PG&E HEARING EXHIBIT PGE-53

A.20-04-023

PG&E'S SECURITIZATION 2020

Prepared Testimony of Mark Ellis on behalf of The Utility Reform Network
(Revised Nov. 10, 2020)

CPUC Docket: A.20-04-023
Exhibit Number: TURN-02R
Witness: Mark Ellis

PREPARED TESTIMONY OF
MARK ELLIS

PUBLIC VERSION

ADDRESSING RATEPAYER-NEUTRALITY ISSUES RELATING TO THE PROPOSAL BY PACIFIC GAS AND ELECTRIC COMPANY TO SECURITIZE $7.5 BILLION OF WILDFIRE LIABILITIES

Submitted on Behalf of

THE UTILITY REFORM NETWORK

785 Market Street, Suite 1400
San Francisco, CA 94103

Telephone: (415) 929-8876
E-mail: tlong@turn.org

October 14, 2020

Revised November 10, 2020

TABLE OF CONTENTS

TABLE OF FIGURES

I. Summary of Findings and Recommendations

PG&E's proposed securitization does not satisfy the standard of being "neutral, on average, to the ratepayers of the electrical corporation" and is therefore a very bad deal for customers.[1] TURN reaches this conclusion on two main grounds:

- The Customer Credit Trust is significantly underfunded. The value of the assets PG&E has pledged to the Trust is scarcely one-half of the value of the Recovery Bonds customers are being asked to guarantee.

- Consequently, the Trust is far riskier, in terms of the probability of fully funding the Customer Credit in each billing period over the life of the securitization, than PG&E's analysis suggests.

The valuation gap and risk become clear after properly accounting for the uncertainty in PG&E's Additional Shareholder Contributions and for more realistic expected returns on the Trust's investments. PG&E's income growth forecast, which determines the timing of the Additional Shareholder Contributions, is implausibly high, implying rate base growth that would result in electricity rates nearly four times the national average by the end of the Trust's life. It is also far more uncertain than the smooth forecast assumed by PG&E, due to both the normal variability of utility income and PG&E's three-decade track record of periodic income shocks. PG&E's assumptions for the Customer Credit Trust's returns are similarly overly optimistic – 104 basis points (18%) higher than the average forecast of eighteen reputable investment management firms.

Adjusting PG&E's analysis accordingly reveals the proposed Customer Credit Trust would be underfunded by $4.08 billion, resulting in a 43% probability of being unable to fully fund the Customer Credit over its entire life.

[1] California Public Utilities Code §3292(b)(1)(D).

TURN concludes that the cost and risk to customers of PG&E's proposal are unacceptably high and therefore recommends the CPUC reject it. Should the Commission nonetheless consider approving the application, TURN has identified several potential remedies that, singly or in combination, can close the valuation gap and reduce the risk to customers, including increasing the Initial and Additional Shareholder Contributions, eliminating several asymmetric (to customers) Trust provisions, and/or by changing the Surplus Sharing mechanism.

These findings and recommendations are discussed in detail in the following sections.

II. Value of Shareholder Contributions falls far short of the value of the Recovery Bonds

The most straightforward way to assess whether PG&E's proposed Securitization is "neutral, on average, to the ratepayers" is to compare the value of the Recovery Bonds (the liability customers are assuming) to the value of the Shareholder Contributions pledged to reimburse them. TURN uses the discounted cash flow method to estimate their respective present values, which entails (1) determining the appropriate discount rate (the cost of capital) and applying it to a (2) cash flow forecast for each asset.[2]

The present-value cost to customers of the Recovery Bonds is higher than their nominal $7.5-billion value. Ordinarily, the present-value cost of a loan is simply equated to its nominal value. Implicit in this valuation is the assumption that the payer of interest retains the full benefit of the interest tax deduction and resulting lower effective interest cost, as is done when using the after-tax interest rate when calculating a company's weight average cost of capital (WACC).

But PG&E proposes to deduct the Recovery Bond interest from its corporate taxable income, claiming the interest tax benefit for shareholders without the corresponding interest expense, which is borne by customers through the Fixed Recovery Charge (FRC). This undeserved benefit, which PG&E would not be able to claim without the Securitization, comes straight out of the pockets of customers in the form of a higher-than-necessary FRC. Discounting the full interest expense (2.92%) at the true, after-tax, cost of capital (2.10%)[3] increases the present-value cost of the Bonds to customers by $0.85 billion, to $8.35 billion.[4]

Additional Shareholder Contributions are riskier and will come later than PG&E's analysis suggests. The nominal $7.59 billion of Additional Shareholder Contributions arise from tax benefits that are realized in proportion to PG&E's positive taxable income. Recognizing their link to taxable income is important for three reasons.

---

[2] While PG&E also uses DCF to estimate the value of the Trust, its analysis does not value each cash flow stream separately, instead applying to the combined net cash flows of the Recovery Bonds and the Customer Credit Trust a single discount rate – PG&E's return on rate base, 7.34% [Table 6-7, p. 6-29] – that does not accurately reflect either's underlying risk and cost of capital.

[3] 2.92% x (1 – 28.0% combined Federal and State tax rate) = 2.10%.

[4] All present values in this testimony are as of 2021, the year of the Securitization and Initial Shareholder Contribution.

First, taxable income is net of interest, i.e., after debtholders have been paid. Because the Additional Shareholder Contributions are linked to income after interest has been deducted, they are equivalent to equity cash flows, and the appropriate discount rate is therefore 10.25% to reflect PG&E's authorized return on equity (ROE).[5] Second, the link to positive taxable income will affect the *timing* of the Additional Shareholder Contributions – the number of years it will take PG&E to contribute the full $7.59 billion to the Trust. Third, the link to taxable income means the Additional Shareholder Contributions are uncertain. As discussed below, several provisions of the Customer Credit Trust impact customers asymmetrically because they fully absorb all losses but share gains with PG&E shareholders. This asymmetry results in a loss of value to customers that is not captured in the simple comparison of Trust assets and customer liabilities. Uncertainty amplifies this loss of value.

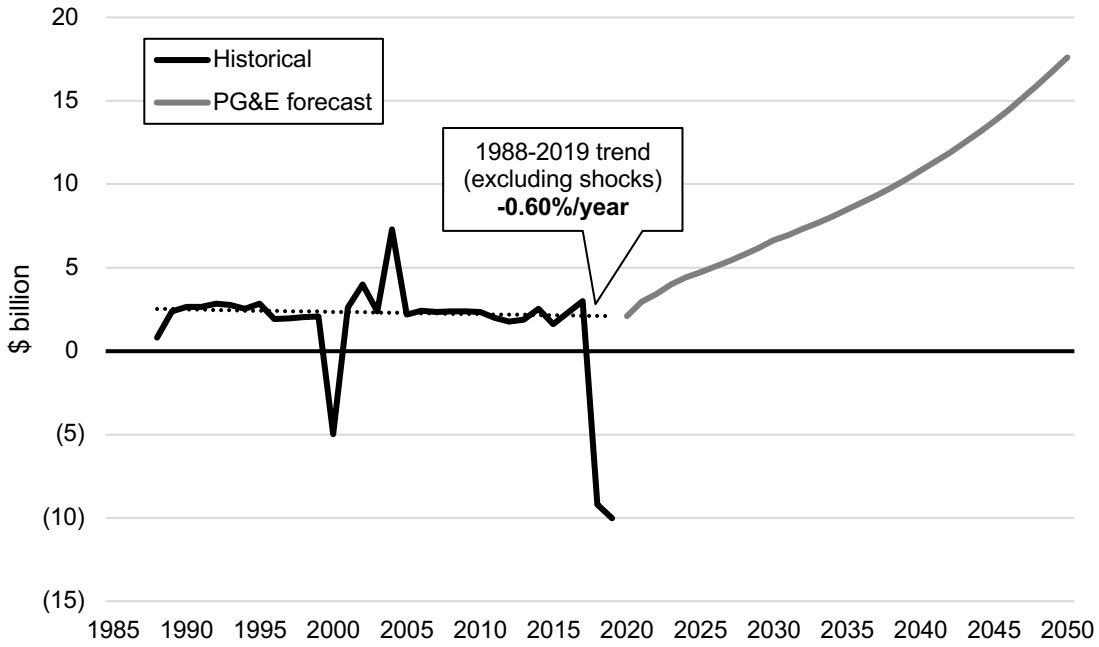
PG&E's income growth forecast is implausible. In the model provided in support of Table 6-2: Forecast Utilization of Shareholder Tax Benefits,[6] PG&E projects rate base and earnings before interest and taxes (EBIT) to rise 7% annually from 2024-2030 and 5% thereafter. This rate of growth – which, when added to PG&E's 2020-24 forecast, averages 5.83% from 2020 through 2050 – is remarkable and unrealistic considering:

- PG&E's historical EBIT growth rate. Excluding one-off events, PG&E's EBIT trended downward at -0.60%/year (-2.96% in real terms) over the thirty-two-year period from 1988 to 2019. PG&E's actual earnings over that period compared with forecasted future earnings in the PG&E model are shown in Figure 1.

[5] TURN's approach to valuing the Additional Shareholder contributions is similar to that of investment bank Lazard. "NOL Monetization Alternatives," an October 17, 2019, confidential presentation to PG&E provided in PG&E's response to TURN data request 1-2a. This presentation is included in Confidential Appendix E.

[6] PG&E testimony, p. 6-11.

