

BEFORE THE
STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

In the Matter of

Consolidated Edison Company of New York

Cases 25-E-0072 and 25-G-0073

May 2025

Prepared Redacted
Exhibits of
Staff Finance Panel:

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CONFIDENTIAL INFORMATION AND ATTACHMENTS REMOVED

Company Name: Con Edison
Case Description: 2025 CECONY Electric and Gas Rate Cases
Case: 25-E-0072, 25-G-0073

Response to DPS Interrogatories – Set DPS-19
Date of Response: March 26, 2025
Responding Witness: Cost of Capital

Question No. :471

Subject: Debt Issuances

On page 42, lines 4-11 of her testimony, Company witness Saegusa explains how the Company forecasted the interest rates for the long-term debt that it expects to issue during the Linking Period and the Rate Year. Specifically, she states that the projected cost rates of these new issuances are based upon forecasted Treasury rates from the *Blue Chip Financial Forecasts* publication, plus a spread to Treasury bond rates based on indicative quotes from financial institutions. Based on these two elements, the Company projects the coupon rates for the Company's new 30-year debt issuances during the years 2025 and 2026.

1. Provide the respective benchmark Treasuries and spread quotes from the financial institutions that comprise these estimates at the time Company witness Saegusa prepared her testimony.
2. Provide the respective spread quotes from the financial institutions for debentures of alternate maturities (i.e., for 10-year and 40-year obligations).
3. For each of the projected debt issuances, provide the assumptions regarding the debt discount and issuance expenses. Also, provide the debt discount and issuance expense amounts that would be required for 10-year and 40-year issuances.
4. Provide a complete copy of the *Blue Chip Financial Forecasts* issue that Company witness Saegusa used to develop her interest rate forecasts.

Response**1. Response:**

CONFIDENTIAL INFORMATION AND ATTACHMENTS REMOVED

REDACTED	

REDACTED

2. **Response:** At the time of filing, the Company did not request indicative pricing for 40-year obligations. The table with indicative spreads for 10-year obligations is set forth below:

Lender	Spread
REDACTED	

3. **Response:** For each of the projected debt issuances, the Company assumed that the bonds would be issued at a discount of 0.3% and that the issuance expenses would be 1.1% of the principal. The discount and issuance expenses for 40-year issuances would be the same as for 30-year obligations.

For 10-year obligations, the Company would assume a discount of 0.3% and issuance expenses of 0.9% of principal.

4. **Response:** Please see the **CONFIDENTIAL** attachment to this response.

Blue Chip Financial Forecasts®

REDACTED

REDACTED

REDACTED

REDACTED

REDACTED

REDACTED

REDACTED

REDACTED

REDACTED

REDACTED

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CONFIDENTIAL INFORMATION REMOVED

Company Name: Con Edison
Case Description: 2025 CECONY Electric and Gas Rate Cases
Case: 25-E-0072, 25-G-0073

Response to DPS Interrogatories – Set DPS-19
Date of Response: March 27, 2025
Responding Witness: Cost of Capital

Question No. :473

Subject: Equity Issuances

On page 69, lines 3-4 of his testimony, Company witness Nowak states, “Based on [the Company’s] cost shown in Exhibit_(JCN-9), flotation cost for the Company have equaled roughly 1.78 percent of the gross equity raised.” Is Consolidated Edison, Inc. planning to issue additional equity during the Rate Year ending December 31, 2026? If so, specify the expected dates and amounts of the gross equity to be raised.

Response

Consolidated Edison, Inc. forecasts that it will issue REDACTED of additional equity during the Rate Year ending December 31, 2026. Of this amount, REDACTED is expected to be issued through the sale of common shares to the public and REDACTED is estimated to be issued through the Company’s Employee Stock Purchase, Dividend Reinvestment and Long-Term Incentive Plans.

CONFIDENTIAL INFORMATION REMOVED

Company Name: Con Edison
Case Description: 2025 CECONY Electric and Gas Rate Cases
Case: 25-E-0072, 25-G-0073

Response to DPS Interrogatories – Set DPS-44
Date of Response: April 22, 2025
Responding Witness: Cost of Capital

Question No. :922

Subject: Equity Issuances – Follow-up to DPS-473 Response

On March 27, 2025, in response to DPS-473, the Company provided the expected plans for Consolidated Edison, Inc. to issue additional equity during the Rate Year.

1. Have there been any change or updates to these plans since March 27, 2025? If so, specify the changes.
2. What portion of the expected proceeds from the issuance of additional equity does Consolidation Edison, Inc. expect to provide to Consolidated Edison Company of New York, Inc.?
3. On what dates does Consolidated Edison, Inc. expect to make these funds available to Consolidated Edison Company of New York, Inc.? (Specify month and year.)

Response

1. No

2. [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

CONSOLIDATED EDISON COMPANY OF NEW YORK INC.
 RATE OF RETURN REQUIRED FOR:
 TWELVE MONTHS ENDING DECEMBER 31, 2026

	<u>Average Capitalization %</u>	<u>Cost Rate %</u>	<u>Weighted Cost Rate %</u>	<u>Pre-Tax Cost Rate %</u>
Long Term Debt	51.21%	4.79%	2.45%	2.45%
Customer Deposits	0.79%	3.00%	0.02%	0.02%
Common Equity	<u>48.00%</u>	9.30%	<u>4.46%</u>	<u>6.17%</u>
Total Capitalization	<u><u>100.00%</u></u>		<u><u>6.94%</u></u>	<u><u>8.65%</u></u>

<u>Ring Fencing</u>		Con Edison Inc.	Central Hudson/Fortis*	Iberdrola - NYSEG & RG&E	National Grid - KEDNY & KEDLI	National Grid - Niagara Mohawk Merger JP 2002	National Grid - Niagara Mohawk Rate Plan Provisions Modified 2013
1.	Transaction/Implementation Costs		Not charged to ratepayers	Not charged to ratepayers	Not charged to ratepayers	Not charged to ratepayers	N/A
2.	Goodwill		Not recorded on utility books to the extent permitted by US GAAP or reflected in rates	Not recorded on utility books (unless required by SEC registration) or reflected in rates**	May be recorded on KEDNY/KEDLI books pursuant to GAAP, but not pushed down on the regulatory books. Excluded from rate base, expenses and capitalization in determining rates or earnings.	Carried on utility books, however never able to be recovered in rates, and no portion of goodwill included in equity portion of capitalization for ratemaking. Debt and equity ratios will be established in rate cases (in a separate document)	Carried on utility books, however never able to be recovered in rates, and no portion of goodwill included in equity portion of capitalization for ratemaking. Debt and equity ratios will be established in rate cases (in separate a document).
3.	Goodwill Impairment Tests		Must provide to Commission	Must provide to Staff	Not stated	Not explicitly stated	Not explicitly stated
4.	Credit Ratings		Must register with a least 2 agencies	Must register with 2 agencies	Must register with 2 agencies	Must register with a least 2 agencies. If bond ratings fall to below investment grade permission to pay dividends must be obtained from the Commission.	Superceded by #7 and #8 - see below
5.	Dividends-Minimum Equity Ratio		1. Must maintain an equity ratio within 200 basis points of the one used to set rates.	NYSEG/RG&E must maintain a minimum equity ratio equal to the ratio in its current rate plan using a trailing 13-month average. On a monthly basis NYSEG/RG&E must maintain a minimum equity ratio of no less than 300 basis points below the ratio used to set rates..	Can pay dividends in any year provided at least two recognized rating agencies give it an investment-grade credit rating	Not stated	No limitations as long as average total debt does not exceed 55% of capital structure. If it exceeds 55%, limitations in place
			2. Dividends are scaled back starting with a rating drop below ‘BBB+’ by more than one rating agency.				
6.	Financial Integrity Measures	Dividends limited to 100% of income available for dividends calculated on a two-year rolling average. (Appendix C, Section 8, clause iii.)	dividends limited to average annual income available for common stock	Dividends limited to income and retained earnings	Dividends limited to income available for dividends in that year, plus cumulative retained earnings, plus certain paid in capital	Dividends limited to average annual income available for common stock + \$100M (2001-2002) gradually reduced to \$0 in 2007 and beyond	Dividends limited by applicable law.
		Debt must be raised directly by utility operating company.					
		May not make loans to, guarantee obligations of, or pledge assets as security for parent holding company or any unregulated affiliates without the prior permission of the Commission.					
7.	Imputed Cost of Debt due to Deterioration of Utility Credit Ratings		If Central Hudson’s S&P rating drops to BBB+ or lower or the equivalent for Moody’s, Fitch or DBRS, and its interest costs increase because of the downgrade, the increased interest costs will not be reflected in Central Hudson’s cost of capital in subsequent rate cases. (three-year limit)	If utility credit ratings fall as a result of action by or against and affiliate, the lower cost of debt will be imputed.	If bonds rating falls below A or A3, then any long-term debt will be "priced" as if it has been sold by an A-/A3 utility	Not stated	If bond ratings fall to below BBB- or Baa3 rates will be established based upon a BBB- or Baa3 bond rating and any resulting difference in interest expense will be disallowed for ratemaking purposes.
8.	Consequences of Loss of Investment Grade Credit Rating		Dividends cannot be paid	If the credit ratings fall to the lowest investment grade rating and there is a negative watch or review downgrade notice or they fall below investment grade, neither NYSEG nor RG&E may transfer, lease, or lend any moneys, assets, rights, or other items of value to any affiliate. They are also constrained in paying dividends if equity ratio in earnings sharing provision isn't met.	1. No dividends are payable. 2. Can't pay dividends at any point in time when its bond rating is at the lowest investment grade and one or more rating agencies have outstanding negative watch or review downgrade notice, or the bond rating of National Grid is at the lowest investment grade rating and there is a negative watch/review downgrade notice by one or more U.S. nationally recognized rating agencies.	Dividends cannot be paid without Commission approval	If bond ratings fall to below BBB- or Baa3 rates will be established based upon a BBB- or Baa3 bond rating and any resulting difference in interest expense will be disallowed for ratemaking purposes.
9.	Loss of Investment Grade Credit Rating		The companies must file a plan to rectify the downgrade	The companies must file a plan to rectify the downgrade	In the event an action by a rating agency triggers a dividend restriction, it may not transfer, lease, or lend any moneys, assets, rights or other items of value to any affiliate without first obtaining the Commission's permission.	Not stated	Not stated
10.	Money Pooling		Utilities may participate where participants are other utilities	Utilities may participate where participants are other utilities	Regulated Money Pool' prohibits it from directly or indirectly loaning or transferring funds borrowed from the money pool to National Grid USA, National Grid plc and all other non-participants in the money pool.	Utility can participate in SEC-approved Money Pool established by parent company	Not stated

	<u>Ring Fencing</u>	Con Edison Inc.	Central Hudson/Fortis*	Iberdrola - NYSEG & RG&E	National Grid - KEDNY & KEDLI	National Grid - Niagara Mohawk Merger JP 2002	National Grid - Niagara Mohawk Rate Plan Provisions Modified 2013
11.	Cross Default Provisions		Not allowed	Not allowed	Future cross default provisions not allowed and any existing ones post merger are to eliminated within 6 months of the closing of the merger.	Not stated in documents but financing orders disallow cross default provisions.	Not stated in documents but financing orders disallow cross default provisions.
12.	Bankruptcy Preferred Stock		Required	Required	Require	Required by May 24, 2011 Order in Cases 06-M-0878 (KeySpan Merger) 01-M-0075 (Niagara Mohawk Merger)	Required carry-over from 06-M-0878 and 01-M-0075.
13.	Accounting Method	Must follow US GAAP*	Must follow US GAAP	Must follow US GAAP	Follow US GAAP	Not explicitly stated	Not explicitly stated
14.	Sarbanes-Oxley Protections	(Merger took place before SOX was passed.)	Continue as if public company	Continue as modified	File Sarbanes-Oxley	N/A - Prior to SOX	Not stated
15.	Independent Audits	Required*	Required	Required	Has independent audits	Not explicitly stated	Not stated
16.	Access to Books and Records	Access to books and records of HoldCo and any subsidiary thereof. (Appendix C, Section 10, Clause i.)	-Access to upstream owners books and records (subject to relevance)	-Access to upstream owners books and records (subject to relevance)**	Access to upstream owners' books and records. Access to affiliate books and records (monitor transactions)	Full access to parent company and other subsidiaries books	Full access to parent company and other subsidiaries books
			-Access to affiliates books and records (if transactions occur)	-Access to affiliates books and records (if transactions occur)			
17.	Parent and affiliate consolidated financial statements		Must annually file complete set of financial statements that it files with Canadian securities regulators, which are in US GAAP, for Fortis, Inc. and its major regulated and unregulated energy company subsidiaries in the US in US dollars. US business entities with annual revenues less than ten percent of total Fortis revenues may be aggregated, provided each entity included is fully identified. To the extent available will also provide from a recognized financial reporting service such as SNL Financial or Bloomberg, Fortis Inc. 's "as reported" quarterly and annual Balance Sheet, Income Statement and Statement of Cash Flows in U.S. dollars with the underlying currency translation assumptions.	Required in former SEC format (U-9C-3 and U-5S). These forms provided consolidating financial statements that were previously required under the PUHCA of 1935 but eliminated when energy holding co. regulation transferred to FERC in energy act of 2005. These have been found to be useful since you can see stand alone audited financial statements and capitalization of each subsidiary	Required in former SEC format (U-9C-3 and U-5S). These forms provided consolidating financial statements that were previously required under the PUHCA of 1935 but eliminated when energy holding co. regulation transferred to FERC in energy act of 2005. These have been found to be useful since you can see stand alone audited financial statements and capitalization of each subsidiary	Required in former SEC format (U-9C-3 and U-5S). These forms provided consolidating financial statements that were previously required under the PUHCA of 1935 but eliminated when energy holding co. regulation transferred to FERC in energy act of 2005. These have been found to be useful since you can see stand alone audited financial statements and capitalization of each subsidiary	Required in former SEC format (U-9C-3 and U-5S). These forms provided consolidating financial statements that were previously required under the PUHCA of 1935 but eliminated when energy holding co. regulation transferred to FERC in energy act of 2005. These have been found to be useful since you can see stand alone audited financial statements and capitalization of each subsidiary
18.	Information on Domestic Holding Company Capital Structure			Information to be provided in rate cases.	Not stated	Not stated	Not stated
19.	SEC Registration		Will not be registered with the SEC	Required to issue 144a debt. Full SEC registration will be required when it is found to be cost effective.	File with SEC	Not stated	Not stated
20.	Tax Sharing Agreement		Not stated	Required as part of compliance filings***	Not stated	Not stated	Not stated
21.	Indemnification of utilities from affiliate tax liabilities		Required	Required	Not stated	Not stated	Not stated
22.	Utilities stand alone taxes/ held harmless from adverse tax consequences		Not stated	Required	Not stated	Not stated	Not stated
	<u>Affiliate Transactions/Code of Conduct</u>						
23.	Filing of changes		Must provide notice to PSC Secretary and Staff 30 days prior to amending	Changes to be filed with Director of OAAF and Secretary	Changes to be filed with Director of OAAF	Subject to review and approval by both DPS and SEC	Changes to be filed with Commission Secretary
24.	Use of affiliate’s name	No restrictions (Appendix C, Section 9, clause i.)	A competitive affiliate operating within Central Hudson’s service territory may not use the name “Central Hudson”	No restrictions/no royalty imputed	No restrictions/no royalty imputation	No restrictions/no royalty imputed	No restrictions/no royalty imputed for National Grid companies
25.	Preferential treatment of affiliates	Prohibited (Appendix C, Section 9, clause i.)	Central Hudson may not give preferential treatment to affiliates	DISCO may not give preferential treatment to affiliates	DISCO may not give preferential treatment to affiliates	May not give preferential treatment to affiliates	May not give preferential treatment to affiliates
26.	Disclosure of customer information to affiliates	Prohibited without customer authorization. (Appendix C, Section 9, clause v.)	Prohibited without customer authorization	Prohibited	Prohibits	No sales leads allowed to be given to affiliates	No sales leads allowed to be given to affiliates
27.	Company Liaison	Designated by senior officer of company. Alternate must also be designated. (Appendix C, Section 10, clause v.)	Designated by company	Designated by company	Designated by company	Not stated	Not stated

	<u>Ring Fencing</u>	Con Edison Inc.	Central Hudson/Fortis*	Iberdrola - NYSEG & RG&E	National Grid - KEDNY & KEDLI	National Grid - Niagara Mohawk Merger JP 2002	National Grid - Niagara Mohawk Rate Plan Provisions Modified 2013
28.	Books and Records/Offices	Unregulated subsidiaries may not be located in the same building as regulated subsidiaries. (Appendix C, Section 4, clause i.)	Central Hudson shall maintain separate books and records from affiliates. Must request Commission approval to establish a separate workspace for a competitive affiliate in an existing CH office.	-DISCO books and offices separate	DISCO books separate but can occupy same building with regulated affiliates	Shall maintain separate books and records from affiliates	Shall maintain separate books and records from affiliates
				-DISCO may not give preferential access to its property to affiliates			
29.	Cost Allocation Guidelines		Fully allocated cost	Fully allocated cost required	Fully allocated cost required	Fully allocated cost required	Fully allocated cost required
30.	DISCO Asset Transfers	Governed by Section 70 of the Public Service Law. Higher of net book or market value. Commission may evaluate at its discretion to ensure compliance. (Appendix C, Section 5, clause i-ii.)	Governed by Section 70 of the Public Service Law	Higher of book or market value	Higher of book or market value	Higher of book or market value and subject to commission approval	Higher of book or market value and subject to commission approval
31.	Cost Allocation Reporting		Annual - Transfers of assets, shared employees, employee transfers, employee loans for emergencies, contracts, cost allocations, affiliate transactions and competitor or customer complaints concerning the course of conduct between CH & any affiliate related to these Standards.	Annual - Transfers of assets, cost allocations, employee transfers, affiliate transactions and complaints concerning conduct.	Annual meeting with senior staff addressing capital attraction, financial performance, asset/employee transfer, etc.	Annual - Transfers of assets, cost allocations, employee transfers and employees in common benefit plans, OEEE special services. Quarterly - all National Grid’s SEC filings with the Commission.	Annual - Transfers of assets, cost allocations, employee transfers and employees in common benefit plans, Quarterly - all National Grid’s SEC filings with the Commission.
32.	Sharing of DISCO Employees	Separate operating employees for unregulated subsidiaries. Regulated subsidiaries may share operating employees. (Appendix C, Section 6, Clause i.)	Separate operating employees	Separate operating employees	Separate operating employees	Utility and unregulated affiliates must have separate operating employees	Utility and unregulated affiliates must have separate operating employees
33.	Directors/Officers	Officers of HoldCo may be officers of regulated subsidiaries. (Appendix C, Section 6, clause iii.)	Director/Officer of Central Hudson may not serve as Director/Officer of competitive affiliate	No interlocking directors with non-regulated businesses	No interlocking directors and non-regulated businesses except for the Treasurer and/or Secretary	Utility and unregulated affiliates must have separate directors/officers	Utility and unregulated affiliates must have separate directors/officers
34.	Employee transfers	Transferred employees to/from unregulated subsidiary may not be transferred back for 18 months at minimum, excepting those covered by collective bargaining agreement or loaning of employees during emergency situation. (Appendix C, Section 6, clause iv.)	Transferred employees to/from affiliate competing with Central Hudson must stay for 1 year minimum	-Transferred employees to/from DISCO must stay for 1 year minimum	Transferred employees to/from DISCO must resign from former position and must stay for minimum of 1 year. Employees can be shared for emergencies	Restrictions on transfers between utility and unregulated affiliate Employee transfer credit of 25% of salary - waived for first 4 years after merger	Restrictions on transfers between utility and unregulated affiliate Employee transfer credit of 25% of salary
				-Employees can be shared for emergencies			
35.	Compensation tying	Compensation of regulated subsidiary employees may not be tied to performance of unregulated subsidiaries. Compensation of shared HoldCo & regulated subsidiary officers may be tied to aggregate performance of HoldCo. (Appendix C, Section 6, clause vii.)	Can be tied to aggregate performance of Central Hudson and any affiliate, including compensation based on Fortis’s stock performance	Can be tied to aggregate performance of parent or its stock	Can be tied to aggregate performance of parent or its stock	Cannot be tied to affiliates	Cannot be tied to affiliates
36.	Goods and Services	Shared services may be provided at fully loaded cost. (Appendix C, Section 7, clause i.)	No shared services planned and must provide 180 days notice prior to any planned material shared service initiative that will require Commission approval.	Shared services may be provided to DISCO at fully loaded cost	Shared services may be provided to DISCO at fully loaded cost. Goods may be provided to DISCO at lower of cost or market.	Regulations on both currently provided incidental services and proposed new services	Not stated
				-Goods may be provided to DISCO at lower of cost or market.			
	<u>Governance</u>						
37.	Reporting		<u>Quarterly report:</u> management employee transfers.	<u>Quarterly report:</u> key personnel, major corporate transactions, changes in capitalization, Board of Director Agendas			

	<u>Ring Fencing</u>	Con Edison Inc.	Central Hudson/Fortis*	Iberdrola - NYSEG & RG&E	National Grid - KEDNY & KEDLI	National Grid - Niagara Mohawk Merger JP 2002	National Grid - Niagara Mohawk Rate Plan Provisions Modified 2013
38.	Board of Directors-Composition		Majority must be independent	1/3 of Networks Board shall be independent	Not stated	Majority will be outside directors (not affiliated with parent company)	Majority will be outside directors (not affiliated with parent company)
				Majority of utility board must be eligible directors (not affiliated with parent or other affiliates)			
				A lead independent director will be established			
39.	Board of Directors-Representation		Majority must reside in New York, with at least two residing in service territory.	½ of independent directors live/work in service territory or have utility experience	Not stated	Not stated	Not stated
40.	Separate Chairman and CEO		Not stated	Required for utilities and utility holdco	Not stated	Not stated	Not stated
41.	Conflicts of Interest		Not stated	Disclosure of Board level conflicts of interest required	Not stated	Not stated	Not stated
42.	Audit and Compliance Committee Composition (ACC)		Majority must be independent directors	2/3 shall be independent directors as well as the Chairman of the ACC	Not stated	Not stated	Not stated
43.	Corporate Headquarters		In service territory	In service territory	Not stated	In Syracuse	In Syracuse
44.	Officer/Executive Locations		At least 50% of officers must Reside in service territory.	Majority of executives to work in service territory	Not stated	In New York State	Only senior mgt involved in day to day operations are required to be In New York State
45.	Communications with Board		Not stated	Staff and Commissioners may submit written communications to the Secretary of the Networks Board of Directors	Not stated	Not stated	Not stated
46.	Community involvement		Central Hudson must maintain at not less than current (2011) levels for ten years after the closing (2013-2022).	Not stated	Not stated	Not stated	Not stated
47.	Service Quality		Continuation of customer service, reliability and safety mechanisms with increased negative revenue adjustments for failure to meet targets	Specific performance (and capital expenditure commitments) and reporting and penalties set forth in Safety, Reliability, and Service Protection Conditions (Appendix 2).	Continuation of customer service, reliability and safety mechanisms with increased negative revenue adjustments for failure to meet targets	Specific objectives and penalties set forth in Service Quality Assurance Program	Specific objectives and penalties set forth in Service Quality Assurance Program
48.	Employees		Current employees retained four years after closing under current conditions of employment	Iberdrola committed that existing employee compensation and benefits will remain substantially unchanged for a period of at least eighteen months after consummation of the merger.	Not stated	Not stated	Not stated
<u>Economic/Rate Benefits</u>							
49.	Synergy Savings / Sharing		\$1.85 million per year guaranteed for first five years (\$9.25 million)	None	50/50, after 5 year rate plan, 100% to customers	Synergy Savings - Phase in to \$130M per year allocated 62% to NY Efficiency Gains - Phase in to \$60M per year allocated 100% to NY	N/A
50.	Other Positive Benefits		1. \$35 million storm deferral write-off 2. \$5 million economic development fund	\$275 million of PBA credits	\$106M KEDNY, \$154M KEDLI		N/A
51.	Other Economic Benefits		Establishment of a pilot program to test ideas for economically expanding gas service to new customers	\$200 million wind investment and if not made, a \$25 million payment (pro-rated based on actual investments) to economic development fund will be required	Not stated		N/A
52.	Rates and Earnings Sharing Mechanism (ESM)		1. Rate Freeze through 7/13/15. 2. 10.0% to 10.5% ESM deadband per current Rate Plan eliminated and 50/50 sharing starts at 10.0%.	13 Month Rate Freeze followed by the implementation of an ESM (customers get 80% in excess of 10.1% ROE)	5 year rate plan, KEDNY \$75M rate increase over 5 years, KEDLI \$60M year 1 rate increase and \$100M increase over 4 years. Earnings sharing begins at 10.50% ROE with graduated levels of sharing.	Customers get: 50% ROE 11.75-14% 75% ROE 14-16% 90% ROE > 16%	Customers get: 50% ROE 9.3-10.3% 75% ROE 10.3-11.3% 90% ROE > 11.3%
53.	Follow on Merger Savings		Must be shared.	Must be shared.	Not stated	Must be shared.	Not stated
54.	Fossil Generation Divestiture		Not stated	Required for affiliates in NYS and they cannot own fossil generation in NYS in future.	Divest Ravenswood Station	Not stated	Not stated

* Includes enhancements to the Joint Proposal offered by the Joint Petitioners in 5/30/13 letter to Commissioners
**Pending Commission Ordering of SEC Registration in a Future Financing.
***Pending Review of the Language in the Compliance

Notes:

- (1) The SEC registration requirement may obligate the utilities to record goodwill on their books.

This is a summary of conditions through the eyes of Staff. The official position of the Commission is contained in the orders in the respective cases

MOODY'S

INVESTORS SERVICE

SECTOR IN-DEPTH

18 October 2016

Rate this Research



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Regulated Utilities - US

Utility Diversification Strategies Seek Growth While Limiting Risk

- » **Utility holding companies are increasingly investing in non-utility businesses that provide better growth trajectories and diversification benefits.** Businesses with “utility-like” characteristics are the most popular with utilities, but these are typically still non-core, riskier investments than the regulated utility business. Emerging diversification segments include contracted renewable power, midstream gas gathering and gas pipelines.
- » **Non-utility assets present a wide range of business risks, and even within the same asset class, the degree of risk can vary significantly.** Generally, the lower risk assets tend to be regulated, tied to a market with predictable, captive demand, and hard assets with long lives.
- » **Leveraged diversification highlights need to manage new business risks.** The pendulum is clearly swinging away from last decade's “back-to-basics” strategy of focusing on the core utility business. So far, companies have generally been managing the risks within their asset portfolios or keeping these exposures small. Eventually venturing too far into a business outside of a utility's core competency is a potential credit pitfall, as demonstrated by the sector's checkered history in past diversification cycles.
- » **Stable and predictable businesses can sustain a higher degree of leverage.** Today's low-cost debt has increased incentives to buy low risk assets. For a utility holding company that is diversifying, we consider the level of risk against the leverage they are incurring.

Utility holding companies are increasingly investing in non-utility businesses that provide better growth trajectories and diversification benefits

Utility holding companies are looking to diversify because they see a weak outlook for power consumption. This year, some diversification themes have emerged, such as companies investing in contracted renewable power and gas pipelines. These businesses share certain utility-like characteristics, such as a relatively predictable and stable stream of revenues and margins.

Renewable energy is a common investment strategy because it is most closely aligned with a utility's core operations. Renewables also represent the one material growth segment across the power sector. Demand for renewables is growing because not only regulations require increasing their use, but also more customers want it. Renewable energy is also becoming more competitively priced against power produced from other resources. Renewable projects can be low risk investments when the off-take is secured by long-term contracts with creditworthy customers. Furthermore, federal tax credits that lower the costs of building wind and solar projects have incentivized companies to construct them sooner rather than later.

Some companies are developing renewable power projects at the utility subsidiary, for example, the \$3.6 billion wind project at Berkshire Hathaway Energy Company's (A3 stable) MidAmerican Energy Company subsidiary (A1 stable). Others are concentrating those efforts at their non-utility subsidiaries, including NextEra Energy, Inc. and Sempra Energy (both Baa1 stable). Meanwhile, both of these companies are divesting their riskier merchant power plants, as profits are expected to be down for a while along with the gas prices that set power prices.

Meanwhile, utility holding companies are once again seeking growth opportunities in the natural gas business. In fact, gas-fired power is second only to renewables as the fastest growing resource for power generation. Utility holding companies are building gas-fired power plants both at their utilities and unregulated power affiliates. For these companies, investing in gas pipelines is a vertical integration play that helps to secure more supply to run these plants. The pipelines will also provide stable source of incremental income for utility holding companies.

The midstream companies that are developing many of these pipelines are welcoming this infusion of capital from the utility sector at a time when they are seeking to reduce debt, while softer equity valuations have made equity financing more costly than before. Some of the largest gas pipeline projects are those taking Marcellus and Utica shale gas to markets in the Southeast, where for example NextEra and Duke Energy Corporation (Baa1 negative) are building large gas-fired power plants at their utility subsidiaries. Both have taken equity stakes in Spectra Energy Partners, LP's (Baa2 stable) \$3.2 billion Sabal Trail Pipeline. Spectra is at the peak of its capital program, and these minority investments have been beneficial in diversifying their funding sources while keeping its balance sheet healthy.

Another company seeking growth from the Marcellus and Utica shale is DTE Energy Company (DTE, A3). We placed its ratings under review for downgrade when it announced a leveraged purchase of \$1.3 billion of gas gathering assets. We believe these assets have higher business risk than DTE's existing regulated assets and expose DTE to volatile gathering volumes and the weak credit qualities of its E&P customers. On the other hand, we placed one of the systems being acquired, Stonewall Gas Gathering LLC (B2), under review for upgrade as it gains a new owner with substantial financial resources.

Non-utility assets present a wide range of business risks, and even within the same asset class, the degree of risk can vary significantly

Even within the same asset class, business risk can vary significantly, depending on the circumstances specific to the asset. Generally, lower risk assets tend to have the following characteristics: regulated versus unregulated; tied to a market with predictable demand (which often involve captive customers and therefore regulated) versus supply (which tends to be unregulated and competitive); hard assets with long lives versus assets that are depleting (e.g., oil and gas exploration and production (E&P)) or temporary (e.g., trading activity).

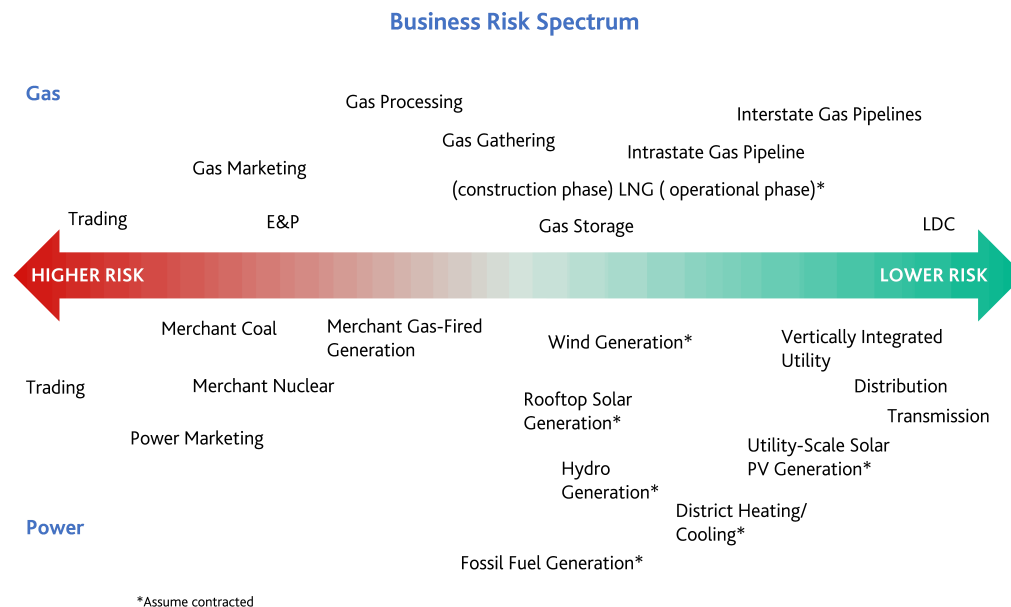
Exhibit 1 below shows our view of the typical relative risk in the integrated value chains of producing and delivering natural gas and power. For details on our rationale for the relative risks typical of these asset types, please refer to the appendix.

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Exhibit 1

Investment outside utilities are riskier but have focused on the lower half of the risk spectrum

Relative Business Risks of Gas and Power Assets



Source: Moody's Investors Service

Levered diversification highlights need to manage new businesses risks

Regulated utility operations are the least risky activities among the asset classes, so that diversification into a non-utility business would tend to increase business risk. So far, the new non-utility investments under these recent diversification strategies have generally been too minor to alter a utility holding company's overall business risk profile. So long as new investments perform as the companies expect, they could provide a diversification benefit. For example, Berkshire Hathaway Energy Company, the most diversified among utility holding companies, is less immune to a downturn in any one business, because it has so many. On the other hand, venturing too far into a business outside of a utility's core competency has potential pitfalls, as demonstrated by the sector's checkered history in past diversification cycles.

So far, the utility sector is concentrating on the low end of the risk spectrum. Exhibit 2 below illustrates some business risk-reducing strategies, in which a company has traded a riskier asset for a more stable one. The color codes show buyers who have also been sellers, for example, Consolidated Edison, Inc. (A3 stable) has begun investing in pipes, while selling its energy retailing business. Black Hills Corporation (Baa1 negative) acquired a local gas distribution company (LDC), then sold merchant generation assets and put its E&P operations up for sale. This turnover is credit-positive by reducing business risk as well as generating asset sale proceeds to mitigate the debt required to help finance these new investments.

Exhibit 2

Investing in lower-risk businesses, divesting higher-risk ones

Recent examples of transactions in utility sector

Date Announced	Asset	Asset Type	EV (\$B)	Buyer	Seller
Oct-15	Piedmont Natural Gas Co.	LDC	\$6.7	Duke	Piedmont
Jan-16	12.5% Mtn Valley Pipeline	Interstate gas pipeline	\$0.4	ConEd	EQT
Feb-16	International energy segment	Latin American power	\$2.4	China Three Gorges/I Square Capital	Duke
Feb-16	SourceGas	LDC	\$2.7	Black Hills	Alinda/GE
Apr-16	LaFrontera	Merchant gas-fired power	\$1.6	EFH	NextEra
Apr-16	49.9% Black Hills Colorado IPP	Merchant gas-fired power	\$0.2	AIA Energy	Black Hills
Jul-16	ConEdison Solution	Retail energy marketing	\$0.2	Constellation	ConEd
Jul-16	Marcus Hook merchant gas-fired	Merchant gas-fired power	\$0.8	Starwood	NextEra
Jul-16	Oncor	T&D	\$18.4	NextEra	EFH
Aug-16	50% stagecoach gas pipe and storage	Interstate gas pipeline/storage	\$1.0	ConEd	Crestwood
Aug-16	O&G assets	Gas reserves	TBD	TBD	Black Hills
Aug-16	7.5% Sabal Trail	Interstate gas pipeline	\$0.2	Duke	Spectra

Source: Moody's Investors Service; company filings

Stable and predictable businesses can sustain a higher degree of leverage

Utility holding companies have tended to seek new growth in lower-risk businesses, which can be financed with more debt while maintaining their credit quality. In assessing the range of credit metrics we assume for a utility holding company that is diversifying, we consider the level of risk against the leverage they are incurring. The more stable and predictable a business, the more debt it can sustain.

As shown in Exhibit 3 below, acquisitions of utilities by Black Hills and Exelon Corporation (Baa2 stable), and potentially NextEra, have allowed for slightly more leverage to be incorporated in their ratings.

Exhibit 3

More stable business mix allows more leverage

Thresholds incorporated into ratings (CFO pre-working capital-to-Debt)

NextEra	2015 at Baa1	>20%
	2017* at Baa1	>18%
Black Hills	2015 at Baa1	>20%
	2016 at Baa1	>15%
Southern	2015 at Baa1	>18%
	2016 at Baa2	>15%
Exelon	2015 at Baa2	>20%
	2016 at Baa2	>18%

* If Oncor acquisition consummated

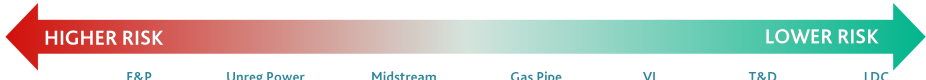
Source: Moody's Investors Service

In Exhibit 4 below, we compare the credit metrics of various gas and power issuers across the risk spectrum. Southern California Gas Company (SoCalGas, A1 stable) representing LDCs, the least risky asset type, has the highest rating among these issuers. On the other end of the spectrum, Range Resources Corporation and Calpine Corporation (both Ba3 stable), respectively representing the riskier E&P and unregulated power businesses, have the lowest ratings among this group.

Exhibit 4

More stable assets can support more leverage

Illustrative issuers and their credit metrics across the gas and power value chains



	E&P	Unreg Power	Midstream	Gas Pipe	VI	T&D	LDC
Illustrative Issuer	Range Resources	Calpine	DCP Midstream	Texas Eastern	PSCO	CECONY	SoCalGas
Rating	Ba3	Ba3	Ba2	Baa1	A3	A2	A1
Debt/EBITDA	3.2x	7.5x	7.9x	1.9x	3.0x	4.0x	3.3x
CFO/Debt	25%	7%	7%	45%	28%	22%	26%

Source: Moody's Financial Metrics, year ended 31 December 2015

On the low end of the risk spectrum are the various types of utilities: LDCs (represented by SoCalGas), transmission and distribution (T&D) electric utilities (represented by Consolidated Edison Company of New York (CECONY, A2 stable)), and vertically integrated (VI) electric utilities (such as Public Service Company of Colorado, PSCO, A3 stable).

On the opposite ends of the spectrum, the utilities and Range have similar metrics. Their debt-to-EBITDA ratios are in the 3x to 4x range and their cash flow from operations (CFO)-to-debt ratios are in the 20% range. These ratios demonstrate that regulated companies are relatively leveraged, and that speculative-grade E&P companies like Range have limited debt capacity because of their volatile cash flow and depleting asset base.

Texas Eastern Transmission L.P. (Baa1 stable) is near the middle of the spectrum but has by far the strongest credit metrics of the group, with debt-to-EBITDA under 2x and CFO-to-debt of 45%. These ratios do not reflect the significant amount of debt at its parent that Texas Eastern helps to support. If we were to add the parent debt without contributions from other subsidiaries as an extreme alternative view, Texas Eastern's ratios would be in the middle of the group, with debt-to-EBITDA at about 6x and CFO-to-debt at 14%.

Higher up the risk spectrum are DCP Midstream, LLC (Ba2 stable), illustrative of the midstream sector, and Calpine Corporation (Ba3 stable), an unregulated power company. Both companies have high leverage, with debt-to-EBITDA in the 7x range and CFO-to-debt about 7%. Although DCP's margins are down due to weak commodity prices, it enjoys the strong support of its investment-grade owners. Calpine's leverage also reflect lower commodity prices, but the company generates free cash flow and has been reducing its leverage.

Appendix

Relative Business Risk by Asset Class

In this appendix, we describe the typical business risks of the various power and gas asset types, starting from the lowest to the highest risk, and the illustrative factors that determine their riskiness. We note that the risks of a particular asset can vary significantly from what we describe as typical for various reasons, such as: the regulatory construct, supply and demand fundamentals, competition, contractual terms, customer base, the significance of market-driven revenues, and geographic diversity.

We see the production of energy (an "upstream" function in the vertically integrated energy value chain) being riskier than transmission and distribution (the energy delivery functions further "downstream" the value chain). We refer to various delivery functions along the gas value chain – traditionally referring to gas gathering and processing only, but more recently including pipelines and others -- as "midstream," but this term does not adequately distinguish among the various asset types and their respective risks.

Highly regulated utility monopolies have the lowest business risk, because they can recover their costs and earn an authorized return under cost of service rates that stabilize their financial performance. Having no competition adds to their stability. Generally, the closer the asset is to the final consumers (retail customers), the lower the risk, except for retail energy marketing.

Infrastructure assets tend to be stable and have low to manageable operating risk. The necessity of infrastructure as critical assets that underpin economic activity often results in them being regulated or increasing the likelihood of government support, which reduces their business risk.

We characterize asset types with medium risk as being essentially driven by highly competitive business environments, although they may have some durability from their infrastructure-type assets, some contracts and regulation. Cash flow can be volatile, exposed to varying degrees of commodity price and volume risks.

We see assets with high business risk being very volatile and sensitive to commodity prices and sales volume. The assets face much competition. The degree of capacity to support long-term debt depends on the durability of the assets to secure and potentially be sold to satisfy debt obligations. Typically, long-lived hard assets, such as power plants, have more debt capacity than depleting assets, such as oil and gas reserves, which in turn have more capacity than temporary assets, such as trading contracts.

Gas Asset Classes

Among utilities, **local gas distribution companies** (LDCs) have the lowest business risk, because they are directly tied to numerous final consumers (retail customers) who are captive to their services and provide stable demand. Operationally, their business of taking gas from the interstate pipeline to the final consumer is more straightforward than delivering electricity. Safety being a key operational concern, regulators have been very supportive of LDCs recovering safety-related investments in their rates.

We consider the **interstate gas pipelines** to be only slightly riskier than regulated utilities. Although pipes are regulated, they do not hold a monopoly franchise and, therefore, are subject to some competition. Their tariffs are overseen by the Federal Energy Regulatory Commission (FERC), but their revenues are determined primarily by commercial contracts with customers. Their revenues are stable because most come from fixed fees that customers pay regardless of how much they use the pipeline.

Among interstate pipelines, "demand-pull" pipes, those that deliver gas supplies directly to the LDCs and vertically integrated utilities with gas-fired power generation, are very stable because of the enduring demand from these final utility customers. Consequently, investment grade utilities tend to be these pipes' main customers and they dependably renew their contracts

In contrast to "demand-pull" pipelines, those that move gas supplies out of producing areas ("supply-push" pipes) are riskier, because they typically rely on speculative grade E&P companies as their customers. Supply-push pipes are riskier also because of the potential they could become stranded assets if they are connected to gas reserves that are not drilled or otherwise deplete over time.

Although regulated at the state level, **intrastate gas pipelines** could be riskier than interstate gas pipelines. Intrastate pipes are usually located in areas like Texas, close to where gas is produced. Compared to interstate pipelines, intrastates are lightly regulated and their revenues can be sensitive to market conditions, particularly basis differentials. These fleeting differentials will be reflected in the rates that the pipe negotiate with their customers under short-term contracts. A significant portion of revenues (and little margin) could be from marketing, which usually entails a back-to-back transaction, whereby gas is bought and sold simultaneously at a discount at a pricing point, with that discount being the pipeline's fee.

US natural gas liquefaction (LNG) exports are in their nascency, which lends uncertainty to the future performance in this business. Four liquefaction projects are currently under construction in the US, with two trains only recently having begun operations. The LNG business models of these US projects are specific to the US supply market and untested elsewhere in the world. Business risk should decline as projects enter operations and establish a track record. The business model unique to each project and contractual terms will materially differentiate the level of operational and financial risk that the project sponsor assumes during both the operational and construction phases.

On the lower end of the LNG risk spectrum are liquefaction plants that have established steady-state operations. They could have low business risk akin to an interstate pipeline if they follow a tolling business model similar to those of interstate gas pipelines, in which stable revenues are typically generated under 20-year contracts with creditworthy customers. As with interstate pipe contracts, these tolling contracts require customers to pay a fixed fee monthly, regardless of how much they utilize the facility. Under this tolling business model, the project sponsor avoids commodity price and supply risks, because the customer retains the risks of supplying the gas feedstock to the plant and shipping the LNG produced to market.

Higher on the risk spectrum are other LNG business models that assume more midstream risks, such as the obligation to supply feedstock for a variable fee, which exposes the project sponsor to the risks of supply procurement and commodity price management. Contractual terms can range from exposing the project sponsor to operating cost increases and LNG production shortfalls (more risk) to passing through such incremental costs to customers (less risk).

During the construction phase, LNG projects face the execution risks that come with the years-long build-out of complex, expensive facilities. Even with experienced contractors at work, the projects could experience delays and cost overruns, unless mitigated by any pass-through provisions in the contract. The substantial capital investment could pose financing risk for the project sponsor.

Natural gas storage can be low risk when it is an ancillary service integrated with an interstate pipeline system, typically supplying gas at a premium to utilities on peak heating days. Storage is a higher risk activity, however, in newer standalone facilities that have the capability of turning over its inventory several times a year, rather than seasonally as with older facilities. Many of these newer

storage sites are along the Gulf Coast and serve marketers, which seek to supply gas-fired generators and prospectively, the LNG plants. Contracts could be short to medium term and sensitive to volumes, commodity prices, weather, and other market conditions.

Gas gathering is the less risky component of a usually integrated gathering and processing (G&P) system. The business entails gathering gas from numerous gas wells and transporting it to a central processing plant. This service is predominantly fee-based but revenues vary by the volumes that go through its gathering lines.

Gas processing entails extracting the impurities and liquids from the natural gas to ready it for shipment on pipelines. This business is exposed to both volume risk and commodity price risk. The degree of commodity price risk varies by the type of processing contract: fee-based (the least risky), percentage of proceeds, and keep-whole (the riskiest). Regardless of contract structure, gas processors are exposed to indirect commodity price exposure, because their E&P customers will adjust drilling activity based on the prices for natural gas liquids and natural gas, which in turn will affect throughput volume and profits for the processor.

Exploration and production (E&P) of gas is a risky business because gas reserves are finite assets that deplete as gas is produced from them. Commodity prices are unpredictable, while substantial capital must be constantly reinvested to replace declining reserves. Even then, technical and geological challenges often keep investments from yielding the hoped-for new reserves and production growth.

Trading and marketing activity is on the high end of the risk spectrum, because it is highly competitive, has thin margins and the potential to consume huge amounts of liquidity in a short time. Future results are impossible to predict, because cash flows and volumes can fluctuate widely due to commodity prices, weather, and other fleeting market conditions. Public disclosure is limited, and the risks related to the trading portfolio and strategies are difficult to understand. Unlike the energy production business, such as gas production or power generation that are based on hard assets, trading and marketing are short on hard assets that can support long-term debt. Marketing is considered less risky than other forms of trading, when the customers' demand and supply requirements and the viability of the business are easier to assess.

Trading and marketing gas is less risky than power, because the wholesale market for gas is more mature, has more established price signals, a deeper market of financial instruments to hedge price risk, and a better interconnected infrastructure network that facilitates executing transactions.

Power Asset Classes

Electric transmission utilities have the lowest risk among types of electric utilities. The FERC regime is a known, well-tested regulatory model. The formula rates that adjust annually for forecasted costs of service and true-ups for variances allow for timely recoveries of expenditures, and the ability to earn premium incentive returns make these utilities highly predictable. Electric transmission is less risky than interstate gas pipelines, which are also FERC-regulated but which face some competition and counterparty and renewal risks under their contracts.

Compared to transmission utilities, we see **electric distribution utilities** as having slightly higher risk due to their local and state regulation that brings closer regulatory scrutiny and the potential for political interference. Since electric services are more universal than gas services and account for a larger portion of customer bills, electric distribution utilities are subject to more regulatory risk than their counterparts, the LDCs.

Vertically integrated utilities also engage in electric distribution and transmission, but generation makes them a riskier type of a regulated monopoly utility. Electric generation is generally riskier than the transmission and distribution, because it entails more operating issues related to the processes of generating power using various technologies, coordinating their delivery to customers, and managing the commodity risks related to fuel procurement.

Certain types of non-utility generation listed below – renewables, district energy, fossil fuel – are relatively stable when their output is secured by long-term sales contracts.

Among contracted power types, **utility-scale solar generation** using proven technology is the least risky, because it is usually backed by power purchase agreements (PPAs) with utility customers that could have tenors some 20 years long. The PPAs set the pricing and obligate the customers to take the power generated from the facility, which reduces the potential for competition from other sources. The amount of revenues the facility generates will depend on the amount of sunshine that determines the ability to generate electricity, but the amount of sunlight is relatively predictable compared to the other common renewable resources of hydro and wind. The operations are relatively simple and require modest costs to run and maintain. The type of solar technology used will have a bearing on the predictability of operations. Proven technology like photovoltaics would be less risky than an emerging one that has yet to accrue a good track record.

District heating and cooling (district energy) systems provide steam and water for heating and cooling from a central station to connected buildings. District energy enjoys various levels of barriers to entry from competitors, ranging from being contracted or effectively a monopoly. Customers could nevertheless eventually switch to another provider or technology. Sales volumes could vary with the local weather and demographics. Many are ageing fossil-fueled systems that require material investment to maintain and to meet environmental standards.

Wind and hydro generation are risky, because these natural resources are far more unpredictable than solar and cannot be controlled, causing volatility in the volume of electricity generated. Wind is subject to short-term volatility, while hydro is prone to wide year-to-year variances. Although some hydro generation plants have a reservoir, their ability to fully utilize the benefits of the reservoir storage can be limited, since they are subject to governmental or regulatory obligations to release the water downstream for drinking water, irrigation, and fish migration. Should a contracted hydro plant experience drought conditions and be unable to produce enough power, the facility owner may have to procure large amounts of replacement power at potentially high market prices if it has firm power delivery obligations.

Unlike the forces of nature that pose risk to wind, hydro, and utility-scale solar, **rooftop solar's** chief risk is legislative and regulatory policy, particularly at the state level. Net metering and the amount of savings on utility bills determine the value proposition for a typical rooftop solar customer and the viability of this business. Rooftop solar portfolios are diversified with numerous photovoltaic installations, but they tend to be regionally concentrated, making them vulnerable to changes in the regulatory as well as economic environment. In addition, this asset class has limited performance history, which raises the uncertainty of how the PPAs with customers will perform over the typical 20-year term of the contract.

Fossil fuel plants are the riskiest type of contracted power assets, because they are exposed to the risks of fuel procurement. They may also require significant capital expenditures to comply with environmental regulations.

Merchant power has business risk comparable to E&P, because both are engaged in the production and sale of energy in unregulated markets. Low natural gas prices have driven down wholesale power prices for the entire merchant sector. **Gas-fired generation** is the best positioned, and therefore, the least risky among merchant generators, because it remains profitable as fuel costs decline with gas prices.

On the other hand, **merchant nuclear and coal plants** are generating little or negative cash flow, making them vulnerable to closure. Plants most at risk are located in markets that do not have forward capacity markets, where generators can earn reliable fees to keep certain amounts of their capacity available. However, the risk of closure would be less if the plant is located where electricity supply is constrained and would be needed to maintain reliability.

Emitting no carbon and other pollutants, merchant nuclear is less risky than old, inefficient merchant coal plants, which face a host of stringent environmental regulations that could lead to costly retrofits or shutdowns.

Power trading has many of the same risks as gas, but is higher risk, because power markets tend to be more volatile and less liquid, in large part due to the inability to store power economically to back up sale transactions. **Retail marketing** is less risky than trading and can provide stable demand for a company's power generation and trading activities.

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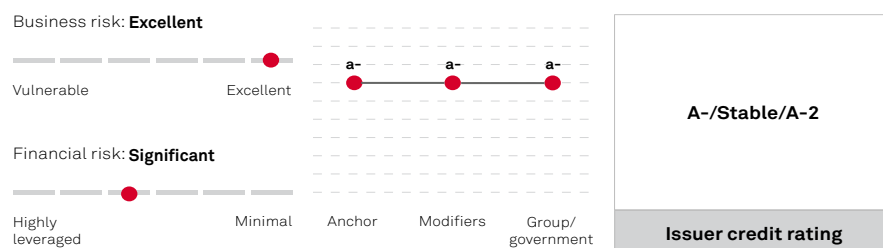
REPORT NUMBER

1040207

Consolidated Edison Co. Of New York Inc.

March 20, 2025

Ratings Score Snapshot



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Credit Highlights

Overview

Key strengths	Key risks
Lower-risk, rate-regulated electricity transmission and distribution; gas distribution; and steam distribution operations.	Lack of regulatory diversity that makes the company dependent on the New York State Public Service Commission (NYPSC) to sustain its credit quality.
Major electric utility service provider, largest gas utility, and largest steam distributor for customers in and around New York City.	Complex and aging infrastructure system contributing to high-profile safety incidents.
Large customer base supports cash flow stability.	Forecast of discretionary cash flow deficits, indicating external funding needs.
Effective management of regulatory risk.	

Consolidated Edison Co. of New York Inc. (CECONY) is the largest contributor to parent Con Edison's consolidated credit profile and is the main driver of our assessment of the parent's business risk profile. We assess the company's business risk profile as excellent. We base this largely on CECONY's management of regulatory risk and the essential nature of the regulated utility services it provides in an economically broad and diverse territory, which includes the most populous city in the U.S.

In January 2025, CECONY filed for electric and gas rate increases. CECONY seeks \$1.612 billion in electric rate increases and \$440.5 million in gas rate increases, based on a 10.1% return on equity and 7.32% overall return. The average rate bases are \$33.749 billion for electricity and \$11.83 billion for gas, with a test period ending Dec. 31, 2026. Although it submitted a one-year rate plan, CECONY plans to negotiate a multiyear settlement. Key factors for the rate increases include property taxes, new infrastructure investments, higher financing costs, and rising operational expenses. We will continue to monitor updates.

Outlook

The stable outlook reflects our expectation that CECONY will maintain funds from operations (FFO) to debt of 16%-18% while it effectively manages regulatory risk, funds elevated capital spending in a balanced manner, and maintains focus on its mostly low-risk, regulated utilities.

Downside scenario

We could lower the ratings on Con Ed and its subsidiaries within the next 12-24 months if FFO to debt remains consistently below 16% through our forecast. This could occur if the company doesn't fund its capital plan in a credit-supportive manner or does not effectively manage regulatory risk.

Upside scenario

We could raise the ratings on Con Ed and its subsidiaries over a similar period if the company significantly improves its financial measures, including FFO to debt consistently greater than 21%.

Our Base-Case Scenario

Key metrics

Consolidated Edison Co. of New York Inc.--Key metrics*

(Mil. \$)	2023a	2024a	2025e	2026f	2027f
Adjusted ratios					
Debt/EBITDA (x)	5.4	5.3	4.0-5.0	4.0-5.0	4.0-5.0
FFO/debt (%)	14.4	14.1	16.0-18.0	16.0-18.0	15.0-17.0

*All figures are adjusted by S&P Global Ratings, unless stated as reported. FFO—Funds from operations. a--Actual. e--Estimate. f--Forecast. \$--U.S. dollar.

Company Description

CECONY has been operating since 1884 and provides electric transmission and distribution to about 3.7 million customers, gas distribution to about 1.1 million customers, and steam distribution services to about 1,520 customers in New York, including New York City. It is a subsidiary of Con Ed.

Rating Component Scores

Foreign currency issuer credit rating	A-/Stable/A-2
Local currency issuer credit rating	A-/Stable/A-2
Business risk	Excellent
Country risk	Very Low
Industry risk	Very Low
Competitive position	Strong
Financial risk	Significant
Cash flow/leverage	Significant
Anchor	a-
Diversification/portfolio effect	Neutral (no impact)
Capital structure	Neutral (no impact)
Financial policy	Neutral (no impact)
Liquidity	Adequate (no impact)
Management and governance	Neutral (no impact)
Comparable rating analysis	Neutral (no impact)
Stand-alone credit profile	a-

Related Criteria

- Criteria | Corporates | General: Sector-Specific Corporate Methodology, April 4, 2024
- Criteria | Corporates | General: Corporate Methodology, Jan. 7, 2024
- Criteria | Corporates | General: Methodology: Management And Governance Credit Factors For Corporate Entities, Jan. 7, 2024
- General Criteria: Environmental, Social, And Governance Principles In Credit Ratings, Oct. 10, 2021
- General Criteria: Group Rating Methodology, July 1, 2019
- Criteria | Corporates | General: Corporate Methodology: Ratios And Adjustments, April 1, 2019
- Criteria | Corporates | General: Reflecting Subordination Risk In Corporate Issue Ratings, March 28, 2018
- General Criteria: Methodology For Linking Long-Term And Short-Term Ratings, April 7, 2017
- Criteria | Corporates | General: Methodology And Assumptions: Liquidity Descriptors For Global Corporate Issuers, Dec. 16, 2014
- General Criteria: Methodology: Industry Risk, Nov. 19, 2013
- General Criteria: Country Risk Assessment Methodology And Assumptions, Nov. 19, 2013
- General Criteria: Principles Of Credit Ratings, Feb. 16, 2011

Ratings Detail (as of March 20, 2025)*

Consolidated Edison Co. of New York Inc.

Issuer Credit Rating	A-/Stable/A-2
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Ratings Detail (as of March 20, 2025)*

Commercial Paper	
<i>Local Currency</i>	A-2
Senior Unsecured	A-

Issuer Credit Ratings History

06-Oct-2022	A-/Stable/A-2
24-Nov-2020	A-/Negative/A-2
26-Jan-2017	A-/Stable/A-2

Related Entities

Consolidated Edison Inc.

Issuer Credit Rating	A-/Stable/A-2
Commercial Paper	
<i>Local Currency</i>	A-2

Orange and Rockland Utilities Inc.

Issuer Credit Rating	A-/Stable/A-2
Commercial Paper	
<i>Local Currency</i>	A-2
Senior Unsecured	A-

Rockland Electric Co.

Issuer Credit Rating	A-/Stable/--
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*Unless otherwise noted, all ratings in this report are global scale ratings. S&P Global Ratings' credit ratings on the global scale are comparable across countries. S&P Global Ratings' credit ratings on a national scale are relative to obligors or obligations within that specific country. Issue and debt ratings could include debt guaranteed by another entity, and rated debt that an entity guarantees.

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CREDIT OPINION

28 March 2025

Update



Send Your Feedback

RATINGS

Consolidated Edison Company of New York, Inc.

Domicile	New York, New York, United States
Long Term Rating	A3
Type	LT Issuer Rating - Dom Curr
Outlook	Stable

Please see the [ratings section](#) at the end of this report for more information. The ratings and outlook shown reflect information as of the publication date.

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Consolidated Edison Company of New York, Inc.

Update to credit analysis

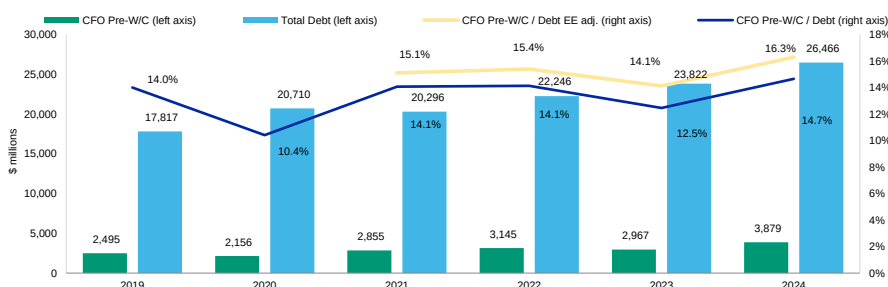
Summary

Consolidated Edison Company of New York, Inc's (CECONY) credit profile is supported by 1) its large size with around \$42 billion of rate base, and the diverse underlying economy in and around New York City; 2) low business risk as a transmission and distribution (T&D) utility; and 3) a suite of regulatory cost recovery mechanisms that provide consistent cash flow under normal operating and economic conditions.

However, CECONY's credit profile is constrained by high capital spending to meet service requirements and the state of New York's energy transition plans, which could place additional pressure on customer rates and debt financing requirements. The company also faces longer-term challenges around its gas and steam distribution businesses, given state greenhouse gas (GHG) emissions targets and goals of significantly limiting the use of natural gas.

Exhibit 1

Historical CFO Pre-WC, Total Debt, CFO Pre-WC to Debt and CFO Pre-WC to Debt (EE adj.)



All data based on adjusted financial data, which follow our Financial Statement Adjustments in the Analysis of Nonfinancial Corporations methodology.

Source: Moody's Financial Metrics™

Recent Developments

On 31 January 2025, CECONY filed a new rate request with the New York Public Service Commission (NYPSC). The filing requested around \$1.6 billion in incremental electric revenue and over \$440 million of incremental gas revenue, which equate to roughly 11.4% and 13.3% of respective rate increases.

The filing was met with a negative response from the state governor, who, in a 11 February 2025 letter to the NYPSC, stated that she objected to CECONY's revenue request and asked the proposal to be rejected by the commission and further explained that customer affordability is a significant short-term challenge for the state.

While the reaction from the governor is viewed negatively, we expect that a typical rate proceeding will occur, as the company and stakeholders seek to negotiate a balanced settlement agreement, for a multi-year period. This could include a lower allowed ROE than the 10.1% that CECONY filed and certain other concessions.

Reductions to capital spending would likely be credit-positive, since it would require less incremental debt issuance. However, if customer affordability concerns are addressed through inadequate operating cost recovery, it would further pressure CECONY's cash flow and result in negative pressure on the company's credit profile.

Credit strengths

- » Low business risk T&D utility serving the largest city in the US
- » New York regulation providing a suite of supportive cost recovery mechanisms
- » Size and diversity of operations, at over \$42 billion of electric (~70%), gas (~26%) and steam (~4%) rate base

Credit challenges

- » Rate increase request that is significant, eliciting customer affordability concerns by key stakeholders
- » Customer arrears balances limiting current cash flow potential
- » Some uncertainty around New York's requirements for utility energy transition
- » Longer-term challenges for natural gas and steam distribution businesses

Rating outlook

The stable outlook for CECONY reflects improvements in the regulatory support for utility cost recovery and our expectation that the ratio of cash flow from operations before changes in working capital (CFO pre-WC) to debt will be above 17%, including our adjustments for energy efficiency expenditures.

Factors that could lead to upgrade

- » The ratio of CFO pre-WC to debt exceeds 20% for a sustained period
- » Further material improvements in the political and regulatory environment for the company

Factors that could lead to downgrade

- » CECONY's ratio of CFO pre-WC to debt remains below 17% through its next rate plan
- » A degradation in the relationship with or level of support from New York politicians, regulators or other stakeholders

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the issuer/deal page on <https://ratings.moody.com> for the most updated credit rating action information and rating history.

Key indicators

Exhibit 2

Consolidated Edison Company of New York, Inc.

	2020	2021	2022	2023	2024
(CFO Pre-W/C + Interest) / Interest Expense	3.8x	4.5x	4.7x	4.0x	4.4x
(CFO Pre-W/C) / Debt	10.4%	14.1%	14.1%	12.5%	14.7%
(CFO Pre-W/C - Dividends) / Debt	5.7%	9.2%	9.7%	8.0%	10.6%
Debt / Book Capitalization	49.3%	46.8%	48.1%	46.8%	47.9%

All data based on adjusted financial data, which follow our Financial Statement Adjustments in the Analysis of Nonfinancial Corporations methodology.
Source: Moody's Financial Metrics™

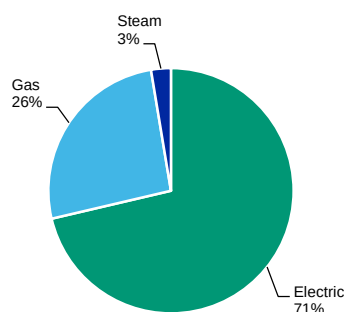
Profile

CECONY is the anchor subsidiary of Consolidated Edison, Inc. (ConEd, Baa1 stable), which also owns Orange and Rockland Utilities, Inc. (O&R, Baa2 positive). CECONY is one of the largest US T&D utilities, serving 3.7 million electric, 1.1 million gas, and 1,520 steam customers in New York City and Westchester County.

CECONY's electric operations account for about 71% of the company's operating income, gas represents almost 26% of operating income, while steam makes under 3%. The exhibit below depicts our forward view of EBITDA contribution of each of these segments.

Exhibit 3

Electric operations drive the majority of CECONY's expected EBITDA generation



Source: Company filings

Detailed credit considerations

Normal course of regulatory proceeding expected despite political pushback

On 31 January 2025, CECONY filed a new rate request with the NYPSC. The filing requested around \$1.6 billion in incremental electric revenue and over \$440 million of incremental gas revenue, which equate to roughly 11.4% and 13.3% of respective rate increases. This is based on the company's \$34.5 billion capital expenditure plans through 2029, which is partly to meet the state's goal for clean energy transition.

The rate increase request was met with a negative response from the state governor, who, in a 11 February 2025 letter to the NYPSC, stated that she objected to CECONY's revenue request. She asked the proposal to be rejected by the commission and further explained that customer affordability is a significant short-term challenge for the state. While the reaction from the governor has created some contentiousness, we expect that the rate proceeding is likely to be typical as the company and stakeholders seek to negotiate a balanced settlement agreement for a multi-year period. Potential outcomes could include a lower allowed ROE than the 10.1% that CECONY filed and certain other concessions.

A reduction in capital investment would like be credit positive since a lower level of investments would require less incremental debt issuance and could result in a lower rate increase for the customers in the future. However, if customer affordability concerns are addressed through inadequate operating cost recovery, it would further pressure CECONY's cash flow and result in negative pressure on the company's credit profile.

Improved regulatory environment in New York

Prior to the governor's letter to the NYPSC regarding the latest rate increase request, we viewed the New York regulatory environment as improving based on CECONY's 2023 electric and gas rate orders, which improved cash collections for key regulatory accounts (e.g., storm cost recovery for its electric business). Moreover, a November 2023 NYPSC order provided a first-time weather normalization mechanism for CECONY's steam business. We viewed these provisions as indications that stakeholder relationships have improved via increased political support, more predictable regulatory outcomes, and better cost recovery.

More generally, New York's regulatory framework is credit supportive in that it provides a very transparent process for determining broad policies and consistently applying them to the state's utilities. New York also allows for a suite of cost recovery mechanisms that generate consistent cash flow under normal operating and economic conditions. For example, the state provides for forward-looking test years for rates, revenue decoupling for electric and gas customers that helps utilities maintain margins even when volumetric demand declines and several other single cost tracking mechanisms.

In the upcoming rate case, we see certain items as important to timely cost recovery, including the pace of regulatory asset and liability amortization and CECONY's proposal to recover nine "Urgent Projects" that are intended to prepare the grid for electrification. The latter also underscores the need for the regulatory framework to consider real-time investment needed to meet state clean energy goals.

Along these lines, in August 2024, the NYPSC issued an order to examine how regulatory practices should be modified to achieve customer goals and incent utility practices that promote state policies and objectives. In turn, state utilities have proposed that certain project cost recovery be allowed through a special surcharge, outside of a general rate proceeding if the timing of such is impractical. We believe that some form of this mechanism is important if utility cash flow is to keep pace with the rampant rise of capital investment and associated debt issuance.

Rate case outcome, including cash recovery of regulatory accounts, a key driver determining future financial profile

Based upon the parameters in CECONY's filing, including our own sensitivity adjustments (e.g., lower allowed ROE), we expect that the company's financial profile could generate CFO pre-WC to debt ratios above 17% through the rate plan. However, metrics could be worse if key regulatory accounts are not recovered on a timely basis. For example, customer arrears have presented a significant pressure on CECONY's cash flow since the COVID-19 pandemic, while storm activity, and related cost recovery, has been a historical challenge for state utilities, resulting in higher-than-expected costs and longer periods for cash recovery.

The exhibit below illustrates how regulatory and other long-term asset and liability accounts have reduced CECONY's financial ratios over the past five years. It compares the calculation of funds from operations (FFO) to CFO pre-WC. The primary difference in these cash flow measures is the impact of long-term regulatory asset and liability movements.

Exhibit 4

Historical regulatory drag on CFO pre-WC to debt metrics

These figures exclude our non-standard adjustment for energy efficiency adjustments

	2020	2021	2022	2023	2024
FFO	2,886	3,218	3,502	4,162	4,448
Other A&L accounts	(730)	(363)	(357)	(1,195)	(569)
CFO pre-WC	2,156	2,855	3,145	2,967	3,879
Debt	20,710	20,296	22,246	23,822	26,466
FFO to debt*	13.9%	15.9%	15.7%	17.5%	16.8%
CFO pre-WC to debt*	10.4%	14.1%	14.1%	12.5%	14.7%
Drag from Other A&L accounts	3.5%	1.8%	1.6%	5.0%	2.1%

*These figures exclude energy efficiency adjustments

Other A&L accounts is Changes in Other Operating Assets & Liabilities

Source: Moody's Financial Metrics™

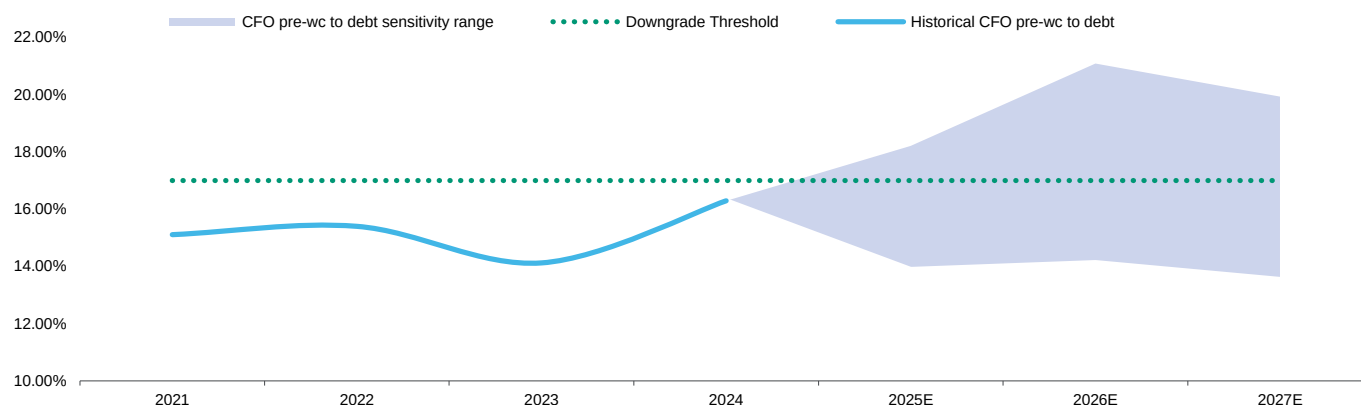
Importantly, our view of CECONY's core financial metrics also includes adjustments for NYPSC-approved energy efficiency expenditures, which are reported as operating expenses under US GAAP. In New York, the NYPSC has authorized utilities to accumulate, amortize, and earn a return on certain energy efficiency expenditures, and treat them as rate based assets and investments. Therefore, we adjust our financial ratios to reflect these expenditures as capital investments, rather than as reductions to cash flow from operations (CFO). We expect the magnitude of these expenditures to increase (see Exhibit 9 in the appendix). Thus, reallocating energy efficiency spending from cash flow from operations to cash flow from investing activities will become more material to financial ratios going forward.

Exhibit 5 depicts a range of sensitivities for the cash recovery of regulatory accounts, approved energy efficiency investments and how CECONY's financial position could be impacted. Since the company requested a sizeable amount of energy efficiency expenditures in its rate filing (e.g., nearly \$800 million per annum), it is a key component to our adjusted metrics. Exhibit 5 includes a range of 50% to 100% of the proposed budget in CECONY's rate case request. In addition, the recovery of long-term asset and liabilities accounts includes a range based upon historical average impact from those accounts. For example, we could assume the 5-year average cash flow reduction (i.e., \$643 million) persists, or that cash recovery of these costs continues to improve, as is the trend from CECONY's last rate case.

In our scenario analysis, we considered a scenario that achieves the company's 17% CFO pre-WC to debt threshold includes energy efficiency investments near the filed rate case levels, as well as about half of the 5-year average cash outflow owed to long-term regulatory accounts. We note that a reduction of capital spending could relieve some pressure to CECONY's balance sheet, making its 17% CFO pre-WC to debt threshold easier to achieve.

Exhibit 5

CECONY's future financial profile is dependent upon the timely recovery of regulatory accounts
CECONY's CFO pre-WC to debt ranges



All data based on adjusted financial data, which follow our Financial Statement Adjustments in the Analysis of Nonfinancial Corporations methodology.

All ratios include our Energy Efficiency adjustment which we incorporate in our view of the credit (see Exhibit 9 in the appendix)

Moody's forecasts are Moody's opinion and do not represent the views of the issuer.

Source: Moody's Financial Metrics™ and Moody's Ratings forecasts

New York's climate goals create long-term challenges for gas and steam distribution businesses

Despite the transparent and formulaic nature of New York's regulatory practices, the state continues to design policy around reaching net zero emissions by 2050, which was outlined in 2019 legislation (i.e., Climate Leadership and Community Protection Act, CLCPA) and given further definition in the state's Climate Action Council's (CAC) latest Scoping Plan, released in December 2022.

New York is seeking to reduce economy wide greenhouse gas (GHG) emissions by 40% by 2030 and 85% by 2050 from 1990 levels, which will require a substantial reduction of fossil natural gas use and a strategic downsizing of the gas system. This policy threatens around 30% of CECONY's total rate base, which is gas distribution (approximately 26% of total rate base), as well as the steam distribution system (about 4% of rate base), which relies on natural gas to generate steam.

Near-term challenges for CECONY include strategies around making long-term investments, today, for gas and steam delivery in the future, as well as maintaining the financial performance of those businesses amid declining demand. To address these risks, the NYPSC has instituted long-term gas planning filings (filed every three years, in addition to annual winter preparedness plans and reviews by staff) and a framework for reporting GHGs as a way to cultivate a methodical and transparent process for gas system investment. This also involves broad stakeholder engagement, which should provide support for the strategy and the plans that CECONY executes, paving the way for adequate cost recovery.

Moreover, the NYPSC-approved decoupling mechanisms for residential and small commercial gas service - and now weather normalization for CECONY's steam business - will help to support that segment's year-over-year financial performance amid declining demand.

As New York's decades-long effort continues, we expect ongoing modifications and rulemaking to ensue, as all stakeholders navigate the complex energy transition. The efforts to transform the state's energy economy will also include attention toward customer affordability and system reliability, which could necessitate a change to the pace of the energy transition.

For example, the New York Department of Public Service has warned that mounting challenges in building renewable generating capacity and expectations for higher electric load could threaten achieving 2030 goals (see our comment [Delay in energy transition goals would ease investment, affordability pressures](#), 25 September 2024).

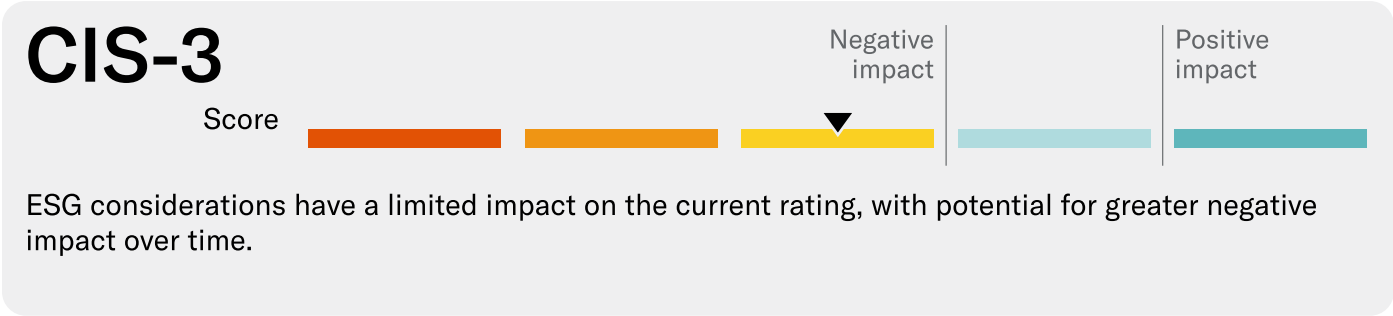
This long-term effort will also provide some time for the NYPSC to respond with regulatory changes to support the necessary investments, while maintaining utility financial health (e.g., accelerated depreciation of assets where useful lives have been cut by phase-out of fossil fuels).

While these efforts threaten the long-term viability of a portion of CECONY's business, they also amplify the growth prospects for its majority electric business. The CAC's Scoping Plan anticipates that annual electricity demand will more than double by 2050, which requires significant investment in the electric grid to ensure stable, secure operations to reliably meet the growing supply and demand. As such, CECONY's asset mix is capable of absorbing this dramatic energy transition, as long as the regulatory construct remains supportive and evolves in a timely fashion.

ESG considerations

Consolidated Edison Company of New York, Inc.'s ESG credit impact score is CIS-3

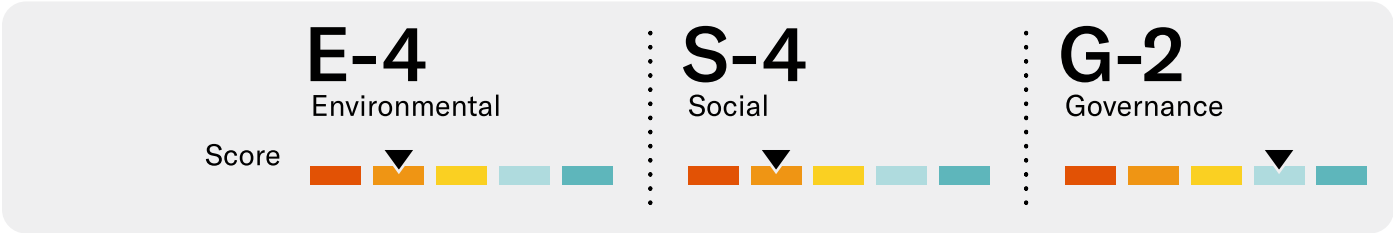
Exhibit 6
ESG credit impact score



Source: Moody's Ratings

CECONY's **CIS-3** indicates that ESG considerations have a limited impact on the current credit rating with greater potential for future negative impact over time. Physical climate risks such as storms and increased exposure demographic and social trends, including a less supportive regulatory environment and customer affordability concerns, could weaken credit quality over the long-term.

Exhibit 7
ESG issuer profile scores



Source: Moody's Ratings

Environmental

CECONY's **E-4** issuer profile score is driven by its geographical concentration in New York, which exposes the company to material and extreme weather events as well as the state's carbon transition goals, which include a strategic downsizing of the company's gas and steam distribution businesses.

CECONY's T&D network is mostly underground, which insulates some of its asset base from physical damage from severe storm events; however, flood risk can still cause substantial damage to its network. In response to climate change risks, CEI expects to invest around \$2 billion in climate resiliency and adaptation by 2030, including efforts to combat more frequent and sustained heat waves (e.g., days per year over 95 degrees Fahrenheit rising to 11 from a historical average of 4) and a higher sea level than historical averages (e.g., 0.8 feet from 0.3 feet). The majority of this investment will apply to CECONY.

Social

CECONY's **S-4** issuer profile score reflects New York's demographic and societal trends to reduce GHG emissions, which increases the risks for the company's gas and steam distribution operations. The score also considers the fundamental utility risk that demographics

and societal trends could include social pressures or public concern around affordability, utility reputational or environmental concerns. In turn, these pressures could result in adverse political intervention into utility operations or regulatory changes.

While the company's 2023 rate order evidenced improved stakeholder relationships and regulatory support for investment, we expect that these risks will continue to be prominent in years to come, since the company is seeking to significantly increase capital spending (for system resiliency and energy transition) and will need to recover higher operating expenses.

Governance

CECONY's **G-2** issuer profile score governance is directed by that of its parent, ConEd. ConEd's governance is broadly in-line with other utilities and does not pose particular risk. This is supported by our neutral to low scores on financial strategy and risk management, management credibility and track record. Examples of consistently conservative financial policies include annual and sizeable issuances of common equity, credit supportive use of asset sales proceeds and no holding company debt.

ESG Issuer Profile Scores and Credit Impact Scores for the rated entity/transaction are available on Moodys.com. In order to view the latest scores, please click [here](#) to go to the landing page for the entity/transaction on MDC and view the ESG Scores section.

