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Nonpartisan Analysis for the U.S. Congress

Business Tax Credits for Wind and Solar Power

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Molly Sherlock

Tax Analysis Division

For information about the symposium, see https://tinyurl.com/fk8wdz66.

Background

Investment in wind and solar power has contributed to reductions in emissions of carbon dioxide in the electric power sector.

The federal government provides tax credits that support investment in energy sources that generate electricity without emitting carbon dioxide in the process.

In April 2025, CBO released a report that provides an overview of the tax credits and explains how the agency assesses their budgetary and economic effects.

That report also explains how CBO's baseline projections reflect revenue estimates developed by the staff of the Joint Committee on Taxation (JCT).

This presentation reprises graphics and information published in Congressional Budget Office, *Business Tax Credits for Wind and Solar Power* (April 2025), www.cbo.gov/publication/61188.

Key Questions Addressed in CBO's Report

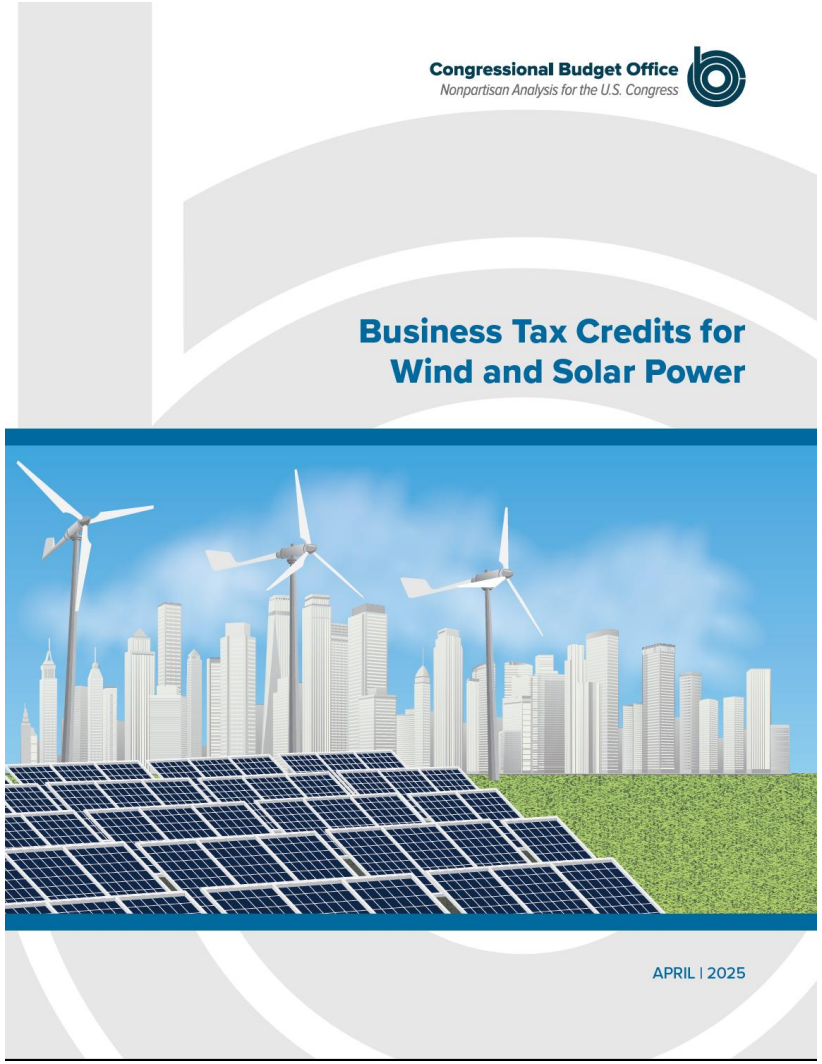
What are the business tax credits for investing in wind and solar electric power?

What are the tax credits' budgetary effects?

What are the tax credits' effects on investment?

What other policy objectives are linked to the tax credits?

How do the tax credits interact with other tax and nontax policies?