Figure 1: Historical and forecast PG&E earnings before interest and taxes

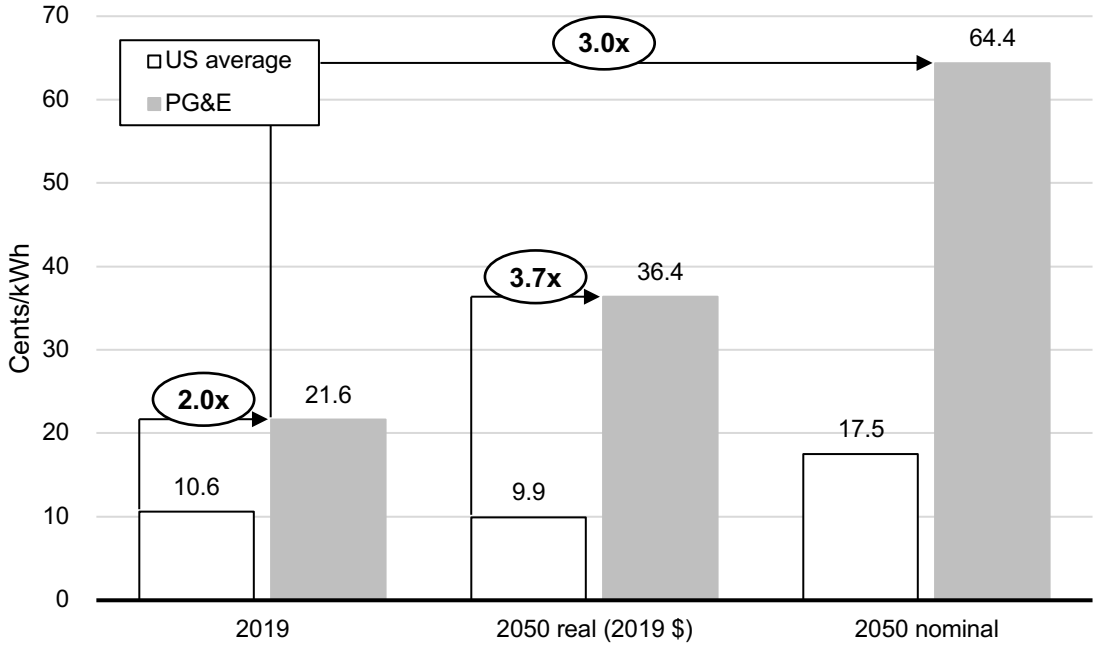


Source: FERC Form 1 via S&P Global; PG&E; TURN analysis

- The implied increase in PG&E's average bundled electric rate. Currently double the national average and the country's fourth highest, by 2050, PG&E's average bundled electric rate would be 36.4 cents/kWh in constant 2019 dollars, 3.7 times

the forecast national average (Figure 2). In nominal terms, PG&E's rates would triple, to 64.4 cents/kWh.[7]

Figure 2: Current and estimated 2050 PG&E average bundled electric rate under PG&E's rate base and EBIT growth forecast



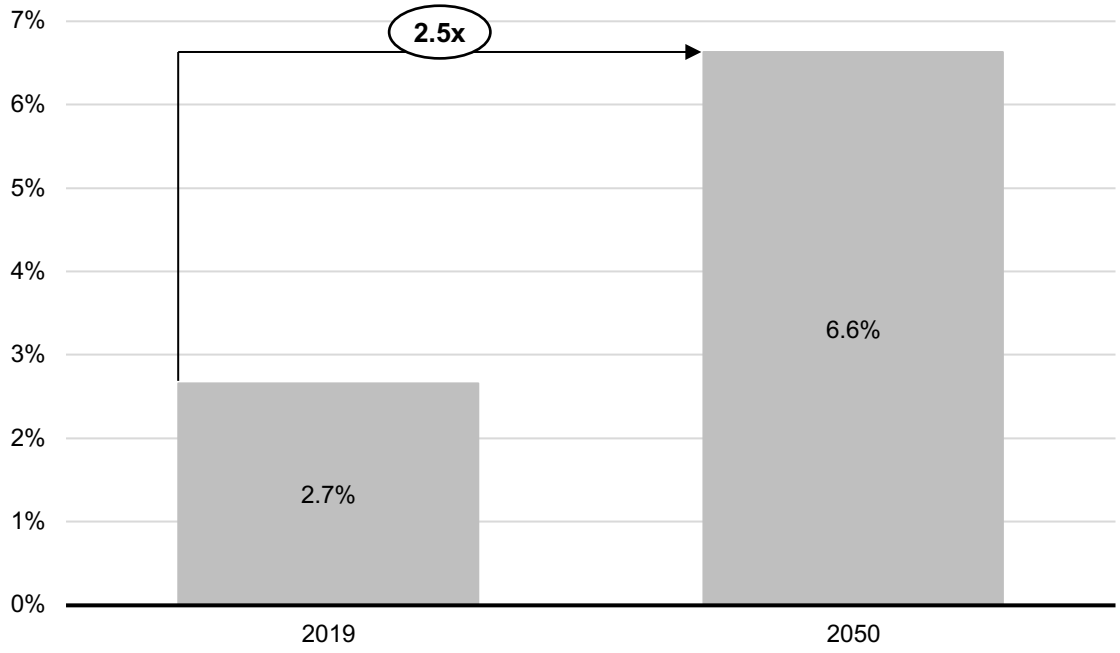
[7] Assumptions:

- National average rate forecast: all sectors average real growth of -0.16/year from Energy Information Administration's "Annual Energy Outlook 2020" (EIA AEO) Reference case.
- PG&E average rate forecast:
  - Two-thirds of PG&E's current average rate, reflecting the approximate historical share attributable to operating costs, held constant in real terms.
  - The remaining one-third escalated at PG&E's 2020-50 average rate base growth rate (5.83%) less inflation (1.86%) less the energy for load forecast growth rate for PG&E from the 2020 Integrated Energy Policy Report "California Energy Demand 2019-2030 Baseline Forecast – Mid Demand Case" (0.24%) = 3.65%.
- All inflation forecasts referenced in this testimony are based on the "30-year Breakeven Inflation Rate" provided by the Federal Reserve Bank of St. Louis for October 2020. "The breakeven inflation rate represents a measure of expected inflation derived from 30-Year Treasury Constant Maturity Securities (BC_30YEAR) and 30-Year Treasury Inflation-Indexed Constant Maturity

Source: PG&E; EIA; TURN analysis

- PG&E's implied share of total US utility income. Currently, PG&E accounts for ~2.7% of the net income of all FERC Form-1 and Form-2 filers (2.4% electric/5.3% gas). Assuming PG&E's forecast is realized[8] while the rest of the sector's income grows commensurate with total national electric and gas utility real revenue (0.74%),[9] PG&E's share of industry profit would increase 2.5 times, to nearly 7%, as shown in Figure 3.

Figure 3: Current and estimated 2050 PG&E share of US utility industry profit under PG&E income growth assumptions



Source: PG&E; EIA; FERC; TURN analysis

Securities (TC_30YEAR). The latest value implies what market participants expect inflation to be in the next 30 years, on average." https://fred.stlouisfed.org/series/T30YIEM; last accessed November 3, 2020.

[8] PG&E's implied real growth rate is (1+5.83%)/(1+1.86%) – 1 = 3.90%.

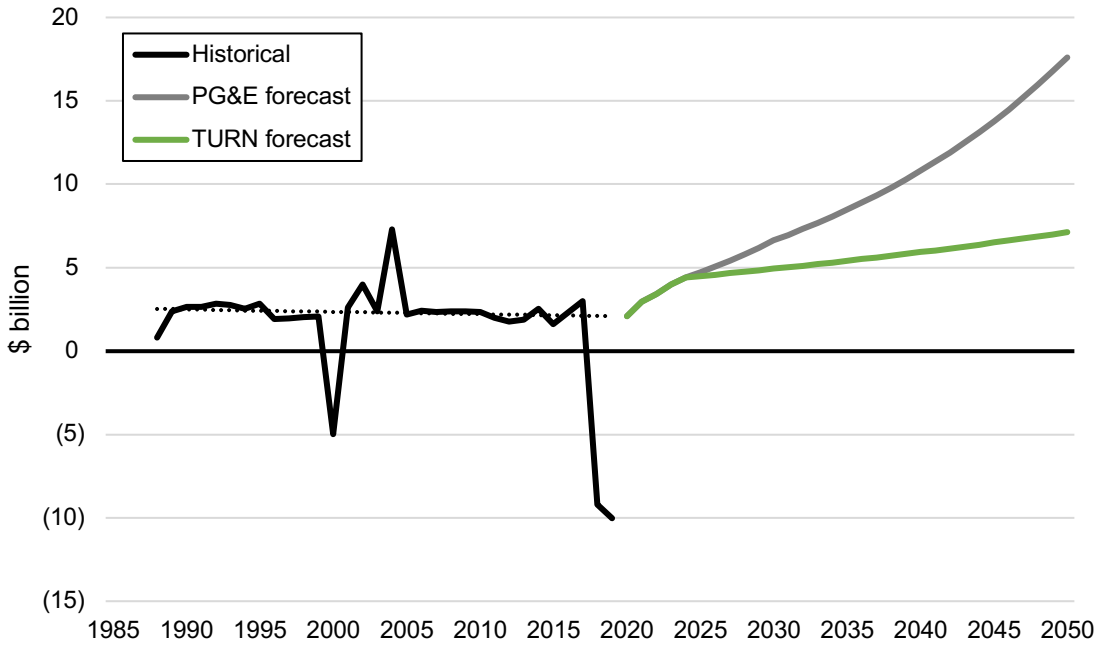
[9] EIA AEO Reference case.

TURN requested any and all documentation PG&E had to support this growth forecast. None of the information provided explained the source of the 5-7% growth rate assumption; they are simply hard-coded figures in their spreadsheet model.[10] If there is a single "smoking gun" demonstrating the complete implausibility of PG&E's analysis of its Securitization proposal, the forecast of future earnings is it. These future values are not the product of any legitimate analysis but are instead an invented plug to ensure that the analysis in support of the Securitization proposal shows a decent likelihood of a reasonable outcome for ratepayers.

TURN developed an alternative forecast for PG&E's future income, based on the "2019-2030 Baseline Forecast – Mid Demand Case" electric and gas forecasts for PG&E developed for the 2020 Integrated Energy Policy Report Update (weighted average of 0.15%),[11] market-based inflation expectations (1.86%), and modest efficiency gains of -0.16% per year (i.e., profit per kWh increases slightly less than inflation),[12] for a net growth rate of 1.86%/year. TURN's forecast is compared to PG&E's in Figure 4.

[10] PG&E's response to TURN data requests 1-3 and 8-1.
[11] Weighted average = electric energy to serve load growth of 0.24% x 82% of income + gas demand growth of -0.22% x 18% of income.
[12] Equated to EIA AEO Reference case decline in real electricity prices.