Liquidity analysis

CECONY relies upon the capital markets to maintain adequate liquidity, given its large capital program, growing dividends and debt maturity profile.

Over the next 12 months, we expect CECONY to generate around \$4.6 billion of cash flow from operations with about \$4.5 billion of capital expenditures, creating roughly \$100 million positive free cash flow before any dividends to ConEd (e.g., nearly \$1.1 billion of dividends were paid through 2024). We expect the size of CECONY's dividends to be driven by efforts to maintain its regulatory allowed capital structure. We also note that ConEd can and will infuse equity into the utility in order to maintain its regulatory capital structure.

ConEd has two credit agreements, consisting of a \$2.5 billion master revolving credit facility due in March 2029 and a \$500 364-day revolving credit facility for CECONY. The master credit facility includes ConEd, CECONY, and O&R as co-borrowers, with sublimits of \$800 million for ConEd, the full \$2.5 billion for CECONY and \$250 million for O&R. The master facility provides a backstop to the commercial paper (CP) programs at each of ConEd, CECONY, and O&R which are sized to their respective sub-limits under the revolver; the 364-day facility also acts as a backstop for CECONY CP.

The credit agreements do not require the companies to represent and warrant as to material adverse change, litigation or full disclosure that would restrict access to the facility. They contain a single financial covenant which limits each borrower's Debt/Capitalization to 65%.

CECONY's next long-term debt maturity is \$250 million of taxable debentures due in December 2026. In addition, the company is the obligor on \$225 million of variable rate demand facilities revenue bonds issued by the New York State Energy Research and Development Authority. Each of these demand obligations is supported by its own letter of credit in case the bondholder opts to put it back to CECONY.

Rating methodology and scorecard factors

The principal methodology used for this rating is the Regulated Electric and Gas Utilities rating methodology.

Exhibit 8

Rating factors

Consolidated Edison Company of New York, Inc.

Regulated Electric and Gas Utilities Industry Scorecard			Current FY Dec-24		Moody's 12-18 month forward view	
Factor 1 : Regulatory Framework (25%)			Measure	Score	Measure	Score
a) Legislative and Judicial Underpinnings of the Regulatory Framework			A	A	A	A
b) Consistency and Predictability of Regulation			A	A	A	A
Factor 2 : Ability to Recover Costs and Earn Returns (25%)						
a) Timeliness of Recovery of Operating and Capital Costs			Aa	Aa	Aa	Aa
b) Sufficiency of Rates and Returns			Baa	Baa	Baa	Baa
Factor 3 : Diversification (10%)						
a) Market Position			Aa	Aa	Aa	Aa
b) Generation and Fuel Diversity			N/A	N/A	N/A	N/A
Factor 4 : Financial Strength (40%)						
a) CFO pre-WC + Interest / Interest (3 Year Avg)			4.4x	Baa	4.5x - 5.5x	A
b) CFO pre-WC / Debt (3 Year Avg)			13.8%	Baa	17% - 20%	Baa
c) CFO pre-WC – Dividends / Debt (3 Year Avg)			9.5%	Baa	13% - 16%	Baa
d) Debt / Capitalization (3 Year Avg)			47.6%	A	43% - 49%	A
Rating:						
Scorecard-Indicated Outcome Before Notching Adjustment				A3		A2
HoldCo Structural Subordination Notching				0		0
a) Scorecard-Indicated Outcome				A3		A2
b) Actual Rating Assigned				A3		A3

All data based on adjusted financial data, which follow our Financial Statement Adjustments in the Analysis of Nonfinancial Corporations methodology.

Moody's forecasts are Moody's opinion and do not represent the views of the issuer.

All ratios do not include our Energy Efficiency adjustment which we incorporate in our view of the credit (see Exhibit 9 in the appendix)

Source: Moody's Financial Metrics™ and Moody's Ratings forecasts

Appendix

Exhibit 9

Illustrative: Adjustments for proposed Energy Efficiency (EE) expenditures improves CECONY's ratios Consolidated Edison Company of New York

	2025		2026		2027	
CFO pre-WC before EE adjustment	\$	3,900	\$	4,600	\$	4,900
CECONY proposed EE expenditures	\$	720	\$	980	\$	720
CFO pre-WC after EE adjustment	\$	4,620	\$	5,580	\$	5,620
Debt	\$	27,600	\$	30,300	\$	33,000
CFO pre-WC to debt (pre-EE adj.)		14.13%		15.18%		14.85%
CFO pre-WC to debt (post-EE adj.)		16.74%		18.42%		17.03%

Moody's forecasts are Moody's opinion and do not represent the views of the issuer.

Energy Efficiency budget is subject to NYPSC approval

Source: *Moody's Ratings projections and Management projections*

Exhibit 10

Peer comparison

Consolidated Edison Company of New York, Inc.

	Consolidated Edison Company of New York, Inc. A3 Stable			Commonwealth Edison Company A3 Stable			Public Service Electric and Gas Company A3 Stable			New York State Electric and Gas Corporation Baa1 Stable			Niagara Mohawk Power Corporation Baa1 Stable		
(in \$ millions)	FY Dec-22	FY Dec-23	FY Dec-24	FY Dec-22	FY Dec-23	FY Dec-24	FY Dec-22	FY Dec-23	FY Dec-24	FY Dec-22	FY Dec-23	LTM Sep-24	FY Mar-22	FY Mar-23	FY Mar-24
Revenue	13,268	13,476	14,129	5,761	7,844	8,219	7,935	7,807	8,449	2,221	2,197	2,405	3926	4254	4148
CFO Pre-W/C	3,145	2,967	3,879	1,364	2,367	3,521	2,113	2,559	2,798	60	81	97	628	607	595
Total Debt	22,246	23,822	26,466	11,251	12,190	12,169	13,189	14,596	15,852	2,576	3,145	3,454	4437	4750	5931
CFO Pre-W/C + Interest / Interest	4.7x	4.0x	4.4x	4.2x	5.6x	7.7x	5.8x	5.9x	5.6x	1.8x	1.8x	1.8x	5.4x	3.9x	3.2x
CFO Pre-W/C / Debt	14.1%	12.5%	14.7%	12.1%	19.4%	28.9%	16.0%	17.5%	17.7%	2.3%	2.6%	2.8%	14.2%	12.8%	10.0%
CFO Pre-W/C – Dividends / Debt	9.7%	8.0%	10.6%	7.0%	13.2%	22.5%	12.6%	16.5%	16.7%	-4.5%	-3.8%	2.8%	9.6%	12.8%	10.0%
Debt / Capitalization	48.1%	46.8%	47.9%	37.9%	38.2%	37.2%	38.5%	39.0%	38.9%	44.7%	46.1%	44.0%	41.9%	41.6%	44.6%

All data based on adjusted financial data, which follow our Financial Statement Adjustments in the Analysis of Nonfinancial Corporations methodology. LTM = Last 12 months.

Source: *Moody's Financial Metrics™*

Exhibit 11

Moody's-adjusted cash flow metrics
Consolidated Edison Company of New York, Inc.

(in \$ millions)	2020	2021	2022	2023	2024
FFO	2,885.9	3,217.7	3,501.6	4,161.8	4,447.8
+/- Other	(730.0)	(363.0)	(357.0)	(1,195.0)	(569.0)
CFO Pre-WC	2,155.9	2,854.7	3,144.6	2,966.8	3,878.8
+/- ΔWC	(258.0)	(511.0)	164.0	(636.0)	(474.0)
CFO	1,897.9	2,343.7	3,308.6	2,330.8	3,404.8
- Div	982.0	988.0	978.0	1,056.0	1,073.0
- Capex	3,459.9	3,775.7	3,971.6	4,484.8	4,969.8
FCF	(2,544.0)	(2,420.0)	(1,641.0)	(3,210.0)	(2,638.0)
(CFO Pre-W/C) / Debt	10.4%	14.1%	14.1%	12.5%	14.7%
(CFO Pre-W/C - Dividends) / Debt	5.7%	9.2%	9.7%	8.0%	10.6%
FFO / Debt	13.9%	15.9%	15.7%	17.5%	16.8%
RCF / Debt	9.2%	11.0%	11.3%	13.0%	12.8%
Revenue	10,647.0	11,716.0	13,268.0	13,476.0	14,129.0
Interest Expense	767.9	809.1	847.2	980.8	1,144.3
Net Income	1,328.8	1,430.9	1,137.3	1,050.1	1,341.8
Total Assets	50,967.0	52,655.0	57,445.0	61,600.0	65,650.0
Total Liabilities	36,118.0	36,343.0	40,567.0	42,454.0	45,679.0
Total Equity	14,849.0	16,312.0	16,878.0	19,146.0	19,971.0

All data based on adjusted financial data, which follow our Financial Statement Adjustments in the Analysis of Nonfinancial Corporations methodology.
Source: Moody's Financial Metrics™

Ratings

Exhibit 12

Category	Moody's Rating
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.	
Outlook	Stable
Issuer Rating	A3
Senior Unsecured	A3
Commercial Paper	P-2
Underlying Senior Unsecured	A3
PARENT: CONSOLIDATED EDISON, INC.	
Outlook	Stable
Issuer Rating	Baa1
Commercial Paper	P-2

Source: Moody's Ratings

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REPORT NUMBER 1439779

CLIENT SERVICES

Americas	1-212-553-1653
Asia Pacific	852-3551-3077
Japan	81-3-5408-4100
EMEA	44-20-7772-5454

BALANCE SHEET DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
YE2024					
Curr Portion LTD	0	0	0	0	0
Notes Payable	<u>2,670</u>	<u>2,194</u>	<u>128</u>	<u>2,322</u>	<u>348</u>
Total STD	2,670	2,194	128	2,322	348
Long Term Debt	24,651	23,409	1,242	24,651	0
Preferred Stock	0	0	0	0	0
Customer Deposits	412	397	15	412	0
Stockholder's Equity	<u>21,962</u>	<u>19,971</u>	<u>931</u>	<u>20,902</u>	<u>1,060</u>
Total Capitalization	49,695	45,971	2,316	48,287	1,408
Net Plant(incl CWIP)	52,165	48,983	3,166	52,149	16
CWIP	3,166	2,912	253	3,165	1
STD %	5.37%	4.77%	5.53%	4.81%	24.72%
LTD %	49.60%	50.92%	53.63%	51.05%	0.00%
P/S %	0.00%	0.00%	0.00%	0.00%	0.00%
CD%	0.83%	0.86%	0.65%		
CE %	44.19%	43.44%	40.20%	43.29%	75.28%
Ratemaking Cap.	47,025	43,777	2,188	45,965	1,060
Ratemaking CE Ratio	46.70%	45.62%	42.55%	45.47%	100.00%
Tot Cap (excl CWIP)	46,529	43,059	2,063	45,122	1,407
CE Ratio (incl port. NP)	47.20%	46.38%	45.13%	46.32%	75.34%

INCOME STMT DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
Year=2024					
Inc Bef Int and Inc Tax	3,325	3,171	193	3,364	(39)
Income tax expense	318	314	29	343	(25)
Net Inc Avail to CE	1,820	1,748	104	1,852	(32)
Avg CE	21,560	19,559	931	20,490	1,071
Ret on Avg CE	8.44%	8.94%	11.17%	9.04%	-2.99%
(Net)Interest Expense	1187	1109	60	1169	18
Avg Debt	25,893	24,283	1,267	25,550	343
Cost of Debt	4.58%	4.57%	4.74%	4.58%	5.25%
Pref Divs					
Avg P/S					
Cost of P/S					
PROOF:					
EBIT*	3,325	3,171	193	3,364	(39)
EBITDA*	5,480	5,208	310	5,518	(38)

CASH FLOW DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
Year=2024					
Net Income (CE + PS)	1,820	1,748	104	1,852	(32)
Depreciation & Amort	2,155	2,037	117	2,154	1
Deferred Inc taxes	416	464	42	506	-90
Other + non-cash (net)	(85)	(27)	(2)	(29)	(56)
FFO(S&P)CFO(Moodys)	4,306	4,222	261	4,483	(177)
Comm St. Dividends	1,100	1,073	68	1,141	(41)
Constr Exp.	4,771	4,456	314	4,770	1

UNADJUSTED METRICS					
EBIT Int Cov	2.8	2.9	3.2	2.9	(2.2)
EBITDA Int Cov	4.6	4.7	5.2	4.7	(2.1)
Avg Debt/EBITDA	4.7	4.7	4.1	4.6	(9.0)
FFO/Constr Exp. %	90.25%	94.75%	83.12%	93.98%	-17700.00%
D&A/Constr Exp. %	45.17%	45.71%	37.26%	45.16%	100.00%
Payout Ratio	60.44%	61.38%	65.38%	61.61%	128.13%
CFO +Int/Int	4.6	4.8	5.4	4.8	(8.8)
CFOFFO/Avg Debt	16.63%	17.39%	20.60%	17.55%	-51.60%

BALANCE SHEET DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
YE2023					
Curr Portion LTD	250	250	0	250	0
Notes Payable	<u>2,288</u>	<u>1,903</u>	<u>46</u>	<u>1,949</u>	<u>339</u>
Total STD	2,538	2,153	46	2,199	339
Long Term Debt	21,927	20,810	1,118	21,928	-1
Preferred Stock	0	0	0	0	0
Customer Deposits	396	378	17	395	1
Stockholder's Equity	<u>21,158</u>	<u>19,146</u>	<u>931</u>	<u>20,077</u>	<u>1,081</u>
Total Capitalization	46,019	42,487	2,112	44,599	1,420
Net Plant(incl CWIP)	49,608	46,648	2,943	49,591	17
CWIP	2,443	2,168	274	2,442	1
STD %	5.52%	5.07%	2.18%	4.93%	23.87%
LTD %	47.65%	48.98%	52.94%	49.17%	-0.07%
P/S %	0.00%	0.00%	0.00%	0.00%	0.00%
CD%	0.86%	0.89%	0.80%		
CE %	45.98%	45.06%	44.08%	45.02%	76.13%
Ratemaking Cap.	43,731	40,584	2,066	42,650	1,081
Ratemaking CE Ratio	48.38%	47.18%	45.06%	47.07%	100.00%
Tot Cap (excl CWIP)	43,576	40,319	1,838	42,157	1,419
CE Ratio (incl port. NP)	48.55%	47.49%	50.65%	47.62%	76.18%

INCOME STMT DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
Year=2023					
Inc Bef Int and Inc Tax	4,026	2,909	175	3,084	942
Income tax expense	487	358	28	386	101
Net Inc Avail to CE	2,519	1,606	96	1,702	817
Avg CE	21,024	18,012	931	18,943	2,081
Ret on Avg CE	11.98%	8.92%	10.31%	8.98%	39.27%
(Net)Interest Expense	1023	945	51	996	27
Avg Debt	24,151	21,903	1,146	23,049	1,102
Cost of Debt	4.24%	4.31%	4.45%	4.32%	2.45%
Pref Divs					
Avg P/S					
Cost of P/S					
PROOF:					
EBIT*	4,029	2,909	175	3,084	945
EBITDA*	6,060	4,833	280	5,113	947

CASH FLOW DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
Year=2023					
Net Income (CE + PS)	2,516	1,606	96	1,702	814
Depreciation & Amort	2,031	1,924	105	2,029	2
Deferred Inc taxes	132	556	34	590	-458
Other + non-cash (net)	(93)	(42)	0	(42)	(51)
FFO(S&P)CFO(Moodys)	4,586	4,044	235	4,279	307
Comm St. Dividends	1,096	1,056	64	1,120	(24)
Constr Exp.	4,494	4,059	294	4,353	141

UNADJUSTED METRICS					
EBIT Int Cov	3.9	3.1	3.4	3.1	35.0
EBITDA Int Cov	5.9	5.1	5.5	5.1	35.1
Avg Debt/EBITDA	4.0	4.5	4.1	4.5	1.2
FFO/Constr Exp. %	102.05%	99.63%	79.93%	98.30%	217.73%
D&A/Constr Exp. %	45.19%	47.40%	35.71%	46.61%	1.42%
Payout Ratio	43.51%	65.75%	66.67%	65.80%	-2.94%
CFO +Int/Int	5.5	5.3	5.6	5.3	12.4
CFOFFO/Avg Debt	18.99%	18.46%	20.52%	18.57%	27.86%

BALANCE SHEET DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
YE2022					
Curr Portion LTD	649	0	0	0	649
Notes Payable	<u>3,040</u>	<u>1,763</u>	<u>59</u>	<u>1,822</u>	<u>1,218</u>
Total STD	3,689	1,763	59	1,822	1,867
Long Term Debt	20,147	19,080	1,068	20,148	-1
Preferred Stock	0	0	0	0	0
Customer Deposits	358	341	17	358	0
Stockholder's Equity	<u>20,889</u>	<u>16,878</u>	<u>931</u>	<u>17,809</u>	<u>3,080</u>
Total Capitalization	45,083	38,062	2,075	40,137	4,946
Net Plant(incl CWIP)	46,766	44,009	2,738	46,747	19
CWIP	2,484	2,268	214	2,482	2
STD %	8.18%	4.63%	2.84%	4.54%	37.75%
LTD %	44.69%	50.13%	51.47%	50.20%	-0.02%
P/S %	0.00%	0.00%	0.00%	0.00%	0.00%
CD%	0.79%	0.90%	0.82%		
CE %	46.33%	44.34%	44.87%	44.37%	62.27%
Ratemaking Cap.	42,043	36,299	2,016	38,315	3,728
Ratemaking CE Ratio	49.68%	46.50%	46.18%	46.48%	82.62%
Tot Cap (excl CWIP)	42,599	35,794	1,861	37,655	4,944
CE Ratio (incl port. NP)	49.04%	47.15%	50.03%	47.30%	62.30%

INCOME STMT DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
Year=2022					
Inc Bef Int and Inc Tax	2,950	2,467	159	2,626	324
Income tax expense	498	255	25	280	218
Net Inc Avail to CE	1,660	1,390	88	1,478	182
Avg CE	20,613	16,595	910	17,505	3,108
Ret on Avg CE	8.05%	8.38%	9.68%	8.44%	5.86%
(Net)Interest Expense	852	822	46	868	-16
Avg Debt	24,184	20,255	1,086	21,341	2,843
Cost of Debt	3.52%	4.06%	4.24%	4.07%	-0.56%
Pref Divs					
Avg P/S					
Cost of P/S					
PROOF:					
EBIT*	3,010	2,467	159	2,626	384
EBITDA*	5,066	4,245	257	4,502	564

CASH FLOW DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
Year=2022					
Net Income (CE + PS)	1,600	1,390	88	1,478	122
Depreciation & Amort	2,056	1,778	98	1,876	180
Deferred Inc taxes	435	85	-4	81	354
Other + non-cash (net)	(18)	175	43	218	(236)
FFO(S&P)CFO(Moodys)	4,073	3,428	225	3,653	420
Comm St. Dividends	1,089	978	57	1,035	54
Constr Exp.	4,168	3,596	228	3,824	344

UNADJUSTED METRICS					
EBIT Int Cov	3.5	3.0	3.5	3.0	(24.0)
EBITDA Int Cov	5.9	5.2	5.6	5.2	(35.3)
Avg Debt/EBITDA	4.8	4.8	4.2	4.7	5.0
FFO/Constr Exp. %	97.72%	95.33%	98.68%	95.53%	122.09%
D&A/Constr Exp. %	49.33%	49.44%	42.98%	49.06%	52.33%
Payout Ratio	65.60%	70.36%	64.77%	70.03%	29.67%
CFO +Int/Int	5.8	5.2	5.9	5.2	(25.3)
CFOFFO/Avg Debt	16.84%	16.92%	20.72%	17.12%	14.77%

BALANCE SHEET DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
YE2021					
Curr Portion LTD	440	0	0	0	440
Notes Payable	<u>1,488</u>	<u>1,285</u>	<u>77</u>	<u>1,362</u>	<u>126</u>
Total STD	1,928	1,285	77	1,362	566
Long Term Debt	22,604	18,382	968	19,350	3,254
Preferred Stock	0	0	0	0	0
Customer Deposits	300	285	14	299	1
Stockholder's Equity	<u>20,336</u>	<u>16,312</u>	<u>888</u>	<u>17,200</u>	<u>3,136</u>
Total Capitalization	45,168	36,264	1,947	38,211	6,957
Net Plant(incl CWIP)	48,596	41,613	2,599	44,212	4,384
CWIP	2,152	1,985	166	2,151	1
STD %	4.27%	3.54%	3.95%	3.56%	8.14%
LTD %	50.04%	50.69%	49.72%	50.64%	46.77%
P/S %	0.00%	0.00%	0.00%	0.00%	0.00%
CD%	0.66%	0.79%	0.72%		
CE %	45.02%	44.98%	45.61%	45.01%	45.08%

Ratemaking Cap.	43,680	34,979	1,870	36,849	6,831
Ratemaking CE Ratio	46.56%	46.63%	47.49%	46.68%	45.91%
Tot Cap (excl CWIP)	43,016	34,279	1,781	36,060	6,956
CE Ratio (incl port. NP)	47.28%	47.59%	49.86%	47.70%	45.08%

INCOME STMT DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
Year=2021					
Inc Bef Int and Inc Tax	2,288	2,352	138	2,490	(202)
Income tax expense	190	246	21	267	(77)
Net Inc Avail to CE	1,346	1,344	75	1,419	(73)
Avg CE	19,701	15,581	848	16,428	3,273
Ret on Avg CE	6.83%	8.63%	8.85%	8.64%	-2.23%
(Net)Interest Expense	905	762	42	804	101
Avg Debt	24,376	19,058	992	20,050	4,326
Cost of Debt	3.71%	4.00%	4.24%	4.01%	2.33%

Pref Divs					
Avg P/S					
Cost of P/S					
PROOF:					
EBIT*	2,441	2,352	138	2,490	(49)
EBITDA*	4,473	4,057	233	4,290	183

CASH FLOW DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
Year=2021					
Net Income (CE + PS)	1,193	1,344	75	1,419	(226)
Depreciation & Amort	2,032	1,705	95	1,800	232
Deferred Inc taxes	133	124	5	129	4
Other + non-cash (net)	501	(2)	33	31	470
FFO(S&P)CFO(Moodys)	3,859	3,171	208	3,379	480
Comm St. Dividends	1,030	988	52	1,040	(10)
Constr Exp.	3,953	3,413	217	3,630	323

UNADJUSTED METRICS					
EBIT Int Cov	2.7	3.1	3.3	3.1	(0.5)
EBITDA Int Cov	4.9	5.3	5.5	5.3	1.8
Avg Debt/EBITDA	5.4	4.7	4.3	4.7	23.6
FFO/Constr Exp. %	97.62%	92.91%	95.85%	93.09%	148.61%
D&A/Constr Exp. %	51.40%	49.96%	43.78%	49.59%	71.83%
Payout Ratio	76.52%	73.51%	69.33%	73.29%	13.70%
CFO +Int/Int	5.3	5.2	6.0	5.2	5.8
CFOFFO/Avg Debt	15.83%	16.64%	20.98%	16.85%	11.10%

BALANCE SHEET DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
YE2020					
Curr Portion LTD	1,967	640	0	640	1,327
Notes Payable	<u>1,870</u>	<u>1,660</u>	<u>45</u>	<u>1,705</u>	<u>165</u>
Total STD	3,837	2,300	45	2,345	1,492
Long Term Debt	20,382	16,149	893	17,042	3,340
Preferred Stock	0	0	0	0	0
Customer Deposits	311	296	14	310	1
Stockholder's Equity	<u>19,065</u>	<u>14,849</u>	<u>807</u>	<u>15,656</u>	<u>3,409</u>
Total Capitalization	43,595	33,594	1,759	35,353	8,242
Net Plant(incl CWIP)	46,555	39,554	2,472	42,026	4,529
CWIP	3,112	2,320	154	2,474	638
STD %	8.80%	6.85%	2.56%	6.63%	18.10%
LTD %	46.75%	48.07%	50.77%	48.21%	40.52%
P/S %	0.00%	0.00%	0.00%	0.00%	0.00%
CD%	0.71%	0.88%	0.80%		
CE %	43.73%	44.20%	45.88%	44.28%	41.36%

Ratemaking Cap.	41,725	31,934	1,714	33,648	8,077
Ratemaking CE Ratio	45.69%	46.50%	47.08%	46.53%	42.21%
Tot Cap (excl CWIP)	40,483	31,274	1,605	32,879	7,604
CE Ratio (incl port. NP)	47.09%	47.48%	50.28%	47.62%	44.83%

INCOME STMT DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
Year=2020					
Inc Bef Int and Inc Tax	2,253	2,139	133	2,272	(19)
Income tax expense	90	215	21	236	(146)
Net Inc Avail to CE	1,101	1,185	71	1,256	(155)
Avg CE	18,639	14,498	785	15,283	3,357
Ret on Avg CE	5.91%	8.17%	9.05%	8.22%	-4.62%
(Net)Interest Expense	1019	739	41	780	239
Avg Debt	22,942	17,275	887	18,162	4,781
Cost of Debt	4.44%	4.28%	4.62%	4.29%	5.00%

Pref Divs					
Avg P/S					
Cost of P/S					
PROOF:					
EBIT*	2,210	2,139	133	2,272	(62)
EBITDA*	4,130	3,737	223	3,960	170

CASH FLOW DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
Year=2020					
Net Income (CE + PS)	1,144	1,185	71	1,256	(112)
Depreciation & Amort	1,920	1,598	90	1,688	232
Deferred Inc taxes	85	168	19	187	-102
Other + non-cash (net)	369	(62)	10	(52)	421
FFO(S&P)CFO(Moodys)	3,518	2,889	190	3,079	439
Comm St. Dividends	975	982	49	1,031	(56)
Constr Exp.	3,909	3,112	214	3,326	583

UNADJUSTED METRICS					
EBIT Int Cov	2.2	2.9	3.2	2.9	(0.3)
EBITDA Int Cov	4.1	5.1	5.4	5.1	0.7
Avg Debt/EBITDA	5.6	4.6	4.0	4.6	28.1
FFO/Constr Exp. %	90.00%	92.83%	88.79%	92.57%	75.30%
D&A/Constr Exp. %	49.12%	51.35%	42.06%	50.75%	39.79%
Payout Ratio	88.56%	82.87%	69.01%	82.09%	36.13%
CFO +Int/Int	4.5	4.9	5.6	4.9	2.8
CFOFFO/Avg Debt	15.33%	16.72%	21.43%	16.95%	9.18%

BALANCE SHEET DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
YE2019					
Curr Portion LTD	1,446	350	0	350	1,096
Notes Payable	<u>1,692</u>	<u>1,137</u>	<u>17</u>	<u>1,154</u>	<u>538</u>
Total STD	3,138	1,487	17	1,504	1,634
Long Term Debt	18,527	14,614	818	15,432	3,095
Preferred Stock	0	0	0	0	0
Customer Deposits	334	334	12	346	-12
Stockholder's Equity	<u>18,213</u>	<u>14,147</u>	<u>762</u>	<u>14,909</u>	<u>3,304</u>
Total Capitalization	40,212	30,582	1,609	32,191	8,021
Net Plant(incl CWIP)	43,889	37,414	2,340	39,754	4,135
CWIP	2,246	1,812	123	1,935	311
STD %	7.80%	4.86%	1.06%	4.67%	20.37%
LTD %	46.07%	47.79%	50.84%	47.94%	38.59%
P/S %	0.00%	0.00%	0.00%	0.00%	0.00%
CD%	0.83%	1.09%	0.75%		
CE %	45.29%	46.26%	47.36%	46.31%	41.19%

Ratemaking Cap.	38,520	29,445	1,592	31,037	7,483
Ratemaking CE Ratio	47.28%	48.05%	47.86%	48.04%	44.15%
Tot Cap (excl CWIP)	37,966	28,770	1,486	30,256	7,710
CE Ratio (incl port. NP)	47.97%	49.17%	51.28%	49.28%	42.85%

INCOME STMT DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
Year=2019					
Inc Bef Int and Inc Tax	2,727	2,313	128	2,441	286
Income tax expense	296	335	17	352	(56)
Net Inc Avail to CE	1,343	1,250	70	1,320	23
Avg CE	17,526	13,529	737	14,266	3,261
Ret on Avg CE	7.66%	9.24%	9.50%	9.25%	0.71%
(Net)Interest Expense	991	728	41	769	222
Avg Debt	21,188	15,722	823	16,545	4,644
Cost of Debt	4.68%	4.63%	4.98%	4.65%	4.78%

Pref Divs					
Avg P/S					
Cost of P/S					
PROOF:					
EBIT*	2,630	2,313	128	2,441	189
EBITDA*	4,314	3,686	212	3,898	416

CASH FLOW DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
Year=2019					
Net Income (CE + PS)	1,440	1,250	70	1,320	120
Depreciation & Amort	1,684	1,373	84	1,457	227
Deferred Inc taxes	308	128	0	128	180
Other + non-cash (net)	(138)	(139)	-1	(140)	2
FFO(S&P)CFO(Moodys)	3,294	2,612	153	2,765	529
Comm St. Dividends	942	912	47	959	(17)
Constr Exp.	3,533	3,028	210	3,238	295

UNADJUSTED METRICS					
EBIT Int Cov	2.7	3.2	3.1	3.2	0.9
EBITDA Int Cov	4.4	5.1	5.2	5.1	1.9
Avg Debt/EBITDA	4.9	4.3	3.9	4.2	11.2
FFO/Constr Exp. %	93.24%	86.26%	72.86%	85.39%	179.32%
D&A/Constr Exp. %	47.66%	45.34%	40.00%	45.00%	76.95%
Payout Ratio	70.14%	72.96%	67.14%	72.65%	-73.91%
CFO +Int/Int	4.3	4.6	4.7	4.6	3.4
CFOFFO/Avg Debt	15.55%	16.61%	18.60%	16.71%	11.39%

				Total Op	Residual
BALANCE SHEET DATA	CEI	CECONY	O&R	Cos	HoldCo
YE2018					
Curr Portion LTD	650	475	62	537	113
Notes Payable	<u>2,566</u>	<u>1,192</u>	<u>54</u>	<u>1,246</u>	<u>1,320</u>
Total STD	3,216	1,667	116	1,783	1,433
Long Term Debt	17,495	13,676	694	14,370	3,125
Preferred Stock	0	0	0	0	0
Customer Deposits	351	339	12	351	0
Stockholder's Equity	<u>16,839</u>	<u>12,910</u>	<u>712</u>	<u>13,622</u>	<u>3,217</u>
Total Capitalization	37,901	28,592	1,534	30,126	7,775
Net Plant(incl CWIP)	41,749	35,374	2,210	37,584	4,165
CWIP	2,147	1,850	129	1,979	168
STD %	8.49%	5.83%	7.56%	5.92%	18.43%
LTD %	46.16%	47.83%	45.24%	47.70%	40.19%
P/S %	0.00%	0.00%	0.00%	0.00%	0.00%
CD%	0.93%	1.19%	0.78%		
CE %	44.43%	45.15%	46.41%	45.22%	41.38%

Ratemaking Cap.	35,335	27,400	1,480	28,880	6,455
Ratemaking CE Ratio	47.66%	47.12%	48.11%	47.17%	49.84%
Tot Cap (excl CWIP)	35,754	26,742	1,405	28,147	7,607
CE Ratio (incl port. NP)	47.10%	48.28%	50.68%	48.40%	42.29%

				Total Op	Residual
INCOME STMT DATA	CEI	CECONY	O&R	Cos	HoldCo
Year=2018					
Inc Bef Int and Inc Tax	2,602	2,211	113	2,324	278
Income tax expense	401	326	15	341	60
Net Inc Avail to CE	1,382	1,196	59	1,255	127
Avg CE	16,129	12,675	689	13,364	2,765
Ret on Avg CE	8.57%	9.44%	8.56%	9.39%	4.59%
(Net)Interest Expense	819	689	39	728	91
Avg Debt	18,659	14,379	784	15,163	3,496
Cost of Debt	4.39%	4.79%	4.98%	4.80%	2.60%

Pref Divs					
Avg P/S					
Cost of P/S					
PROOF:					
EBIT*	2,602	2,211	113	2,324	278
EBITDA*	4,040	3,487	190	3,677	363

				Total Op	Residual
CASH FLOW DATA	CEI	CECONY	O&R	Cos	HoldCo
Year=2018					
Net Income (CE + PS)	1,382	1,196	59	1,255	127
Depreciation & Amort	1,438	1,276	77	1,353	85
Deferred Inc taxes	408	354	17	371	37
Other + non-cash (net)	(119)	(135)	56	(79)	(40)
FFO(S&P)CFO(Moodys)	3,109	2,691	209	2,900	209
Comm St. Dividends	842	846	46	892	(50)
Constr Exp.	3,497	3,051	199	3,250	247

UNADJUSTED METRICS					
EBIT Int Cov	3.2	3.2	2.9	3.2	3.1
EBITDA Int Cov	4.9	5.1	4.9	5.1	4.0
Avg Debt/EBITDA	4.6	4.1	4.1	4.1	9.6
FFO/Constr Exp. %	88.90%	88.20%	105.03%	89.23%	84.62%
D&A/Constr Exp. %	41.12%	41.82%	38.69%	41.63%	34.41%
Payout Ratio	60.93%	70.74%	77.97%	71.08%	-39.37%
CFO +Int/Int	4.8	4.9	6.4	5.0	3.3
CFOFFO/Avg Debt	16.66%	18.71%	26.68%	19.13%	5.98%

				Total Op	Residual
BALANCE SHEET DATA	CEI	CECONY	O&R	Cos	HoldCo
YE2017					
Curr Portion LTD	1,298	1,200	54	1,254	44
Notes Payable	<u>577</u>	<u>150</u>	<u>96</u>	<u>246</u>	<u>331</u>
Total STD	1,875	1,350	150	1,500	375
Long Term Debt	14,731	12,065	607	12,672	2,059
Preferred Stock	0	0	0	0	0
Customer Deposits	346	334	12	346	0
Stockholder's Equity	<u>15,418</u>	<u>12,439</u>	<u>666</u>	<u>13,105</u>	<u>2,313</u>
Total Capitalization	32,370	26,188	1,435	27,623	4,747
Net Plant(incl CWIP)	37,600	33,209	2,068	35,277	2,323
CWIP	2,156	1,502	103	1,605	551
STD %	5.79%	5.16%	10.45%	5.43%	7.90%
LTD %	45.51%	46.07%	42.30%	45.87%	43.37%
P/S %	0.00%	0.00%	0.00%	0.00%	0.00%
CD%	1.07%	1.28%	0.84%		
CE %	47.63%	47.50%	46.41%	47.44%	48.73%

Ratemaking Cap.	31,793	26,038	1,339	27,377	4,416
Ratemaking CE Ratio	48.49%	47.77%	49.74%	47.87%	52.38%
Tot Cap (excl CWIP)	30,214	24,686	1,332	26,018	4,196
Ratemaking CE Ratio	51.03%	50.39%	50.00%	50.37%	55.12%

				Total Op	Residual
INCOME STMT DATA	CEI	CECONY	O&R	Cos	HoldCo
Year=2017					
Inc Bef Int and Inc Tax	2,726	2,412	142	2,554	172
Income tax expense	472	685	42	727	(255)
Net Inc Avail to CE	1,525	1,104	64	1,168	357
Avg CE	14,858	12,134	656	12,790	2,069
Ret on Avg CE	10.26%	9.10%	9.76%	9.13%	17.26%
(Net)Interest Expense	729	623	36	659	70
Avg Debt	16,217	13,045	746	13,791	2,427
Cost of Debt	4.50%	4.78%	4.83%	4.78%	2.88%

Pref Divs					
Avg P/S					
Cost of P/S					
PROOF:					
EBIT*	2,726	2,412	142	2,554	172
EBITDA*	4,067	3,607	213	3,820	247

				Total Op	Residual
CASH FLOW DATA	CEI	CECONY	O&R	Cos	HoldCo
Year=2017					
Net Income (CE + PS)	1,525	1,104	64	1,168	357
Depreciation & Amort	1,341	1,195	71	1,266	75
Deferred Inc taxes	485	575	12	587	-102
Other + non-cash (net)	(189)	(213)	26	(187)	(2)
FFO(S&P)CFO(Moodys)	3,162	2,661	173	2,834	328
Comm St. Dividends	803	796	44	840	(37)
Constr Exp.	3,443	2,840	189	3,029	414

UNADJUSTED METRICS					
EBIT Int Cov	3.7	3.9	3.9	3.9	2.5
EBITDA Int Cov	5.6	5.8	5.9	5.8	3.5
Avg Debt/EBITDA	4.0	3.6	3.5	3.6	9.8
FFO/Constr Exp. %	91.84%	93.70%	91.53%	93.56%	79.23%
D&A/Constr Exp. %	38.95%	42.08%	37.57%	41.80%	18.12%
Payout Ratio	52.66%	72.10%	68.75%	71.92%	-10.36%
CFO +Int/Int	5.3	5.3	5.8	5.3	5.7
CFOFFO/Avg Debt	19.50%	20.40%	23.19%	20.55%	13.52%

				Total Op	Residual
BALANCE SHEET DATA	CEI	CECONY	O&R	Cos	HoldCo
YE2016					
Curr Portion LTD	39	0	4	4	35
Notes Payable	<u>1,054</u>	<u>600</u>	<u>70</u>	<u>670</u>	<u>384</u>
Total STD	1,093	600	74	674	419
Long Term Debt	14,735	12,074	661	12,735	2,000
Preferred Stock	0	0	0	0	0
Customer Deposits	352	336	15	351	1
Stockholder's Equity	<u>14,298</u>	<u>11,829</u>	<u>645</u>	<u>12,474</u>	<u>1,824</u>
Total Capitalization	30,478	24,839	1,395	26,234	4,244
Net Plant(incl CWIP)	35,216	31,119	1,931	33,050	2,166
CWIP	1,864	1,104	71	1,175	689
STD %	3.59%	2.42%	5.30%	2.57%	9.87%
LTD %	48.35%	48.61%	47.38%	48.54%	47.13%
P/S %	0.00%	0.00%	0.00%	0.00%	0.00%
CD%	1.15%	1.35%	1.08%		
CE %	46.91%	47.62%	46.24%	47.55%	42.98%

Ratemaking Cap.	29,424	24,239	1,325	25,564	3,860
Ratemaking CE Ratio	48.59%	48.80%	48.68%	48.80%	47.25%
Tot Cap (excl CWIP)	28,614	23,735	1,324	25,059	3,555
Ratemaking CE Ratio	49.97%	49.84%	48.72%	49.78%	51.31%

				Total Op	Residual
INCOME STMT DATA	CEI	CECONY	O&R	Cos	HoldCo
Year=2016					
Inc Bef Int and Inc Tax	2,639	2,262	131	2,393	246
Income tax expense	698	603	36	639	59
Net Inc Avail to CE	1,245	1,056	59	1,115	130
Avg CE	13,675	11,622	625	12,247	1,428
Ret on Avg CE	9.10%	9.09%	9.44%	9.10%	9.10%
(Net)Interest Expense	696	603	36	639	57
Avg Debt	15,051	12,572	732	13,304	1,747
Cost of Debt	4.62%	4.80%	4.92%	4.80%	3.26%

Pref Divs					
Avg P/S					
Cost of P/S					
PROOF:					
EBIT*	2,639	2,262	131	2,393	246
EBITDA*	3,855	3,368	198	3,566	289

				Total Op	Residual
CASH FLOW DATA	CEI	CECONY	O&R	Cos	HoldCo
Year=2016					
Net Income (CE + PS)	1,245	1,056	59	1,115	130
Depreciation & Amort	1,216	1,106	67	1,173	43
Deferred Inc taxes	783	545	8	553	230
Other + non-cash (net)	(84)	(266)	10	(256)	172
FFO(S&P)CFO(Moodys)	3,160	2,441	144	2,585	575
Comm St. Dividends	763	744	42	786	(23)
Constr Exp.	3,680	2,672	167	2,839	841

UNADJUSTED METRICS					
EBIT Int Cov	3.8	3.8	3.6	3.7	4.3
EBITDA Int Cov	5.5	5.6	5.5	5.6	5.1
Avg Debt/EBITDA	3.9	3.7	3.7	3.7	6.0
FFO/Constr Exp. %	85.87%	91.35%	86.23%	91.05%	68.37%
D&A/Constr Exp. %	33.04%	41.39%	40.12%	41.32%	5.11%
Payout Ratio	61.29%	70.45%	71.19%	70.49%	-17.69%
CFO +Int/Int	5.5	5.0	5.0	5.0	11.1
CFOFFO/Avg Debt	21.00%	19.42%	19.67%	19.43%	32.91%

BALANCE SHEET DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
YE2015					
Curr Portion LTD	739	650	79	729	10
Notes Payable	<u>1,529</u>	<u>1,033</u>	<u>60</u>	<u>1,093</u>	<u>436</u>
Total STD	2,268	1,683	139	1,822	446
Long Term Debt	12,006	10,787	590	11,377	629
Preferred Stock	0	0	0	0	0
Customer Deposits	354	339	15	354	0
Stockholder's Equity	<u>13,052</u>	<u>11,415</u>	<u>605</u>	<u>12,020</u>	<u>1,032</u>
Total Capitalization	27,680	24,224	1,349	25,573	2,107
Net Plant(incl CWIP)	32,209	29,315	1,823	31,138	1,071
CWIP	1,247	922	80	1,002	245
STD %	8.19%	6.95%	10.30%	7.12%	21.17%
LTD %	43.37%	44.53%	43.74%	44.49%	29.85%
P/S %	0.00%	0.00%	0.00%	0.00%	0.00%
CD%	1.28%	1.40%	1.11%		
CE %	47.15%	47.12%	44.85%	47.00%	48.98%

Ratemaking Cap.	26,151	23,191	1,289	24,480	1,671
Ratemaking CE Ratio	49.91%	49.22%	46.94%	49.10%	61.76%
Tot Cap (excl CWIP)	26,433	23,302	1,269	24,571	1,862
Ratemaking CE Ratio	49.38%	48.99%	47.68%	48.92%	55.42%

INCOME STMT DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
Year=2015					
Inc Bef Int and Inc Tax	2,451	2,242	117	2,359	92
Income tax expense	605	574	30	604	1
Net Inc Avail to CE	1,193	1,084	52	1,136	57
Avg CE	12,814	11,302	615	11,917	898

Ret on Avg CE	9.31%	9.59%	8.46%	9.53%	6.35%
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(Net)Interest Expense	653	584	35	619	34
Avg Debt	13,633	12,067	703	12,770	863
Cost of Debt	4.79%	5.40%	4.98%	4.85%	3.94%

Pref Divs					
Avg P/S					
Cost of P/S					
PROOF:					
EBIT*	2,451	2,242	117	2,359	92
EBITDA*	3,581	3,282	185	3,467	114

CASH FLOW DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
Year=2015					
Net Income (CE + PS)	1,193	1,084	52	1,136	57
Depreciation & Amort	1,130	1,040	68	1,108	22
Deferred Inc taxes	653	449	7	456	197
Other + non-cash (net)	23	(105)	35	(70)	93
FFO(S&P)CFO(Moodys)	2,999	2,468	162	2,630	369
Comm St. Dividends	733	872	81	953	(220)
Constr Exp.	3,054	2,410	153	2,563	491

UNADJUSTED METRICS					
EBIT Int Cov	3.8	3.8	3.3	3.8	2.7
EBITDA Int Cov	5.5	5.6	5.3	5.6	3.4
Avg Debt/EBITDA	3.8	3.7	3.8	3.7	7.6
FFO/Constr Exp. %	98.20%	102.41%	105.88%	102.61%	75.15%
D&A/Constr Exp. %	37.00%	43.15%	44.44%	43.23%	4.48%
Payout Ratio	61.44%	80.44%	155.77%	83.89%	-385.96%
CFO +Int/Int	5.6	5.2	5.6	5.2	11.9
CFOFFO/Avg Debt	22.00%	20.45%	23.06%	20.60%	42.76%

BALANCE SHEET DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
YE2014					
Curr Portion LTD	560	350	143	493	67
Notes Payable	<u>800</u>	<u>450</u>	<u>76</u>	<u>526</u>	<u>274</u>
Total STD	1,360	800	219	1,019	341
Long Term Debt	11,631	10,864	457	11,321	310
Preferred Stock	0	0	0	0	0
Customer Deposits	344	330	14	344	0
Stockholder's Equity	<u>12,576</u>	<u>11,188</u>	<u>625</u>	<u>11,813</u>	<u>763</u>
Total Capitalization	25,911	23,182	1,315	24,497	1,414
Net Plant	29,827	27,590	1,740	29,330	497
CWIP	1,144	971	60	1,031	113
STD %	5.25%	3.45%	16.65%	4.16%	24.12%
LTD %	44.89%	46.86%	34.75%	46.21%	21.92%
P/S %	0.00%	0.00%	0.00%	0.00%	0.00%
CD%	1.33%	1.42%	1.06%		
CE %	48.54%	48.26%	47.53%	48.22%	53.96%

Ratemaking Cap.	25,111	22,732	1,239	23,971	1,140
Ratemaking CE Ratio	50.08%	49.22%	50.44%	49.28%	66.93%
Tot Cap (excl CWIP)	24,767	22,211	1,255	23,466	1,301
Ratemaking CE Ratio	50.78%	50.37%	49.80%	50.34%	58.65%

INCOME STMT DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
Year=2014					
Inc Bef Int and Inc Tax	2,251	2,150	130	2,280	(29)
Income tax expense	568	555	35	590	(22)
Net Inc Avail to CE	1,092	1,058	60	1,118	(26)
Avg CE	12,411	11,018	623	11,640	771

Ret on Avg CE	8.80%	9.60%	9.64%	9.60%	-3.37%
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(Net)Interest Expense	591	537	35	572	19
Avg Debt	12,711	11,358	675	12,032	679
Cost of Debt	4.65%	5.40%	5.19%	4.75%	2.80%

Pref Divs					
Avg P/S					
Cost of P/S					
PROOF:					
EBIT*	2,251	2,150	130	2,280	(29)
EBITDA*	3,322	3,141	191	3,332	(10)

CASH FLOW DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
Year=2014					
Net Income (CE + PS)	1,092	1,058	60	1,118	(26)
Depreciation & Amort	1,071	991	61	1,052	19
Deferred Inc taxes	518	331	27	358	160
Other + non-cash (net)	167	68	(9)	59	108
CFO	2,848	2,448	139	2,587	261
Comm St. Dividends	739	712	40	752	(13)
Constr Exp.	2,419	2,094	146	2,240	179

UNADJUSTED METRICS					
EBIT Int Cov	3.8	4.0	3.7	4.0	(1.5)
EBITDA Int Cov	5.6	5.8	5.5	5.8	(0.5)
Avg Debt/EBITDA	3.8	3.6	3.5	3.6	(67.9)
FFO/Constr Exp. %	117.73%	116.91%	95.21%	115.49%	145.81%
D&A/Constr Exp. %	44.27%	47.33%	41.78%	46.96%	10.61%
Payout Ratio	67.67%	67.30%	66.67%	67.26%	50.00%
CFO +Int/Int	5.8	5.6	5.0	5.5	14.7
CFO/Avg Debt	22.41%	21.55%	20.61%	21.50%	38.47%

BALANCE SHEET DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
YE2013					
Curr Portion LTD	485	475	4	479	6
Notes Payable	<u>1,451</u>	<u>1,210</u>	<u>69</u>	<u>1,279</u>	<u>172</u>
Total STD	1,936	1,685	73	1,758	178
Long Term Debt	10,494	9,366	600	9,966	528
Preferred Stock	0	0	0	0	0
Customer Deposits	321	308	13	321	0
Stockholder's Equity	<u>12,245</u>	<u>10,847</u>	<u>620</u>	<u>11,467</u>	<u>778</u>
Total Capitalization	24,996	22,206	1,306	23,512	1,484
Net Plant	28,436	26,150	1,650	27,800	636
CWIP	1,429	1,303	91	1,394	35
STD %	7.75%	7.59%	5.59%	7.48%	11.99%
LTD %	41.98%	42.18%	45.94%	42.39%	35.58%
P/S %	0.00%	0.00%	0.00%	0.00%	0.00%
CD%	1.28%	1.39%	1.00%		
CE %	48.99%	48.85%	47.47%	48.77%	52.43%

Ratemaking Cap.	23,545	20,996	1,237	22,233	1,312
Ratemaking CE Ratio	52.01%	51.66%	50.12%	51.58%	59.30%
Tot Cap (excl CWIP)	23,567	20,903	1,215	22,118	1,449
Ratemaking CE Ratio	51.96%	51.89%	51.03%	51.84%	53.69%

INCOME STMT DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
Year=2013					
Inc Bef Int and Inc Tax	2,257	2,061	121	2,182	75
Income tax expense	476	520	19	539	(63)
Net Inc Avail to CE	1,062	1,020	65	1,085	(23)
Avg CE	12,057	10,700	594	11,294	764

Ret on Avg CE	8.81%	9.53%	10.94%	9.61%	-3.01%
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(Net)Interest Expense	719	521	37	558	161
Avg Debt	11,869	10,659	642	11,300	569
Cost of Debt	6.06%	5.40%	5.77%	4.94%	28.32%

Pref Divs	0	0	0	0	0
Avg P/S	0	0	0	0	0
Cost of P/S					
PROOF:					
EBIT*	2,257	2,061	121	2,182	75
EBITDA*	3,281	3,007	177	3,184	97

CASH FLOW DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
Year=2013					
Net Income (CE + PS)	1,062	1,020	65	1,085	(23)
Depreciation & Amort	1,024	946	56	1,002	22
Deferred Inc taxes	40	222	3	225	(185)
Other + non-cash (net)	(72)	(72)	23	(49)	(23)
CFO	2,054	2,116	147	2,263	(209)
Comm St. Dividends	721	728	38	766	(45)
Constr Exp.	2,538	2,207	135	2,342	196

UNADJUSTED METRICS					
EBIT Int Cov	3.1	4.0	3.3	3.9	0.5
EBITDA Int Cov	4.6	5.8	4.8	5.7	0.6
Avg Debt/EBITDA	3.6	3.5	3.6	3.5	5.9
FFO/Constr Exp. %	80.93%	95.88%	108.89%	96.63%	-106.63%
D&A/Constr Exp. %	40.35%	42.86%	41.48%	42.78%	11.22%
Payout Ratio	67.89%	71.37%	58.46%	70.60%	195.65%
CFO +Int/Int	3.9	5.1	5.0	5.1	(0.3)
CFO/Avg Debt	17.31%	19.85%	22.92%	20.03%	-36.76%

BALANCE SHEET DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
YE2012					
Curr Portion LTD	706	700	3	703	3
Notes Payable	539	421	3	424	115
Total STD	1,245	1,121	6	1,127	118
Long Term Debt	10,062	9,145	604	9,749	313
Preferred Stock	0	0	0	0	0
Customer Deposits	304	292	12	304	0
Stockholder's Equity	11,869	10,552	568	11,120	749
Total Capitalization	23,480	21,110	1,190	22,300	1,180
Net Plant	26,939	24,745	1,562	26,307	632
CWIP	1,110	947	80	1,027	83

STD %	5.30%	5.31%	0.50%	5.05%	10.00%
LTD %	42.85%	43.32%	50.76%	43.72%	26.53%
P/S %	0.00%	0.00%	0.00%	0.00%	0.00%
CD%	1.29%	1.38%	1.01%		
CE %	50.55%	49.99%	47.73%	49.87%	63.47%

Ratemarking Cap.	22,941	20,689	1,187	21,876	1,065
Ratemarking CE Ratio	51.74%	51.00%	47.85%	50.83%	70.33%
Tot Cap (excl CWIP)	22,370	20,163	1,110	21,273	1,097
Ratemarking CE Ratio	53.06%	52.33%	51.17%	52.27%	68.28%
Inc Tax Factor					

INCOME STMT DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
Year=2012					
Inc Bef Int and Inc Tax	2,345	2,091	125	2,216	129
Income tax expense	600	529	31	560	40
Net Inc Avail to CE	1,138	1,014	64	1,078	60
Avg CE	11,653	10,385	550	10,935	718

Ret on Avg CE	9.77%	9.76%	11.64%	9.86%	8.36%
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(Net)Interest Expense	604	545	30	575	29
Avg Debt	10,990	10,006	610	10,616	375
Cost of Debt	5.50%	5.40%	4.92%	5.42%	7.74%

Pref Divs	3	3	0	3	0
Avg P/S	107	107	0	107	0
Cost of P/S		2.82%		2.82%	

PROOF:					
EBIT*	2,345	2,091	125	2,216	129
EBITDA*	3,300	2,985	178	3,163	137

CASH FLOW DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
Year=2012					
Net Income (CE + PS)	1,141	1,017	64	1,081	60
Depreciation & Amort	955	894	53	947	8
Deferred Inc taxes	584	365	90	455	129
Other + non-cash (net)	(46)	54	26	80	(126)
CFO	2,634	2,330	233	2,563	71
Comm St. Dividends	709	682	34	716	(7)
Constr Exp.	2,069	1,788	131	1,919	150

UNADJUSTED METRICS					
EBIT Int Cov	3.9	3.8	4.2	3.9	4.4
EBITDA Int Cov	5.5	5.5	5.9	5.5	4.7
Avg Debt/EBITDA	3.3	3.4	3.4	3.4	2.7
FFO/Constr Exp. %	127.31%	130.31%	177.86%	133.56%	47.33%
D&A/Constr Exp. %	46.16%	50.00%	40.46%	49.35%	5.33%
Payout Ratio	62.30%	67.26%	53.13%	66.42%	-11.67%
CFO +Int/Int	5.4	5.3	8.8	5.5	3.4
CFO/Avg Debt	23.97%	23.29%	38.20%	24.14%	18.96%

BALANCE SHEET DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
YE2011					
Curr Portion LTD	530	525	3	528	2
Notes Payable	0	0	0	0	0
Total STD	530	525	3	528	2
Long Term Debt	10,143	9,220	607	9,827	316
Preferred Stock	213	213	0	213	0
Customer Deposits	303	290	13	303	0
Stockholder's Equity	11,436	10,218	532	10,750	686
Total Capitalization	22,625	20,466	1,155	21,621	1,004
Net Plant	25,093	23,502	1,469	24,971	122
CWIP	1,280	1,165	76	1,241	39

STD %	2.34%	2.57%	0.26%	2.44%	0.20%
LTD %	44.83%	45.05%	52.55%	45.45%	31.47%
P/S %	0.94%	1.04%	0.00%	0.99%	0.00%
CD%	1.34%	1.42%	1.13%		
CE %	50.55%	49.93%	46.06%	49.72%	68.33%

Tot Cap (excl CWIP)	21,345	19,301	1,079	20,380	965
Ratemarking CE Ratio	53.58%	52.94%	49.30%	52.75%	71.09%
Total Debt	10,673				

INCOME STMT DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
Year=2011					
Inc Bef Int and Inc Tax	2,256	2,081	118	2,199	57
Income tax expense	600	558	31	589	11
Net Inc Avail to CE	1,051	978	53	1,031	20
Avg CE	11,249	10,071	530	10,600	649

Ret on Avg CE	9.34%	9.71%	10.01%	9.73%	3.08%
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(Net)Interest Expense	594	534	34	568	26
Avg Debt	10,675	9,744	612	10,356	319
Cost of Debt	5.56%	5.48%	5.56%	5.49%	8.15%

Pref Divs	11	11	0	11	0
Avg P/S	213	213	0	213	0
Cost of P/S	5.16%	5.16%	#DIV/0!	5.16%	#DIV/0!

PROOF:					
EBIT*	2,256	2,081	118	2,199	57
EBITDA*	3,140	2,910	166	3,076	64

CASH FLOW DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
Year=2011					
Net Income (CE + PS)	1,062	989	53	1,042	20
Depreciation & Amort	884	829	48	877	7
Deferred Inc taxes	491	462	30	492	-1
Other + non-cash (net)	204	137	(23)	114	90
CFO	2,641	2,417	108	2,525	116
Comm St. Dividends	693	681	32	713	(20)
Constr Exp.	1,967	1,785	105	1,890	77

UNADJUSTED METRICS					
EBIT Int Cov	3.8	3.9	3.5	3.9	2.2
EBITDA Int Cov	5.3	5.4	4.9	5.4	2.5
Avg Debt/EBITDA	3.4	3.3	3.7	3.4	5.0
FFO/Constr Exp. %	134.27%	135.41%	102.86%	133.60%	150.65%
D&A/Constr Exp. %	44.94%	46.44%	45.71%	46.40%	9.09%
Payout Ratio	65.94%	69.63%	60.38%	69.16%	-100.00%
CFO +Int/Int	5.4	5.5	4.2	5.4	5.5
CFO/Avg Debt	24.74%	24.81%	17.66%	24.38%	36.36%

BALANCE SHEET DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
YE2010					
Curr Portion LTD	5	0	3	3	2
Notes Payable	0	0	0	0	0
Total STD	5	0	3	3	2
Long Term Debt	10,671	9,743	610	10,353	318
Preferred Stock	213	213	0	213	0
Customer Deposits	289	276	13	289	0
Stockholder's Equity	11,061	9,923	527	10,450	611
Total Capitalization	22,239	20,155	1,153	21,308	931
Net Plant	23,863	22,401	1,400	23,801	62
CWIP	1,481	1,345	113	1,458	23

STD %	0.02%	0.00%	0.26%	0.01%	0.21%
LTD %	47.98%	48.34%	52.91%	48.59%	34.16%
P/S %	0.96%	1.06%	0.00%	1.00%	0.00%
CD%	1.30%	1.37%	1.13%		
CE %	49.74%	49.23%	45.71%	49.04%	65.63%

Tot Cap (excl CWIP)	20,758	18,810	1,040	19,850	908
Ratemarking CE Ratio	53.29%	52.75%	50.67%	52.64%	67.29%
Total Debt	10,676				

INCOME STMT DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
Year=2010					
Inc Bef Int and Inc Tax	2,160	1,948	110	2,058	102
Income tax expense	548	495	26	521	27
Net Inc Avail to CE	992	893	49	942	50
Avg CE	10,655	9,635	517	10,152	504

Ret on Avg CE	9.31%	9.27%	9.49%	9.28%	9.93%
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(Net)Interest Expense	609	549	35	584	25
Avg Debt	10,631	9,703	607	10,310	321
Cost of Debt	5.73%	5.66%	5.77%	5.66%	7.79%

Pref Divs	11	11	0	11	0
Avg P/S	213	213	0	213	0
Cost of P/S	5.16%	5.16%	#DIV/0!	5.16%	#DIV/0!

PROOF:					
EBIT	2,160	1,948	110	2,058	102
EBITDA	3,000	2,735	154	2,889	111

CASH FLOW DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
Year=2010					
Net Income (CE + PS)	1,003	904	49	953	50
Depreciation & Amort	840	787	44	831	9
Deferred Inc taxes	659	622	19	641	18
Other + non-cash (net)	(39)	(12)	17	5	(44)
CFO	2,463	2,301	129	2,430	33
Comm St. Dividends	629	670	32	702	(73)
Constr Exp.	2,014	1,853	135	1,988	26

EBIT Int Cov	3.5	3.5	3.1	3.5	4.1
EBITDA Int Cov	4.9	5.0	4.4	4.9	4.4
Avg Debt/EBITDA	3.5	3.5	3.9	3.6	2.9
FFO/Constr Exp. %	122.29%	124.18%	95.56%	122.23%	126.92%
D&A/Constr Exp. %	41.71%	42.47%	32.59%	41.80%	34.62%
Payout Ratio	63.41%	75.03%	65.31%	74.52%	-146.00%
CFO +Int/Int	5.0	5.2	4.7	5.2	2.3
CFO/Avg Debt	23.17%	23.71%	21.27%	23.57%	10.28%

BALANCE SHEET DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
YE2009					
Curr Portion LTD	731	625	103	728	3
Notes Payable	0	0	0	0	0
Total STD	731	625	103	728	3
Long Term Debt	9,854	9,038	497	9,535	319
Preferred Stock	213	213	0	213	0
Customer Deposits	274	259	15	274	0
Stockholder's Equity	10,249	9,347	506	9,853	396
Total Capitalization	21,321	19,482	1,121	20,603	718
Net Plant	22,464	21,146	1,303	22,449	15
CWIP	1,428	1,334	87	1,421	7

STD %	3.43%	3.21%	9.19%	3.53%	0.42%
LTD %	46.22%	46.39%	44.34%	46.28%	44.43%
P/S %	1.00%	1.09%	0.00%	1.03%	0.00%
CD%	1.29%	1.33%	1.34%		
CE %	48.07%	47.98%	45.14%	47.82%	55.15%

Tot Cap (excl CWIP)	19,893	18,148	1,034	19,182	711
Ratemaking CE Ratio	51.52%	51.50%	48.94%	51.37%	55.70%
Total Debt	10,585				

INCOME STMT DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
Year=2009					
Inc Bef Int and Inc Tax	1,930	1,749	94	1,843	87
Income tax expense	440	404	23	427	13
Net Inc Avail to CE	868	781	43	824	44
Avg CE	9,974	9,169	481	9,650	324

Ret on Avg CE	8.70%	8.52%	8.95%	8.54%	13.58%
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(Net)Interest Expense	611	553	28	581	30
Avg Debt	10,331	9,443	510	9,952	379
Cost of Debt	5.91%	5.86%	5.50%	5.84%	7.92%

Pref Divs	11	11	0	11	0
Avg P/S	213	213	0	213	0
Cost of P/S	5.16%	5.16%	#DIV/0!	5.16%	#DIV/0!

PROOF:					
EBIT	1,930	1,749	94	1,843	87
EBITDA	2,721	2,493	136	2,629	92

CASH FLOW DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
Year=2009					
Net Income (CE + PS)	879	792	43	835	44
Depreciation & Amort	791	744	42	786	5
Deferred Inc taxes	436	364	41	405	31
Other + non-cash (net)	(185)	(131)	1	(130)	(55)
CFO	1,921	1,769	127	1,896	25
Comm St. Dividends	601	652	32	684	(83)
Constr Exp.	2,179	2,045	127	2,172	7

EBIT Int Cov	3.2	3.2	3.4	3.2	2.9
EBITDA Int Cov	4.5	4.5	4.9	4.5	3.1
Avg Debt/EBITDA	3.8	3.8	3.7	3.8	4.1
FFO/Constr Exp. %	88.16%	86.50%	100.00%	87.29%	357.14%
D&A/Constr Exp. %	36.30%	36.38%	33.07%	36.19%	71.43%
Payout Ratio	69.24%	83.48%	74.42%	83.01%	-188.64%
CFO +Int/Int	4.1	4.2	5.5	4.3	1.8
CFO/Avg Debt	18.59%	18.73%	24.93%	19.05%	6.60%

BALANCE SHEET DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
YE2008					
Curr Portion LTD	482	475	3	478	4
Notes Payable	363	253	0	253	110
Total STD	845	728	3	731	114
Long Term Debt	9,232	8,494	416	8,910	322
Preferred Stock	213	213	0	213	0
Customer Deposits	265	250	15	265	0
Stockholder's Equity	9,698	8,991	455	9,446	252
Total Capitalization	20,253	18,676	889	19,565	688
Net Plant	20,874	19,654	1,210	20,864	10

STD %	4.17%	3.90%	0.34%	3.74%	16.57%
LTD %	45.58%	45.48%	46.79%	45.54%	46.80%
P/S %	1.05%	1.14%	0.00%	1.09%	0.00%
CD%	1.31%	1.34%	1.69%		
CE %	47.88%	48.14%	51.18%	48.28%	36.63%

Tot Cap (excl CWIP)	20,253	18,676	889	19,565	688
Adj CE Ratio	47.88%	48.14%	51.18%	48.28%	36.63%
Total Debt	10,077				

INCOME STMT DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
Year=2008					
Inc Bef Int and Inc Tax	2,001	1,683	97	1,780	221
Income tax expense	524	397	25	422	102
Net Inc Avail to CE	1,196	783	44	827	369
Avg CE	9,387	8,539	436	8,974	413

Ret on Avg CE	12.74%	9.17%	10.10%	9.22%	89.35%
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(Net)Interest Expense	544	492	28	520	24
Avg Debt	9,669	8,615	450	9,065	604
Cost of Debt	5.63%	5.71%	6.22%	5.74%	3.97%

Pref Divs	11	11	0	11	0
Avg P/S	213	213	0	213	0
Cost of P/S	5.16%	5.16%	#DIV/0!	5.16%	#DIV/0!

PROOF:					
EBIT	2,275	1,683	97	1,780	495
EBITDA	2,992	2,355	137	2,492	500

CASH FLOW DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
Year=2008					
Net Income (CE + PS)	1,207	794	44	838	369
Depreciation & Amort	717	672	40	712	5
Deferred Inc taxes	470	500	16	516	(46)
Other + non-cash (net)	(921)	(266)	(23)	(289)	(632)
CFO	1,473	1,700	77	1,777	(304)
Comm St. Dividends	618	618	31	649	(31)
Constr Exp.	2,326	2,202	120	2,322	4

EBIT Int Cov	4.2	3.4	3.5	3.4	20.6
EBITDA Int Cov	5.5	4.8	4.9	4.8	20.8
Avg Debt/EBITDA	3.2	3.7	3.3	3.6	1.2
FFO/Constr Exp. %	63.33%	77.20%	64.17%	76.53%	-7600.00%
D&A/Constr Exp. %	30.83%	30.52%	33.33%	30.66%	125.00%
Payout Ratio	51.67%	78.93%	70.45%	78.48%	-8.40%
CFO +Int/Int	3.7	4.5	3.8	4.4	(11.7)
CFO/Avg Debt	15.24%	19.73%	17.11%	19.60%	-50.33%

BALANCE SHEET DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
YE2007					
Curr Portion LTD	809	280	3	283	526
Notes Payable	840	555	45	600	240
Total STD	1,649	835	48	883	766
Long Term Debt	7,611	7,172	433	7,605	6
Preferred Stock	213	213	0	213	0
Customer Deposits	249	234	15	249	0
Stockholder's Equity	9,076	8,086	416	8,502	574
Total Capitalization	18,798	16,540	912	17,452	1,346
Net Plant	19,914	18,005	1,120	19,125	789

STD %	8.77%	5.05%	5.26%	5.06%	56.91%
LTD %	40.49%	43.36%	47.48%	43.58%	0.45%
P/S %	1.13%	1.29%	0.00%	1.22%	0.00%
CD%	1.32%	1.41%	1.64%		
CE %	48.28%	48.89%	45.61%	48.72%	42.64%

Tot Cap (excl CWIP)	18,798	16,540	912	17,452	1,346
Adj CE Ratio	48.28%	48.89%	45.61%	48.72%	42.64%
Total Debt	9,260				

INCOME STMT DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
Year=2007					
Inc Bef Int and Inc Tax	1,890	1,705	103	1,808	82
Income tax expense	437	392	23	415	22
Net Inc Avail to CE	929	844	46	890	39
Avg CE	8,540	7,609	388	7,997	543

Ret on Avg CE	10.88%	11.09%	11.86%	11.13%	7.18%
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(Net)Interest Expense	517	458	34	492	25
Avg Debt	9,025	7,631	487	8,118	907
Cost of Debt	5.73%	6.00%	6.99%	6.06%	2.76%

Pref Divs	11	11	0	11	0
Avg P/S	213	213	0	213	0
Cost of P/S	5.16%	5.16%	#DIV/0!	5.16%	#DIV/0!

PROOF:					
EBIT	1,894	1,705	103	1,808	86
EBITDA	2,561	2,298	141	2,439	122

CASH FLOW DATA	CEI	CECONY	O&R	Total Op Cos	Residual HoldCo
Year=2007					
Net Income (CE + PS)	940	855	46	901	39
Depreciation & Amort	667	593	38	631	36
Deferred Inc taxes	335	320	15	335	0
Other + non-cash (net)	(444)	(540)	4	(536)	92
CFO	1,498	1,228	103	1,331	167
Comm St. Dividends	582	548	31	579	3
Constr Exp.	1,934	1,816	112	1,928	6

EBIT Int Cov	3.7	3.7	3.0	3.7	3.4
EBITDA Int Cov	5.0	5.0	4.1	5.0	4.9
Avg Debt/EBITDA	3.5	3.3	3.5	3.3	7.4
FFO/Constr Exp. %	77.46%	67.62%	91.96%	69.04%	2783.33%
D&A/Constr Exp. %	34.49%	32.65%	33.93%	32.73%	600.00%
Payout Ratio	62.65%	64.93%	67.39%	65.06%	7.69%
CFO +Int/Int	3.9	3.7	4.0	3.7	7.7
CFO/Avg Debt	16.60%	16.09%	21.17%	16.40%	18.41%

Note:
* Outstanding debt balances and annual costs are prorated for the number of months outstanding during the 12-month period.

THE JOURNAL OF FINANCE • VOL. XXXV, NO. 4 • SEPTEMBER 1980

On Forecasting Long-Term Interest Rates: Is the Success of the No-Change Prediction Surprising?

DR JAMES E. PESANDO*

I. Introduction

IN A RECENT ARTICLE in this Journal, Elliott and Baier [1] provide empirical evidence that the no-change forecast decidedly outperforms the "unconditional predictions" of long-term interest rates associated with the Modigliani-Sutch, Modigliani-Shiller and other well-known models of interest rate determination. The authors use "unconditional predictions" to refer to forecasts generated by variants of these models in which the current long-term rate is regressed on the relevant sets of exogenous variables lagged one period. These regressions—and the subsequent forecasts—are "unconditional" in the sense that they restrict the information set used to track long-term interest rates to that which is known at the beginning of the period.

The crucial issue that the authors do not address, however, is whether the superior forecasting performance of the no-change prediction is or is not surprising on *a priori* grounds. This issue is of extreme importance in interpreting their findings. One possible interpretation of the Elliott-Baier results, for example, is that the specific information sets associated with the six models are not valuable in a forecasting context, but other information sets may be. In fact, the empirical results reported by Elliott-Baier are not surprising in view of the accumulating evidence that (1) the bond market is efficient and (2) term premiums, if they exist, are time-invariant. These results imply, in effect, that short-term movements in long-term interest rates will not be "forecastable". This important point is reviewed briefly below.

II. The No-Change Prediction: A "Naive" Forecast?

The fact that long-term interest rates will approximately follow a martingale sequence under the conditions described above, and hence that the no-change prediction will approximate the optimal forecast, has been shown by both Sargent (1976) and Pesando (1978). Let $R_{n,t}$ denote the interest rate (for simplicity) on an n -period, non-coupon, bond in period t , ϕ_t the information available to the market in period t , and ${}_{t+i}f_{1,t}$ the forward rate at time t for the one-period bond rate in period $t + i$. Then, under the joint hypothesis of market efficiency and the pure

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expectations model of the term structure, the ex ante changes in the long-term rate can be approximated as follows:

$$E(\tilde{R}_{n,t} | \phi_{t-1}) - R_{n,t-1} = \frac{1}{n} [E({}_{t+n-1}\tilde{f}_{1,t} | \phi_{t-1}) - R_{1,t-1}] \quad (1)$$

The term on the right-hand side of equation (1), which represents the nonoverlapping one-period rates, clearly approaches zero as n gets large. In this case, the optimal forecast of the long-term rate is simply its current value; that is, the optimal forecast is the no-change extrapolation. If $\Psi_{n,t}$ represents the term premium accorded an n -period bond in period t , then (1) may be rewritten as:

$$E(\tilde{R}_{n,t} | \phi_{t-1}) - R_{n,t-1} = \frac{1}{n} [E({}_{t+n-1}\tilde{f}_{1,t} | \phi_{t-1}) - R_{1,t-1}] + E(\tilde{\psi}_{n,t} | \phi_{t-1}) - \psi_{n,t-1} \quad (2)$$

If this term premium is constant, then (2) simply reduces to (1) and the previous result holds.

Elliott-Baier employ monthly data in their forecasting experiments. Assume, for the sake of argument, that the several long-term rates employed in their study have a representative term to maturity of 10 years. (The synthetic series of U.S. Government bonds employed in the study has an exact maturity of 15 years.) If interest rates are expressed at annual rates, then n equals 120 and thus the ex ante change defined in (1) must be very close to zero, unless the short-term rate is "very" nonstationary. Suppose, for example, that $R_{1,t-1}$ equals five per cent (.05) and that $E({}_{t+n-1}\tilde{f}_{1,t} | \phi_{t-1})$ equals 10 per cent, which would be consistent with a sharply rising yield curve. The ex ante change in the long-term rate, in spite of the 500 basis point difference in the respective short-term rates, is only $500 \div 120$ or approximately 4 basis points. Note, by way of contrast, that if the unit of observation were annual rather than monthly, these same figures would imply—since n would equal 10—an ex ante change of more than 40 basis points in the long-term rate. These figures highlight the fact that it is short-run movements in long-term rates which are not likely to be "forecastable" under the joint hypothesis of market efficiency and a time-invariant term premium.

For non-coupon bonds, as noted by Pesando [5] the expression analogous to (1) is more complicated, but the martingale approximation remains quite close. Intuitively, the martingale approximation—and hence the random walk characteristic of long-term rates—stems from the fact that over short time intervals (one month in the case at hand), the percentage change in bond prices necessary to equate the ex ante returns on short- and long-term securities (up to a time-invariant term premium) is very small. As a result, the implied ex ante changes in long-term rates are very close to zero. In a recent paper (Pesando 1979a), I calculated—for quarterly data—the ex ante changes in long-term Government of Canada and long-term Canadian corporate bonds implied by their yields and the yields on 90-day Treasury Bills and 90-day finance company paper, respectively.¹

¹ For purposes of these calculations, the (assumed) constant term premiums were set equal to the mean spreads between short- and long-term interest rates in the sample period. The representatives terms to maturity for the two interest rate series were assumed to equal 17 years, although complications posed by call options and sinking funds may cloud the interpretation of this figure in the case of corporate bonds.

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The mean absolute values of the ex ante changes in these long-term rates for the sample period 1957:1–1979:1 equalled 2.07 basis points and 2.60 basis points, respectively. If monthly data were employed, the corresponding ex ante changes would be approximately one-third as large. With monthly data, the mean absolute values of the ex ante changes in Government of Canada and Canadian corporate bonds would thus be less than a single basis point. Clearly, if the bond market is efficient and if the term premium accorded long-term interest rate is time-invariant, then agents without access to inside information are not likely to be able to forecast short-term movements in long-term interest rates.

III. Conclusion

Those who work in the capital asset pricing framework of modern finance theory tend to treat the term premium—which is related to the covariance of bond returns and the return to the market portfolio—as constant over time. Many—if not most—of those who have conducted empirical studies of the determinants of term premiums have concluded that they may well be time-invariant. In the absence of convincing evidence of the existence of time-varying term premiums, and in view of the strong *a priori* belief in market efficiency, the success of the “no-change” prediction in the forecasting experiments conducted by Elliott-Baier is not surprising. Short-run movements in long-term interest rates, quite simply, are not likely to be “forecastable”. The failure of recorded forecasts to outperform the no-change prediction of the martingale model, in both the United States (Prell [6], Fraser [2]) and Canada (Pesando [3]), is also noteworthy in this regard.

REFERENCES

1. J. W. Elliott and Jerome R. Baier. “Econometric Models and Current Interest Rates: How Well Do They Predict Future Rates?” *Journal of Finance* 34: No. 4 (September 1979).
2. D. R. Fraser. “On the Accuracy and Usefulness of Interest Rate Forecasts”. *Business Economics* XII: No. 4 (September 1977).
3. James E. Pesando. “Forecasting Interest Rates: An Efficient Markets Perspective”. Mimeograph, University of Toronto (August 1979(a)).
4. ———. “On the Efficiency of the Bond Market: Some Canadian Evidence”. *Journal of Political Economy* 86, No. 6 (December 1978).
5. ———. “On the Random Walk Characteristics of Short- and Long-term Interest Rates in an Efficient Market”. *Journal of Money, Credit and Banking*, forthcoming (1979(b)).
6. M. J. Prell. “How Well Do the Experts Forecast Interest Rates?” Federal Reserve Bank of Kansas City *Monthly Review* (September–October 1973).
7. Thomas J. Sargent. “A Classical Macroeconometric Model for the United States”. *Journal of Political Economy* 84, No. 2 (April 1976).

JUST HOW BAD ARE ECONOMISTS AT PREDICTING INTEREST RATES? (AND WHAT ARE THE IMPLICATIONS FOR INVESTORS?)

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On January 2, 1997, the *Wall Street Journal* published its semiannual survey of economists. Most of the fifty-seven economists surveyed predicted that the yield on the thirty-year Treasury bond, then at 6.64%, would drop by July 1. The consensus estimate for this yield was 6.52%.

Fears of inflation, however, have recently caused interest rates to rise. The yield at the time of this writing in mid-April is over 7%. Thus, barring a major downward shift in interest rates, economists will have wrongly predicted the direction of interest rates.

Some readers will not be surprised by this result, for economists have a notoriously bad reputation for huge forecasting errors. But just how bad are economists at predicting interest rates? And if these experts, whose careers often depend on the accuracy of their predictions, cannot predict interest rates, what are the implications for actively managed bond funds?

I address these questions by analyzing the *Wall Street Journal* survey of economists.

THE DATA AND RESULTS

Economists are employed in nearly all segments of the economy. One of the primary duties of economists in the financial sector is to forecast the economy, or, more specifically, to forecast important

economic data such as GDP growth, inflation, and interest rates. Every six months, in late December and late June, the *Wall Street Journal* surveys a group of economists, asking for their forecasts of interest rates, GDP growth, inflation, and the value of the dollar against the yen. The forecasts are published in the first week of January and July.

The participating economists work primarily in the financial sector, most notably investment banks and commercial banks. Only three of the fifty-seven economists participating in the December 1996 survey were then in academia. The number of economists participating has increased steadily from twelve in 1981 to about sixty in the mid-1990s.

The economists have been predicting, six months in advance, the yield on three-month Treasury bills and thirty-year Treasury bonds since December 1981. Each economist provides an estimate for each interest rate, and then a consensus estimate is calculated, which is simply the arithmetic mean of all the estimates.

Can economists predict interest rates? The answer is emphatically "no," regardless of the measure used.

There have been thirty six-month surveys completed since December 1981. The Exhibit provides the consensus estimate and the actual yield for the three-month and thirty-year Treasury securities.

Rates on three-month Treasury bills moved in the *opposite* direction of the consensus prediction in sixteen of these contests (53%). That economists predicted the direction of short-term interest rates correctly almost half of the time is the good news. The bad news is that the consensus estimate for the thirty-year Treasury bond has been in the *wrong* direction in twenty of the thirty contests (67%).

The average error for the consensus estimate is 79 basis points for the Treasury bill, and 86 basis points for the thirty-year bond. Assuming interest rates would stay the same each period yields average errors of 74

and 78 basis points, respectively. Thus, investors who assumed interest rates would remain constant were more accurate than the consensus estimate.

Incorrectly forecasting the direction of interest rates is not very costly for investors if rates move very little. In fact, economists have been least accurate when interest rate changes were largest! The rates on the three-month Treasury bill moved 100 basis points or more on ten occasions. The consensus estimate was in the right direction on six of these occasions, yet the consensus underestimated the move by an average of 99 basis points.