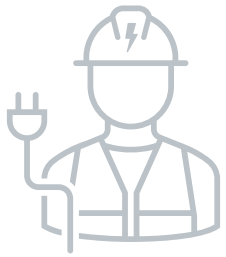
Business Tax Credits for Investing in Wind and Solar Electric Power

Overview of Tax Credits for Investing in Wind and Solar Electric Power

	Investment tax credit (ITC)	Production tax credit (PTC)
Summary	Tax credit for investment in specified energy property; available for zero-emissions power and storage property	Tax credit per kilowatt-hour of electricity produced at a new renewable generation facility; available for zero-emissions electricity
Amount	30 percent	$0.03 per kilowatt-hour in 2024; adjusted annually for inflation
Duration	Onetime credit	10 years
Bonus credits	10 percentage points if located in an energy community or uses domestically sourced materials	10 percent if located in an energy community or uses domestically sourced materials
Direct payment / transferability	Direct payment for tax-exempt entities; otherwise transferable	
Phaseout / expiration	Emissions-reduction threshold phasedown, but not before 2032	

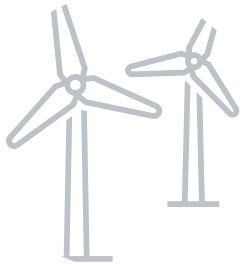
For notes about this table, see the online version at https://tinyurl.com/ey8vywdr.

The Tax Credits' Additional Policy Objectives



Labor and Workforce Standards. An enhanced credit (five times the base credit amount) can be claimed if a project's workers are paid prevailing wages and if apprentices perform a portion of the work on a project.*

Economic and Community Development. A bonus credit is available for projects located in energy communities—geographic areas that historically were economically reliant on the fossil fuel industry or that are designated brownfield sites.



Domestic Manufacturing. A bonus credit is available when the steel and iron used for a project meet Buy America domestic production requirements and when a sufficient proportion of the total cost of the project's other manufactured components is attributable to domestic sources.

* Prevailing wages are the average wages, including benefits, paid to workers in a similar occupation in the geographic area of employment. To meet the condition related to prevailing wages, workers must be paid at least that amount, either through wages or a combination of wages and benefits.

The Tax Credits' Budgetary Effects

The Tax Credits' Budgetary Effects in CBO's January 2025 Baseline Projections

In CBO's January 2025 baseline projections, the ITC and PTC together:

- Increase the estimated deficit for 2025 by $28 billion, and
- Increase projected deficits over the 2026–2035 period by $308 billion.

In CBO's baseline projections, some of the cost of the ITC and PTC is for tax credits tied to past investment:

- Tax credits for a wind energy project that began producing electricity in 2016, for example, could be claimed through 2025.

The cost of the ITC and PTC can be measured in different ways:

- Tax expenditures are determined by past and anticipated future investment; whereas
- Revenue estimates, which JCT provides, measure changes in deficits that result from a specified policy change.

The Tax Credits' Value to Investors and Cost to the Government

Investment in a utility-scale Solar facility in 2025	With the ITC	Without the ITC
Investment amount	$350 million	
Tax credit amount	$140 million 40% with energy community bonus	none
	When the ITC is claimed, the amount of the investment that can be deducted for depreciation is reduced by 50% of the amount of the tax credit.	
Value of deprecation deductions	$54 million 21% × ($112 million for bonus deprecation + $147 million, the present value of MACRS depreciation)	$68 million 21% × ($140 million for bonus deprecation + $183 million, the present value of MACRS depreciation)
After-tax cost of investment	$156 million $350 million−$140 million−$54 million	$282 million $350 million−$68 million

A **$140 million** ITC reduces the after-tax cost of investment by **$126 million** (from $282 million to $156 million).

The bonus depreciation amount in 2025 is 40 percent. ITC = investment tax credit; MACRS = modified accelerated cost recovery system.

Transferability and Direct Payment

The ITC and PTC can be used to offset a taxpayer's tax liability. Transferability and direct payment are options added to the credits under the 2022 reconciliation act.