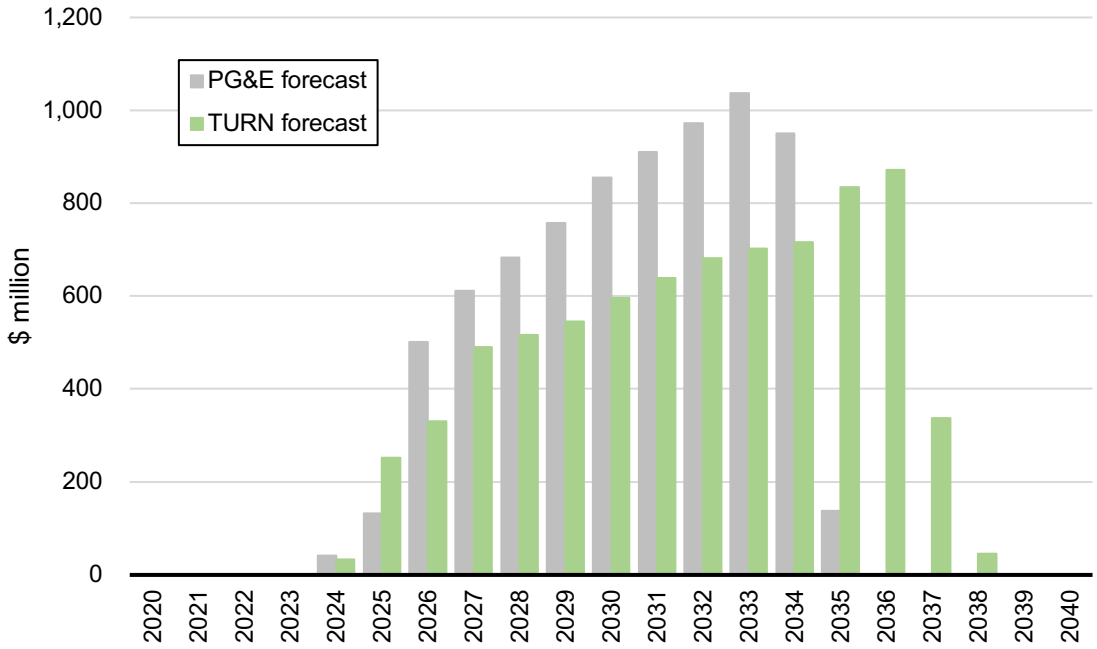
Figure 4: Historical and forecast PG&E earnings before interest and taxes



Source: FERC Form 1 via S&P Global; PG&E; TURN analysis

Because the Additional Shareholder Contributions are directly proportional to income, a lower income growth rate delays those contributions relative to PG&E's forecast, as shown in Figure 5. Under this more realistic forecast and using the appropriate discount rate, $7.59 billion of nominal Additional Shareholder Contributions has a present value of $2.82 billion.

Figure 5: Additional Shareholder Contributions to Customer Credit Trust[13]

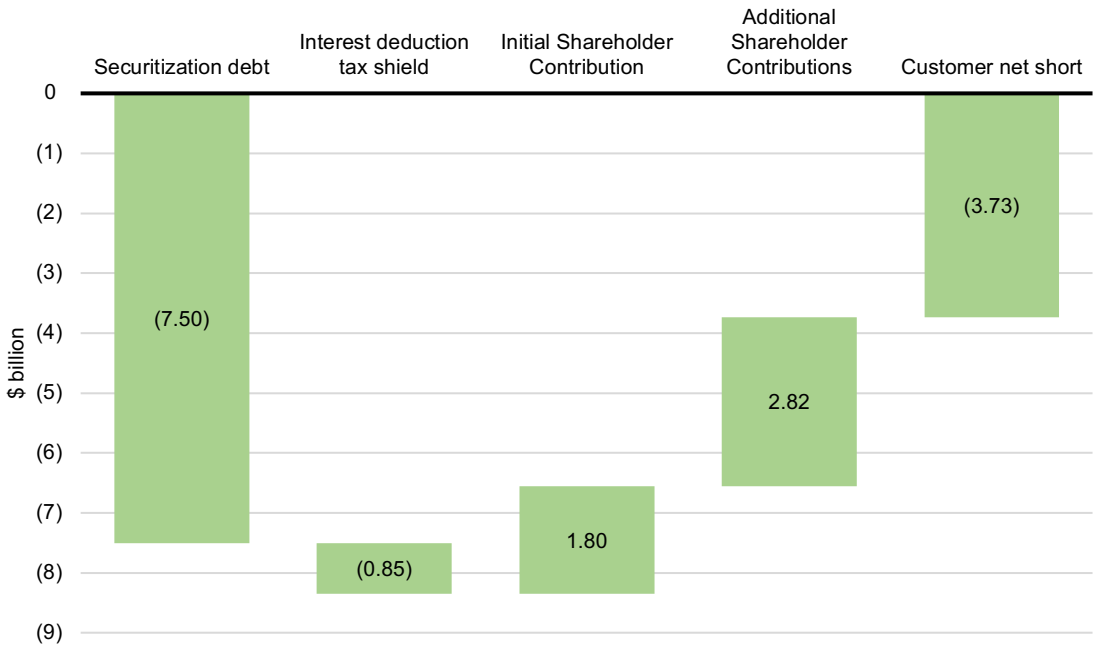


Source: PG&E; TURN analysis

The few simple adjustments to PG&E's analysis described so far – looking at each cash flow stream individually, discounting them at their own cost of capital, and assuming a more realistic income forecast – produce a customer net short of $3.73 billion (Figure 6).

[13] TURN identified several potential errors and inconsistencies in PG&E's calculations of annual tax benefits which result in differences in TURN's and PG&E's estimates of the Additional Shareholder Contributions even during the explicit 2020-24 forecast period. TURN attempted to resolve its concerns through written data requests submitted to PG&E. Despite TURN's efforts, PG&E refused to acknowledge the errors and did not provide sufficient information to explain the inconsistencies.

Figure 6: Breakdown of customer net short



Even before accounting for the Trust's asymmetric provisions that erode its value to customers, to be discussed below, the Trust is effectively 45% under-funded. This yawning gap between the value of the Recovery Bonds and Shareholder Contributions is a fundamental, inescapable problem with PG&E's proposal. If it did not exist, there would be no need for the Securitization to begin with; PG&E could pledge the Shareholder Contribution cash flows as security without a customer guarantee. This under-funding translates directly into an unacceptably high risk of not satisfying the "neutral, on average, to ratepayers" standard.

III. The Trust's underfunding poses an unacceptably high risk of not satisfying the "neutral, on average, to ratepayers" standard.

PG&E maintains that ratepayer-neutrality is satisfied if the Trust (1) is able to fully fund the Customer Credit in each billing period over the life of the Securitization and (2) ends in surplus. But PG&E's own evidence in support of ratepayer-neutrality is weak. PG&E's model output data indicate only an 84% probability of fully funding the Customer Credit in every billing period over the life of the Securitization, which translates into a one-in-six chance of a

shortfall at some point over the life of the Trust.[14] Similarly, PG&E's claimed $0.12-billion (present value) expected customer surplus – which it deems a "significant opportunity for customers"[15] – is a mere 1.4% pittance relative to the $8.36 billion present-value cost to customers of the Securitization.

Even these weak indicators of ratepayer-neutrality are significantly overstated. In addition to the discount-rate adjustments and delay to the Additional Shareholder Contributions discussed above, several other aspects of PG&E's analysis understate the risks to ratepayer-neutrality and further erode the Trust's value.

- PG&E's return assumptions for the Trust's three asset classes are aggressive – 104 basis points (18%) higher than the average of eighteen recent public forecasts from leading investment managers and consultants.
- PG&E's analysis only accounts for one source of uncertainty – the Trust's returns. Another significant source of uncertainty is the outlook for PG&E's income growth, which, as described above, determines the timing of the Additional Shareholder Contributions and, therefore, the Trust's cash flows and prospects for fully funding the Customer Credit in every billing period.
- PG&E's treatment of Customer Credit shortfalls and the Surplus Sharing mechanism impact customers asymmetrically, fully burdening them with all losses (and then some) but requiring them to share gains with PG&E shareholders. This asymmetry results in a loss of value to customers that is not captured in the simple comparison of Trust assets and customer liabilities.

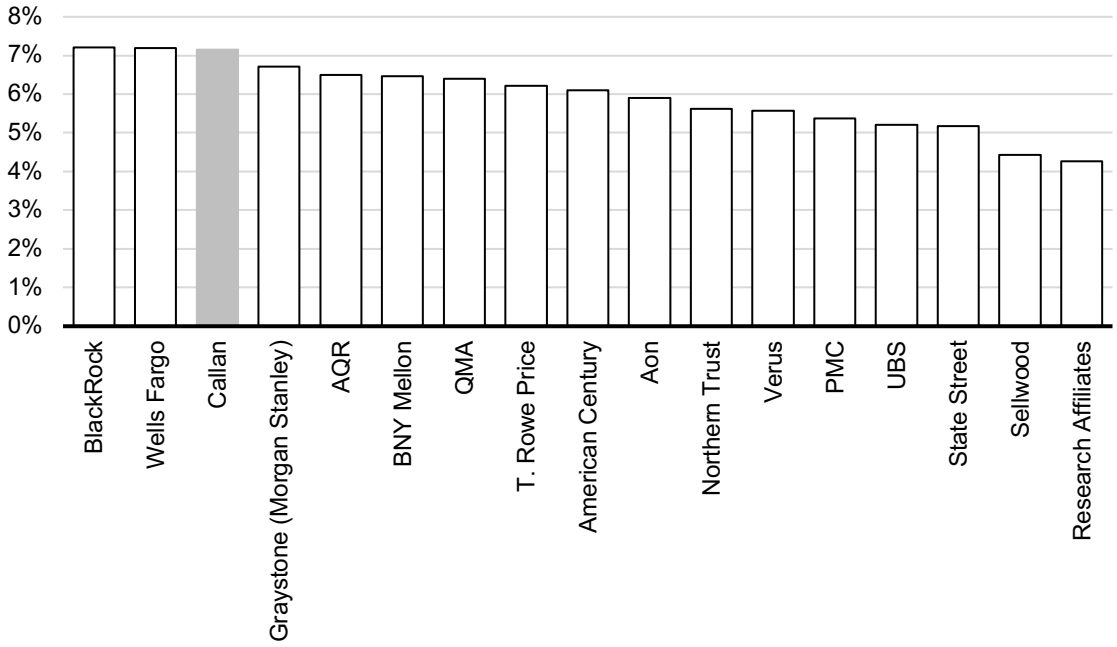
Adjusting PG&E's analysis of the Trust's value for each of these dramatically increases the probability of shortfall and widens the valuation gap.

[14] PG&E testimony, Table 6-7: Range of Surplus Outcome and Year of First Shortfall, p. 6-29.
[15] PG&E testimony, p. 1-14.