EXHIBIT

WALL STREET JOURNAL CONSENSUS INTEREST RATE FORECAST

DATE PUBLISHED	3-MONTH TREASURY BILL			30-YEAR TREASURY BOND		
	CONSENSUS FORECAST (%)	ACTUAL YIELD (%)	CORRECT DIRECTION?	CONSENSUS FORECAST (%)	ACTUAL YIELD (%)	CORRECT DIRECTION? (%)
Jan-82	11.06	12.43	Wrong	13.05	13.92	Wrong
Jul-82	11.61	11.08	Right	13.27	13.62	Right
Jan-83	7.37	8.75	Right	10.11	10.98	Right
Jul-83	8.60	8.95	Wrong	10.59	11.87	Wrong
Jan-84	8.72	9.90	Wrong	11.39	13.64	Wrong
Jul-84	10.64	7.84	Wrong	13.78	11.53	Wrong
Jan-85	8.56	6.83	Wrong	11.60	10.44	Wrong
Jul-85	7.31	7.08	Right	10.51	9.27	Wrong
Jan-86	6.96	5.98	Right	9.45	7.28	Wrong
Jul-86	6.14	5.66	Wrong	7.63	7.49	Right
Jan-87	4.98	5.73	Wrong	7.05	8.50	Wrong
Jul-87	5.91	5.67	Wrong	8.45	8.98	Wrong
Jan-88	5.70	6.54	Right	8.65	8.83	Right
Jul-88	6.77	8.09	Right	9.36	8.99	Right
Jan-89	8.29	7.98	Wrong	9.25	8.04	Wrong
Jul-89	7.76	7.79	Right	8.12	7.97	Wrong
Jan-90	7.03	7.98	Wrong	7.62	8.40	Wrong
Jul-90	7.56	6.62	Right	8.16	8.24	Right
Jan-91	6.14	5.62	Right	7.65	8.41	Wrong
Jul-91	5.84	3.93	Wrong	8.22	7.39	Right
Jan-92	3.80	3.63	Right	7.30	7.78	Wrong
Jul-92	3.54	3.15	Right	7.61	7.39	Right
Jan-93	3.41	3.07	Wrong	7.44	6.67	Wrong
Jul-93	3.34	3.05	Wrong	6.84	6.34	Wrong
Jan-94	3.40	4.15	Right	6.26	7.61	Wrong
Jul-94	4.67	5.70	Right	7.30	7.87	Wrong
Jan-95	6.50	5.44	Wrong	7.94	6.62	Wrong
Jul-95	5.45	5.08	Wrong	6.62	5.94	Wrong
Jan-96	4.90	5.15	Wrong	6.00	6.89	Right
Jul-96	5.31	5.19	Right	6.86	6.64	Right
Jan-97	5.10	?	?	6.52	?	?

Again, this is the good news. The yield on the thirty-year bond has moved more than 100 basis points on ten occasions. The consensus estimate was in the *wrong direction* on eight of these occasions. One of the two correct guesses was a consensus estimate of a 19-basis point drop when rates dropped 102 basis points. Economists therefore essentially missed on nine of the ten biggest interest rate movements in the last fourteen years.

The survey data from the *Wall Street Journal* clearly show that economists as a group cannot predict interest rates. Might there be some individual economists, however, who can successfully predict interest rates? Further analysis suggests everyone is almost equally inaccurate.

Forty-four economists have participated in ten or more contests. Of these, only thirteen participants guessed the right direction of long-term interest rates more than 50% of the time; none of these professionals exceeded a 60% accuracy rate.¹ The median accuracy rate is 44%. The figures are only slightly better for the three-month rate, with twenty-four economists above 50%, and one expert actually getting the direction right two-thirds of the time.

For a final test, I examined future predictions of the economists with the most accurate predictions to determine if success could continue for the short term. The three economists in each survey with the closest prediction for the thirty-year bond were examined, although ties cause as many as seven economists to be included in this winner's bracket. Only 44% of these economists (48 of 108) were in the top half of the next survey, suggesting that economists with the closest forecasts cannot repeat their performance.

IMPLICATIONS FOR INVESTORS

The inability of economists to forecast interest rates has important implications for investors. Bond prices depend almost entirely on two factors: default risk and interest rates.² To earn above-market returns in the bond market, one needs to be able to predict default risk or interest rates better than the market. Bond rating agencies like Moody's and Standard & Poor's do an outstanding job at predicting default risk. Consequently, it is improbable that fixed-income fund managers can predict default risk better than the market consensus.

The ability to earn above-market returns in bonds then boils down to predicting interest rates correctly, but my analysis of the *Wall Street Journal*

survey clearly shows that economists working for top investment banks, commercial banks, money management firms, and investment newsletters have no ability in this department.

If fund managers cannot accurately predict interest rates, actively managed bond funds have no edge over passively managed funds. Once management fees are factored in, the advantage goes to index funds. Indeed, there is overwhelming evidence that the bond market is brutally efficient, and the performance of bond managers reflects this efficiency.

For example, as of June 1, 1996, only 23.4% of taxable bond funds and 33.9% of tax-free bond funds had a one-year record better than the relevant bond index, compared with 44.1% of general equity funds and 58.5% of aggressive growth funds. In a longer-term study, Firman [1994] observes that only 128 of 800 fixed-income pension managers (16%) have a ten-year record better than the relevant bond index.³

CONCLUSION

Economists participating in the *Wall Street Journal* forecasting survey have no ability to predict interest rates. Since interest rates cannot be predicted, bond managers have no reliable method with which to earn above-market returns. Instead, actively managed bond funds, shackled by management fees, and with no superior ability to predict interest rates, have generally underperformed the relevant bond index. Bond index funds should appeal to investors for this reason.

ENDNOTES

¹Six participants in the most recent survey predicted the yield on the thirty-year Treasury bond out to the second decimal point (e.g., 6.79% instead of rounding to 6.8%).

²Some bonds are also subject to changes in the tax code, as the inverse relationship between the price of municipal bonds and the popularity of flat tax proposals clearly indicates.

³See Blake, Elton, and Gruber [1993] for further evidence. For an overview on the efficiency of capital markets, see Fama [1991].

REFERENCES

- Blake, Christopher R., Edwin J. Elton, and Martin J. Gruber. "The Performance of Bond Mutual Funds." *Journal of Business*, 66 (July 1993), pp. 371-403.
- Fama, Eugene F. "Efficient Capital Markets: II." *Journal of Finance*, 46 (December 1991), pp. 1575-1617.
- Firman, Jaclyn. "The Coming Investor Revolt." *Fortune*, October 31, 1994, pp. 66-76.

Professional Forecasts of Interest Rates and Exchange Rates: Evidence from the Wall Street Journal's Panel of Economists

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March 2005

Abstract

We use individual economists' 6-month-ahead forecasts of interest rates and exchange rates from the *Wall Street Journal's* survey to test for forecast unbiasedness, accuracy, and heterogeneity. We find that a majority of economists produced unbiased forecasts but that none predicted directions of changes more accurately than chance. We find that the forecast accuracy of most of the economists is statistically indistinguishable from that of the random walk model when forecasting the Treasury bill rate but that the forecast accuracy is significantly worse for many of the forecasters for predictions of the Treasury bond rate and the exchange rate.

Regressions involving deviations in economists' forecasts from forecast averages produced evidence of systematic heterogeneity across economists, including evidence that independent economists make more radical forecasts.

JEL code: E47

Keywords: Forecast evaluation, interest rates, exchange rate

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Professional Forecasts of Interest Rates and Exchange Rates:
Evidence from the Wall Street Journal's Panel of Economists

Professional forecasters' predictions of macroeconomic variables are of widespread interest. Governments, businesses, and households purchase forecasts, presumably to help them form their own expectations and aid in economic decision-making.¹ Economic researchers increasingly use surveys of professional forecasters' predictions as proxies of otherwise unobservable expectations in studying asset price determination.² But compared with the effort put into making macroeconomic forecasts, the effort put into assessing forecast quality ex post is small (Fildes and Stekler (2002), p 462).

Ex post assessments of forecast quality are potentially valuable to forecasters and users of forecasts alike. The theory of rational expectations implies that, if professional forecasters understand fundamental economic processes, they will produce unbiased, identical forecasts given access to the same information and presented with similar incentives with respect to forecast accuracy. If ex post assessments show forecasters' predictions to be unbiased and statistically identical, they serve to increase confidence in the profession's knowledge of economic processes, researchers' use of forecasts to proxy economic expectations, and agents' use of forecasts to inform economic decision-making. But if assessments yield evidence of bias or heterogeneity, they call for a reexamination of assumptions about information access, incentives and, possibly, understanding of economic processes.

¹ For example, Carroll (2003) reports evidence that households use the reported forecasts of professional economists in forming their own expectations.

² For example, Anderson et al (2003) and the references cited by them, discuss researchers' use of professional economists' forecasts of macroeconomic variables to distinguish expected from unexpected macroeconomic announcements in studies of financial market reactions to economic news. Frankel and Froot (1987) and MacDonald (2000) observe that forecasts of interest rates and exchange rates potentially enable researchers to separate the confounding effects of expectations and time-varying risk premiums.

Of the studies that assess forecast quality from survey data, most focus on inflation, GDP and exchange rate forecasts and several cast doubt on the rationality of forecasters (MacDonald (2000)). For example Ito (1990), using survey data of individual economists' exchange rate forecasts, finds evidence of heterogeneous expectations, as do MacDonald and Marsh (1996), who use individual economists' exchange rate forecasts from a different survey. Lamont (2002) finds that the patterns of economists' forecasts of real GDP, the unemployment rate and the inflation rate are inconsistent with the single goal of forecast accuracy, suggesting strategic behavior. Laster *et al.* (1999) also finds evidence of strategic behavior by forecasters making real GDP forecasts from survey data which groups forecasters by industry rather than identifying them individually, which raises the issue of how carefully survey participants make their predictions when they are not identified. Compared with inflation, GDP and exchange rate forecasting, interest rate forecasting has received less attention.

To help address the comparative dearth of forecast assessments and to contribute to the debate on forecaster rationality we analyze interest rate and exchange rate forecasts from a highly visible but relatively little studied survey of forecasters, the *Wall Street Journal's* panel of economists. This survey is particularly well-suited to assessing forecast quality because the names and employers of the forecaster-economists are published along side their forecasts, which should give the economists strong incentives to think carefully about their forecasts. We focus on interest rate and exchange rate forecasts because their actual values are never subject to subsequent revision, unlike, say GDP, so there is no question about the actual values economists were predicting.³ In addition, the *Wall Street Journal* surveys contain consistent data on interest rate and exchange rate forecasts for a longer period than on other variables. We proceed by testing whether economists' forecasts are unbiased, more accurate than naïve prediction rules,

³ Keane and Runkle (1990) present evidence that using preliminary versus revised data can change the conclusions from unbiasedness tests.

and heterogeneous or indicative of strategic behavior by economists. We study the forecasts of individual economists as well as the survey means, allowing for the possibility that the interest rates and exchanges rates forecasted are non-stationary. We are unaware of previous papers that allow for non-stationarity in the actual data when applying tests of forecast unbiasedness to individual data. We are also unaware of previous papers using interest rate and exchange rate forecasts from the *Wall Street Journal* survey to study forecast unbiasedness, assess the statistical significance of forecast accuracy, or investigate forecast heterogeneity and possibly strategic behavior by economists.

To preview our results, we find that a majority of economists produce forecasts that are unbiased and that most produce forecasts that are less accurate than the forecasts generated by a random walk model. While efficient financial markets should make accurate forecasting of interest rates or exchange rates impossible, rational forecasters should not do significantly worse than a random walk model. We find that the economists' forecasts exhibit the same kind of heterogeneity found by Ito (1990) and MacDonald and Marsh (1996), using Japanese and European survey data, respectively. When we apply the models of Laster *et al.* (1999) and Lamont (2002) to our economists' forecasts we find evidence of strategic behavior similar to Laster *et al.*, but contrary to Lamont's finding that economists make more extreme forecasts as they age, we find that more experienced economists make less radical forecasts.

The rest of the paper is organized as follows. Section 1 briefly reviews some of the past work on evaluating survey measures of expectations. Section 2 describes our data. Section 3 reports our empirical results and section 4 offers some conclusions.

1. Review of Past Work

Although researchers have put less effort towards assessing professional economists' forecasts than seems warranted, the existing research focuses on three issues.⁴ The first is whether mean or median responses, usually referred to as consensus forecasts, give misleading inferences about the unbiasedness and rationality of individual forecasters. Figlewski and Wachtel (1981) report that pooling individuals' inflation forecasts from the Livingston survey produces stronger evidence of bias than using survey averages. Keane and Runkle (1990) find that individuals' inflation forecasts from the Survey of Professional Forecasters (SPF) are generally unbiased whereas Bonham and Cohen (2001) find many of the forecasters in the SPF to be biased and systematically heterogeneous so that pooling their forecasts is inappropriate.⁵ The finding of bias in inflation expectations runs contrary to rational expectations, and might reflect heterogeneity of expectations. Whether the individual forecasts of interest rates and exchange rates of professional economists are similarly plagued by bias is a question addressed below.

A second issue of research focus is whether the standard tests of economists' forecast unbiasedness are rendered invalid by nonstationarity in the variables economists' forecast.⁶ Liu and Maddala (1992) find that exchange rate forecasts from the Money Market Services (MMS) survey appear to be nonstationary but cointegrated with the actual data and thus, potentially unbiased; when they introduce a restricted cointegration test they find that the forecasts are indeed unbiased. In contrast, Aggarwal *et al.* (1995) and Schirm (2003) find that only about half

⁴ Much of the work on evaluating survey measures of expectations focuses on inflation forecasts. See Croushore (1998) and Thomas (1999) for reviews of this work. MacDonald (2000) examines previous work on financial market expectations.

⁵ Bonham and Cohen (2001) test whether the coefficients of the standard unbiasedness equation are the same across individuals and reject this hypothesis. Batchelor and Dua (1991) use individual forecast data from the Blue Chip Economic Indicators and find that most individuals are unbiased.

⁶ The standard test is to regress the actual value being forecasted on the forecast and test that the intercept is zero and the slope is one.

the macroeconomic variables forecasted by economists in the MMS surveys appear unbiased after testing for nonstationarity and cointegration.⁷ But Osterberg (2000), applying the Liu-Maddala techniques to more recent exchange rate forecasts in the MMS survey, finds that these forecasts are unbiased. The aforementioned tests, it should be noted, all use the median responses from the MMS surveys rather than forecasts of individual economists. To our knowledge the issue of variable non-stationarity and forecast unbiasedness has not been investigated using forecasts by individual economists.

A third issue of research focus concerns forecast heterogeneity and strategic behavior by forecasters as a potential source of such heterogeneity. Study of this issue has been furthered by the availability of data reporting forecasts by individuals. Ito (1990) and MacDonald and Marsh (1996) use individual data and report evidence supporting systematically heterogeneous expectations about exchange rate movements. The latter paper also finds that variations in the degree of heterogeneity can help explain the volume of trading in financial markets. Scharfstein and Stein (1990) and Erbeck and Waldmann (1996) argue that the incentive structure facing forecasters leads to “herding,” that is, making forecasts that are close to the mean or “consensus” forecast. In contrast, Laster *et al.* (1999) and Lamont (2002) suggest that incentives could lead forecasters to make forecasts that are more extreme than their true expectations if forecasters are rewarded not only for being right but for being right when others are wrong. Laster *et al.* (1999) find evidence consistent with strategic forecasting using forecasts of real GDP from the Blue Chip Economic Indicators, although their data are not ideal for testing their theory since

⁷ These variables include the consumer price index, the producer price index, the M₁ money supply, personal income, durable goods, industrial production, retail sales, the index of leading indicators, housing starts, the trade balance, and unemployment.

individual forecasters are not identified, only the industry of their employment.⁸ Lamont (2002) uses *Business Week's* annual set of economists' forecasts for real GDP growth, inflation, and unemployment to test whether forecasters make more radical predictions when they own their own firms, and hence may gain the most from publicity. He finds support for this hypothesis, as well as evidence that forecasters produce forecasts that deviate more from the mean forecast as they age. Perhaps due to the paucity of data on interest rate and exchange rate forecasts by individuals, the issue of heterogeneity in interest rate forecasts and strategic behavior in forecasting interest rates and exchange rates remains largely unstudied.

To investigate the rationality, accuracy, and heterogeneity for individual forecasters' interest rate and exchange rate forecasts we use data from the *Wall Street Journal's* bi-annual survey of economists. Several researchers have used these data previously, mainly to examine forecast accuracy. Kolb and Stekler (1996) examine the six-month-ahead interest rate forecasts from 1982 through January 1990 and find little evidence that forecasters, individually or on average, can predict the sign of interest rate changes. Greer reports similar evidence for predicting the direction of one-year changes for various variables for 1984-1997 (Greer (1999)) and for the long-term interest rate for 1984-1998 (Greer (2003)). Cho (1996) evaluates the six-month-ahead predictions of twenty-four forecasters who participated in all the surveys from December 1989 through June 1994. He finds that about 80 percent of the forecasters predicted the short-term interest rate more accurately than a random walk model but that very few predicted the long-term interest rate or the exchange rate better than a random walk model. Eisenbeis *et al.* (2002) uses the *Wall Street Journal* data from 1986 to 1999 to illustrate a new approach to ranking forecasters across variables that differ in volatility and cross-correlation.

⁸ Pons-Novell (2003), using Livingston survey data on forecasts of the unemployment rate, found support for industry effects as in Laster *et al.* (1999) but not the age effect found by Lamont(2002) . The Livingston data, however, do not identify the individual respondents by name.

But to our knowledge, researchers have not previously used the *Wall Street Journal* data to test for unbiasedness of individual forecasts or to test for strategic forecasting by individual forecasters.

After describing our data, we employ them to investigate the dominating issues in the recent work on expectations of economic variables: unbiasedness of individuals' forecasts, the implications of nonstationarity of the data for the accuracy of unbiasedness tests, and systematic heterogeneity of forecasts, possibly as a result of strategic behavior. In addition, we go beyond past researchers' use of the *Wall Street Journal* data by examining the statistical significance of the surveyed economists' forecast accuracy.

2. The *Wall Street Journal* survey data

Since 1981 the *Wall Street Journal* has published forecasts of several economic variables by a set of economists at the beginning and at the mid-point of each year. The economists are identified both by name and by employer. The survey is dominated by economists employed by banks and securities firms but it also includes representatives from non-financial industries, consulting and forecasting companies, universities and professional associations.⁹ The initial survey presented economists' forecasts of the prime rate. In January 1982 the survey introduced forecasts of the Treasury bill and Treasury bond interest rates. Additional forecasts have been added including the CPI inflation rate, real GDP growth, and the dollar-yen exchange rate, among others. In the January survey economists are asked for their forecasts of the Treasury bill rate, Treasury bond rate, and the dollar-yen exchange rates for the last business day of June, and

⁹ For respondents that appeared in at least six surveys from January 1982 through July 2002, the employer mix is as follows: banks (30 individuals and 394 observations), econometric modelers (5 and 108), independent forecasters (26 and 325), industrial corporations (5 and 41), securities firms (39 and 626), and others (10 and 154).

in the July survey they are asked for their forecasts for the last business day of December.¹⁰ The surveys are published in the first week of January and July, along with commentary on the forecasts and, more recently, discussion of the accuracy of the last set of forecasts.¹¹

In this paper we examine the six-month-ahead forecasts of the Treasury bill and Treasury bond rates that began in 1982 along with the six-month-ahead forecasts of the dollar-yen exchange rate that began in 1989. Our sample ends with the July 2002 survey. This long time period allows larger sample sizes for individual forecasters and a larger number of participants. We choose the interest rate and exchange rate variables both because they appear on the largest number of surveys and because the actual data are not revised so there is no question of what variable the forecasters were predicting.¹²

Table 1 reports the means and standard deviations of the survey responses along with the range, and number of respondents. The number of respondents varies over time: only twelve economists participated in the January 1982 survey compared with fifty-five in the July 2002 survey. There is also considerable turnover in the respondents themselves. Table 1 also reports the actual values for the Treasury bill rate, the Treasury bond rate, and the yen-dollar exchange rate on the last business day of June and December.

For several tests we restrict the sample to the set of respondents that made at least twenty forecasts. Table 2 reports the names, participation dates, and professional affiliations of these respondents from 1982 through 2002.

¹⁰ Respondents have often been asked for 12-month ahead forecasts but these are not available for the entire period.

¹¹ The selection of survey respondents does not depend on their past performance. The *Journal* tries to get broad representation but also wants to include the chief economists from major financial institutions. We thank Jon Hilsenrath of the *Wall Street Journal* for this information.

¹² There was a change in the definition of the three-month Treasury bill rate from the discount yield to the bond-equivalent yield starting with the July 1989 survey. The long-term bond rate refers to the thirty-year bond until the July 2001 survey when it was changed to the ten-year rate. All data are available from the authors on request.

Figures 1-3 show the dispersion in the forecast errors, defined as actual minus predicted, of the Treasury bill rate, the Treasury bond rate, and the yen-dollar exchange rate. The figures are similar in showing a considerable spread in forecasts. The assumption that agents form unique rational expectations using the same model and same information is clearly not supported by the data. Figure 1 indicates that the errors in predicting the Treasury bill rate are largely of one sign for about half the surveys, suggesting that while expectations vary across individuals a common source exists for at least some of the error. Figures 2 and 3 provide stronger support for this interpretation, where an even higher proportion of the survey errors are of the same sign for the long-term bond rate and the exchange rate. The correlation coefficient for the two interest rate forecast errors is .66, indicating that most of the forecast errors are from unpredicted shifts in the yield curve rather than unpredicted changes in its slope. There is little evidence of correlation in the errors for interest rates and the exchange rate.¹³

3. Evaluating the survey data

3.1. Tests of unbiasedness

A major issue in the literature on economic expectations is unbiasedness, which is a requirement for rationality when a forecaster's loss function is symmetric about the forecast error. Denoting the forecast of a variable made at time (t-1) for time t as ${}_{t-1}F_t$ and the actual value of the variable as A_t , the usual test involves estimating

$$A_t = \alpha + \beta {}_{t-1}F_t + \varepsilon_t \quad [1]$$

¹³ For the forecast errors in the figures, the correlation between the Treasury bill forecast errors and the exchange rate errors is .02 and the correlation between the Treasury bond forecast errors and the exchange rate errors is -.07.

where ε_t is a random error term. A forecast series is unbiased if the joint hypothesis that $\alpha=0$ and $\beta=1$ cannot be rejected.¹⁴

As is well-known estimating [1] may produce misleading inferences when A and F are nonstationary and not cointegrated since the error term will also be nonstationary, resulting in the spurious regression problem noted by Granger and Newbold (1974). If the actual series is nonstationary, an unbiased forecast must also be nonstationary and the two series must be cointegrated with a cointegrating vector of zero and one. Liu and Maddala (1992) suggest a restricted cointegration test when A and F are I(1): impose the restrictions $\alpha=0$ and $\beta=1$ and use the data to compute forecast errors; if the forecast errors are stationary, the restrictions are supported and the forecasts are unbiased since the cointegrating vector is unique with only two series.¹⁵ We perform the Liu-Maddala test below after first establishing whether A and F are I(1).

To establish that the As -- the daily Treasury bill, Treasury bond and exchange rate data sampled at six-month intervals, the data frequency that matches our forecast series -- are I(1), we perform unit root tests. Using levels data we cannot reject the hypothesis of a unit root for any of the three series, but using first-differenced data we can reject the unit root hypothesis for all three. Thus all three actual series appear to be I(1).¹⁶

To establish that the Fs -- the Treasury bill, Treasury bond and yen-dollar exchange rate forecast series of the thirty-three economists listed in Table 2 who responded to at least 20 surveys -- are I(1), we perform 99 unit root tests (three forecast series for each of the thirty-three

¹⁴ Rationality tests often include a test that ε_t is not autocorrelated and may also include other information available at time (t-1) on the right hand side of equation [1]. Rationality requires that all such variables have zero coefficients.

¹⁵ Papers employing this restricted cointegration test include Hakkio and Rush (1989) and Osterberg (2000).

¹⁶ The ADF statistics using 1 lag for the levels of the Treasury Bill rate, Treasury bond rate, and yen-dollar exchange rate are -.867, -.970, and -2.396 respectively, indicating that each series has at least one unit root. The ADF statistics for the first differences are -4.950, -6.143, and -3.612 indicating that all series are I(1). Rose (1988) and Rapach and Weber (2004) also find that the nominal interest rate has a unit root while Baillie and Bollerslev (1989) report similar findings for nominal exchange rates.

economists). The t statistics for augmented Dickey-Fuller (ADF) unit root tests performed on levels and first differences for individual forecasters are reported in the second column of Tables 3-5. Starred values indicate rejection of the unit root hypothesis at the 0.01, 0.05 or 0.10 levels of significance. Of the 99 forecast series, 71 appear to be $I(1)$ using the 10% significance level or better.

To complete the Liu-Maddala test we impose the restriction that $\alpha=0$ and $\beta=1$ on [1], use the A s and F s to compute the forecast errors, and perform ADF tests to determine whether the forecast errors are $I(0)$. The third columns in Tables 3-5 report ADF t statistics for the case of a zero intercept since the null hypothesis is that the residuals have an expected value of zero. Box-Ljung Q statistics to test for serial correlation in the residuals appear beneath the t statistics. Of the 99 forecast error series all but four are $I(0)$ at the 10% level or better and only four show evidence of serially correlated errors.

To pass the Liu-Maddala test the F s must be $I(1)$ and the forecast residuals must be $I(0)$. Nearly 60 % of the Treasury bill rate forecasts reported in Table 3 meet both criteria.¹⁷ In addition, over three-quarters of the Treasury bond rate forecast series in Table 4 and two-thirds of the exchange rate forecast series in Table 5 meet both criteria.¹⁸ Altogether, two-thirds (67) of the 99 forecast series pass the Liu-Maddala test of unbiasedness. Moreover, the three series of mean survey responses pass the Liu-Maddala test, as indicated in the last row of each table.

While the results of the Liu-Maddala tests are encouraging to proponents of forecaster rationality, Lopes (2000) provides evidence that the power of their restricted cointegration test

¹⁷ About one-third of the forecast series appear to be $I(0)$ despite the Treasury bill rate series being $I(1)$. First differences of four other forecast series appear to be nonstationary even though the first difference of the Treasury bill rate series is stationary; the forecast errors in these four cases do appear stationary, however. For some individuals there are gaps, usually just one, in the forecast series. While Shin and Sarker (1993) find that occasional missing values do not change the asymptotic distribution of the standard Dickey-Fuller tests, our samples are small so that the results with a gap remain suspect.

¹⁸ Of the eleven exchange rate forecast series that failed, three had ten or fewer observations.

may be low, as is usual with unit root tests. He uses Monte Carlo techniques to show that a more powerful test of unbiasedness in finite samples is a simple t-test for the hypothesis that a forecast series' mean forecast error is zero. Accordingly, we also report the mean forecast error and its t-statistic in column 4 of each table. We fail to reject at the 10% level the null hypothesis of unbiasedness for 73% of the Treasury bill forecast series, 67% of the Treasury bond forecast series, and 88% of the exchange rate forecast series.¹⁹ Of the forecast series with test statistics that reject the null, all of the Treasury bill rate and exchange rate forecast series and about two-thirds of the Treasury bond rate forecast series err on the high side. Biased forecasts by some forecasters did not serve to impart bias to the survey mean forecasts, however: the average forecast errors of the survey mean forecasts were statistically indistinguishable from zero, implying unbiasedness.

In summary, about two-thirds of the forecast series appear to be statistically unbiased, as do all three series of mean survey responses. Economists whose forecasts appeared to be biased usually overestimated the 6-month-ahead level of the Treasury bill, Treasury bond or yen-dollar exchange rate, with overestimation occurring more frequently in predicting interest rates than exchange rates. Based on the t-tests for unbiasedness at the 10% level, about 60 % of the survey economists were statistically unbiased in their predictions of the Treasury bill, Treasury bonds and exchange rate; about 10% made biased forecasts of one of the three rates; and the remaining 30% made biased forecasts of two series. No economist made biased predictions of all three rates.²⁰

¹⁹ At the less stringent 5% level, 80%, 73% and 91%, respectively, of the Treasury bill, Treasury bond, and exchange rate series fail to reject the null of unbiasedness.

²⁰ If the less stringent 5% level is used to judge unbiasedness, 67% of the survey forecasters were statistically unbiased in their predictions of all three rates; about 6% made biased forecasts of one of the rates; and the remaining 27% made biased forecasts of two rates.

3.2 Measures of predictive ability

While unbiasedness is a requirement for rationality of forecasters with symmetric loss functions, predictive ability is a hallmark of forecasters who “know the true model” determining macroeconomic variables. We take two approaches to measuring predictive accuracy: first, we assess forecasters’ success at predicting the direction of interest rate and exchange rate changes;²¹ second, we compare forecasters’ accuracy to the accuracy of a traditional benchmark, the random walk model without drift, and test whether the accuracy metrics are statistically different. Although previous researchers have employed the *Wall Street Journal* survey to assess predictive accuracy using one approach or the other (but not both), they reach contradictory conclusions.²² Moreover, we are unaware of any previously published research using the *Wall Street Journal* survey that tests for statistical differences in the accuracy of individual economists’ forecasts versus forecasts of the random walk model.

In our first approach to predictive accuracy we use standard techniques to assess economists’ accuracy in predicting the direction of change in the Treasury bill rate, Treasury bond rate, and yen-dollar exchange rate over 6-month intervals. The results appear in columns five and six of Tables 3-5. Column 5 reports the fraction of correctly-predicted changes along with the p-value for Fisher’s exact test of the hypothesis that predicted and actual changes were independent. Column 6 reports the standard χ^2 statistic and the Pesaran-Timmerman (1992) test

²¹ Leitch and Tanner (1991) argue that the direction of change is more closely related to profits than say the mean square error for interest rate predictions.

²² Kolb and Stekler (1996) and Greer (1999, 2003) present tests of directional change whereas Cho (1996) compares economists’ forecast errors against the forecast errors made by the naïve model of no change. Kolb and Stekler and Greer find that little evidence that economists can predict the direction of change, whereas Cho finds that eighty percent of the economists outperformed the naïve model when forecasting the Treasury bill rate.

statistic, also with a χ^2 distribution with 1 degree of freedom, of the same independence hypothesis.²³

The directional accuracy tests suggest that the surveyed economists provide no useful information.²⁴ In forecasting the Treasury bill rate about two-thirds of economists predicted the direction of change correctly more than half the time, but for no economist was the percentage of correctly predicted directions significantly greater than expected by chance; moreover for a few, the percentage was significantly lower. In predicting the Treasury bond rate, only about one-third of economists forecasted directional change correctly more than half the time; nevertheless, few predicted directional change less accurately than chance. The surveyed economists were more successful in predicting directional change in the yen-dollar exchange rate: about 80 predicted correctly more than half the time; nevertheless none predicted correctly more often than would be expected by chance. Finally, the survey means successfully predicted the direction of Treasury bill rate and exchange-rate changes about as accurately as chance, but predicted the direction of Treasury bond rate changes significantly more poorly than chance. Thus, when set the task of predicting the direction of interest rate and exchange rate changes, the surveyed economists acquit themselves modestly, at best.

In our second approach to predictive accuracy, we compare the accuracy of the surveyed economists' predictions to the accuracy of a model predicting that interest rates and exchange rates follow a random walk without drift. Specifically, we computed the ratio of the mean square errors (MSEs) of each economist's forecast series to the MSEs of forecast series covering the

²³ For each forecaster we constructed a contingency table with the number of times the forecaster predicted a decline and there was a decline, the number of times the forecaster predicted an increase and there was an increase, the number of times the forecaster incorrectly predicted a decrease, and the number of times the forecaster incorrectly predicted an increase.

²⁴ We also performed the test of Cumby and Modest (1987), suggested by Stekler and Petrei (2003), in which the actual change is regressed on a binary variable taking the value of one if the forecaster predicted an increase and zero otherwise. These tests, not reported, also indicated that the respondents were unable to provide useful information on the direction of change.

same dates but using as forecasts the six-month-earlier actual values (that is, actuals on the last business day in December and June, respectively, to forecast values for the last business day in June and December, respectively; these actuals are usually published along side the forecasts in the *Wall Street Journal*). The question becomes whether individual economists can outperform the random walk model by achieving a ratio less than one. In addition to analyzing this ratio we follow the recommendation of Fildes and Stekler (2002) and test for statistically significant differences between individuals' forecasts and random walk forecasts of no change using the modified Diebold-Mariano (1995) test statistic proposed by Harvey *et al.* (1997). Specifically, this statistic tests whether the mean difference between the squared forecast errors of the economist and of the random walk model is significantly different from zero; this statistic has a t-distribution under the null hypothesis that the mean is zero. We report our results in Tables 3-5. The next-to-the last column reports the number of forecasts made by each economist together with the sum of the squared forecast errors. The last column reports the ratio of each economist's MSE to the MSE from a random walk model and the Diebold-Marino statistic in parentheses.

The statistical evidence indicates that economists generally fail to beat and tend to be statistically less accurate than the random walk model. Although in predicting the Treasury bill rate eight of thirty-three economists achieve a MSE ratio less than one, the Diebold-Marino statistics indicate that no economist forecasts significantly better than the random walk model (i.e. a t-statistic that is significantly less than zero) and five do significantly worse at the 10% level. In predicting the Treasury bond rate, no economist achieved a MSE ratio less than one; moreover, about two-thirds of economists predicted significantly worse than a random walk model, judging by the Diebold-Marino statistics (i.e., a t-statistic significantly greater than zero). Accuracy in predicting the yen-dollar exchange was little better: no economist achieved a MSE ratio less than one, and half predicted significantly worse than a random walk model, judged by

the Diebold-Marino statistics. Economists' poor predictive ability is reflected in the survey mean predictions. Although survey mean predictions of the Treasury bill rate achieve a MSE ratio less than one, the survey mean predictions do not differ statistically from the random walk predictions. Survey mean predictions of neither the Treasury bond rate nor the yen-dollar exchange rate achieved MSE ratios less than one, and although the mean predictions of the Treasury bond rate did not differ statistically from the random walk predictions, the mean exchange-rate predictions were significantly worse than the random walk predictions.

Taken all together, the evidence on predictive ability suggests that agents who use forecasts and prize accuracy would have suffered less disappointment by assuming that interest rates and exchange rates stay at their last observed levels rather than by relying on forecasts from the *Wall Street Journal* survey. The dismal predictive accuracy of many of the economists leads us to ask whether the forecasts are systematically heterogeneous, possibly because some economists face incentives to forecast large interest rate and exchange rate changes.

3.3. Tests of systematic heterogeneity of forecasts

Professional economists who are rational, who know the “true model,” and who, in addition, have access to the same macroeconomic information relevant to forecasting interest rates and exchange rates – as a priori reasoning suggests is probably the case – should produce homogenous (identical) forecasts. In this section we examine whether forecasts of the economists in the *Wall Street Journal* survey are homogeneous or systematically heterogeneous.

To test for homogeneity in forecasts we follow Ito (1990), who posits a fixed-effects model. Ito models the forecast for time t of the j^{th} economist, $f_{j,t}$, as being a function of common information, I_t , an individual effect represented by an individual-specific dummy variable, g_j , and a random error term, $u_{j,t}$:

$$f_{j,t} = f(I_t) + g_j + u_{j,t} . \quad [2]$$

Ito assumes further that $f(I_t)$ contains a constant so that the average of the g_j s may be set to zero.

Averaging equation [2] across all economists and then subtracting the average from [2] yields:

$$f_{j,t} - f_{AVE,t} = g_j + (u_{j,t} - u_{AVE,t}) . \quad [3]$$

Homogeneity of forecasts can be tested by estimating [3] on forecast data for individual economists and testing that the estimated values of g_j are identical across economists.^{25 26}

Table 6 presents the results from estimating [3] using the Treasury bill rate, Treasury bond rate and the yen-dollar exchange rate forecasts of the economists in the *Wall Street Journal* survey and testing for forecast homogeneity. Like Ito (1990) we estimate [3] twice, first letting the g_j s represent dummy variables for individual economists and again letting the g_j s represent dummy variables for the economists' sector of employment. Panels A and B, respectively, report results from the two estimations. We report results for two sub-samples of economists, one including all economists having at least six survey responses (Panel 1) and another including all economists having at least twenty responses (Panel 2), the same economists whose forecasts were examined in sections 3.1 and 3.2.²⁷

The evidence in Table 6 overwhelmingly rejects the hypothesis of homogeneous forecasts. In Panel A, F tests reject the null hypothesis of identical g_j estimates for all economists at the 0.01 level for all the data sets, indicating the presence of significant individual effects. In

²⁵ An essentially identical approach is to regress the individual forecasts on a set of time dummies as well as a set of individual dummies and test for individual effects.

²⁶ Ito uses [3] to test for heterogeneity in exchange rate forecasts made by Japanese economists. He finds that the data reject the hypothesis of homogeneous forecasts both when the g_j s are individual dummy variables and when the g_j s represent the industry of the economist's employment. Ito also finds that economists employed in export industries have a depreciation bias whereas those employed in the import business have an appreciation bias, a pattern he terms the "wishful thinking" effect. MacDonald and Marsh (1996) also find evidence of heterogeneity across exchange rate forecasters from a large survey of European economists. In addition they report that the dispersion of forecasts is positively related to the volume of foreign exchange trading. MacDonald and Marsh report that the European economists are generally less accurate than a random walk for 3-month predictions but that a substantial number of economists beat a random walk when making 12-month forecasts.

²⁷ These are unbalanced panels since participants change over time.

Panel B, coefficient estimates of five employment sectors appear (top number, standard errors beneath) along with F tests of the null hypothesis that the estimated coefficients are identical (reported in the last row). The data soundly reject the null for all data sets. The coefficient estimates indicate that, compared with other economists, independent forecasters made significantly lower forecasts of the Treasury bill and Treasury bond rate and significantly higher forecasts of the yen-dollar exchange rate. Economists employed by securities firms also made comparatively low forecasts of the Treasury bond rate, but not as low as economists employed by independent firms. Economists affiliated with banks produced forecasts statistically indistinguishable from the consensus, as did economists employed by econometric modeling firms, except for yen-dollar exchange rate forecasts made by Panel 2, which were statistically lower.

In summary, the evidence from the *Wall Street Journal* survey suggests that the economists' forecasts are indeed systematically heterogeneous. This finding leads us to investigate whether individual forecasters behave strategically in making their forecasts.

3.4. Tests of strategic forecasting

Laster *et al.* (1999) and Lamont (2002) suggest that the incentive structure facing professional economists potentially motivates them to supply heterogeneous forecasts. Specifically, they argue that if economists are rewarded both for forecast accuracy and for “standing out from the crowd,” economists may announce more extreme predictions than if they were rewarded for forecast accuracy alone.²⁸ To investigate this possibility we estimate a model combining elements of Lamont (2002) and Laster *et al.* (1999):

²⁸ Lamont (2002) models forecasters' payoff function as follows:

$$w_j = R(|f_j - a|, |f_j - f_{c(j)}|)$$

$$|f_j - f_{c(-j)}|_t = \beta_0 + \beta_1 \text{AGE}_{j,t} + \beta_2 \text{AGE}_{j,t} * \text{MODEL}_{j,t} + \beta_3 \text{AVEDEV}(-j)_t \\ + \beta_4 \text{OWN}_{j,t} + \sum \gamma_i D_{i,t} + \varepsilon_{j,t} \quad [4]$$

Following Lamont our dependent variable – a measure of “standing out from the crowd” – is the absolute value of the difference between an individual economist’s time t forecast and the average time t forecast omitting that economist’s forecast. AGE is the number of years an economist had participated in the *Wall Street Journal* survey at the time of survey t while the interaction term AGE*MODEL allows the effect of an economist’s age to differ if the economist is employed by an econometric modeling firm.²⁹ AGE is included to control for changing incentive structures: incentives might encourage young forecasters to make extreme forecasts so as to gain publicity while encouraging older forecasters to make less extreme forecasts so as to protect the reputations; alternatively, incentives might encourage young forecasters to make less extreme forecasts so as to hide their inexperience while encouraging seasoned, secure forecasters to make more radical forecasts. AVEDEV(- j) is the average absolute deviation of the forecasts from the mean, omitting the j^{th} economist; this latter variable controls for variations in the spread of the forecasts over time. The dummy variable, OWN, equals one if an economist is employed at a firm that bears his name. Finally, following Laster *et al.*, we add dummy variables for the industry employing the j^{th} economist at the time of survey t , the D_{it} s. Our industries include banks, securities firms, finance departments of corporations, econometric modelers, and economists employed by independent firms not bearing the economists’ names, similar to Laster

where w_j is the payoff to forecaster the j^{th} forecaster, $|f_j - a|$ is the absolute value of the j^{th} forecaster’s forecast from the actual value, and $|f_j - f_{c(-j)}|$ is the absolute value of the j^{th} forecaster’s forecast from the consensus forecast, omitting the j^{th} forecaster’s forecast. Lamont assumes the partial derivative of R with respect to the first argument, R_1 , is negative: inaccurate forecasts reduce a forecaster’s payoff. But he allows that the partial derivative of R with respect to the second argument, R_2 , is an empirical question.

²⁹ Lamont found that this variable was important and that the effect of age was not significant for forecasts from econometric models.

et al. The hypothesis that economists behave strategically is supported by statistically significant coefficients on AGE, AGE*MODEL, OWN, and the D_{jt} s, as well as by statistical differences among the estimated coefficients of the D_{jt} s.

Table 7 presents estimates of [4] using the Treasury bill rate, Treasury bond rate and the yen-dollar exchange rate forecasts of the economists in the *Wall Street Journal* survey. As in the previous section we report estimates for two sub-samples of economists, one including all economists having at least six survey responses (Panel 1) and another including all economists having at least twenty responses (Panel 2), the same economists whose forecasts were examined in sections 3.1 and 3.2.

The Table 7 estimates show overwhelming evidence of strategic behavior by economists in the form of statistically significant estimated coefficients of AGE, OWN and several of the D_{jt} s, as well as statistical differences among the D_{jt} s. The estimated coefficients of AGE are negative and usually statistically significant, implying that economists make less extreme forecasts the longer they are surveyed.³⁰ This age effect holds for all economists including those employed by econometric modeling firms, since the estimated coefficient of AGE*MODEL never achieves significance. Though pervasive, the estimated age effects are small in absolute terms: compared with a first-time respondent, an economist in the survey for 10 years (20 surveys) is about 4 basis points closer to the mean interest rate forecast and a little less than one yen closer to the mean exchange rate forecast. Larger in absolute terms is the effect of employment by a forecasting firm bearing one's name: forecasts of such economists deviate more from the mean forecasts than forecasts of other economists by amounts ranging from 13 to

³⁰ As noted above, the *Wall Street Journal* does not systematically drop forecasters with poor records so a negative coefficient should not be due to a survivorship bias. It is possible, however, that people who make extreme and inaccurate forecasts drop out to avoid negative publicity. We also estimated a model with age and AVEDEV(-j) as explanatory variables for each of the individuals listed in Table 2. Age was statistically significant at the .10 level for only about one-third of the panel and was negative in most cases. No individual had significantly positive coefficients on age for all three variables being forecasted.

22 basis points for the interest rates and 1.7 yen, on average, for the exchange rate. The name effect appears to drive economists' strategic behavior rather than independence per se: only in forecasting the Treasury bond rate did economists employed by independent firms named for others make forecasts statistically more extreme than the consensus, and even then the effect was absolutely small. Surveyed economists employed by banks appeared to make less extreme forecasts than other economists, judging from the consistently negative and statistically significant estimated coefficients of Banks. Economists employed by securities firms, corporations and econometric modeling firms also tended to make less extreme forecasts, judging from the generally negative although inconsistently significant estimated coefficients of their respective dummy variables. When the hypothesis that economists' forecasts deviated equally from the consensus regardless of employment is tested, F statistics soundly and universally reject the hypothesis. Because it seems unlikely that economists in different industries had differential access to the macroeconomic data needed to make interest rate and exchange rate forecasts, we conclude that incentive structures encourage economists employed in different industries to supply heterogeneous forecasts, with economists from firms bearing their own names being more likely to make extreme forecasts because they gain the most from being right when others are wrong.³¹

3.5 Discussion of results

We believe that the results presented in sections 3.1 – 3.4 present a consistent story. Our findings from section 3.1 – that 30% of economists produced biased forecasts, generally in the upward direction – and from section 3.2 – that economists generally failed to forecast as

³¹ We also estimated equation [4] allowing for individual fixed effects or individual random effects. These models gave similar estimates for the effects of AGE and AVEDEV but wiped out the statistical significance of the industry effects. Since individuals change industries occasionally in our sample, as indicated in Table 2, the industry differences appear to be captured by the individual effects.

accurately as the random walk model and sometime forecasted less accurately – is consistent with the heterogeneity of forecasts we found in section 3.3. When we tested for evidence of strategic behavior by economists in section 3.4 by using a synthesis of the Lamont (2002) and Laster *et al.* (1999), we obtained some results similar to theirs. Like Lamont and Laster *et al.* we found that economists from independent firms tend to make more extreme forecasts and, like Lamont, we found that economists whose firms bear their names make forecasts that consistently deviate more from the survey mean than other economists. But whereas Lamont found evidence that economists make more extreme forecasts the longer they are surveyed, we found the opposite to be true: the estimated coefficients of AGE are consistently negative and usually statistically significant.

Although our results on strategic behavior bear some similarities to Lamont and Laster *et al.*'s, we believe it is important to note the advantages of the *Wall Street Journal* survey data on interest rates and exchange rates for testing strategic behavior compared with *Business Week* survey data used by Lamont and the Blue Chip Economic Indicators data used by Laster *et al.* Although the *Business Week* survey publishes forecasts of economists by name, Lamont studied economists' forecasts of real GDP growth, inflation and unemployment, all of which are subject to revision, which raises the issue of which values economists were forecasting. Laster *et al.* also study economists' forecasts of real GDP growth, so the caveats that apply to Lamont apply to Laster *et al.* as well. In addition, the Blue Chip Indicators data Laster *et al.* use groups forecasters by industry rather than identifying them individually; hence the incentives to forecast strategically are not as strong.

Our finding that the *Wall Street Journal*'s panel of economists cannot predict changes in interest rates and exchange rates more accurately than a random walk model is not surprising,

given the efficiency of financial markets. What is perhaps surprising is that so many of the panel forecast significantly worse than the random walk model. The explanation of these results we favor is that many of the economists face incentives that reward the exceptionally right guess but do not equally penalize the exceptionally wrong guess. An alternative explanation is that even if the economists know the random walk model to be more accurate over time, this leaves them with no story to spin about their forecasts. Always telling customers that you predict no change in interest rates or exchange rates may simply be too truthful to keep one employed.

4. Conclusions

While widespread public interest in forecasts of macroeconomic variables has led professional economists to put considerable effort in generating forecasts, less effort has gone into assessing the quality of these forecasts. The theory of rational expectations implies that professional economists' forecasts should be unbiased and identical given access to the same information and similar incentives with respect to predictive accuracy. Previous studies employing survey data of professional economists' forecasts to assess forecast quality have tended to lack comprehensiveness, suffer from data problems, or produce inconclusive results.

This paper has sought to help fill the void by using semi-annual survey data from the *Wall Street Journal's* panel of economists to study interest rate and exchange rate forecasts of individual economists. We found that while about 60% of the surveyed economists produced unbiased estimates, virtually all failed to make 6-month ahead forecasts of the Treasury bill rate, Treasury bond rate and yen-dollar exchange rate that beat a naïve random walk model for accuracy, and many made forecasts significantly less accurate than the random walk model. When we tested for homogeneity of interest rate and exchange rate forecasts, we found them to be systematic heterogeneous. In particular, we found that independent economic forecasters (those not employed by banks, security firms, corporations' finance departments, or econometric

model firms) made significantly lower forecasts of the Treasury bill rate and Treasury bond rate and significantly higher forecasts of the yen-dollar exchange rate. Evidence of systematically heterogeneous forecasts led us to consider whether economists faced economic incentives to produce heterogeneous forecasts. When we estimated an incentives model combining elements of models estimated by Lamont (2002) and Laster *et al.* (1999), we found evidence that economists who would be expected to gain the most from favorable publicity – those employed by firms named for them – make more extreme forecasts, whereas economists employed by other institutions tend to make more conservative, less extreme forecasts. We found no evidence that economists become more radical with age. If anything, experienced economists appear to preserve their reputations by deviating less from the consensus forecast than inexperienced economists.

References

- Aggarwal, R., S. Mohanty and F. Song, "Are Survey Forecasts of Macroeconomic Variables Rational?" *Journal of Business*, 68(1), January 1995, 99-119.
- Anderson, T., T. Bollerslev, F.X. Diebold, and C. Vega, "Micro Effects of Macro Announcements: Real-Time Price Discovery in Foreign Exchange," *American Economic Review*, 93(1), March 2003, 38-62.
- Baillie, R.T. and T. Bollerslev, "Common Stochastic Trends in a System of Exchange Rates," *Journal of Finance*, 44(1), March 1989, 167-181.
- Batchelor, R. and P. Dua, "Blue Chip Rationality Tests," *Journal of Money, Credit, and Banking*, 23(4), November 1991, 692-705.
- Bonham, C.S., and R.H. Cohen, "To Aggregate, Pool, or Neither: Testing the Rational-Expectations Hypothesis Using Survey Data," *Journal of Business and Economic Statistics*, 19(3), July 2001, 278-291.
- Carroll, C.D. "Macroeconomic Expectations of Households and Professional Forecasters." *Quarterly Journal of Economics*, 118(1), February 2003, 269-298.
- Cho, D.W. "Forecast Accuracy: Are Some Business Economists Consistently Better Than Others?" *Business Economics*, 31(4), October 1996, 45-49.
- Croushore, D. "Evaluating Inflation Forecasts," Working Paper No. 98-14, Federal Reserve Bank of Philadelphia, June 1998.
- Cumby, R.E. and D.M. Modest, "Testing for Market Timing Ability: A Framework for Forecast Evaluation," *Journal of Financial Economics*, 19(1), September 1987, 169-189.
- Diebold, F.X. and R.S. Mariano, "Comparing Predictive Accuracy," *Journal of Business and Economic Statistics*, 13(3), July 1995, 253-263.
- Eisenbeis, R., D. Waggoner, and T. Zha, "Evaluating Wall Street Journal Survey Forecasters: A Multivariate Approach," *Business Economics*, 37(3), July 2002, 11-21.
- Ehrbeck, T. and R. Waldmann. "Why are Professional Forecasters Biased? Agency Versus Behavioral Explanations." *Quarterly Journal of Economics*, 111(1), February 1996, 21-40.
- Figlewski, S. and P. Wachtel, "The Formation of Inflationary Expectations," *Review of Economics and Statistics*, 63(1), February 1981, 1-10.
- Frankel, J.A. and K.A. Froot, "Using Survey Data to Test Standard Propositions Regarding Exchange Rate Expectations," *American Economic Review*, 77(1), March 1987, 133-153.

Granger, C.W.J. and P. Newbold, "Spurious Regressions in Econometrics," *Journal of Econometrics*, 2(2), July 1974, 111-120.

Greer, M. R. "Assessing the Soothsayers: An Examination of the Track Record of Macroeconomic Forecasting," *Journal of Economic Issues*, 33(1), March 1999, 77-94.

Greer, M.R. "Directional Accuracy Tests of Long-Term Interest Rate Forecasts," *International Journal of Forecasting*, 19(2), April-June 2003, 291-298.

Hakkio, C.S. and M. Rush, "Market Efficiency and Cointegration: An Application to the Sterling and Deutschmark Exchange Markets," *Journal of International Money and Finance*, 1989, 8, 75-88.

Harvey D., S. Leybourne, and P. Newbold, "Testing the Equality of Prediction Mean Squared Errors," *International Journal of Forecasting*, 13(2), June 1997, 281-291.

Ito, T. "Foreign Exchange Rate Expectations: Micro Survey Data," *American Economic Review*, 80(3), June 1990, 434-449.

Keane, M.P. and D.E. Runkle, "Testing the Rationality of Price Forecasts: New Evidence from Panel Data," *American Economic Review*, 80(4), September 1990, 714-735.

Kolb, R.A. and H.O. Stekler, "How Well Do Analysts Forecast Interest Rates?" *Journal of Forecasting*, 15(5), September 1996, 385-394.

Lamont, O., "Macroeconomic Forecasts and Microeconomic Forecasters," *Journal of Economic Behavior and Organization*, 48(3), July 2002, 265-280.

Laster, D., P. Bennett, and I.S. Geom. "Rational Bias in Macroeconomic Forecasts." *Quarterly Journal of Economics*, 114(1), February 1999, 293-318.

Leitch, G. and J.E. Tanner, "Economic Forecast Evaluation: Profits Versus the Conventional Error Measures," *American Economic Review*, 84(3), June 1991, 580-590.

Liu, P.C. and G.S. Maddala, "Rationality of Survey Data and Tests for Market Efficiency in the Foreign Exchange Market," *Journal of International Money and Finance*, 11(4), August 1992, 366-381.

Lopes, A. C. B.D., "On the 'Restricted Cointegration Test' as a Test of the Rational Expectations Hypothesis," *Applied Economics*, 30(2), February 1998, 269-278.

MacDonald, R. "Expectation Formation and Risk in Three Financial Markets: Surveying What the Surveys Say," *Journal of Economic Surveys*, 14(1), February 2000, 69-100.

MacDonald, R. and I.W. Marsh, "Currency Forecasters are Heterogeneous: Confirmation and Consequences," *Journal of International Money and Finance*, 15(5) October 1996, 665-685.

Osterberg, W.P. "New Results on the Rationality of Survey Measures of Exchange-Rate Expectations," *Economic Review*, Federal Reserve Bank of Cleveland, 36(1), Quarter 1, 2000, 14-21.

Pesaran, M.H. and A. Timmerman, "A Simple Nonparametric Test of Predictive Performance," *Journal of Business and Economic Statistics*, 10(4), October 1992, 461-465.

Pons-Novell, J. "Strategic Bias, Herding Behaviour and Economic Forecasts," *Journal of Forecasting*, 22(1), January 2003, 67-77.

Rapach, D.E. and C.E. Weber, "Are Real Interest Rates Really Nonstationary?" *Journal of Macroeconomics*, 26(3), September 2004, 409-430

Rose, A.K. "Is the Real Interest Rate Stable?" *Journal of Finance*, 43(8), December 1988, 1095-1112.

Scharfstein, D.S. and J.C. Stein. "Herd Behavior and Investment," *American Economic Review*, 80(3), June 1990, 465-479.

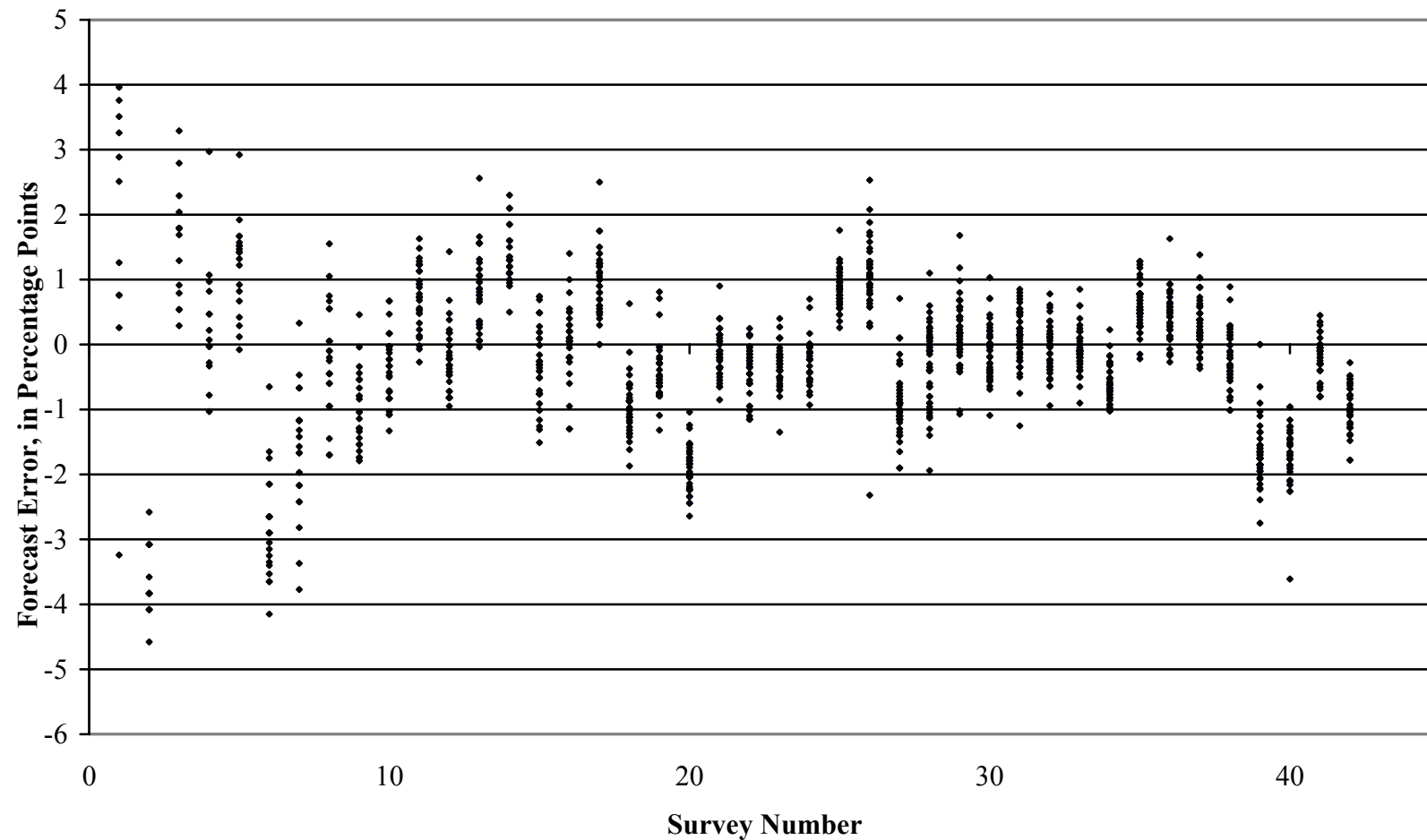
Schirm, D.C. "A Comparative Analysis of the Rationality of Consensus Forecasts of U.S. Economic Indicators," *Journal of Business*, 76(4), October 2003, 547-561.

Shin, D.W. and S. Sarker, "Testing for a Unit Root in an AR(1) Time Series Using Irregularly Observed Data," Working paper, Oklahoma State University, 1993.

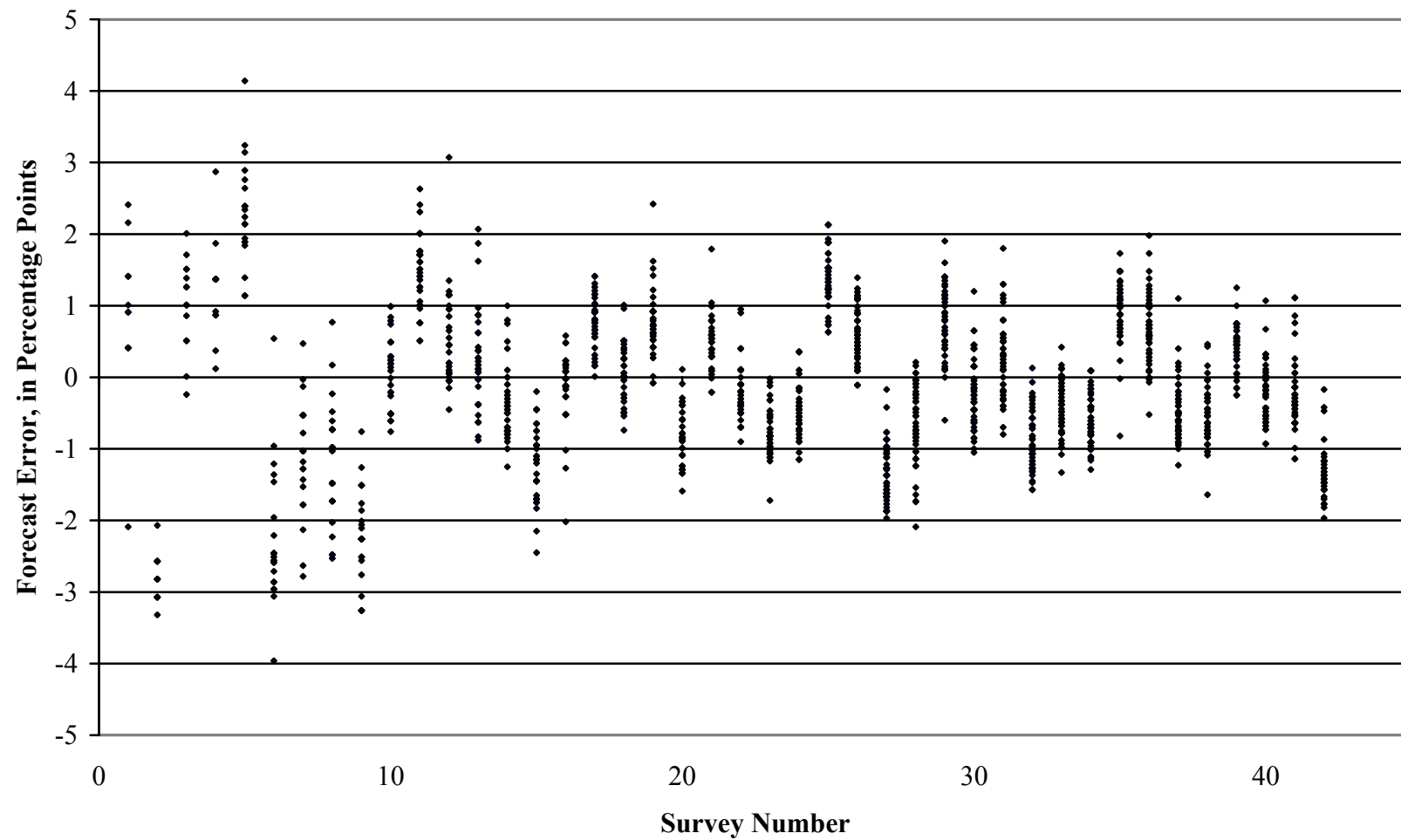
Stekler, H.O. and G. Petrei, "Diagnostics for Evaluating the Value and Rationality of Economic Forecasts," *International Journal of Forecasting*, 19(4), October-December 2003, 735-742.

Thomas, L.B., "Survey Measures of Expected U.S. Inflation," *Journal of Economic Perspectives*, 13(4), Autumn 1999, 125-44.

Figure 1
Forecast Errors of the Treasury Bill Rate

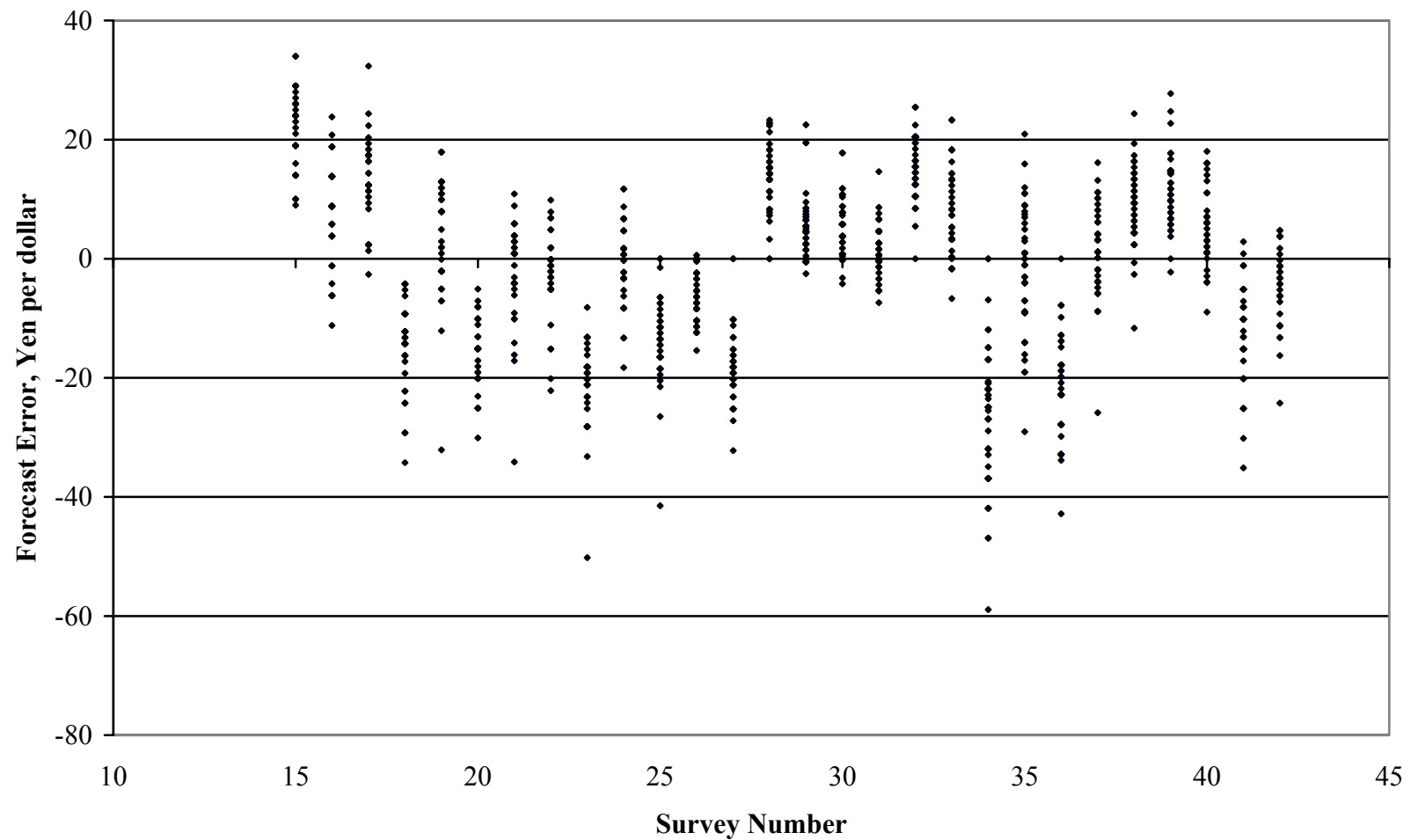


Note: Forecast errors are measured as the actual rate minus forecasters' predictions on the survey date, six months earlier. Forecast errors are shown for the 42 surveys beginning with January 1982 and ending with July 2002.

Figure 2**Forecast Errors for the Treasury Bond Rate**

See notes to Figure 1.

Figure 3
Forecast Errors for the Yen-Dollar Exchange Rate



Note: Forecasts of the yen-dollar exchange rate were added to the *Wall Street Journal* survey in January 1989. Forecast errors are shown for the 28 surveys from January 1989 to July 2002, which correspond to survey numbers 15-24 in our sample.

Table 1
Summary Statistics for Survey Forecasts

Survey Date	Treasury bill Rate			Treasury bond Rate			Yen-Dollar Rate		
year_mo	Mean S.D.	Range N	Actual	Mean S.D.	Range N	Actual	Mean S.D.	Range N	Actual
1982_01	11.06 2.05	8.8-16 12	12.76	13.05 1.13	11.5-16 12	13.91			
1982_07	11.61 .54	10.5-12.5 14	7.92	13.27 .35	12.5-13.75 14	10.43			
1983_01	7.37 .94	5.5-9.625 17	8.79	10.11 .71	9-11.625 17	11.01			
1983_07	8.60 .89	6-10 17	8.97	10.59 .60	9-11.75 17	11.87			
1984_01	8.72 .64	7-10 24	9.92	11.39 .68	9.5-12.5	13.64			
1984_07	10.62 .76	8.5-12 24	7.85	13.75 .85	11-14.75 24	11.54			
1985_01	8.56 .98	6.5-10.6 24	6.83	11.60 .80	10-13.25 24	10.47			
1985_07	7.31 .82	5.5-8.75 25	7.05	10.51 .83	8.5-11.8 25	9.27			
1986_01	6.96 .58	5.5-7.75 25	5.96	9.45 .63	8-10.5 25	7.24			
1986_07	6.02 .51	5-7 30	5.67	7.41 .51	6.5-8.25 30	7.49			
1987_01	4.98 .48	4.1- 6 35	5.73	7.05 .53	5.88-8 35	8.51			
1987_07	5.91 .50	4.25-6.63 35	5.68	8.45 .66	5.88-9.4 35	8.95			
1988_01	5.70 .58	4-6.6 36	6.56	8.65 .71	6.8-9.75 36	8.87			
1988_07	6.78 .39	5.8-7.6 32	8.1	9.36 .56	8-10.25 32	9			
1989_01	8.29 .60	7.25-9.5 38	7.99	9.25 .49	8.25-10.5 38	8.05	121.37 6.15	110-135 38	144
1989_07	7.76 .52	6.4-9.1 38	7.8	8.12 .48	7.4-10 38	7.98	136.53 8.47	120-135 38	143.8
1990_01	7.03 .48	5.5-8 40	8	7.62 .35	7-8.4 40	8.41	137.78 6.81	120-155 40	152.35
1990_07	7.56 .43	6-8.5 40	6.63	8.16 .40	7.25-9 40	8.26	149.78 7.14	140-170 40	135.75
1991_01	6.14 .42	4.9-7.03 40	5.71	7.65 .46	6-8.5 40	8.42	133.65 9.69	120-170 40	137.9
1991_07	5.84 .35	5-6.6 40	3.96	8.22 .38	7.3-9 40	7.41	140.78 5.61	130-155 40	124.9
1992_01	3.80 .34	2.75-4.5 42	3.65	7.30 .37	6-8 42	7.79	127.64 8.07	115-160 42	125.87
1992_07	3.54 .39	2.9-4.3 42	3.15	7.61 .38	6.45-8.3 42	7.4	127.33 7.07	115-147 42	124.85
1993_01	3.41 .32	2.7-4.45 44	3.1	7.44 .33	6.7-8.4 44	6.68	127.70 7.07	115-157 44	106.8

Table 1, continued

Survey Date	Treasury bill Rate			Treasury bond Rate			Yen-Dollar Rate		
	Mean S.D.	Range N	Actual	Mean S.D.	Range N	Actual	Mean S.D.	Range N	Actual
1993_07	3.34 .31	2.37-4 44	3.07	6.84 .35	5.99-7.5 44	6.35	112.16 6.44	100-130 44	111.7
1994_01	3.40 .28	2.5-4 51	4.26	6.26 .38	5.5-7 51	7.63	113.10 5.90	100-140 49	98.51
1994_07	4.67 .60	3.15-8 58	5.68	7.30 .39	6.5-8.1 58	7.89	106.85 3.69	99-115 52	99.6
1995_01	6.50 .49	4.89-7.5 59	5.6	7.94 .38	6.8-8.6 59	6.63	104.09 4.00	95-117 57	84.78
1995_07	5.44 .56	4-7.04 62	5.1	6.61 .52	5.75-8.05 62	5.96	89.23 4.24	80-100 60	103.28
1996_01	4.98 .45	3.5-6.25 64	5.18	6.03 .44	5-7.5 64	6.9	104.71 4.56	87-112 62	109.48
1996_07	5.31 .40	4.18-6.3 58	5.21	6.86 .47	5.45-7.7 58	6.65	109.99 4.25	98-120 56	115.77
1997_01	5.16 .41	4.4-6.5 57	5.25	6.52 .52	5-7.6 57	6.8	113.45 4.15	100-122 55	114.61
1997_07	5.41 .35	4.58-6.3 55	5.36	6.79 .40	5.8-7.5 55	5.93	114.89 4.66	105-125 54	130.45
1998_01	5.18 .30	4.25-6 56	5.1	6.02 .37	5.2-6.95 56	5.62	130.41 7.03	115-145 54	138.29
1998_07	5.08 .25	4.25-5.5 55	4.48	5.72 .36	5-6.38 55	5.09	141.28 10.38	120-172 53	113.08
1999_01	4.20 .33	3.5-5 54	4.78	5.05 .44	4.25-6.8 54	5.98	122.77 9.93	100-150 52	120.94
1999_07	4.89 .34	3.7-5.6 54	5.33	5.83 .48	4.5-7 54	6.48	124.75 7.19	110-145 53	102.16
2000_01	5.58 .35	4.5-6.25 53	5.88	6.38 .40	4.8-7.13 53	5.9	105.32 7.20	90-132 53	106.14
2000_07	6.11 .41	5-6.9 53	5.89	6.01 .39	5-7.1 53	5.46	105.34 5.94	90-126 53	114.35
2001_01	5.36 .38	4.3-6.4 52	3.65	5.35 .31	4.5-6 54	5.75	113.21 5.39	97-127 53	124.73
2001_07	3.39 .42	2.7-5.35 54	1.74	5.28 .40	4-6 54	5.07	126.48 6.18	113-140 54	131.04
2002_01	1.89 .32	1.25-2.5 55	1.7	5.06 .51	3.75-6 55	4.86	132.76 7.34	117-115 55	119.85
2002_07	2.19 .33	1.5-3 54	1.22	5.21 .36	4-6.25 55	3.83	123.58 6.53	110-143 55	118.75

Note: Survey respondents are asked early in January and July for their forecasts for the last business day of July and December, respectively. The mean, standard deviation (S.D.) and range of the forecasts in each survey are shown. The number of respondents (N) varies across surveys. The actual values of the variables forecasted are shown in the “Actual” column.

Table 2
Participants Responding To At Least Twenty Surveys

Person	Firm	start	end	gaps	missing dates
David Berson	Fannie Mae	199001	200207	0	
Paul Boltz	T. Rowe Price	198401	199801	0	
Philip Braverman		198401	199901	0	
	Briggs Schaedle	198401	198807		
	Irving Securities	198901	198907		
	DKB Securities	199001	199901		
Dewey Daane	Vanderbilt Univ.	198807	200207	0	
Robert Dederick	Northern Trust	198607	199607	0	
Gail Fosler	Conference Board	199101	200207	0	
Maury Harris		198607	200207	0	
	Paine Webber Inc.	198607	200007		
	UBS Warburg	200107	200207		
Richard Hoey		198401	199401	1	199107
	A.G. Becker	198401	198407		
	Drexel Burnham	198501	199101		
	Dreyfus Corp.	199201	199401		
Stuart G. Hoffman	PNC Bank, Fin Serv	198801	200207	1	199401
William Hummer		199301	200207	0	
	Wayne Hummer	199301	199707		
	Hummer Invest.	199807	200207		
Edward Hyman		198301	200207	1	198901
	C.J. Lawrence	198301	199107		
	ISI Group	199201	200207		
Saul Hymans	Univ. of Michigan	198607	200207	0	for yen:199407 199607 199807 199901
David Jones	Aubrey G. Lanston	198201	199301	0	
Irwin Kellner	ManuHan-Chem-Chase	198201	199701	1	198407
Carol Leisenring	CoreStates Finl.	198707	199801	0	
Alan Lerner		198201	199307	1	198401
	Bankers Trust	198201	199207		
	Lerner Consulting	199301	199301		
Mickey Levy		198507	200207	0	
	Fidelity Bank	198507	199107		
	CRT Govt. Securities	199201	199307		
	NationsBank Cap. Mk	199401	199807		
	Bank of America	199901	200207		
Arnold Moskowitz		198401	200007	1	198807
	Dean Witter	198401	199107		
	Moskowitz Capital	199201	200007		
John Mueller	LBMC	199107	200207	2	199401 199507
Elliott Platt	Donaldson Lufkin(DLJ)	198807	200001	1	199207
Maria Ramirez		199207	200207	1	199401
	Ramirez Inc.	199207	199307		
	MF Ramirez	199407	200107		
	MFR	200201	200207		
Donald Ratajczak		198701	200101	0	
	Georgia State Univ.	198701	200001		
	Morgan Keegan	200007	200101		
David Resler		198407	200207	0	
	First Chicago	198407	198701?		
	Nomura Securities I	198707	200207		
Alan Reynolds		198607	200001	1	199501
	Polyconomics	198607	199107		
	Hudson Institute	199201	200001		
Richard Rippe		199001	200207	0	
	Dean Witter	199001	199107		
	Prudential Securities	199201	200207		

Table 2, continued
Participants Responding To At Least Twenty Surveys

Person	Firm	start	end	gaps	missing dates
Norman Robertson		198201	199601	1	199407
	Mellon Bank	198207	199207		
	Carnegie Mellon	199301	199601		
A. Gary Shilling	Shilling & Co.	198201	200207	4	198307 198401 198901 198907
Alan Sinai		198201	200207		198807 199707
	Data resources	198207	198307		
	Lehman Bros Shearson	198401	198801		
	The Boston Co.(Lehman)	198901	199207		
	Economic Advisors Inc (Lehman)	199301	199307		
	Lehman Brothers	199401	199701		
	WEFA Group	199801	199801		
	(Primark) Decision Economic	199807	200207		
James Smith		198701	200207	2	198807 199401
	UT-Austin	198701	198801		
	Univ. of N.C.	198901	199901		
	Natl Assn of Realtors	199907	200001		
	Univ. of N.C.	200007	200207		
Donald Straszheim		198607	200207	11	198807 199707-200201
	Merril Lynch	198607	199701		
	Straszheim Global Advisors	200207	200207		
Raymond Worseck	A.G. Edwards	198901	199901	0	
David Wyss		198401	200207	4	198807 199407(yen) 200001-200101
	Data Resources	198401	199907		
	Standard & Poor's (McGraw-Hill)	200107	200207		
Edward Yardeni		198607	200007	1	198807
	Prudential Bache	198607	199107		
	C.J. Lawrence	199201	199507		
	Deutsche Bank	199601	200007		

Table 3
Unbiasedness and Accuracy of Treasury Bill Rate Forecasts

Individual	Liu-Maddala Restricted Cointegration Test of Unbiasedness		Mean Forecast Error and t-test for Unbiasedness	Fraction of Correct Directions (p-value for independence test) ^a	χ^2 and Pesaran-Timmerman Tests of Independence ^b	Accuracy	
	ADF(forecast) ADF(Δ forecast)	ADF(error) Q(4)				$\Sigma (A-F)^2$ n	MSE Ratio to Random Walk (Modified DM statistic) ^c
David Berson	-3.149** -3.030**	-2.426** 4.260	-.351 (-2.369)**	.577 (.453)	.735 .765	17.488 26	.877 (-.754)
Paul Boltz	-2.720* -2.833*	-2.901*** .541	-.460 (-2.257)**	.517 (.694)	.348 .361	39.928 29	1.929 (1.810)*
Phillip Braverman	-3.768*** -3.931***	-4.680*** 1.696	.203 (1.027)	.483 (.368)	1.178 1.217	37.695 31	1.780 (1.225)
Dewey Daane	-2.289 -3.632**	-2.775*** 2.200	-.382 (-2.584)**	.517 (.694)	.348 .361	21.981 29	.984 (-.066)
Robert Dederick	-1.559 -2.984**	-2.758*** 2.752	-.084 (-.477)	.524 (1.000)	.029 .031	13.270 21	1.008 (.039)
Gail Fosler	-3.171** -4.061***	-3.313*** 6.633	-.514 (-2.776)**	.542 (.653)	.697 .728	25.241 24	1.402 (1.370)
Maury Harris	-1.571 -3.275**	-3.185*** 2.009	-.092 (-.639)	.545 (.728)	.308 .318	22.264 33	.958 (-.211)
Richard Hoey	-1.660 -2.334	-2.290** 3.560	-.425 (-1.765)*	.350 (.613)	.848 .892	25.598 20	1.674 (1.698)
Stuart G. Hoffman	-1.954 -3.870***	-3.245*** .842	-.164 (-1.043)	.621 (.264)	1.830 1.896	20.978 29	.966 (-.160)
William Hummer	-2.047 -2.516	-1.819* 2.019	-.380 (-2.190)**	.600 (.582)	1.250 1.316	14.282 20	1.038 (.220)
Edward Hyman	-1.784 -4.026***	-4.399*** 6.248	.289 (1.672)	.564 (.706)	.416 .427	47.690 39	1.515 1.076
Saul Hymans	-2.545 -3.900***	-2.828*** 8.681	-.196 (-1.210)	.455 (.733)	.203 .209	28.911 33	1.245 (2.010)*
David Jones	-1.701 -4.117***	-2.770*** 4.205	-.316 (-.882)	.391 (.400)	1.245 1.301	67.325 23	1.533 (1.052)
Irwin Kellner	-3.635** -4.854***	-4.828*** 1.172	-.102 (-.421)	.333 (.141)	3.274* 3.387*	51.619 30	1.190 (1.480)
Carol Leisenring	-1.669 -3.114**	-2.430** 3.773	.025 (.147)	.455 (1.000)	.188 .197	12.913 22	.982 (-.081)
Alan Lerner	-1.765 -5.333***	-3.887*** 6.775	-.583 (-1.990)*	.652 (.221)	1.806 1.888	51.187 23	1.188 (.505)
Mickey Levy	-2.409 -4.476***	-3.810*** 3.691	-.152 (-.991)	.514 (1.000)	.000 .000	28.724 35	1.175 (.888)

Arnold Moskowitz	-2.800* -4.842***	-3.934** 3.671	-.078 (-.425)	.333 (.072)*	4.332** 4.468**	36.167 33	1.863 (1.512)
John Mueller	-2.937* -3.442**	-2.221** 3.907	-.310 (-1.512)	.238 (.030)**	5.743** 6.030**	26.525 21	1.711 (.996)
Elliott Platt	-2.725* -3.202**	-3.248*** 2.597	.077 (.461)	.522 (1.000)	.034 .035	14.410 23	1.092 (.379)
Maria Ramirez	-2.117 -2.585	-1.692* 1.803	-.374 (-2.678)**	.600 (.319)	1.684 1.772	10.209 20	.810 (-.593)
Donald Ratajczak	-2.023 -3.382**	-3.022*** .705	-.135 (-.939)	.586 (.462)	.909 .941	17.279 29	.897 (-.506)
David Resler	-2.485 -4.057***	-4.401*** 3.540	-.099 (-.629)	.514 (1.000)	.036 .037	33.284 37	1.117 (.658)
Alan Reynolds	-1.331 -2.891*	-1.995** 7.928	.104 (.569)	.519 (1.000)	.030 .031	23.776 27	1.662 (1.711)*
Richard Rippe	-3.192** -3.667**	-2.583** 1.481	-.349 (-2.185)**	.577 (.428)	1.009 1.049	19.738 26	.990 (-.051)
Norman Robertson	-2.562 -4.123***	-3.836*** 3.265	-.207 (-.841)	.571 (.701)	.289 .300	47.190 28	1.034 (.133)
A. Gary Shilling	-3.126** -5.300***	-3.388*** 2.056	.338 (1.446)	.553 (1.000)	.080 .082	80.992 38	1.428 (1.110)
Alan Sinai	-2.086 -4.320***	-4.063*** 5.303	-.278 (-1.459)	.525 (1.000)	.102 .105	59.551 40	1.075 (.292)
James Smith	-2.660 -3.588**	-2.577** 9.800*	.202 (.882)	.467 (.358)	1.701 1.760	46.689 30	2.415 (2.560)**
Donald Straszheim	-1.035 -1.936	-2.347** 2.171	-.076 (-.465)	.524 (1.000)	.002 .002	12.906 22	1.171 (.169)
Raymond Worsecck	-2.049 -2.828*	-2.390** 1.238	-.291 (-1.619)	.524 (.656)	.404 .424	15.336 21	1.464 (1.657)
David Wyss	-2.208 -3.958**	-4.242*** 2.417	-.210 (-1.301)	.559 (.728)	.215 .222	30.722 34	1.336 (1.180)
Edward Yardeni	-1.928 -3.110**	-2.626*** .868	.254 (1.626)	.393 (.102)	4.044* 4.194*	20.197 28	1.690 (2.339)**
Survey Mean	-2.647 -4.950***	-4.309*** 1.709	-.223 (-1.318)	.524 (1.000)	.096 .098	51.444 42	.891 (-.557)

Notes:

***, **, * signify statistical significance at the .01, .05, and .10 levels

^a The number in parentheses is the significance level of the test for independence of predicted and actual changes using the Fisher exact test.^b These are Chi-square statistics for the test of independence of predicted and actual changes, see Pesaren and Timmerman (1992)^c The modified DM test is the modification of the Diebold-Mariano (1995) test of differences in squared forecast errors given in Harvey *et al* (1997).