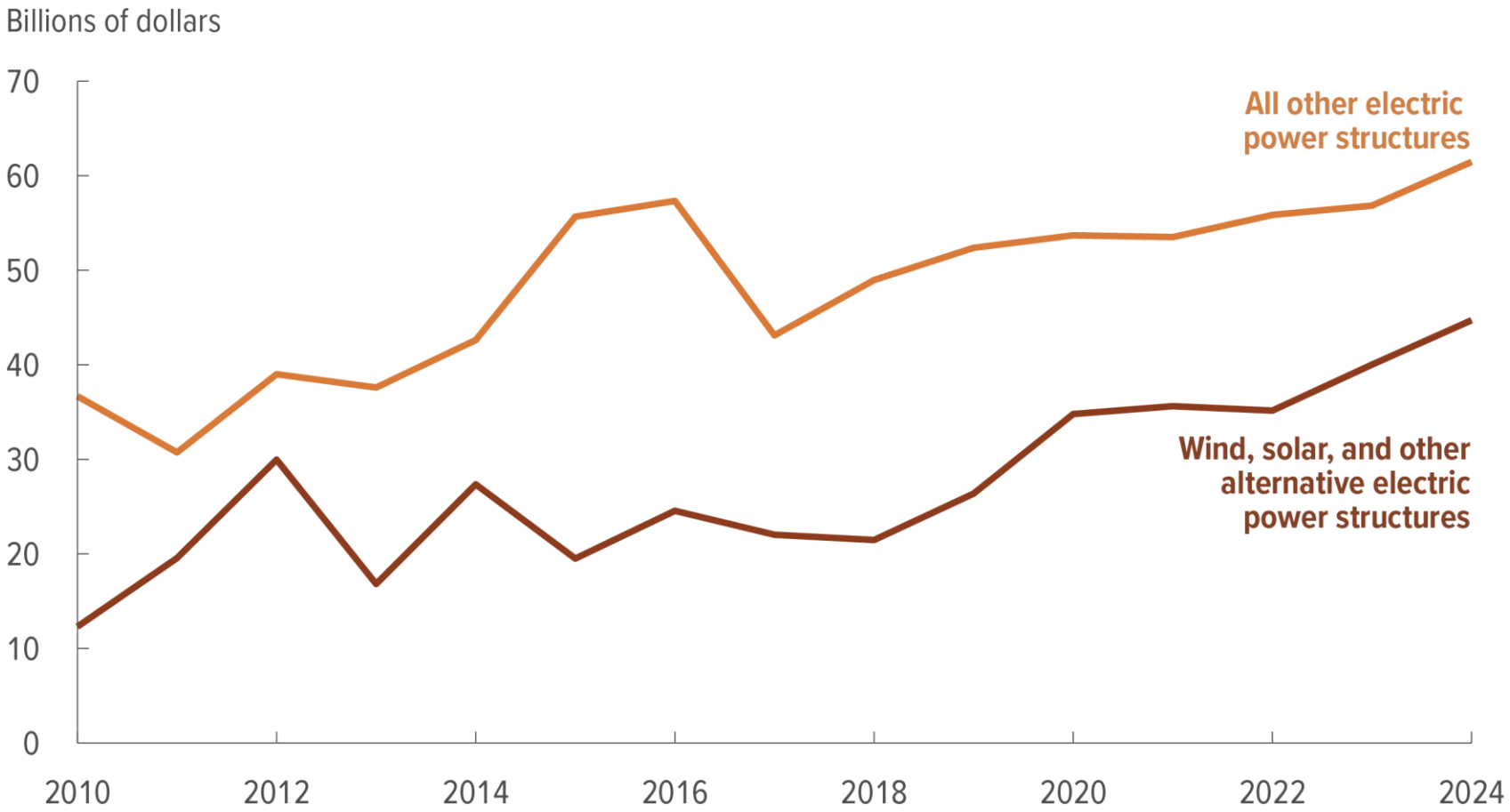
- Businesses can transfer (or sell, if transferred in exchange for cash) their tax credit, and
- Tax-exempt and governmental entities can receive the credit as a direct payment.