A. PG&E's CCT return assumptions are aggressively high.

PG&E commissioned the investment consulting firm Callan to estimate the Trust's future returns, value, and ability to reimburse customers for the Fixed Recovery Charge over the life of the securitization based on Callan's projections of future investment returns. TURN compared Callan's 30-year capital market projections for the three main asset classes in which the Trust is expected to invest[16] to comparable 30-year forecasts from eighteen reputable investment management and consulting firms ("investors").[17] As seen in Figures 7, 8, and 9, Callan's are consistently in the highest quartile of forecasts.[18]

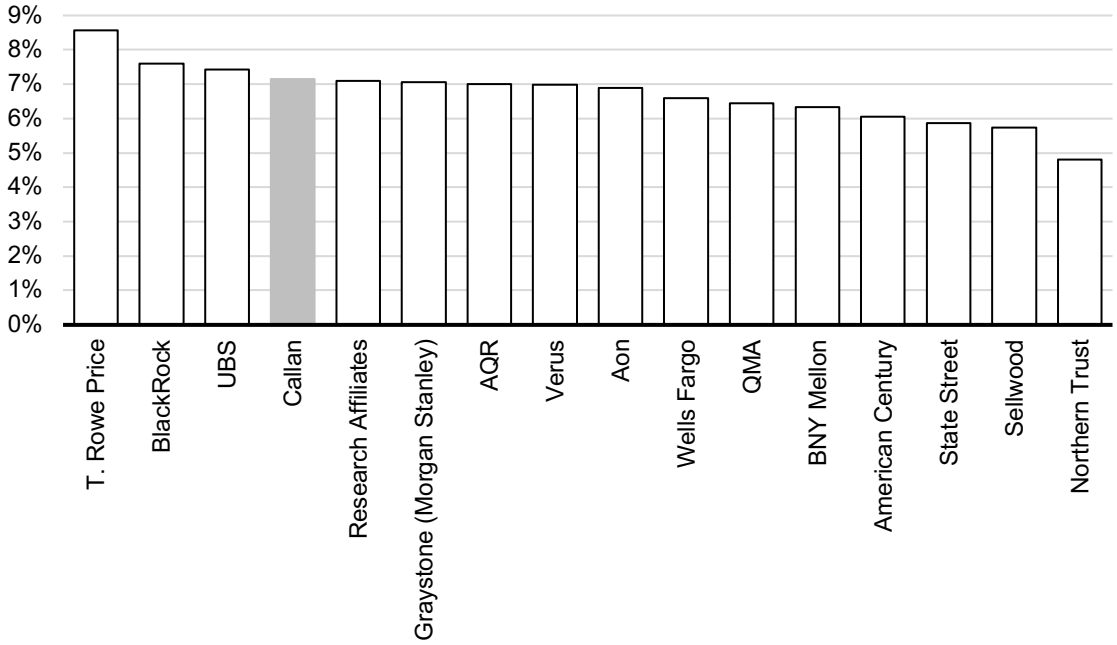
Figure 7: Expected 30-year geometric return – broad US equity



Source: Investment manager and consultant reports; TURN analysis

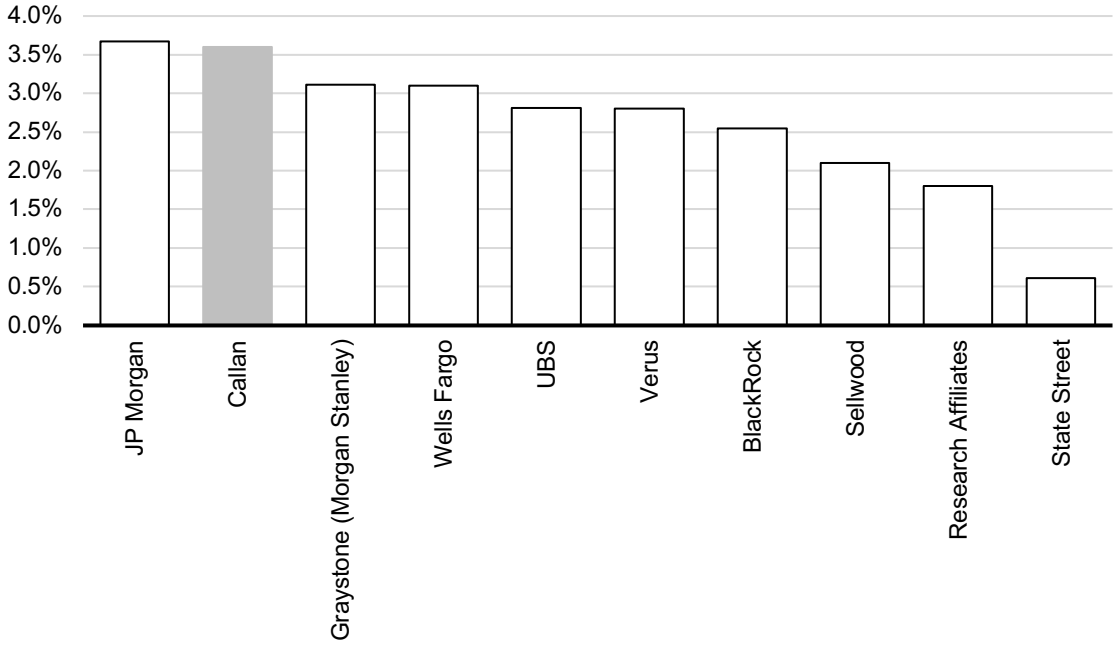
[16] PG&E testimony, Table 6-4: Callan Long-Term Capital Market Projections, p. 6-27.
[17] Appendix B provides a list of the forecasts reviewed and details of TURN's analysis.
[18] Not all reports had comparable data for all three asset classes.

Figure 8: Expected 30-year geometric return – non-US equity



Source: Investment manager and consultant reports; TURN analysis

Figure 9: Expected 30-year geometric return – US fixed income



Source: Investment manager and consultant reports; TURN analysis

Table 1 summarizes the forecast averages and Callan's ranking among its industry peers. While Callan's assumptions fall within the range of the other forecasts, they are 0.42% to 1.18% higher than the average for each asset class.

Table 1: Summary of investors' 30-year return forecasts and Callan's position among them

Line no.		Broad US equity	Non-US equity	US fixed income
1	Callan public 10-year	7.15%	7.15%	3.60%
2	Number of forecasts	17	16	10
3	Average geometric return	5.97%	6.73%	2.62%
4	Callan – average	+1.18%	+0.42%	+0.98%
5	Standard deviation	0.90%	0.87%	0.92%
6	Callan rank	3 (18%)	4 (25%)	2 (20%)
7	Percentile	9%	31%	14%

TURN believes the average of the investor forecasts represents a more realistic and appropriate set of base case return and risk (standard deviation) assumptions. Table 2 compares Callan's key forecast assumptions to the investor averages. For the portfolio as a whole, the investor-average expected return is 104 basis points (15%) lower with 10% less risk.[19]

Table 2: TURN (investor average) and Callan 30-year return forecasts

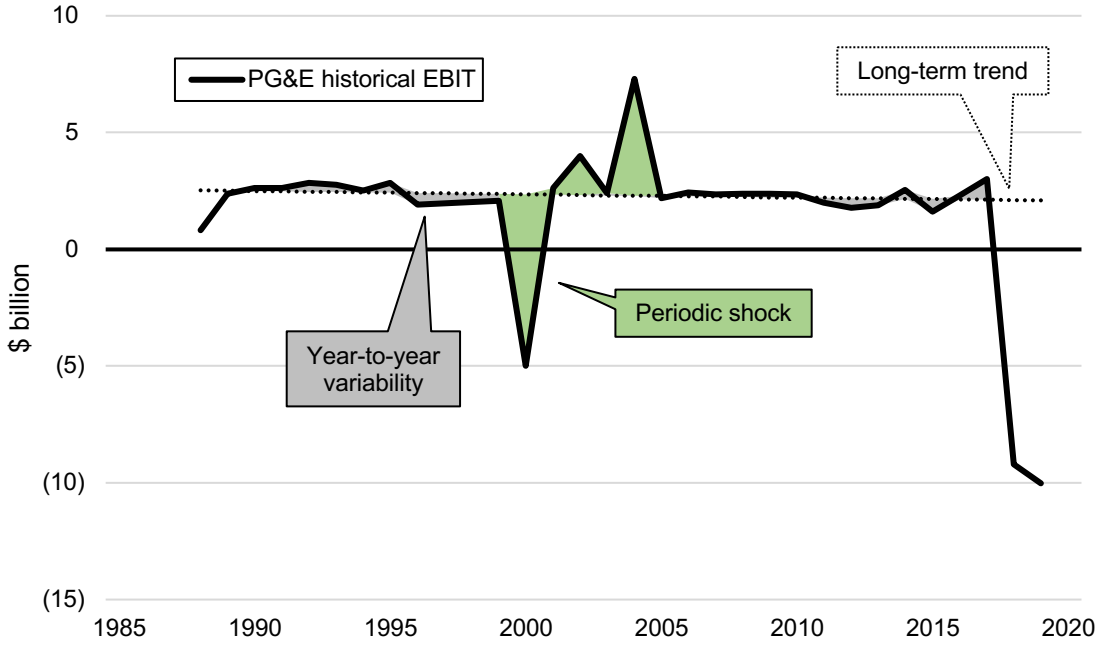
Line no.	Asset class	Weight	Geometric average return	Standard deviation	Arithmetic average return
	Callan				
1	Broad US equity	56%	7.15%	18.10%	8.63%
2	Non-US equity	24%	7.15%	20.50%	9.03%
3	US fixed income	20%	3.60%	3.75%	3.67%
4	Portfolio total	100%	6.79%	14.34%	7.73%
	TURN (investor average)				
5	Broad US equity	56%	5.97%	16.23%	7.18%
6	Non-US equity	24%	6.73%	17.87%	8.17%
7	US fixed income	20%	2.62%	4.26%	2.70%
8	Portfolio	100%	5.75%	12.85%	6.52%

[19] Among the nine reports with 30-year forecasts for all three asset classes, the average portfolio return and risk were essentially the same, 5.72% and 12.87%, respectively.

B. The outlook for PG&E's income is a significant additional source of uncertainty affecting the Securitization's ratepayer-neutrality

PG&E's analysis of the Trust's value and ratepayer-neutrality only accounts for one source of uncertainty – the Trust's returns. Another significant source of uncertainty is the outlook for PG&E's income growth, which, as described above, determines the timing of the Additional Shareholder Contributions and, therefore, the Trust's cash flows and prospects for ratepayer-neutrality. There are three main sources of uncertainty in PG&E's future income, illustrated in Figure 10: the overall growth trend, normal year-to-year variation that all utilities face, and periodic one-off shocks (both positive and negative) to which PG&E has been uniquely prone.

Figure 10: Three sources of uncertainty in PG&E's income outlook



Source: FERC Form 1 via S&P Global; TURN analysis

TURN developed models for each of these three sources of uncertainty based on PG&E's historical income and publicly available forecasts of future demand growth, inflation, and utility rates. Appendix C summarizes the key elements of TURN's modeling approach.

C. Asymmetric Trust provisions further erode the value of the Trust

The Customer Credit Trust's treatment of Customer Credit shortfalls and the Surplus Sharing mechanism impact customers asymmetrically, fully burdening them with all losses (and then some) but requiring them to share gains with PG&E shareholders. This asymmetry results in a loss of value to customers that is not captured in the simple comparison of Trust assets and customer liabilities.

Tax gross-up. In the discussion of its Trust modeling results PG&E describes an income tax gross-up mechanism for Customer Credit shortfalls:[20]

> "During a period in which the Customer Credit is less than the FRC, any portion of the FRC that exceeds the Customer Credit and is in excess of tax deductions related to interest payments on the securitized Bonds (i.e., principal) is taxable income. Thus it is assumed that customers will reimburse PG&E for any computed tax liability created by the principal component of shortfalls. The grossed-up tax rate used on the principal component of shortfalls in the analysis was 38.9 percent."