Table 4
Unbiasedness and Accuracy of Treasury bond Rate Forecasts

Individual	Liu-Maddala Restricted Cointegration Test of Unbiasedness		Mean Forecast Error and t-test for Unbiasedness	Fraction of Correct Directions (p-value for independence)	χ^2 and Pesaran-Timmerman Tests of Independence	Forecast Accuracy	
	ADF(forecast) ADF(Δ forecast)	ADR(error) Q(4)				$\Sigma (A-F)^2$ n	MSE Ratio to Random Walk (Modified DM statistic)
David Berson	-1.424 -5.626***	-4.789*** 8.454	-.163 (-1.074)	.269 (.043)**	5.110** 5.310**	15.612 26	1.388 (2.963)***
Paul Boltz	-3.171** -3.529**	-2.857*** 2.837	-.455 (-2.216)**	.414 (.669)	.232 .240	40.280 29	1.664 (2.199)**
Phillip Braverman	-5.037*** -4.235***	-3.891*** 1.226	.269 (1.298)	.581 (1.000)	.057 .059	42.084 31	1.664 (1.377)
Dewey Daane	-2.382 -6.463***	-4.107*** 4.773	-.490 (-3.254)***	.310 (.164)	2.653 2.748	25.412 29	2.088 (2.431)**
Robert Dederick	-1.894 -4.943***	-4.993*** 4.133	-.046 (-.254)	.409 (.659)	.833 1.458	13.946 21	1.533 (2.216)**
Gail Fosler	-1.312 -4.553***	-2.392** 7.005	-.590 (-3.742)***	.500 (.615)	.825 .861	22.078 24	1.999 (2.187)**
Maury Harris	-1.191 -4.870***	-5.221*** 8.784	.095 (.713)	.545 (1.000)	.021 .021	19.213 33	1.426 (1.668)
Richard Hoey	-2.140 -2.535	-2.602** 11.496**	-.443 (-1.414)	.300 (.160)	3.039* 3.199*	41.128 20	2.135 (2.274)**
Stuart G. Hoffman	-1.695 -5.522***	-4.168*** 4.667	-.183 (-1.462)	.345 (.128)	3.131* 4.137**	13.755 29	1.304 (1.942)*
William Hummer	-1.631 -4.453***	-3.236*** 10.435*	-.387 (-2.434)**	.300 (.290)	1.832 1.928	12.605 20	1.300 (1.354)
Edward Hyman	-1.501 -5.486***	-4.109*** 7.866	.501 (2.743)***	.538 (1.000)	.030 .031	59.230 39	2.123 (1.801)*
Saul Hymans	-1.402 -5.948***	-5.403*** 12.111**	-.186 (-1.390)	.455 (1.000)	.122 .520	20.005 33	1.486 (2.073)*
David Jones	-2.074 -3.742**	-3.124*** 2.073	-.276 (-1.006)	.478 (1.000)	.048 .050	39.840 23	1.252 (.967)
Irwin Kellner	-2.579 -7.460***	-4.899*** 7.124	-.159 (-.767)	.433 (.272)	2.143 2.217	38.332 30	1.190 (.676)
Carol Leisenring	-1.522 -6.388***	-5.804*** 8.473	-.010 (-.067)	.591 (.655)	.282 .002	10.413 22	1.175 (.941)
Alan Lerner	-2.183 -4.813***	-3.882*** 4.164	-.523 (-1.921)*	.652 (.685)	1.806 .320	43.875 23	1.525 (2.129)**
Mickey Levy	-2.581 -7.662***	-6.895*** 5.468	-.088 (-.571)	.514 (1.000)	.008 .150	28.397 35	1.471 (2.153)**

Arnold Moskowitz	-2.831* -6.454***	-5.387*** 5.660	.012 (.055)	.424 (.278)	1.636 1.688	45.956 33	1.764 (1.706)*
John Mueller	-1.397 -4.429***	-1.842* 7.100	-.362 (-2.035)*	.381 (.361)	1.527 1.604	16.028 21	1.796 (2.154)**
Elliott Platt	-2.569 -4.903***	-4.729*** 4.268	.069 (.385)	.435 (.680)	.434 .454	16.210 23	1.593 (2.221)**
Maria Ramirez	-1.435 -5.654***	-2.077** 4.222	-.456 (-3.708)***	.350 (1.000)	.019 .020	9.906 20	1.206 (.949)
Donald Ratajczak	-1.152 -4.745***	-5.111*** 5.544	-.092 (-.634)	.310 (.067)*	3.948** 5.798**	17.389 29	1.469 (2.948)***
David Resler	-3.229** -4.704***	-4.442*** 3.581	.018 (.105)	.541 (.687)	.315 1.016	37.129 37	1.510 (2.558)**
Alan Reynolds	-1.482 -3.878***	-2.964*** 2.142	.204 (1.229)	.407 (.420)	1.187 1.232	20.397 27	2.031 (2.778)**
Richard Rippe	-1.196 -6.679***	-3.391*** 3.371	-.137 (-.911)	.308 (.105)	3.718** 3.867**	15.103 26	1.343 (1.472)
Norman Robertson	-2.248 -4.483***	-4.526*** 3.287	-.201 (-.828)	.286 (.030)**	5.320** 5.517**	45.725 28	1.254 (2.124)**
A. Gary Shilling	-2.636* -5.943***	-3.083*** 2.280	.534 (2.754)***	.553 (1.000)	.011 .011	63.702 38	1.761 (2.111)**
Alan Sinai	-2.275 -5.397***	-5.222*** 4.684	-.027 (-.146)	.500 (.730)	.234 .240	51.929 40	1.293 (1.299)
James Smith	-1.391 -5.143***	-4.429*** 3.802	.604 (3.431)***	.600 (1.000)	.599 .620	37.865 30	3.222 (2.228)**
Donald Straszheim	-1.120 -4.352***	-4.463*** 5.540	.004 (.021)	.476 (1.000)	.043 .046	15.843 22	1.560 (2.291)**
Raymond Worseck	-.587 -4.222***	-3.240*** 2.295	-.177 (-.972)	.429 (.659)	.531 1.458	14.601 21	1.503 (1.803)*
David Wyss	-3.683** -4.514***	-4.753*** 3.412	-.137 (-.831)	.294 (.032)**	6.103** 6.287**	31.063 34	1.147 (.906)
Edward Yardeni	-1.152 -5.295***	-3.493*** 7.406	.575 (3.896)***	.536 (1.000)	.778 .807	25.757 28	2.182 (2.346)**
Mean	-2.459 -5.832***	-5.570*** 7.109	-.135 (-.832)	.333 (.024)**	6.133** 6.283**	46.418 42	1.132 (1.072)

Notes: See notes to Table 3

Table 5
Unbiasedness and Accuracy of Yen-Dollar Exchange Rate Forecasts

Individual	Liu-Maddala Restricted Cointegration Test of Unbiasedness		Mean Forecast Error and t-test for Unbiasedness	Fraction of Correct Directions (p-value for independence)	χ^2 and Pesaran- Timmerman Tests of Independence	Forecast Accuracy	
	ADF(forecast) ADF(Δ forecast)	ADF(error) Q(4)				$\Sigma (A-F)^2$ n	MSE Ratio to Random Walk (Modified DM statistic)
David Berson	-2.504 -3.589**	-2.721*** 1.681	-3.118 (-1.133)	.385 (.217)	2.275 2.366	5175.980 26	1.518 (2.452)**
Paul Boltz	-1.122 -2.735*	-2.120** 4.258	2.563 (.841)	.474 (1.000)	.003 .003	3301.963 19	1.397 (1.930)*
Phillip Braverman	-2.007 -3.097**	-2.847*** 1.481	-.204 (-.072)	.667 (.198)	2.291 2.405	3404.713 21	1.113 (.381)
Dewey Daane	-2.105 -3.535**	-3.209*** 3.265	2.873 (.996)	.393 (.441)	1.011 1.048	6518.140 28	1.729 (2.012)*
Robert Dederick	-.791 -2.042	-2.185** 3.752	1.146 (.320)	.563 (1.000)	.152 .163	3109.605 16	1.518 (1.921)*
Gail Fosler	-3.116** -3.357**	-2.699** 3.660	2.701 (.918)	.542 (.653)	.697 .728	4957.834 24	1.621 (1.828)*
Maury Harris	-1.917 -3.212**	-2.695** 3.536	-2.724 (-1.078)	.571 (.698)	.324 .336	5034.540 28	1.336 (1.642)
Richard Hoey	-1.370 -2.073	-1.984** 3.865	4.253 (.786)	.500 (1.000)	.000 .000	2685.864 10	2.170 (2.201)**
Stuart G. Hoffman	-1.874 -2.827*	-2.980*** 3.403	-1.251 (-.474)	.444 (.448)	.759 .788	4941.500 27	1.374 (2.028)*
William Hummer	-1.755 -2.847*	-2.432** 2.423	.240 (.080)	.550 (1.000)	.135 .142	3451.686 20	1.197 (1.400)
Edward Hyman	-2.179 -3.404**	-2.260** 2.403	-5.529 (-2.225)**	.543 (.569)	.675 .701	5159.600 27	1.513 (2.025)*
Saul Hymans	-1.982 -2.312	-2.291** 3.291	1.873 (.789)	.458 (1.000)	.084 .088	3194.330 25	1.055 (.593)
David Jones	-.792 -1.962	-1.722* 2.238	.136 (.028)	.444 (1.000)	.225 .253	1648.664 9	1.364 (2.071)*
Irwin Kellner	-1.135 -3.155**	-2.831*** 3.259	3.762 (1.191)	.647 (.294)	2.082 2.212	2955.657 17	1.442 (1.056)
Carol Leisenring	-1.138 -1.606	-1.947* 4.245	-.385 (-.134)	.526 (1.000)	.003 .003	2809.424 19	1.190 (.904)
Alan Lerner	-1.537 -2.670*	-.814 2.892	-7.008 (-1.372)	.500 (1.000)	.476 .529	2839.654 10	2.301 (2.358)**
Mickey Levy	-1.842 -3.257**	-2.598** 4.886	-3.438 (-1.435)	.607 (.560)	.778 .867	4672.100 28	1.239 (1.350)

Arnold Moskowitz	-1.373 -2.827*	-2.315** 2.750	-2.802 (-.960)	.583 (.673)	.243 .358	4893.624 24	1.399 (1.635)
John Mueller	-2.405 -2.739*	-2.550** 3.444	2.911 (1.063)	.524 (.659)	.311 .327	3329.745 21	1.311 (.826)
Elliott Platt	-1.764 -3.366**	-2.376** 3.983	-1.493 (-.495)	.636 (.384)	1.352 1.416	4245.175 22	1.239 (1.331)
Maria Ramirez	-2.369 -2.784*	-2.648** 6.150	-2.993 (-.920)	.500 (1.000)	.159 .167	4202.448 20	1.550 (1.908)*
Donald Ratajczak	-1.683 -3.186**	-3.075*** 3.363	2.600 (.927)	.400 (.653)	.329 .343	4886.268 25	1.357 (1.716)*
David Resler	-1.673 -3.116**	-2.991*** 4.052	-1.367 (-.580)	.536 (1.000)	.050 .052	4245.559 28	1.126 (1.132)
Alan Reynolds	-1.309 -2.814*	-2.296** 2.255	-.762 (-.279)	.591 (.666)	.627 .657	3470.269 22	1.082 (.466)
Richard Rippe	-2.688* -3.759***	-2.942*** 1.791	.305 (.118)	.577 (.453)	.735 .765	4343.981 26	1.275 (1.621)
Norman Robertson	-.327 -2.730*	-2.072** 2.063	-.216 (-.058)	.571 (1.000)	.286 .308	2517.032 14	1.254 (1.109)
A. Gary Shilling	-2.298 -3.653**	-1.483 2.917	-13.233 (-3.983)***	.538 (1.000)	.763 .793	11728.621 26	3.441 (3.582)***
Alan Sinai	-2.613 -3.434**	-2.506** 3.374	-1.653 (-.554)	.519 (1.000)	.008 .008	6320.800 27	1.796 (1.654)
James Smith	-1.800 -4.013***	-1.616 3.248	-11.881 (-4.713)***	.630 (.407)	1.511 1.569	9506.039 27	2.644 (2.294)**
Donald Straszheim	-1.093 -3.058**	-3.770*** 4.067	1.350 (.476)	.588 (.620)	.701 .745	2237.738 18	1.092 (.293)
Raymond Worseck	-1.305 -3.308**	-1.530 6.685	-3.109 (-1.003)	.571 (.673)	.269 .283	4235.650 21	1.385 (1.297)
David Wyss	-2.522 -3.551**	-2.805*** 2.847	.080 (.024)	.542 (1.000)	.168 .175	6049.966 24	1.693 (3.278)***
Edward Yardeni	-1.578 -2.717*	-2.302** 2.356	-4.860 (-1.810)*	.667 (.163)	3.055 3.187	4546.241 24	1.300 (1.360)
Mean	-1.941 -3.147**	-2.838*** 3.596	-1.529 (-.645)	.464 (.687)	.491 .509	4594.172 28	1.219 (2.114)**

Notes: See notes to Table 3

Table 6
Tests of Heterogeneity of Forecasts Across Survey Respondents

Dependent variable: Deviation of an individual's time t forecast from the mean time t forecast

Data set	Panel 1 ³			Panel 2 ⁴		
Number of forecasters	93	93	79	33	33	33
Number of forecasts	1650	1650	1280	924	924	722
Forecast variable	T-Bill rate	T-Bond rate	Yen/\$ rate	T-Bills rate	T-Bonds Rate	Yen/\$ Rate
Panel A: Models with Individual Dummy Variables						
Tests for individual effects ¹	4.09***	8.63***	6.76***	5.96***	15.38***	12.23***
Panel B: Models with Employment Dummy Variables						
Banks	-.009 (.039)	-.025 (.038)	.837 (.594)	-.013 (.056)	-.041 (.053)	.343 (.784)
Security firms	-.044 (.036)	-.145*** (.035)	.423 (.540)	-.054 (.049)	-.136*** (.046)	-.175 (.656)
Independent Forecasters	-.158*** (.044)	-.262*** (.043)	1.653** (.653)	-.240*** (.062)	-.350*** (.059)	2.618*** (.824)
Corporate forecasters	-.033 (.083)	-.090 (.080)	1.874 (1.214)	na	Na	na
Econometric models	-.047 (.064)	-.107 (.062)	-1.483 (.974)	.014 (.077)	-.062 (.074)	-2.552** (1.113)
Constant	.047 (.031)	.108 (.030)	-.582 (-1.28)	.015 (.041)	.069 (.039)	-.454 (.529)
F test for differences across employers ²	3.46***	10.91***	2.93**	4.95***	10.58***	5.92***
, * represent statistical significance at the .05 and .01 levels ¹ This F statistic tests that the coefficients for all individuals are the same. ² This F statistic tests that the coefficients for all employer types are the same. ³ Panel 1 includes all economists having at least 6 forecasts. ⁴ Panel 2 includes all economists having at least 20 forecasts.						

Table 7
OLS Estimates of Incentives Model

**Dependent variable: Absolute value of the deviation of an economist's time t forecast
from the time t forecast mean excluding that economist**

Data set	Panel 1			Panel 2		
Number of forecasters	93	93	79	33	33	33
Number of forecasts	1650	1650	1280	924	924	722
Forecast variable	T-Bill	T-Bond	Yen/\$	T-Bill	T-Bond	Yen/\$
AGE	-.0018* (.0011)	-.0021** (.0010)	-.0428*** (.0149)	-.0022 (.0015)	-.0029** (.0014)	-.0435** (.0206)
AGE*MODEL	.0002 (.0045)	-.0041 (.0042)	.0214 (.0720)	.0040 (.0054)	-.0011 (.0049)	-.0165 (.0956)
AVEDEV	.8436*** (.0512)	.6983*** (.0765)	.8610*** (.0793)	1.0475*** (.0830)	.9218*** (.1148)	.6490*** (.1108)
OWN	.1697*** (.0382)	.1298*** (.0364)	1.7425*** (.5638)	.2185*** (.0514)	.2042*** (.0470)	1.6198** (.6782)
Independent but not OWN	.0527 (.0333)	.0710** (.0318)	.2293 (.4760)	.0370 (.0505)	.1095** (.0462)	.1236 (.6422)
Banks	-.0742*** (.0269)	-.0944*** (.0257)	-.9469*** (.3983)	-.1388*** (.0396)	-.1574*** (.0362)	-1.9637*** (.5339)
Securities firms	-.0254 (.0248)	.0115 (.0236)	-.3453 (.3616)	-.0844** (.0344)	-.0495 (.0316)	-1.7803*** (.4485)
Corporate forecasters	-.1133** (.0572)	-.0966* (.0539)	-.7845 (.8384)			
Econometric Models	-.1476** (.0334)	-.0974 (.0698)	-1.1935 (1.3083)	-.2706*** (.0962)	-.2020** (.0875)	-1.1726 (1.9129)
Constant	.0979*** (.0334)	.1492*** (.0397)	1.5665*** (.5343)	.0836* (.0502)	.1319** (.0573)	3.4837*** (.7448)
F test for differences across industries	9.20***	10.53***	4.40***	11.82***	14.38***	8.51***
R ²	.185	.097	.101	.218	.150	.100
*, **, and *** represent statistical significance at the .10, .05, and .01 levels						

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Predicting Interest Rates: A Comparison of Professional and Market-Based Forecasts

Michael T. Belongia

Interest rates have varied substantially in recent years. Since 1981, for example, the monthly average three-month Treasury bill rate has ranged between 5.18 percent and 16.30 percent while the Baa corporate bond rate ranged between 9.61 percent and 17.18 percent; the prime rate during this time reached a high of 20.5 percent and fell to a low of 7.5 percent. Interest rate movements are important, of course, because they affect the present value of streams of future payments, that is, wealth. Moreover, the risk of interest rate changes is related directly to the level of interest rates.¹ During the 1980s, therefore, firms and individuals have faced substantial exposure to interest rate risk.

There are at least two approaches that can be taken to reduce the magnitude of this problem. The first is to hedge interest rate risk, which has been discussed at length in this *Review* and elsewhere.² The second is to forecast the likely course of interest rates. This article investigates the reliability of such forecasts in general and assesses the specific usefulness of forecasts by professional economists.

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¹Interest rate risk, for a firm whose portfolio is composed of streams of future receipts and payments, is measured by the interest elasticity of the portfolio; for a single asset, this can be expressed as $-n(i/1+i)$, where n is the term to maturity. A more general expression for a portfolio of assets and liabilities is derived in Belongia and Santoni (1987). In either case, the level of interest rate risk rises with the interest rate.

²See Belongia and Santoni (1984, 1985).

INTEREST RATE FORECASTS: THEORY AND EVIDENCE

Given the popular attention that such forecasts command, it is surprising to note what economic theory says about them: they are unlikely to provide accurate insights about the future. This argument is stated clearly by Zarnowitz:

It might be argued that these are *forecasts* of people who study the economy (experts), which are quite unlike the *expectations* of those who act in the economy (agents). On the one hand, the experts are usually credited with more knowledge of the economy at large than the agents have. On the other hand, the experts are often charged with being less strongly motivated to predict optimally than the agents who are seen as having more at stake.³

Economists, at least on one level, lack sufficient incentives to make forecasts that are more accurate than information already available in the marketplace. Moreover, previous studies have shown there is little systematic difference among professional forecasts, at least partly because they "use to a large extent the same data, receive the same news, interact, and draw upon a common pool of knowledge and techniques."⁴

The key issue, however, really is not whether experts have more (or better) information than the public, but whether individuals who consistently can fore-

³See Zarnowitz (1983), p. 2.

⁴See Zarnowitz (1986), p. 6, and the references cited therein.

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cast interest rates more accurately than the market are likely to make their forecasts public. The reason has to do with individual self-interest. Quite simply, why would anyone reveal valuable insight about the future when he could increase his wealth directly by appropriately trading in financial markets using this information?

If, for example, a person *knew* that the three-month Treasury bill rate would be 6.50 percent in December, while the futures market currently priced it at 7.00 percent, the forecaster's wealth gain would be limited only by his ability to buy December Treasury bill futures; in this example, he would make a profit of \$1,250 on every contract he could buy.⁵ Certainly, he has no incentive to make the same forecast public without appropriate compensation, at least until he had taken as large a position in the market as he could. Of course, forecasters may have incentives to sell forecasts that are of no value to their wealth; it is not clear, however, why other individuals would pay for such predictions.

As a general rule, the accuracy of economic forecasts varies widely across variables. Previous research has found that predictions of the three-month Treasury bill rate six months into the future by major commercial forecasters are within two percentage points of the actual rate only 67 percent of the time.⁶ Thus, if in June, the three-month Treasury bill rate was forecast to be 7 percent in December, there is only a 0.67 probability that the actual December rate would be somewhere between 5 percent and 9 percent. Other studies have shown that error statistics often double in size when the forecast horizon is extended as little as from one to two quarters ahead.⁷

The Efficient Markets Hypothesis and Interest Rate Forecasts

A model of interest rate determination demonstrates why individuals are unable (as opposed to unwilling) to forecast interest rates more accurately, on average, than the forecasts already implied by cur-

rent spot rates or prices in the interest rate futures markets. This model, known as the efficient markets model, states that the *expected* interest rate at some specified future point in time, given all information presently available, is equal to the current interest rate plus whatever change in the interest rate is suggested by currently available information.⁸

The driving force behind the efficient markets model is the information available to traders in the market and the incentives they have to use this information. Current market rates and expectations of future rates are influenced by changes in information that affect expectations about the future. Because new information is unknown until it actually is released, success in predicting future interest rates depends upon predicting both future changes in the information *and* the market's reaction to such "news."

An Illustration of the Efficient Markets Model

One illustration of the efficient markets model applied to actual data is the change in interest rates that follows the weekly Federal Reserve M1 announcement that usually occurs at 4:30 p.m. [EST] each Thursday. The assumption is that the interest rate at 3:30 p.m., just prior to the announcement, fully reflects all currently available information relevant to the Treasury bill rate, including various forecasts of the Fed's yet-to-be-announced change in M1; thus, the available information at 3:30 p.m. includes both actual and predicted data.

When the Fed announces the M1 change at 4:30 p.m., the market's information set is revised with the actual M1 change replacing its predicted value. If no other significant information is released until rates are observed again at 5 p.m., the change in the Treasury bill rate from 3:30 to 5 p.m. reflects the market's reaction to the news in the M1 announcement. If the actual and predicted M1 values are different, the efficient markets model predicts that interest rates will react to the new information in the Fed's M1 announcement; many studies have found this result empirically.⁹

⁵Treasury bill futures are priced by subtracting the Treasury bill interest rate from 100. Thus, interest rates of 7.00 and 6.50 percent imply contract prices of 93.00 and 93.50, respectively. Moreover, each basis-point change in the interest rate is worth \$25 on the value of a contract. Buying one contract at 93.00 and selling at 93.50 would show a simple profit of 50 basis points $\times$ \$25 = \$1,250, abstracting from commission and other costs.

⁶McNees, p. 11.

⁷Typically, the criterion is root-mean-squared error (RMSE); see McNees (1986). Also, see Zarnowitz (1983).

⁸The efficient markets model applied to interest rate determination can be expressed as:

$$E(i_{t+1}|\Omega_t) = i_t(1 + E(i_{t+1} - i_t|\Omega_t)),$$

where E is the expectations operator and Ω_t is the information available to agents at the time forecasts are made. For more detail on this model, see Fama and Miller (1972) or Mishkin (1983).

⁹See Sheehan (1985) and Belongia and Sheehan (1987) for a survey and critique of these studies.

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This example demonstrates the major point of the efficient markets model: changes in interest rates depend on changes in information. A forecast that interest rates will be higher six months from now than what already is implied by the underlying term structure really is a forecast that new information will be revealed which will cause market participants to raise the rate of interest. Such forecasts are potentially useful only if the forecasters consistently have better information, on average, than the other market participants generally possess. Or, to state the proposition differently, a useful forecast is not simply an accurate one; it also must tell something about the future that is not already reflected in current market interest rates.

A COMPARISON OF INTEREST RATE FORECASTS

A comparison of alternative interest rate forecasts is essentially a comparison of information sets that forecasters possess. The futures market, as well as forecasts that simply assume the future will resemble the present, provide useful alternatives to forecasts produced by specialized forecasting services. If all forecasts have similar accuracy, it would suggest that market participants use essentially the same information.

Survey Forecasts

The information content of economists' forecasts is intriguing for a variety of reasons. Presumably, their specialized training gives them insight to the workings of financial markets. In return for their services, the economists involved earn relatively large salaries; moreover, some command considerable public attention. The latter group should include those whose forecasts are among the best of competing alternatives.

Market Forecasts

The futures market offers an interesting perspective on forecasts. At a given point in time, individuals may enter into agreements to buy or sell interest-sensitive assets, such as Treasury bills, at a date as much as two years into the future. The collective actions of investors betting that interest rates will rise from today's level (who will sell Treasury bill futures short) and investors betting that interest rates will fall (who will buy, or go long in, Treasury bill futures) determine, at each moment in time, the "market's" expectation of what interest rates will be at a specified future date. Such forecasts are interesting for two reasons: they reflect all available information held by market partici-

pants and these participants have a compelling reason to forecast accurately. If they are wrong, the money lost is their own!

A naive or no-change model is an interesting third alternative because, as previously noted, predicting interest rates really involves predicting changes in information and the market's reaction to this news. If one believes it is impossible to predict actions by OPEC, changes in macroeconomic policy, revisions in economic data and other factors that affect expectations of future interest rates, the best strategy would be to predict no change in information and, hence, no change in interest rates. Certainly, as the length of the forecast horizon grows shorter, the probability of large changes in information (and interest rates) declines as well.

Sources of Forecasts: Professional and Market Data

The six-month-ahead forecasts of the three-month Treasury bill rate by nine economists surveyed regularly by the *Wall Street Journal* were collected over the period December 1981 through June 1986. These forecasts, which are published on or about each January 1 and July 1, yielded 10 forecast periods and 90 predictions to be evaluated. Each forecast was assumed to be made the day before publication.¹⁰

Comparable forecasts from the futures market were derived by observing on June 30 the three-month Treasury bill rate implied by the December Treasury bill futures contract and on December 31 the rate implied by the June contract. A larger sample to be used later also employed observations on the March futures contract from the previous September 30 and on the September contract from March 31. These data were compared with actual Treasury bill rates on the day the relevant futures contract ceased trading.¹¹ The procedure yielded 40 observations, of which 10 coincided with dates of the economists' forecasts. The naive or no-change forecast was obtained by observing the spot Treasury bill rates on the last business days of March, June, September and December and predicting that same rate would exist on the last day of the month six months hence. Again there are 40 observa-

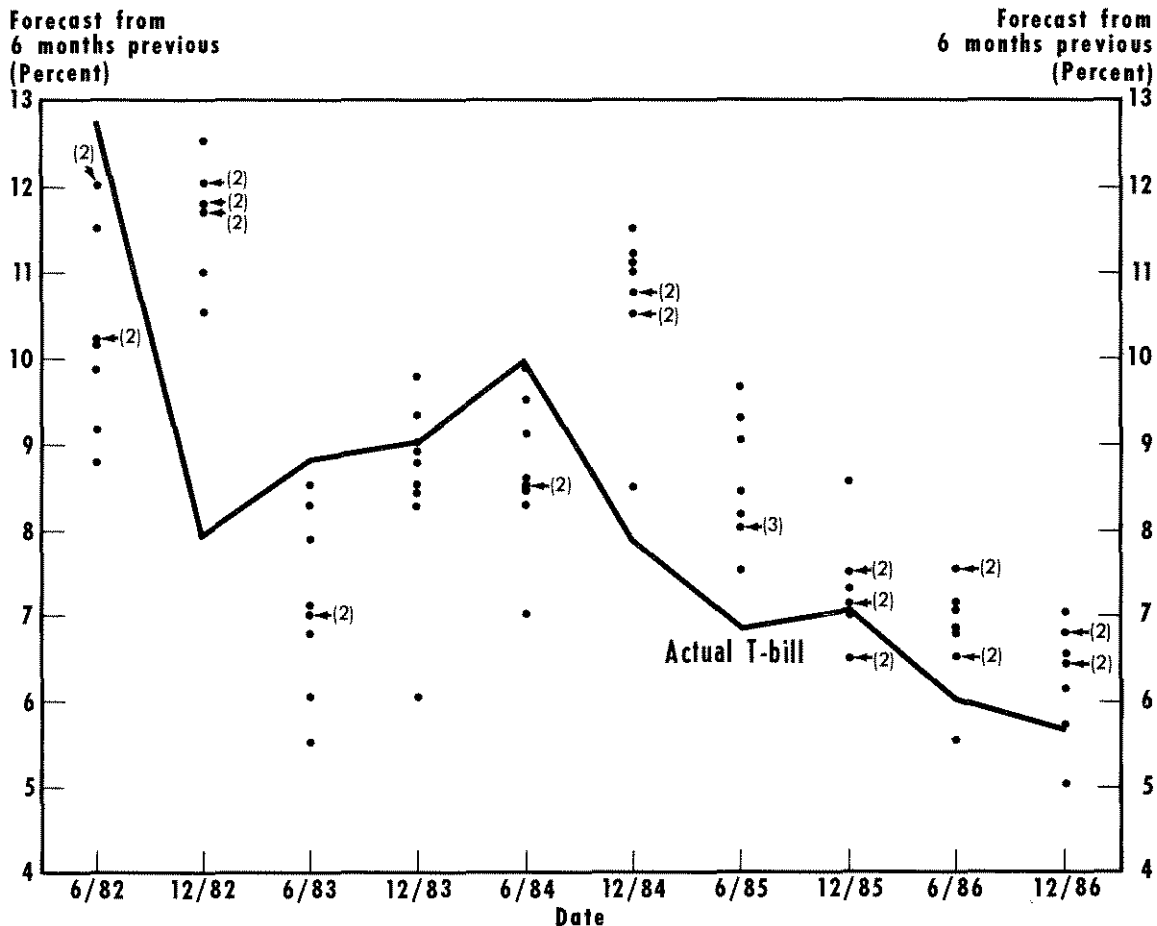
¹⁰The full *Wall Street Journal* survey includes many more economists, but only nine individuals have responded consistently since the initial survey in December 1981.

¹¹Treasury bill futures contracts usually are liquidated in the third week of their terminal months, not the last day of the month as with the economist forecasts.

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Chart 1

Treasury Bill Rates: Actual and Predicted

tions over the 1977–86 interval with 10 coinciding with dates of the economist survey. Although this sample of market-based forecasts includes only 10 observations that coincide with the economists' forecasts, it serves as the basis for the first comparison. Subsequent analysis uses the entire sample back to 1977 for a stronger test of forecast accuracy.

Forecasts of Direction of Change

A first assessment about the accuracy of the professional forecasts was made against a relatively weak criterion, the predicted *direction* of change. That is, if rates were forecast to increase (or decrease), did they? The individual forecasts relative to subsequent actual values are plotted in chart 1.

The 90 individual expert predictions correctly forecast the *direction* of change on 38 occasions, or 42 percent of the time. If interest rate movements are random, a 50 percent record of accuracy would be expected.¹² Only one of the nine forecasters guessed

¹²This type of performance — the strategies of professional investors yielding returns inferior to those of simple rules — is common. For example, the mean equity fund managed by professional institutional money managers rose 16.7 percent in 1986 compared with an 18.7 percent rise in the S&P 500 index. Moreover, more than 67 percent of the money managers produced returns in 1986 smaller than the general increase in market values, as measured by the S&P 500; see Wallace (1987). For a more extensive discussion of this result and a similar finding of inferior performance by mutual fund managers over time, see Malkiel (1985), pp. 147–82, and the references to his chapter 7.

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Table 1

Summary Statistics for Errors from Alternative Forecasts: June 1982-December 1986

	MAE	Mean error	RMSE	n
Economist individual forecasts	1.625	-0.406	2.056	90
Economist mean forecast	1.550	-0.406	1.889	10
Futures market forecast	1.466	-1.132	2.253	10
Naive forecast	1.321	-0.543	1.859	10

the direction of change correctly more than one-half of the time; he was correct on six of 10 occasions. Three others guessed the correct direction of change on five of 10 occasions. The worst individual performance was two correct predictions.

For the 40 quarterly predictions derived from futures market observations, 22, or nearly 55 percent, correctly forecast the direction of change. Over the shorter 1982-86 sample, five of 10 directions of change were predicted correctly by the futures market. On the simple criterion of direction of change, the futures market outperforms the economists surveyed.¹³

Point Forecasts

A different criterion by which to evaluate forecasts is a comparison of the point estimates of the predicted changes in interest rates with the actual changes. These comparisons were analyzed several ways. First, forecasts by the nine experts provided 90 individual predictions of the Treasury bill rate. These individual predictions also could be aggregated to form a consensus, or average, prediction for the nine economists at a specific moment in time. The performance of the experts relative to the futures market and naive forecasts first was judged over the short 1982-86 sample that coincided with the economist survey. Differences between actual Treasury bill rates and, respectively, the economist, futures market and naive forecasts were calculated to generate values for forecast errors. All errors were calculated as actual minus predicted values. Table 1 shows the summary statistics for these errors.

¹³There is no meaningful way to construct a direction-of-change criterion for the naive forecast.

The entries in table 1 represent the mean absolute error (MAE), mean error and root-mean-squared error (RMSE) from forecasts for the three-month Treasury bill rate six months into the future. The first two rows are associated with the individual and consensus forecasts from the survey of experts. The third row is based on the differences between the actual Treasury bill rate and the futures market prediction. The fourth row is based on the naive predictions, the differences between current and previous actual rates.

The most interesting aspect of these summary statistics is their remarkable similarity. Of course, this result was predicted by the earlier theoretical discussion, which emphasized that all available information would be reflected in current market rates. The mean errors for all forecasts are negative, indicating that these methods tended to overestimate the interest rate; the futures market, however, tended to be the most bearish forecaster on this account by overpredicting the Treasury bill rate an average of 1.132 percentage points. MAE statistics also are similar, with a range of about 30 basis points between the best (naive) and worst (individual economist). The RMSE statistic, which is a measure of the dispersion of forecast errors, shows the naive and economist consensus to perform best.¹⁴

¹⁴The likely explanation for the futures prediction having the highest RMSE is the method of calculation. The RMSE will tend to be lower for forecasts that made many errors of a similar size relative to forecasts that had smaller errors, on average, but had several very large errors. This result occurs, of course, because calculating the RMSE involves squaring the forecast errors. The effects of random variation in small samples also is a potential source of distortion. Thus, two very large futures market errors offset a record of generally accurate forecasts as indicated by other statistics.

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Table 2

Market-Based Forecasts Over a Longer Horizon: March 31, 1977 - December 31, 1986

	MAE	Mean Error	RMSE	n
Futures market forecast				
Daily data	1.676	-0.163	2.589	40
Weekly averages	1.702	-0.141	2.634	40
Naive forecast				
Daily data	1.740	0.035	2.578	40
Weekly averages	1.788	0.027	2.695	40

Longer Sample Results for Market-Based Forecasts

Error statistics from the longer 10-year sample of quarterly observations described earlier are reported in table 2. Because daily interest rate changes are volatile and a large, one-day change could affect the results, forecasts for a specific date also were compared with the average Treasury bill rate for the week in which that date occurred.

Relative to the previous results, the futures market average errors declined substantially to near 15 basis points, compared with the shorter sample mean error of about 113 basis points. MAE and RMSE values increased slightly, however, for the longer sample. The forecast errors do not appear to vary with the use of daily or weekly average values for the terminal period spot rate. The naive forecast also shows slight increases in MAE and RMSE values but its mean error falls about 50 basis points to near zero. Again, while these statistics are not directly comparable with the economist forecasts because of the different sample periods, nothing in them suggests superior performance by the economists.

Market Reaction to Forecasts

As a final check on the information content of the expert forecasts, daily Treasury bill rates were divided into two groups: those for days when the experts' forecasts were published and those for other trading days. (Recall that the forecasts are useful to the market only if they add to the existing pool of market information.) To test whether this is true, equation (1) was estimated:

$$(1) \text{TB}_t = 0.015 + 0.998 \text{TB}_{t-1} + 0.049 \text{ANNOUNCEMENT}_t + e_t$$

(1.02) (657.2) (0.95)

$\bar{R}^2 = 0.99$ DW = 1.77

where the daily value of the Treasury bill rate (TB_t) is regressed on the previous day's value (TB_{t-1}) and a dummy variable (ANNOUNCEMENT) that takes a value of one on the 11 days that the expert forecasts were released.¹⁵ If the expert forecasts add to the market's information, the coefficient for the ANNOUNCEMENT variable should be significantly different from zero; as the t-statistic of 0.95 reveals, however, we cannot reject the hypothesis that the forecast announcements have no effect on Treasury bill rates. Apparently, the Treasury bill market had already incorporated the information underlying these forecasts prior to their public release.

SUMMARY

Interest rate risk has been substantial in the 1980s, and, by no coincidence, the demand for interest rate forecasts has increased. There are strong theoretical reasons to believe, however, that such forecasts are subject to large errors. Moreover, anyone who could predict interest rates more accurately, on average, than other market participants would have no reason to make his forecasts publicly. Comparisons of interest rate forecast errors support the notion that several market-based forecasts, using information easily accessible to the general public, predict the Treasury bill rate six months into the future as well as a panel of prominent forecasters.

Why, then, do economists make public forecasts of interest rates and seemingly earn large salaries for doing so? Several explanations related to other primary functions of corporate economists seem plausible. First, economists may serve an advertising function for their firms: they are paid, in part, to get the

¹⁵It is possible to use the January 3, 1987, survey for this estimation.

FEDERAL RESERVE BANK OF ST. LOUIS

MARCH 1987

firm's name mentioned in the press often, and forecasting interest rates is one way to achieve this end. Second, economists may provide a managerial insurance function. If a business decision has the potential to cause large losses, managers who have relied on the input of economists cannot be held negligent, in the sense of acting without seeking "the best information available at the time." Finally, forecasting interest rates may be a trivial portion of an economist's overall function; his compensation may be based primarily on analytical performance in other areas. It is unlikely, however, that economists are employed primarily for their ability to predict interest rates more accurately than the market.

REFERENCES

- Belongia, Michael T., and Gary J. Santoni. "Hedging Interest Rate Risk with Financial Futures: Some Basic Principles," this *Review* (October 1984), pp. 15-25.
- _____. "Cash Flow or Present Value: What's Lurking Behind That Hedge?" this *Review* (January 1985), pp. 5-13.
- _____. "Interest Rate Risk, Market Value, and Hedging Financial Portfolios," *Journal of Financial Research* (Spring 1987), pp. 47-55.
- Belongia, Michael T., and Richard G. Sheehan. "The Informational Efficiency of Weekly Money Announcements: An Econometric Critique," *Journal of Business and Economic Statistics* (forthcoming).
- Fama, Eugene F., and Merton H. Miller. *The Theory of Finance*, (Holt, Rinehart and Winston, Inc., 1972).
- Granger, C. W. J. "Comment," *Journal of Business & Economic Statistics* (January 1986), pp. 16-17.
- Litterman, Robert B. "A Statistical Approach to Economic Forecasting," *Journal of Business & Economic Statistics* (January 1986), pp. 1-4.
- Malkiel, Burton G. *A Random Walk Down Wall Street*, 4th edition, (W. W. Norton and Company, Inc., 1985).
- McNees, Stephen K. "Forecasting Accuracy of Alternative Techniques: A Comparison of U.S. Macroeconomic Forecasts," *Journal of Business & Statistics* (January 1986), pp. 5-15.
- Mishkin, Frederic S. *A Rational Expectations Approach to Macroeconomics: Testing Policy Ineffectiveness and Efficient-Markets Models* (University of Chicago Press, 1983).
- Sheehan, Richard G. "Weekly Money Announcements: New Information and Its Effects," this *Review* (August/September 1985), pp. 25-34.
- Wallace, Anise C. "Funds That Put The Pros to Shame," *New York Times*, February 8, 1987.
- Zarnowitz, Victor. "Rational Expectations and Macroeconomic Forecasts," NBER Working Paper No. 1070 (January 1983).
- _____. "The Record and Improvability of Economic Forecasting," NBER Working Paper No. 2099, Cambridge, MA (December 1986).

12/29/2020

Economists Got the Decade All Wrong. They're Trying to Figure Out Why. - WSJ

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JOURNAL REPORTS: DECADE IN REVIEW

Economists Got the Decade All Wrong. They're Trying to Figure Out Why.

The U.S. has enjoyed its longest economic expansion on record without triggering inflation as interest rates remain historically low



Subdued growth and low interest rates have been part of the mix in the longest economic expansion on record for the U.S.

PHOTO: RON ANTONELLI/BLOOMBERG NEWS

By Greg Ip

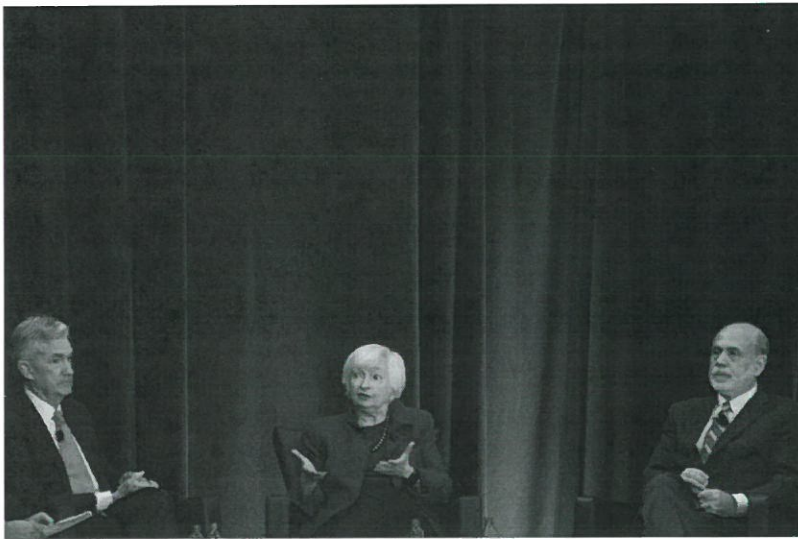
Dec. 14, 2019 1:00 pm ET

In the fall of 2009, the global financial crisis had only just ended, and interest rates were a mere 0.1%. Peering ahead, economists assumed the recovery would resemble previous recoveries, though a tad slower, and thus rates would start rising the next year and plateau at 4.2% by 2015.

But by the fall of 2010, rates hadn't budged. Like Charlie Brown taking another run at the football, economists gamely made the same forecast that year, and the year after that and the year after that. Rates remained stuck near zero until 2015, a stretch of free money unseen since the 1940s.

When rates started to rise, they didn't come close to levels once considered normal, ending the decade between 1.5% and 1.75%. Private-sector economists now expect them to average 2.4% over the long term, according to Blue Chip Economic Indicators. Judging by the bond market, they might have guessed high again: Ten-year Treasury note yields are just 1.8%—roughly zero, adjusted for inflation.

How could economists have gotten something so basic so spectacularly wrong? What was it about this past decade that made all their predictions go awry?



Fed Chairman Jerome Powell and former chairmen Janet Yellen and Ben Bernanke. The financial crisis was followed by a stretch of free money unseen since the 1940s.

PHOTO: JESSICA MCGOWAN/GETTY IMAGES

 WHAT'S NEWS



Decade in Review: The Economy



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THE DECADE IN REVIEW

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Economists have been casting around for the answer, a theory to explain their inability to peer accurately into the months ahead, let alone the years. Such a theory must do more than say “The Federal Reserve did it.” It must explain why growth was the most subdued of any expansion since the 1940s and inflation consistently ran below the Fed’s 2% target, the reasons the Fed kept rates so low.

WSJ NEWSLETTER

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Tyler Blint-Welsh.



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And, no less difficult, it would have to explain why, in spite of that subdued growth, the U.S. has enjoyed its longest economic expansion on record, one marked by a record-breaking bull market in stocks and unemployment falling to a 50-year low.

One explanation is the "debt hangover" theory popularized by Carmen Reinhart and Kenneth Rogoff, whose history of financial crises, "This Time Is Different: Eight Centuries of Financial Folly," was a sleeper hit in 2009. They found that in the wake of financial crises, households, banks, businesses and sometimes governments are fixated on paying down debts and wary that another crisis is around the corner, so they avoid borrowing and investing. This holds down growth, inflation and interest rates.

The U.S. initially tracked this model. It had barely exited its own crisis when another erupted in the eurozone, pushing Greece into default and others to the brink of it.

But as those crises faded from view, low growth, inflation and rates persisted.

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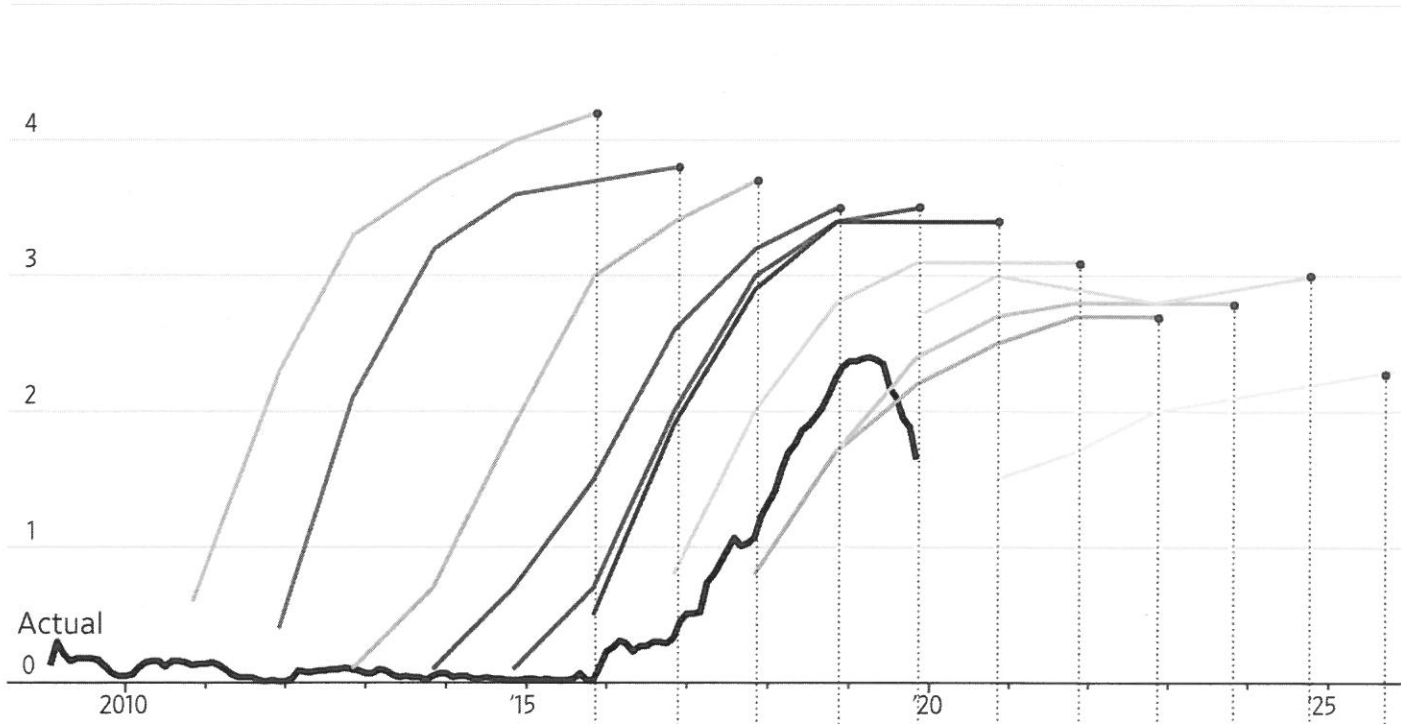
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A Confounding Decade

Since 2009 economists' projections of interest rates and unemployment (shown with year made) have consistently proved too high.

Three-month Treasury bill

5%



Unemployment rate

10%





Sources: Blue Chip Economic Indicators (forecasts); Federal Reserve Bank of St. Louis (actual T-bill, unemployment rates)
Kathryn Tam/THE WALL STREET JOURNAL

So in 2013 Larry Summers, a former top adviser to Presidents Bill Clinton and Barack Obama and now an economist at Harvard University, advanced an alternative explanation: “secular stagnation.” He borrowed the phrase from an earlier Harvard economist, Alvin Hansen who used it in 1938 to describe the Great Depression’s persistently weak growth and high unemployment. Mr. Hansen tied it to weak investment due to slow population growth: Businesses had less need to invest when there were fewer new workers and customers and when aging households bought fewer big-ticket products like houses.

Slow population growth is once again weighing on growth and interest rates, Mr. Summers noted, and he added several other factors: the fastest-growing businesses, such as social-media platforms, invest little of their rich profits. Higher inequality meant more income flows to the high-saving, low-spending rich.

Though initially skeptical of Mr. Summers’s thesis, many economists have since warmed to it, at least for other parts of the world, if not the U.S. In some countries like Germany a persistent excess of savings manifests itself as a trade surplus which flows into other countries’ bonds, holding down interest rates around the world.

Secular stagnation has several profound implications. First, with interest rates closer to zero, central banks are less able to combat future recessions. Second, a structural shortage of private borrowing means governments can run big deficits without pushing up interest rates. Indeed, given central banks’ lack of ammunition, governments should run deficits, or the economy will stagnate. Reducing entitlements such as future Social Security benefits in the name of fiscal prudence may worsen the problem by encouraging households to save more.

Secular stagnation also increases the risk of protectionism. Any country with too little domestic demand to achieve full employment and 2% inflation will be tempted to foist the problem on its neighbors by cheapening its currency or erecting tariffs so as to export more and import less.

12/29/2020

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Yet in key respects the past decade doesn't conform to the gloomy prognosis of secular stagnation: The stock market has romped to one record after another, and job growth has remained consistently strong.

As with interest rates, economists have been surprised by unemployment, which peaked at almost 10% in 2010. Year after year, they expected it to bottom out around 5%. It's now down to 3.5%, a 50-year low, and likely headed lower.

The expansion is now the longest since records begin in the mid-1800s. It bears little resemblance to the 1930s, which Mr. Hansen described as "sick recoveries which die in their infancy and...leave a hard and seemingly immovable core of unemployment."



Job seekers and recruiters at a fair in Los Angeles. Economists have been surprised by the continued decline of unemployment.

PHOTO: MONICA ALMEIDA/REUTERS

This points to a third possible theory. The so-called natural rate of unemployment, the lowest the U.S. can sustain without running out of workers or pushing up inflation (called u^* or "u-star" in economists' equations) is much lower than previously thought. So the recovery has had more ground to cover than many realized, and as a result the economy has spent much of the past decade operating well below capacity.

THE DECADE IN REVIEW

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Jan Hatzius, chief economist at Goldman Sachs, says there isn't a lot of mystery about the behavior of inflation and interest rates: "We fell into a deep hole so we had a lot of spare capacity, and it took a long time to climb out."

The U.S. may have finally climbed out, but until Europe has as well, interest rates may remain low, he says. "How secular is it? How cyclical? Until you've seen economies really normalize from a cyclical perspective it's going to be hard to fully distinguish between those two things."

In other words, it might take the next decade to answer what really happened in the last.

Mr. Ip is The Wall Street Journal's chief economics commentator, in Washington. He can be reached at greg.ip@wsj.com.

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What is your take on the economy over the past 10 years? Join the conversation below.

Appeared in the December 18, 2019, print edition as '.'

College Rankings

Energy

VIX INDEX(^VIX)			
<u>Month</u>	<u>High</u>	<u>Low</u>	<u>Avg</u>
4/1/2025	52.33	21.51	36.92
3/1/2025	27.86	17.15	22.51
2/1/2025	21.13	14.77	17.95
1/1/2025	19.54	14.85	17.20
12/1/2024	27.62	12.77	20.20
11/1/2024	21.98	13.51	17.75
10/1/2024	23.16	18.03	20.60
9/1/2024	22.38	15.37	18.88
8/1/2024	38.57	14.65	26.61
7/1/2024	18.46	12.03	15.25
6/1/2024	13.33	11.94	12.64
5/1/2024	15.39	11.86	13.63
4/1/2024	19.23	13.65	16.44
3/1/2024	15.22	12.78	14.00
2/1/2024	15.85	12.79	14.32
1/1/2024	14.79	12.44	13.62
12/1/2023	13.67	12.07	12.87
11/1/2023	16.87	12.46	14.67
10/1/2023	21.71	17.03	19.37
9/1/2023	18.94	13.09	16.02
8/1/2023	17.89	13.57	15.73
7/1/2023	15.44	13.19	14.32
6/1/2023	15.65	12.91	14.28
5/1/2023	20.09	16.05	18.07
4/1/2023	19.09	15.78	17.44
3/1/2023	26.52	18.49	22.51
2/1/2023	22.87	17.87	20.37
1/1/2023	22.9	18.35	20.63
12/1/2022	25	19.06	22.03
11/1/2022	26.09	20.35	23.22
10/1/2022	33.63	25.75	29.69
9/1/2022	32.6	22.79	27.70
8/1/2022	26.21	19.53	22.87
7/1/2022	27.54	21.33	24.44
6/1/2022	34.02	24.02	29.02
5/1/2022	34.75	25.42	30.09
4/1/2022	33.52	18.57	26.05
3/1/2022	36.45	18.90	27.68
2/1/2022	31.02	19.96	25.49
1/1/2022	31.96	16.60	24.28
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10/1/2021	22.96	15.01	18.99
9/1/2021	25.71	16.11	20.91
8/1/2021	21.67	15.45	18.56
7/1/2021	22.50	15.07	18.79

6/1/2021	20.70	15.62	18.16
5/1/2021	27.59	16.69	22.14
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7/1/2020	32.19	24.10	28.15
6/1/2020	40.79	24.52	32.66
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12/1/2019	17.99	11.71	14.85
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10/1/2019	21.46	12.27	16.87
9/1/2019	21.15	13.31	17.23
8/1/2019	24.81	13.73	19.27
7/1/2019	16.55	11.69	14.12
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11/1/2018	23.81	16.09	19.95
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8/1/2018	16.86	10.17	13.52
7/1/2018	18.08	11.44	14.76
6/1/2018	18.99	11.22	15.11
5/1/2018	18.78	10.91	14.85
4/1/2018	25.72	14.57	20.15
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7/1/2016	17.04	11.40	14.22
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9/1/2014	17.08	11.52	14.30
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5/1/2014	14.49	11.32	12.91
4/1/2014	17.85	12.60	15.23
3/1/2014	18.22	13.46	15.84
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7/1/2013	17.32	12.07	14.70
6/1/2013	21.91	14.96	18.44
5/1/2013	16.35	12.26	14.31
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2/1/2013	19.28	12.08	15.68

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5/1/2012	25.46	16.01	20.74
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10/1/2007	24.15	16.08	20.12
9/4/2007	28.82	16.91	22.87
8/1/2007	37.50	19.33	28.42
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5/1/2007	14.60	12.54	13.57
4/2/2007	15.46	11.46	13.46
3/1/2007	21.25	11.21	16.23
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2/1/2005	13.20	10.90	12.05
1/3/2005	14.75	12.29	13.52
12/1/2004	13.74	11.14	12.44
11/1/2004	16.76	12.56	14.66
10/1/2004	16.87	12.60	14.74
9/1/2004	15.98	13.16	14.57
8/2/2004	19.97	14.67	17.32
7/1/2004	17.93	13.34	15.64

6/1/2004	17.04	13.75	15.40
5/3/2004	20.45	15.19	17.82
4/1/2004	17.98	13.86	15.92
3/1/2004	22.67	13.83	18.25
2/2/2004	18.06	13.80	15.93
1/2/2004	18.68	14.01	16.35
12/1/2003	18.86	14.66	16.76
11/3/2003	19.61	16.02	17.82
10/1/2003	22.82	15.79	19.31
9/2/2003	23.26	17.54	20.40
8/1/2003	22.68	17.82	20.25
7/1/2003	20.22	17.75	18.99
6/2/2003	22.15	19.14	20.65
5/1/2003	21.59	18.40	20.00
4/1/2003	29.13	20.33	24.73
3/3/2003	33.61	27.75	30.68
2/3/2003	34.33	29.63	31.98
1/2/2003	34.69	24.25	29.47
12/2/2002	30.78	26.20	28.49
11/1/2002	31.30	23.16	27.23
10/1/2002	42.64	30.00	36.32
9/3/2002	40.65	34.60	37.63
8/1/2002	45.08	27.75	36.42
7/1/2002	44.92	27.11	36.02
6/3/2002	28.42	22.61	25.52
5/1/2002	22.56	17.70	20.13
4/1/2002	24.05	18.11	21.08
3/1/2002	20.50	17.40	18.95
2/1/2002	26.09	20.85	23.47
1/2/2002	24.35	20.45	22.40
12/3/2001	25.91	21.40	23.66
11/1/2001	32.31	23.25	27.78
10/1/2001	35.31	28.42	31.87
9/4/2001	43.74	25.85	34.80
8/1/2001	25.41	19.71	22.56
7/2/2001	25.24	18.76	22.00
6/1/2001	23.17	19.06	21.12
5/1/2001	25.78	20.57	23.18
4/2/2001	34.72	24.13	29.43
3/1/2001	32.84	24.12	28.48
2/1/2001	28.35	20.27	24.31
1/2/2001	29.99	21.57	25.78
12/1/2000	31.74	22.41	27.08
11/1/2000	29.65	23.67	26.66
10/2/2000	29.47	21.03	25.25
9/1/2000	21.88	17.53	19.71
8/1/2000	20.55	16.53	18.54
7/3/2000	21.16	18.94	20.05
6/1/2000	23.05	19.54	21.30
5/1/2000	31.63	23.62	27.63
4/3/2000	33.49	24.03	28.76
3/1/2000	24.86	19.21	22.04

2/1/2000	26.00	21.25	23.63
1/3/2000	27.01	19.66	23.34
12/1/1999	23.91	19.32	21.62
11/1/1999	24.18	19.11	21.65
10/1/1999	28.75	20.49	24.62
9/1/1999	27.84	20.98	24.41
8/2/1999	28.45	20.96	24.71
7/1/1999	24.98	17.42	21.20
6/1/1999	26.62	21.09	23.86
5/3/1999	28.90	24.15	26.53
4/1/1999	26.42	21.77	24.10
3/1/1999	29.22	22.73	25.98
2/1/1999	31.36	25.87	28.62
1/4/1999	32.98	23.28	28.13
12/1/1998	31.31	20.21	25.76
11/2/1998	29.28	21.84	25.56
10/1/1998	45.74	28.05	36.90
9/1/1998	45.29	32.47	38.88
8/3/1998	44.28	25.98	35.13
7/1/1998	25.25	16.23	20.74
6/1/1998	26.20	19.36	22.78
5/1/1998	23.39	18.99	21.19
4/1/1998	26.09	19.87	22.98
3/2/1998	24.66	17.76	21.21
2/2/1998	21.55	18.55	20.05
1/2/1998	28.69	21.47	25.08
12/1/1997	30.27	22.65	26.46
11/3/1997	37.57	26.65	32.11
10/1/1997	38.20	19.53	28.87
9/2/1997	25.99	22.00	24.00
8/1/1997	24.76	19.77	22.27
7/1/1997	23.51	17.82	20.67
6/2/1997	21.82	18.51	20.17
5/1/1997	21.57	17.51	19.54
4/1/1997	21.34	17.64	19.49
3/3/1997	22.14	18.32	20.23
2/3/1997	21.41	18.90	20.16
1/2/1997	21.14	17.09	19.12
12/2/1996	21.99	17.75	19.87
11/1/1996	18.04	13.79	15.92
10/1/1996	18.48	14.80	16.64
9/3/1996	20.51	15.20	17.86
8/1/1996	18.76	13.71	16.24
7/1/1996	21.55	13.78	17.67
6/3/1996	18.64	13.68	16.16
5/1/1996	18.62	14.90	16.76
4/1/1996	20.22	14.72	17.47
3/1/1996	20.70	16.10	18.40
2/1/1996	17.12	12.65	14.89
1/2/1996	16.88	12.00	14.44
12/1/1995	14.55	10.36	12.46
11/1/1995	13.41	11.57	12.49

10/2/1995	15.74	13.46	14.60
9/1/1995	13.22	11.10	12.16
8/1/1995	13.78	11.52	12.65
7/3/1995	13.86	11.52	12.69
6/1/1995	14.12	10.75	12.44
5/1/1995	13.77	11.26	12.52
4/3/1995	13.50	11.48	12.49
3/1/1995	14.22	11.19	12.71
2/1/1995	12.51	10.84	11.68
1/3/1995	14.25	11.10	12.68
12/1/1994	17.23	11.82	14.53
11/1/1994	18.41	14.84	16.63
10/3/1994	16.97	13.55	15.26
9/1/1994	14.56	11.40	12.98
8/1/1994	12.83	11.09	11.96
7/1/1994	14.92	11.13	13.03
6/1/1994	16.72	11.22	13.97
5/2/1994	16.16	11.94	14.05
4/4/1994	23.87	13.77	18.82
3/1/1994	20.45	12.31	16.38
2/1/1994	16.34	10.61	13.48
1/3/1994	12.57	9.94	11.26
12/1/1993	13.83	9.31	11.57
11/1/1993	15.90	11.74	13.82
10/1/1993	13.14	10.87	12.01
9/1/1993	17.30	11.16	14.23
8/2/1993	12.39	11.47	11.93
7/1/1993	13.87	10.60	12.24
6/1/1993	14.74	11.11	12.93
5/3/1993	14.76	12.14	13.45
4/1/1993	15.25	10.96	13.11
3/1/1993	16.22	12.08	14.15
2/1/1993	15.90	12.12	14.01
1/4/1993	14.72	11.30	13.01
12/1/1992	12.80	11.51	12.16
11/2/1992	17.33	12.50	14.92
10/1/1992	20.51	15.47	17.99
9/1/1992	15.19	12.47	13.83
8/3/1992	15.88	13.14	14.51
7/1/1992	15.83	12.27	14.05
6/1/1992	18.20	13.21	15.71
5/1/1992	16.92	13.57	15.25
4/1/1992	20.15	14.85	17.50
3/2/1992	19.79	14.57	17.18
2/3/1992	18.79	16.35	17.57
1/2/1992	19.23	16.24	17.74
12/2/1991	20.57	15.44	18.01
11/1/1991	21.92	13.95	17.94
10/1/1991	18.58	14.81	16.70
9/3/1991	18.22	15.35	16.79
8/1/1991	21.19	14.41	17.80
7/1/1991	20.29	15.18	17.74

6/3/1991	19.55	15.50	17.53
5/1/1991	18.38	15.23	16.81
4/1/1991	20.12	15.47	17.80
3/4/1991	21.05	14.90	17.98
2/1/1991	23.60	19.57	21.59
1/2/1991	36.20	20.91	28.56
12/3/1990	26.38	20.94	23.66
11/1/1990	30.87	20.09	25.48
10/1/1990	33.98	27.27	30.63
9/4/1990	30.56	27.88	29.22
8/1/1990	36.47	20.43	28.45
7/2/1990	23.68	15.63	19.66
6/1/1990	19.36	14.72	17.04
5/1/1990	20.14	16.72	18.43
4/2/1990	24.16	17.73	20.95
3/1/1990	22.74	17.62	20.18
2/1/1990	24.87	19.71	22.29
1/2/1990	27.25	17.24	22.25

1/1/90- 4/1/25

20.31

Staff's Proxy Group: Credit Ratings, Regulated Revenues, and S&P Business/Financial Risk Profiles

Total No.	Company Name	Ticker	Industry	2024 (\$M)	2024 (\$M)	2024	2025	2025	S&P Business Risk Profile	S&P Financial Risk Profile
				Regulated Utility Revenue	Total Revenue	% of Utility Revenue	Moody's Credit Ratings	S&P Credit Ratings		
1	Alliant Energy Corp	LNT	Central	3,891	3,981	97.74%	Baa2	BBB+	Excellent	Significant
2	Ameren Corp	AEE	Central	7,623	7,623	100.00%	Baa1	BBB+	Excellent	Significant
3	American Electric Power Co. Inc	AEP	Central	17,492	19,721	88.70%	Baa2	BBB+	Excellent	Significant
4	Avista Corp	AVA	West	1,936	1,938	99.90%	Baa2	BBB	Strong	Significant
5	Black Hills Corp	BKH	West	2,111	2,128	99.22%	Baa2	BBB+	Excellent	Significant
6	CenterPoint Energy Inc	CNP	Central	8,589	8,643	99.38%	Baa2	BBB+	Excellent	Aggressive
7	CMS Energy Corp	CMS	Central	7,199	7,515	95.80%	Baa2	BBB+	Excellent	Significant
8	Consolidated Edison Inc	ED	East	15,256	15,256	100.00%	Baa1	A-	Excellent	Significant
9	Dominion Energy	D	East	13,082	14,459	90.48%	Baa2	BBB+	Excellent	Significant
10	Duke Energy Corp New	DUK	East	30,039	30,357	98.95%	Baa2	BBB+	Excellent	Significant
11	Edison International	EIX	West	17,547	17,599	99.70%	Baa2	BBB	Strong	Significant
12	Entergy Corp	ETR	Central	11,806	11,880	99.38%	Baa2	BBB+	Excellent	Significant
13	Eversource Energy	ES	East	11,802	11,901	99.17%	Baa2	BBB+	Excellent	Significant
14	FirstEnergy Corp	FE	East	13,267	13,472	98.48%	Baa3	BBB	Excellent	Significant
15	IDACORP Inc	IDA	West	1,823	1,827	99.80%	Baa2	BBB	Strong	Significant
16	MGE Energy Inc	MGEE	Central	676	677	99.86%	A1	AA-	Excellent	Intermediate
17	NorthWestern Energy Group, Inc.	NWE	West	1,514	1,514	100.00%	Baa2	BBB	Strong	Significant
18	OGE Energy Corp	OGE	Central	2,657	2,985	89.00%	Baa1	BBB+	Excellent	Significant
19	Pinnacle West Capital Corp	PNW	West	4,898	5,125	95.57%	Baa2	BBB+	Excellent	Significant
20	Portland General Electric Co.	POR	West	2,806	3,440	81.57%	A3	BBB+	Excellent	Significant
21	PPL Corp.	PPL	East	8,462	8,462	100.00%	Baa1	A-	Excellent	Significant
22	Public Service Enterprise Group Inc.	PEG	East	7,790	10,290	75.70%	Baa2	BBB+	Excellent	Significant
23	Sempra Energy	SRE	West	11,437	13,185	86.74%	Baa2	BBB+	Strong	Significant
24	Southern Co	SO	East	24,392	26,724	91.27%	Baa1	A-	Excellent	Significant
25	TXNM Energy Inc.	PNM	West	1,829	1,971	92.79%	Baa3	BBB	Strong	Significant
26	WEC Energy Group	WEC	Central	8,184	8,600	95.16%	Baa1	A-	Excellent	Significant
27	Xcel Energy Inc	XEL	West	13,377	13,441	99.52%	Baa1	BBB+	Excellent	Significant
28										

Average of Staff's Proxy Group

Average of Staff's Proxy Group Non-Regulated Revenue

95.39%

4.61%

Baa2**BBB+****Excellent****Significant****Sources:**

Latest Credit Ratings from Standard & Poor's, and Moody's Credit Reports

Regulated revenue % from 2024 Annual Reports (10K)

2024 Equity Ratios from CapitalIQ, a business unit of Standard and Poor's

Business and Financial Profiles from Standard and Poor's Latest Credit Reports

Proxy Group Credit Ratings and Regulated Revenues

				2025	2025	2024 (\$M)	2024 (\$M)	2024		
Total No.	Company Name	Ticker	Industry	Moody's Credit Ratings ⁶	S&P Credit Ratings ⁶	Regulated Utility Revenue	Total Revenue	% of Utility Revenue	Reason for Exclusion	
Electric Utility (East), April, 2025										
1	Consolidated Edison Inc	ED	East ¹	Baa1	A-	15,256	15,256	100.00%		
2	Dominion Energy	D	East ¹	Baa2	BBB+	13,082	14,459	90.48%		
3	Duke Energy Corp New	DUK	East ¹	Baa2	BBB+	30,039	30,357	98.95%		
4	Eversource Energy	ES	East ¹	Baa2	BBB+	11,802	11,901	99.17%		
5	Exelon Corp	EXC	East ¹	Baa2	A-	23,120	23,028	100.40%	Lacks beta from Value Line	
6	FirstEnergy Corp	FE	East ¹	Baa3	BBB	13,267	13,472	98.48%		
7	NextEra Energy Inc	NEE	East ¹	Baa1	A-	17,019	24,753	68.78%	Regulated revenue	
8	PPL Corp.	PPL	East ¹	Baa1	A-	8,462	8,462	100.00%		
9	Public Service Enterprise Group Inc	PEG	East ¹	Baa2	BBB+	7,790	10,290	75.70%		
10	Southern Co	SO	East ¹	Baa1	A-	24,392	26,724	91.27%		
Electric Utility (Central), April, 2025										
11	Alliate Inc	ALE	Central ²	Baa1	BBB	1,243	1,530	81.25%	M&A activity	
12	Alliant Energy Corp	LNT	Central ²	Baa2	BBB+	3,891	3,981	97.74%		
13	Ameren Corp	AEE	Central ²	Baa1	BBB+	7,623	7,623	100.00%		
14	American Electric Power Co. Inc	AEP	Central ²	Baa2	BBB+	17,492	19,721	88.70%		
15	CenterPoint Energy Inc	CNP	Central ²	Baa2	BBB+	8,589	8,643	99.38%		
16	CMS Energy Corp	CMS	Central ²	Baa2	BBB+	7,199	7,515	95.80%		
17	DTE Energy Company	DTE	Central ²	Baa2	BBB+	7,990	12,457	64.14%	Regulated revenue	
18	Entergy Corp	ETR	Central ²	Baa2	BBB+	11,806	11,880	99.38%		
19	Evergy Inc.	EVRG	Central ²	Baa2	BBB+	5,679	5,847	97.12%		
20	Fortis Inc	FTS	Central ²	Baa3	A-	11,473	11,508	99.70%	Foreign exchange risk	
21	MGE Energy Inc ⁵	MGEE	Central ²	A1	AA-	676	677	99.86%		
22	OGE Energy Corp	OGE	Central ²	Baa1	BBB+	2,657	2,985	89.00%		
23	Otter Tail Corp	OTTR	Central ²	Baa2	BBB	525	1,331	39.46%	Regulated revenue	
24	WEC Energy Group	WEC	Central ²	Baa1	A-	8,184	8,600	95.16%		
Electric Utility (West), April, 2025										
25	Avista Corp	AVA	West ³	Baa2	BBB	1,936	1,938	99.90%		
26	Black Hills Corp	BKH	West ³	Baa2	BBB+	2,111	2,128	99.22%		
27	Edison International	EIX	West ³	Baa2	BBB	17,547	17,599	99.70%		
28	Hawaiian Electric Industries Inc	HE	West ³	B1	B-	3,207	3,220	99.60%	Credit ratings	
29	IDACORP Inc	IDA	West ³	Baa2	BBB	1,823	1,827	99.80%		
30	NorthWestern Energy Group, Inc.	NWE	West ³	Baa2	BBB	1,514	1,514	100.01%		
31	PG&E Corp.	PCG	West ³	Ba3	BB	24,419	24,419	100.00%	Credit ratings	
32	Pinnacle West Capital Corp	PNW	West ³	Baa2	BBB+	4,898	5,125	95.57%		
34	Portland General Electric Co.	POR	West ³	A3	BBB+	2,806	3,440	81.57%		
35	Sempra Energy	SRE	West ³	Baa2	BBB+	11,437	13,185	86.74%		
33	TXNM Energy Inc	TXNM	West ³	Baa3	BBB	1,829	1,971	92.79%		
36	Xcel Energy Inc	XEL	West ³	Baa1	BBB+	13,377	13,441	99.52%		
Natural Gas Utility, April, 2025										
1	Atmos Energy Corp	ATO	Gas ⁴	A1	A-	3,915	4,165	94.00%		
2	Chesapeake Utilities	CPK	Gas ⁴	NR	NR	583	787	74.08%	Credit ratings	
3	New Jersey Resources Corp	NJR	Gas ⁴	NR	NR	1,018	1,797	56.65%	Credit ratings and regulated revenue	
4	NiSource Inc	NI	Gas ⁴	Baa2	BBB+	5,283	5,455	96.85%		
5	Northwest Natural Holding Co. ⁵	NWN	Gas ⁴	Baa1	A-	1,076	1,153	93.32%		
6	ONE Gas Inc.	OGS	Gas ⁴	A3	A-	2,084	2,084	100.00%		
7	RGC Resources Inc	RGCO	Gas ⁴	NR	NR	84,533	84,641	99.87%	Credit ratings	
8	Southwest Gas Holdings, Inc.	SWX	Gas ⁴	Baa2	BBB-	2,475	5,112	48.42%	Regulated revenue	
9	Spire Inc.	SR	Gas ⁴	Baa2	BBB+	2,438	2,593	94.02%		
10	Star Group L.P.	SGU	Gas ⁴	NR	NR	-	1,766	0.00%	Credit ratings and regulated revenue	
11	UGI Corp.	UGI	Gas ⁴	NR	NR	1,598	7,210	22.16%	Credit ratings and regulated revenue	

Source

- ¹ Electric East Utilities
- ² Electric Central Utilities
- ³ Electric West Utilities
- ⁴ Natural Gas Utilities
- ⁵ Applied subsidiary credit rating
- ⁶ Credit Ratings, as of April 2025

Company Witnesses Proxy Group: Credit Ratings, Regulated Revenues, and S&P Business/Financial Risk Profiles

Total No.	Company Name	Ticker	Industry	2024 (\$M)	2024 (\$M)	2024	2025	2025	S&P Business Risk Profile	S&P Financial Risk Profile
				Regulated Utility Revenue	Total Revenue	% of Utility Revenue	Moody's Credit Ratings	S&P Credit Ratings		
1	American Electric Power Co. Inc	AEP	Central	17,492	19,721	88.70%	Baa2	BBB+	Excellent	Significant
2	Atmos Energy Corp	ATO	Gas	3,915	4,165	94.00%	A2	A-	Excellent	Significant
3	Avista Corp	AVA	West	1,936	1,938	99.90%	Baa2	BBB	Strong	Significant
4	Black Hills Corp	BKH	West	2,111	2,128	99.20%	Baa2	BBB+	Excellent	Significant
5	CMS Energy Corp	CMS	Central	7,199	7,515	95.80%	Baa2	BBB+	Excellent	Significant
6	Edison International	EIX	West	17,547	17,599	99.70%	Baa2	BBB	Strong	Significant
7	Eversource Energy	ES	East	11,802	11,901	99.17%	Baa2	BBB+	Excellent	Significant
8	Exelon Corp	EXC	East	23,120	23,028	100.40%	Baa2	A-	Excellent	Significant
9	NiSource Inc	NI	Gas	5,283	5,455	96.85%	Baa2	BBB+	Excellent	Significant
10	Northwest Natural Holding Co.	NWN	Gas	1,076	1,153	93.32%	Baa1	A-	Excellent	Intermediate
11	NorthWestern Energy Group, Inc.	NWE	West	1,514	1,514	100.00%	Baa2	BBB	Strong	Significant
12	OGE Energy Corp	OGE	Central	2,657	2,985	89.01%	Baa1	BBB+	Excellent	Significant
13	ONE Gas Inc.	OGS	Gas	2,084	2,084	100.00%	A3	A-	Excellent	Significant
14	Portland General Electric Co.	POR	West	2,806	3,440	81.57%	A3	BBB+	Excellent	Significant
15	PPL Corp.	PPL	East	8,462	8,462	100.00%	Baa1	A-	Excellent	Significant
16	Public Service Enterprise Group Inc.	PEG	East	7,790	10,290	75.70%	Baa2	BBB+	Excellent	Significant
17	Spire Inc.	SR	Gas	2,438	2,593	94.02%	Baa2	BBB+	Excellent	Aggressive
18	TXNM Energy Inc.	PNM	West	1,829	1,971	92.80%	Baa3	BBB	Strong	Significant
19	Xcel Energy Inc	XEL	West	13,377	13,441	99.52%	Baa1	BBB+	Excellent	Significant
Average of Company's Proxy Group						94.72%	Baa1	BBB+	Excellent	Significant
Average of Company's Proxy Group Non-Regulated Revenue						5.28%				

Sources:

Latest Credit Ratings from Standard & Poor's, and Moody's Credit Reports

Regulated revenue % from 2024 Annual Reports (10K)

2024 Equity Ratios from CapitalIQ, a business unit of Standard and Poor's

Business and Financial Profiles from Standard and Poor's Latest Credit Reports

Discount Cash Flow Model
Electric, Gas and Water Proxy Group

Company ¹	Ticker	Beta ²	Stock Price ³	EPS	DPS	DPS	DPS	BPS	BPS	BPS	Number of Shares	Number of Shares
			Feb-Apr 2025									
1 Alliant Energy Corp.	LNT	0.95	62.32	4.25	2.04	2.16	2.43	28.85	29.00	31.90	256.70	257.00
2 Ameren Corp.	AEE	0.90	98.39	6.50	2.85	3.03	3.57	45.95	48.70	52.65	272.00	285.00
3 American Electric Power	AEP	0.85	104.20	7.50	3.80	3.98	4.31	52.35	55.55	60.90	535.00	550.00
4 Avista Corp	AVA	0.75	39.75	2.95	2.00	2.10	2.20	34.40	35.25	35.75	81.00	85.00
5 Black Hills Corp.	BKH	0.90	59.42	5.00	2.70	2.80	3.10	51.50	53.00	56.00	73.00	77.00
6 Centerpoint Energy	CNP	1.10	35.04	2.00	0.89	0.95	1.01	17.90	19.25	21.50	652.50	653.00
7 CMS Energy Corp.	CMS	0.90	71.60	4.20	2.20	2.30	2.50	27.55	28.75	30.75	300.00	302.00
8 Consolidated Edison	ED	0.80	103.95	7.00	3.40	3.60	4.24	65.75	68.25	77.75	347.00	355.00
9 Dominion Energy	D	0.90	54.29	4.25	2.67	2.67	2.67	31.75	32.80	38.00	844.00	880.00
10 Duke Energy	DUK	0.90	117.02	8.00	4.22	4.30	5.00	65.15	67.75	76.25	773.00	777.00
11 Edison International	EIX	0.90	54.93	7.00	3.36	3.56	4.25	38.80	41.60	50.00	387.00	395.00
12 Entergy Corp.	ETR	1.00	82.96	4.20	2.43	2.55	3.00	36.50	38.25	43.45	435.00	460.00
13 Evergy Inc.	EVERG	0.95	66.60	5.00	2.71	2.84	3.25	45.65	45.85	47.50	230.00	230.00
14 Eversource	ES	0.95	59.71	5.90	3.03	3.20	3.76	45.00	46.95	53.25	368.00	372.00
15 FirstEnergy Corp	FE	0.90	40.09	3.70	1.80	1.90	2.30	19.80	21.25	25.50	580.00	595.00
16 IDACORP, Inc.	IDA	0.75	114.67	7.10	3.52	3.65	4.20	66.65	70.00	74.00	54.00	56.00
17 MGE Energy, Inc.	MGEE	0.80	90.21	4.65	1.95	2.20	2.35	35.10	36.25	41.00	36.50	36.50
18 NorthWestern Energy Group	NWE	0.80	55.52	4.30	2.64	2.68	2.80	47.40	48.60	53.55	62.00	64.00
19 OGE Energy Corp.	OGE	1.05	44.29	2.95	1.71	1.73	1.79	23.75	24.25	26.25	200.20	200.20
20 Pinnacle West Capital	PNW	0.80	91.15	6.25	3.61	3.67	3.85	58.00	58.75	70.00	120.50	125.00
21 Portland General Electric	POR	0.80	43.17	4.00	2.09	2.21	2.60	36.00	37.50	42.25	111.00	120.00
22 PPL	PPL	1.10	34.65	2.40	1.09	1.17	1.40	20.55	21.20	23.45	737.40	738.00
23 Public Service Enterprise Group	PEG	1.00	81.17	5.25	2.56	2.72	3.24	34.10	36.00	42.50	500.00	505.00
24 Sempra Energy	SRE	0.90	71.75	6.30	2.60	2.72	3.28	47.65	50.00	59.50	652.50	665.00
25 Southern Co.	SO	0.95	88.67	5.50	2.96	3.05	3.10	31.75	31.90	32.25	1095.00	1095.00
26 TXNM Energy	TXNM	0.70	51.19	3.65	1.65	1.73	2.00	28.80	29.25	33.00	92.00	95.00
27 WEC Energy Group	WEC	0.90	104.75	6.90	3.57	3.81	4.59	40.70	42.50	46.75	315.43	315.43
28 Xcel Energy, Inc.	XEL	0.75	69.44	5.00	2.28	2.42	3.00	35.80	37.70	43.70	580.00	595.00

Median: **0.900**
Average: **0.891** **71.10**

Sources:

 ¹Value Line Electric Industry Central, as of March 2025.