When credits are awarded as payments, they are recorded in the federal budget as outlays.

- Outlays for the ITC and PTC are estimated to be $1 billion in 2025 and are projected to be $14 billion (or 5 percent of the total cost of $308 billion) from 2026 to 2035.

The Tax Credits' Effects on Investment

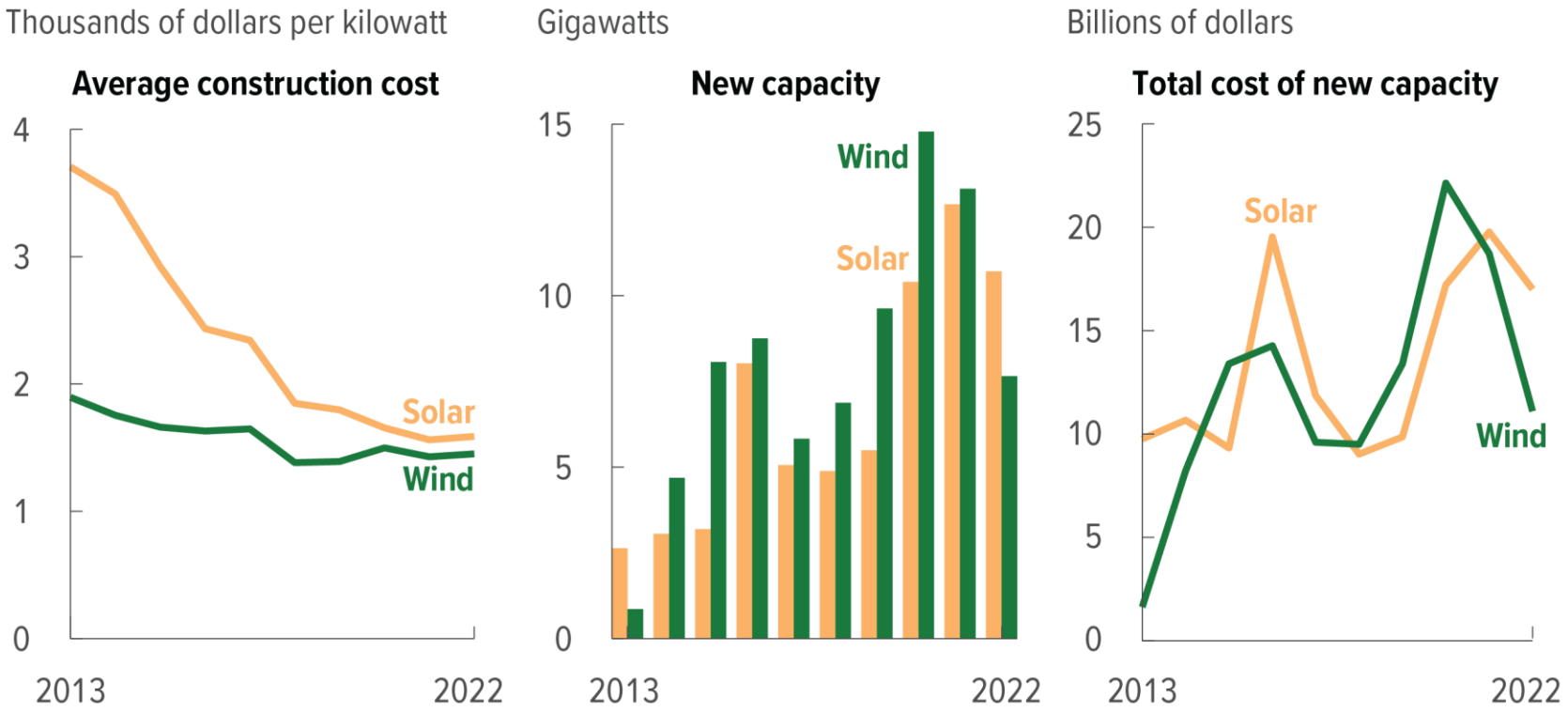
Investment in Electric Power Structures



From 2010 to 2024, nominal investment in alternative electric power structures—mainly wind and solar structures—grew at an average annual rate of nearly 10 percent; investment in all other electric power structures grew at an average annual rate of almost 4 percent.