Customers not only cover the shortfalls but, adding insult to injury, are also required to compensate PG&E for the associated tax liability. This represents an incremental cost to customers not reflected in the comparison of their assets and liabilities.

Customer Credit shortfall make-up. In its overview of the Customer Credit, PG&E refers to a Customer Credit make-up mechanism:[21]

> "If assets in the Customer Credit Trust are insufficient to fund a Customer Credit equal to the FRCs for a period of time, the future Customer Credit Trust balance will first be used to make up any previous shortfalls in Customer Credits."

The Callan model does not include such a make-up provision. Instead, it accumulates the shortfalls, including the tax gross-up described above, over time and deducts them from any Trust ending surplus before Surplus Sharing, effectively crediting them back to customers at the end of the Trust's life. Because Callan's model does not account for any time-value-of-money

[20] PG&E testimony, p. 6-28, footnote 18.
[21] PG&E testimony, p. 6-2.

for these risky "loans" to the Trust, it understates their economic cost. To compensate, TURN added a cost-of-capital charge to the shortfall payments equivalent to PG&E's ROE as the "loans" are only reimbursed with Additional Shareholder Contributions, which, as explained above, have the same risk profile as PG&E's equity.

Surplus Sharing. PG&E proposes to share with customers 25% of any Customer Credit Trust surplus. The 75% of Trust surplus that goes to PG&E is a third loss of value to customers that is not reflected in the comparison of their assets and liabilities.

D. More realistic assumptions and properly accounting for customer costs significantly reduce the probability the Securitization will be ratepayer-neutral

TURN had access to Callan's Monte Carlo simulation model and consulted with Callan through a series of information-sharing sessions organized by PG&E to assist TURN in using it. TURN re-ran the model with its own assumptions for PG&E's income (Additional Shareholder Contribution timing) and Trust returns, and with the other adjustments described above.[22] Table 3 compares TURN's results to those presented by PG&E in Table 6-7: Range of Surplus Outcomes and Year of First Shortfall.[23] Under these more realistic assumptions, the Trust has a 43% probability of shortfall over the course of its life and a 15% probability of shortfall as early as 2029 (corresponding to the 85th percentile and shaded in gray in the table). In contrast, PG&E's analysis concludes a shortfall that early in the Trust's life is virtually impossible, with the *earliest* shortfall in its 2,000 simulations occurring fourteen years later in 2043. This stark difference in the potential onset of Trust shortfalls is a clear demonstration of how PG&E's analysis grossly underestimates the Securitization's risks to ratepayer-neutrality.

---

[22] During its conversations with Callan, TURN learned that the model Callan uses to forecast returns contains numerous "tuning" parameters that require recalibration whenever any assumption is changed – a process Callan advised against. Instead, TURN generated a larger set of simulation runs (10,380, compared to Callan's 2,000) using Callan's assumptions, scaled them to its own return assumptions using well-known statistical techniques (normal rescoring), and re-simulated the Trust's performance. This approach allowed TURN to produce reliable results running the model on its own while still retaining the nuanced cross-asset and inter-temporal relationships embedded in Callan's return forecasting model.

[23] PG&E testimony, p. 6-29.

While the expected future value of the Trust, at $1.150 billion (Table 3, line 20), is positive, the customer value is -$0.330 billion (in 2050 dollars) after the Surplus Sharing mechanism, under which customers absorb 100% of deficits but keep only 25% of surpluses.[24] This is just one of several asymmetric aspects of the Trust that erode its value to customers.

[24] 25% x $1.973 = $0.934 - $0.824 = -$0.330.

Table 3: Range of surplus outcomes and year of first shortfall under PG&E and TURN income and return assumptions

$ million

		PG&E		TURN	
Line no.	Percentile	Nominal surplus (deficit)	First shortfall year	Nominal surplus (deficit)	First shortfall year
1	5%	$16,639	NA	$9,618	NA
2	10%	$12,642	NA	$6,829	NA
3	15%	$9,874	NA	$5,243	NA
4	20%	$8,176	NA	$4,178	NA
5	25%	$7,005	NA	$3,301	NA
6	30%	$6,034	NA	$2,628	NA
7	35%	$5,180	NA	$2,041	NA
8	40%	$4,468	NA	$1,559	NA
9	45%	$3,860	NA	$1,112	NA
10	50%	$3,276	NA	$694	NA
11	55%	$2,785	NA	$292	NA
12	60%	$2,292	NA	($40)	2050
13	65%	$1,809	NA	($507)	2049
14	70%	$1,372	NA	($981)	2048
15	75%	$914	NA	($1,446)	2047
16	80%	$421	NA	($1,905)	2046
17	85%	($106)	2050	($2,423)	2029
18	90%	($851)	2049	($3,253)	2027
19	95%	($1,928)	2047	($5,094)	2027
20	Expected value (EV)	$4,414		$1,150	
21	EV positive outcomes	$4,566		$1,973	
22	EV negative outcomes	($152)		($824)	
23	Customer EV	$535		($330)	
24	Breakeven pre-tax return	4.04%		5.17%	
25	Probability of surplus/deficit	84%/16%		60%/40%	
26	Probability of shortfall[25]	16%		43%	

[25] "Shortfall" refers to the Trust's inability to fully fund the Customer Credit at any point in its life, a key criterion of ratepayer neutrality. "Surplus" and "deficit" refer to Trust ending values. It is possible to have a shortfall and still end in surplus after Additional Shareholder Contributions are added to the Trust and earn a return.

With these modeling results the customer asset/liability calculation can be adjusted for the loss of customer value due to the Customer Credit (CC) shortfall tax gross-up (plus its time-value-of-money) and the Surplus Sharing. The expected value in 2050 of the Customer Credit shortfall tax gross-up is $0.207 billion. The loss of customer value due to Surplus Sharing, relative to the value of the Trust assets, is simply the difference between the Trust and customer expected values: $1.150 billion + $0.330 billion = $1.480 billion. Discounting each back from 2050 at its respective cost of capital – PG&E's ROE (10.25%) for the CC shortfall tax gross-up and the expected after-tax return on the Trust (5.0%) for Surplus Sharing – yields additional losses of $0.01 billion and $0.34 billion. As shown in Figure 11, the customer gap is now $4.08 billion, leaving the Trust 49% under-funded.

Figure 11: Breakdown of customer net short

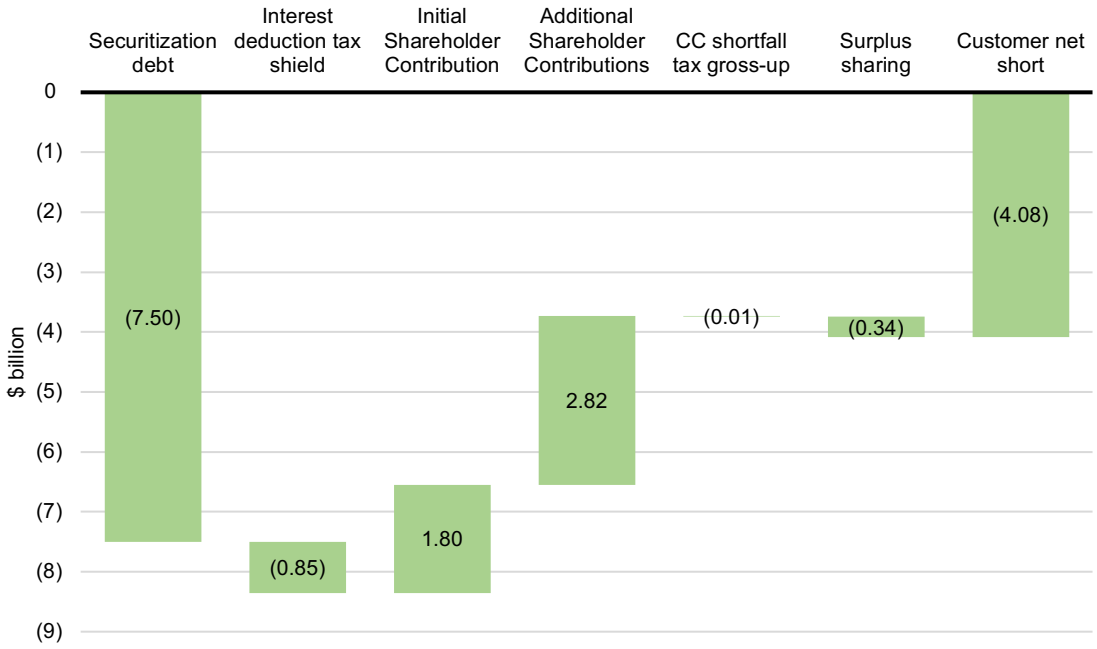
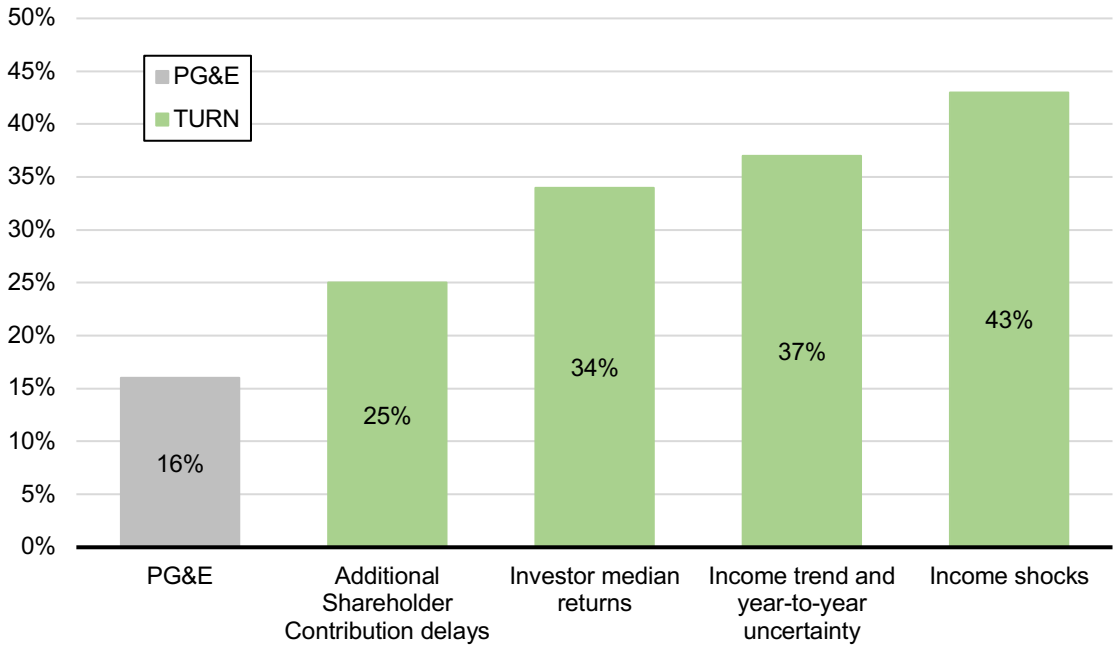


Figure 12 presents the sequential effect of each of TURN's changes on the probability of shortfall. Note that no single change to PG&E's assumptions accounts for most of the difference in shortfall probability. Additional Shareholder Contribution delays and investor returns each contribute 9%, while income variability and unanticipated income shocks add 3% and 6%,

respectively. This highlights the importance of recognizing *all* the potential risks to ratepayer neutrality, not just those that are obvious or easy to quantify.[26]

While TURN believes even PG&E's estimated shortfall probability of 16% is unacceptably risky to ratepayer neutrality, no reasonable person would conclude that a 43% risk meets this standard. To put these figures in context, the Recovery Bonds that customers are guaranteeing are expected to obtain a AAA credit rating. Since 1980, AAA-rated bonds have had a default rate of 0.00%. The quality of the customer guarantee to Recovery Bondholders far exceeds that of PG&E's pledge to customers, another reflection of the yawning gap in value between customer assets and liabilities.