 ¹Value Line Electric Industry East, as of February 2025.

 ¹Value Line Electric Industry West, as of April 2025.

²Beta data is from Value Line Investment Survey.

³Historical price data is from S&P Capital IQ

Discount Cash Flow Model
Electric, Gas and Water Proxy Group

Company ¹	DPS Growth 2029	Retention Rate 2029	Return on Equity 2029	S Increase in B x R	V MBR -1 Shares	S x V	Sustainable Growth	Long Form ROE
1 Alliant Energy Corp.	4.47	0.43	13.53	5.80	0.03	1.16	0.03	9.03%
2 Ameren Corp.	5.79	0.45	12.51	5.64	1.17	1.14	1.34	9.82%
3 American Electric Power	3.20	0.43	12.50	5.32	0.69	0.99	0.69	9.42%
4 Avista Corp	2.41	0.25	8.27	2.10	1.21	0.16	0.19	7.41%
5 Black Hills Corp.	3.51	0.38	9.01	3.42	1.34	0.15	0.21	8.21%
6 Centerpoint Energy	3.21	0.50	9.47	4.69	0.02	0.96	0.02	7.16%
7 CMS Energy Corp.	3.25	0.40	13.81	5.59	0.17	1.60	0.27	8.74%
8 Consolidated Edison	5.67	0.39	9.20	3.63	0.57	0.58	0.33	7.44%
9 Dominion Energy	0.00	0.37	11.46	4.26	1.05	0.71	0.75	9.30%
10 Duke Energy	4.33	0.38	10.70	4.01	0.13	0.80	0.10	7.76%
11 Edison International	6.05	0.39	14.43	5.67	0.51	0.42	0.21	12.13%
12 Entergy Corp.	5.41	0.29	9.87	2.82	1.41	1.27	1.79	7.64%
13 Evergy Inc.	4.65	0.35	10.59	3.71	0.00	0.46	0.00	7.93%
14 Eversource	5.54	0.36	11.31	4.10	0.27	0.33	0.09	9.53%
15 FirstEnergy Corp	6.32	0.38	14.95	5.66	0.64	1.02	0.66	10.88%
16 IDACORP, Inc.	4.51	0.41	9.68	3.96	0.91	0.72	0.66	7.70%
17 MGE Energy, Inc.	4.78	0.49	11.57	5.72	0.00	1.57	0.00	7.86%
18 NorthWestern Energy Group	1.48	0.35	8.16	2.85	0.80	0.17	0.14	7.57%
19 OGE Energy Corp.	1.15	0.39	11.39	4.48	0.00	0.86	0.00	8.01%
20 Pinnacle West Capital	1.62	0.38	9.19	3.53	0.92	0.57	0.53	7.77%
21 Portland General Electric	5.61	0.35	9.66	3.38	1.97	0.20	0.39	8.93%
22 PPL	6.46	0.42	10.41	4.34	0.02	0.69	0.01	7.74%
23 Public Service Enterprise Group	6.07	0.38	12.69	4.86	0.25	1.38	0.34	8.48%
24 Sempra Energy	5.98	0.48	10.90	5.22	0.48	0.51	0.24	9.18%
25 Southern Co.	1.16	0.44	17.09	7.46	0.00	1.79	0.00	10.27%
26 TXNM Energy	4.93	0.45	11.28	5.10	0.81	0.78	0.63	8.92%
27 WEC Energy Group	6.48	0.33	14.99	5.02	0.00	1.57	0.00	8.63%
28 Xcel Energy, Inc.	7.10	0.40	11.72	4.69	0.64	0.94	0.60	8.80%

Median:

4.86 8.56%

Average:

4.90 8.65%

Cost of Equity Calculation
Staff Electric Proxy Group

Cost of Market ¹ :	<i>Implied</i>	<i>Required</i>
February 2025	10.80%	11.20%
March 2025	10.70%	11.10%
April 2025	10.90%	11.30%
Cost of Market	11.00%	

Treasury Rates ² :	<i>10 year</i>	<i>30 year</i>
February 2025	4.45%	4.68%
March 2025	4.28%	4.60%
April 2025	4.28%	4.71%
Risk Free Rate	4.50%	

Market Risk Premium (MRP): 6.50%

Proxy Group Beta	0.89	Average
Traditional CAPM ROE	10.29%	
Zero Beta CAPM ROE	10.47%	
Overall CAPM ROE	10.38%	
DCF ROE	8.65%	

Return on Equity
2/3 DCF 1/3 CAPM Weighting

9.23%

Average

Sources:

¹ Bank of America Securities, Quantitative Profiles Reports - data is average of Implied and Required Returns for S&P 500.

² Federal Reserve Bank of St. Louis, Federal Reserve Economic Data (FRED)

Congressional Budget Office
Nonpartisan Analysis for the U.S. Congress



The Budget and Economic Outlook: 2025 to 2035

JANUARY | 2025

By the Numbers

The Budget Outlook, by Fiscal Year

	Average, 1975–2024	Percentage of GDP				Billions of dollars			
		Actual, 2024	2025	2026	2035	Actual, 2024	2025	2026	2035
Revenues	17.3	17.1	17.1	17.8	18.3	4,918	5,163	5,580	8,031
Individual income taxes	8.0	8.4	8.7	9.5	10.0	2,426	2,621	2,968	4,413
Payroll taxes	6.0	5.9	5.8	5.9	5.9	1,709	1,759	1,840	2,605
Corporate income taxes	1.8	1.8	1.7	1.6	1.2	530	524	495	517
Other	1.5	0.9	0.9	0.9	1.1	253	259	277	496
Outlays	21.1	23.7	23.3	23.3	24.4	6,826	7,028	7,294	10,730
Mandatory	11.1	14.3	14.0	14.0	15.1	4,130	4,228	4,386	6,626
Social Security	4.4	5.0	5.2	5.3	6.0	1,454	1,572	1,664	2,624
Major health care programs	3.5	5.8	5.8	5.8	6.7	1,669	1,754	1,832	2,949
Medicare	2.1	3.2	3.1	3.2	4.0	910	942	1,000	1,753
Medicaid, CHIP, and marketplace subsidies	1.3	2.6	2.7	2.7	2.7	759	812	831	1,196
Other mandatory	3.2	3.5	3.0	2.8	2.4	1,006	902	891	1,053
Discretionary	7.9	6.3	6.1	6.1	5.3	1,815	1,848	1,897	2,322
Defense	4.2	3.0	2.9	2.8	2.4	855	859	866	1,053
Nondefense	3.7	3.3	3.3	3.3	2.9	960	989	1,031	1,268
Net interest	2.1	3.1	3.2	3.2	4.1	881	952	1,010	1,783
Total deficit (-)	-3.8	-6.6	-6.2	-5.5	-6.1	-1,907	-1,865	-1,713	-2,699
Primary deficit (-)	-1.7	-3.6	-3.0	-2.2	-2.1	-1,026	-913	-703	-916
Debt held by the public at the end of each period	49.7	97.8	99.9	101.7	118.5	28,199	30,103	31,883	52,056

See [Appendix B](#). When October 1 (the first day of the fiscal year) falls on a weekend, certain payments that ordinarily would have been made on that day are instead made at the end of September and thus are shifted into the previous fiscal year. Outlays and deficits have been adjusted to remove the effects of those shifts. CHIP = Children's Health Insurance Program; GDP = gross domestic product.

The Economic Outlook, by Calendar Year

	Estimated, 2024	2025	2026	2027	Annual average	
					2028– 2029	2030– 2035
Change from fourth quarter to fourth quarter (percent)						
Real (inflation-adjusted) GDP	2.3	1.9	1.8	1.8	1.8	1.8
Inflation						
PCE price index	2.5	2.2	2.1	2.0	2.0	2.0
Consumer price index	2.7	2.3	2.4	2.3	2.2	2.2
Payroll employment (net monthly change, in thousands)	187	90	58	46	52	57
Annual average (percent)						
Unemployment rate	4.0	4.3	4.4	4.4	4.4	4.4
Interest rates						
Effective federal funds rate	5.1	4.0	3.5	3.3	3.3	3.2
3-month Treasury bills	5.0	3.8	3.3	3.2	3.2	3.1
10-year Treasury notes	4.2	4.1	3.9	3.9	3.9	3.8
Tax bases (percentage of GDP)						
Wages and salaries	42.6	42.8	43.1	43.2	43.5	43.6
Domestic corporate profits	11.4	11.1	10.7	10.3	9.6	9.5

See [Appendix C](#). GDP = gross domestic product; PCE = personal consumption expenditures.

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Notes About This Report

The budget projections in this report include the effects of legislation enacted through January 6, 2025, and are based on the Congressional Budget Office's economic projections. Those economic projections reflect economic developments and information as of December 4, 2024, and are available on CBO's website (www.cbo.gov/data/budget-economic-data#4).

Unless this report indicates otherwise, all years referred to in describing the budget outlook are federal fiscal years, which run from October 1 to September 30 and are designated by the calendar year in which they end. Years referred to in describing the economic outlook are calendar years.

When October 1 falls on a weekend, certain monthly payments that the government would ordinarily have made on that day are instead made at the end of September and thus are shifted into the previous fiscal year. Consequently, the number of payments in the fiscal year that begins on a weekend decreases, and the number in the previous year increases. Those shifts in the timing of payments affect outlays and deficits (or surpluses) and thus are reflected in the agency's baseline budget projections (see Table A-1 and Table B-1). But timing shifts can complicate comparisons of annual outlays and deficits and distort certain budgetary trends, so CBO also presents adjusted baseline projections that treat the payments as if they were not subject to the shifts. (For examples, see Table B-2 and Table B-4.)

Unless this report indicates otherwise, historical economic data shown in the text, tables, and figures reflect data available from the Bureau of Economic Analysis and other sources in mid-January 2025. Those data contain updated values for the last two months of 2024, which were not available when CBO developed its current projections.

Numbers in the text, tables, and figures may not add up to totals because of rounding.

Some of the figures in this report use shaded vertical bars to indicate periods of recession. (A recession begins just after a peak in economic activity and runs through the subsequent trough.)

Supplemental data for this analysis are available on CBO's website (www.cbo.gov/publication/60870#data), as are a glossary of budgetary and economic terms (www.cbo.gov/publication/42904), a guide that explains the differences between common budgetary terms (www.cbo.gov/publication/57420), a description of how CBO develops its baseline budget projections (www.cbo.gov/publication/58916), a description of how CBO prepares its economic forecast (www.cbo.gov/publication/53537), and previous editions of this report (<https://tinyurl.com/4dt4hshv>).

The Budget and Economic Outlook: 2025 to 2035

The Congressional Budget Office regularly publishes reports presenting its baseline projections of what the federal budget and the economy would look like in the current year and over the next 10 years if laws governing taxes and spending generally remained unchanged. This report is the latest in that series, presented in an abbreviated version to facilitate work on other Congressional priorities. The budget projections are based on CBO's economic forecast, which reflects developments in the economy as of December 4, 2024. They also incorporate legislation enacted through January 6, 2025.

The Budget Outlook

Deficits

In CBO's projections, the federal budget deficit in fiscal year 2025 is \$1.9 trillion. Adjusted to exclude the effects of shifts in the timing of certain payments, the deficit grows to \$2.7 trillion by 2035. It amounts to 6.2 percent of gross domestic product (GDP) in 2025 and drops to 5.2 percent by 2027 as revenues increase faster than outlays. In later years, outlays increase faster than revenues, on average. In 2035, the adjusted deficit equals 6.1 percent of GDP—significantly more than the 3.8 percent that deficits have averaged over the past 50 years.

Debt

From 2025 to 2035, debt swells as increases in mandatory spending and interest costs outpace growth in revenues. Federal debt held by the public rises from 100 percent of GDP this year to 118 percent in 2035, surpassing its previous high of 106 percent of GDP in 1946.

Outlays and Revenues

Federal outlays in 2025 total \$7.0 trillion, or 23.3 percent of GDP. They remain close to that level through 2028 and then rise, reaching 24.4 percent of GDP in 2035 (if adjusted to exclude the effects of shifts in the timing of certain payments). The main reasons for that increase are growth in spending for Social Security and Medicare and rising net interest costs. Revenues total \$5.2 trillion, or 17.1 percent of GDP, in 2025. They rise to 18.2 percent of GDP by 2027, in part because of the scheduled expiration of provisions of the 2017 tax act. Revenues decline as a share of GDP over the next two years, falling to 17.9 percent in 2029, but then generally increase, reaching 18.3 percent in 2035.

Changes in CBO's Budget Projections

The deficit for 2025 is \$0.1 trillion (or 4 percent) less in CBO's current projections than it was in the agency's June 2024 projections, and the cumulative deficit over the 2025–2034 period is smaller by \$1.0 trillion (or 4 percent). The largest contributor to the cumulative decrease was growth in projected collections of individual income taxes, driven by greater projections of taxable income in CBO's economic forecast.

Projections for **2025**

Budget deficit:
\$1.9 trillion

Debt held by
the public:
100% of GDP

Outlays:
\$7.0 trillion

Revenues:
\$5.2 trillion

When October 1 (the first day of the fiscal year) falls on a weekend, certain payments that ordinarily would have been made on that day are instead made at the end of September and thus are shifted into the previous fiscal year. Because those shifts can distort budgetary trends, CBO often presents adjusted projections of deficits and outlays that treat the payments as if they were not subject to the shifts.

The Budget Outlook, by Fiscal Year

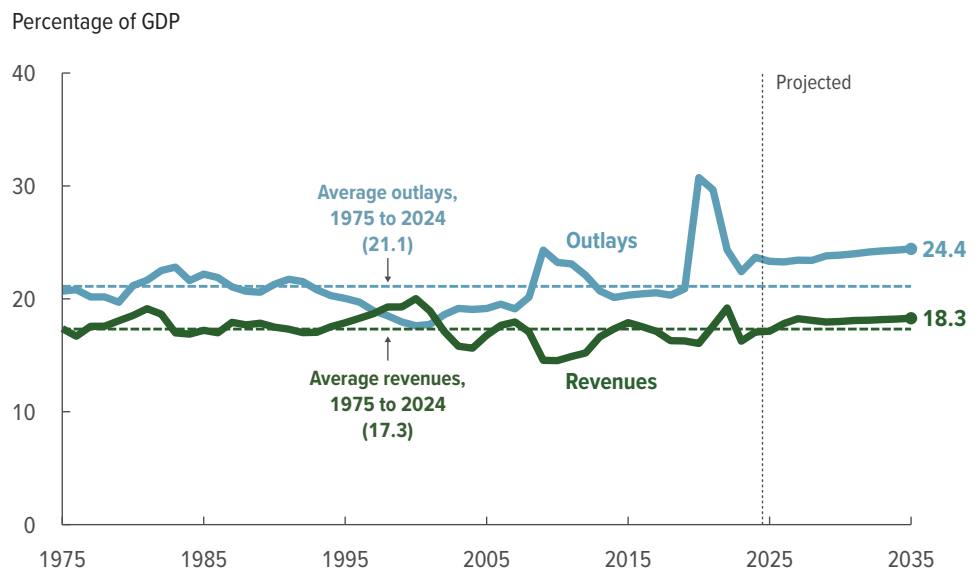
	Average, 1975–2024	Percentage of GDP				Billions of dollars			
		Actual, 2024	2025	2026	2035	Actual, 2024	2025	2026	2035
Revenues	17.3	17.1	17.1	17.8	18.3	4,918	5,163	5,580	8,031
Individual income taxes	8.0	8.4	8.7	9.5	10.0	2,426	2,621	2,968	4,413
Payroll taxes	6.0	5.9	5.8	5.9	5.9	1,709	1,759	1,840	2,605
Corporate income taxes	1.8	1.8	1.7	1.6	1.2	530	524	495	517
Other	1.5	0.9	0.9	0.9	1.1	253	259	277	496
Outlays	21.1	23.7	23.3	23.3	24.4	6,826	7,028	7,294	10,730
Mandatory	11.1	14.3	14.0	14.0	15.1	4,130	4,228	4,386	6,626
Social Security	4.4	5.0	5.2	5.3	6.0	1,454	1,572	1,664	2,624
Major health care programs	3.5	5.8	5.8	5.8	6.7	1,669	1,754	1,832	2,949
Medicare	2.1	3.2	3.1	3.2	4.0	910	942	1,000	1,753
Medicaid, CHIP, and marketplace subsidies	1.3	2.6	2.7	2.7	2.7	759	812	831	1,196
Other mandatory	3.2	3.5	3.0	2.8	2.4	1,006	902	891	1,053
Discretionary	7.9	6.3	6.1	6.1	5.3	1,815	1,848	1,897	2,322
Defense	4.2	3.0	2.9	2.8	2.4	855	859	866	1,053
Nondefense	3.7	3.3	3.3	3.3	2.9	960	989	1,031	1,268
Net interest	2.1	3.1	3.2	3.2	4.1	881	952	1,010	1,783
Total deficit (-)	-3.8	-6.6	-6.2	-5.5	-6.1	-1,907	-1,865	-1,713	-2,699
Primary deficit (-)	-1.7	-3.6	-3.0	-2.2	-2.1	-1,026	-913	-703	-916
Debt held by the public at the end of each period	49.7	97.8	99.9	101.7	118.5	28,199	30,103	31,883	52,056

See Appendix B.

The Budget Outlook in Six Figures

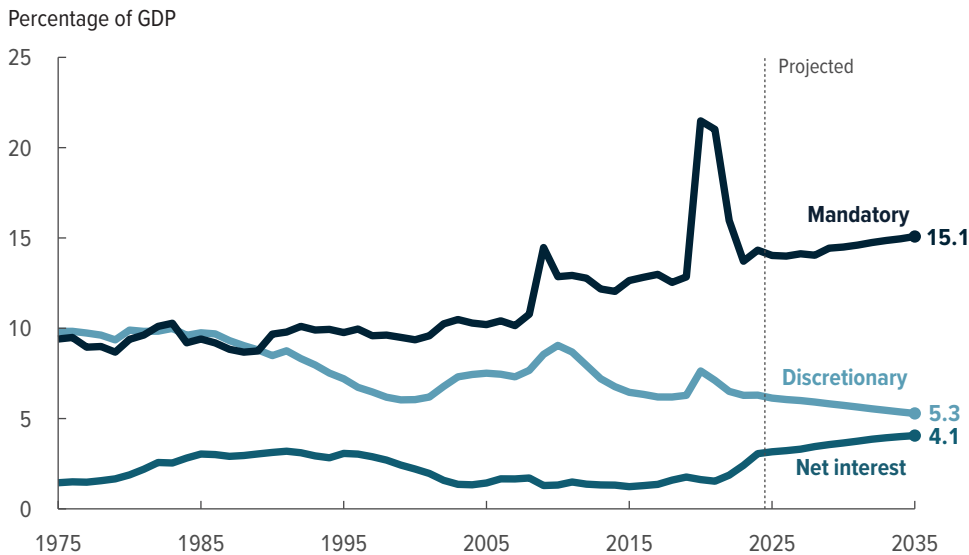
Total Outlays and Revenues

Measured as a percentage of GDP, federal outlays in CBO's projections exceed their 50-year average every year from 2025 to 2035. Revenues remain below their 50-year average in 2025 but rise above it thereafter.



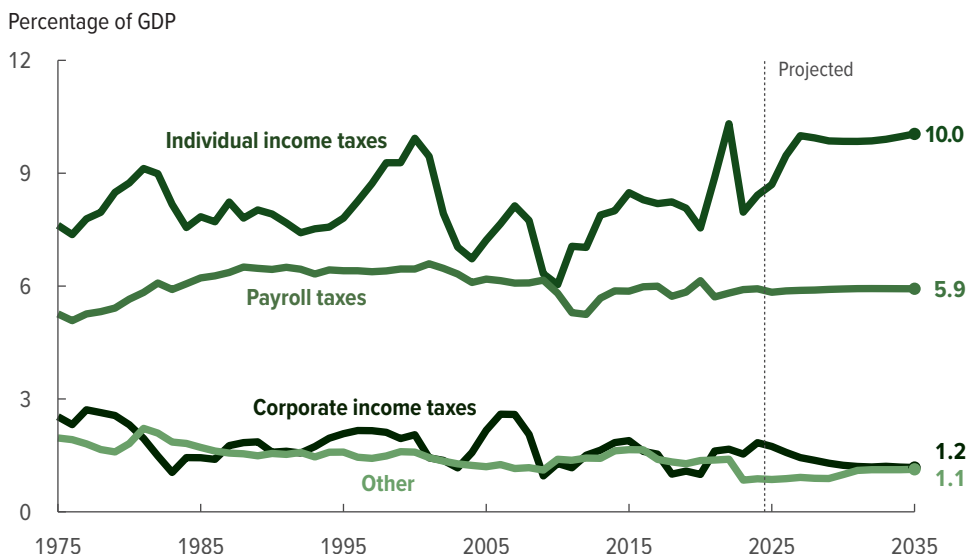
Outlays, by Category

In CBO's projections, rising spending for Social Security and Medicare boosts mandatory outlays, and discretionary spending shrinks as a share of GDP. Net outlays for interest increase as debt mounts. Interest costs exceed outlays for defense from 2025 to 2035 and exceed outlays for nondefense discretionary programs from 2027 to 2035. From 2027 on, interest costs are greater in relation to GDP than at any point since at least 1940 (the first year for which the Office of Management and Budget reports such data).



Revenues, by Category

Receipts from individual income taxes rise over the next three years, primarily because of scheduled increases in most tax rates, and then roughly stabilize as a share of GDP. After 2025, corporate income tax receipts decrease in relation to GDP, largely because of other scheduled changes in tax rules, increased claims of tax credits, and slower growth of corporate profits relative to overall growth in the economy.



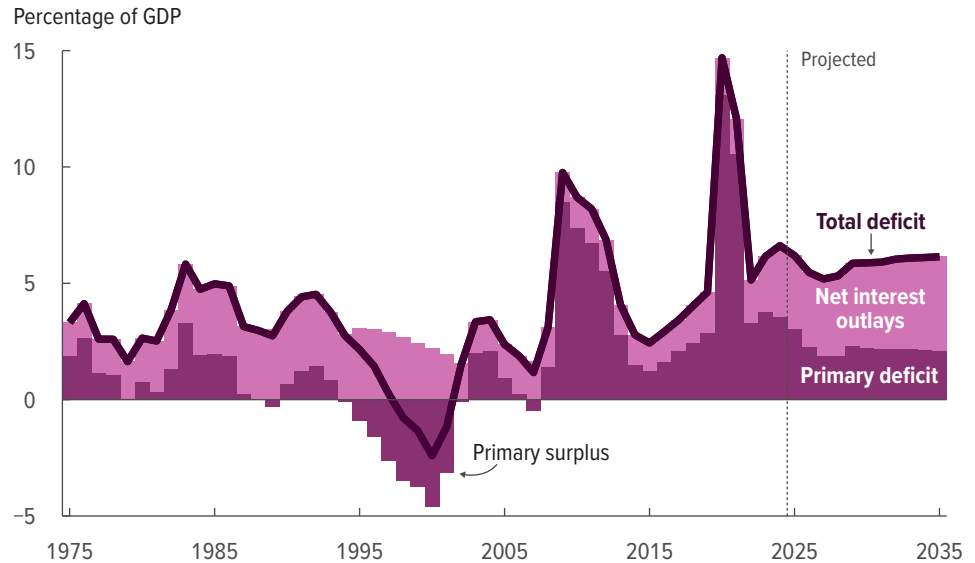
Outlook for Outlays and Revenues

Increases in spending for Social Security and Medicare and rising net interest costs push outlays to **\$10.7** trillion, or **24.4%** of GDP, in 2035.

Revenues in 2035 total **\$8.0** trillion, or **18.3%** of GDP.

Total Deficit, Net Interest Outlays, and Primary Deficit

In CBO's projections, the total deficit—the amount by which outlays exceed revenues—equals 6.1 percent of GDP in 2035. By that year, net interest payments grow to 4.1 percent of GDP and account for about one-sixth of all federal spending. The primary deficit (which excludes those payments) equals 2.1 percent of GDP in 2035.



Changes in CBO's Projections of the 10-Year Deficit Since June 2024

Deficits from 2025 to 2034 are projected to total \$21.1 trillion, \$1.0 trillion less than CBO projected in June. Most of that decrease is due to economic changes to CBO's projections, particularly increases in projected revenues from individual income taxes. Legislative changes and technical (that is, neither economic nor legislative) changes boosted projected deficits. Those increases offset more than half of the decrease from economic changes. (For more details about changes to CBO's budget projections, see Appendix A.)

Trillions of dollars

2025–2034 deficit in CBO's June 2024 baseline

22.1

2025–2034 deficit in CBO's January 2025 baseline

21.1

Economic changes

-2.5

Legislative changes

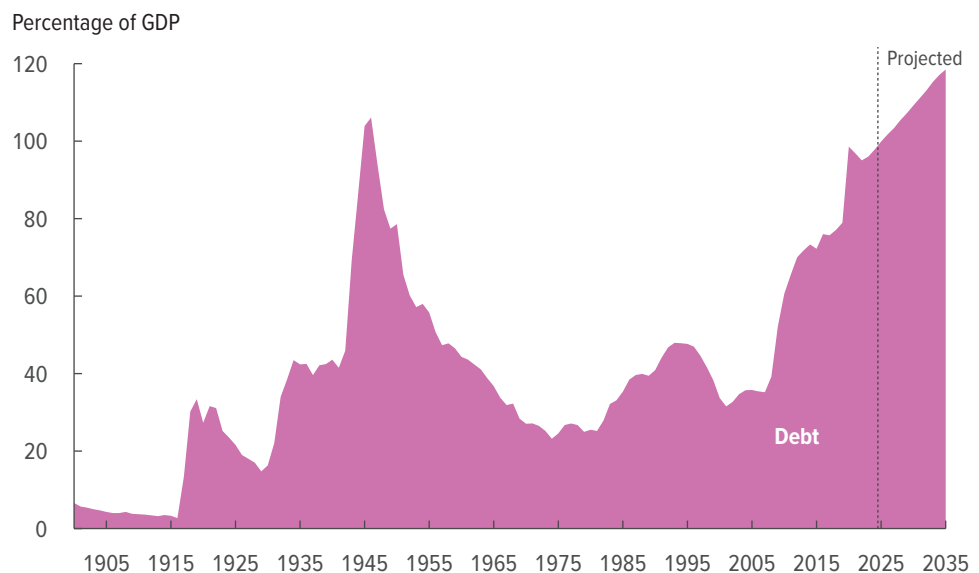
0.3

Technical changes

1.3

Federal Debt Held by the Public

Debt held by the public rises each year. From 2025 to 2035, it swells from 100 percent of GDP to 118 percent—an amount greater than at any point in the nation's history. (For more details about CBO's budget projections, see Appendix B.)



The Economic Outlook

Economic Growth

In CBO's projections, economic growth cools from an estimated 2.3 percent in calendar year 2024 to 1.9 percent in 2025 and 1.8 percent in 2026 amid higher unemployment and lower inflation. The Federal Reserve continues reducing interest rates through the end of 2026, which supports economic growth. Real GDP then grows by 1.8 percent per year, on average, through 2035. Roughly four-fifths of the growth over that period is due to increases in the productivity of the labor force. The rest is due to increases in the size of the labor force.

Inflation

The overall growth of prices slows slightly in 2025. Inflation as measured by the price index for personal consumption expenditures (PCE) falls from an estimated 2.5 percent in 2024 to a rate roughly in line with the Federal Reserve's long-run goal of 2 percent in 2027 and stabilizes thereafter.

Interest Rates

The Federal Reserve began reducing the federal funds rate (the rate financial institutions charge each other for overnight loans) in September 2024. In CBO's projections, those reductions continue through the end of 2026. Longer-term interest rates, such as the rate on 10-year Treasury notes, decline through the end of 2026 and then remain roughly flat.

Changes in CBO's Economic Projections

Since June 2024, when CBO published its previous full economic forecast, the agency's projections of the average growth rate of real GDP over the 2024–2026 period have changed little. CBO raised its forecast of the average unemployment rate for 2024 to 2026 and lowered its forecast of employment growth over that period. Inflation is expected to be slightly higher, on average, in 2025 and 2026 than the agency projected in June. The forecast of long-term interest rates for 2026 is also higher. After 2026, CBO's current and previous forecasts are generally similar.

Outlook for 2025– 2035

Over the next two years, economic growth slows, and inflation continues to decline.

After 2026, economic growth and inflation remain moderate.

The Economic Outlook, by Calendar Year

	Estimated, 2024	2025	2026	2027	Annual average	
					2028– 2029	2030– 2035
Change from fourth quarter to fourth quarter (percent)						
Real (inflation-adjusted) GDP	2.3	1.9	1.8	1.8	1.8	1.8
Inflation						
PCE price index	2.5	2.2	2.1	2.0	2.0	2.0
Consumer price index	2.7	2.3	2.4	2.3	2.2	2.2
Payroll employment (net monthly change, in thousands)	187	90	58	46	52	57
Annual average (percent)						
Unemployment rate	4.0	4.3	4.4	4.4	4.4	4.4
Interest rates						
Effective federal funds rate	5.1	4.0	3.5	3.3	3.3	3.2
3-month Treasury bills	5.0	3.8	3.3	3.2	3.2	3.1
10-year Treasury notes	4.2	4.1	3.9	3.9	3.9	3.8
Tax bases (percentage of GDP)						
Wages and salaries	42.6	42.8	43.1	43.2	43.5	43.6
Domestic corporate profits	11.4	11.1	10.7	10.3	9.6	9.5

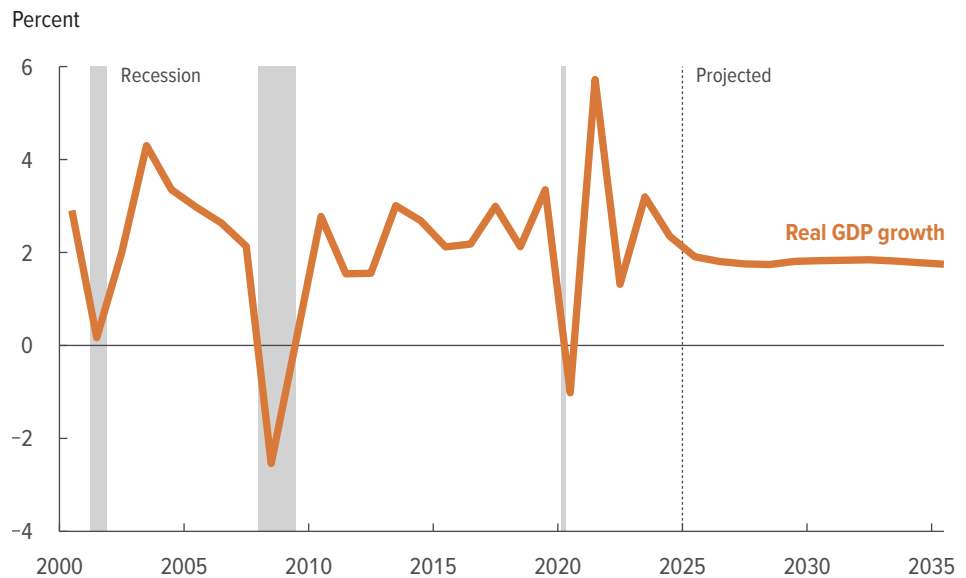
See Appendix C.



The Economic Outlook in Six Figures

Growth of Real GDP

The growth of economic output, as measured by the nation's GDP, is expected to moderate in 2025, reflecting slower growth in consumer and government spending. CBO expects that more moderate economic growth to continue in 2026 as consumer spending slows further and investment in private nonresidential structures declines.

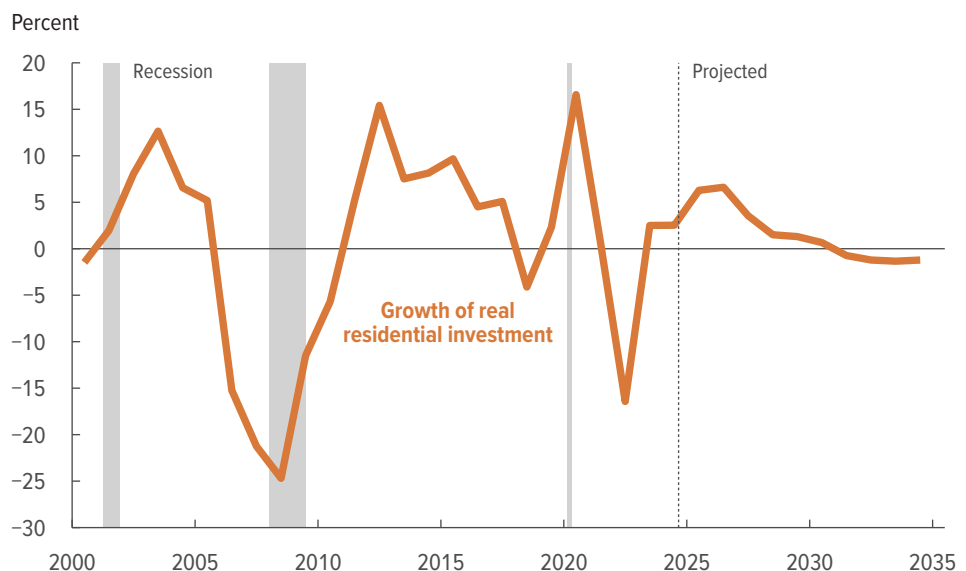


Outlook for Economic Growth

Real GDP grows by **1.9%** in 2025 and **1.8%** in 2026.

Residential Investment

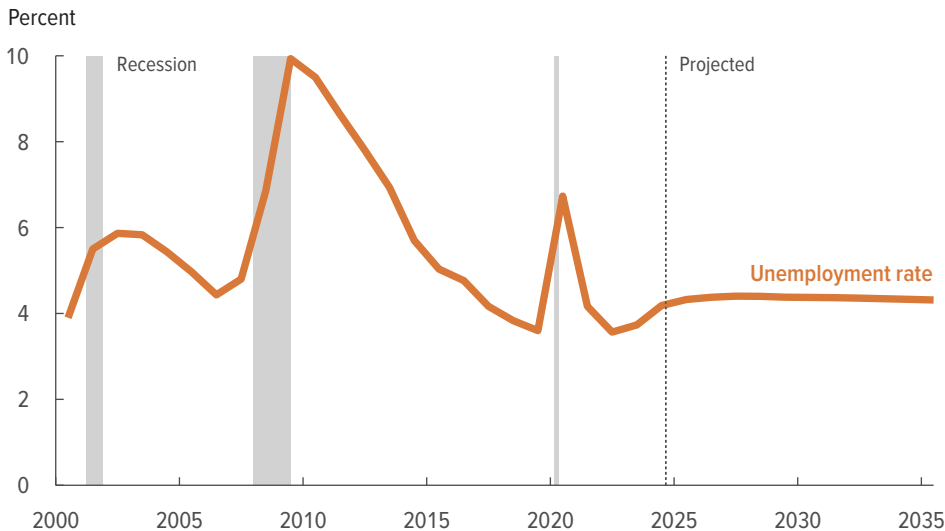
Real residential investment, which includes home construction, renovations, and brokers' commissions, grew by an estimated 2.5 percent in 2024, contributing 0.1 percentage point to real GDP growth. In CBO's projections, that contribution rises to 0.3 percentage points in 2025 and 2026 before declining. Such investment grows by an average of 6.4 percent in those years as falling interest rates, pent-up demand, recent increases in the population, and a limited supply of existing homes for sale boost demand for new homes.



Unemployment

In CBO's projections, the slowdown in economic growth raises the unemployment rate to 4.3 percent at the end of 2025 and 4.4 percent at the end of 2026.

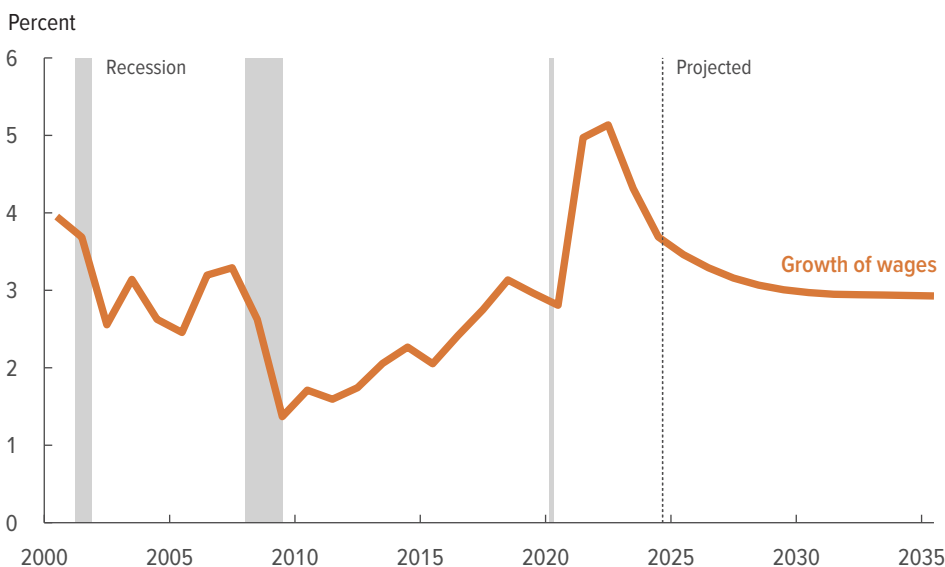
In later years, the unemployment rate declines gradually, reaching 4.3 percent at the end of 2035.



Outlook for Unemployment and Wages

Wages

Weaker demand for labor and falling inflation slow the growth of nominal wages over the next year. Wage growth declines gradually after 2025 but remains above the rate it averaged from 2015 to 2019—before the coronavirus pandemic—through 2035.



The unemployment rate rises through the end of 2026 and then declines gradually after 2032.

Wage growth continues to slow, falling to **2.9%** at the end of 2035.

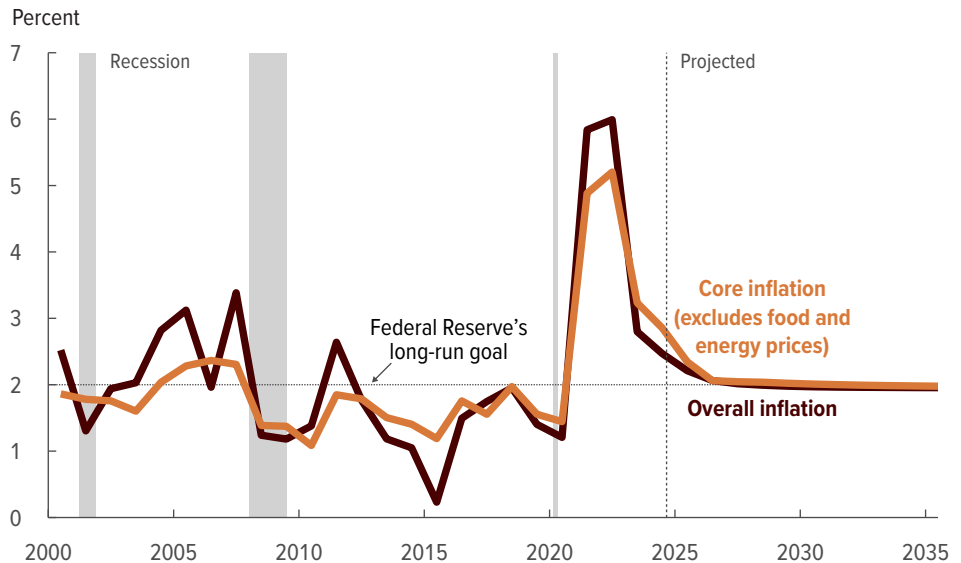
Outlook for Inflation and Interest Rates

Inflation slows in 2025 and settles at **2%** or less after 2026.

After 2025, short-term interest rates remain below 10-year rates, reflecting their typical relationship.

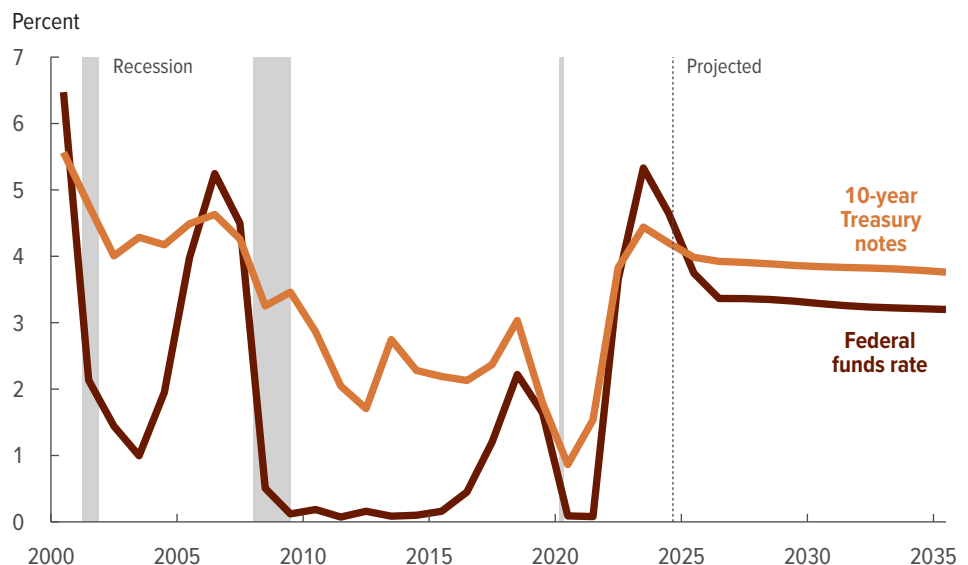
Overall Inflation and Core Inflation

CBO expects the growth of overall prices to slow further in 2025, to a rate close to the Federal Reserve's long-run goal of 2 percent. In CBO's projections, inflation as measured by the PCE price index (the Federal Reserve's preferred measure) falls from 2.5 percent in 2024 to 2.2 percent in 2025, reflecting moderating demand for labor and slower growth in housing costs. Inflation then declines more gradually, reaching 2.1 percent in 2026. From 2027 to 2035, it averages 2.0 percent per year.



Interest Rates

The Federal Reserve continues to lower the federal funds rate, which falls to 3.7 percent in the fourth quarter of 2025 and 3.4 percent in the fourth quarter of 2026. The 10-year rate declines less in those years. From 2027 to 2035, both short- and long-term interest rates decline slightly. (For details about the entire forecast and changes to it, see Appendix C.)



Appendix A: Changes in CBO's Baseline Projections Since June 2024

At least once a year, the Congressional Budget Office publishes reports providing the agency's projections of what the federal budget and the economy would look like in the current fiscal year and over the next 10 years if current laws governing taxes and spending generally remained unchanged. In this appendix, CBO describes key ways in which its current budget projections differ from the projections that the agency published in June 2024.¹ (For the current budget projections in tabular form, see Appendix B.)

Overview

CBO estimates that if no new legislation affecting spending and revenues was enacted after January 6, 2025, the budget deficit for fiscal year 2025 would total \$1.87 trillion. That amount is \$0.1 trillion (or 4 percent) less than the \$1.94 trillion deficit the agency estimated in June 2024, when it last published its baseline budget projections.² Since then, CBO has increased its projection of revenues in 2025 by \$125 billion (or 2 percent) and its estimate of outlays in that year by \$53 billion (or 1 percent).

CBO now projects that if current laws governing revenues and spending generally remained unchanged, the cumulative deficit for the 2025–2034 period would be

\$21.1 trillion. That amount is \$1.0 trillion (or 4 percent) less than the \$22.1 trillion the agency projected in June 2024. That change is the net result of a \$1.9 trillion (or 3 percent) increase in projected revenues and a \$0.9 trillion (or 1 percent) increase in projected outlays over the 2025–2034 period. The main factor contributing to a smaller projected cumulative deficit over that period is an increase in projected individual income tax receipts, driven by greater projections of taxable income in CBO's economic forecast.

In CBO's current projections, debt held by the public reaches \$49.6 trillion at the end of 2034—\$1.1 trillion less than the \$50.7 trillion projected in June 2024. Also, the economy is now projected to be 2.3 percent larger in 2034, mainly because of upward revisions to data about the size of the economy in 2024. Together, that reduction in projected debt and the larger projected economy cause federal debt at the end of 2034 to equal 117 percent of gross domestic product (GDP); last June, CBO projected that debt in 2034 would equal 122 percent of GDP.

When CBO updates its baseline budget projections, it groups the changes into three categories—legislative, economic, and technical. Those categories are defined as follows:

- Legislative changes result from laws enacted since the agency published its previous baseline projections.
- Economic changes arise from revisions that the agency has made to its economic forecast, including those made to incorporate the projected effects of enacted legislation on the economy.³
- Technical changes are revisions to projections that are neither legislative nor economic.

1. For those June 2024 projections, see Congressional Budget Office, *An Update to the Budget and Economic Outlook: 2024 to 2034* (June 2024), www.cbo.gov/publication/60039. CBO's current baseline projections incorporate the effects of legislation enacted through January 6, 2025, and include the effects of the American Relief Act, 2025 (Public Law 118-158), which provides federal agencies with funds to operate through March 14, 2025. The effects of legislation discussed here generally reflect the estimates provided for budget enforcement purposes around the time the legislation was enacted.

2. When October 1 (the first day of the fiscal year) falls on a weekend, certain payments that ordinarily would have been made on that day are instead made at the end of September and thus are shifted into the previous fiscal year. Because those shifts can distort budgetary trends, CBO often presents adjusted projections of deficits and outlays that treat the payments as if they were not subject to the shifts. The projections discussed in this appendix, however, have not been adjusted to remove the effects of those timing shifts.

3. CBO's current economic forecast reflects the laws enacted and the policy measures taken through December 4, 2024. The economic changes discussed in this report reflect differences between the current forecast and CBO's June 2024 forecast. For more details about that earlier forecast, see Congressional Budget Office, *An Update to the Budget and Economic Outlook: 2024 to 2034* (June 2024), www.cbo.gov/publication/60039.

The \$1.0 trillion reduction in the projected cumulative deficit over the 2025–2034 period is the net result of the following changes:

- A \$0.3 trillion net increase attributable to legislative changes (see Table A-1). CBO increased its projections of outlays for the Social Security program because of the Social Security Fairness Act of 2023 (Public Law 118-273), which increased benefits for certain workers who receive pensions for employment not covered by Social Security. Most of the people who will see increased benefits have employment experience at state and local governments or were first hired by the federal government before 1984.
- A \$2.5 trillion net decrease resulting from economic changes. Most of that decrease is due to a \$2.2 trillion increase in projected revenues, largely stemming from higher projections of taxable income that boosted projected individual income tax receipts. The reduction in deficits arising from that increase in projected revenues reduced net outlays for interest by \$0.4 trillion.
- A \$1.3 trillion net increase attributable to technical changes. The largest adjustments increasing the deficit are upward revisions to projections of outlays for Medicaid and a downward revision to projections of corporate income tax revenues.

As a result of those changes, primary deficits—that is, deficits excluding net outlays for interest—are now projected to total \$8.1 trillion over the 2025–2034 period, which is \$1.1 trillion (or 12 percent) less than CBO projected in June 2024. That reduction is partially offset by an increase of \$0.1 trillion (or 1 percent) in projected net outlays for interest over the 2025–2034 period.

After reviewing administrative actions and judicial decisions that changed its baseline projections since June 2024, CBO identified one administrative action, regarding immigration, that changed those projections by \$5 billion or more in at least one year of the projection period. In June 2024, the Administration issued an executive order that is projected to reduce immigration by suspending entry of most noncitizens at the southern border of the United States. The effects of that order are included in the economic and technical changes to revenues and to outlays for various programs discussed in this appendix; isolating those effects from other changes and reporting them separately was not practicable.

Legislative Changes

Revisions that CBO made to its projections of outlays and revenues to account for legislation enacted since the agency published its June 2024 baseline increased the estimated deficit for 2025 by \$35 billion and projected deficits over the 2025–2034 period by \$0.3 trillion.⁴

Changes in Outlays

Incorporating the effects of recently enacted legislation into CBO's baseline projections increased estimated outlays in 2025 by \$29 billion (or less than 1 percent) and projected outlays over the 2025–2034 period by \$0.2 trillion (or less than 1 percent). The largest change was a \$1.0 trillion decrease in outlays for defense discretionary programs that was almost entirely offset by an increase in outlays for nondefense discretionary programs.⁵

Discretionary Outlays. To account for legislation enacted since CBO completed its June 2024 baseline projections, the agency decreased its projections of discretionary outlays over the 2025–2034 period by \$17 billion. That downward revision is the net result of a \$958 billion decrease in defense outlays that was almost entirely offset by a \$941 billion increase in nondefense outlays.

Defense. Decreases in defense funding, and thus outlays, stemmed from two factors. First, the interaction of the continuing resolution that was in place on January 6, 2025 (when CBO's current baseline projections were finalized), and the caps established by the Fiscal Responsibility Act of 2023 (FRA, P.L. 118-5) reduced projected funding in 2025 and later years. Second, funding designated as an emergency requirement provided for defense purposes in 2025 was much less than the amount of such funding projected in June 2024.

Two separate sections of the FRA, sections 101 and 102, established caps on defense and nondefense funding. The limit on defense funding under section 102 is about \$45 billion less than the limit established under section 101. Which section applies in 2025 depended on

4. The June 2024 baseline projections incorporated the effects of legislation enacted through May 13, 2024.

5. Funding that is provided in appropriation acts and the outlays that result from it are generally categorized as discretionary.

whether a continuing resolution funded any part of the government on January 1 of that year.⁶

On December 21, 2024, a continuing resolution was enacted to fund the government through March 14, 2025.⁷ As a result, the caps established under section 102 of the FRA are currently in place. The current continuing resolution provides \$888 billion in base defense funding for 2025. (Base funding refers to funding constrained by the caps established by the FRA.) That amount exceeds the \$850 billion cap on such funding established under section 102 of the FRA. As a result, CBO's current baseline projections for 2025 include a reduction in funding to comply with that cap. In CBO's previous baseline projections, which incorporated the effects of the caps established under section 101 of the FRA, base defense funding totaled \$895 billion.

In accordance with provisions of the Balanced Budget and Emergency Deficit Control Act of 1985 (P.L. 99-177), CBO's projections of funding for discretionary programs generally reflect the assumption that funding in future years is equal to the amount provided for the current year with increases for inflation.⁸ As a result, the downward adjustment to base defense funding affects the agency's baseline projections of such funding after 2025. To account for the caps currently in place, CBO reduced its projections of defense outlays from funding constrained by the caps over the 2025–2034 period by \$0.5 trillion.

In addition, as of January 6, 2025, \$12 billion in defense funding designated as an emergency requirement, which is not constrained by the caps established by the FRA and is included in nonbase funding, has been provided for fiscal year 2025. That amount is \$57 billion less than the amount of such funding in CBO's June 2024

baseline projections. Because CBO's current projections of such funding begin with that smaller amount and grow with inflation over the next 10 years, projected outlays stemming from funding designated as an emergency requirement are \$0.5 trillion less than they were in CBO's previous baseline projections.

Nondefense. The increases in projected nondefense funding, and thus outlays, stemmed from base funding that is greater than previously projected and from increases in funding designated as an emergency requirement.

Base nondefense funding is \$36 billion more in 2025 than CBO previously projected. That is mainly because funding for mandatory programs was reduced by \$39 billion in the continuing resolution. For purposes of determining compliance with the caps established by the FRA, that reduction is credited against discretionary funding. In CBO's current baseline projections, however, that reduction is reflected as a change in mandatory spending, thereby boosting discretionary funding by \$39 billion in relation to the agency's June 2024 projections. Projecting that the increase would continue in each year of the 2025–2034 period raised CBO's projections of nondefense outlays over that period by \$0.5 trillion.

Similarly, nondefense funding designated as an emergency requirement for 2025 is \$59 billion greater than CBO projected in June, almost entirely because of the supplemental appropriations for disaster relief provided in the American Relief Act, 2025 (P.L. 118-158). Because of that increase in funding, the agency raised its projections of nondefense outlays over the 2025–2034 period by an additional \$0.5 trillion.

Mandatory Outlays. CBO increased its estimate of mandatory outlays in 2025 by \$25 billion (or 1 percent) and its projections of such outlays over the 2025–2034 period by \$0.2 trillion (or less than 1 percent), on net, to account for legislation enacted since the agency prepared its previous baseline projections. The repeal of the windfall elimination provision and the government pension offset for Social Security benefits accounted for nearly all of that change. Those two provisions reduced benefits for retired or disabled workers and their spouses who have fewer than 30 years of significant earnings from employment covered by Social Security if they also receive pensions based on employment not covered

6. For a more detailed explanation of the caps established by the FRA, see Congressional Budget Office, *The Budget and Economic Outlook: 2024 to 2034* (February 2024), Box 1-2, www.cbo.gov/publication/59710.

7. For CBO's estimate of discretionary appropriations provided by the current continuing resolution, see Congressional Budget Office, cost estimate for H.R. 10545, the American Relief Act, 2025 (December 20, 2024), www.cbo.gov/publication/61148.

8. To develop its projections of discretionary funding related to federal personnel, CBO is required to use the employment cost index for wages and salaries to adjust for inflation; to develop its projections of other types of discretionary funding, the agency is required to use the GDP price index.

Table A-1.

Changes in CBO's Baseline Projections of the Deficit Since June 2024

Billions of dollars

											Total	
	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2025– 2029	2025– 2034
Deficit in CBO's June 2024 baseline ^a	1,938	1,851	1,756	1,942	1,949	2,193	2,283	2,487	2,822	2,862	9,436	22,083
Legislative changes												
Changes in revenues	-6	-6	-8	-11	-12	-10	-9	-4	-3	-3	-43	-70
Changes in outlays												
Discretionary												
Defense												
Base	-27	-38	-43	-46	-47	-49	-50	-52	-53	-54	-201	-459
Nonbase	-8	-29	-42	-51	-57	-59	-61	-63	-64	-65	-187	-499
Subtotal, defense	-35	-68	-84	-97	-104	-108	-111	-114	-117	-119	-388	-958
Nondefense												
Base	24	34	52	47	48	50	51	52	54	55	205	466
Nonbase	15	29	36	44	50	55	58	61	63	64	174	474
Subtotal, nondefense	39	63	88	90	99	104	109	113	116	119	378	941
Subtotal, discretionary	4	-5	3	-7	-5	-4	-2	-1	*	*	-9	-17
Mandatory	25	14	13	16	12	17	19	19	19	20	80	173
Debt service ^b	*	2	2	3	4	5	6	7	8	9	11	44
Total change in outlays	29	11	18	12	11	18	22	24	26	29	82	201
Increase or decrease (-) in the deficit from legislative changes	35	17	27	23	23	27	31	28	29	31	125	271
Economic changes												
Changes in revenues												
Individual income taxes	114	140	136	134	137	142	152	166	179	193	661	1,492
Corporate income taxes	40	35	31	28	24	22	23	26	28	33	158	291
Payroll taxes	10	16	20	24	27	28	29	31	33	37	96	254
Federal Reserve remittances	2	1	*	*	*	77	7	6	3	-1	4	95
Other	2	2	2	2	1	1	2	2	3	4	8	20
Total change in revenues	168	193	190	188	189	270	213	231	246	265	928	2,153
Changes in outlays												
Mandatory												
Medicare	*	-2	-5	-8	-9	-13	-17	-21	-28	-29	-24	-131
Medicaid	-2	-3	-4	-5	-5	-7	-8	-10	-12	-14	-20	-69
SNAP	*	-1	-2	-2	-3	-3	-4	-5	-5	-6	-8	-30
Earned income tax credits and child tax credits	1	*	-1	-1	-2	-3	-3	-4	-4	-4	-3	-21
Other	-4	-7	-4	-1	*	1	1	4	4	5	-15	*
Subtotal, mandatory	-5	-12	-15	-17	-19	-25	-31	-35	-44	-48	-69	-252
Discretionary	0	2	3	5	7	9	10	10	10	10	17	65
Net interest												
Effect of interest rates and inflation	-64	-48	*	41	60	65	59	47	31	14	-12	205
Debt service ^b	-2	-14	-22	-29	-35	-42	-50	-58	-68	-79	-101	-398
Subtotal, net interest	-67	-62	-21	12	25	23	9	-11	-37	-65	-113	-193
Total change in outlays	-72	-73	-33	*	13	6	-12	-37	-72	-103	-165	-381
Increase or decrease (-) in the deficit from economic changes	-239	-266	-223	-187	-177	-264	-225	-267	-317	-368	-1,092	-2,534

Continued

Table A-1.

Continued

Changes in CBO's Baseline Projections of the Deficit Since June 2024

Billions of dollars

											Total	
	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2025– 2029	2025– 2034
Technical changes												
Changes in revenues												
Individual income taxes	-38	-9	-1	3	-2	-8	-9	-4	1	9	-48	-59
Corporate income taxes	-6	-7	-18	-22	-27	-31	-30	-28	-29	-35	-79	-233
Payroll taxes	12	10	9	6	7	9	13	16	17	18	44	118
Other	-5	6	6	1	1	-36	-5	-4	-3	-5	9	-44
Total change in revenues	-36	-1	-3	-12	-20	-65	-31	-20	-14	-13	-73	-217
Changes in outlays												
Mandatory												
Medicaid	57	84	100	91	91	87	83	82	73	67	424	817
Medicare	6	5	-4	-9	-9	-18	-26	-31	-47	-60	-10	-194
Social Security	5	7	8	9	9	9	9	8	8	4	38	76
SNAP and child nutrition	7	6	7	8	8	9	9	9	9	8	35	80
Earned income tax credits and child tax credits	-2	-3	-4	-5	-4	-5	-5	-5	-6	-6	-18	-45
Veterans’ benefits	7	-4	1	4	5	4	4	5	6	4	13	35
Other	1	5	6	-3	-4	3	2	-5	2	2	5	8
Subtotal, mandatory	81	99	114	95	97	89	77	63	44	18	487	777
Discretionary												
Defense	-11	-8	-5	1	5	6	4	3	2	1	-17	-1
Nondefense	22	10	5	10	1	2	3	2	3	1	48	58
Subtotal, discretionary	12	2	*	11	6	8	7	5	5	2	30	57
Net interest												
Debt service ^b	1	5	9	13	17	22	27	31	34	37	45	195
Other	2	5	2	1	2	*	2	4	5	3	11	26
Subtotal, net interest	3	10	10	14	19	22	29	35	39	39	56	222
Total change in outlays	96	111	124	120	122	118	113	103	89	59	573	1,055
Increase or decrease (-) in the deficit from technical changes	132	112	127	133	143	184	144	123	103	72	646	1,272
All changes												
Total increase or decrease (-) in the deficit	-73	-138	-69	-32	-11	-53	-50	-117	-185	-264	-322	-991
Deficit in CBO’s January 2025 baseline ^a	1,865	1,713	1,687	1,911	1,938	2,140	2,233	2,371	2,637	2,597	9,114	21,092
Addendum:												
Change in revenues	125	187	179	165	156	195	173	207	228	250	812	1,865
Change in outlays	53	49	110	133	146	142	123	90	44	-15	490	874
Increase or decrease (-) in the primary deficit ^c	-9	-87	-60	-61	-59	-103	-94	-147	-195	-248	-276	-1,064
Increase or decrease (-) in the deficit from the change in net interest outlays	-63	-50	-9	29	48	50	44	30	10	-17	-45	73

Data source: Congressional Budget Office. See www.cbo.gov/publication/60870#data.

SNAP = Supplemental Nutrition Assistance Program; * = between -\$500 million and \$500 million.

a. When outlays exceed revenues, the result is a deficit. Values in this row were calculated by subtracting revenues from outlays; thus, positive values indicate deficits. When outlays are subtracted from revenues, as recorded in the federal budget and in the tables in Appendix B, negative values indicate deficits.

b. Debt-service costs are the changes in interest payments resulting from an increase or decrease in projected deficits.

c. Primary deficits exclude net outlays for interest.

by Social Security. Eliminating those two provisions increased benefits for those beneficiaries, which, in turn, increased projected outlays for Social Security over the 2025–2034 period by about \$0.2 trillion.

That increase was partly offset by a provision of the American Relief Act, 2025, that temporarily rescinded \$20 billion of mandatory funding for the Internal Revenue Service (IRS).⁹ In CBO’s baseline, the provisions of temporary funding bills are annualized—that is, estimated as if appropriations were provided for the entire fiscal year. As a result, CBO’s baseline reflects the full \$20 billion reduction in spending. (That rescission reduced CBO’s projections of receipts from individual and corporate income taxes, as discussed below.)

Net Outlays for Interest. Before accounting for the changes in interest payments that would result from changes in projected deficits (known as debt service), CBO increased its estimate of the deficit in 2025 by \$34 billion and its projection of the cumulative deficit for the 2025–2034 period by \$227 billion to account for legislation enacted since the June 2024 baseline was prepared. The increases in federal borrowing stemming from larger annual deficits would increase debt-service costs; that debt service increased CBO’s projections of net outlays for interest over the 2025–2034 period by \$44 billion.

Changes in Revenues

To account for legislation enacted since it prepared its previous baseline projections, CBO revised downward its estimate of revenues in 2025 by \$6 billion and its projections of revenues over the 2025–2034 period by \$70 billion.

Those reductions mainly stemmed from the provision of the American Relief Act, 2025, that temporarily rescinded \$20 billion in funding provided to the IRS. CBO anticipates that the IRS would prioritize continuing enforcement activities that are expected to have the largest return in terms of collections, so as additional funds are rescinded, the amount of revenues reduced by each dollar of rescinded funds increases. If enacted for

the full fiscal year, that rescission would reduce individual and corporate income tax receipts over the 2025–2034 period by \$66 billion—resulting in a net increase in the projected cumulative deficit of \$46 billion.

In addition, CBO lowered projections of individual income tax receipts over the 2025–2034 period by \$5 billion to account for the enactment of the Federal Disaster Tax Relief Act of 2023 (P.L. 118-148).¹⁰ That law included a provision that relaxed limitations on deducting certain losses from federally declared disasters over the past several years.

Economic Changes

The economic forecast that underlies CBO’s baseline budget projections includes the agency’s projections of GDP, interest rates, the labor force, wages and salaries, inflation, and other factors that affect federal spending and revenues. Taken together, the revisions made to account for changes in that forecast reduced CBO’s estimate of the deficit in 2025 by \$0.2 trillion and its projection of the cumulative deficit over the 2025–2034 period by \$2.5 trillion. Upward revisions to revenues were the main reason for those reductions.

Changes in Revenues

To account for changes in its economic forecast, CBO increased its estimate of revenues in 2025 by \$168 billion (or 3 percent) and its projections of revenues over the 2025–2034 period by \$2.2 trillion (or 3 percent). Those changes are largely the result of higher projections of GDP and the associated components of taxable income, including wages, salaries, and corporate profits. CBO revised upward its projections of GDP over the 2025–2034 period by \$7.2 trillion (or 2 percent). That upward revision boosted projected receipts from income and payroll taxes.

Other factors further boosted receipts. Higher asset values increased anticipated capital gains realizations, boosting projected revenues from individual and corporate income taxes. Those higher asset values also increased projected account balances and distributions from taxable retirement accounts. Downward revisions to CBO’s forecast of short-term interest rates reduced projections of the Federal Reserve’s interest expenses, thus boosting projected remittances from the Federal Reserve to the Treasury.

9. In keeping with the American Relief Act, 2025, which temporarily continues discretionary appropriations and authorities contained in 2024 appropriation legislation through March 14, 2025, that funding has been temporarily precluded from obligation; whether it remains unavailable to the IRS for the duration of fiscal year 2025 depends on future legislation. If future legislation permanently rescinded that funding, CBO would incorporate the changes in spending or revenues into its assessment of the budgetary effects of that legislation.

10. For more information, see Congressional Budget Office, cost estimate for H.R. 5863, the Federal Disaster Tax Relief Act of 2023 (January 9, 2024), www.cbo.gov/publication/59866.

Individual Income Taxes. Economic changes increased CBO's estimate of revenues from individual income taxes in 2025 by \$114 billion (or 4 percent) and its projections of such revenues over the 2025–2034 period by \$1.5 trillion (or 4 percent), on net.

The increases in 2025 and later years were partly driven by higher projections of components of taxable income, including wages, salaries, and business income taxed at the individual level. Projected receipts were also boosted by higher asset values, especially for equities, in the near term, which increased expected capital gains realizations and distributions from taxable retirement accounts.

Corporate Income Taxes. To account for changes in its economic forecast, CBO raised its estimate of revenues from corporate income taxes in 2025 by \$40 billion (or 8 percent) and its projections of such revenues over the 2025–2034 period by \$291 billion (or 6 percent). Those changes resulted from revisions to the agency's projections of domestic corporate profits, which increased by \$2.8 trillion (or 9 percent) over that period. Those higher projected profits resulted from updated estimates by the Bureau of Economic Analysis of the total profits earned from 2021 to 2024. However, because corporate tax revenues are already known for those years, the larger estimates of historical profits imply a lower average tax rate on those profits. Incorporating that lower average rate resulted in a downward revision to projected revenues that is categorized as a technical change, as discussed below.

Payroll Taxes. Revisions to CBO's economic forecast increased the agency's estimate of revenues from payroll taxes in 2025 by \$10 billion (or less than 1 percent) and its projections of such revenues over the 2025–2034 period by \$254 billion (or 1 percent). Those upward revisions largely stemmed from higher projections of wages and salaries.

Federal Reserve Remittances. Because CBO now expects short-term interest rates to decline more quickly than previously anticipated, the interest that the Federal Reserve pays to banks for deposits is less than previously projected. That change boosted CBO's projections of remittances from the Federal Reserve over the 2025–2034 period by \$95 billion (or 16 percent). In CBO's projections, most changes in the Federal Reserve's income or costs affect the Federal Reserve banks' deferred assets until 2030 and then begin to affect remittances.

Other Revenues. To account for changes in its economic forecast, CBO increased its estimates of revenues from estate and gift taxes, customs duties, and excise taxes in 2025 by \$2 billion (or 1 percent) and its projections over the 2025–2034 period by \$20 billion (or 1 percent), on net. Most of that increase resulted from growth in projected imports, which increased the expected tax base for customs duties.

Changes in Outlays

Revisions to CBO's economic forecast included revisions to projected interest rates and reductions in projected rates of inflation. To account for those and other changes to its economic forecast, CBO decreased its estimate of outlays in 2025 by \$72 billion (or 1 percent) and its projections of outlays over the 2025–2034 period by \$0.4 trillion (or less than 1 percent).

Mandatory Outlays. Economic changes decreased CBO's estimate of mandatory outlays in 2025 by \$5 billion (or less than 1 percent), on net. Projected mandatory outlays over the 2025–2034 period fell by \$0.3 trillion (or less than 1 percent). Downward revisions to projected outlays for Medicare and Medicaid account for most of that decrease.

Medicare. CBO reduced its projections of outlays for Medicare over the 2025–2034 period by \$131 billion (or 1 percent). The agency's latest economic forecast includes downward revisions to the producer price index for prescription drugs, which reduced the expected growth in payments to providers such as hospitals and skilled nursing facilities.

Medicaid. CBO decreased its projections of outlays for Medicaid over the 2025–2034 period by \$69 billion (or 1 percent). The agency's latest economic forecast includes downward revisions to projected increases in the prices of many medical goods and services, which reduced projected payment rates for Medicaid.

Supplemental Nutrition Assistance Program. Economic changes to CBO's projections for the 2025–2034 period decreased projected outlays for the Supplemental Nutrition Assistance Program (SNAP) by \$30 billion (or 3 percent). That reduction stemmed mainly from downward revisions to CBO's projections of increases in food prices.

Earned Income and Child Tax Credits. To account for changes in its economic forecast, CBO decreased its estimate of total outlays for the earned income tax credit (EITC) and the child tax credit (CTC) over the 2025–2034 period by \$21 billion (or 2 percent). That decrease was a result of reductions in the agency’s projections of the U.S. population, including reductions in the projected number of children. To account for that decrease in the projected population, CBO revised downward its projections of the number of people who would claim those credits; as a result, projected outlays are smaller than they were in the agency’s June 2024 baseline projections.

Other Mandatory Programs. Changes in CBO’s economic forecast also affected projected outlays for other mandatory programs. Although those changes included upward and downward revisions, their net effect was to increase projected outlays for those programs over the 2025–2034 period by less than \$1 billion.

Discretionary Outlays. Economic changes—stemming mainly from upward revisions to the agency’s forecasts of certain measures of inflation—increased projected discretionary outlays over the 2025–2034 period by \$65 billion (or less than 1 percent). CBO’s baseline projections generally reflect the assumption that discretionary funding keeps pace with inflation.

Net Outlays for Interest. Economic changes reduced CBO’s estimate of net outlays for interest in 2025 by \$64 billion (or 6 percent) but increased its projections of such outlays over the 2025–2034 period by \$205 billion (or 2 percent). Those changes were attributable to revisions to the agency’s forecasts of interest rates on Treasury securities. CBO decreased its projections of short-term interest rates in 2025 and 2026 and increased them over the 2027–2034 period. The agency increased its projections of long-term rates over the 2026–2029 period and lowered them over the 2031–2034 period.

All told, changes stemming from revisions to CBO’s economic forecast decreased the projected cumulative deficit for the 2025–2034 period by \$2.1 trillion. To account for the reduction in debt-service costs stemming from the decrease in projected deficits, the agency lowered its projections of net outlays for interest over that period by \$398 billion.

Technical Changes

Technical changes—those changes that are neither legislative nor economic—result from a variety of factors, such as revisions to average tax rates, new information or data from federal agencies (including actual outlays and revenues for the most recent fiscal year), and changes in the way programs are administered that affect federal spending and revenues. Technical changes increased CBO’s estimate of the deficit in 2025 by \$0.1 trillion and boosted projected deficits over the 2025–2034 period by \$1.3 trillion.

Changes in Outlays

Taken together, technical changes increased CBO’s estimate of outlays in 2025 by \$0.1 trillion (or 1 percent) and its projections of outlays over the 2025–2034 period by \$1.1 trillion (or 1 percent). Greater projected spending on Medicaid was the largest technical revision, boosting outlays over the 2025–2034 period by \$0.8 trillion.

Mandatory Outlays. CBO increased its projections of outlays for several mandatory programs and decreased them for others to account for revisions to its demographic projections, updated projections of enrollment in benefit programs, and changes in other technical factors that underlie those spending projections. On net, technical changes to CBO’s projections increased its estimate of mandatory outlays in 2025 by \$81 billion (or 2 percent) and its projections of such outlays over the 2025–2034 period by \$0.8 trillion (or 2 percent).

Medicaid. Technical changes increased CBO’s estimate of outlays for Medicaid in 2025 by \$57 billion (or 10 percent) and its projections over the 2025–2034 period by \$817 billion (or 12 percent). Several factors contributed to those increases. The biggest factors were that in 2024, enrollment in Medicaid and actual outlays for the program were significantly greater than expected, causing CBO to increase its projections of spending on the program in future years.

In June 2024, CBO expected Medicaid enrollment to be 79 million people in 2025. The revised projections reflect an expected enrollment of 84 million people in that year. Costs per enrollee in 2024 were also significantly higher than expected because of a reported decrease in the average health status of Medicaid enrollees after the continuous eligibility policy put in place during the coronavirus pandemic ended on April 1, 2023. CBO expects that the higher costs per enrollee will lead to higher-than-previously-projected payment rates for

health plans that manage care for Medicaid enrollees beginning in 2026, when payment rates start to reflect that decrease in average health status.

Four other factors caused CBO to increase its projections of outlays for Medicaid. First, the agency expects greater spending on the program over the 2025–2034 period because of an increase in the number of disabled people receiving Supplemental Security Income. (Such people automatically qualify for Medicaid.) Second, CBO increased projected spending to account for greater anticipated use of prescription drugs over that period, particularly the use of anti-obesity medications known as glucagon-like peptide-1 agonists, or GLP-1s. Third, CBO increased projected spending to account for a modest increase in expected coverage expansions under the optional eligibility category established by the Affordable Care Act. And finally, the agency increased its projections of outlays associated with state-directed payments in Medicaid managed care. Those increased projections reflect higher-than-expected spending through directed payment arrangements in 2024. They also incorporate the effects of a final rule that permits states to pay hospitals, skilled nursing facilities, and physicians affiliated with academic medical centers at the average commercial payment rate when using a directed payment.¹¹

Medicare. CBO's estimate of outlays for Medicare over the 2025–2034 period is \$194 billion (or 1 percent) less than it was in June 2024 because of technical revisions. Two factors explain most of that decrease. First, CBO reduced its projections of Medicare enrollment over that period by 1 percent compared with its June 2024 projection. The reduction stemmed from modeling improvements that included removing foreign-born people who are not eligible for benefits from the agency's enrollment projections. Second, CBO reduced its projections of growth in the amounts that Medicare pays to clinical laboratories to better reflect the amounts that Medicare has paid in recent years.

Social Security. CBO increased its projections of outlays for Social Security over the 2025–2034 period by \$76 billion (or less than 1 percent) for technical reasons. Most of that increase stems from an upward revision to the agency's projections of growth in the number of people age 65 or older in the population, which slightly increased the projected number of beneficiaries of Old-Age and Survivors Insurance and Disability Insurance.

Supplemental Nutrition Assistance Program and Child Nutrition. For technical reasons, CBO increased its projections of outlays for SNAP over the 2025–2034 period by \$52 billion (or 5 percent) and of outlays for child nutrition programs over that same period by \$28 billion (or 7 percent). Enrollment in SNAP in 2024 was higher than anticipated, which led CBO to increase projected enrollment in the program by 2 to 3 million people in each year of the projection period. The upward revision to outlays for child nutrition programs reflects the fact that more free lunches and breakfasts were provided in 2024 than CBO projected.

Earned Income and Child Tax Credits. CBO decreased its projections of outlays for the EITC and CTC over the 2025–2034 period by \$45 billion (5 percent). That decrease stemmed from a change to CBO's tax model to better align the number of children claimed on tax returns in future years with CBO's projections of the population. That change reduced the projected number of children claimed on tax returns and, in turn, reduced projected outlays for the EITC and CTC.

Veterans' Benefits and Services. For technical reasons, CBO increased its projections of outlays for veterans' benefits and services over the 2025–2034 period by \$35 billion (or 1 percent). That increase reflects the incorporation of actual outcomes in 2024 into CBO's projections. The number of beneficiaries of disability compensation in 2024 was greater than CBO expected, which led the agency to increase the number of beneficiaries in each year of the projection period by 45,000. In addition, a sustained recovery in enrollments and a more intensive use of benefits resulted in greater projected outlays for readjustment benefits. (Those benefits are intended to assist veterans with the transition from military life to civilian life; they include employment programs, education assistance, and vocational rehabilitation benefits.)