For notes about this figure, see the online version at https://tinyurl.com/2r7kkeaz.

New Wind and Solar Generating Capacity and the Cost of That Capacity



Investment can be measured in terms of the amount of new generating capacity deployed. Wind and solar capacity has grown faster than nominal investment because the cost of building wind and solar power structures has declined.

For notes about this figure, see the online version at https://tinyurl.com/3sv562um.

Tax Credits and the User Cost of Capital

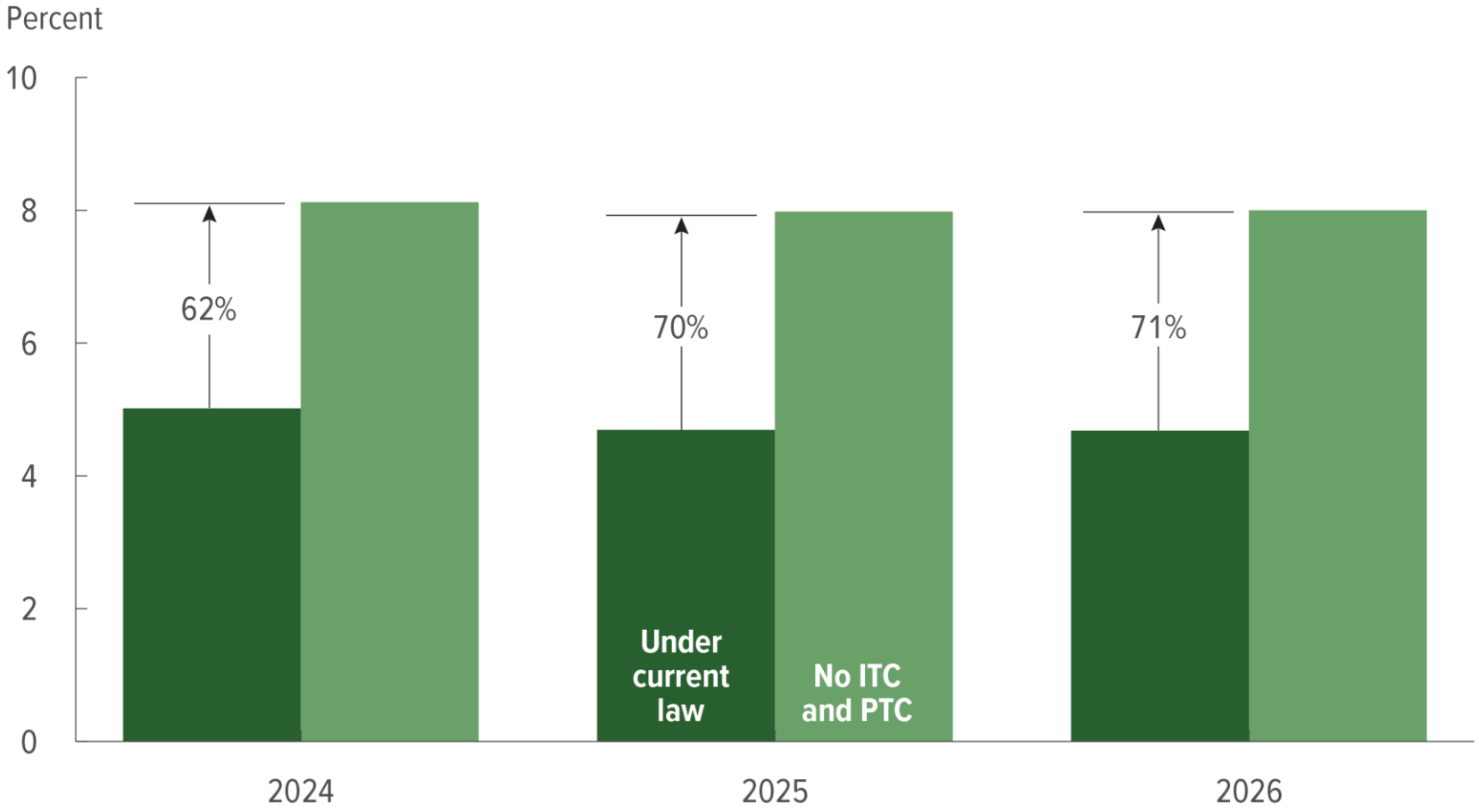
Tax credits affect investment by changing the ***user cost of capital***, which is the before-tax return on investment that provides the required return to investors after covering taxes and depreciation.