Figure 12: Probability of Customer Credit shortfall under PG&E and TURN assumptions



[26] TURN recognizes that this analysis does not incorporate other known risks, such as changes in tax law or corporate actions that could materially impact taxable income (e.g., asset sales, acquisitions, change of control), and others yet to be identified.

IV. Potential remedies

PG&E's proposed Securitization and Customer Credit Trust is clearly a very bad deal for customers: a $4.08-billion loss in present value terms and an unacceptably high risk of not being ratepayer-neutral. TURN therefore recommends the CPUC reject PG&E's application to protect ratepayer interests.

Should the Commission feel compelled to approve the Securitization, TURN has identified several potential remedies which singly or in combination could mitigate the risk to customers and bring PG&E's proposal closer to ratepayer-neutrality.

Increase the Initial Shareholder Contribution. The foregoing analysis suggests two potential criteria for determining an Initial Shareholder Contribution that is fair to customers and has a reasonable probability of being ratepayer-neutral throughout its life. The first is to close the current customer present-value net short of $4.08 billion. Adding this to the currently proposed $1.8 billion brings the total Initial Shareholder Contribution to $5.88 billion.

A second criterion is to ensure a maximum specified probability of shortfall over the Trust's life (currently 43%). Customers are providing sufficient security of payment to earn the Recovery Bonds a credit rating of AAA, which historically has corresponded to a 0% default rate. The Callan model can be used to estimate an Initial Shareholder Contribution that would provide customers comparable security of payment from the Trust.

Figure 13, which plots the shortfall probability (in log-scale) against the Initial Shareholder Contribution (ISC), illustrates this approach. In the base case (black line), PG&E's proposed $1.8-billion ISC has a shortfall probability (P_s) of 43%. As the ISC is increased, P_s declines exponentially: at ISC = $2.5 billion, P_s = 12%, and at ISC = $3.5 billion, P_s = 1%. This line can be extended by increasing the ISC until the target P_s is met.

Because the relationship between P_s and ISC is exponential, mathematically, even an infinite ISC would not reduce the shortfall probability to 0.00%. Historical AAA default rates are reported only to two decimal places, so a default rate of ½ of 0.01% would still be reported as 0.00%. TURN used this standard – 0.005% – as the target shortfall probability. To meet this standard, the Initial Shareholder Contribution would need to be $6.0 billion (indicated by the

open bubble at the end of the black dashed trend line), consistent with closing the present value gap.[27]

Increase the Additional Shareholder Contributions. This testimony has already identified one cash flow stream that rightly belongs to customers yet is not being contributed to the Trust – the interest tax shield on the Recovery Bonds, which has a present value of $0.85 billion. TURN's analysis indicates that increasing the Additional Shareholder Contributions (ASC) by the Recovery Bond interest tax shield can reduce the probability of shortfall from 43% to 11%.

Contributing the interest tax shield would benefit both PG&E and customers. As explained previously, the present value is $0.85 billion. With the interest contribution, satisfying P_s = 0.005% would require an ISC of $4.8 billion (indicated by the open bubble at the end of the gray dashed line representing the "Interest ASC" scenario), for a total contribution of $5.65 – $0.35 billion less than would be required by increasing the ISC alone. A lower total shareholder contribution is required because the interest deduction would flow into the Trust over its entire life and more closely match the Trust's expected outflows than the returns on the ISC.[28] This bigger "bang for the buck" can be observed in the steeper downward slope of the "Interest ASC" line relative to the base case.

A second potential source of cash flow that could be used to protect customers is PG&E's dividend, which it plans to resume as early as 2023 and would distribute nearly [redacted] to shareholders through [redacted].[29] As a condition of approval, the CPUC could require PG&E to make a voluntary but binding commitment to dedicate some portion of its future dividends to the Trust for a specified period of time (up to and including the life of the Trust) or until Trust assets reach a specified level. TURN's modeling indicates contributing an additional [redacted] in future dividends can reduce the probability of shortfall over the Trust's life to 10% and would require an ISC of $4.9 billion to meet P_s =

[27] The present value gap before the ISC is $4.08 billion + $1.8 billion (PG&E's proposed ISC) = $5.9 billion.
[28] The Customer Credit is intended to offset the FRC, which corresponds to the Securitization debt's interest and principal.
[29] PG&E testimony, Chapter 5, Exhibit 5.6, p. 5; PG&E testimony Chapter 1, Exhibit 1.5, p. 29.

0.005%, comparable to the effect of contributing the interest tax shield (the orange line representing the "Dividend ASC" scenario in Figure 13).[30]

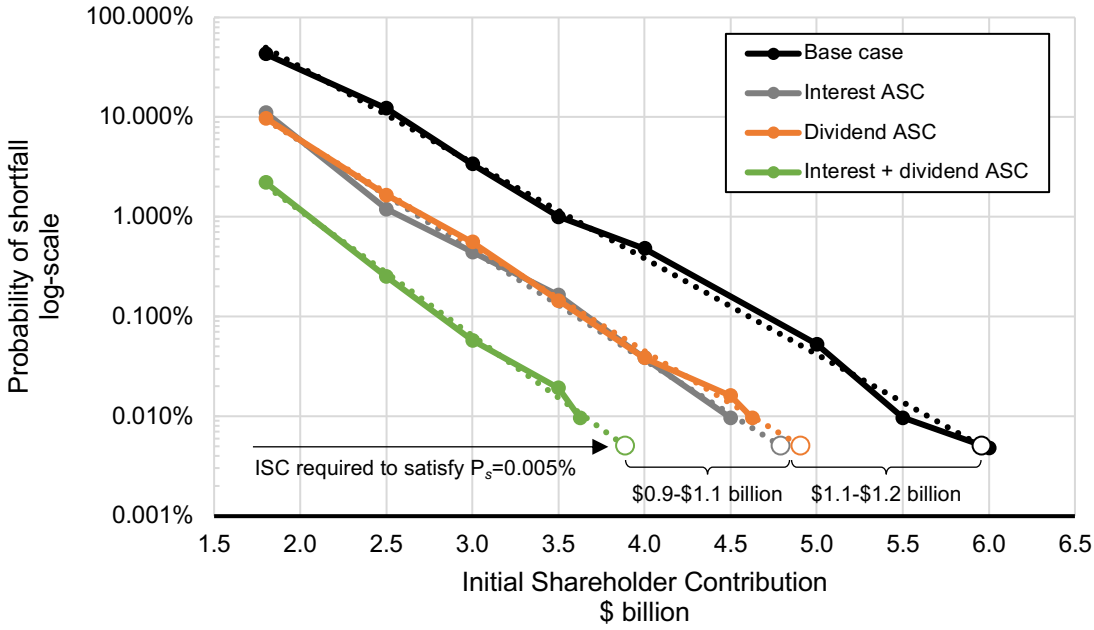
While the relationship between ISC and P_s for the dividend contribution is similar to that for the interest tax shield (as indicated by their overlapping plots), it is likely more expensive to PG&E. While the nominal value of the dividend contributions would be [redacted], the present value would be [redacted] at PG&E's 10.25% ROE.

The interest tax benefit and dividend contributions are combined in the "Interest + dividend ASC" scenario represented by the green line in Figure 13. Combined, they reduce the required ISC by $2.1 billion (a bit less than the sum of their individual effects[31]), to $3.9 billion.

[30] TURN estimated this amount as [redacted]. In TURN's modeling, the dividend is based on the underlying income trend growth rate, before the addition of year-to-year variation or shocks, to reflect their general stability. In the event of a negative shock, the dividend is suspended for four years; 50% of positive shocks are distributed as one-time dividends.

[31] The effects are not directly additive because the relationship between ISC and P_s is exponential. It is possible to estimate the sum of the effects of the interest and dividend contributions from their individual regression lines; the resulting estimate of the required ISC is within 2% of the estimate using the combined model results.

Figure 13: Probability of CCT shortfall as a function of Initial Shareholder Contribution under different Additional Shareholder Contribution scenarios



A third potential source of incremental cash is the removal of the Customer Credit shortfall tax gross-up described previously. According to TURN's analysis, the expected cost of this gross-up over the life of the Securitization is $207 million (in 2050).[32] Worse, it adds insult to injury since customers are already paying the difference between the Customer Credit and the FRC. This provision should simply be removed from the Trust agreement.

Change the Surplus Sharing mechanism. This testimony previously identified one deficiency in the Surplus Sharing mechanism: the Trust's ending surplus/deficit does not account for the time-value-of-money of any Customer Credit shortfalls. In its modeling, TURN added a capital charge equal to the Trust's after-tax expected return. This addition is one potential remedy.

Another remedy is to structure the Surplus Sharing to create an incentive for PG&E to voluntarily cure any Customer Credit shortfalls as they occur. For example, the customer share

[32] PG&E's testimony [p. 6-2] refers to a make-up provision that would reimburse customers for both the Customer Credit shortfall and tax gross-up from future Additional Shareholder Contributions, but details are not provided and Callan's model does not include such a mechanism.

of any residual value could increase from 25% to 100% if PG&E fails to voluntarily cure any Customer Credit shortfalls using shareholder funds. The testimony of TURN's Jennifer Dowdell further discusses this potential remedy.

APPENDIX A

STATEMENT OF QUALIFICATIONS FOR MARK ELLIS

I am an independent consultant and business advisor and have been working in the energy and utility sector for over twenty-five years. During this time, I led the strategy function for a major US utility holding company, consulted to companies and government agencies across the energy value chain ("from wellhead to wall-socket"), and contributed to the development of billions of dollars of energy infrastructure worldwide.