Other Mandatory Programs. Technical changes increased CBO's projections of outlays for other mandatory programs over the 2025–2034 period by \$8 billion, on net.

11. When an agency publishes a proposed regulation in the Federal Register, CBO generally does not incorporate an estimate of the total effects of the rule as proposed into its baseline projections. Rather, CBO typically incorporates a portion of the effects based on the assigned probability (often 50 percent) that the rule will be implemented to reflect the uncertainty about whether and how the rule will ultimately be carried out. After the final version of a rule is published, CBO incorporates the total estimated effects of the final rule into its subsequent cost estimates and baseline projections. For more information, see Congressional Budget Office, *CBO Explains How It Develops the Budget Baseline* (April 2023), www.cbo.gov/publication/58916.

Discretionary Outlays. Technical changes increased CBO's projections of discretionary outlays over the 2025–2034 period by \$57 billion (or less than 1 percent). In general, that increase stemmed from adjustments to better reflect the recent rates at which discretionary funding has translated into outlays.

Net Outlays for Interest. Increases in debt-service costs and other technical changes added \$222 billion (or 2 percent) to CBO's projections of net outlays for interest over the 2025–2034 period. Those increases in debt-service costs stemmed from greater borrowing to finance more noninterest outlays and from less revenues.

Changes in Revenues

For technical reasons, CBO decreased its estimate of revenues in 2025 by \$36 billion (or less than 1 percent) and its projections of revenues over the 2025–2034 period by \$0.2 trillion (or less than 1 percent).

The largest downward revisions were to projections of receipts from individual and corporate income taxes and remittances from the Federal Reserve, which partially offset the upward revisions to those sources that were prompted by economic changes. The largest upward revisions were to projected receipts from payroll taxes and estate and gift taxes.

Individual Income Taxes. Technical revisions reduced CBO's estimate of individual income tax receipts in 2025 by \$38 billion (or 1 percent) and its projections of such receipts over the 2025–2034 period by \$59 billion (or less than 1 percent). CBO decreased its estimate of individual income tax receipts in 2025 because recent tax collections have been weaker than expected, given current economic data. The small net downward revisions over the 2025–2034 period reflect many offsetting factors, including the incorporation of information from recent tax collections, detailed historical tax data for prior tax years, and updated information on the distribution of earnings.

Corporate Income Taxes. For technical reasons, CBO decreased its estimate of revenues from corporate income taxes in 2025 by \$6 billion (or 1 percent) and its projections of such revenues for the 2025–2034 period by

\$233 billion (or 5 percent). That decrease in projected revenues results from newly available data from corporate tax returns and from updated estimates of past profits reported by the Bureau of Economic Analysis.

Long-standing business credits reported on tax returns, including those for research and investment, have been larger than expected over the past several years, causing CBO to revise upward its projections of those credits going forward. In addition, the Bureau of Economic Analysis revised upward the estimated amount of profits earned during the 2021–2024 period. That upward revision caused CBO to increase its projections of profits in future years, which resulted in higher projections of corporate tax receipts for economic reasons. But because corporate tax revenues are already known for those years, the higher estimates of historical profits imply a lower average tax rate on those profits, resulting in a downward adjustment to projected revenues.

Payroll Taxes. For technical reasons, CBO increased its estimate of revenues from payroll taxes in 2025 by \$12 billion (or less than 1 percent) and its projections of such revenues over the 2025–2034 period by \$118 billion (or less than 1 percent). On the basis of recent tax information, CBO now projects that a larger share of earnings will fall below the taxable maximum for Social Security taxes, boosting projected payroll taxes.

Other Revenues. Technical revisions decreased CBO's estimate of revenues from other sources in 2025 by \$5 billion (or 2 percent) and its projections of such revenues over the 2025–2034 period by \$44 billion (or 1 percent), on net. CBO reduced its projections of remittances from the Federal Reserve over the 2025–2034 period by \$68 billion (or 11 percent) to better reflect the rising interest costs that the Federal Reserve has been paying on deposits at Federal Reserve banks. CBO also reduced its projections of receipts from excise taxes over that period by \$31 billion (or 3 percent), mostly because recent collections of aviation and highway taxes were smaller than anticipated. Those decreases were partly offset by increased projections of receipts from estate and gift taxes over the 2025–2034 period. Those projections were revised upward by \$42 billion (or 8 percent) to account for recent collections.

Appendix B: The Budget Outlook in Tables

By law, the Congressional Budget Office is required to produce an annual report providing the agency's projections of what the federal budget and the economy would look like in the current fiscal year and over the next 10 years if current laws governing taxes and spending generally remained unchanged. This report is the latest in that series, presented in an abbreviated version to facilitate work on other Congressional priorities. The agency uses its economic forecast—which includes projections of income, inflation, interest rates, and other variables—as a basis for projecting revenues from each major revenue source (individual, corporate, payroll, and other taxes), spending for every federal budget account, the resulting deficits or surpluses, and federal debt.

The budget projections in this report reflect developments in the economy as of December 4, 2024. They also incorporate legislation enacted through January 6, 2025.

The first two tables in this appendix show CBO's projections for the budget by category (see Table B-1) and projections for those same categories of outlays (and thus of deficits) adjusted to exclude the effects of shifts in the timing of certain payments that can distort budgetary trends (see Table B-2). The rest of the tables show the agency's projections of federal debt (see Table B-3), details about mandatory (see Table B-4) and discretionary spending (see Table B-5), and a set of key projections (see Table B-6).

Mandatory spending, also called direct spending, includes outlays for certain benefit programs and other

payments that generally are covered by statutory criteria. Discretionary spending, which covers a broad array of government programs and activities, is controlled by appropriation acts that specify the amount of funding (or budget authority), as well as the purpose and period of availability of that funding.

The agency's budget projections—often referred to as CBO's budget baseline—are constructed in accordance with provisions set forth in the Balanced Budget and Emergency Deficit Control Act of 1985 (Public Law 99-177) and the Congressional Budget and Impoundment Control Act of 1974 (P.L. 93-344). For projections of discretionary spending, CBO's baseline incorporates limits on discretionary funding for 2025, as specified in the Fiscal Responsibility Act of 2023 (FRA; P.L. 118-5). CBO's projections of discretionary spending generally reflect the assumption (as required by law) that funding will grow with inflation after 2025.

CBO's baseline is not intended to provide a forecast of future budgetary outcomes. Rather, it helps policymakers assess the potential effects of future policy decisions by providing a benchmark that can be used to evaluate the anticipated effects of proposed legislation and to determine whether that legislation is subject to various budget enforcement procedures.

CBO last released its baseline budget projections in June 2024; changes since then are discussed in Appendix A. Additional information about the agency's projections is available on CBO's website.

Table B-1.

CBO's Baseline Budget Projections, by Category

													Total	
	Actual, 2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2026– 2030	2026– 2035
In billions of dollars														
Revenues														
Individual income taxes	2,426	2,621	2,968	3,253	3,355	3,455	3,584	3,721	3,870	4,037	4,220	4,413	16,615	36,876
Payroll taxes	1,709	1,759	1,840	1,915	1,990	2,072	2,155	2,242	2,329	2,419	2,510	2,605	9,973	22,078
Corporate income taxes	530	524	495	469	462	453	450	456	468	493	503	517	2,329	4,767
Other ^a	253	259	277	298	301	310	360	416	439	456	474	496	1,545	3,827
Total	4,918	5,163	5,580	5,935	6,108	6,290	6,549	6,834	7,106	7,405	7,708	8,031	30,463	67,548
On-budget	3,658	3,859	4,217	4,516	4,637	4,760	4,959	5,180	5,389	5,623	5,860	6,114	23,088	51,254
Off-budget ^b	1,260	1,304	1,364	1,418	1,472	1,530	1,591	1,654	1,718	1,782	1,848	1,917	7,375	16,293
Outlays														
Mandatory	4,060	4,228	4,386	4,596	4,852	4,948	5,276	5,520	5,788	6,208	6,341	6,465	24,058	54,380
Discretionary	1,810	1,848	1,897	1,951	2,002	2,033	2,086	2,130	2,175	2,229	2,271	2,315	9,969	21,090
Net interest	881	952	1,010	1,075	1,164	1,247	1,328	1,417	1,514	1,605	1,694	1,783	5,825	13,836
Total	6,750	7,028	7,294	7,622	8,019	8,228	8,689	9,067	9,477	10,042	10,306	10,563	39,852	89,306
On-budget	5,430	5,603	5,784	6,029	6,325	6,434	6,791	7,060	7,357	7,809	7,972	8,126	31,363	69,687
Off-budget ^b	1,320	1,425	1,509	1,593	1,694	1,795	1,898	2,007	2,120	2,233	2,334	2,436	8,489	19,619
Total deficit (-) ^c	-1,832	-1,865	-1,713	-1,687	-1,911	-1,938	-2,140	-2,233	-2,371	-2,637	-2,597	-2,531	-9,389	-21,758
On-budget	-1,772	-1,744	-1,568	-1,513	-1,688	-1,674	-1,832	-1,880	-1,968	-2,186	-2,112	-2,012	-8,274	-18,432
Off-budget ^b	-60	-121	-146	-174	-223	-265	-308	-353	-403	-451	-485	-519	-1,115	-3,326
Primary deficit (-) ^{c,d}	-951	-913	-703	-612	-746	-691	-812	-816	-857	-1,033	-904	-749	-3,564	-7,922
Debt held by the public	28,199	30,103	31,883	33,636	35,601	37,581	39,748	41,992	44,372	46,985	49,556	52,056	n.a.	n.a.
Addendum:														
GDP	28,828	30,136	31,341	32,538	33,765	35,047	36,394	37,792	39,252	40,768	42,330	43,936	169,085	373,164
As a percentage of GDP														
Revenues														
Individual income taxes	8.4	8.7	9.5	10.0	9.9	9.9	9.8	9.8	9.9	9.9	10.0	10.0	9.8	9.9
Payroll taxes	5.9	5.8	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9
Corporate income taxes	1.8	1.7	1.6	1.4	1.4	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.4	1.3
Other ^a	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.1	1.1	1.1	1.1	1.1	0.9	1.0
Total	17.1	17.1	17.8	18.2	18.1	17.9	18.0	18.1	18.1	18.2	18.2	18.3	18.0	18.1
On-budget	12.7	12.8	13.5	13.9	13.7	13.6	13.6	13.7	13.7	13.8	13.8	13.9	13.7	13.7
Off-budget ^b	4.4	4.3	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
Outlays														
Mandatory	14.1	14.0	14.0	14.1	14.4	14.1	14.5	14.6	14.7	15.2	15.0	14.7	14.2	14.6
Discretionary	6.3	6.1	6.1	6.0	5.9	5.8	5.7	5.6	5.5	5.5	5.4	5.3	5.9	5.7
Net interest	3.1	3.2	3.2	3.3	3.4	3.6	3.6	3.7	3.9	3.9	4.0	4.1	3.4	3.7
Total	23.4	23.3	23.3	23.4	23.8	23.5	23.9	24.0	24.1	24.6	24.3	24.0	23.6	23.9
On-budget	18.8	18.6	18.5	18.5	18.7	18.4	18.7	18.7	18.7	19.2	18.8	18.5	18.5	18.7
Off-budget ^b	4.6	4.7	4.8	4.9	5.0	5.1	5.2	5.3	5.4	5.5	5.5	5.5	5.0	5.3
Total deficit (-) ^c	-6.4	-6.2	-5.5	-5.2	-5.7	-5.5	-5.9	-5.9	-6.0	-6.5	-6.1	-5.8	-5.6	-5.8
On-budget	-6.1	-5.8	-5.0	-4.6	-5.0	-4.8	-5.0	-5.0	-5.0	-5.4	-5.0	-4.6	-4.9	-4.9
Off-budget ^b	-0.2	-0.4	-0.5	-0.5	-0.7	-0.8	-0.8	-0.9	-1.0	-1.1	-1.1	-1.2	-0.7	-0.9
Primary deficit (-) ^{c,d}	-3.3	-3.0	-2.2	-1.9	-2.2	-2.0	-2.2	-2.2	-2.2	-2.5	-2.1	-1.7	-2.1	-2.1
Debt held by the public	97.8	99.9	101.7	103.4	105.4	107.2	109.2	111.1	113.0	115.3	117.1	118.5	n.a.	n.a.

Data source: Congressional Budget Office. See www.cbo.gov/publication/60870#data.

GDP = gross domestic product; n.a. = not applicable.

a. Consists of excise taxes, remittances from the Federal Reserve System, customs duties, estate and gift taxes, and miscellaneous fees and fines.

b. The revenues and outlays of the Social Security trust funds and the net cash flow of the Postal Service are classified as off-budget.

c. When outlays exceed revenues, the result is a deficit. Values in this row were calculated by subtracting outlays from revenues; thus, negative values indicate deficits.

d. Primary deficits exclude net outlays for interest.

Table B-2.

CBO's Baseline Projections of Outlays and Deficits, Adjusted to Exclude Effects of Timing Shifts

	Actual, 2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
In billions of dollars												
Adjustments to exclude effects of timing shifts ^a	75	0	0	0	-116	116	0	0	0	-156	-11	167
Outlays, adjusted for timing shifts												
Mandatory	4,130	4,228	4,386	4,596	4,742	5,058	5,276	5,520	5,788	6,058	6,330	6,626
Discretionary	1,815	1,848	1,897	1,951	1,997	2,038	2,086	2,130	2,175	2,223	2,271	2,322
Net interest	881	952	1,010	1,075	1,164	1,247	1,328	1,417	1,514	1,605	1,694	1,783
Total	6,826	7,028	7,294	7,622	7,903	8,344	8,689	9,067	9,477	9,886	10,294	10,730
Total deficit (-), adjusted for timing shifts^b	-1,907	-1,865	-1,713	-1,687	-1,795	-2,054	-2,140	-2,233	-2,371	-2,481	-2,586	-2,699
Primary deficit (-), adjusted for timing shifts ^{b,c}	-1,026	-913	-703	-612	-630	-807	-812	-816	-857	-877	-893	-916
As a percentage of GDP												
Outlays, adjusted for timing shifts												
Mandatory	14.3	14.0	14.0	14.1	14.0	14.4	14.5	14.6	14.7	14.9	15.0	15.1
Discretionary	6.3	6.1	6.1	6.0	5.9	5.8	5.7	5.6	5.5	5.5	5.4	5.3
Net interest	3.1	3.2	3.2	3.3	3.4	3.6	3.6	3.7	3.9	3.9	4.0	4.1
Total	23.7	23.3	23.3	23.4	23.4	23.8	23.9	24.0	24.1	24.2	24.3	24.4
Total deficit (-), adjusted for timing shifts^b	-6.6	-6.2	-5.5	-5.2	-5.3	-5.9	-5.9	-5.9	-6.0	-6.1	-6.1	-6.1
Primary deficit (-), adjusted for timing shifts ^{b,c}	-3.6	-3.0	-2.2	-1.9	-1.9	-2.3	-2.2	-2.2	-2.2	-2.2	-2.1	-2.1
Addendum:												
Baseline deficit (-), unadjusted												
In billions of dollars ^b	-1,832	-1,865	-1,713	-1,687	-1,911	-1,938	-2,140	-2,233	-2,371	-2,637	-2,597	-2,531
As a percentage of GDP ^b	-6.4	-6.2	-5.5	-5.2	-5.7	-5.5	-5.9	-5.9	-6.0	-6.5	-6.1	-5.8

Data source: Congressional Budget Office. See www.cbo.gov/publication/60870#data.

GDP = gross domestic product.

a. When October 1 (the first day of the fiscal year) falls on a weekend, certain payments that would have ordinarily been made on that day are instead made at the end of September and thus are shifted into the previous fiscal year. Those shifts primarily affect mandatory outlays; discretionary outlays are also affected but to a much lesser degree. Net interest outlays are not affected.

b. When outlays exceed revenues, the result is a deficit. Values in this row were calculated by subtracting outlays from revenues; thus, negative values indicate deficits.

c. Primary deficits exclude net outlays for interest.

Table B-3.

CBO's Baseline Projections of Federal Debt

Billions of dollars

	Actual, 2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Debt held by the public at the beginning of the year	26,236	28,199	30,103	31,883	33,636	35,601	37,581	39,748	41,992	44,372	46,985	49,556
Changes in debt held by the public												
Resulting from the deficit	1,832	1,865	1,713	1,687	1,911	1,938	2,140	2,233	2,371	2,637	2,597	2,531
Resulting from other means of financing ^a	131	38	67	67	54	42	27	12	9	-24	-27	-31
Total	1,964	1,903	1,780	1,753	1,965	1,980	2,167	2,245	2,379	2,613	2,570	2,500
Debt held by the public at the end of the year												
In billions of dollars	28,199	30,103	31,883	33,636	35,601	37,581	39,748	41,992	44,372	46,985	49,556	52,056
As a percentage of GDP	97.8	99.9	101.7	103.4	105.4	107.2	109.2	111.1	113.0	115.3	117.1	118.5
Addendum:												
Federal financial assets ^b	2,198	2,237	2,303	2,370	2,424	2,465	2,493	2,505	2,513	2,489	2,463	2,432
Debt minus financial assets												
In billions of dollars	26,001	27,866	29,579	31,266	33,177	35,115	37,255	39,488	41,858	44,496	47,093	49,624
As a percentage of GDP	90.2	92.5	94.4	96.1	98.3	100.2	102.4	104.5	106.6	109.1	111.3	112.9
Federal Reserve's holdings of debt held by the public	4,384	4,467	5,017	5,602	6,202	6,803	7,343	7,859	8,377	8,896	9,418	9,941
Debt minus financial assets and the Federal Reserve's holdings												
In billions of dollars	21,617	23,399	24,563	25,664	26,975	28,312	29,912	31,629	33,482	35,599	37,675	39,683
As a percentage of GDP	75.0	77.6	78.4	78.9	79.9	80.8	82.2	83.7	85.3	87.3	89.0	90.3
Gross federal debt ^c	35,230	37,209	39,130	40,872	42,748	44,781	46,828	48,910	51,083	53,590	56,396	59,207
Debt subject to limit ^d	35,355	37,333	39,253	40,994	42,869	44,902	46,950	49,033	51,207	53,715	56,522	59,334
Average interest rate on debt held by the public (percent)	3.3	3.4	3.3	3.4	3.4	3.5	3.5	3.5	3.6	3.6	3.6	3.6

Data sources: Congressional Budget Office; Department of the Treasury. See www.cbo.gov/publication/60870#data.

GDP = gross domestic product.

- Factors not included in budget totals that affect the government's need to borrow from the public. Those factors include changes in the government's cash balances and cash flows associated with federal credit programs, such as those related to student loans. Only the subsidy costs of those programs are reflected in the budget deficit.
- The value of outstanding student loans and other credit transactions, cash balances, and various financial instruments.
- Federal debt held by the public plus Treasury securities held by federal trust funds and other government accounts.
- The amount of federal debt that is subject to the overall limit set in law. That measure of debt excludes debt issued by the Federal Financing Bank and reflects certain other adjustments that are excluded from gross federal debt. The statutory debt limit was reinstated on January 2, 2025, and set at \$36.1 trillion, matching the amount of total debt outstanding on the prior day. In the coming weeks, the Department of the Treasury is expected to announce a "debt issuance suspension period" and to take "extraordinary measures" to borrow additional funds without breaching the debt limit. The Deficit Control Act requires CBO to project spending, revenues, and deficits independently of the debt limit. For more details, see Congressional Budget Office, *Federal Debt and the Statutory Limit, February 2023* (February 2023), www.cbo.gov/publication/58906.

Table B-4.

CBO's Baseline Projections of Mandatory Outlays, Adjusted to Exclude Effects of Timing Shifts

Billions of dollars

													Total	
	Actual, 2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2026– 2030	2026– 2035
Social Security														
Old-Age and Survivors Insurance	1,300	1,411	1,493	1,580	1,677	1,771	1,868	1,968	2,070	2,172	2,274	2,377	8,389	19,251
Disability Insurance	154	161	171	181	189	196	203	211	219	227	237	247	941	2,081
Subtotal	1,454	1,572	1,664	1,761	1,865	1,968	2,072	2,179	2,289	2,399	2,511	2,624	9,329	21,331
Major health care programs														
Medicare ^{a,b}	1,089	1,145	1,216	1,291	1,372	1,460	1,555	1,659	1,770	1,905	2,037	2,166	6,893	16,429
Medicaid	618	656	695	738	767	803	837	871	910	948	986	1,025	3,839	8,579
Premium tax credits and related spending ^c	122	136	115	119	122	125	128	133	139	148	139	155	610	1,324
Children's Health Insurance Program	19	21	21	22	22	23	23	23	16	15	15	15	110	195
Subtotal	1,848	1,957	2,047	2,169	2,283	2,411	2,542	2,686	2,835	3,015	3,176	3,362	11,452	26,527
Income security programs														
Supplemental Nutrition Assistance Program	107	110	107	110	111	111	111	112	115	115	116	116	550	1,124
Earned income, child, and other tax credits ^d	91	121	94	78	78	78	78	78	78	78	77	77	406	795
Supplemental Security Income ^a	62	65	67	69	71	73	75	77	80	82	84	87	354	764
Unemployment compensation	35	43	47	49	50	51	53	53	54	56	58	59	249	530
Child nutrition	34	35	37	39	40	42	43	45	46	48	49	51	201	440
Family support and foster care ^e	46	37	36	36	37	37	38	38	39	39	39	40	184	379
Subtotal	375	410	387	381	387	392	398	402	412	418	424	431	1,945	4,032
Federal civilian and military retirement														
Civilian ^f	128	131	136	140	144	148	152	156	162	168	172	177	719	1,556
Military ^a	78	80	83	86	89	91	93	96	98	101	104	106	442	947
Subtotal	206	211	219	226	232	239	245	252	260	269	276	283	1,161	2,502
Veterans' programs														
Income security ^{a,g}	175	188	202	215	228	239	248	259	270	282	294	306	1,132	2,543
Toxic exposures fund ^h	19	24	28	32	37	41	46	50	55	59	63	67	183	477
Other ^{a,i}	12	19	17	18	19	20	20	21	22	23	24	25	94	208
Subtotal	206	231	247	265	283	300	314	330	347	364	381	398	1,409	3,228
Other programs														
Higher education	125	25	27	27	27	27	27	28	28	29	29	29	134	276
Agriculture	20	22	23	25	26	24	22	21	22	22	23	23	119	230
Deposit insurance	36	-26	-23	-17	-95	-11	-12	-12	-12	-21	-14	-14	-158	-232
MERHCF	12	13	13	14	15	15	16	17	17	18	19	19	74	164
Fannie Mae and Freddie Mac ^j	0	0	4	6	7	7	7	8	8	10	12	13	31	82
Pension Benefit Guaranty Corporation	12	-6	-1	-4	-4	-4	-5	-5	-5	-5	-6	-6	-18	-44
Education Stabilization Fund	49	16	1	0	0	0	0	0	0	0	0	0	1	1
Other	140	184	172	160	155	150	141	133	123	109	99	93	778	1,334
Subtotal	395	229	216	210	129	208	197	189	181	161	162	157	961	1,811
Mandatory outlays, excluding offsetting receipts	4,484	4,610	4,781	5,012	5,179	5,518	5,768	6,040	6,324	6,626	6,929	7,255	26,257	59,431

Continued

Table B-4.

Continued

CBO's Baseline Projections of Mandatory Outlays, Adjusted to Exclude Effects of Timing Shifts

Billions of dollars

	Actual, 2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	Total	
													2026– 2030	2026– 2035
Offsetting receipts														
Medicare	-179	-203	-215	-233	-250	-267	-289	-311	-335	-363	-389	-413	-1,254	-3,065
Federal share of federal employees' retirement														
Civil service retirement and other	-61	-64	-66	-68	-70	-72	-74	-77	-79	-81	-84	-86	-350	-758
Military retirement	-25	-23	-22	-22	-23	-24	-24	-25	-25	-26	-27	-27	-115	-245
Social Security	-23	-23	-24	-25	-26	-27	-27	-28	-29	-30	-31	-32	-129	-278
Subtotal	-109	-109	-111	-115	-119	-122	-126	-130	-133	-137	-141	-145	-593	-1,280
Receipts related to natural resources	-19	-19	-19	-20	-19	-20	-20	-21	-21	-21	-22	-22	-99	-205
MERHCF	-11	-11	-13	-14	-14	-15	-16	-17	-17	-18	-19	-20	-72	-164
Fannie Mae and Freddie Mac ^j	-6	-7	0	0	0	0	0	0	0	0	0	0	0	0
Other	-30	-33	-36	-35	-35	-35	-41	-42	-29	-29	-29	-29	-181	-338
Total	-354	-382	-395	-416	-437	-459	-492	-520	-536	-568	-599	-630	-2,199	-5,051
Mandatory outlays, including offsetting receipts	4,130	4,228	4,386	4,596	4,742	5,058	5,276	5,520	5,788	6,058	6,330	6,626	24,058	54,380
Effects that timing shifts have on mandatory outlays in CBO's baseline projections														
Medicare	-45	0	0	0	77	-77	0	0	0	111	8	-119	n.a	n.a
Supplemental Security Income	-5	0	0	0	6	-6	0	0	0	7	*	-7	n.a	n.a
Military retirement	-6	0	0	0	7	-7	0	0	0	7	1	-8	n.a	n.a
Veterans' income security	-13	0	0	0	20	-20	0	0	0	23	2	-25	n.a	n.a
Veterans' other	-1	0	0	0	1	-1	0	0	0	1	*	-1	n.a	n.a
Total	-70	0	0	0	110	-110	0	0	0	150	11	-161	n.a	n.a
Mandatory outlays in CBO's baseline projections	4,060	4,228	4,386	4,596	4,852	4,948	5,276	5,520	5,788	6,208	6,341	6,465	24,058	54,380
Addendum:														
Outlays, net of offsetting receipts														
Medicare	910	942	1,000	1,058	1,122	1,193	1,266	1,348	1,435	1,542	1,648	1,753	5,639	13,365
Major health care programs	1,669	1,754	1,832	1,936	2,033	2,144	2,254	2,375	2,500	2,652	2,787	2,949	10,198	23,463

Data source: Congressional Budget Office. See www.cbo.gov/publication/60870#data.

Spending for benefit programs shown in this table generally excludes administrative costs, which are discretionary.

MERHCF = Department of Defense Medicare-Eligible Retiree Health Care Fund; n.a. = not applicable; * = between zero and \$500 million.

- When October 1 (the first day of the fiscal year) falls on a weekend, certain payments that would have ordinarily been made on that day are instead made at the end of September and thus are shifted into the previous fiscal year. Outlays have been adjusted to remove the effects of those timing shifts.
- Gross spending, excluding the effects of Medicare premiums and other offsetting receipts. (Net Medicare spending is shown in the addendum section.)
- Spending to subsidize health insurance purchased through the marketplaces established under the Affordable Care Act and provided through the Basic Health Program and spending to stabilize premiums for health insurance purchased by individuals and small employers.
- Includes outlays for the American Opportunity Tax Credit and other credits.
- Includes Temporary Assistance for Needy Families, Child Support Enforcement, Child Care Entitlement to States, and other programs that benefit children.
- Includes benefits for retirement programs in the civil service, foreign service, and Coast Guard; benefits for smaller retirement programs; and annuitants' health care benefits.
- Includes veterans' compensation, pensions, and life insurance programs.
- Provides funding for health care, claims processing, and certain other incidental expenses related to providing care to veterans exposed to toxic substances.
- Primarily the GI Bill and similar education benefits.
- Cash payments from Fannie Mae and Freddie Mac to the Treasury are recorded as offsetting receipts in 2024 and 2025. Beginning in 2026, CBO's estimates reflect the net lifetime costs—that is, the subsidy costs adjusted for market risk—of the guarantees that those entities will issue and of the loans that they will hold. CBO counts those costs as federal outlays in the year of issuance.

Table B-5.

Changes in Discretionary Budget Authority From 2024 to 2025

Billions of dollars

	Actual, 2024	Enacted, 2025	Change	Percentage change
Defense				
Base funding ^a	886	888	2	**
Nonbase funding				
Emergency funding not subject to the caps ^b	*	*	0	0
Emergency funding resulting in cap adjustments ^c	67	12	-56	-82.6
Other nonbase funding	0	0	0	n.a.
Subtotal, nonbase funding	68	12	-56	-82.5
Effect of caps under section 102 of the FRA	0	-38	-38	n.a.
Subtotal, defense	954	862	-92	-9.7
Nondefense				
Base funding ^{a,d}	749	747	-1	**
Nonbase funding				
Emergency funding not subject to the caps ^b	70	68	-2	-2.6
Emergency funding resulting in cap adjustments ^c	56	118	61	109.3
Other nonbase funding	29	29	*	-1.0
Subtotal, nonbase funding	155	215	59	38.3
Effect of caps under section 102 of the FRA	0	0	0	n.a.
Subtotal, nondefense	904	962	58	6.5
Total				
Base funding ^a	1,635	1,636	1	**
Nonbase funding				
Emergency funding not subject to the caps ^b	70	68	-2	-2.6
Emergency funding resulting in cap adjustments ^c	124	130	6	4.7
Other nonbase funding	29	29	*	-1.0
Subtotal, nonbase funding	223	226	4	1.6
Effect of caps under section 102 of the FRA	0	-38	-38	n.a.
Total	1,858	1,824	-34	-1.8
Addendum:				
Caps under section 101 of the FRA				
Defense	886	895	9	1.0
Nondefense	704	711	7	1.0
Caps under section 102 of the FRA				
Defense	850	850	0	0
Nondefense	736	736	0	0

Data source: Congressional Budget Office. See www.cbo.gov/publication/60870#data.

FRA = Fiscal Responsibility Act of 2023; n.a. = not applicable; * = between zero and \$500 million; ** = between -0.5 percent and 0.5 percent.

- Consists of all discretionary appropriations except those that have been designated as an emergency requirement or for disaster assistance, certain program integrity activities (which identify and reduce overpayments in some benefit programs), certain fire suppression operations, certain funding for the Army Corps of Engineers, and programs designated in the 21st Century Cures Act. Funding in this category is constrained by the caps established by sections 101 and 102 of the FRA.
- Consists almost entirely of funding designated as an emergency requirement and provided by the Infrastructure Investment and Jobs Act, the Bipartisan Safer Communities Act, and section 443 of the Consolidated Appropriations Act, 2023. Section 103 of the FRA stipulated that such funding is exempt from the caps.
- Consists of funding, designated as an emergency requirement in keeping with section 251 of the Deficit Control Act, that changes the level of the caps.
- Because compliance with statutory caps is based on cost estimates produced when appropriation legislation is enacted—rather than CBO’s baseline—funding exceeds the level of the caps. Most of the difference stems from net reductions to mandatory funding that were included in appropriation acts. When those reductions are reflected in CBO’s baseline, they appear as mandatory spending.

Table B-6.

Key Projections in CBO's Baseline

Percentage of GDP

	2025	2026	Annual average	
			2027–2030	2031–2035
Revenues				
Individual income taxes	8.7	9.5	9.9	9.9
Payroll taxes	5.8	5.9	5.9	5.9
Corporate income taxes	1.7	1.6	1.3	1.2
Other ^a	0.9	0.9	0.9	1.1
Total revenues	17.1	17.8	18.1	18.2
Outlays				
Mandatory				
Social Security	5.2	5.3	5.6	5.9
Major health care programs ^{b,c}	5.8	5.8	6.1	6.5
Other ^b	3.0	2.8	2.6	2.5
Subtotal	14.0	14.0	14.3	14.9
Discretionary ^b	6.1	6.1	5.9	5.4
Net interest	3.2	3.2	3.5	3.9
Total outlays	23.3	23.3	23.6	24.2
Deficit (-)^d	-6.2	-5.5	-5.6	-6.1
Debt held by the public at the end of the period	100	102	109	118
Addendum:				
Social Security				
Revenues ^e	4.5	4.6	4.6	4.7
Outlays ^f	5.2	5.3	5.6	5.9
Contribution to the deficit (-) ^{d,g}	-0.7	-0.7	-0.9	-1.2
Medicare				
Revenues ^e	1.5	1.5	1.5	1.6
Outlays ^{b,f}	3.8	3.9	4.1	4.7
Offsetting receipts	-0.7	-0.7	-0.8	-0.9
Contribution to the deficit (-) ^{d,g}	-1.7	-1.7	-1.8	-2.2
GDP at the end of the period (trillions of dollars)	30.1	31.3	36.4	43.9

Data source: Congressional Budget Office. See www.cbo.gov/publication/60870#data.

This table satisfies a requirement specified in section 3111 of S. Con. Res. 11, the Concurrent Resolution on the Budget for Fiscal Year 2016.

GDP = gross domestic product.

- Consists of excise taxes, remittances from the Federal Reserve System, customs duties, estate and gift taxes, and miscellaneous fees and fines.
- When October 1 (the first day of the fiscal year) falls on a weekend, certain payments that would have ordinarily been made on that day are instead made at the end of September and thus are shifted into the previous fiscal year. Outlays have been adjusted to remove the effects of those timing shifts.
- Consists of outlays for Medicare (net of premiums and other offsetting receipts), Medicaid, and the Children's Health Insurance Program, as well as subsidies for health insurance purchased through the marketplaces established under the Affordable Care Act and related spending.
- When outlays exceed revenues, the result is a deficit. Values in this row were calculated by subtracting outlays from revenues; thus, negative values indicate deficits or contributions to deficits.
- Includes payroll taxes other than those paid by the federal government on behalf of its employees; those payments are intragovernmental transactions. Also includes income taxes paid on Social Security benefits, which are credited to the trust funds.
- Does not include outlays related to the administration of the program, which are discretionary. For Social Security, outlays do not include intragovernmental offsetting receipts stemming from the employer's share of payroll taxes paid to the Social Security trust funds by federal agencies on behalf of their employees.
- The contribution to the deficit shown in this row differs from the change in the trust fund balance for the associated program. It does not include intragovernmental transactions, interest earned on balances, or outlays related to the administration of the program.

Appendix C: The Economic Outlook in Tables

The economic projections in this report incorporate information through December 4, 2024, and reflect the assumption that current laws generally remain unchanged. For the Congressional Budget Office's economic projections, see Table C-1. For the agency's projections of real GDP and its components, see Table C-2. For key inputs in CBO's projections of real potential GDP, see Table C-3. And for a comparison of the agency's current and previous projections for the 2024–2034 period, see Table C-4.

Table C-1.

CBO's Economic Projections for Calendar Years 2025 to 2035

Percent

		Annual average				
	Estimated, 2024	2025	2026	2027	2028– 2029	2030– 2035
Change from fourth quarter to fourth quarter						
Gross domestic product						
Real ^a	2.3	1.9	1.8	1.8	1.8	1.8
Nominal	4.9	4.1	3.9	3.8	3.8	3.8
Inflation						
PCE price index	2.5	2.2	2.1	2.0	2.0	2.0
Core PCE price index ^b	2.9	2.3	2.1	2.0	2.0	2.0
Consumer price index ^c	2.7 ^f	2.3	2.4	2.3	2.2	2.2
Core consumer price index ^b	3.3 ^f	2.4	2.3	2.3	2.3	2.3
GDP price index	2.4	2.2	2.0	2.0	2.0	2.0
Employment cost index ^d	3.7	3.5	3.3	3.2	3.0	2.9
Payroll employment (average monthly change, in thousands) ^e	187 ^f	90	58	46	52	57
Fourth-quarter level						
Unemployment rate	4.1 ^f	4.3	4.4	4.4	4.4 ^g	4.3 ^h
Change from year to year						
Gross domestic product						
Real ^a	2.7	2.1	1.8	1.8	1.8	1.8
Nominal	5.2	4.4	3.9	3.8	3.8	3.8
Inflation						
PCE price index	2.5	2.2	2.1	2.0	2.0	2.0
Core PCE price index ^b	2.8	2.5	2.1	2.0	2.0	2.0
Consumer price index ^c	3.0 ^f	2.2	2.4	2.3	2.2	2.2
Core consumer price index ^b	3.4 ^f	2.6	2.4	2.3	2.3	2.3
GDP price index	2.4	2.2	2.1	2.0	2.0	2.0
Employment cost index ^d	3.9	3.5	3.4	3.2	3.1	2.9
Annual average						
Unemployment rate	4.0 ^f	4.3	4.4	4.4	4.4	4.4
Interest rates						
Effective federal funds rate ⁱ	5.1 ^f	4.0	3.5	3.3	3.3	3.2
3-month Treasury bills	5.0 ^f	3.8	3.3	3.2	3.2	3.1
10-year Treasury notes	4.2 ^f	4.1	3.9	3.9	3.9	3.8
Tax bases (percentage of GDP)						
Wages and salaries	42.6	42.8	43.1	43.2	43.5	43.6
Domestic corporate profits ^j	11.4	11.1	10.7	10.3	9.6	9.5

Data sources: Congressional Budget Office; Bureau of Economic Analysis; Bureau of Labor Statistics; Federal Reserve. See www.cbo.gov/publication/60870#data.

GDP = gross domestic product; PCE = personal consumption expenditures.

a. Real values are nominal values that have been adjusted to remove the effects of changes in prices.

b. Excludes prices for food and energy.

c. The consumer price index for all urban consumers.

d. The employment cost index for wages and salaries of workers in private industry.

e. Calculated by dividing by 12 the net change in nonfarm payrolls from the fourth quarter of one calendar year to the fourth quarter of the next year.

f. Actual value for 2024.

g. Value for the fourth quarter of 2029.

h. Value for the fourth quarter of 2035.

i. The median interest rate that financial institutions charge each other for overnight loans of their monetary reserves, weighted by loan volume.

j. Adjusted to exclude the effects of tax rules on depreciation allowances and the effects of changes in prices on the value of inventories.

Table C-2.

Projected Growth of Real GDP and Its Components

					Annual average	
	Estimated, 2024	2025	2026	2027	2028– 2029	2030– 2035
	Change from fourth quarter to fourth quarter (percent)					
Real GDP	2.3	1.9	1.8	1.8	1.8	1.8
Components of real GDP						
Consumer spending	2.8	2.0	1.4	1.5	1.8	2.2
Business fixed investment ^a	3.1	2.8	2.8	2.8	2.3	2.7
Residential investment ^b	2.5	6.3	6.6	3.6	1.4	-0.8
Purchases by federal, state, and local governments ^c	2.4	0.2	0.2	0.2	0.1	0.2
Federal	2.7	-0.4	-0.1	-0.1	-0.1	0.2
State and local	2.3	0.6	0.5	0.4	0.3	0.2
Exports	1.7	1.9	3.5	3.8	2.8	2.2
Imports	5.4	2.3	1.8	1.6	1.3	2.3
Inventory investment (billions of 2017 dollars) ^d	16.5	-2.2	6.1	-0.1	1.7	1.1
	Contributions to the growth of real GDP (percentage points)					
Components of real GDP						
Consumer spending	1.9	1.4	1.0	1.0	1.2	1.5
Business fixed investment ^a	0.4	0.4	0.4	0.4	0.3	0.4
Residential investment ^b	0.1	0.3	0.3	0.2	0.1	*
Purchases by federal, state, and local governments ^c	0.4	*	*	*	*	*
Federal	0.2	*	*	*	*	*
State and local	0.2	0.1	0.1	*	*	*
Exports	0.2	0.2	0.4	0.4	0.3	0.2
Imports	-0.7	-0.3	-0.2	-0.2	-0.2	-0.3
Inventory investment ^d	0.1	*	*	*	*	*

Data source: Congressional Budget Office. See www.cbo.gov/publication/60870#data.

Real values are nominal values that have been adjusted to remove the effects of changes in prices.

GDP = gross domestic product; * = between -0.05 and 0.05 percentage points.

- a. Purchases of new equipment, nonresidential structures, and intellectual property products (such as software) by private companies and nonprofit institutions.
- b. Spending on home construction (new single-family and multifamily structures, manufactured homes, and dormitories), home improvements, and brokers' commissions and other ownership-transfer costs.
- c. Based on the national income and product accounts.
- d. The change in private inventories.

Table C-3.

Key Inputs in CBO's Projections of Real Potential GDP

Percent

	Average annual growth							Projected average annual growth		
	1950–1973	1974–1981	1982–1990	1991–2001	2002–2007	2008–2024	Overall, 1950–2024	2025–2029	2030–2035	Overall, 2025–2035
Overall economy										
Real potential GDP ^a	4.0	3.1	3.2	3.3	2.3	1.9	3.1	2.2	1.9	2.0
Potential labor force ^b	1.6	2.4	1.6	1.2	1.0	0.6	1.3	0.9	0.4	0.6
Potential labor force productivity ^c	2.3	0.7	1.6	2.0	1.3	1.4	1.7	1.3	1.4	1.4
Nonfarm business sector										
Real potential output	4.1	3.4	3.5	3.8	2.4	2.3	3.3	2.5	2.2	2.3
Potential hours worked	1.4	2.1	1.6	1.4	0.1	0.7	1.2	0.9	0.5	0.6
Capital services ^d	4.3	4.0	3.9	4.2	2.9	2.5	3.7	2.4	2.2	2.3
Potential total factor productivity ^e	1.7	0.6	1.1	1.4	1.4	1.0	1.3	1.1	1.1	1.1
Contributions to the growth of real potential output (percentage points)										
Potential hours worked	0.9	1.4	1.1	0.9	0.1	0.5	0.8	0.6	0.3	0.4
Capital services ^d	1.4	1.3	1.3	1.4	0.9	0.8	1.2	0.8	0.7	0.7
Potential total factor productivity ^e	1.7	0.6	1.1	1.4	1.4	1.0	1.3	1.1	1.1	1.1
Total contribution	4.0	3.4	3.4	3.8	2.4	2.3	3.3	2.4	2.1	2.3
Potential labor productivity ^f	2.6	1.2	1.8	2.4	2.3	1.6	2.1	1.6	1.7	1.6

Data source: Congressional Budget Office. See www.cbo.gov/publication/60870#data.

Real values are nominal values that have been adjusted to remove the effects of changes in prices.

The table shows compound annual growth rates over the specified periods. Those rates are calculated from the fourth quarter of the year immediately preceding each period to the fourth quarter of the last year of the period.

GDP = gross domestic product.

- CBO's estimate of the amount of real GDP that could be produced if labor and capital were employed at their maximum sustainable rates.
- CBO's estimate of how big the labor force would be if economic output and other key variables were at their maximum sustainable amounts.
- The ratio of real potential GDP to the potential labor force.
- The services provided by capital goods (such as software, equipment, and factories) that constitute the actual input in the production process.
- The average real output per unit of combined labor and capital services, excluding the effects of business cycles.
- The ratio of potential output to potential hours worked in the nonfarm business sector.

Table C-4.

CBO's Current and Previous Economic Projections for Calendar Years 2024 to 2034

Percent

	Annual average					
	2024	2025	2026	2024–2028	2029–2034	Overall, 2024–2034
Change from fourth quarter to fourth quarter						
Real GDP ^a						
January 2025	2.3	1.9	1.8	1.9	1.8	1.9
June 2024	2.0	2.0	1.8	1.9	1.8	1.8
Nominal GDP						
January 2025	4.9	4.1	3.9	4.1	3.8	3.9
June 2024	4.6	4.1	3.6	3.9	3.8	3.9
Inflation						
PCE price index						
January 2025	2.5	2.2	2.1	2.2	2.0	2.0
June 2024	2.7	2.1	1.9	2.1	2.0	2.0
Core PCE price index ^b						
January 2025	2.9	2.3	2.1	2.3	2.0	2.1
June 2024	3.0	2.3	2.1	2.3	2.0	2.1
Consumer price index ^c						
January 2025	2.6	2.3	2.4	2.4	2.2	2.3
June 2024	3.0	2.3	2.2	2.4	2.2	2.3
Core consumer price index ^b						
January 2025	3.2	2.4	2.3	2.5	2.3	2.4
June 2024	3.4	2.5	2.3	2.6	2.2	2.4
GDP price index						
January 2025	2.4	2.2	2.0	2.1	2.0	2.0
June 2024	2.6	2.0	1.8	2.0	2.0	2.0
Employment cost index ^d						
January 2025	3.7	3.5	3.3	3.3	3.0	3.1
June 2024	4.0	3.5	3.3	3.4	3.0	3.2
Real potential GDP ^e						
January 2025	2.3	2.3	2.3	2.2	1.9	2.1
June 2024	2.1	2.2	2.1	2.1	1.9	2.0

Continued

Table C-4.

Continued

CBO's Current and Previous Economic Projections for Calendar Years 2024 to 2034

Percent

	Annual average					
	2024	2025	2026	2024–2028	2029–2034	Overall, 2024–2034
Annual average						
Unemployment rate						
January 2025	4.0	4.3	4.4	4.3	4.4	4.3
June 2024	3.9	4.0	4.2	4.2	4.5	4.3
Interest rates						
Effective federal funds rate ^f						
January 2025	5.1	4.0	3.5	3.9	3.3	3.5
June 2024	5.3	4.8	3.8	4.1	3.0	3.5
3-month Treasury bills						
January 2025	5.0	3.8	3.3	3.7	3.1	3.4
June 2024	5.2	4.5	3.6	3.8	2.8	3.3
10-year Treasury notes						
January 2025	4.2	4.1	3.9	4.0	3.8	3.9
June 2024	4.5	4.1	3.7	3.9	4.0	3.9
Tax bases (percentage of GDP)						
Wages and salaries						
January 2025	42.6	42.8	43.1	43.0	43.6	43.3
June 2024	43.3	43.5	43.7	43.6	43.9	43.8
Domestic corporate profits ^g						
January 2025	11.4	11.1	10.7	10.7	9.5	10.0
June 2024	10.2	10.1	9.8	9.8	9.0	9.4

Data source: Congressional Budget Office. See www.cbo.gov/publication/60870#data.

GDP = gross domestic product; PCE = personal consumption expenditures.

- a. Real values are nominal values that have been adjusted to remove the effects of changes in prices.
- b. Excludes prices for food and energy.
- c. The consumer price index for all urban consumers.
- d. The employment cost index for wages and salaries of workers in private industry.
- e. CBO's estimate of the amount of real GDP that could be produced if labor and capital were employed at their maximum sustainable rates.
- f. The median interest rate that financial institutions charge each other for overnight loans of their monetary reserves, weighted by loan volume.
- g. Adjusted to exclude the effects of tax rules on depreciation allowances and the effects of changes in prices on the value of inventories.

Appendix D: Tax Expenditures

Many exclusions, deductions, credits, and preferential rates in the federal tax system cause revenues to be lower than they would be otherwise for any underlying set of tax rates. Such provisions resemble federal spending and contribute to the budget deficit; thus, they are known as tax expenditures.¹

Like federal spending, tax expenditures provide financial assistance for specific activities, entities, or groups of people. However, the budgetary treatment of tax expenditures differs from that of spending programs. Tax expenditures increase the deficit by reducing the government's revenue collections, although the amount of forgone revenues attributable to specific tax expenditures (or to tax expenditures in general) is not typically recorded separately in the budget, unlike outlays for each spending program.² The Congressional Budget and Impoundment Control Act of 1974 (Public Law 93-344) requires that the federal budget list tax expenditures. The Administration regularly publishes estimates of tax expenditures prepared by the Treasury Department's Office of Tax Analysis, and the Congress publishes estimates prepared by the staff of the Joint Committee on Taxation (JCT).³

1. Sec. 3(3) of the Congressional Budget and Impoundment Control Act of 1974, codified at 2 U.S.C. §622(3) (2023), defines tax expenditures as "those revenue losses attributable to provisions of the Federal tax laws which allow a special exclusion, exemption, or deduction from gross income or which provide a special credit, a preferential rate of tax, or a deferral of tax liability."
2. The exception is the portion of refundable tax credits that exceeds a taxpayer's tax liability; that amount is recorded in the budget as mandatory spending.
3. For this analysis, the Congressional Budget Office adopted JCT's definition of tax expenditures as deviations from a "normal" income tax structure. For the individual income tax, that structure includes existing regular tax rates, the standard deduction, personal exemptions, and deductions of business expenses. For the corporate income tax, that structure includes the statutory tax rate, generally defines income on an accrual basis (meaning that future income and expenses are recorded when they are incurred rather than when payments are exchanged), and allows for costs to be recovered according to a specified depreciation system that is less favorable than under current law. For more information,

Tax expenditures have a large effect on the federal budget. In fiscal year 2025, the value of all the tax expenditures in the individual and corporate income tax systems (including their effects on payroll taxes) is estimated to be \$2.3 trillion, or 7.6 percent of gross domestic product (GDP).⁴ That amount, which was calculated by the Congressional Budget Office on the basis of estimates prepared by JCT, equals about 44 percent of all federal revenues in 2025 and exceeds projected outlays for all discretionary programs combined (see Figure D-1).

Simply adding up the estimates for specific tax expenditures does not account for the interactions that may occur among those tax provisions. For instance, the total tax expenditure for all itemized deductions would be smaller than the sum of the separate tax expenditures for each deduction. The reason is that all taxpayers would claim the standard deduction if there were no itemized deductions; but if only one or a few itemized deductions were removed, many taxpayers would still choose to itemize. The progressive structure of the tax brackets (meaning that higher rates apply to higher income) ensures that the opposite would be the case with income exclusions. In other words, the tax expenditure for all exclusions considered together would be greater than the sum of the separate tax expenditures for each exclusion. In 2025, those and other factors are expected to be approximately offsetting, so the total amount of tax

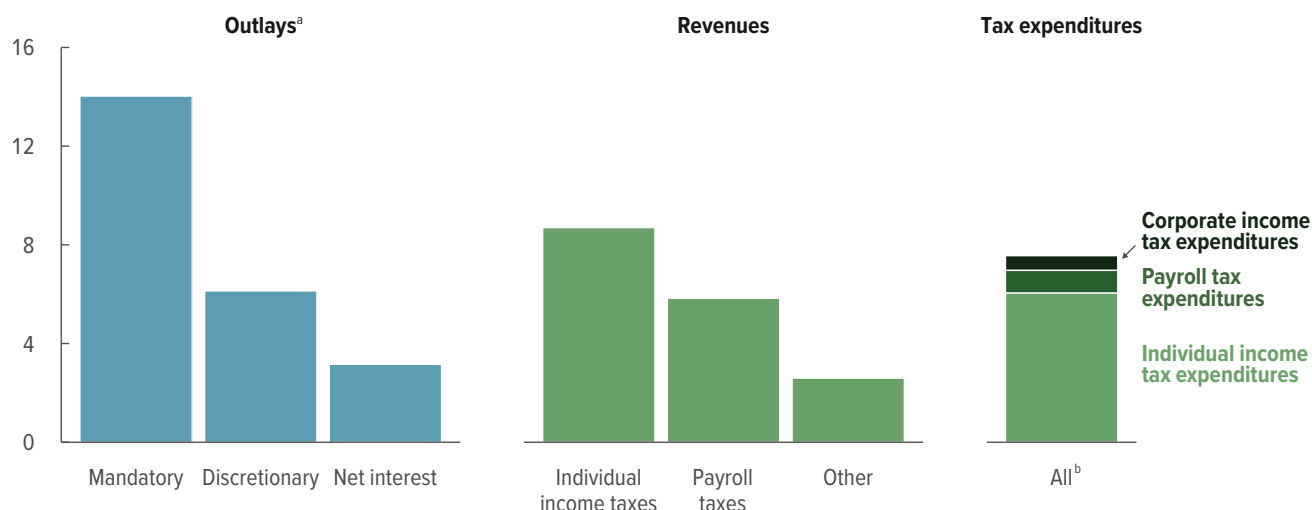
see Congressional Budget Office, *How Specifications of the Reference Tax System Affect CBO's Estimates of Tax Expenditures* (December 2021), www.cbo.gov/publication/57543; Joint Committee on Taxation, *Estimates of Federal Tax Expenditures for Fiscal Years 2024–2028*, JCX-48-24 (December 11, 2024), www.jct.gov/publications/2024/jcx-48-24. The Treasury's definition of tax expenditures is broadly similar to JCT's. See Treasury Department, *Tax Expenditures Fiscal Year 2026* (November 27, 2024), <https://tinyurl.com/msmf3r3e>.

4. Unlike JCT, CBO includes estimates of the largest payroll tax expenditures. As defined by CBO, a normal payroll tax structure includes the existing payroll tax rates as applied to a broad definition of compensation, which consists of cash wages and fringe benefits. Tax expenditures that reduce the tax base for payroll taxes also decrease spending for Social Security by reducing the earnings base used to calculate Social Security benefits.

Figure D-1.

Estimated Outlays, Revenues, and Tax Expenditures in Fiscal Year 2025

Percentage of GDP



Tax expenditures are provisions of the tax system (such as tax credits and deductions) that cause revenues to be lower than they would be otherwise. Like federal spending programs, tax expenditures contribute to the budget deficit. In 2025, the total revenues forgone because of tax expenditures are projected to equal 7.6 percent of GDP (or \$2.3 trillion).

Data source: Congressional Budget Office, using estimates by the staff of the Joint Committee on Taxation. See www.cbo.gov/publication/60870#data.

GDP = gross domestic product.

- The outlay portions of refundable tax credits are included in tax expenditures as well as in mandatory outlays. In 2025, they are estimated to total 0.8 percent of GDP.
- This total is the sum of the estimates for each separate tax expenditure and does not account for interactions among them. However, CBO estimates that the total for all tax expenditures roughly equals the sum of the estimates for each separate tax expenditure. Because estimates of tax expenditures are based on people's behavior with current provisions of the tax code in place, they do not reflect the amount of revenues that would be collected if provisions were eliminated and taxpayers adjusted their activities accordingly.

expenditures is projected to roughly equal the sum of the individual tax expenditures.

Estimates of tax expenditures measure the difference between households' and businesses' tax liability under current law and the tax liability they would have incurred if the provisions generating those tax expenditures were

repealed and taxpayers' behavior was unchanged. Such estimates do not represent the amount of revenues that would be raised if those provisions were eliminated, because the changes in incentives that would result from eliminating those provisions would lead households and businesses to modify their behavior in ways that would lessen the effect on revenues.

Appendix E: Table and Figure Notes

This appendix provides details about the tables and figures presented in the main text of the report.

The Budget Outlook, by Fiscal Year

Data source: Congressional Budget Office. See www.cbo.gov/publication/60870#data.

When October 1 (the first day of the fiscal year) falls on a weekend, certain payments that would have ordinarily been made on that day are instead made at the end of September and thus are shifted into the previous fiscal year. Outlays and deficits have been adjusted to exclude the effects of those timing shifts.

CHIP = Children's Health Insurance Program; GDP = gross domestic product.

Total Outlays and Revenues

Data source: Congressional Budget Office. See www.cbo.gov/publication/60870#data.

When October 1 (the first day of the fiscal year) falls on a weekend, certain payments that would have ordinarily been made on that day are instead made at the end of September and thus are shifted into the previous fiscal year. All projections presented here have been adjusted to exclude the effects of those timing shifts. Historical amounts have been adjusted as far back as the available data will allow.

GDP = gross domestic product.

Outlays, by Category

Data source: Congressional Budget Office. See www.cbo.gov/publication/60870#data.

When October 1 (the first day of the fiscal year) falls on a weekend, certain payments that would have ordinarily been made on that day are instead made at the end of September and thus are shifted into the previous fiscal year. All projections presented here have been adjusted to exclude the effects of those timing shifts. Historical amounts have been adjusted as far back as the available data will allow.

GDP = gross domestic product.

Revenues, by Category

Data source: Congressional Budget Office. See www.cbo.gov/publication/60870#data.

Revenues in the "other" category consist of excise taxes, remittances from the Federal Reserve System, customs duties, estate and gift taxes, and miscellaneous fees and fines.

GDP = gross domestic product.

Total Deficit, Net Interest Outlays, and Primary Deficit

Data source: Congressional Budget Office. See www.cbo.gov/publication/60870#data.

When October 1 (the first day of the fiscal year) falls on a weekend, certain payments that would have ordinarily been made on that day are instead made at the end of September and thus are shifted into the previous fiscal year. All projections presented here have been adjusted to exclude the effects of those timing shifts. Historical amounts have been adjusted as far back as the available data will allow.

GDP = gross domestic product.

Changes in CBO's Projections of the 10-Year Deficit Since June 2024

Data source: Congressional Budget Office. See www.cbo.gov/publication/60870#data.

Federal Debt Held by the Public

Data source: Congressional Budget Office. See www.cbo.gov/publication/60870#data.

GDP = gross domestic product.

The Economic Outlook, by Calendar Year

Data source: Congressional Budget Office. See www.cbo.gov/publication/60870#data.

For 2024, values for real GDP, inflation as measured by the PCE price index, and the tax bases are estimates; values for inflation as measured by the consumer price index, payroll employment, the unemployment rate, and interest rates are actual values.

GDP = gross domestic product; PCE = personal consumption expenditures.

Growth of Real GDP

Data source: Congressional Budget Office. See www.cbo.gov/publication/60870#data.

GDP = gross domestic product.

Residential Investment

Data source: Congressional Budget Office. See www.cbo.gov/publication/60870#data.

Unemployment

Data source: Congressional Budget Office. See www.cbo.gov/publication/60870#data.

Projections in this figure are fourth-quarter values.

Wages

Data source: Congressional Budget Office. See www.cbo.gov/publication/60870#data.

Overall Inflation and Core Inflation

Data source: Congressional Budget Office. See www.cbo.gov/publication/60870#data.

Interest Rates

Data source: Congressional Budget Office. See www.cbo.gov/publication/60870#data.

Projections in this figure are fourth-quarter values.

About This Document

This volume is one of a series of reports on the state of the budget and the economy that the Congressional Budget Office issues each year. It satisfies the requirement of section 202(e) of the Congressional Budget Act of 1974 for CBO to submit to the Committees on the Budget periodic reports about fiscal policy and to provide baseline projections of the federal budget. In keeping with CBO's mandate to provide objective, impartial analysis, this report makes no recommendations.

CBO consulted members of its Panel of Economic Advisers during the development of this report. Although the agency's outside advisers provided considerable assistance, they are not responsible for the contents of this report; that responsibility rests solely with CBO.

The following pages list CBO's staff members who contributed to this report by preparing the economic, revenue, and spending projections; writing the report; reviewing, editing, fact-checking, designing, and publishing it; compiling the supplemental materials posted along with it on CBO's website; and providing other support. The report is available at www.cbo.gov/publication/60870.

CBO seeks feedback to make its work as useful as possible. Please send comments to communications@cbo.gov.



Phillip L. Swagel
Director
January 2025

Economic Projections

The economic projections were prepared by the Macroeconomic Analysis Division, with contributions from analysts in other divisions. That work was supervised by Devrim Demirel, Robert Arnold, and Jaeger Nelson.

Nicholas Abushacra · Housing, model and data management

Joyce Bai · Financial markets

Aaron Betz · Effects of fiscal policy, potential output, productivity

Daniel Fried · Net exports, exchange rates, energy prices

Edward Gamber · Labor markets, current-quarter analysis

Ron Gecan · Energy prices

Mark Lasky · Business investment, housing

Chandler Lester · Inflation, house prices

Kyoung Mook Lim · Federal, state, and local government spending and revenues; effects of fiscal policy

Michael McGrane · Financial markets, Federal Reserve's balance sheet, quantifying uncertainty

Christine Ostrowski · Consumer spending, income

Natalia Reyes · Motor vehicle sector, research assistance

Jeffrey Schafer · Interest rates, monetary policy

Byoung Hark Yoo · Quantifying uncertainty

Revenue Projections

The revenue projections were prepared by the Tax Analysis Division, supervised by John McClelland, Edward Harris, Molly Saunders-Scott, and Joshua Shakin. In addition, the staff of the Joint Committee on Taxation provided valuable assistance.

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Dorian Carloni · Business taxation

Nathaniel Frentz · Federal Reserve System's remittances, miscellaneous fees and fines

Bilal Habib · Tax modeling

Jack Lynch · Customs duties

Shannon Mok · Estate and gift taxes

Daniel Page · Excise taxes

James Pearce · Capital gains realizations, wage distribution, tax modeling

Kevin Perese · Tax modeling

Kurt Seibert · Payroll taxes, depreciation, tax modeling

Jennifer Shand · Corporate income taxes

Molly Sherlock · Energy and excise taxes

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The spending projections were prepared by the Budget Analysis Division, with contributions from analysts in other divisions. That work was supervised by Chad Chirico, Christina Hawley Anthony, Sam Papenfuss, Barry Blom, Megan Carroll, Elizabeth Cove Delisle, Sean Dunbar, Kathleen FitzGerald, Ann E. Futrell, Justin Humphrey, Sarah Masi, David Newman, Robert Reese, Asha Saavoss, and Emily Stern of the Budget Analysis Division, as well as by Chapin White, Tamara Hayford, and Alexandra Minicozzi of the Health Analysis Division and by Sebastien Gay of the Financial Analysis Division.

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Christopher Mann · Defense (facilities, energy, nuclear programs)

Aldo Prosperi · Defense (research and development, cybersecurity)

David Rafferty · Military retirement, compensation for radiation exposure and energy employees' occupational illness, immigration

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Jeremy Crimm · Law enforcement, justice assistance, homeland security, Postal Service, immigration

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Wendy Kiska · Pension Benefit Guaranty Corporation, student loans

Leah Koestner · Student loans, higher education programs

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Mitchell Remy · Veterans' housing, Fannie Mae and Freddie Mac

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Cornelia Hall · Medicare

Caroline Hanson · Health insurance coverage

Nianyi Hong · Health insurance coverage

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Breanna Browne-Pike · Federal civilian retirement and federal pay

Aaron Feinstein · Other interest, monthly Treasury data, historical data

Avi Lerner · Debt, interest on the public debt

Samuel Liedtka · Appropriation bills (Interior and Related Agencies; Military Construction and Veterans Affairs)

Amber Marcellino · Budget projections

George McArdle · Appropriation bills (Agriculture and Food and Drug Administration; State and Foreign Operations)

Amy McConnel · Appropriation bills (Commerce, Justice, and Science; Financial Services and General Government; Homeland Security)

Hieu Ngo · Computer applications and data systems

Dan Ready · Budget projections and national income and product accounts

Mark Sanford · Appropriation bills (Defense)

Youstiena Shafeek · Budget projections and appropriation bills

Esther Steinbock · Appropriation bills (Energy and Water Development; Transportation and Housing and Urban Development)

J'nell Blanco Suchy · Appropriation bills (Labor, Health and Human Services, and Education; Legislative Branch), scorekeeping for authorization acts

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Amber Marcellino wrote the budget outlook, Edward Gamber wrote the economic outlook, and Dan Ready and Aaron Feinstein wrote Appendix A with assistance from Jennifer Shand. Breanna Browne-Pike wrote Appendix B, Edward Gamber wrote Appendix C, Kathleen Burke wrote Appendix D, and Christine Browne and Youstiena Shafeek compiled Appendix E.

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Mark Doms, Mark Hadley, and Jeffrey Kling reviewed the report. The editing and publishing were handled by CBO's editing and publishing group, supervised by Lora Engdahl and John Skeen, and the agency's communications team, supervised by Leigh Angres.

Christine Bogusz, Christine Browne, Scott Craver, Michael Fialkowski, Christian Howlett, Brett Kessler, Rebecca Lanning, Bo Peery, and Caitlin Verboon edited and proofread the report and supplemental material; Casey Labrack and Jorge Salazar created the graphics; Jorge Salazar prepared the text for publication; and Annette Kalicki published the report on CBO's website.

Nicholas Abushacra, Margot Berman, Jodi Capps, Alexander Gniewecki, Jada Ho, Jack Lynch, Daniel Page, Natalia Reyes, Youstiena Shafeek, Emma Uebelhor, and Grace Watson fact-checked the report. Nicholas Abushacra, Natalia Reyes, and Youstiena Shafeek coordinated the preparation of figures and tables related to the budget and economic projections. Nicholas Abushacra, Aaron Feinstein, Avi Lerner, Jack Lynch, Daniel Page, Natalia Reyes, and Youstiena Shafeek compiled data and supplemental information, and Annette Kalicki and Simone Thomas coordinated the presentation of those materials on CBO's website.

Quantitative Profiles

Red light, green light. Value over Growth

Red: Value factors flash warning sign for the market...

Cheap stocks generally outperform expensive stocks as intuition would suggest. Since 1986, our Low Forward PE factor has outperformed the High PE factor by 4.6ppt per year. But ahead of market peaks, the opposite tends to occur, similar to today. Over the past six months, Low PE has lagged High PE by >9ppt.

...and 60% of death-knell signals now triggered

High vs. Low PE performance is one of 10 signals we track to gauge the risk that a bull market is coming to an end – overall, 60% of our market signposts are triggered today vs. an average of 70% at prior market peaks (see Exhibit 3). For more details on our signposts, see [How do bull markets end?](#). This shift supports our view that in 2025, investors should pick their spots rather than buying the index wholesale.

Green: Regime Indicator leaps higher

In contrast, our US Regime Indicator which entered “Recovery” in November continued its uptrend, hitting the fastest pace this cycle (+0.08 vs +0.02 in Nov. and +0.05 in Dec.). After flip-flopping for the past two years, the indicator is on a sustained upward trend: six of eight inputs improved – Inflation, GDP, ISM Manufacturing, Leading Economic Indicators, Capacity Utilization and High Yield credit spreads – with just EPS Revisions and 10-yr Tsy yield indicators lower. (At this pace, we would enter Mid Cycle by April.)

Conclusion: buy cheap stocks

The “Recovery” regime unequivocally favors Value over Growth (Exhibit 10). Narrow bull markets led by growth stocks as in ‘99/’00 tend to reverse violently into Value leadership. Inflation came in hot, the Fed might be done as our economists forecast a month ago (see [Fed on hold](#)) and Value has generally outperformed Growth in the six months after the last rate cut. In fact, Value factors outperformed the index by 6ppt on average vs. just 0.9ppt for Growth (see Exhibit 4). Low P/E fared especially well, generating close to 10ppt of alpha over the subsequent six months. See Exhibit 6 for 26 Buy-rated stocks with Low Price to Forward Earnings.

Exhibit 2: Cheap stocks have underperformed expensive stocks ahead of market peaks

Performance of Low Fwd PE vs. High Fwd PE (based on top / bottom decile of S&P 500) (1986-1/2025)



Source: FactSet, BoFA US Equity & Quant Strategy

BoFA GLOBAL RESEARCH

Trading ideas and investment strategies discussed herein may give rise to significant risk and are not suitable for all investors. Investors should have experience in relevant markets and the financial resources to absorb any losses arising from applying these ideas or strategies.

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Timestamp: 13 February 2025 11:26PM EST

13 February 2025

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**Exhibit 1: Top/Bottom 5 screens
(unconstrained) in January**
As of 1/31/2025

Top 5 screens	Perf.
Relative Strength (30wk/75wk)	7.7%
Price Returns (11-m since 1 y ago)	7.2%
Relative Strength (Price/200D MA)	7.1%
Relative Strength (5wk/30wk)	6.9%
Relative Strength (10wk/40wk)	6.8%
S&P 500 (Equal weighted)	3.4%

Bottom 5 screens	Perf.
Low Price	1.1%
Low Price to Free Cash Flow	1.3%
Low Price to Cash Flow	1.5%
Dividend Yield (Total Return)	1.8%
Most Active	1.9%
S&P 500 (Equal weighted)	3.4%

Source: FactSet, BoFA US Equity & Quant Strategy

BoFA GLOBAL RESEARCH

Disclaimer: The valuations and screens contained herein are useful in assessing comparative valuations and comparative earnings prospects and are not intended to recommend transactions relating to any specific security. These indicators should be used in investment decisions only with other factors including financial risk, investment risk, management strategies and operating and financial outlooks.

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Cases 25-E-0072 and 25-G-0073

Exhibit 35: BofA Universe Sector/Industry Factor Evaluation (cont'd)

1/13/2025 10:33:37

	Valuation Analysis										Expectation Analysis							
	# of Comp	% Univ BofA	Impl. Return	Reqd Return	DDM Alpha	Eqty. Duration	BofA Adj Beta	P/E Ratio	Price/ Book	Yield	Surprise	Earnings (Decile)			PR 5yr Growth	EPS Growth		
												Risk	Torp	Disp	Est. Rev.		2025E	2026E
HEALTH CARE	239	10.58	10.7	9.5	1.2	33.9	0.81	19.7	4.24	1.5	5.0	5.0	6.0	4.0	6.0	15.8	16	13
HEALTH CARE EQUIP	40	2.26	9.1	10.7	-1.6	43.0	0.98	26.5	4.63	0.9	7.0	5.0	5.0	2.0	5.0	11.6	9	13
HEALTH CARE PROV	48	2.14	10.8	9.6	1.2	33.3	0.83	15.1	2.86	1.4	5.0	4.0	6.0	3.0	7.0	9.8	8	13
HEALTH CARE TECH	8	0.11	10.0	10.9	-0.9	36.4	1.03	41.2	4.66	0.0	5.0	2.0	6.0	5.0	3.0	25.4	63	9
BIOTECH	98	1.98	10.7	8.5	2.2	30.3	0.70	27.4	4.45	1.8	3.0	6.0	6.0	6.0	4.0	12.0	48	26
PHARMACEUTICALS	26	2.95	12.7	8.6	4.1	26.4	0.66	15.5	6.11	2.5	4.0	4.0	7.0	4.0	6.0	27.7	21	9
LIFE SCIENCES	19	1.13	9.0	10.9	-1.9	44.4	0.95	26.4	4.06	0.3	7.0	5.0	4.0	3.0	7.0	9.8	6	14
FINANCIALS	176	12.22	11.4	11.5	-0.1	32.3	1.11	16.1	2.75	1.7	5.0	4.0	6.0	4.0	4.0	16.7	10	16
BANKS	33	3.07	11.4	11.4	0	30.2	1.10	12.6	1.63	2.4	5.0	4.0	6.0	5.0	3.0	9.3	9	21
FINANCIAL SERVICES	34	2.89	10.3	11.4	-1.1	39.0	1.12	22.2	7.23	0.6	7.0	2.0	6.0	2.0	5.0	17.7	12	14
CONSUMER FINANCE	11	0.68	12.2	12.5	-0.3	30.5	1.27	15.3	2.67	1.2	4.0	6.0	7.0	4.0	3.0	17.9	8	19
CAPITAL MARKETS	55	3.59	12.2	12.4	-0.2	28.7	1.22	18.8	3.97	1.9	5.0	4.0	7.0	4.0	4.0	21.1	11	14
MORTGAGE REITS	11	0.06					1.41	7.8	0.97	12.3	8.0	7.0	3.0	5.0	7.0	-3.6	-4	3
INSURANCE	32	1.93	11.3	10.0	1.3	31.4	0.87	13.3	2.43	1.5	6.0	5.0	6.0	4.0	5.0	18.7	8	14
INFO TECH	165	29.32	11.3	11.8	-0.5	37.9	1.15	28.2	11.33	0.6	6.0	4.0	6.0	5.0	5.0	22.6	24	21
INTERNET SOFTWARE	1	0.03	9.8	15.5	-5.7	41.4	1.73	41.6		0.0	6.0		5.0	7.0	2.0	19.6	34	35
IT SERVICES	20	1.43	9.5	11.1	-1.6	40.3	1.06	28.4	7.06	1.3	6.0	4.0	4.0	4.0	5.0	13.8	8	9
SOFTWARE	74	10.04	10.0	11.2	-1.2	40.1	1.06	32.0	10.45	0.5	7.0	3.0	5.0	4.0	5.0	20.0	14	16
COMMUNICA. EQUIP	9	0.86	9.9	10.5	-0.6	38.8	0.96	22.4	6.88	1.5	9.0	2.0	4.0	4.0	3.0	12.1	5	11
TECH. H/W, STORAGE & PERIPH	10	6.62	8.7	11.7	-3	47.6	1.14	28.5	33.13	0.5	6.0	2.0	4.0	4.0	7.0	10.7	19	12
ELECTR EQUIP & INSTR	19	0.62	10.0	11.6	-1.6	39.0	1.12	19.5	3.76	0.9	5.0	4.0	6.0	4.0	4.0	10.6	16	14
SEMICONDUCTORS	32	9.72	14.9	12.6	2.3	28.5	1.29	26.2	10.49	0.5	6.0	7.0	8.0	6.0	4.0	36.4	52	36
COMMUNICATION SERVICES	50	11.93	10.8	11.0	-0.2	36.7	1.04	21.1	5.63	0.7	6.0	4.0	7.0	5.0	3.0	17.5	15	14
DIVERSIFIED TELECOM SVS	6	0.63	10.7	8.7	2	25.3	0.69	11.1	1.57	5.5	7.0	7.0	4.0	3.0	8.0	2.9	-4	8
WIRELESS TELECOM SVS	1	0.20	10.5	8.9	1.6	36.3	0.70	22.5	4.32	1.3	9.0	7.0	7.0	5.0	7.0	13.1	6	16
MEDIA	15	0.51	11.6	11.3	0.3	29.8	1.09	10.8	2.01	2.3	7.0	6.0	6.0	7.0	5.0	11.4	15	13
ENTERTAINMENT	16	1.66	11.1	12.3	-1.2	33.4	1.23	30.6	4.61	0.3	6.0	4.0	6.0	6.0	4.0	28.7	92	6
INTERACTIVE MEDIA & SVCS	12	8.93	10.7	11.0	-0.3	38.5	1.03	22.5	8.38	0.4	6.0	4.0	7.0	5.0	3.0	17.0	13	16
UTILITIES	50	2.24	10.0	9.3	0.7	32.2	0.78	17.5	2.21	3.0	6.0	5.0	5.0	2.0	5.0	8.6	8	8
ELECTRIC UTILITIES	21	1.39	9.9	9.2	0.7	32.6	0.76	17.5	2.24	3.0	6.0	5.0	5.0	2.0	5.0	7.3	7	8
GAS UTILITIES	6	0.08	9.6	9.3	0.3	31.2	0.78	16.2	1.67	2.9	4.0	3.0	5.0	3.0	5.0	13.4	23	10
MULTI-UTILITIES	13	0.57	10.0	9.1	0.9	31.5	0.74	17.6	1.97	3.4	6.0	5.0	5.0	1.0	6.0	7.9	9	7
WATER UTILITIES	6	0.07	9.9	9.6	0.3	33.1	0.81	19.7	2.02	2.8	3.0	4.0	5.0	1.0	6.0	9.0	7	5
INDEP POWER PROD & ENERGY TRAD	4	0.12	11.9	11.5	0.4	30.5	1.12	15.8	8.11	1.7	4.0	10.0	8.0	8.0	2.0	23.3	7	7
REAL ESTATE	92	2.27	9.8	11.0	-1.2	32.1	1.04	18.2	2.45	3.7	6.0	5.0	4.0	2.0	6.0	6.9	6	17
DIVERSIFIED REITS	5	0.04	9.8	11.4	-1.6	29.6	1.11	12.1	1.50	5.3	8.0	3.0	3.0	2.0	8.0	2.0	1	5
INDUSTRIAL REITS	7	0.28	9.6	11.1	-1.5	32.7	1.05	19.1	1.90	3.4	8.0	5.0	4.0	1.0	8.0	5.8	4	8
HOTEL & RESORT REITS	9	0.06	10.9	13.7	-2.8	28.8	1.33	8.9	1.38	4.6	7.0	9.0	4.0	4.0	6.0	2.7	-1	8
OFFICE REITS	11	0.08	10.0	12.6	-2.6	32.1	1.21	11.3	1.26	4.3	4.0	7.0	2.0	3.0	6.0	0.4	-8	4
HEALTH CARE REITS	10	0.29	10.9	11.7	-0.8	28.6	1.15	17.4	2.01	3.5	3.0	8.0	5.0	1.0	4.0	11.6	6	8
RESIDENTIAL REITS	11	0.31	9.3	10.5	-1.2	34.1	0.96	17.8	2.64	3.4	4.0	4.0	3.0	1.0	6.0	4.4	3	4
RETAIL REITS	18	0.33	10.0	12.0	-2	28.0	1.19	13.4	2.11	4.8	5.0	5.0	4.0	1.0	6.0	3.0	3	4
SPECIALIZED REITS	16	0.80	9.5	9.9	-0.4	34.4	0.90	23.3	3.89	3.7	7.0	5.0	4.0	2.0	6.0	8.4	14	45
REAL ESTATE MGMT & DEV	5	0.09	10.3	15.1	-4.8	40.0	1.24	88.3	3.83	0.1	8.0	4.0	4.0	7.0	3.0	19.5	46	112
BofA UNIVERSE	1307	100.00	10.8	11.3	-0.5	36.2	1.08	22.5	4.94	1.3						17.6	15	17
S&P 500	504	92.31	10.8	11.2	-0.4	36.6	1.06	22.4	5.03	1.2						16.2	14	16

Source: BofA US Equity and Quant Strategy, FactSet

Quantitative Profiles

This is what a change in leadership looks like

VIX > 25 → momentum down (true to form)

VIX spikes often herald a change in leadership (more below), thus Momentum typically lags during periods of above average volatility (VIX at 25 seems to be a reasonable cutoff, see Exhibit 3). Momentum is one of the few factors where VIX levels matter more than changes – most factors map onto direction of VIX travel - Quality for a rising VIX, “junk” for a falling VIX (Exhibit 5). The VIX spiked 90% from mid-Feb to mid-Mar, and stocks corrected ~10%, with Momentum hit hardest. Momentum and Growth are crowded and expensive - typical at the end of unchallenged leadership cycles. High Beta lagged, also typical of shifts – what went up the most goes down the most.

Unlike most corrections, not all risk is lagging

Interestingly, Low Price - the “dollar stocks” of the S&P 500, an area often associated with distress/bankruptcy risk, and High EPS Dispersion, or earnings uncertainty, were among the top factors counter to the trend of risk lagging during corrections. Quality may be undergoing a shift from asset-light/growth to old economy/value. Also, stocks with the highest foreign sales exposure (exporters) - where diversified income streams have been associated with quality - have lagged as retaliatory tariff risk emerges. And mega caps have lagged where they typically hold up better during downturns.

Head-fakes and positioning unwinds are part of it

Most leadership shifts have been accompanied by market corrections and VIX spikes, as well as de-risking (here, Institutional Neglect held up well in Feb/Mar amid significant de-risking of active funds). “Head-fakes” also tend to accompany shifts – temporary resummptions of prior leadership (Exhibit 2). After March 2000, Tech saw five subsequent mini reversals within two years of the peak amid a broader secular underperformance trend. Similarly, two 5ppt+ leadership “head fakes” followed the rotation around the GFC and around Staples’ peak in the early ‘90s. The Growth to Value rotation may have begun with 2022’s end of ZIRP, followed by an unusually strong “head-fake” in ‘23/’24.

Re-think income – best downside protection

Cash-return factors were the only ones in the black in Feb., (+0.3%), with High Dividend Yield (+1.5%) best and Dividend Growth (+0.6%) also strong. Value held up well (-0.7% on avg.) and is likely to continue as (1) the current regime (Recovery) favors Value (Exhibit 15); (2) narrow bull markets led by Growth have reversed into multi-year Value leadership; and (3) Value usually led after the last rate cut (house view: no 2025 cuts).

Screen: stocks for while you wait for the dust to settle

With increasing uncertainty over the macro (stagflation concerns, tariff whipsaws, economic disappointments are the negatives; corporate optimism, deregulation and productivity are the positives) - how should one invest? Stocks with a history of weathering prior downturns with low crowding risk and low earnings volatility may make sense. See Exhibit 9 for a screen of 37 stocks that meet these criteria.