Tax credits, including the ITC and PTC, reduce the user cost of capital.

CBO uses its capital tax model, CapTax, to estimate the user cost of capital.

In CBO's economic models, private investment responds to changes in the user cost of capital.

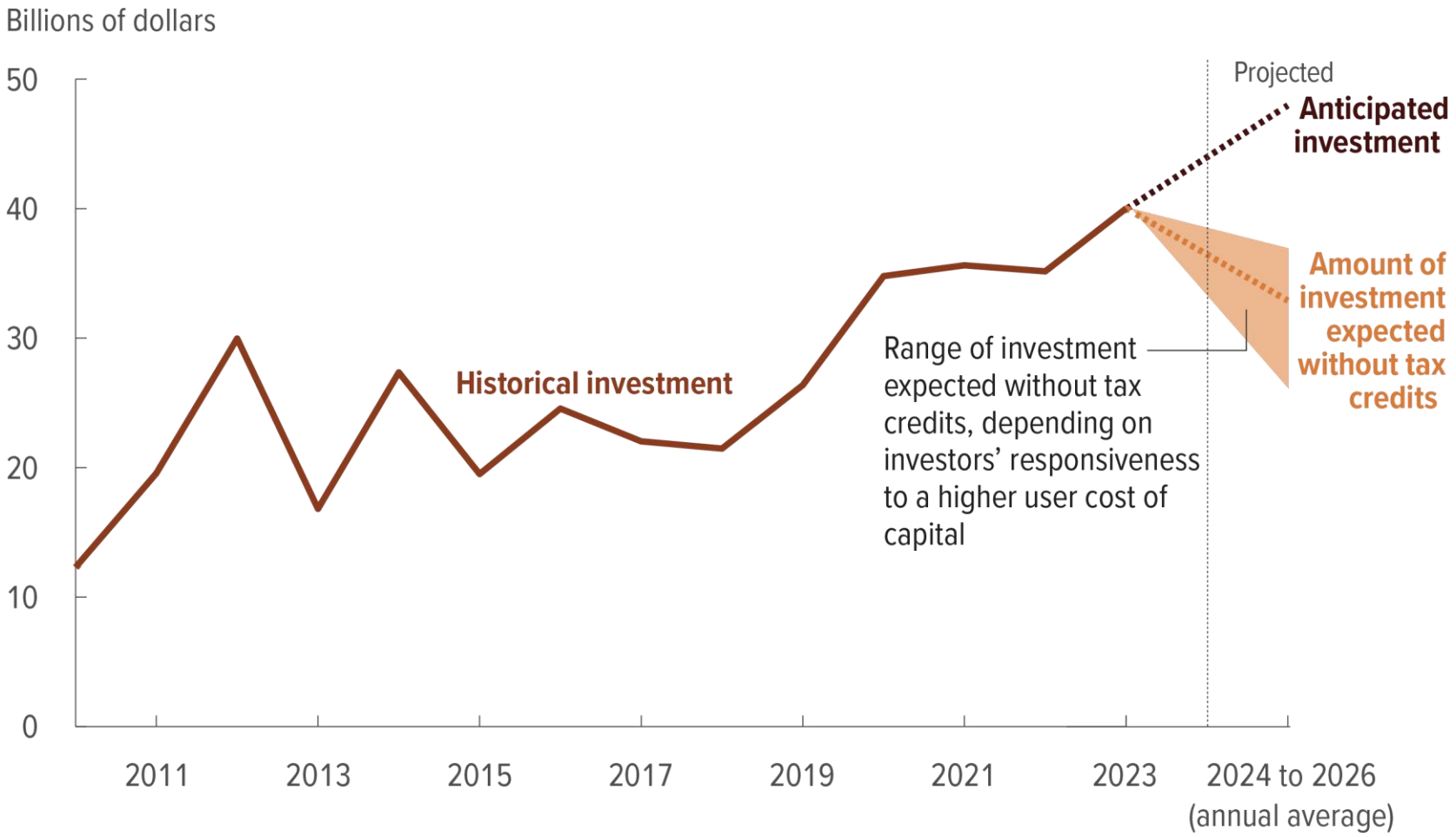
The User Cost of Capital for Investment in Wind and Solar Electric Power Under Current Law and Without the ITC and PTC