From 2004 to 2019, I held several positions in corporate and business development at Sempra Energy, including Chief of Corporate Strategy. While there, I led hundreds of projects and initiatives spanning corporate and business unit strategy, finance, risk management, project development, regulatory and environmental policy, and technology assessment, and advised the organization's leaders on its highest-priority issues and questions.

Prior to my work at Sempra, I worked as a management consultant in McKinsey & Company's energy practice where I advised corporations and government agencies across the energy value chain, including Governor Gray Davis during the 2000-01 California electricity crisis. Prior to McKinsey, I held various engineering and project development positions with ExxonMobil, Southern California Edison, and Sanyo Electric in Osaka, Japan. My first job out of high school was with LADWP, as a seasonal waterworks laborer.

I have an MS from MIT's Technology & Policy Program, and a BS in mechanical engineering from Harvard University. I also spent one year pursuing traditional Jewish religious studies in Jerusalem.

APPENDIX B

INVENTORY OF
CAPITAL MARKET ASSUMPTIONS REPORTS

Appendix B: Inventory of Capital Market Assumptions Reports

Line no.	Investment management or consulting firm	Report title	Date
1	American Century Investments	Long-Term Capital Market Assumptions: Methodology and Models Underpinning Asset Allocation Solutions	9/19
2	Aon	Capital Market Assumptions	6/20
3	AQR Capital Management	Capital Market Assumptions: Expected real returns for major asset classes	3/20
4	BlackRock Investment Institute	Capital Market Assumptions	6/20
5	BNY Mellon Wealth Management	10-Year Capital Market Assumptions: Calendar Year 2020	3/20
6	Callan Institute	Capital Market Assumptions: 2020-2029	2/20
7	Cliffwater LLC	Cliffwater Q1 2020 Long Term (10 Year) Capital Market Assumptions	1/20
8	Evestment PMC Quantitative Research Group	Capital Markets Assumptions 2020	3/20
9	fi^3 Financial Advisors	April 2020 Outlook	4/20
10	GMO LLC	7-Year Asset Class Real Return Forecasts	8/20
11	Graystone Consulting (Morgan Stanley)	Annual Update of GIC Capital Market Assumptions	4/20
12	Invesco Investment Solutions	2020 Long-Term Capital Market Assumptions: Q3 update	6/20
13	J.P. Morgan Asset Management	2020 Long-Term Capital Market Assumptions: LTCMA Mark-to-Market: COVID-19 - new cycle, new starting point	3/20
14	Morningstar Research	Morningstar Markets Observer	6/20
15	Northern Trust	Capital Market Assumptions: Five-Year Outlook: 2021 Edition	8/20
16	PIMCO	PIMCO's Capital Market Assumptions, June 2020	6/20
17	QMA (PGIM)	2020 Q3 Capital Market Assumptions	6/20
18	Research Affiliates	Asset Allocation Interactive	8/20
19	Sellwood Consulting LLC	2020 Capital Market Assumptions	2/20
20	State Street Global Advisors	Long Term Asset Class Forecast: Q2 2020	3/20
21	T. Rowe Price	Capital Market Assumptions: Five-Year Perspective 2020	1/20
22	UBS	Capital Market Assumption (CMA) & Strategic Asset Allocation (SAA) Updates: Strategic and equilibrium assumptions & SAA models by risk and investor characteristic	4/20
23	Vanguard Research	Beyond the pandemic: What to expect from stocks, bonds	6/20
24	Verus Advisory	2020 Capital Market Assumptions	11/19
25	Wells Fargo Investment Institute	2020 Capital Market Assumptions: Methodology--the building-block approach	7/20

Calculations supporting TURN's 30-year return forecasts can be found in Mr. Ellis's workpapers Excel file, tabs CMA and F7-9 T1 AppB.

APPENDIX C

TURN MODELING ASSUMPTIONS AND DATA SOURCES

Appendix C: Modeling assumptions and data sources for three sources of uncertainty TURN incorporated into PG&E's income outlook

Line no.			
	EBIT growth trend		
1	**Model**	Normally distributed random compound annual growth from 2024	
	Input assumptions	Mean	Standard deviation (uncorrelated)
2	Mean growth	1.68%	0.82%
3	= real demand	0.15%	0.69%
4	+ efficiency	-0.16%	0.21%
5	+ inflation	1.86%	0.40%
6	**Years applied**	2025-50	
	Sources		
7	Demand	Weighted average (by share of PG&E income, 82%/18% electric/gas) growth rate from 2020 Integrated Energy Policy Report (IEPR) Update "2020-30 Baseline Forecast – Mid Demand Case" for PG&E	24 weighted average growth rates from 8 electric and 3 gas IEPR demand forecasts
8	Efficiency	EIA AEO Reference case real electricity retail price growth rate	22 EIA AEO Reference and Side case real electricity price growth rates
9	Inflation	Federal Reserve Bank of St. Louis October 2020 monthly average 30-year breakeven inflation rate	22 EIA AEO Reference and Side case CPI growth rates
	Year-to-year variation		
10	**Model**	Normally distributed random yearly percentage variation from PG&E (2021-24) or TURN continuously compounded (2025-50) static EBIT forecast	
11	**Input assumptions**	Zero mean. Standard deviation (14.9%) of percentage differences in PG&E's 1988-2019 EBIT from its underlying growth trend, excluding one-off shocks (greater than +/-50%)	
12	**Years applied**	2021-2050 with five-year linear phase-in factor (0.2 in 2021, … , 1.0 in 2025)	
13	**Source**	FERC Form 1 via S&P Global	
	Periodic shocks		
14	**Models**	Exponentially distributed random event arrival times	Log-normally distributed random percentage variation from PG&E (2021-24) or TURN continuously compounded (2025-50) static EBIT forecast
15	**Input assumptions**	Average frequency of one-off shocks to PG&E EBIT, 1988-2019	Historical EBIT shocks, 1988-2019 (percentage difference from underlying growth trend greater than +/-50%)
16		Mean Positive: 2/32 = 0.0625 Negative: 4/32 = 0.125	Mean | standard deviation Positive: 145% | 103% Negative: -373% | 234%
17	**Years applied**	Positive: 2024-50; negative: 2021-50	
18	**Source**	FERC Form 1 via S&P Global	

APPENDIX D

SELECTED PG&E RESPONSES TO TURN DATA REQUESTS

APPENDIX E

PG&E RESPONSE TO TURN DATA REQUEST 1, QUESTION 2 (CONFIDENTIAL)

APPENDIX B

INVENTORY OF
CAPITAL MARKET ASSUMPTIONS REPORTS

Appendix B: Inventory of Capital Market Assumptions Reports

Line no.	Investment management or consulting firm	Report title	Date
1	American Century Investments	Long-Term Capital Market Assumptions: Methodology and Models Underpinning Asset Allocation Solutions	9/19
2	Aon	Capital Market Assumptions	6/20
3	AQR Capital Management	Capital Market Assumptions: Expected real returns for major asset classes	3/20
4	BlackRock Investment Institute	Capital Market Assumptions	6/20
5	BNY Mellon Wealth Management	10-Year Capital Market Assumptions: Calendar Year 2020	3/20
6	Callan Institute	Capital Market Assumptions: 2020-2029	2/20
7	Cliffwater LLC	Cliffwater Q1 2020 Long Term (10 Year) Capital Market Assumptions	1/20
8	Evestment PMC Quantitative Research Group	Capital Markets Assumptions 2020	3/20
9	fi^3 Financial Advisors	April 2020 Outlook	4/20
10	GMO LLC	7-Year Asset Class Real Return Forecasts	8/20
11	Graystone Consulting (Morgan Stanley)	Annual Update of GIC Capital Market Assumptions	4/20
12	Invesco Investment Solutions	2020 Long-Term Capital Market Assumptions: Q3 update	6/20
13	J.P. Morgan Asset Management	2020 Long-Term Capital Market Assumptions: LTCMA Mark-to-Market: COVID-19 - new cycle, new starting point	3/20
14	Morningstar Research	Morningstar Markets Observer	6/20
15	Northern Trust	Capital Market Assumptions: Five-Year Outlook: 2021 Edition	8/20
16	PIMCO	PIMCO's Capital Market Assumptions, June 2020	6/20
17	QMA (PGIM)	2020 Q3 Capital Market Assumptions	6/20
18	Research Affiliates	Asset Allocation Interactive	8/20
19	Sellwood Consulting LLC	2020 Capital Market Assumptions	2/20
20	State Street Global Advisors	Long Term Asset Class Forecast: Q2 2020	3/20
21	T. Rowe Price	Capital Market Assumptions: Five-Year Perspective 2020	1/20
22	UBS	Capital Market Assumption (CMA) & Strategic Asset Allocation (SAA) Updates: Strategic and equilibrium assumptions & SAA models by risk and investor characteristic	4/20
23	Vanguard Research	Vanguard economic and market outlook for 2020: The new age of uncertainty	12/19
24	Verus Advisory	2020 Capital Market Assumptions	11/19
25	Wells Fargo Investment Institute	2020 Capital Market Assumptions: Methodology--the building-block approach	7/20

Calculations supporting TURN's 30-year return forecasts can be found in Mr. Ellis's workpapers Excel file, tabs CMA and F7-9 T1 AppB.

APPENDIX C

TURN MODELING ASSUMPTIONS AND DATA SOURCES

Appendix C: Modeling assumptions and data sources for three sources of uncertainty TURN incorporated into PG&E's income outlook

Line no.			
	EBIT growth trend		
1	**Model**	Normally distributed random compound annual growth from 2024	
	Input assumptions	Mean	Standard deviation (uncorrelated)
2	Mean growth	1.68%	0.82%
3	= real demand	0.15%	0.69%
4	+ efficiency	-0.16%	0.21%
5	+ inflation	1.86%	0.40%
6	**Years applied**	2025-50	
	Sources		
7	Demand	Weighted average (by share of PG&E income, 82%/18% electric/gas) growth rate from 2020 Integrated Energy Policy Report (IEPR) Update "2020-30 Baseline Forecast – Mid Demand Case" for PG&E	24 weighted average growth rates from 8 electric and 3 gas IEPR demand forecasts
8	Efficiency	EIA AEO Reference case real electricity retail price growth rate	22 EIA AEO Reference and Side case real electricity price growth rates
9	Inflation	Federal Reserve Bank of St. Louis October 2020 monthly average 30-year breakeven inflation rate	22 EIA AEO Reference and Side case CPI growth rates
	Year-to-year variation		
10	**Model**	Normally distributed random yearly percentage variation from PG&E (2021-24) or TURN continuously compounded (2025-50) static EBIT forecast	
11	**Input assumptions**	Zero mean. Standard deviation (14.9%) of percentage differences in PG&E's 1988-2019 EBIT from its underlying growth trend, excluding one-off shocks (greater than +/-50%)	
12	**Years applied**	2021-2050 with five-year linear phase-in factor (0.2 in 2021, … , 1.0 in 2025)	
13	**Source**	FERC Form 1 via S&P Global	
	Periodic shocks		
14	**Models**	Exponentially distributed random event arrival times	Log-normally distributed random percentage variation from PG&E (2021-24) or TURN continuously compounded (2025-50) static EBIT forecast
15	**Input assumptions**	Average frequency of one-off shocks to PG&E EBIT, 1988-2019	Historical EBIT shocks, 1988-2019 (percentage difference from underlying growth trend greater than +/-50%)
16		Mean Positive: 2/32 = 0.0625 Negative: 4/32 = 0.125	Mean | standard deviation Positive: 145% | 103% Negative: -373% | 234%
17	**Years applied**	Positive: 2024-50; negative: 2021-50	
18	**Source**	FERC Form 1 via S&P Global	