20 March 2025

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**Exhibit 1: Top/Bottom 5 screens
(unconstrained) in February**
As of 2/28/2025

Top 5 screens	Perf.
Dividend Yield (Total Return)	1.5%
Institutional Neglect	1.5%
High EPS Estimate Dispersion	1.4%
Analyst Coverage Neglect	0.8%
Low Price	0.8%
S&P 500 (Equal weighted)	-0.7%

Bottom 5 screens	Perf.
Relative Strength (5wk/30wk)	-5.3%
High Beta	-5.2%
Price Returns (3-Month)	-5.0%
Relative Strength (10wk/40wk)	-4.8%
Price Returns (12-Month)	-4.4%
S&P 500 (Equal weighted)	-0.7%

Source: FactSet, BofA US Equity & Quant Strategy
BofA GLOBAL RESEARCH

Disclaimer: The valuations and screens contained herein are useful in assessing comparative valuations and comparative earnings prospects and are not intended to recommend transactions relating to any specific security. These indicators should be used in investment decisions only with other factors including financial risk, investment risk, management strategies and operating and financial outlooks.

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Exhibit 40: BofA Universe Sector/Industry Factor Evaluation (cont'd)

As of 2/28/2025

	Valuation Analysis										Expectation Analysis										
	# of Comp	% Univ BofA	Impl. Return	Reqd Return	DDM Alpha	Eqty. Duration	BofA Adj Beta	P/E Ratio	Price/Book	Yield	Surprise	Earnings (Decile)			Risk	Torp	Disp	Est. Rev.	PR 5yr Growth	EPS Growth	
																				2025E	2026E
HEALTH CARE	240	10.88	10.7	9.3	1.4	34.2	0.79	19.9	4.47	1.5	5	5	6	4	5			16.0	13	15	
HEALTH CARE EQUIP	40	2.30	9.3	10.6	-1.3	42.4	0.98	26.1	4.75	0.9	7	5	4	2	4			11.3	9	12	
HEALTH CARE PROV	48	2.09	11.2	9.5	1.7	32.3	0.83	14.1	2.60	1.5	5	4	6	2	5			10.4	7	12	
HEALTH CARE TECH	8	0.12	10.4	11.0	-0.6	36.7	1.05	38.5	4.67	0.0	5	2	5	5	2			20.3	70	16	
BIOTECH	99	2.15	11.2	8.5	2.7	30.4	0.71	30.2	4.30	1.8	4	6	7	6	5			18.9	39	39	
PHARMACEUTICALS	26	3.20	11.8	8.1	3.7	29.6	0.63	16.6	8.52	2.4	4	4	6	5	5			23.5	16	11	
LIFE SCIENCES	19	1.02	9.4	10.9	-1.5	43.2	0.97	23.1	3.56	0.3	6	4	4	2	6			8.2	6	13	
FINANCIALS	177	12.44	11.2	11.3	-0.1	32.7	1.09	15.7	2.72	1.7	5	4	5	3	4			13.4	9	18	
BANKS	33	3.07	11.1	11.3	-0.2	30.0	1.09	12.0	1.60	2.4	5	4	5	4	2			9.0	9	22	
FINANCIAL SERVICES	34	2.97	10.1	11.3	-1.2	39.7	1.10	22.1	7.34	0.6	7	2	5	2	5			15.7	11	15	
CONSUMER FINANCE	11	0.66	12.2	12.4	-0.2	29.7	1.26	14.4	2.59	1.3	6	6	6	4	3			17.2	9	19	
CAPITAL MARKETS	56	3.56	12.1	12.2	-0.1	29.4	1.20	17.6	3.33	2.0	5	4	6	4	3			16.3	11	17	
MORTGAGE REITS	11	0.07					1.43	8.1	1.04	11.4	6	7	3	4	5			-19.8	-2	4	
INSURANCE	32	2.11	11.2	9.7	1.5	32.4	0.84	14.3	2.65	1.4	5	5	5	4	6			10.7	5	16	
INFO TECH	164	29.40	10.9	11.9	-1	37.5	1.17	27.2	10.96	0.6	6	4	5	4	4			18.7	21	19	
INTERNET SOFTWARE	1	0.03	12.1	16.7	-4.6	31.9	1.89	40.5		0.0	4		7	8	8			26.8	33	16	
IT SERVICES	20	1.38	9.8	11.1	-1.3	38.4	1.06	26.7	6.65	1.4	6	4	3	4	4			14.7	6	10	
SOFTWARE	73	9.77	10.2	11.2	-1	39.4	1.07	30.0	9.85	0.6	7	2	5	4	4			17.7	13	17	
COMMUNICA. EQUIP	9	0.85	10.0	10.3	-0.3	37.8	0.93	21.1	6.55	1.6	7	2	4	3	3			11.0	7	11	
TECH. H/W, STORAGE & PERIPH	10	6.91	8.7	11.5	-2.8	48.0	1.12	28.8	33.67	0.5	7	2	4	3	5			10.7	19	11	
ELECTR EQUIP & INSTR	19	0.60	10.6	11.6	-1	36.4	1.13	18.5	3.59	0.9	5	5	6	4	4			13.0	14	14	
SEMICONDUCTORS	32	9.85	13.4	13.1	0.3	28.2	1.35	25.2	10.14	0.5	6	7	7	6	3			26.7	36	28	
COMMUNICATION SERVICES	50	11.18	10.6	11.1	-0.5	37.2	1.06	19.1	5.12	0.8	5	4	5	5	5			15.1	15	14	
DIVERSIFIED TELECOM SVS	6	0.72	10.3	8.4	1.9	27.9	0.66	12.2	1.80	4.9	7	7	3	3	7			2.7	-7	7	
WIRELESS TELECOM SVS	1	0.24	10.1	9.1	1	38.4	0.76	25.7	5.00	1.2	10	7	6	5	5			13.1	6	16	
MEDIA	15	0.49	12.0	11.2	0.8	28.4	1.08	10.3	1.89	2.5	7	6	6	6	6			9.2	16	13	
ENTERTAINMENT	16	1.73	11.1	12.4	-1.3	34.8	1.25	30.2	4.72	0.3	6	4	6	5	3			30.9	96	20	
INTERACTIVE MEDIA & SVCS	12	8.00	10.5	11.2	-0.7	39.0	1.06	19.4	7.18	0.4	5	4	5	5	5			13.3	13	14	
UTILITIES	51	2.34	9.9	9.0	0.9	32.7	0.75	17.7	2.19	3.0	6	4	4	2	4			7.9	6	14	
ELECTRIC UTILITIES	21	1.45	9.7	8.9	0.8	33.2	0.74	17.7	2.31	3.0	7	4	4	2	4			6.4	7	12	
GAS UTILITIES	6	0.09	9.5	9.0	0.5	32.2	0.75	16.8	1.84	2.8	4	3	5	3	4			14.4	29	11	
MULTI-UTILITIES	13	0.60	10.0	8.8	1.2	31.8	0.71	18.1	1.97	3.4	6	4	5	2	5			7.8	7	13	
WATER UTILITIES	6	0.08	9.7	9.3	0.4	34.7	0.79	20.8	2.12	2.6	2	4	3	1	4			8.9	7	13	
INDEP POWER PROD & ENERGY TRAD	5	0.13	11.5	11.4	0.1	31.2	1.10	15.2	2.97	1.7	6	10	6	8	2			19.4	-13	32	
REAL ESTATE	91	2.42	9.8	11.0	-1.2	32.4	1.04	18.8	2.54	3.6	6	5	3	2	8			7.0	5	18	
DIVERSIFIED REITS	5	0.04	9.6	11.2	-1.6	31.5	1.09	13.1	1.55	4.9	8	3	6	2	7			2.0	0	7	
INDUSTRIAL REITS	7	0.29	9.5	11.1	-1.6	33.0	1.05	19.8	1.96	3.4	8	5	3	2	9			5.7	3	8	
HOTEL & RESORT REITS	9	0.06	11.5	13.4	-1.9	28.7	1.33	8.8	1.32	4.9	8	8	4	3	8			3.2	-3	5	
OFFICE REITS	11	0.08	10.3	12.6	-2.3	30.9	1.21	11.0	1.22	4.4	7	7	2	3	7			1.3	-11	3	
HEALTH CARE REITS	10	0.32	10.9	11.6	-0.7	29.0	1.14	18.4	2.17	3.2	2	8	4	3	8			12.0	7	12	
RESIDENTIAL REITS	11	0.34	9.1	10.4	-1.3	35.5	0.95	19.1	2.81	3.3	7	4	3	1	8			3.8	2	5	
RETAIL REITS	17	0.35	10.0	12.1	-2.1	28.7	1.19	13.8	2.20	4.7	6	5	3	1	7			3.0	2	5	
SPECIALIZED REITS	16	0.84	9.4	9.9	-0.5	34.3	0.91	22.9	4.01	3.7	6	5	3	2	8			8.5	15	45	
REAL ESTATE MGMT & DEV	5	0.10	12.0	16.4	-4.4	32.3	1.31	100.2	3.72	0.1	6	4	6	7	8			24.6	112	60	
BofA UNIVERSE	1312	100.00	10.7	11.2	-0.5	35.8	1.08	21.7	4.80	1.3								15.2	14	17	
S&P 500	503	92.73	10.7	11.1	-0.4	36.1	1.06	21.7	4.87	1.3								14.2	12	16	

Source: BofA US Equity and Quant Strategy, FactSet

Quantitative Profiles

Slowdown next?

The world has paused and so has our regime indicator

After a rip-roaring start to 2025, risk assets were roiled by worse than expected [US tariffs \(note\)](#), then lifted by a [stay of execution \(note\)](#), leaving the S&P 500 in a 5100 to 5500 trading range since then. Our US Regime Indicator flipped from an Upturn to the first month of a Downturn. Is this a wobble or a phase-shift? The indicator has been flip-flopping between these phases since February 2022 amid volatile macro signals as well as inventory and demand whipsaws – first from COVID, now from front-running tariffs. The two indicator inputs that improved in April (inflation and capacity utilization) may be attributable to hoarding/ demand pull-forwards ahead of tariffs. The remaining six (EPS revisions, GDP revisions, Treasury yields, ISM Manufacturing, Leading Economic Indicators and Credit) weakened.

Different credit cycle: sovereign risk supersedes corp. risk

Credit spreads widened ~200bp peak to trough this year, the biggest move since 2020. Unlike 2020, default risk and credit demand remained stable. Our credit strategists highlight a new theme: [credit risk stemming from underlying 10y Tsy volatility](#). A foreign buyers strike in T-Bonds, higher uncertainty in US policy and high government debt are contributors. Meanwhile, fundamental dividend safety, a measure of corporate health, is superior to prior downturns, and is better in the Value index than Growth (Exhibit 11).

In a downturn, focus on sales over EPS, needs over wants

We like inexpensive stocks with positive growth, but find that sales-based valuation and revision metrics have tended to outperform earnings measures during prior Downturns (Exhibit 7). Why? Demand for discretionary goods tends to drop, unit volume sales decline and top line growth can grow scarce. Margins can be more easily maintained by cost cutting, but pricing power is required for sales growth during a Downturn – and pricing power is more evident in non-discretionary categories. The Russell 1000 Value index has a higher proportion of earnings contributed from non-discretionary goods and services like utilities, telecom, insurance, drugs, rent, etc. than the Russell 1000 Growth index (Exhibit 10). But not all value is good value: select higher multiple media and retail (Magnificent 7 members) may be better protected by scale, content, switching costs, etc.

Remember high quality dividend yield?

With increasing policy uncertainty, volatility is likely to remain elevated. And tariffs pose inflation risks. High quality is the best hedge against volatility in our view (Exhibit 23), and inflation-protected income will likely drive alpha. A traditional high quality dividend yield approach may be prudent. We screen for high quality stocks with above-market dividend yields in the S&P 500 ex-Financials (Exhibit 26) and separately within Financials (Exhibit 27), a sector where we maintain an overweight.

Trading ideas and investment strategies discussed herein may give rise to significant risk and are not suitable for all investors. Investors should have experience in relevant markets and the financial resources to absorb any losses arising from applying these ideas or strategies.

BofA Securities does and seeks to do business with issuers covered in its research reports. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision. Refer to important disclosures on page 38 to 40.

12818847

Timestamp: 17 April 2025 04:36AM EDT

17 April 2025

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**Exhibit 1: Top/Bottom 5 screens
(unconstrained) in 1Q25**
As of 3/31/2025

Top 5 screens	Perf.
Low Price to Sales	3.0%
Dividend Yield (Total Return)	2.1%
DDM Valuation	1.6%
High EPS Estimate Dispersion	1.2%
Forecast Positive EPS Surprise	0.8%
S&P 500 (Equal weighted)	-0.9%

Bottom 5 screens	Perf.
High Beta	-9.3%
Price Ret. (12-m + 1-m Reversal)	-8.5%
Relative Strength (10wk/40wk)	-8.2%
Relative Strength (5wk/30wk)	-8.1%
ROE (5-Yr Avg. Adj. by Debt)	-6.4%
S&P 500 (Equal weighted)	-0.9%

Source: FactSet, BofA US Equity & Quant Strategy

BofA GLOBAL RESEARCH

Disclaimer: The valuations and screens contained herein are useful in assessing comparative valuations and comparative earnings prospects and are not intended to recommend transactions relating to any specific security. These indicators should be used in investment decisions only with other factors including financial risk, investment risk, management strategies and operating and financial outlooks.

Download [unconstrained factors](#)
[constituents/historical returns](#) and [sector-neutral constituents](#) in Research Library


Exhibit 42: BofA Universe Sector/Industry Factor Evaluation (cont'd)

As of 3/31/2025

	Valuation Analysis										Expectation Analysis							
	# of Comp	% Univ BofA	Impl. Return	Reqd Return	DDM Alpha	Eqty. Duration	BofA Adj Beta	P/E Ratio	Price/ Book	Yield	Surprise	Earnings (Decile)			PR 5yr Growth	EPS Growth		
												Risk	Torp	Disp	Est. Rev.	2025E	2026E	
HEALTH CARE	242	11.35	10.8	9.5	1.3	33.7	0.81	19.2	4.18	1.6	5	5	6	4	4	17.4	14	15
HEALTH CARE EQUIP	42	2.34	9.4	10.8	-1.4	41.5	0.99	24.6	4.40	0.9	7	5	4	2	4	11.2	9	13
HEALTH CARE PROV	48	2.37	11.0	9.6	1.4	33.1	0.81	14.9	2.78	1.4	5	4	6	2	5	11.0	8	13
HEALTH CARE TECH	8	0.12	10.1	11.6	-1.5	40.4	1.12	34.7	4.36	0.0	8	2	4	4	2	19.0	74	13
BIOTECH	99	2.24	11.3	8.7	2.6	28.6	0.72	29.0	4.43	1.8	3	6	6	6	4	26.2	40	41
PHARMACEUTICALS	27	3.25	12.0	8.6	3.4	28.9	0.68	15.7	6.01	2.5	4	4	6	4	4	23.5	16	11
LIFE SCIENCES	18	1.03	9.4	11.2	-1.8	42.9	1.01	21.8	3.40	0.4	6	4	4	2	6	8.3	5	12
FINANCIALS	177	12.48	11.3	11.1	0.2	32.0	1.04	14.6	2.57	1.8	6	4	5	3	4	13.1	9	18
BANKS	33	3.00	11.5	11.0	0.5	28.1	1.01	10.9	1.47	2.8	5	4	5	4	2	9.1	9	22
FINANCIAL SERVICES	34	2.99	10.2	11.3	-1.1	39.1	1.08	20.7	7.01	0.7	7	2	5	2	4	15.3	11	17
CONSUMER FINANCE	11	0.62	12.5	12.1	0.4	28.8	1.17	12.8	2.30	1.5	6	6	6	4	3	15.3	6	19
CAPITAL MARKETS	56	3.51	12.4	12.3	0.1	28.7	1.18	16.0	2.92	2.0	5	4	5	4	3	15.9	11	16
MORTGAGE REITS	11	0.07					1.25	7.9	0.98	12.4	6	7	4	5	6	-8.2	-5	5
INSURANCE	32	2.29	11.0	9.2	1.8	32.9	0.75	14.4	2.70	1.4	6	5	5	4	6	10.5	4	16
INFO TECH	163	28.41	11.1	12.5	-1.4	36.4	1.22	24.3	9.99	0.7	7	4	5	4	4	18.6	21	19
INTERNET SOFTWARE	1	0.03	12.5	16.5	-4	30.6	1.81	35.9		0.0	4		7	8	8	26.8	33	16
IT SERVICES	20	1.33	9.4	11.3	-1.9	38.4	1.06	24.1	5.97	1.5	6	4	3	4	5	11.0	5	9
SOFTWARE	72	9.66	10.2	11.7	-1.5	38.9	1.12	27.7	9.40	0.6	7	2	5	3	4	16.8	12	17
COMMUNICA. EQUIP	9	0.85	10.2	10.8	-0.6	36.7	0.98	19.5	6.13	1.7	7	2	4	3	3	10.8	7	11
TECH. H/W, STORAGE & PERIPH	10	6.72	8.9	12.1	-3.2	46.7	1.17	26.4	30.65	0.5	6	2	4	3	5	10.7	18	12
ELECTR EQUIP & INSTR	19	0.59	11.0	11.6	-0.6	35.0	1.10	17.0	3.32	1.1	5	5	6	3	4	13.4	13	15
SEMICONDUCTORS	32	9.23	14.2	13.9	0.3	26.0	1.43	21.6	8.82	0.6	6	7	7	6	4	28.4	37	28
COMMUNICATION SERVICES	49	10.86	10.9	11.4	-0.5	35.8	1.07	17.2	4.68	0.9	5	4	6	5	5	15.1	15	14
DIVERSIFIED TELECOM SVS	6	0.80	10.6	8.2	2.4	27.2	0.62	12.4	1.87	4.7	3	7	3	3	6	4.2	-6	6
WIRELESS TELECOM SVS	1	0.25	10.2	9.2	1	38.2	0.75	25.1	4.94	1.2	9	7	6	5	5	13.1	6	16
MEDIA	15	0.52	12.2	11.0	1.2	27.5	1.02	9.7	1.85	2.5	6	6	6	6	6	9.0	19	13
ENTERTAINMENT	15	1.70	11.4	13.0	-1.6	33.9	1.31	28.0	4.45	0.3	6	4	6	5	3	30.7	97	20
INTERACTIVE MEDIA & SVCS	12	7.61	10.8	11.4	-0.6	37.6	1.08	17.1	6.40	0.5	4	4	6	5	5	13.2	13	14
UTILITIES	51	2.51	9.8	8.9	0.9	33.0	0.71	17.6	2.24	3.0	6	4	4	2	4	7.2	7	10
ELECTRIC UTILITIES	21	1.55	9.8	8.7	1.1	32.9	0.70	17.5	2.26	3.0	7	4	4	2	4	6.2	7	10
GAS UTILITIES	6	0.09	9.5	9.3	0.2	32.0	0.77	17.2	1.77	2.8	4	3	4	2	4	14.9	27	12
MULTI-UTILITIES	13	0.65	9.9	8.6	1.3	32.2	0.67	18.3	2.04	3.4	5	4	4	1	5	7.6	7	12
WATER UTILITIES	6	0.09	9.5	9.4	0.1	36.1	0.79	22.0	2.32	2.4	3	4	3	1	4	8.9	7	13
INDEP POWER PROD & ENERGY TRAD	5	0.12	9.9	11.4	-1.5	36.3	1.07	13.9	6.04	1.9	4	10	4	8	6	8.9	-3	-12
REAL ESTATE	91	2.53	9.8	10.8	-1	32.1	0.99	18.6	2.41	3.7	6	5	3	2	8	8.5	11	12
DIVERSIFIED REITS	5	0.04	9.6	10.6	-1	31.3	0.98	12.6	1.57	5.0	7	3	5	2	7	2.1	0	8
INDUSTRIAL REITS	7	0.29	9.8	11.7	-1.9	30.7	1.11	18.0	1.82	3.7	8	5	3	2	8	5.7	3	8
HOTEL & RESORT REITS	9	0.05	11.9	12.2	-0.3	24.3	1.23	7.7	1.18	5.5	5	8	3	4	8	3.2	-3	4
OFFICE REITS	11	0.08	10.6	12.3	-1.7	29.1	1.15	10.3	1.14	4.7	6	7	2	2	7	1.3	-11	3
HEALTH CARE REITS	10	0.35	10.9	10.7	0.2	28.9	0.98	18.3	2.17	3.2	2	8	4	2	8	12.1	7	12
RESIDENTIAL REITS	11	0.36	9.2	10.1	-0.9	34.7	0.88	19.2	2.77	3.4	7	4	2	2	7	3.4	0	5
RETAIL REITS	17	0.36	10.1	10.9	-0.8	27.7	1.02	13.3	2.11	4.9	6	5	3	1	7	2.9	2	5
SPECIALIZED REITS	16	0.90	9.2	10.3	-1.1	35.9	0.94	24.6	3.74	3.7	8	5	3	3	8	9.3	56	25
REAL ESTATE MGMT & DEV	5	0.10	12.4	16.4	-4	30.9	1.24	95.2	3.67	0.1	6	4	6	7	9	43.7	44	64
BofA UNIVERSE	1313	100.00	10.9	11.4	-0.5	34.9	1.07	20.5	4.42	1.4						15.1	13	17
S&P 500	503	93.30	10.9	11.3	-0.4	35.1	1.05	20.6	4.52	1.3						14.3	12	16

Source: BofA US Equity and Quant Strategy, FactSet

Calculation of Issuance Cost Adjustment
Rate Year Ending December 31, 2026

Total Equity Issued by CEI	
Equity Issued via Public Sale	
Equity Issued via Co. Programs	
 Total Equity Infusion to CECONY	
Infusion from Existing Equity	
Infusion from New Equity	
Infusion from Publicly Sold Equity	
 Company Proposed Rate Base, Elec.	\$33,748,725,000
Company Proposed Rate Base, Gas	\$11,830,418,000
Company Proposed Rate Base, Total	\$47,461,378,000
 Staff Recommended Rate Base, Elec.	\$31,856,196,619
Staff Recommended Rate Base, Gas	\$11,132,323,418
Staff Recommended Rate Base, Total	\$44,870,755,037
 Rate Base, Steam (Per JP, RY3)	\$1,882,235,000
 Ratio: Staff/Company Rate Base	94.54%
Infusion needed for Staff's Rate Base	
 Ratio: Steam/Total Rate Base	4.19%
Infusion attributable to Elec./Gas	
 Historic Issuance Expense Ratio	1.78%
Recoverable Issuance Costs	
 Value of 1 basis point (Elec./Gas)	\$2,187,799
Ratio: Issuance Costs to Basis Point Value	
 Preliminary ROE	9.23%
Adder for Issuance Costs	
Adjusted ROE	
Rounded	9.30%
 Adjustment for Issuance Costs (basis points)	7.00

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The Value Line Investment Survey – Quality Control Procedures

Last Updated January 1, 2014

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After the analyst completes the first draft of a report, it is then subject to a thorough editing process, which includes a review from at least one senior analyst that is very familiar with that particular industry. This may include several rounds of back-and-forth questions and other communication.

When the senior analyst is satisfied, the report is then exposed to a number of other reviews and checks. For instance, a fellow analyst will evaluate the report. It will also be scrutinized by Value Line's Statistics, Quality Control, and Proofreading Departments.

As a final check, an additional senior analyst will read the report one last time, which occurs immediately before all reports are sent to our printer and prepared for Web site posting.

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Major energy rate case decisions in the US January-December 2024

Quarterly update on decided rate cases

Lisa Fontanella, Research Director

Contributors: Brian Collins, Jim Davis, Russell Ernst, Lillian Federico, Monica Hlinka, Jason Lehmann, Dan Lowrey

Editor: Tom Cobbe

For detailed data

Access the [RRA's electric and gas rate case decisions as of Dec. 31, 2024](#) and related data.

Averages calculated in 2024 show that electric and gas authorized returns on equity continue to trend higher.

To learn more or to request a demo, visit spglobal.com/marketintelligence.

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Executive Summary

Introduction

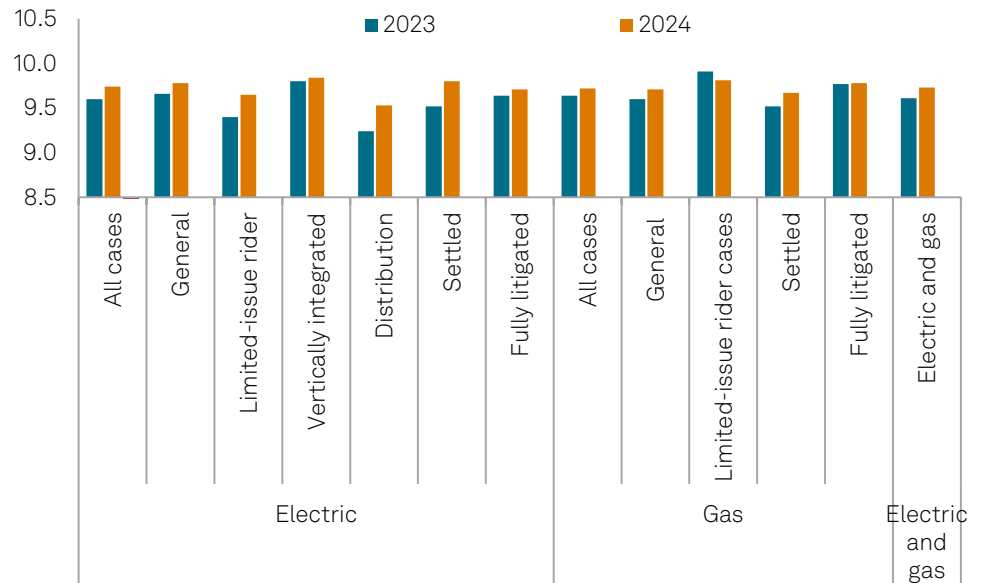
Rate case activity remained elevated in 2024, with nearly 155 decisions issued by state public utility commissions, including 99 electric and gas equity-return determinations.

Amid the heightened rate case activity, the average electric and gas authorized returns on equity (ROEs) rose in 2024.

According to calculations by Regulatory Research Associates, the average authorized ROE for electric utilities was 9.74% in 2024, above the 9.60% average in 2023. There were 55 electric ROE authorizations in 2024 versus 63 in 2023. Similarly, the average authorized ROE for gas utilities was 9.72% in 2024, an increase from 9.64% in 2023, with 44 gas ROE authorizations compared to 43 in 2023.

The primary driver for rate case filings continues to be capital expenditure recovery. Energy utilities are investing in infrastructure to modernize transmission and distribution systems; build new natural gas, solar and wind generation; and deploy new technologies to support the expansion of electric vehicles, battery storage and advanced metering infrastructure, all facilitating the transition toward decarbonization. Additional reasons for rate filings include rising expenses, revised cost-of-capital parameters, economic and sectorwide impacts on operations, recovery of storm and severe-weather-related costs, regulatory approval for alternative regulatory mechanisms, and addressing rate treatment for generation facilities being retired early due to the energy transition.

Average authorized ROE (%)



	2023	2024
Electric averages		
All cases	9.60	9.74
General rate cases	9.66	9.78
Limited-issue rider cases	9.40	9.65
Vertically integrated cases	9.80	9.84
Distribution-only cases	9.24	9.53
Settled cases	9.52	9.80
Fully litigated cases	9.64	9.71
Gas averages		
All cases	9.64	9.72
General rate cases	9.60	9.71
Limited-issue rider cases	9.91	9.81
Settled cases	9.52	9.67
Fully litigated cases	9.77	9.78
Composite electric and gas averages		
Electric and gas	9.61	9.73
US Treasury		
30-year bond yield	4.09	4.41

Data compiled Jan. 28, 2025.

ROE = return on equity.

Sources: Regulatory Research Associates, a group within S&P Global Commodity Insights; US Treasury Department.

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About this report

This quarterly report presents a comprehensive analysis of electric and gas rate case decisions issued in the US for 2024, along with select aggregated historical data. The report utilizes data compiled by Regulatory Research Associates (RRA) for its rate case database, accessible via the S&P Capital IQ Pro platform. RRA aims to track all “major” rate cases for investor-owned utilities nationwide, defining “major” as cases where the utility’s request leads to a rate change of at least \$5 million, or where the commission approves a rate change of at least \$3 million. Beyond base rate cases, the database includes details on certain limited-issue rider proceedings, particularly those involving significant rate base additions outside of a general rate case. In some instances, the rate change coverage criteria may not apply. Historical data in this report may differ from previous reports due to variations in presentation, such as the treatment of withdrawn or dismissed cases and the inclusion of cases not previously included in RRA’s coverage.

The Take

In 2024, the average authorized returns for electric and gas utilities rose moderately compared to 2023, driven by a higher-interest-rate environment. However, the impact of interest rate increases on authorized returns has not been proportional, as regulators are more cautious about raising ROEs than lowering them. Affordability concerns remain prevalent as regulators manage customer rate increases due to substantial but necessary capital investment related to the energy transition amid inflationary pressures.

In recent years, rate case activity for investor-owned electric and gas utilities in the US has been elevated, with state public utility commissions issuing nearly 155 decisions in 2024. RRA expects this surge in rate case activity to persist given the elevated interest and inflation rates and the need for significant capital expenditures.

Overview of electric and gas authorizations

Both the electric and gas average authorized ROEs in 2024 rose above 2023 levels.

The average ROE authorized for electric utilities in rate cases decided in 2024 was 9.74%, notably above the 9.60% average observed in 2023. There were 55 electric ROE authorizations in 2024 versus 63 in 2023.

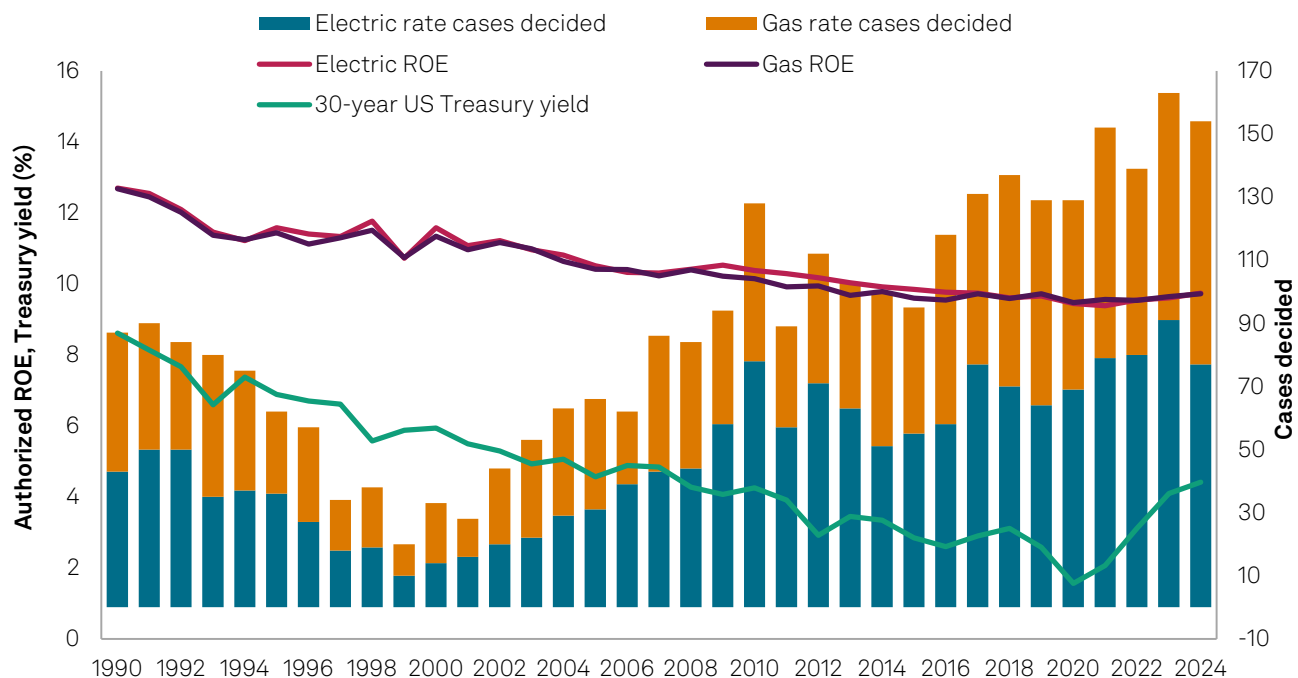
The average ROE authorized for gas utilities in cases decided in 2024 was 9.72%, above the 9.64% average observed in 2023. There were 44 gas ROE authorizations in 2024 versus 43 in 2023.

The electric data set includes several limited-issue rider cases. Historically, the ROEs authorized in these cases were significantly higher than those approved in general rate cases, primarily due to incentives in Virginia for certain types of generation investment. However, these premiums have largely expired. Excluding the 14 rider cases in 2024 and the 15 in 2023, the average authorized ROE for electric cases was 9.78% in 2024, versus 9.66% in 2023. Similarly, excluding the four rider rate cases in 2024 and six in 2023, the average authorized ROE for gas cases was 9.71% in 2024 and 9.60% in 2023. Generally, limited-issue riders have a limited impact on average ROEs in the gas sector, as most gas riders depend on the ROE approved in any given utility's previous base rate case.

In 2024, the median ROE authorized in all electric utility rate cases was 9.70% versus 9.50% in 2023; for gas utilities, the median was 9.70% in 2024 and 9.60% in 2023.

Historically, authorized returns have generally followed the overall trend of interest rates; however the magnitude of changes in authorized ROEs often lag interest rate changes, particularly when rates rise.

Average electric, gas authorized ROEs; number of rate cases decided



Data compiled Jan. 28, 2025.

ROE = return on equity.

Sources: Regulatory Research Associates, a group within S&P Global Commodity Insights; US Treasury Department.

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Interest rates — as measured by the 30-year US Treasury bond yield — declined steadily from 1990 to 2020, exerting downward pressure on authorized ROEs. During this period, Treasury yields dropped by over 700 basis points, from 8.61% to 1.56%, while the average authorized ROEs for electric and gas utilities combined decreased by less than 325 basis points, from 12.69% to 9.45%. Notably, average authorized ROEs did not fall below 10% until 2011 for gas utilities and 2014 for electric utilities. The calendar-year averages fell below 9.50% for the first time in 2020.

The decline in authorized ROEs has coincided with an increase in rate case activity, with 100 or more cases adjudicated in 12 of the past 15 calendar years. This count includes electric and gas cases where no ROEs were specified but excludes withdrawn cases. In 2024, nearly 155 cases were decided, with authorized increases totaling over \$9 billion.

Between 1990 and 2020, interest rates and authorized ROEs declined at different rates, leading to a widening spread between authorized ROEs and the average yield on 30-year US Treasuries. This spread increased from just over 400 basis points in 1990 to nearly 800 basis points in 2020.

The widening spread is primarily due to regulators' implicit understanding that the interest rate drop driven by US Federal Reserve intervention was atypical. Consequently, regulators did not fully reflect the interest rate drop in newly authorized ROEs. In some instances, regulators recognized that industry changes and economic instability posed increased risks for investors, justifying a higher premium over interest rates.

Since 2020, with rising interest rates, the spread has begun to narrow, reaching about 530 basis points in 2024. Given the various factors increasing customer bills, the spread may continue to narrow, as regulators may become more reluctant about raising authorized returns.

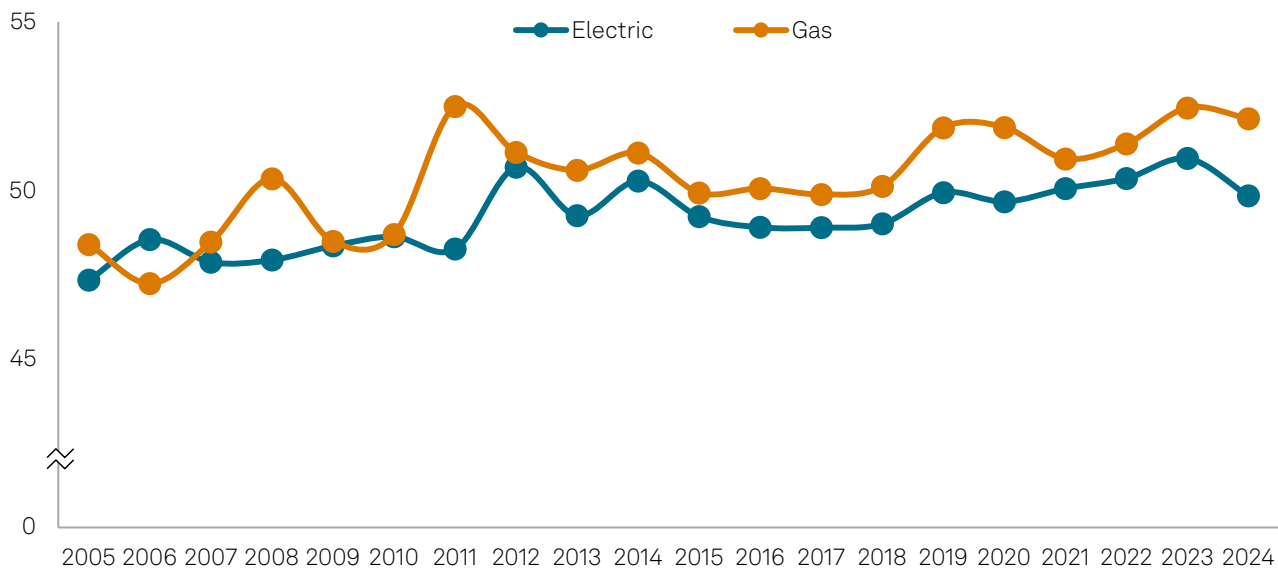
Capital structure trends

The negative cash flow impact from federal tax changes that took effect in 2018 raised concerns regarding utility liquidity and credit metrics. In response, many utilities sought higher common equity ratios. Consequently, the average authorized equity ratios adopted by utility commissions in 2019 were modestly higher than those observed in 2018 and 2017.

For the full years 2024, 2023, 2022, 2021 and 2020, the average equity ratios authorized in electric utility cases were 49.84%, 50.95%, 50.36%, 50.06% and 49.67%, respectively. During the same period, average equity ratios authorized gas utilities were 52.13%, 52.45%, 51.38%, 50.94% and 51.87%.

From a longer-term perspective, equity ratios have generally increased over the past several years. In 2005, the average equity ratio approved in electric rate cases was 47.34%; for gas utilities, it was 48.40%. Following the 2008 financial crisis, many commissions began approving equity-rich capital structures. Authorized equity ratios for gas utilities have consistently been higher than those for electric utilities for most of the period since 2005.

Average authorized equity ratio (%)



Data compiled Jan. 28, 2025.

Sources: Regulatory Research Associates, a group within S&P Global Commodity Insights;
US Treasury Department.

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A more granular look at ROE trends

Thus far, the discussion has focused on broad trends in authorized ROEs. The following sections provide a more detailed analysis.

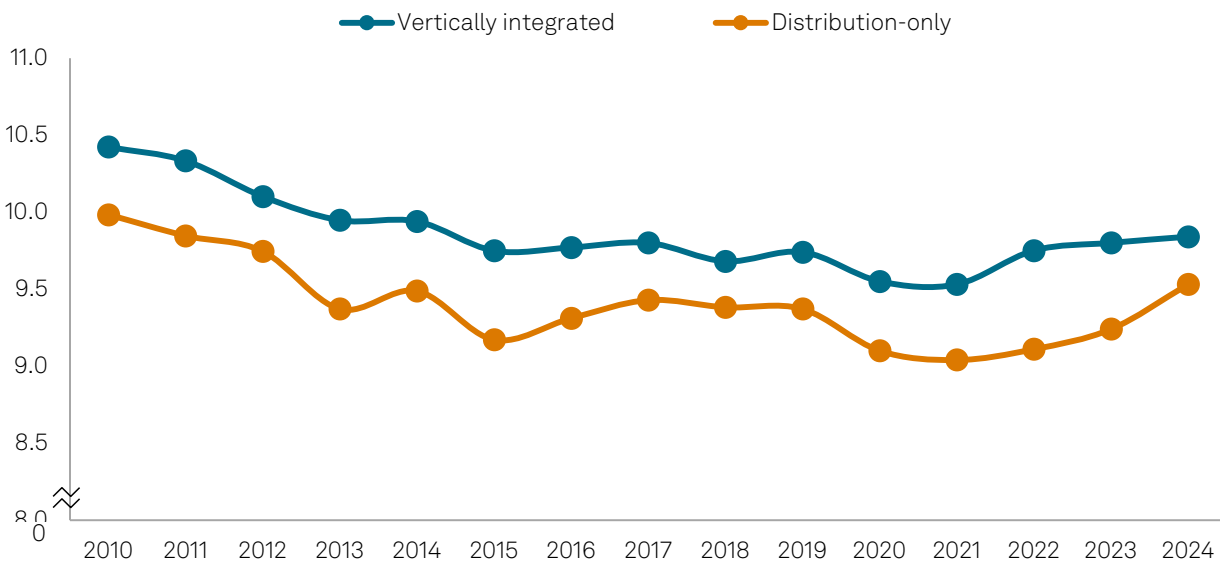
RRA has noted significant differences in average ROEs based on the types of proceedings or decisions in which these ROEs were established.

Due to the restructuring of the electric industry, several states have unbundled electric rates and introduced retail competition for generation. In these states, commissions have jurisdiction only over return parameters and revenue requirement for distribution operations.

RRA finds that the annual average authorized ROEs in vertically integrated cases involving generation have historically been about 30-65 basis points higher than in distribution-only cases. This difference likely reflects the increased risk associated with the ownership and operation of generation assets.

In 2024, the industry average ROE for vertically integrated electric utilities was 9.84%, slightly above the 9.80% average in 2023. For electric distribution-only cases, the industry average ROE was 9.53% in 2024, significantly above the 9.24% average in 2023.

Average authorized electric ROEs (%)



Data compiled Jan. 28, 2025.

ROE = return on equity.

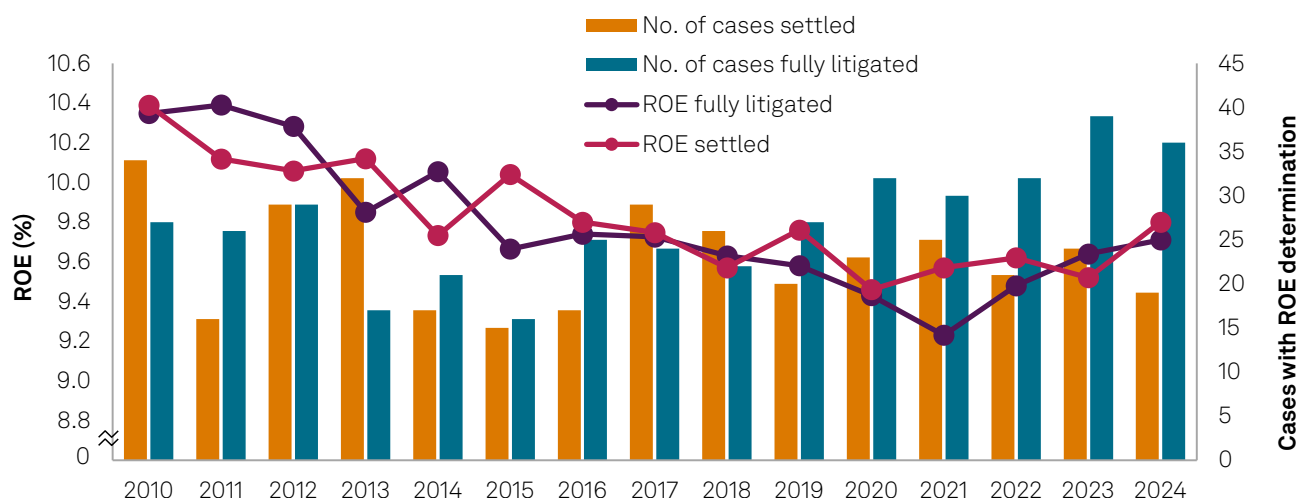
Source: Regulatory Research Associates, a group within S&P Global Commodity Insights.

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In recent years, settlements have frequently been used to resolve rate cases, with many taking the form of “black box” settlements. These do not specify the ROE or other typical rate case parameters underlying the stipulated rate change. However, some states require settlements to specify these values, or at least the specific adjustments from which these values were derived.

For both electric and gas cases, RRA has observed no consistent pattern in the average authorized ROEs between settled and fully litigated cases. In some years, the average authorized ROE was higher for fully litigated ones, while in others, the opposite was true.

Average authorized electric ROEs: settled vs. fully litigated cases



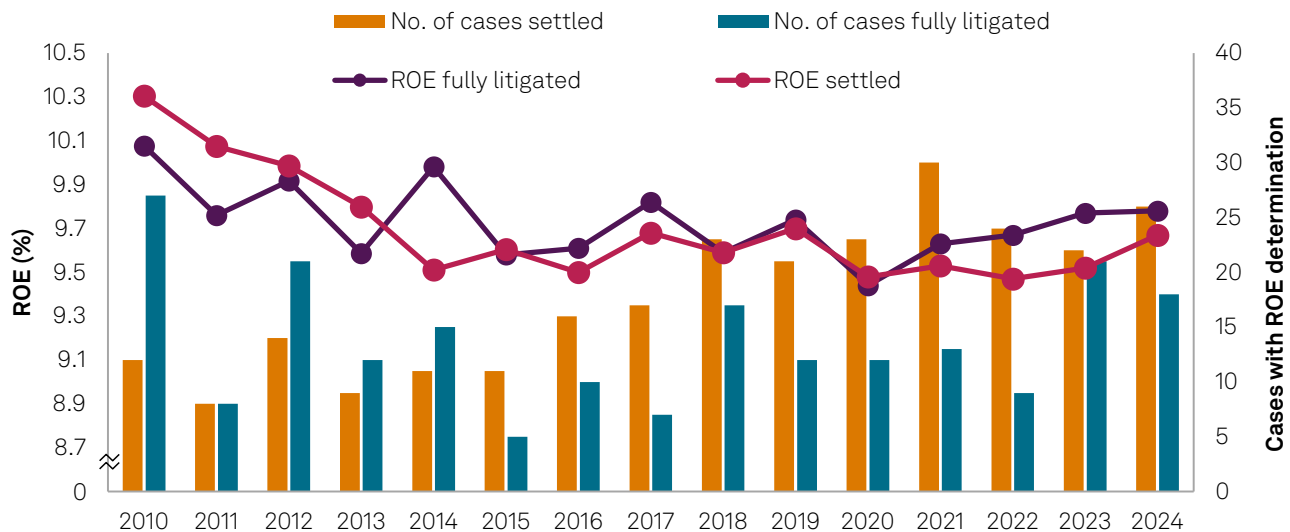
Data compiled Jan. 28, 2025.

ROE = return on equity.

Source: Regulatory Research Associates, a group within S&P Global Commodity Insights.

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Average authorized gas ROEs: settled vs. fully litigated cases



Data compiled Jan. 28, 2025.

ROE = return on equity.

Source: Regulatory Research Associates, a group within S&P Global Commodity Insights.

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The following discussion focuses on the corresponding tables available here.

Table 1 shows the average ROE authorized in major electric and gas rate decisions annually since 1990 and quarterly since 2020, followed by the number of observations in each period. **Table 2** indicates the composite electric and gas industry data for all major cases, summarized annually since 2005 and quarterly since 2021.

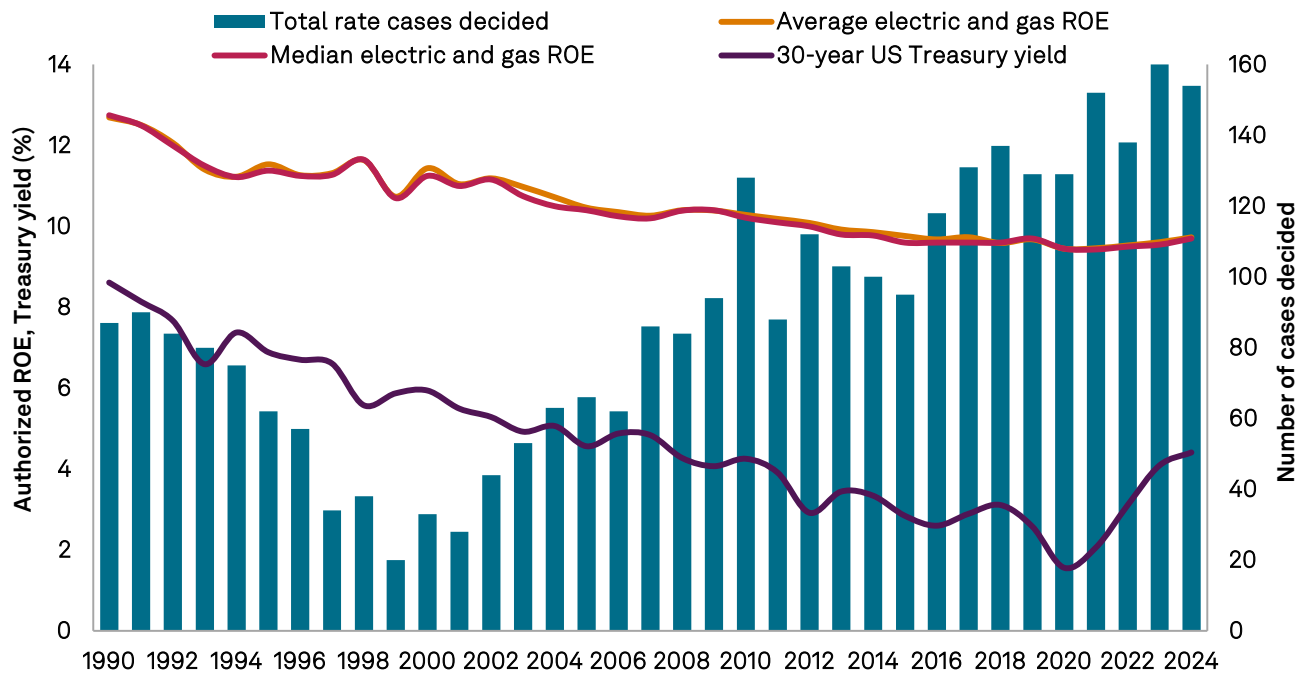
Tables 3 and **4** provide comparisons since 2010 of average authorized ROEs for settled versus fully litigated cases, general rate cases versus limited-issue rider proceedings and vertically integrated cases versus distribution-only cases for electric and gas utilities, respectively.

The individual electric and gas cases decided in 2024 are listed in **Table 5**, with the decision date shown first, followed by the company name, company ticker, the abbreviation for the state issuing the decision, the authorized rate of return, the ROE and the percentage of common equity in the adopted capital structure. Next, RRA indicates the month and year in which the adopted test year ended, whether the commission utilized an average or a year-end rate base and the amount of the permanent rate change authorized. The dollar amounts represent the permanent rate change ordered when the decisions were rendered. This study does not reflect fuel adjustment clause rate changes.

The simple mean is utilized for the return averages. In addition, the average equity returns indicated in this report reflect the ROEs approved in cases decided during the specified periods; they are not necessarily representative of the average currently authorized ROEs for utilities industrywide or the returns earned by the utilities.

Table 6 and the graph below track the average and median equity return authorized for all electric and gas rate cases since 1990. As the table indicates, the average authorized ROEs have generally trended downward since 1990, reflecting the significant decline in interest rates and capital costs over this time frame. However, with the higher interest rate environment in the past couple of years, the average is beginning to trend moderately upward.

Composite electric, gas average authorized ROEs; total number of rate cases



Data compiled Jan. 28, 2025.

ROE = return on equity.

Sources: Regulatory Research Associates, a group within S&P Global Commodity Insights;
US Treasury Department.

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Further Reading

[RRA Quarterly State Regulatory Evaluations — Energy](#)

[RRA Utility Holding Company Comparative Regulatory Risk Assessment — November 2024 Release](#)

[Major energy utility cases in progress in the US - Quarterly update on pending rate cases](#)

[General Elections: A deep dive into the 2024 state-level elections](#)

[The Commissions](#)

[The Rate Case Process: A Conduit to Enlightenment](#)

[Rate base: It's more complicated than it sounds](#)

[Frequently Asked Questions](#)

[Intro to Water Utilities — Current Trends and Growth Drivers](#)

[An Overview of FERC Regulation](#)

[FERC Regulatory Review](#)

About Regulatory Research Associates

Regulatory Research Associates, a group within S&P Global Commodity Insights, is the leading authority on utility securities and regulation. Understanding the financial and strategic impact of federal and state regulation is a key to success in the energy business. For over 40 years, Regulatory Research Associates has been the leading provider of independent research, expert analysis, proprietary data and consultation on utility securities and regulation. S&P Global Commodity Insights produces content for distribution on S&P Capital IQ Pro.

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Consolidated Edison, Inc.

Investor Update
March 10 - 14, 2025



Investor Relations

Available Information

On February 20, 2025, Consolidated Edison, Inc. issued a press release reporting its 2024 earnings and filed with the Securities and Exchange Commission the company's 2024 Form 10-K. This presentation should be read together with, and is qualified in its entirety by reference to, the earnings press release and the Form 10-K. Copies of the earnings press release and the Form 10-K are available at: www.conedison.com/en/. (Select "For Investors" and then select "Press Releases" and "SEC Filings," respectively.)

Forward-Looking Statements

This presentation contains forward-looking statements that are intended to qualify for the safe-harbor provisions of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. Forward-looking statements are statements of future expectations and not facts. Words such as "forecasts," "expects," "estimates," "anticipates," "intends," "believes," "plans," "will," "target," "guidance," "potential," "goal," "consider" and similar expressions identify forward-looking statements. The forward-looking statements reflect information available and assumptions at the time the statements are made, and accordingly speak only as of that time. Actual results or developments might differ materially from those included in the forward-looking statements because of various factors such as those identified in reports Con Edison has filed with the Securities and Exchange Commission, including that Con Edison's subsidiaries are extensively regulated and may be subject to substantial penalties; its utility subsidiaries' rate plans may not provide a reasonable return; it may be adversely affected by changes to the utility subsidiaries' rate plans; the failure of, or damage to, its subsidiaries' facilities could adversely affect it; a cyber-attack could adversely affect it; the failure of processes and systems, the failure to retain and attract employees and contractors, and their negative performance could adversely affect it; it is exposed to risks from the environmental consequences of its subsidiaries' operations, including increased costs related to climate change; its ability to pay dividends or interest depends on dividends from its subsidiaries; changes to tax laws could adversely affect it; it requires access to capital markets to satisfy funding requirements; a disruption in the wholesale energy markets, increased commodity costs or failure by an energy supplier or customer could adversely affect it; it faces risks related to health epidemics and other outbreaks; its strategies may not be effective to address changes in the external business environment; it faces risks related to supply chain disruptions, inflation and the imposition of tariffs; and it also faces other risks that are beyond its control. This list of factors is not all-inclusive because it is not possible to predict all factors that could cause actual results or developments to differ from the forward-looking statements. Con Edison assumes no obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law.

For more information, contact:

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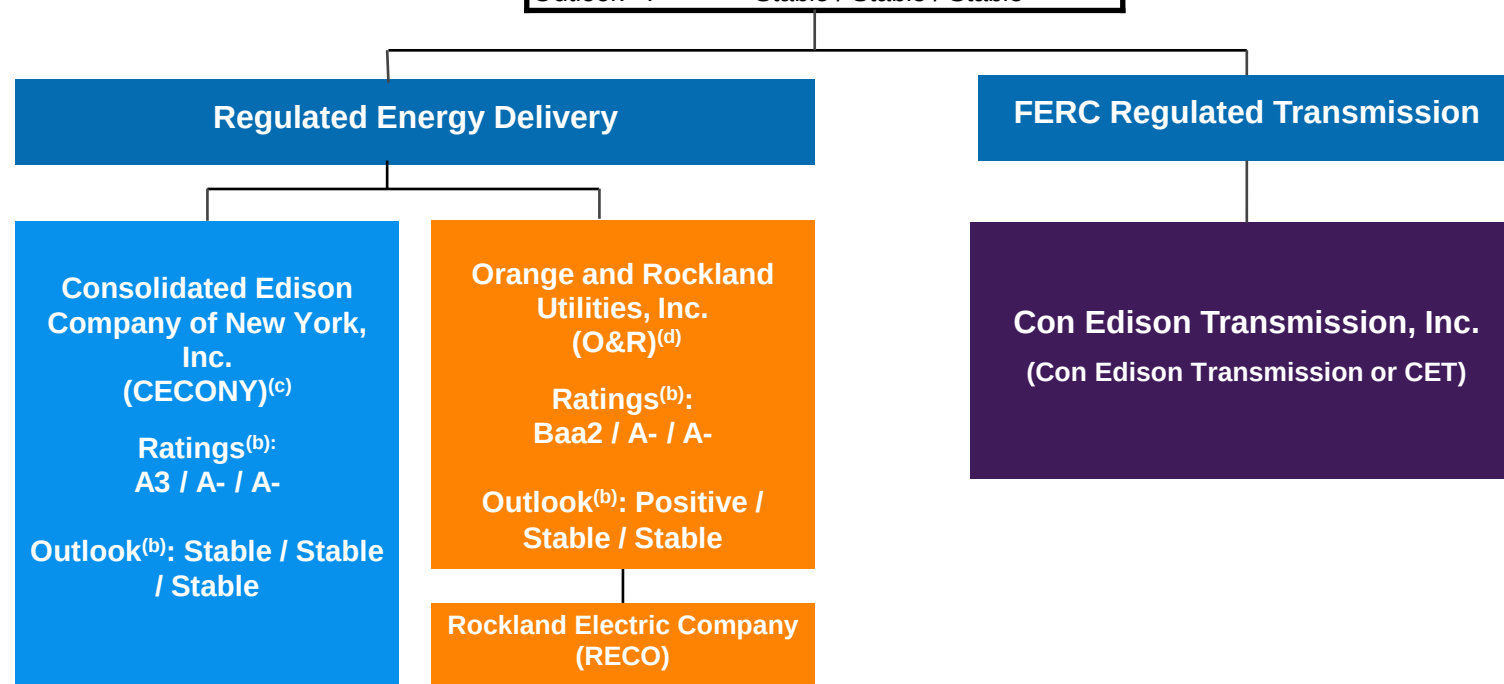
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Organizational Structure

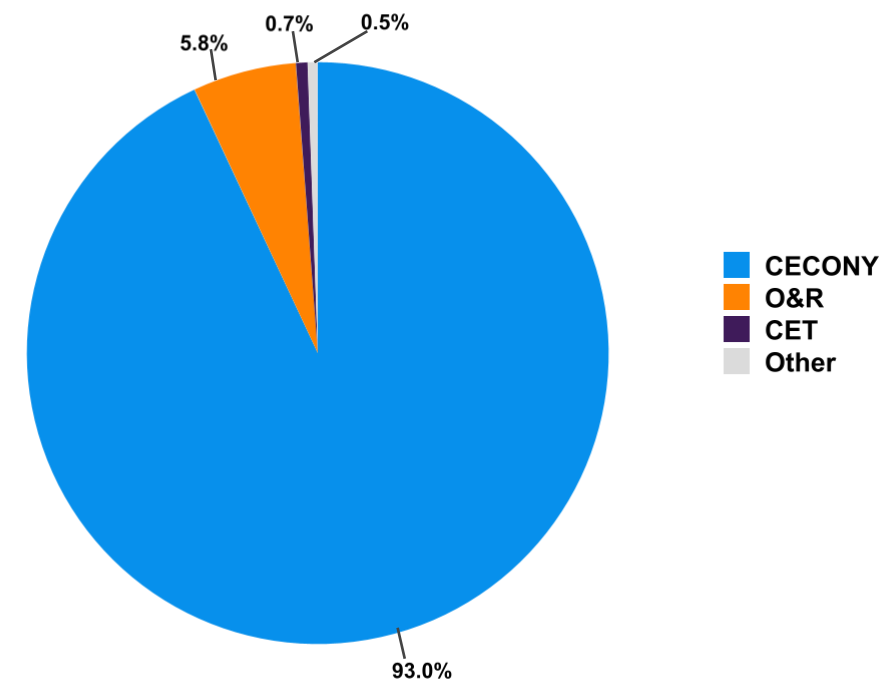


Market Cap^(a): \$30.9 billion
 Issuer Ratings^(b): Baa1 / A- / BBB+
 Outlook^(b): Stable / Stable / Stable



Percentages of Total Assets by Business

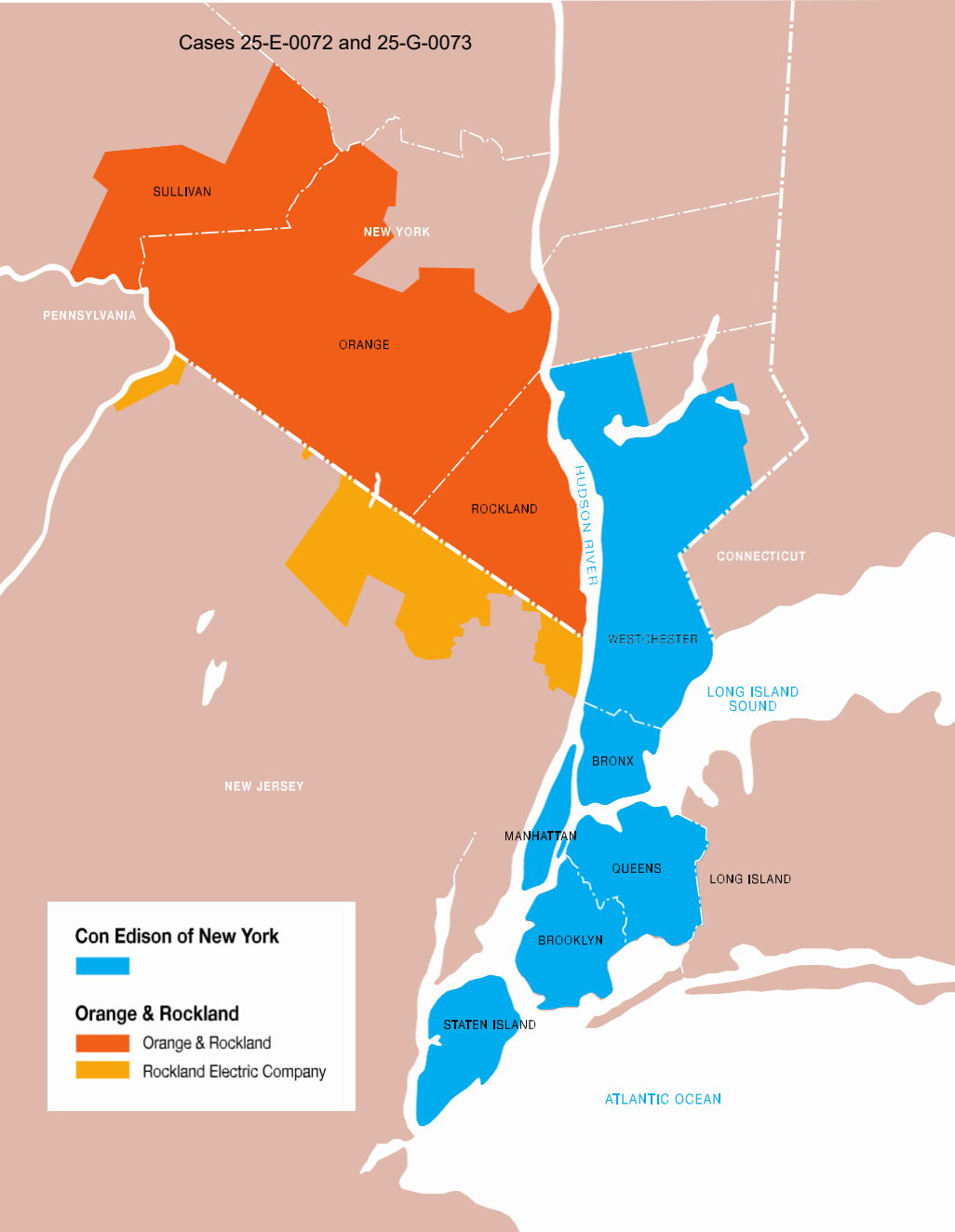
2024 Total Assets: \$71 billion^(a)



- a. As of December 31, 2024.
- b. Con Edison's issuer ratings and the senior unsecured ratings of CECONY and O&R and outlook shown in order of Moody's / S&P Global Ratings (S&P) / Fitch. Ratings are not a recommendation to buy, sell or hold securities and may be subject to revision or withdrawal at any time.
- c. CECONY delivers electricity to approximately 3.7 million customers, gas to approximately 1.1 million customers and steam to approximately 1,520 customers.
- d. O&R delivers electricity to approximately 0.3 million customers and gas to over 0.1 million customers.

We Deliver Electricity, Gas and Steam

- CECONY delivers **electricity** to approximately 3.7 million customers, **gas** to approximately 1.1 million customers and **steam** to approximately 1,520 customers.
- O&R delivers **electricity** to approximately 0.3 million customers and **gas** to approximately 0.1 million customers.
- CECONY operates the largest **steam** system in the U.S.
- Con Edison Transmission brings clean energy to customers in the Northeast.





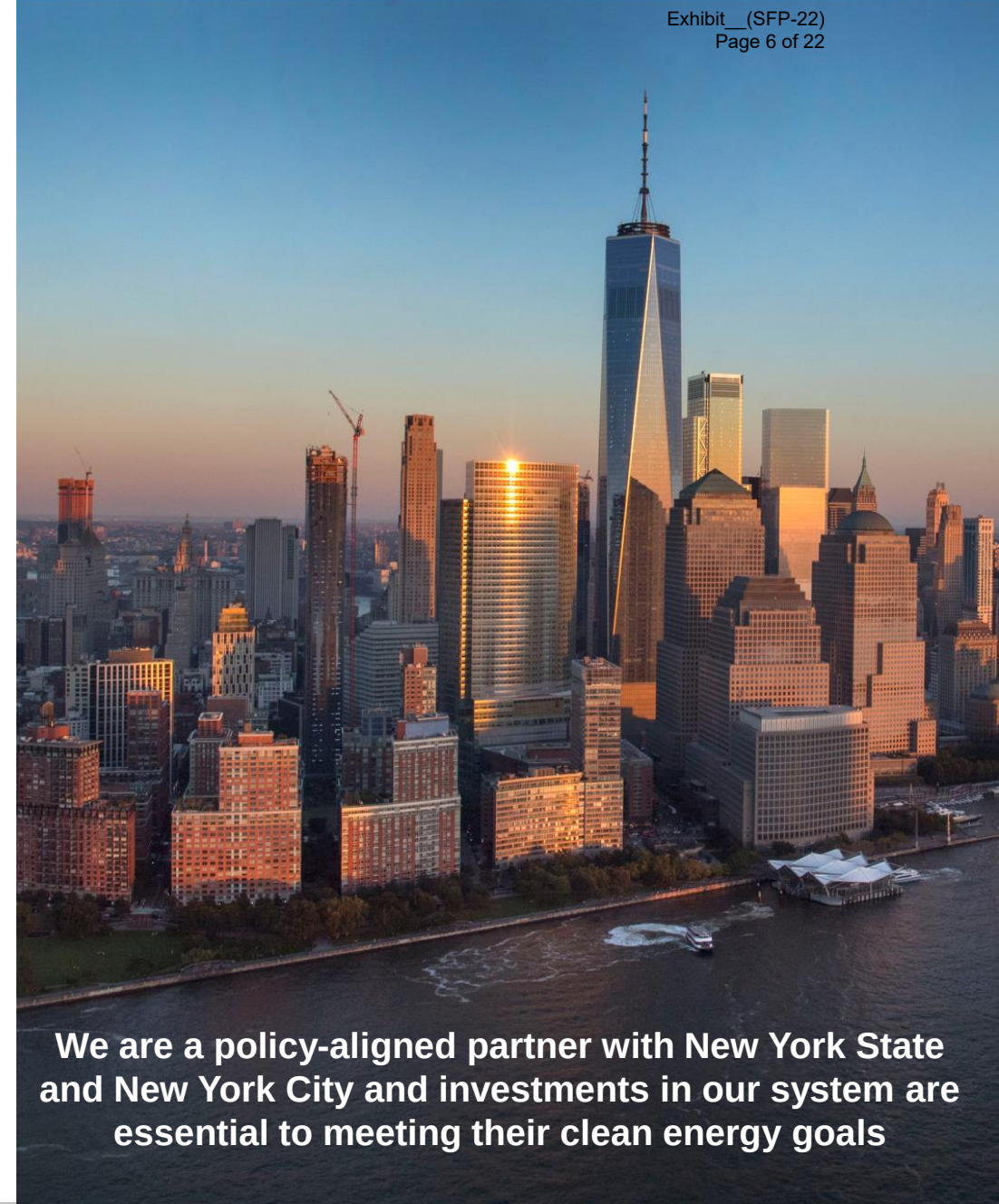
What We Value

- **Safety** of our employees and our customers
- **Operational excellence** throughout our systems
- Delivering the best possible **customer experience**
- Supporting **diversity, equity, and inclusion** to build a foundation for a culture that guides employee interaction and fosters respect
- Providing **value** to our shareholders and customers

Our Story

Con Edison is focused on building and maintaining safe and reliable regulated energy infrastructure to support New York State's ambitious clean energy goals

- **Long-term value creation for shareholders**
 - Delivered on five-year EPS CAGR target initiated in 2019
 - Achieved 51st year of consecutive dividend increases
 - Fully regulated business model
 - Transparent regulatory process in New York with revenue predictability
- **Future growth opportunities**
 - \$38 billion in capital investments forecasted from 2025 - 2029
 - Forecasted 8.2% annual utility rate base growth target from 2025 - 2029
 - Growth financed through a simplified capital structure with no long-term holding company debt
- **Industry-leading safe and reliable service**
 - Nation-leading electric system reliability
 - Incorporating science-based resilience into future build and design of our underground and overhead electric transmission and distribution systems
 - Industry leaders in monitoring our gas system

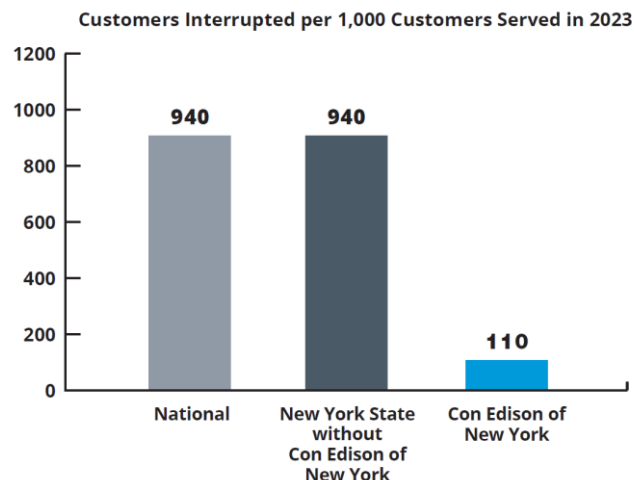


We are a policy-aligned partner with New York State and New York City and investments in our system are essential to meeting their clean energy goals

Setting Industry Standards for Safety, Operational Excellence and the Customer Experience

World Class Reliability

- CECONY's service is about 9 times more reliable than the U.S. average



- O&R won PA Consulting 2024 ReliabilityOne® Award for Northeast Region Suburban service area

Resilient Build and Design

- ~72% of CECONY's electric T&D system is underground
- Over 1.2 million weather related customer outages have been avoided as a result of the resilience investments
Con Edison continues to make post Sandy

Safety

- CECONY pioneered state of the art natural gas detectors with 70% penetration in our system
- CECONY's monthly leak surveys on its entire gas distribution system exceeds the regulatory requirement of annual surveys in business districts
- Industry leading leak repair schedules enhances safety and reduces methane emissions

Customer Focused

- CECONY #1 in J.D. Power's 2024 Electric Utility Business Customer Satisfaction Study for large electric utilities in the East
- Our Energy Affordability Programs aim to keep energy affordable for vulnerable customers, targeting utility costs to 6% of average annual income
- In 2024, CECONY supported more than 352,000 customers through energy efficiency programs

Meeting Load Growth and Customer Demand for Electrification

Investments in substations and transmission essential to meet customer needs

- Progress on key infrastructure projects to support clean energy sources and our customers' growing electrification needs
 - **Brooklyn Clean Energy Hub** targeting in-service date of December 2027
 - **Idlewild Substation** on track to support the electrification of JFK airport and MTA fleets with a target in-service date in 2028
 - Targeting in-service dates in 2025 for the Goethals to Fox Hills and Greenwood to Gowanus **transmission projects**
 - **Eastern Queens** and **Gateway Substations** are targeting in-service dates in 2028

Supporting our customers' clean heating needs, new tech adoption

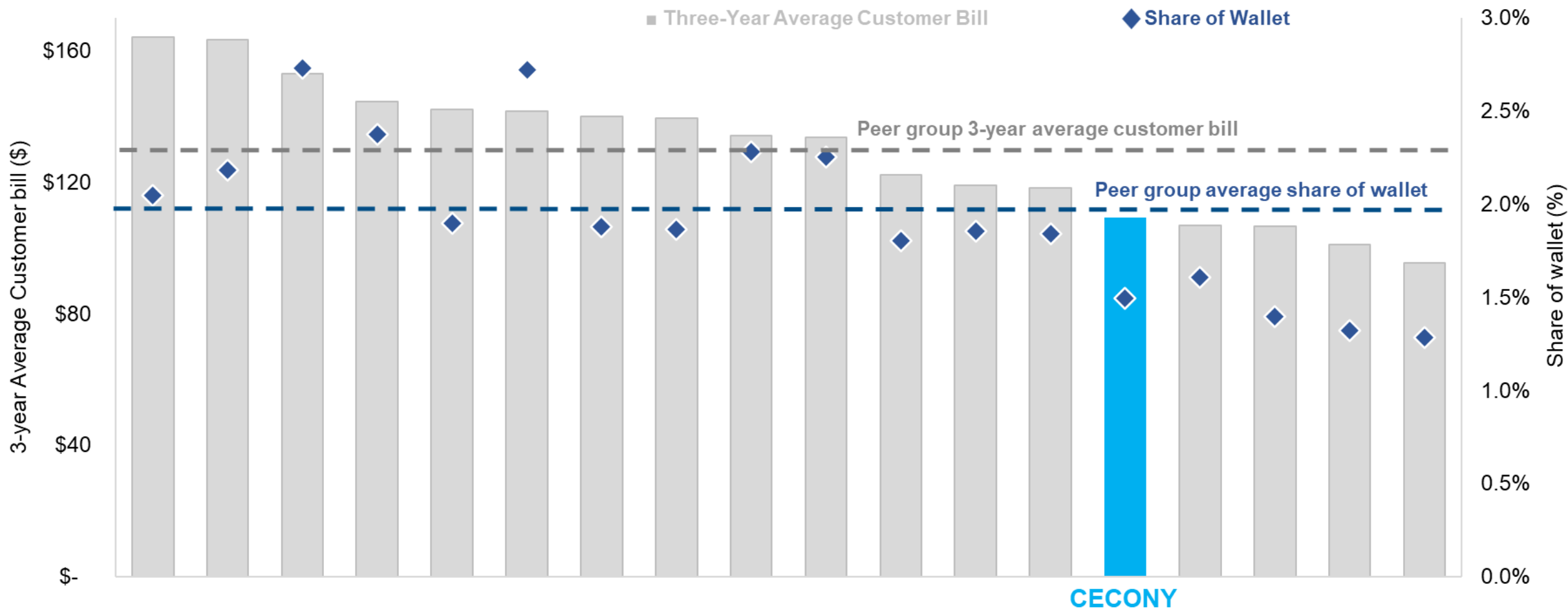
- CECONY and O&R have supported **14,868 heat pump installations in 2024**
 - There was a 77% increase in the installation of heat pumps across the service territory from Q3 to Q4 2024
- In 2024, **over \$183 million** was been invested throughout CECONY and O&R's service territory **to support Clean Heat Programs**

Meeting our customers' demand for EV infrastructure

- More than **90,000 light-duty Electric Vehicles** registered in the CECONY service area, with 2024 seeing a 36% increase
- Since the program's inception, CECONY and O&R have paid out over \$108 million in incentives under the PowerReady program, which has helped support the installation of over **12,493 EV charging plugs in our service territory**
- Of the charging plugs installed as of December 31, 2024 in CECONY and O&R's service territories, **4,934 EV chargers are in disadvantaged communities** and **3,361 are publicly accessible**
- As of December 31, 2024, **27,237 customers** of CECONY and O&R have enrolled in the company's **Residential Management Charging Program**

Customer Affordability

CECONY electric customer bills are lower than our proxy peer average on both a total bill and share of wallet basis



Source: S&P Market Intelligence, EIA. Three-year (2021 - 2023) average customer bills are annualized full-service residential bills. Share of wallet calculated as annual bill over median household income.

Supporting Low-income Customers

Approximately 466,000 CECONY and O&R customers, or 14% of the customer base, receive public assistance

- Customers enrolled in CECONY and O&R's Energy Affordability Programs (EAP) receive bill discounts aimed at reducing energy burden to 6% of wallet
- Customer outreach efforts encourage enrollment into the EAP
- At the end of 2024, approximately 14% of residential customers across CECONY's service territory were in the EAP
- Over the course of 2024, the CECONY EAP provided \$311 million in discounts to help make bills more affordable for our most vulnerable customers representing a 17% increase over 2023

You may qualify for a discount on your energy bill.