CBO estimates that without the ITC and PTC, the user cost of capital for investments in wind and solar electric power would be 70 percent higher in 2025.

For notes about this figure, see the online version at https://tinyurl.com/yybkwb8d.

Investment in Wind and Solar Power Structures With and Without the ITC and PTC

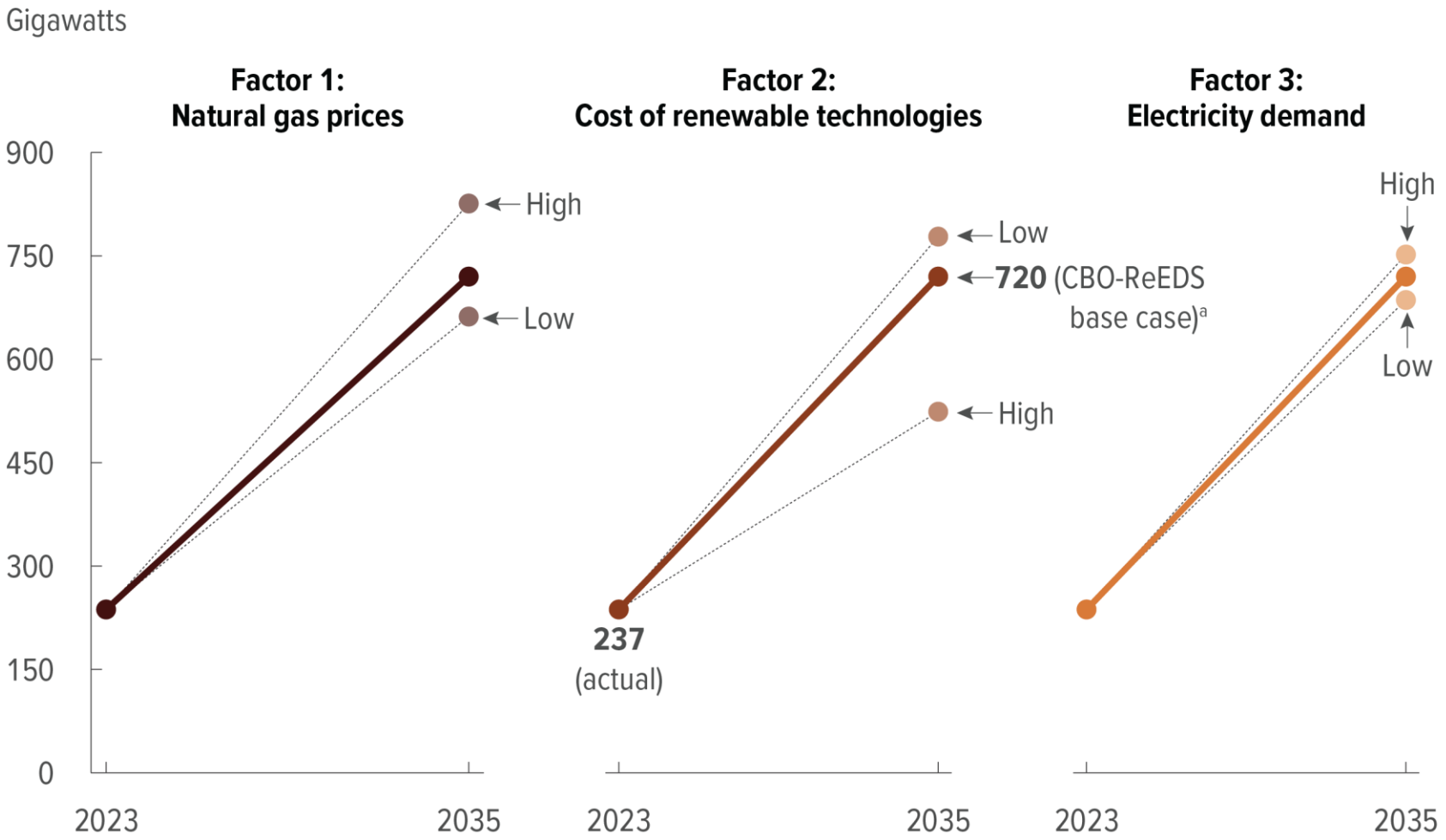


CBO estimates that over the 2024–2026 period, investment in wind and solar power structures will average $48 billion per year.

If the ITC and PTC were not available, investment in wind and solar power structures would be expected to be about $33 billion per year (two-thirds of what is currently expected).

For notes about this figure, see the online version at https://tinyurl.com/5at95cty.

Using the CBO-ReEDS Model to Evaluate the Effects of Selected Factors on Wind and Solar Generating Capacity



CBO's baseline projections are subject to uncertainty because investment in wind and solar generating capacity is uncertain. If natural gas prices were higher, or the cost of wind and solar technologies was lower, or if demand for electricity was greater than anticipated, the result would be more new wind and solar generating capacity than is currently projected.

For notes about this figure, see the online version at https://tinyurl.com/ye637vff.

Macroeconomic Effects of the ITC and PTC

The investment motivated by the ITC and PTC increases the capital stock; thus, those tax credits contribute to additional economic activity and growth.

In 2025, the overall user cost of capital for investment in business assets is 11.3 percent. Without the ITC and PTC, the user cost of capital would be slightly higher (but would still round to 11.3 percent).

Because investment in wind and solar power structures is a small share of total economywide investment, the tax credits have a small effect on CBO's estimate of the overall user cost of capital.

The Tax Credits' Various Policy Objectives

