.7	-0.1
	High	1.0	0.5	0.0	0.5	9.3	0.1
2043	Low	1.3	-0.1	0.0	-0.1	1.1	-0.4
	Medium	0.8	0.1	0.0	0.1	3.2	0.0
	High	0.4	0.4	0.0	0.4	5.2	0.3

Note: The \$2.0 trillion in federal infrastructure investment is proportional to the investment allocation in the 2018 Senate Democrats' Jobs and Infrastructure Plan for America's Workers and is financed with \$2 trillion from an increase in the gas tax. The actual amount of money raised by the gas tax will be slightly less than \$2 trillion as households choose to save more and consume less in response to the higher cost of gas. Consistent with our previous dynamic analysis and the empirical evidence, the projections above assume that the U.S. economy is 40 percent open and 60 percent closed. Specifically, 40 percent of new government debt is purchased by foreigners. The government is assumed to focus spending on "shovel ready" projects and so, the above projections assume double the spending rates and building rates applied by CBO (2016). Consistent with empirical evidence, the projections above assume that the elasticity of output to a change in public capital is 0.05. Revenue estimates change with the distribution of taxable income that reflect a dynamic economy.

**Economic Impact with User Fees**

Select "User Fee Financed" from the drop down menu in Table 2 to see the effects of the infrastructure proposal if it is financed by 10 years of user fees. The effect on debt is much smaller than it is for the deficit-financed proposal because most of the proposed investment is financed by user fees. Relative to current policy, debt is between 0.1 and 0.7 percent larger in 2033, which lowers private capital between 0.1 and 0.6 percent in the same year. Nonetheless, the investment in public infrastructure makes both capital and labor more productive, which offsets the impact from the higher debt. Under the low change in net infrastructure spending, GDP is 0.1 percent lower in both 2033 and 2043, relative to current policy. Under a high change in net infrastructure spending, GDP is 0.5 percent higher in 2033 and 0.4 higher percent in 2043.

## Economic Impact with Gas Taxes

Select "Gas Tax Financed" from the drop down menu in Table 2 to see the effects of the infrastructure proposal if it is financed by a 10-year increase in the gas tax of about \$1.67 per gallon.<sup>9</sup> In this case, debt increases as all of the spending occurs before all of the tax is collected, which allows interest to accrue on the additional federal debt. Furthermore, in response to the gas tax, households spend less and save more thereby reducing revenue but slightly increasing private capital relative to the proposal financed with user fees. Debt is between 1.0 and 1.6 percent larger in 2033 and between 0.4 and 1.3 percent larger in 2043. Debt rises, in part, because the gas tax is raised by a constant amount of \$1.67 per gallon over 10 years, whereas spending on "shovel ready" projects happens at a faster rate. Despite the increase to debt, there is slightly more private capital than if the infrastructure proposal were financed with user fees because households save more. Private capital changes between -0.4 and 0.1 percent in 2033 and between -0.4 and 0.3 percent in 2043. The change in capital combined with higher productivity leads to a change in GDP between 0.0 and 0.5 percent in 2033 and between -0.1 and 0.4 percent in 2043.

- 
1. The Office of the Speaker of the House, Newsroom. (2019). *Pelosi, Schumer Joint Statement on White House Infrastructure Meeting* [Press release]. Retrieved from <https://www.speaker.gov/newsroom/43019-3/>. ↩
  2. This financing arrangement utilizes PWB's microsimulation model and represents a conventional revenue estimate of a change in the tax on gasoline. We adjusted the tax rate until \$2 trillion was raised in additional revenue over 10 years. ↩
  3. There are a number of proposals to increase the gas tax including one proposal to [double the gas tax](#) and another to increase the gas tax by [\\$0.25 per gallon](#). ↩
  4. Currently, the federal gas tax is \$0.184 per gallon of gasoline. ↩
  5. Capital services reflect both the size of the physical capital stock and the productivity of different types of capital assets. In the dynamic model, public capital services are modeled separately from private capital services. The amount of public capital in the economy does not change in response to economic conditions. Private capital services reflect the amount of privately-owned, productive capital in the economy, which, by contrast, changes as households and foreign investors change their saving and investing behavior in response to changing economic conditions. ↩
  6. Updates to the models include but are not limited to [in-model estimates of a partially open economy](#), [refinements to federal debt maturity](#) and [corporate debt](#), detailed treatment of business entities, an definition of an open economy that is consistent with a foreign take-up rate of debt issuance, and time-varying OASI benefit brackets, survival, birth and immigration rates. In addition, we have updated our definition of an open economy to be more consistent with a foreign 'take-up' view of openness. In particular, if the economy is 100 percent open then 100 percent of new debt is bought by foreigners. ↩
  7. "The Macroeconomic and Budgetary Effects of Federal Investment." Congressional Budget Office, June 2016. <https://www.cbo.gov/publication/51628>. ↩
  8. "Estimating the supply and demand of gasoline using tax data." *Energy Economics*, 34 (2012): 195 - 200. ↩
  9. Currently, the federal gas tax is \$0.184 per gallon of gasoline. ↩