If you receive benefits from any of these government assistance programs, you may be eligible for a discount on your energy bill:

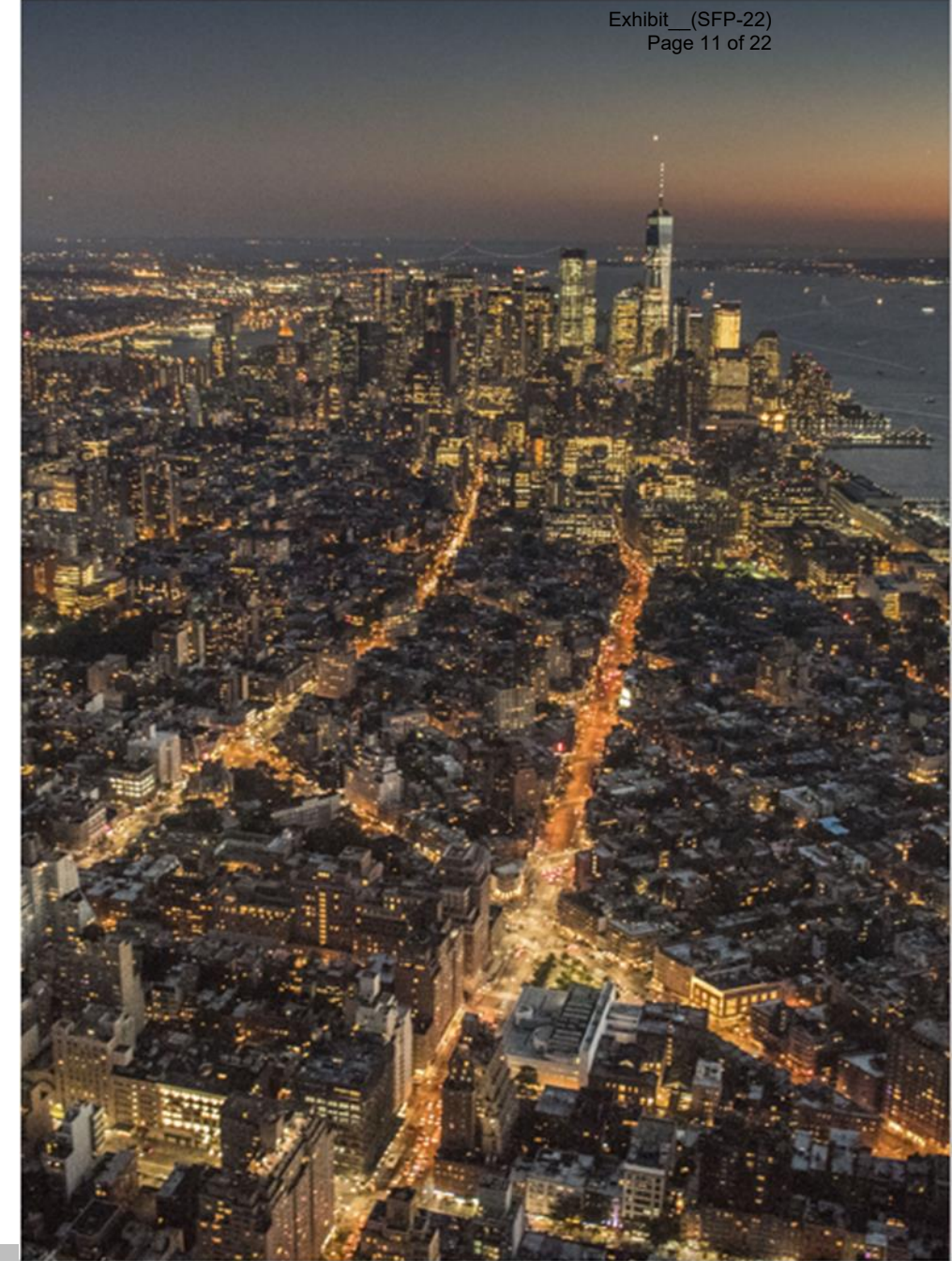
- ✓ Medicaid
- ✓ Federal Public Housing Assistance
- ✓ Veterans Disability
- ✓ VA Survivors Pension

Visit conEd.com/EAP to apply.

conEdison

Utility Regulation in New York State

- **Revenue predictability**
 - Revenue decoupling mechanisms in place for CECONY and O&R electric and gas
 - Weather normalization adjustment in CECONY steam rate plan effective November 1, 2023
- **Formulaic approach** to return on equity
 - 2/3 Discounted Cash Flow Model
 - 1/3 Capital Asset Pricing Model
- **Reduced regulatory lag**
 - **Fully-forecasted** rate case test year
 - **Timely recovery** of most fuel and commodity costs
 - **True-ups** (reconciliations) for major costs including pensions, environmental costs, property taxes (partial), and variable-rate debt



Rate Case Filing Status

The Company filed new rate plans for CECONY Electric and Gas in January 2025

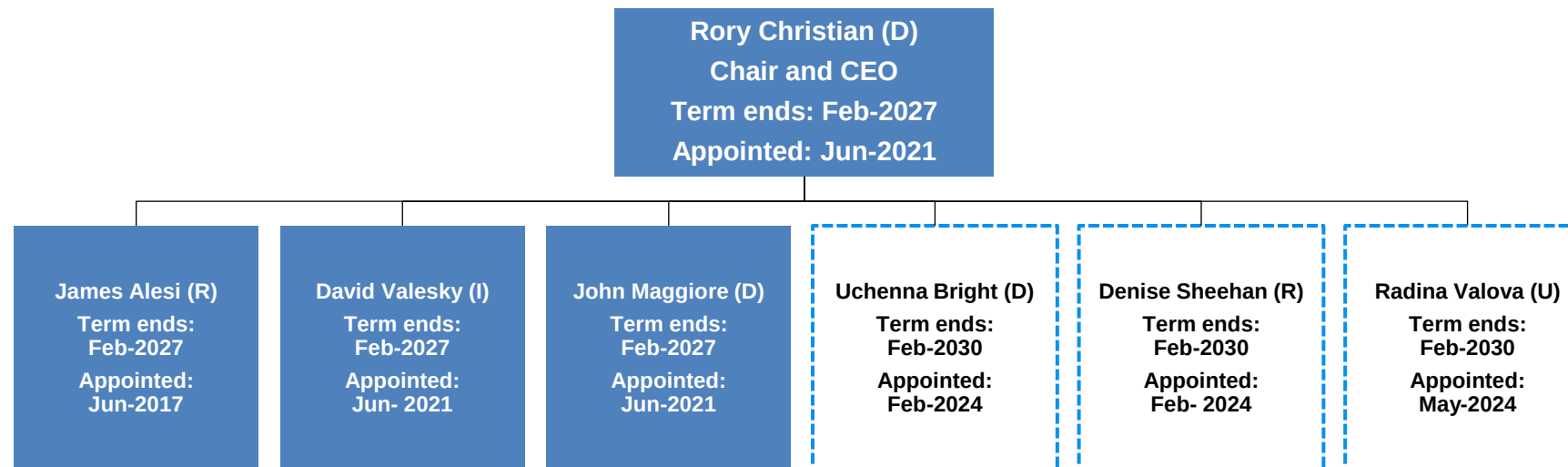
		Regulator	Rate Base ^(a) (\$ millions)	Current Plan Start Date	Current Plan End Date	Status
CECONY	Electric	New York State Public Service Commission (NYSPSC)	\$29,362	Jan 2023	Dec 2025	Rate case filed January 2025
	Gas	NYSPSC	11,063	Jan 2023	Dec 2025	
	Steam	NYSPSC	1,848	Nov 2023	Oct 2026	
O&R	O&R - NY Electric	NYSPSC	1,293	Jan 2025	Dec 2027	Joint Proposal (JP) approved November 2023
	O&R - NY Gas	NYSPSC	720	Jan 2025	Dec 2027	
	Rockland Electric	New Jersey Board of Public Utilities (NJBPU)	263	Jan 2022	N/A	Stipulation of settlement approved December 2021

(a) Average rate base at January 1, 2025

(b) New rates are subject to NYSPSC approval with a make-whole provision

New York State Public Service Commission

Commissioners



NYSPSC STAFF



- Fiscal Year 2024 enacted budget: \$317.5 million
- Staffing: 528 employees
- Regulates: Electric, Gas, Water, Telecom, Cable, and Steam

Sources:

[Directory of DPS Offices | Department of Public Service \(ny.gov\)](#)[Department of Public Service Annual Reports | Department of Public Service \(ny.gov\)](#)

S&P Capital IQ – Research – New York Public Service Commission

New York State's Return on Equity Formula

The NYSPSC has a formulaic approach to determining ROE for every utility in the state

Discounted Cash Flow Model (2/3 weighting)

- The Staff employs a dividend discount model for the proxy group and takes the average result

$$\text{Value} = \frac{D_1}{(1+R)} + \frac{D_2}{(1+R)^2} + \frac{D_3}{(1+R)^3} + \dots + \frac{D_{200}}{(1+R)^{200}}$$

- Solving for an equity return, R, where:
 - D_1 through D_4 = Value Line dividend per share estimates
 - D_5 through D_{200} = Dividend per share based on growth rate calculated using Value Line estimates of future return on equity, earnings retention, share issuances and market to book value
 - Value = average of prior three monthly high and low proxy group stock prices

Capital Asset Pricing Model (1/3 weighting)

- Staff solves for an equity return, R

$$R = R_{UST} + (R_{MKT} - R_{UST}) * \beta$$

- Where:
 - R_{UST} is the risk-free return: average of prior three monthly yields for 10-year and 30-year Treasuries
 - R_{MKT} is the market rate of return: BofA Merrill Lynch's monthly *Quantitative Profiles* report (three month average)
 - β is the risk of the individual share relative to that of the market: Value Line estimate for proxy group

Summary of CECONY Electric & Gas Rate Filings

In January 2025, CECONY submitted to the New York Public Service Commission (NYSPSC) rate cases in support of new electric and gas rates to become effective January 1, 2026

Proposed Return on Equity and Equity Ratio

Return on equity.....10.10%

Equity ratio.....48%

Proposed Rate Changes and Capital Investments

	Electric Case number 25-E-0072				Gas Case number 25-G-0073			
(\$ in millions)	Rate Change	Average Rate Base	Capital Investments	Total Bill Impact	Rate Change	Average Rate Base	Capital Investments	Total Bill Impact
Rate Year 1: 2026	\$1,612	\$33,750	\$5,814	11%	\$441	\$11,830	\$1,288	13%
Rate Year 2: 2027	932	36,660	5,905	6%	266	12,460	1,253	7%
Rate Year 3: 2028	880	41,380	6,139	5%	166	13,055	1,221	4%
Annual levelized rate increase	\$1,263			9%	\$337			10%

Summary

- True-up of costs of pension and other post employment benefits (OPEBs), environmental remediation, and storms (electric)
- Requesting full reconciliation of property taxes, municipal infrastructure support costs, uncollectibles, late payment charges, and long-term debt cost rate
- Requesting to reduce certain gas asset service lives by 5 years in alignment with the gas transition that is expected to result from Climate Leadership & Community Protection Act (CLCPA) implementation
- Continuing the revenue decoupling mechanism for electric and gas service
- Continuing provision for recovery of cost of purchased power, gas, and fuel
- Continuation of earning opportunities from Earnings Adjustment Mechanisms (EAMs) for meeting energy efficiency goals and other potential incentives

Additional rate plan information: [Rate Plan Information | Consolidated Edison, Inc.](#)

Breakdown of CECONY Electric and Gas 2023 - 2025 Current Case Capital Investment vs 2026-2028 Rate Filing Request

The proposed electric and gas rate plans will support economic growth and development in New York City and Westchester county by investing more than \$21 billion over three years.

The cumulative capital investment request is 83% above current approved amounts.

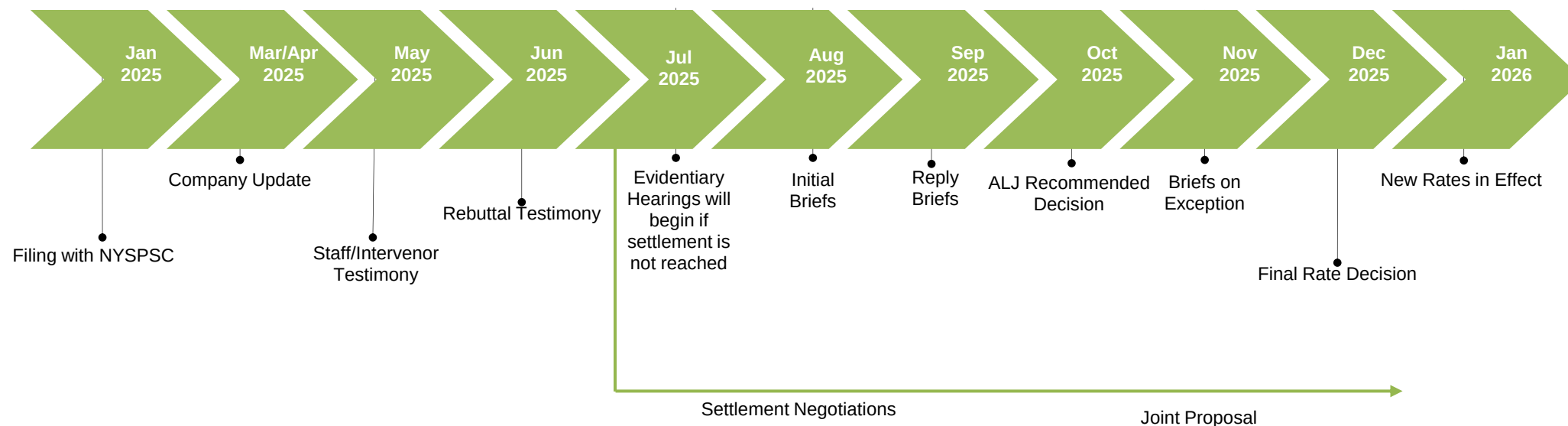
CECONY (\$ millions)	3-Year (Current Case 2023-2025)	3-Year (Request 2026-2028)
Gas		
Gas Operations	\$2,520	\$2,784
Interference - Gas	399	\$247
Total Gas	\$2,919	\$3,031
Common		
Information Technology	\$1,430	\$2,864
Facilities, Equipment and Security	703	1,679
Total Common^(a)	\$2,133	\$4,543
Electric		
Risk Reduction	\$1,407	\$2,143
System Expansion	909	1,991
Replacement	1,438	1,981
New Substations	175	1,522
New Business	629	931
Eastern Queens / Idlewild	-	857
Distribution - Transformers	415	801
Resiliency	-	645
Substation - Transformer Purchases	263	508
Substation - Gowanus Expansion	-	450
Brooklyn Energy Hub	-	426
Proactive Planning	-	361
Other	1,521	1,430
Total Electric	\$6,757	\$14,046
Total Electric and Gas	\$11,809	\$21,619

(a) Common plant allocation is 83% for electric and 17% for gas
Additional rate plan information: [Rate Plan Information](#) | [Consolidated Edison, Inc.](#)

Estimated Timeline for CECONY Electric and Gas Rate Case

The next milestone in the rate process will be when NYSPSC Staff releases their testimony in May

Typical timeline for rate setting process:



Additional rate plan information: [Rate Plan Information | Consolidated Edison, Inc.](#)

NYSPSC's ROE Decisions from 2010 -2024

Year	Month	Company	ROE	Term	Year	Month	Company	ROE	Term
2010	Mar	CECONY Electric	10.15%	3 years	2017	Jan	CECONY Electric and Gas	9.00%	3 years
	Jun	Central Hudson Electric and Gas	10.00%	3 years		Apr	National Fuel Gas	8.70%	1 year
	Sep	CECONY Gas and Steam	9.60%	3 years	2018	Mar	Niagara Mohawk Electric and Gas	9.00%	3 years
	Sep	Rochester G&E ("RGE") / NYSEG	10.00%	40 months		Jun	Central Hudson Electric and Gas	8.80%	3 years
2011	Jan	Niagara Mohawk Electric	9.30%	2 years	2019	Mar	O&R Electric/Gas	9.00%	3 years
	Jun	O&R Electric	9.20%	1 year	2020	Jan	CECONY Electric and Gas	8.80%	3 years
2012	Jun	O&R Electric (9.40%, 9.50% an 9.60% in year 1, 2 and 3, respectively)	9.50%	3 years		Nov	RGE / NYSEG	8.80%	3 years
2013	Mar	Niagara Mohawk Electric and Gas	9.30%	3 years	2021	May	Corning Gas	8.80%	1 year
2014	Feb	CECONY Gas and Steam	9.30%	3 years		Aug	KeySpan Gas	8.80%	3 years
	Feb	CECONY Electric	9.20%	2 years		Nov	Central Hudson Electric and Gas	9.00%	3 years
	May	National Fuel Gas	9.10%	2 years	2022	Jan	Niagara Mohawk Electric and Gas	9.00%	3 years
2015	Jun	Central Hudson Electric and Gas	9.00%	3 years		Apr	O&R Electric and Gas	9.20%	3 years
	Jun	CECONY Electric extension	9.00%	3 rd year		Jun	Corning Gas	9.25%	3 years
	Oct	O&R Electric/Gas	9.00%	2 / 3 years	2023	Jul	CECONY Electric and Gas	9.25%	3 years
2016	Jun	RGE / NYSEG	9.00%	3 years		Oct	RGE / NYSEG	9.20%	3 years
	Dec	KeySpan Gas	9.00%	3 years		Nov	CECONY Steam	9.25%	3 years
					2024 ^(a)	Jul	Central Hudson Electric and Gas	9.50%	1 year
						Aug	KeySpan Gas	9.35%	3 years
						Dec	National Fuel Gas	9.70%	3 years

(a) O&R Electric and Gas Joint Proposal – ROE 9.75%, Term 3 years is subject to approval by the New York State Public Service Commission

Source: S&P Capital IQ – Research – Past Rate Cases

Summary of O&R Electric & Gas Joint Proposal

In November 2024, O&R, the New York State Department of Public Service and other parties entered into a joint proposal for new electric and gas rate plans for the three-year period January 2025 through December 2027, which is subject to New York State Public Service Commission approval

Proposed Return on Equity and Equity Ratio

Return on equity.....9.75%

Equity ratio.....48%

Proposed Rate Changes and Capital Investments

(\$ in millions)	Electric Case number 24-E-0060			Gas Case number 24-G-0061		
	Rate Change ^(a)	Average Rate Base	Capital Investments	Rate Change ^(a)	Average Rate Base	Capital Investments
Rate Year 1: 2025	\$(13)	\$1,293	\$311	\$4	\$720	\$121
Rate Year 2: 2026	25	1,393	349	18	791	127
Rate Year 3: 2027	44	1,646	315	16	863	110

Summary

- Electric and gas capital investment of \$975 million and \$358 million over three years, respectively
- True up of costs for pension and OPEBs, environmental remediation, major storms, and low-income bill credits
- Partial true-up of property taxes, uncollectibles, and late payment charges
- Continuation of decoupling of electric and gas revenues from electric and gas consumption
- Continuation of earnings opportunities from Earnings Adjustment Mechanisms (EAMs) and other positive incentives

(a) The Joint Proposal recommends that the electric base rate changes will be implemented with no change in 2025 and annual increases of approximately \$17.7 million in each of 2026 and 2027. The Joint Proposal recommends that the gas base rate increase will be implemented with annual increases of approximately \$10.4 million in each of 2025, 2026 and 2027.

Additional rate plan information: [Rate Plan Information | Consolidated Edison, Inc.](#)

O&R Electric & Gas Rate Case Filing Comparison^(a)

(\$ in millions)	Electric				Gas			
	Case number 24-E-0060				Case number 24-G-0061			
Rate Year 1: Jan 2025 - Dec 2025	Jan 2024 Filing	Apr 2024 Update	May 2024 Staff/Intervenor Testimony	Nov 2024 Joint Proposal	Jan 2024 Filing	Apr 2024 Update	May 2024 Staff/Intervenor Testimony	Nov 2024 Joint Proposal
New infrastructure investment, including return, depreciation and property taxes	\$17	\$14	\$11	\$13	\$6	\$7	\$7	\$10
ROE/Financing	15	15	7	8	7	8	4	4
Depreciation changes due to proposed rates	2	2	(1)	—	9	10	1	—
Sales revenue change	(9)	(9)	(15)	(13)	4	5	4	4
Operations & maintenance expenses	8	8	(8)	(1)	(5)	(5)	(10)	(6)
Regulatory amortization	(10)	(11)	(12)	(11)	(8)	(8)	(8)	(8)
Other revenues	(7)	(7)	(7)	(7)	—	—	—	—
Income taxes	2	(1)	(2)	(2)	1	—	(1)	—
Total Rate Increase (Decrease)	\$18	\$11	\$(27)	\$(13)	\$14	\$17	\$(3)	\$4
Rate Base	\$1,324	\$1,305	\$1,286	\$1,293	\$695	\$711	\$707	\$720
ROE	10.25%	10.25%	9.50%	9.75%	10.25%	10.25%	9.50%	9.75%
Equity Ratio	50%	50%	48%	48%	50%	50%	48%	48%

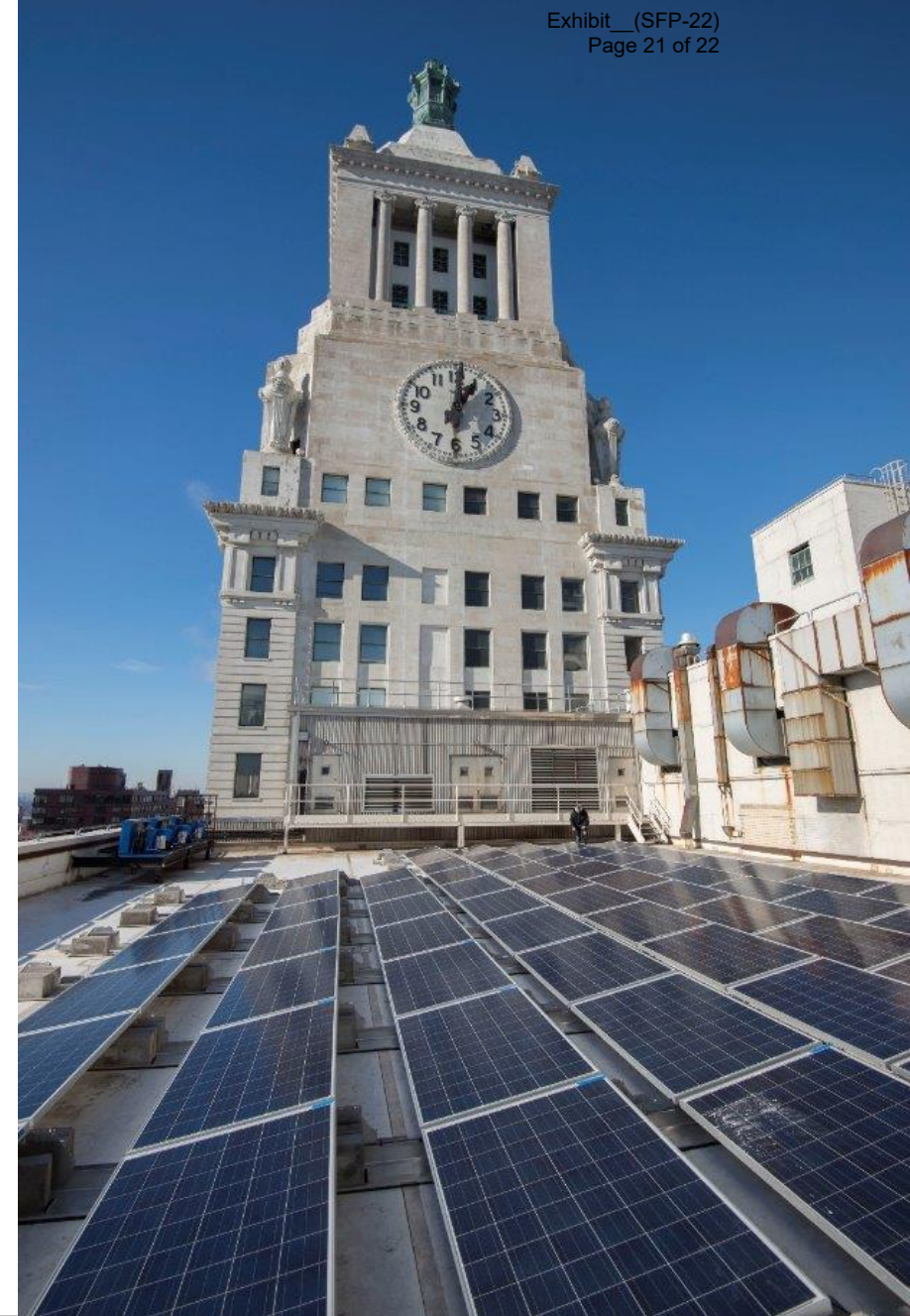
(a) The Joint Proposal is subject to approval by the NYSPSC

Additional rate plan information: [Rate Plan Information | Consolidated Edison, Inc.](#)

Investment Thesis

Con Edison's track record makes it a bellwether holding for any equity or debt investor seeking a steady and reliable investment that can endure our changing and challenging times.

- **Sound governance** and management practices
- Steady investments in **grid resiliency**
- **Science-based approach** to climate change vulnerabilities
- Committed to a **clean energy economy** that is in step with our regulators
- **Revenue certainty** through revenue decoupling and weather normalization at our New York utilities
- **Transparent** New York regulatory environment
- **Responsible** financial management





Consolidated Edison, Inc.

Investor Update
March 10 - 14, 2025



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New York Public Service Commission

General Information

Contact Information	Empire State Plaza, Agency Bldg. 3 Albany, NY 12223-1350 (518) 474-7080 http://www.dps.ny.gov
Number of Commissioners	7 of 7
Selection Method	Commissioners: Gubernatorial appointment, Senate confirmation Chairperson: Appointed by and serves at the pleasure of the Governor
Term of Office	Commissioners: 6 years Chairperson: Indefinite
Chairperson of Commission	Rory Christian
Deputy Chairperson of Commission	NA
Governor	Kathleen "Kathy" Hochul (D)
Service Regulated	Cable television companies, Electric utilities, Gas utilities, Radio common carriers, Securities companies, Steam utilities, Telecommunications utilities, Water utilities
Commission Ranking	Average/2 (12/3/2020)
Commission Budget	\$90 million
Commissioner Salaries	Commissioners: \$109,800 Chairperson: \$127,000
Size of Commission Staff	520
Company Name, Abbreviated	New York Public Service Commission's Rate Case History
Research Notes	RRA Articles
RRA Contact	Lisa Fontanella

Commissioners

PERSON'S NAME	PARTY ABBREVIATION	DATE ROLE BEGAN	TERM ENDS
Rory Christian Chairman	D	06/2021	02/2027
Diane Burman	R	07/2013	02/2024
James Alesi	R	06/2017	02/2027
John Howard	D	06/2019	02/2024
Tracey Edwards	D	06/2019	02/2024
David Valesky	I	06/2021	02/2027
John Maggiore	D	06/2021	02/2027

RRA Ranking History

New York Public Service Commission

DATE OF RANKING CHANGE	COMMISSION RANKING
12/3/2020	Average / 2
5/11/2017	Average / 1
4/16/2013	Average / 2
10/24/2007	Average / 3
10/1/2002	Average / 2
7/10/1996	Average / 3
10/19/1994	Average / 2
3/24/1987	Average / 1
7/2/1982	Average / 3

RRA maintains three principal rating categories for regulatory climates: Above Average, Average, and Below Average. Within the principal rating categories, the numbers 1, 2, and 3 indicate relative position. The designation 1 indicates a stronger rating; 2, a mid-range rating; and, 3, a weaker rating. The evaluations are assigned from an investor perspective and indicate the relative regulatory risk associated with the ownership of securities issued by the jurisdiction's utilities. The evaluation reflects our assessment of the probable level and quality of the earnings to be realized by the state's utilities as a result of regulatory, legislative, and court actions.

Miscellaneous Issues

Gubernatorial election – Incumbent Gov. Andrew Cuomo, a Democrat, was re-elected on Nov. 6, 2018, to a third term commencing January 2019.

Commission membership — No more than three commissioners may be from the same party. Under state law, PSC membership may be expanded from five to seven and with the recent confirmation of new commissioners, the commission was effectively expanded by the governor to seven in June 2021. Specifically, state law allows for PSC membership to be expanded to seven, with no more than four members of a seven-member commission permitted to be from the same political party. In accordance with the law, the term of any additional commissioners are to be six years from February of the calendar year in which the commissioner is appointed.

Services regulated — Investor- and municipally-owned electric and gas utilities; investor-owned water companies; local telephone service providers; steam utilities; cable television providers; and, radio-common carriers. In addition, the PSC has oversight of securities issuances by regulated operating utilities.

Staff Contacts

James Denn, Director, Public Affairs (518) 474-7080

(Section updated 6/11/2021)

RRA Evaluation

The New York regulatory environment is somewhat balanced from an investor viewpoint. While the PSC, in rate cases decided in recent years, has authorized electric and gas ROEs that are lower than the nationwide industry averages, for the most part, these decisions were based on multi-year settlements that incorporated increasing rate bases over the term of the plans, revenue decoupling mechanisms and deferral accounting for increases in such items as net plant, pension expense, and labor costs. Additionally, other factors in the rate-setting process, including the incorporation of fully forecasted test periods improve the utilities' opportunity to earn the authorized ROE. Regarding industry restructuring, the electric utilities, for the most part, divested their generation assets, and the companies are protected from commodity price risk, given their use of automatic mechanisms that allow

New York Public Service Commission

timely recovery of power procurement costs from provider-of-last-resort customers. While the electric market has been restructured, the PSC, in an effort to preserve the environmental attributes of zero-emission nuclear-powered generating facilities operating within the state, has implemented a program that supports in-state nuclear power by creating a zero-emissions credit framework, to provide financial support for the units. The PSC has embarked upon an investigation, "Reforming the Energy Vision", or REV, addressing how the current regulatory paradigm is to be modified to enable electric utilities to coordinate and manage distributed energy resources. Implementation of paradigm changes has resulted in incentive metrics for the achievement of operational and performance goals. With regard to mergers, the PSC was critical of certain merger proposals (National Grid/KeySpan and Iberdrola/Energy East); although the commission ultimately approved these transactions, significant ring-fencing measures were imposed. In an August 2020 review of the regulatory rankings, RRA listed New York as a state to watch, citing the heightened politicization of certain energy regulatory matters in the state. Following a subsequent review, on Dec. 3, 2020, RRA lowered the ranking to Average/2. (Section updated 12/3/20)

Commission Staff

There are about 520 positions authorized for the fiscal year April 2018 – March 2019. The Chairman appoints directors, deputies, lawyers, administrative law judges, and special assistants, with all others selected through, and protected by, the Civil Service System. (Section updated 8/31/18)

Consumer Interest

Represented by the PSC staff, the New York Department of State's Utility Intervention Unit, and the State Attorney General. Other active groups include Multiple Intervenors — a consortium of industrial customers, the Public Utility Law Project, the American Association of Retired Persons, and various environmental advocacy groups. On Oct. 30, Gov. Cuomo announced the creation of a statewide special counsel for ratepayer protection that will participate as a party in matters before the PSC. The special counsel is permitted to make presentations to the PSC at its monthly meetings, file reports to the commission regarding the operations of the utilities, hold forums with consumers and stakeholders in the community, and make recommendations regarding necessary legislation. To fill the role of special counsel, Cuomo appointed Rory Lancman. Duties the governor outlined for Lancman in his role as special counsel include reviewing the performance of the state's electric, gas, water and telecommunications companies; determining whether the utilities are making required investments; reviewing whether utilities are "responding adequately" to residential and commercial consumers; and reviewing whether utilities are complying with renewable energy goals and standards. (Section updated 12/2/20)

Rate Case Timing/Interim Procedures

In traditional rate proceedings, the PSC generally issues a decision within 11 months of a company's initial filing. Interim or emergency rate hikes are permitted only if a utility demonstrates that its ability to raise additional capital and to maintain service would be impaired in the absence of the increase. Interim or emergency rate hikes are seldom requested. (Section updated 4/15/21)

Rate Base and Test Period

In a traditional rate case, the PSC relies on an average original-cost rate base for a fully forecasted test period. Filings must include operating results for a historical 12-month period ending not more than 150 days prior to the filing date. The company must provide forecasted results for the first 12-month period that the rates will be in effect, plus an appropriate "verifiable link" between the two periods. In the context of adopting multi-year rate plans, the PSC has allowed rate base to be updated each year.

With regard to construction-work-in-progress, or CWIP, in the 1980s, during the nuclear construction cycle, the PSC permitted a cash return on CWIP to the extent a utility's cash flow metrics were projected to be below certain standards. However, now that the regulated utilities, for the most part, no longer own generating facilities, the current construction projects, e.g., distribution facilities, are significantly less costly, and the lead time to commercial operation of these projects is considerably shorter. As a result, the CWIP issue is less of a concern than in the past. (Section updated 4/15/21)

Return on Equity

We note that in recent years, in both fully litigated and settled cases, the PSC has authorized ROEs that are among the lowest in the nation. In traditional fully litigated rate cases, the PSC relies on a combination of the discounted cash flow, or DCF, approach and the capital asset pricing model, or CAPM, to set the authorized ROE, with a weighting of two-thirds DCF and one-third CAPM. In the context of orders predicated on multi-year rate settlements, the PSC has generally authorized ROEs that included a slight

New York Public Service Commission

premium — typically about 30 basis points — to account for investor risk associated with the multi-year plan. These plans have typically included ROE-based company/ratepayer revenue sharing mechanisms for earnings in excess of the authorized ROE (see the Alternative Regulation section). Recent multi-year plans have provided a specific authorized return that is below the initial threshold for sharing.

On Nov. 20, 2020, the PSC adopted, with modifications, a three-year rate plan settlement for New York State Electric & Gas Corp., or NYSEG, and Rochester Gas & Electric Corp., or RG&E, covering April 17, 2020, through April 30, 2023. The rate plans incorporate an 8.8% ROE for the company's electric and gas operations. NYSEG and RG&E are subsidiaries of Avangrid Inc. The ultimate parent of NYSEG and RG&E is Iberdrola SA.

On Jan. 16, 2020, Consolidated Edison Co. of New York, Inc. or CECONY, a subsidiary of Consolidated Edison, was authorized an 8.8% ROE for its electric and gas operations, following adoption of a multi-year rate plan settlement. The company's steam operations are authorized a 9.3% ROE, as established in a 2014 rate case.

On March 14, 2019, the PSC adopted a multi-year rate plan settlement for Orange and Rockland Utilities, Inc., or ORU, covering the period Jan. 1, 2019, through Dec. 31, 2021, for the company's electric and gas distribution rates. The plans incorporate a 9% ROE. ORU is a subsidiary of Consolidated Edison.

On June 14, 2018, Central Hudson Gas & Electric Corp., a subsidiary of CH Energy Group, was authorized an 8.8% ROE for both its electric and gas operations as part of a three-year rate settlement.

On March 15, 2018, the PSC adopted a three-year electric and gas rate plan for Niagara Mohawk Power Corp., or NMP, following a joint proposal that specified a 9% ROE. NMP is a subsidiary of National Grid USA.

On April 20, 2017, the PSC authorized National Fuel Gas Distribution Corp., or NFGD, an 8.7% ROE. While most decisions before the PSC are not fully litigated and result in multiyear rate agreements, the parties to this case were unable to reach a settlement on a multi-year rate plan. NFGD is a subsidiary of National Fuel Gas.

On Dec. 15, 2016, the PSC adopted a multi-year gas joint proposal for Brooklyn Union Gas Co., or BUG, and KeySpan Gas East Corp., or KGE, providing for three year rate plans covering the period Jan. 1, 2017 through Dec. 31, 2019. The rate plans incorporate 9% ROEs. BUG and KGE are doing business as National Grid NY, but are referred to as KeySpan Energy Delivery New York and KeySpan Energy Delivery Long Island, respectively. Both companies are subsidiaries of National Grid USA. (Section updated 12/2/20)

Accounting

Historically, utilities were permitted to recover from ratepayers, on a current basis, the costs associated with the eventual decommissioning of nuclear facilities, and the amounts collected were placed in external trusts. However, as part of their electric restructuring initiatives, Niagara Mohawk Power, or NMP, New York State Electric & Gas, or NYSEG, Rochester Gas & Electric, or RG&E, and Central Hudson Gas & Electric, or CHG&E, sold their ownership interests in the Nine Mile Point Nuclear Station to Constellation Energy, and Consolidated Edison of New York, or CECONY sold its interest in Indian Point units 1 and 2 to Entergy. Additionally, RG&E sold its Ginna nuclear plant to Constellation Energy. All of the transactions included the transfer of the existing decommissioning liability and related trust funds to the purchasers.

The PSC has a history of using deferrals and other accounting measures in rate cases in order to mitigate the bill impact of approved revenue requirement increases, and to allow the utilities' to maintain earnings when faced with increases in certain expenses during the course of a multi-year rate plan. The PSC generally applies the following criteria to determine whether deferred accounting treatment is appropriate: (1) the expense is incremental to the amount allowed in current rates; (2) the incremental amount is material to earnings, and extraordinary in nature; and, (3), the utility is not over-earning. Specifically, the PSC has allowed deferrals and true-up mechanisms for: pensions; other post-employment benefits; property taxes; environmental site investigation and remediation costs; long-term debt cost rate; major storm cost reserve; non-officer management variable pay; workers compensation insurance; and, electric net utility plant — downward-only.

During 2009 and 2010, the PSC required several of the utilities to implement "austerity adjustments," essentially imputing yet-to-be-achieved cost savings to their revenue requirements in order to recognize "extraordinary harsh economic realities" being experienced by customers.

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Both Brooklyn Union Gas and KeySpan Gas East have gas safety and reliability surcharges in place that allow for recovery of costs of incremental leak prone pipe. In addition, as per the company's rate plans adopted on Dec. 15, 2015, BUG and KGE are permitted to annually reconcile site investigation and remediation, or SIR, costs and for BUG a SIR surcharge, is to be in place beginning Jan. 1, 2018, to accommodate the variable costs associated with SIR projects in New York City. The surcharge is to be triggered if the reconciliation between the rate allowance and actual costs exceeds \$25 million, on a cumulative basis, and is to be capped at 2% of BUG's prior year aggregate revenues (Section updated 1/10/17)

Court Actions

PSC decisions may initially be appealed to the State Supreme Court or, in certain instances, to the Appellate Division of the Supreme Court. All appeals of Supreme Court decisions are made to the Appellate Division. Certain Appellate Division appeals may be taken to the Court of Appeals, the state's highest court. State Supreme Court judges are elected on partisan ballots. Members of the Appellate Division are designated by the governor. Court of Appeals judges are appointed by the governor with the advice and consent of the Senate.

On Oct. 19, 2016, several electric generators, including Dynegy and NRG Energy, and others filed a lawsuit with the U.S. District Court for the Southern District of New York protesting the nuclear subsidies approved by the PSC, as part of the state's Clean Energy Standard, or CES. The petitioners allege that the subsidies intrude on the exclusive authority of the Federal Energy Regulatory Commission over the sale of electric energy at wholesale in interstate commerce, under the Federal Power Act, or FPA, and therefore, request that the Court find the subsidies to be invalid and withdrawn from the CES order.

An appeal of the PUC's 2017 rate case order for National Fuel Gas is pending before the Appellate Division of the Supreme Court. In the appeal, National Fuel Gas alleges that the PSC has treated the company "in a different manner from its peers" and PSC's rulings on several matters, including equity ratio and earnings sharing, have deviated from standard commission policy. (Section updated 8/31/18)

Alternative Regulation**Rate plans**

The PSC has a long history of adopting multi-faceted, multi-year rate plans. Most of the major utilities are operating under plans that include earnings sharing provisions, with earnings in excess of an established ROE cap to be shared by stockholders and ratepayers, as well as the potential for penalties related to service quality and customer service. Additionally, the plans generally include expense reconciliation mechanisms that allow the utilities to defer increases in certain expenses so long as the company's earned ROE remains below specified thresholds (see the Accounting section). If a rate plan expires before the implementation of a replacement plan, the final-year provisions of the latest plan continue to apply. Generally, the PSC imputes a productivity adjustment, which typically has been calculated as 1% of total labor expenses, all employee benefits and payroll taxes. The latest plans for the New York utilities are described briefly below.

New York State Electric & Gas Corp. (NYSEG)/Rochester Gas and Electric Corp. (RG&E) — On Nov. 20, 2020, the PSC approved a modified three-year joint proposal for NYSEG and RG&E covering April 17, 2020, through April 30, 2023. Under the approved joint proposal, earnings sharing provisions are to be in place for the electric and gas operations for NYSEG and RG&E, under which actual earnings above a threshold ROE of 9%, 9.10% and 9.2% in rate-years one, two and three, respectively, are to be shared with customers. The earnings sharing mechanism in effect for rate-year three is to continue until new rates are adopted by the PSC in a subsequent proceeding. For determining earnings above the earnings sharing threshold, ROE calculations for the utilities' electric and gas businesses are to reflect the lesser of each company's actual average common equity ratio or 50%. Under the approved joint proposal, NYSEG and RG&E are permitted to implement several earnings adjustment mechanisms tied to electric and gas energy efficiency, heat pumps, beneficial electrification, distributed energy resource utilization, and electric and gas heating peak load reduction. The utilities are permitted to recover earnings adjustment mechanism incentives through a surcharge mechanism. The utilities are subject to negative revenue adjustments for failing to meet certain performance targets as well as positive revenue adjustments for exceeding certain targets.

Consolidated Edison Co. of New York, Inc., or CECONY — On Jan. 16, 2020, the PSC approved a three-year electric and gas rate plan for CECONY, covering Jan. 1, 2020, through Dec. 31, 2022. The plan includes earnings sharing provisions under which actual earnings above a threshold ROE are to be shared with customers. Specifically, incremental earnings between a 9.3% ROE and a 9.8% ROE are to be shared equally by ratepayers and shareholders; incremental earnings between a 9.8% ROE and a 10.3%

New York Public Service Commission

ROE are to be allocated 75%/25% to ratepayers and shareholders; and incremental earnings in excess of a 10.3% ROE are to be allocated 90%/10% to ratepayers and shareholders. In addition, the joint proposal permits CECONY to earn incentives for electric and gas energy efficiency and other potential incentives. The company is subject to penalties if certain performance targets related to reliability, safety and other matters are not met. The joint proposal reflects a productivity adjustment ranging from 1% to 2% over the three-year rate plan as well as an imputation for "business cost optimization" savings.

Orange and Rockland Utilities, Inc., or ORU — On March 14, 2019, ORU adopted a three-year electric and gas rate plan for ORU covering the period Jan. 1, 2019, through Dec. 31, 2021. The revenue requirement specified in the plan is based upon a 9% ROE. The approved joint proposal includes earnings-sharing provisions under which actual earnings between a 9.6% and 10.2% ROE are to be shared equally by ratepayers and shareholders. Incremental earnings between a 10.2% and 10.8% ROE are to be allocated 75% to ratepayers and 25% to shareholders, and incremental earnings in excess of a 10.8% equity return are to be shared 90% with ratepayers 10% with shareholders. As per the approved joint proposal, ORU is to apply 50% of its portion of electric and gas shared earnings and all of the customers' portion of electric and gas shared earnings first to reduce deferred undercollections of site investigation and remediation costs and then to reduce other deferred costs.

Central Hudson Gas & Electric Corp., or CHG&E — On June 14, 2018, the PSC approved a three-year electric and gas rate plan for CHG&E, covering the period July 1, 2018 through June 30, 2021. The revenue requirement specified in the plan is based on an 8.8% ROE; incremental actual earnings between a 9.3% and 9.8% equity return are to be shared equally between customers and shareholders. Earnings between a 9.8% and 10.3% equity return would be allocated 80% to customers and 20% to shareholders, and earnings in excess of a 10.3% equity return would be allocated 90% to customers and 10% to shareholders. The earnings sharing provisions are to remain in place until a new rate plan is adopted by the PSC.

Niagara Mohawk Power Corp., or NMP — On March 15, 2018, the PSC approved a three-year electric and gas rate plan for NMP, covering the April 1, 2018, through March 31, 2021 period. The plan contains graduated earnings sharing provisions that begin at a 9.5% ROE. Specifically, incremental earnings between a 9.5% ROE and a 10% ROE are to be shared equally by ratepayers and shareholders; incremental earnings between a 10% ROE and a 10.5% ROE are to be allocated 75%/25% to ratepayers and shareholders; and, incremental earnings in excess of a 10.5% ROE are to be allocated 90%/10% to ratepayers and shareholders.

Brooklyn Union Gas Co., or BUG/KeySpan Gas East Corp., or KGE — BUG and KGE are subject to rate plans covering the three-year period Jan. 1, 2017 through Dec. 31, 2019. The rate plans include earnings sharing provisions, under which actual earnings above a threshold ROE are to be shared with customers. Specifically, incremental earnings between a 9.5% ROE and a 10% ROE are to be shared equally by ratepayers and shareholders; incremental earnings between a 10% and a 10.5% ROE are to be allocated 75%/25% to ratepayers and shareholders; and incremental earnings in excess of a 10.5% ROE are to be allocated 90%/10% to ratepayers and shareholders. If the companies do not file for new rates to take effect on or before July 1, 2020, 100% of any earnings over a 9% ROE are to be deferred for ratepayers' benefit beginning on Jan. 1, 2020. The approved joint proposal incorporates productivity adjustments of 2% in rate year 1 and 1.5% in rate years 2 and 3 for BUG and KGE. The productivity adjustments are intended to capture unspecified gains in productivity and decreases in O&M expense expected to result from the increased capital expenditures and other improvements in the companies' gas systems.

National Fuel Gas Distribution Corp., or NFGD — A PUC decision issued in April 2017, in a fully-litigated rate case called for NFGD to be subject to an earnings sharing mechanism effective April 1, 2018, if the company did not file for new rates to become effective by the fourth quarter of 2018. A rate case was not filed, as such, the company is subject to an earnings sharing mechanism under which earnings above a 9.2% ROE are to be shared equally by ratepayers and shareholders.

Reforming the Energy Vision

The PSC is conducting an investigation, "Reforming the Energy Vision", or REV, addressing how regulatory practices could be modified to enable electric utilities to manage and coordinate distributed energy resources, or DER, and enable customers to optimize their energy resource decisions, provide system benefits, and be compensated for providing such benefits.

The REV initiative proceeded along two tracks, and in February, 2015, the PSC issued a Track 1 order adopting a regulatory policy framework and implementation plan. Track 1 addressed the functions of the "distribution system platform", or DSP, providers including: undertaking an integrated approach that considers all energy resources (including energy efficiency, demand reduction, and distributed generation) in utility planning and operations (as opposed to a silo approach of evaluating these resources) to help optimize resource deployment to meet customer reliability needs and reduce overall costs to customers; upgrading distribution management systems and communications infrastructure and providing a platform to accommodate distributed energy resources, or DER, to offer new energy products and services; and, creating pricing mechanisms to buy/sell products/services from DER to

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provide value to the utility system and thus to customers.

Track 1 also addressed factors that may affect customer participation, whether the DSP should be the incumbent utility or an independent entity, which products and services the DSPs will purchase from DER providers, whether the utilities should be permitted to own/control DER, and how to maximize customer engagement.

In May 2016, the PSC issued a Track 2 order adopting a policy framework on ratemaking and utility business models. The order outlines four ways for utilities to achieve earnings: traditional cost-of-service earnings; earnings tied to achievement of alternatives that reduce utility capital spending and provide definitive consumer benefit; earnings from market-facing platform activities; and, transitional outcome-based performance measures.

With respect to the transitional measures, the PSC established earnings adjustment mechanisms, or EAMs, which are incremental performance incentives that the state's utilities can earn in return for advancing REV, environmental and clean energy public policy objectives to increase efficiencies, advance the deployment of distributed energy resources, and support the state's clean energy agenda. EAMs are to vary by utility and are required to be filed within the context of rate cases. The PSC indicated that EAMs should be outcome-based and generally be positive only.

Following the track 2 order, the PSC has approved various electric EAMs tied to system efficiency, energy efficiency, and carbon reduction within the context of rate proceedings for CECONY, NMP, CHG&E, ORU, NYSEG and RG&E.

Other incentives

In addition to ESMs and EAMs, other types of incentive mechanisms employed in the state include: positive revenue adjustments and shared saving-type mechanisms. Positive revenue adjustments reward utilities for meeting certain goals related to gas safety and the reduction of terminations/uncollectibles. Shared saving mechanisms include incentives tied to non-wire alternatives, non-pipe alternatives, property tax reductions, off-system sales and capacity release.

Service quality

The state's electric and gas utilities have negative revenue adjustments if certain metrics tied to safety, reliability and customer service are not maintained. (Section updated 12/2/20)

Legislation

The New York Legislature, a bicameral body, convenes annually in January.

In the Senate, there are 43 Democrats and 20 Republicans. In the House, there are 106 Democrats, 43 Republicans, and 1 independent. Bills introduced in odd-numbered years are carried over to even number years.

The 2021 session convened Jan. 6 and is scheduled to adjourn on June 10.

2019 Legislation

On July 18, 2019, Gov. Andrew Cuomo, signed into law the New York State Climate Leadership and Community Protection Act, or CLCPA, establishing a framework for reducing greenhouse gas emissions, increasing renewable electric generation and increasing energy efficiency. In addition, the law contains other socially responsible environmental, social and governance-type provisions geared toward "disadvantaged communities."

The law requires the PSC to establish a renewable energy program by June 30, 2021, that requires a minimum of 70% of statewide electric generation from the state's load-serving entities be generated by renewable energy systems by 2030. In addition, the law mandates that by 2040, emissions from the electric sector be eliminated.

Under the new law, the PSC is to establish programs that require the state's load-serving entities to meet the following procurement targets: at least 6 GW of photovoltaic solar generation by 2025; at least 3 GW of statewide energy storage capacity by 2030; and at least 9 GW of offshore wind by 2035.

To achieve the climate goals outlined in the CLCPA, Cuomo signed into law on April 3, 2020, the Renewable Energy Growth Act, which, among other things, calls for the PSC, in consultation with other state agencies and authorities, the electric utilities, and the New York Independent System Operator to conduct a "comprehensive study for the purpose of identifying distribution upgrades,

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local transmission upgrades and bulk transmission investments that are necessary or appropriate to facilitate the timely achievement" of the state's renewable energy targets as outlined in the CLCPA. Other provisions of the Renewable Energy Growth Act include the creation of a new Office of Renewable Energy Siting to improve and streamline the process for siting large-scale renewable energy projects and modifications to the process for the siting major utility transmission facilities.

2020 Legislation

In June 2020, legislation was enacted that called for a moratorium on customer utility service disconnections for 180 days after the COVID-19 state of emergency is lifted or expires or until March. 31, 2020, whichever is earlier, for "defaulted deferred payment agreements or arrears owed to the utility corporation or municipality when such customer has experienced a change in financial circumstances due to the COVID-19 state of emergency," as defined by the PSC. The moratorium applies to the state's energy utilities, water utilities and telephone corporations.

2021 Legislation

In 2021, legislation was passed that awaits the governor's signature that would extend the state's existing moratorium on service disconnections for residential utilities. Specifically, the legislation, calls for a moratorium on residential customer utility service disconnections for 180 days after the COVID-19 state of emergency is lifted or expires or until Dec. 31, 2021, whichever is earlier, for "defaulted deferred payment agreements or arrears owed to the utility corporation or municipality when such customer has experienced a change in financial circumstances due to the COVID-19 state of emergency," as defined by the PSC. The legislation would expire Dec. 31, 2021. (Section updated 4/16/2021)

Corporate Governance

The PSC has authority over securities issuances by the state's utilities and mergers and acquisitions involving these entities. In the most recent orders approving merger requests, the PSC has adopted a variety of provisions that protect the utility, and ultimately the customer, from other-than-arm's-length relationships with affiliates (see the Merger Activity section). Additionally, state law provides for each electric and gas utility to undergo a management audit every five years. Also, as a result of the PSC's expanded enforcement powers, the commission is conducting periodic operational audits.

In 2010, the PSC rejected Entergy's proposed spinoff of its nuclear operations (Indian Point 2 and 3, and Fitzpatrick) to a new company named Enexus Corporation. The PSC indicated that the company's petition was not in the public interest, and would not meet the commission's "no net harm" standard. The PSC remained concerned that Entergy will, in the future, seek to implement "other financial transactions which may not trigger the specific provisions of [public service law that requires a PSC review], but which may be harmful to the financial strength of the New York nuclear assets. In that event, Entergy might conclude that no notice to us of the proposed transaction is necessary. To assure that adequate notice of such transactions is provided, we are instituting a new proceeding [Case No. 10-E-0402] to identify the circumstances when such notice must be provided and to describe the content and details of such notice." The PSC indicated that several strategic alternatives had been suggested by Entergy, including a financial restructuring, ring-fencing the utilities, and leveraging the parent company, and the commission stated that implementation of any of these strategies could have negative credit-rating implications. In a 2011 order, the commission provided Entergy notice of its reporting requirements relative to actions that Entergy may take. No further actions by Entergy have been taken.

In 2013, the PSC approved, with conditions, a request by Iberdrola to reorganize its U.S. corporate structure. Iberdrola, the parent of utilities New York State Electric & Gas, or NYSEG, and Rochester Gas and Electric Corp., or RGE, reorganized in November 2013, by centralizing its presence in each country of operation under one country specific subsidiary holding company, thus more closely linking NYSEG and RGE to Iberdrola affiliates that operate in competitive U.S. markets. The PSC adopted requirements that separate the utilities from potential financial risks associated with competitive affiliates, and added conditions to improve transparency and access to company books and records. Additionally, the utilities were required to begin registering debt issuances with the Securities and Exchange Commission when market conditions become cost effective.

As part of a rate plan adopted by the PSC for Consolidated Edison Co. of New York, Inc., or CECONY, on Jan. 16, 2020, the PSC adopted ring-fencing provisions that call for the company to report to the PSC whenever CECONY's parent, Consolidated Edison Inc.'s, investments in non-utility businesses or whenever its debt reaches or exceeds certain thresholds. Specifically, if at the end of any semiannual period ending June 30 and Dec. 31, ConEd's investment in its nonutility business exceeds 15% of its total consolidated revenues, assets or cash flow, or if the ratio of holding company debt to total consolidated debt exceeds 20%, CECONY is to notify the PSC. Within 60 days of such notification, CECONY is required to submit a ring-fencing plan or would be

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required to demonstrate why additional ring-fencing measures are not necessary. (Section updated 1/31/20)

Merger Activity

By law, the PSC must review any requests to transfer minority interests greater than 10% to any entity or person. If the transfer is to another electric or gas corporation, the PSC must review the request no matter how small the percentage. Regarding mergers of rate-regulated utility companies in New York State, the PSC has generally applied a "net positive benefits" standard.

The PSC may approve a transaction following a determination that the terms and conditions as fixed or imposed are in the public interest. In evaluating whether a proposed transaction is in the public interest, the PSC has recently required that petitioners "show that the transaction would provide customers positive net benefits after considering the expected benefits offset by any risks or detriments that would remain after applying reasonable mitigation measures."

The commission is prohibited by law from permitting a utility to recover premiums above book value in rates, and has generally required that at least 50% of merger savings be allocated to ratepayers. The PSC has also placed various ring-fencing-type conditions upon merger approvals.

In 1998, the PSC approved the proposed merger of Long Island Lighting Company, or LILCO, and KeySpan Energy, following a settlement. The agreement and PSC order required LILCO to implement a 3.9% gas rate reduction and a 2.5% electric rate decrease. The rates of KeySpan's gas distribution subsidiary Brooklyn Union Gas Co. were reduced 3%. The merger was completed in 1998. KeySpan was later acquired by National Grid (see below).

In 1999, the PSC approved the merger of Consolidated Edison, or ED, and Orange and Rockland Utilities, Inc., or ORU, following a settlement. The merger was completed in 1999, and ORU became a subsidiary of ED. The companies agreed to an electric rate credit and gas rate reductions, which the Staff indicated would implicitly reflect the flow-through to ratepayers of 75% of merger savings. The approved merger agreement contained provisions regarding cost allocation, affiliate transactions, the separation of unregulated operations from utility operations, PSC access to books and records of unregulated affiliates, and standards of competitive conduct for the utility subsidiaries, the holding company and energy services affiliates. The agreement also included protections regarding the issuance of securities, dividend payment policies, prohibitions on loans, cross-default provisions, pledges and guarantees and restrictions on non-utility investments. ORU agreed to ensure that the total debt of either ORU or its utility subsidiaries would not exceed 65% of total capitalization. Specifically, ORU debt must be raised directly by ORU, and cannot be "derived" from the parent. ORU is precluded from making loans to the parent or any unregulated subsidiary, without prior authorization from the PSC.

In addition, ORU may not guarantee any obligation of affiliate Consolidated Edison Co. of New York, Inc., or CECONY, or any unregulated affiliate, or pledge its assets as security for the indebtedness of the parent or an affiliate. With regard to dividends, ORU may not pay out more than 100% of income available for dividends calculated on a two-year rolling average basis. The dividend restriction does not apply to dividends necessary to transfer to the parent revenues from major transactions, such as asset sales, divestiture, or to dividends reducing ORU's equity ratio to a level appropriate to ORU's business risk, or to dividends necessary to transfer to ED the earnings of ORU's subsidiaries. ORU is required to certify annually to the PSC that it has retained or otherwise has access to sufficient capital to maintain and upgrade its system in order to continue the provision of reliable service. The agreement also includes specific provisions regarding transactions between affiliates and for assigning joint costs to the regulated utilities — CECONY and ORU — and to ED's unregulated subsidiaries

In 2001, the PSC approved the proposed merger of Niagara Mohawk Power Corp., or NMP's, then-parent Niagara Mohawk Holdings and National Grid, and adopted a settlement that called for implementation of a ten-year rate plan in conjunction with the merger. The merger closed in the first quarter of 2002. NMP was required to reduce electric delivery charges by \$160 million (8%) upon merger closing, and such charges remained stable for ten years. The company and customers were to equally share roughly \$117 million of net savings. The company agreed to forego recovery of up to \$850 million of nuclear-related stranded costs.

In 2002, the PSC approved the proposed merger of Energy East and RGS Energy Group in conjunction with a five-year rate settlement signed by the parties to New York State Electric & Gas Corp.'s, or NYSEG's, Price Protection Plan Proceeding. The merger closed in June 2002. The approved settlement required NYSEG to implement a \$205 million (13%) electric revenue requirement reduction. In accordance with the settlement, savings that flowed from the merger were to be shared equally by stockholders and customers of both Rochester Gas & Electric Corp., or RG&E, and NYSEG. (See below for information concerning Energy East's acquisition by Iberdrola).

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In 2007, the PSC approved the merger of KeySpan and National Grid subject to several conditions. The merging parties immediately agreed to those conditions, and closing occurred immediately thereafter. The conditions included the following: a dividend restriction for Brooklyn Union Gas Co., or BUG, and KeySpan Gas East Corp., or KSE, would be triggered by a downgrading action by one of the rating agencies to non-investment grade; no debt associated with the merger may be reflected on the books of BUG or KSE; BUG and KSE were to modify corporation by-laws to prevent a bankruptcy of National Grid from triggering a bankruptcy of BUG or KSE; and, the sale of KeySpan's Ravenswood Station to mitigate potential vertical market power (the facility was ultimately sold in 2008 to TransCanada Corp.).

In 2008, the PSC unanimously approved Iberdrola's proposed acquisition of Energy East. The merger closed later in September 2008, and the operating companies are now subsidiaries of Iberdrola USA, a subsidiary of Iberdrola. The commission largely approved conditions recommended by the PSC Staff, which had proposed 34 financial protection measures, and noted that Iberdrola had agreed to 16 of these measures that related to such issues as maintaining bond ratings and money pool participation. The PSC required that the customers of Energy East subsidiaries NYSEG and RG&E be credited with "positive benefit adjustments" totaling \$275 million. NYSEG and RG&E were required to file new rate cases after 12 months; new cases were filed in 2009 and completed in 2010.

In 2011, the PSC granted Exelon's and Constellation Energy Group's petition that the commission decline to further review their proposed merger. The merger was completed in 2012. In its 2011 action, the PSC acknowledged that their authority over the merger was somewhat ambiguous due to the electric industry restructuring framework in New York. The PSC's involvement in this transaction stemmed from Constellation Energy Group subsidiary Constellation Energy Nuclear Group's majority ownership interest in the Nine Mile Point Nuclear Station Unit 1 and 2, and the R.E. Ginna Nuclear Power Plant.

In 2013, the PSC approved Fortis Inc.'s proposal to acquire CH Energy Group, or CHEG, the parent of Central Hudson Gas & Electric Corp., or CHG&E, and the transaction closed immediately thereafter. Fortis is a Canadian holding company, with several electric and gas distribution companies in Canada, the U.S. and the Caribbean. A total of \$9.25 million of synergy savings is to flow to ratepayers over the first five years after closing; \$35 million of deferred regulatory assets, largely related to storm costs, are to be written off; and, CHG&E is required to contribute \$5 million to a community benefit fund for economic development and low-income customer-assistance purposes. CHG&E's electric and gas rates were frozen until at least July 1, 2015. Additionally, the company's then-current rate plan's ROE threshold was reduced by 50 basis points to 10% from 10.5%. All other provisions of the company's then-rate plan, applicable to the third rate year, were to continue at least through June 30, 2015.

In October 2019, the PSC approved the acquisition of St. Lawrence Gas by Liberty Utilities Co. parent Algonquin Power and Utilities Corp, following the adoption of a joint proposal. The transaction was completed in November 2019.

Pending mergers

On Jan. 13, 2021, Corning Natural Gas parent Corning Natural Gas Holding Corp.'s reached an agreement with an affiliate of Argo Infrastructure Partners, an independent infrastructure investment manager, to acquire all the outstanding shares of Corning Natural Gas Holding Corp common stock. The parties expect the transaction to be completed by 2021. (Section updated 2/1/21)

Electric Regulatory Reform/Industry Restructuring

Retail access was implemented in 1998 pursuant to the PSC's 1996 "Competitive Opportunities" order. The PSC did not adopt a generic policy regarding recovery of stranded investment; the commission considered this issue on a company-by-company basis, and permitted most stranded investment to be recovered. The PSC indicated a preference for, but did not require, divestiture of generation assets. In 1997 and 1998, the PSC approved company-specific implementation plans, and virtually all generation assets were divested.

The incumbent power distributors have retained the provider-of-last-resort, or POLR, obligation, and are procuring the power to meet this obligation through bilateral wholesale contracts with competitive suppliers. Several utilities have physical contracts with non-utility generators that provide a portion of their supply needs. Others have physical contracts with nuclear plants. Most of the utilities physically purchase the majority of their required energy on the New York Independent System Operator Day-ahead market. The energy provided to residential and small commercial customers is price-hedged through various financial instruments. The PSC allows the utilities to use a market supply charge to flow through variations in POLR power costs through each customer bill, on a monthly or bi-monthly basis.

In 1999, the PSC approved a plan to open to competition electric metering services, including installation and maintenance, meter

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reading and meter data retrieval and storage.

The PSC is reviewing the eligibility criteria for energy service companies.

The PSC is conducting an investigation, "Reforming the Energy Vision" that is reviewing the role of the utility in light of the proliferation of distributed generation resources and other market structure changes (see the Alternative Regulation section).

On Nov. 17, 2016, the PSC approved a request filed by Entergy Nuclear FitzPatrick, or ENF, and Exelon Generation Co. LLC, or ExGen, for approval of a transaction that calls for ExGen to acquire the 852-MW James A. FitzPatrick nuclear plant, and related assets, from ENF, and for the plant to continue to be subject to a "lightened regulatory regime." ENF's parent is Entergy Corp. and ExGen parent is Exelon Corp. The filing was tendered in accordance with the PSC's Aug. 1, 2016 adoption of a Clean Energy Standard that provides for 50% of electricity in New York to be procured from renewable energy sources by 2030, and for implementation of a framework to subsidize nuclear generating facilities in the state that may otherwise be retired (see the Renewable Energy and Emissions sections). (Section updated 11/21/16)

Gas Regulatory Reform/Industry Restructuring

Several years ago, the PSC espoused a policy that all local gas distribution companies, or LDCs, should exit the gas commodity business, with each utility to continue to be the gas supplier-of-last resort until it has exited the commodity business. However, all of the gas companies continue to sell gas. Recovery of gas commodity costs is addressed through semi-automatic adjustment clauses. (See the Adjustment Clauses section.)

Transportation-only service for large customers — usage greater than 5,000 DTH — has been available statewide since 1985. Following a 1996 generic order, the PSC approved plans filed by several LDCs to further open the local gas market to competition, allowing all customers to purchase gas supplies from sources other than their LDC. (Section updated 11/21/16)

Adjustment Clauses

Historically, all energy utilities used a semi-automatic fuel adjustment clause, or FAC, through which variations in fuel, gas and purchased power costs were flowed through to customers. With electric industry restructuring, however, generation was divested, and the electric companies have largely transitioned from the FAC to a market power adjustment clause, or MAC, or a commodity adjustment clause, or CAC. The MAC/CAC allows the distribution utilities to flow through the costs of power procured to serve customers who have not selected an alternative supplier. Changes in the clause are recognized in each customer bill, i.e., monthly, bi-monthly, etc. Although the incumbent distributors have retained the provider-of-last-resort obligation, the operation of the MAC/CAC insulates the distributor from any financial effects associated with changes in market prices.

The state's renewable portfolio standards program is funded by a separate non-bypassable volumetric delivery charge on all customer bills. Collection of this charge began in 2005, and is based on the estimated market price of the renewable resources, with subsequent true-ups to reflect actual costs.

Each of the electric and gas utilities in New York operates under a full revenue decoupling mechanism, or RDM. The RDMs provide for the companies to implement a rate surcharge or credit associated with a revenue shortfall or over-collection related to a predetermined revenue target. As a result, the RDMs offset the potential effect on earnings of any variation in sales, whether the variation is caused by energy efficiency, weather, or the economy. (Section updated 11/21/16)

Integrated Resource Planning

The PSC established Energy Efficiency Portfolio Standards, or EEPS in 2008, directing entities under its jurisdiction to reduce customers' electricity usage 15% by the year 2015. A goal of 7.7 million MWh of electric energy savings by 2015 was established for energy efficiency programs to be delivered by the electric utilities. Subsequently, similar goals were established for gas utilities. Approximately 100 electric and gas energy efficiency programs have been approved by the PSC. In 2011, the commission approved the continuation of most existing EEPS programs through 2015, with total funding of about \$1.5 billion for electric efficiency programs and \$630 million for gas programs. In January 2016, the commission authorized a 10 year, \$5.3 billion Clean Energy Fund, or CEF, to be managed by the New York State Energy Research and Development Authority. The CEF is designed to achieve at least 13.4 million MMBtu of cumulative annual energy efficiency, as well as 88 million MWh of renewable energy. (Section updated 11/21/16)

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Renewable Energy

In 2004, the PSC implemented a renewable energy standard calling for at least 25% of electric needs be provided from renewable resources by 2013. The standard was expanded by the PSC in December 2009 to 30% by 2015. In 2016, the commission adopted a transition from the renewable energy standard to a clean energy standard, or CES. In July 2018, the PSC adopted an offshore wind goal and in December 2018 an energy storage goal. In July 2019, legislation, referred to as the Climate Leadership and Community Production Act, or CLCPA, was enacted that codified the state's renewable energy commitments and emission reduction targets. The Act expands upon the PSC's CES mandate by requiring that at least 70% of the electricity in the state come from renewable energy technologies by 2030 and that the state's electric sector be 100% carbon free by 2040. See below for further information.

Clean Energy Standard

In 2016, the PSC adopted the state energy plan's goal that 50% of electricity be procured from renewable energy resources by 2030, as part of a strategy to reduce statewide greenhouse gas emissions 40% from 1990 levels by 2030.

The PSC also adopted a CES that includes renewable energy credit, or REC, and zero-emissions credit, or ZEC, requirements. Eligible renewable resources include wind, solar, hydroelectric, biomass, biogas, liquid biofuels, fuel cells and tidal ocean. Beginning in 2017, LSEs for their full-service customers are to obtain RECs and ZECs in amounts determined by the PSC. The LSEs subject to the CES include the state's electric distribution utilities, as well as all energy service companies, municipalities, cooperatives, the Long Island Power Authority and the New York Power Authority.

All eligible resources that came into operation after Jan. 1, 2015, are classified as Tier 1 resources. Under the CES, new renewable power resources were required to comprise 0.6% of the state's total electricity load in 2017, and increasing to 4.8% in 2021. Tier 2 serves as a maintenance program to support existing renewable resources. Eligibility for the new Tier 2 is limited to: run-of-river hydroelectric facilities of 5 MW or less; wind facilities; and, biomass direct combustion facilities that were in commercial operation any time prior to Jan. 1, 2003, and were originally included in New York's baseline of renewable resources calculated when the states' renewable portfolio program was first adopted.

The overall renewables mandate, which includes both existing and new renewable generation increases from 26.32% in 2017 to 30.54% in 2021. The standards after 2021 are to be determined by the PSC every three years.

The obligations to achieve the CES are to be applied statewide. The LSEs will be permitted to meet their obligations by purchasing RECs from the New York State Energy Research and Development Authority, or NYSEERDA, by purchasing qualified RECs from other sources or by making alternative compliance payments to NYSEERDA.

The CES contains a Tier 3 that allows for the utilization of ZECs to preserve zero-emission attributes called for in the CES. According to the PSC, maintaining zero-emission nuclear power is a critical element to achieving New York's ambitious climate goals. Adoption of the ZEC framework is designed to allow financially struggling upstate nuclear power plants to remain in operation during the state's transition to 50% renewables by 2030.

The CES framework provided for nuclear facilities deemed by the PSC to "demonstrate public necessity" and to be at risk of closure to be offered multiyear contracts with a state agency for the purchase of ZECs for each megawatt-hour of energy produced by an eligible plant. Specifically, the commission ordered that 12-year contracts with the nuclear facilities be administered in six two-year tranches. ZEC prices are based on a formula that takes into account the social cost of carbon, the impact from the state's participation in the Regional Greenhouse Gas Initiative, the forecast energy price and the forecast capacity price in the relevant market within the NYISO. LSEs, are required to purchase ZECs in proportion to load served and pass the costs to ratepayers through a commodity charge. The PSC determined that the James A. FitzPatrick, R.E. Ginna/Ontario Sta. 13 and Nine Mile Point nuclear plants met the criteria but Indian Point did not qualify.

Climate Leadership and Community Protection Act

On July 18, 2019, the CLCPA was signed into law, establishing a framework for reducing greenhouse gas emissions, increasing renewable electric generation and increasing energy efficiency. In addition, the law contains other socially responsible environmental, social and governance-type provisions geared toward "disadvantaged communities."

The law requires the PSC to establish a renewable energy program by June 30, 2021, that requires a minimum of 70% of statewide electric generation from the state's load-serving entities be generated by renewable energy systems by 2030. In addition,

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the law mandates that by 2040, emissions from the electric sector be eliminated.

The CLCPA specifies a new statewide greenhouse gas emissions reduction goal from all anthropogenic sources of 40% below 1990 levels by 2030 and 85% below 1990 levels by 2050, with the remaining 15% to be offset through "greenhouse gas emission offset projects" to achieve net-zero emissions in all sectors of the economy (see the Emissions requirements section).

The CLCPA codified various state procurement targets and called for the PSC to establish programs that require the state's load-serving entities to meet the targets. These targets include: at least 6 GW of photovoltaic solar generation by 2025; at least 3 GW of statewide energy storage capacity by 2030; and at least 9 GW of offshore wind by 2035. In addition, the Act codified the state's targets for energy efficiency that calls for end-use energy savings of 185 trillion BTUs below 2025 energy-use forecast.

By July 1, 2024, and every two years thereafter, the PSC is to issue a comprehensive review of the renewable energy and zero emissions targets. The PSC may suspend or modify the obligations under the program if, after conducting a hearing, it makes a determination that the program "impedes the provision of safe and adequate electric service," "is likely to impair existing obligations and agreements" and/or there is a significant increase in arrears or service disconnections related to the program.

The PSC, to the extent practicable, is to specify a minimum percentage of energy storage projects that should be delivered into New York ISO zones that serve disadvantaged communities. In addition, the PSC is to facilitate the deployment of energy storage projects for the reduction of combustion-powered peaking facilities located in or near disadvantaged communities.

The CLCPA establishes a 22-member climate action council tasked with preparing a scoping plan that identifies and makes recommendations on how the state can attain the goal of achieving 100% net-zero greenhouse gas emissions in all sectors of the economy by 2050 (see the Emissions requirements section).

ESG-type social equity initiatives under the Climate Leadership and Community Protection Act

The CLCPA provides funding toward ESG-type social equity initiatives requiring that at least 35% of the state's clean energy benefits go to disadvantaged communities.

According to the law, "climate change especially heightens the vulnerability of disadvantaged communities, which bear environmental and socioeconomic burdens as well as legacies of racial and ethnic discrimination. Actions undertaken by New York state to mitigate greenhouse gas emissions should prioritize the safety and health of disadvantaged communities, control potential regressive impacts of future climate change mitigation and adaptation policies on these communities, and prioritize the allocation of public investments in these areas."

The law states that "ensuring career opportunities are created and shared geographically and demographically is necessary to ensure increased access to good jobs for marginalized communities while making the same neighborhoods more resilient. Climate change has a disproportionate impact on low-income people, women, and workers. It is in the interest of the state of New York to protect and promote the interests of these groups against the impacts of climate change and severe weather events and to advance our equity goals by ensuring quality employment opportunities in safe working environments." (Section updated 2/26/20)

Emissions Requirements

State-level greenhouse gas emission reduction goals

The Climate Leadership and Community Protection Act, or CLCPA, which was enacted on July 18, 2019, specifies a new statewide greenhouse gas emissions reduction goal from all anthropogenic sources of 40% below 1990 levels by 2030 and 85% below 1990 levels by 2050, with the remaining 15% to be offset through "greenhouse gas emission offset projects" to achieve net-zero emissions in all sectors of the economy.

The CLCPA defines statewide greenhouse gas emissions to mean "carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and any other substance emitted into the air that may be reasonably anticipated to cause or contribute to anthropogenic climate change."

In addition, the CLCPA defines statewide greenhouse gas emissions as "the total annual emissions of greenhouse gases produced within the state from anthropogenic sources and greenhouse gases produced outside of the state that are associated with the generation of electricity imported into the state and the extraction and transmission of fossil fuels imported into the state."

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By Jan. 1, 2021, the state Department of Environmental Conservation, or DEC, is to consider establishing a mandatory registry and reporting system.

By Jan. 1, 2022, and each year thereafter, the DEC is to issue a report on statewide greenhouse gas emissions from all greenhouse gas emissions sources. The report is to include "an estimate of greenhouse gas emissions associated with the generation of imported electricity and with the extraction and transmission of fossil fuels imported into the state which shall be counted as part of the statewide total."

In addition, by Jan. 1, 2024, the DEC is to promulgate rules and regulations to ensure compliance with the statewide emissions reduction limits. The regulations are to include "measures to reduce emissions from greenhouse gas emission sources that have a cumulatively significant impact on statewide greenhouse gas emissions, such as internal combustion vehicles that burn gasoline or diesel fuel and boilers or furnaces that burn oil or natural gas."

In order to comply with the statewide greenhouse gas emissions limits, an alternative compliance mechanism, or ACM, may be utilized by entities subject to greenhouse gas emissions limits to achieve net-zero emissions. The electric generation sector is not eligible to participate in an ACM. The law specifies that such mechanisms may not account for more than 15% of statewide greenhouse gas emissions and the "use of this mechanism must offset a quantity greater than or equal to the greenhouse gases emitted." In addition, the offset of greenhouse gas emissions is not to "result in disadvantaged communities having to bear a disproportionate burden of environmental impacts."

The CLCPA calls for the DEC to establish an application process for alternative compliance that, at a minimum, would require that the entities "sufficiently demonstrate" that compliance with the greenhouse gas emissions limits is not "technologically feasible" and that the entities have "reduced emissions to the maximum extent practicable." After an initial four-year period, the DEC would be required to review whether the entities may continue participation in the ACM.

The CLCPA establishes a 22-member climate action council tasked with preparing a scoping plan that identifies and makes recommendations on how the state can attain the goal of achieving 100% net-zero greenhouse gas emissions in all sectors of the economy by 2050. A draft scoping plan is to be submitted by Jan. 1, 2022, and a final scoping plan is to be completed by Jan. 1, 2023, with updates every five years. The scoping plan is to contain several recommendations as noted in the accompanying chart, including measures to minimize "leakage," defined as "a reduction in emissions of greenhouse gases within the state that is offset by an increase in emissions of greenhouse gases outside of the state." The scoping plan is to be incorporated into the state's energy plan.

As part of the council, several working groups are to be formed. A "just transition working group" is to advise the council on "issues and opportunities for workforce development and training related to energy efficiency measures, renewable energy and other clean energy technologies, with specific focus on training and workforce opportunities for disadvantaged communities, and segments of the population that may be underrepresented in the clean energy workforce such as veterans, women and formerly incarcerated persons." The working group is to identify energy-intensive industries and related trades and identify sector-specific impacts of the state's current workforce and avenues to maximize the skills and expertise of New York state workers in the new energy economy." In addition, the working group is to "identify sites of electric generating facilities that may be closed as a result of a transition to a clean energy sector and the issues and opportunities presented by reuse of those sites." The group is also to advise the council on "the potential impacts of carbon leakage risk on New York state industries and local host communities, including the impact of any potential carbon reduction measures on the competitiveness of New York state business and industry."

A climate justice working group is to be created by July 1, 2020, to establish criteria to identify disadvantaged communities based on geographic, public health, environmental hazard and socioeconomic criteria.

New York City-level greenhouse gas emission reduction goals

In May 2019, legislation, known as the Climate Mobilization Act was enacted requiring large buildings, both commercial and residential, in New York City to reduce greenhouse gas emissions by 40% by 2030 and 80% by 2050, relative to 2005 levels. To meet the carbon reduction mandates, building owners may achieve compliance through operational changes, retrofits, purchasing greenhouse gas offsets, purchasing renewable energy credits, utilizing clean distributed energy resources.

Regional initiatives

New York is part of the Regional Greenhouse Gas Initiative, or RGGI, a cooperative effort among several Northeastern and Mid-Atlantic states to reduce greenhouse gas and power-related emissions. The RGGI member states are Connecticut, Delaware,

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Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont.

Clean Power Plan

In 2015, the U.S. Environmental Protection Agency, or EPA, released the final version of its Clean Power Plan, or CPP. The CPP calls for a 32% reduction nationwide in the domestic power sector's carbon dioxide emissions by 2030, versus 2005 levels.

In 2016, the U.S. Supreme Court stayed the rule, pending the outcome of a review by the U.S. Court of Appeals for the District of Columbia Circuit, or D.C. Circuit. The stay prevented the CPP from becoming effective until the D.C. Circuit issues a ruling on the merits and the Supreme Court takes action on any subsequent appeals from that ruling.

In 2017, President Donald Trump issued an executive order that effectively initiated the process of reversing the steps that had been taken to date on the CPP. In October 2017 the EPA Administrator began the formal process of reversing the Clean Power Plan.

On June 19, 2019, the EPA released its final Affordable Clean Energy, or ACE, rule, which replaces the CPP. The ACE rule focuses on CO2 emissions and efficiency improvements at existing coal-fired power plants. According to the EPA, the regulation would cut about 11 million short tons of CO2 from existing coal-fired generators by 2030. After the guidelines are finalized, states will have three years to develop and submit compliance plans that include site-specific measures based on a coal unit's potential for efficiency gains. However, opposition to the plan is already taking shape. (Section updated 2/26/20)

Reliability Issues

The PSC is permitted to address utility underperformance in terms of service restoration following storms, and is authorized to levy penalties based on company revenues. The utilities are required to file detailed emergency preparedness plans annually, and the commission has the authority to revoke a utility's operating license if necessary.

The PSC has adopted a Reliability Performance Mechanism, or RPM, for each major electric utility in the state. The RPM establishes a minimum reliability performance level, with earnings consequences if this level is not achieved. Each RPM includes threshold standards for the System Average Interruption Frequency Index and Customer Average Interruption Duration Index. These indices are calculated on an annual basis and exclude outages caused by major storms, catastrophic events, and incidents beyond the utility's control. The frequency and duration threshold standards are set by the PSC during a utility's rate case proceeding. There are also utility-specific RPM metrics in areas where a utility has repeatedly failed to complete work under its own initiative. The maximum penalty ranges between \$2 million and \$112 million. These penalty levels are based on company revenues and historical reliability performances.

The PSC has also adopted Electric Safety Standards related to stray voltage, as well as the reliability of the electric system. The standards include: (1) annual stray voltage testing of electric facilities accessible to the public; (2) inspection of utility electric facilities on a minimum of a five-year cycle; (3) recordkeeping, certification, quality assurance and reporting requirements; and, (4) adoption of the National Electric Safety Code as the minimum standard governing utility construction, maintenance and operations. The standards have annual performance targets with predetermined revenue adjustments if the targets are not met. Failure to achieve any of the annual performance targets will result in a revenue adjustment equal to 75 ROE basis points.

On Feb. 16, 2017, the PSC adopted a \$153.3 million settlement for Consolidated Edison Co. of New York Inc., or CECONY, stemming from an investigation into the East Harlem gas explosion that occurred in 2014. Under the approved settlement, in lieu of potential remedies that could have been sought by the PSC in a civil penalty or prudence proceeding, CECONY is to forgo recovery of \$128.3 million of costs largely incurred in 2014, 2015 and 2016 related to leak response-related activities, gas safety public education programs, emergency payments to residents and businesses immediately following the explosion, and expenses related to remediating leak-prone gas pipes. In addition, the company agrees to earmark \$25 million for the benefit of customers. (Section updated 5/4/17)

Rate Structure

In 2013, a new minimum threshold for mandatory hourly pricing, or MHP, was implemented for Niagara Mohawk Power, or NMP, reducing the threshold from 500 KW to 250 KW. This reduction made NMP's MHP threshold the lowest in the state. New York's five other major investor-owned electric utilities have MHP thresholds that range from 300 KW to 500 KW. Customers on MHP rates are billed for supply based on individual hourly prices, which allows them to shift their usage from high price, high usage

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hours to lower price hours and reduce their supply costs. Reducing load during high price, high usage hours also lowers the wholesale market price by reducing the peak demand. (Section updated 11/21/16)