The ITC and PTC Under the 2022 Reconciliation Act

The 2022 reconciliation act linked energy-related tax credits to policy objectives in three areas:

- Adhering to prevailing wages and apprenticeship requirements results in tax credits that are five times the base amount—which could encourage investment in projects with higher labor costs.
- Bonus tax credits for energy communities encourage investment in areas that historically were economically reliant on fossil fuels. About half of all U.S. land area is designated as an energy community. Many projects would have located in those areas without the bonus credits.
- Bonus tax credits encourage the use of domestically sourced materials, which usually cost more.

Because of those other policy objectives, CBO does not expect the credits to stimulate investment in wind and solar electric power at the lowest possible cost.

How the Tax Credits Interact With Other Tax and Nontax Policies

The Tax Credits' Interactions With Other Tax and Nontax Policies

When U.S. or international tax policy includes a minimum tax, there is a trade-off between providing tax credits and achieving the objectives of the minimum tax policy.

Regulations and tax policies can support energy-related policy objectives. When both are used simultaneously to support investment in wind and solar power, the tax incentives provided by the government reduce the cost to the private sector of complying with the government's regulations.

Tariffs on solar products and other imported goods interact with tax policies in various ways.

- Import tariffs make capital goods more expensive and thus increase the cost of deploying solar and other energy-related technologies that use inputs (such as aluminum and steel, for example) subject to the tariffs.
- Tariffs can protect U.S. manufacturers from low-cost imports, encouraging domestic manufacturing and making it easier to use domestically sourced materials.