APPENDIX D

SELECTED PG&E RESPONSES TO TURN DATA REQUESTS

PACIFIC GAS AND ELECTRIC COMPANY
Securitization 2020
Application 20-04-023
Data Response

PG&E Data Request No.:	TURN_001-Q01-06		
PG&E File Name:	Securitization2020_DR_TURN_001-Q01-06		
Request Date:	June 12, 2020	Requester DR No.:	001
Date Sent:	July 1, 2020	Requesting Party:	The Utility Reform Network
PG&E Witness:	Q1-Q4: David Thomason Q5: Greg Allen (Callan LLC)	Requester:	Thomas Long

GENERAL OBJECTIONS

1. PG&E objects to each request to the extent it seeks information protected from disclosure by the attorney-client privilege, the attorney work-product doctrine, or any other privilege or protection from disclosure. PG&E intends to invoke all such privileges and protections, and any inadvertent disclosure of privileged or protected information shall not give rise to a waiver of any such privilege or protection.

2. These responses are made without waiving PG&E's rights to raise all issues regarding relevance, materiality, privilege, or admissibility in evidence in any proceeding. PG&E reserves the right, but does not obligate itself, to amend these responses as needed based on any changes to PG&E's Application or the proposed securitization structure.

3. PG&E incorporates each of these General Objections into each of its responses below. Each of PG&E's responses below is provided subject to and without waiver of the foregoing objections and any additional objections made below**.**

QUESTION 01

Referring to the Customer Credit Trust structure proposed in PG&E's Testimony, Chapter 6:

a. Did PG&E solicit (formally or informally) or assess interest by investors in employing the cash flows from a trust structure funded by shareholder contributions or future shareholder cashflow pledges (rather than a securitization of a fixed customer-funded rate component) as a means to obtain debt financing following PG&E's emergence from bankruptcy?

b. If so, please: (i) describe the investor response to this financing structure; and (ii) provide all documents reflecting PG&E's assessment of such an approach and any documents received in response to any such solicitation of interest.

c. If the answer to a above is anything other than an unqualified yes, please explain why PG&E did not solicit interest from investors in this financing structure.

d. Did PG&E solicit feedback or opinions from other market participants or consultants regarding the feasibility or cost of obtaining investor funding using the cash flows from a trust structure funded by shareholder contributions or pledges of future shareholder cashflows following PG&E's emergence from bankruptcy?

e. If so, please: i) describe the assessment of market participants or investors of the feasibility or cost of this financing structure; and ii) provide all documents reflecting any such assessments.

f. If the answer to d above is anything other than an unqualified yes, please explain why PG&E did not solicit opinions regarding the feasibility or cost from market participants or consultants.

ANSWER 01

PG&E objects to this request as vague, ambiguous. PG&E further objects to this request as overbroad and unduly burdensome. Subject to its objections, PG&E responds as follows:

a. No, PG&E did not solicit or assess interest from investors in employing the cash flows from a trust structure funded by shareholder contributions or future shareholder cash flow pledges as a means to obtain debt financing following PG&E's emergence from bankruptcy.

b. Not applicable.

c. PG&E did not seek to use the trust as a financeable asset to obtain debt financing. The purpose of the trust structure is to provide certainty and stability with respect to the Customer Credit. Further, the financeable asset underlying the trust is the NOLs[1] addressed in response to Question 2 below.

[1] Unless otherwise indicated, capitalized terms herein have the meanings given to them in PG&E's Application.

d. PG&E did not solicit feedback or opinions from other market participants or consultants regarding the feasibility or cost of obtaining investor funding using the cash flows from a trust structure funded by shareholder contributions or pledges of future shareholder cash flows following PG&E's emergence from bankruptcy. PG&E notes that the equity backstop commitments previously contemplated the potential for a trust to be established to return tax benefits (i.e., cash flows generated by application of NOLs) to the backstop parties under certain circumstances, for no additional consideration. PG&E does not understand that to be responsive to this request.

e. Not applicable.

f. See response to part c. above.

QUESTION 02

In PG&E's Testimony, pp. 6-4 and 6-5, PG&E States:

> "PG&E will fund the Customer Credit Trust with the Initial Shareholder Contribution of $1.8 billion in 2021. In later years, as PG&E generates taxable income, PG&E will use cash that becomes available by reason of Shareholder Tax Benefits to make Additional Shareholder Contributions."

Regarding these NOLs which PG&E contemplates using to support its Customer Credit Trust:

a. Did PG&E seek input from investors or other market participants regarding the feasibility or cost of monetizing its NOLs by way of a sale or other structured transfer of the value of PG&E's tax benefits to an investor or investors? If so, please provide all documents received from investors or other market participants on this subject. If not, why not?
b. Did PG&E or its advisors conduct a valuation of the NOLs pledged to the trust (discounted to the time of trust formation). If so, please provide that analysis, as well as any underlying models, assumptions, and other relevant details.
c. What is PG&E's best estimate of the range of implicit interest rates associated with any transactions of the type described in part a above?
d. What is PG&E's best estimate of the amount of financing available under any transactions of the type described in part a above?

ANSWER 02

PG&E objects to this request as vague and ambiguous. PG&E further objects to this request as overbroad and unduly burdensome. PG&E further objects to this request as seeking information protected by the attorney-client privilege and/or attorney work product doctrine. PG&E's response excludes any privileged information or attorney work product. Subject to its objections, PG&E responds as follows:

a. Yes, PG&E sought input from advisor banks regarding the feasibility or cost of monetizing NOLs by way of a sale or other structured transfer of the value of such tax benefits to an investor or investors. *See* 2020Securitization_DR_TURN_01-Q02_Atch01CONF; 2020Securitization_DR_TURN_01-Q02_Atch02CONF; 2020Securitization_DR_TURN_01-Q02_Atch03CONF; 2020Securitization_DR_TURN_01-Q02_Atch04CONF; and 2020Securitization_DR_TURN_01-Q02_Atch05CONF. PG&E notes that the financial forecasts contained in these documents are no longer current.

b. No, PG&E's proposal does not require or rely upon any valuation of the NOLs discounted to the time of trust formation.

c., d. Because market data and precedents for such a transaction are limited and PG&E did not market such a transaction to investors, PG&E does not have a best estimate of the range of implicit interest rates or amount of financing available under transactions of the type described in part a. above. Based on PG&E's review of information related to such potential transactions (*e.g.*, documents provided in response to part a.), the interest rate and amount of financing available were more expensive, less efficient, and less credit positive than alternative available financings and the proposed Securitization.

QUESTION 03

Please provide a live excel version of the model supporting Testimony Table 6-2: Forecast Utilization of Shareholder Tax Benefits on p. 6-9.

ANSWER 03

See 2020Securitization_DR_Misc_Chapters 3_6_7_Securitization Application_TestimonyWorkingModel_Final (1).xlsx.

QUESTION 04

Please provide a live excel version of the model supporting Testimony, Table 6-3: Illustrative Securitization Fixed Recovery Charge and Customer Credit Schedule on p. 6-13.

ANSWER 04

See 2020Securitization_DR_Misc_Chapters 3_6_7_Securitization Application_TestimonyWorkingModel_Final (1).xlsx.

QUESTION 05

On p. 6-18, PG&E states:

"Across the full range of 2,000 simulations generated by the model, the Customer Credit Trust had a positive terminal balance in roughly 75 percent of the outcomes."

a. Please provide a live version of the model supporting Confidential Testimony Table 6-7. Range of Surplus Outcomes and Year of First Shortfall.

b. Please provide all supporting documentation and data for the model's assumptions, including those in Confidential Testimony Table 6-4. Callan Long Term Capital Market Projections – Return and Standard Deviation and Confidential Testimony Table 6-5. Callan Long Term Capital Market Projections – Correlation.

c. Please provide the results of all 2000 simulations in excel format.

d. Did all of the original simulations discussed above include the same assumptions regarding the amount and timing of the initial and additional shareholder contributions? If not how did the assumptions vary and why?

e. If the answer to part a is yes, did any of the simulations examined include "Additional Shareholder Contributions different from the $7.59 billion "cap?" If so please explain the different amounts and the reason for these differences in Additional Shareholder Contributions.

f. Please provide all documents pertaining to the modeling that were exchanged between Callan and PG&E.

ANSWER 05

PG&E objects to this request as vague, ambiguous, and unduly burdensome. The model supporting Table 6-7 requires the use of proprietary software over which PG&E does not possess a license and cannot grant a license to TURN. PG&E further objects to this request as overbroad and as seeking information protected by the attorney-client privilege and/or attorney work product doctrine. PG&E's response excludes any privileged information or attorney work product. Subject to its objections, PG&E responds as follows:

a. In accordance with Rules 10.4(d) and (e), PG&E will meet and confer with TURN to arrange access to, or sufficient use of, the model that supports Mr. Allen's testimony.

b. *See* 2020Securitization_DR_Misc_Chapter 6_Capital Markets Assumptions 2020-FullDeck_master_021220.pdf; 2020Securitization_DR_Misc_Chapter 6_Callan-Capital-Market-Assumptions-2020-2029.pdf; 2020Securitization_DR_Misc_Chapters 3_6_7_Securitization Application_TestimonyWorkingModel_Final (1).xlsx.

c. *See* 2020Securitization_DR_Misc_Chapter 6_All Trials.xlsx.

d. Yes.

e. Assuming this question is meant to refer to the answer to part d. being yes, none of the simulations referenced on p. 6-18 of Mr. Allen's testimony included Additional Shareholder Contributions different from the $7.59 billion cap.

f. Mr. Allen requested information from PG&E regarding the tax treatment of the nuclear decommissioning trusts. *See* 2020Securitization_DR_TURN_01-Q05_2019 Estimated Tax PymtsCONF.xls.

QUESTION 06

Referring to PG&E's Testimony, Table 6-2 on p. 6-9:

a. Did PG&E perform any simulations assuming federal tax benefits were applied in later years or in smaller amounts than are assumed in Table 6-2? If not, why not?

b. If the answer to part b above is yes, what percentage of simulations had a positive terminal balance when federal tax benefits were applied later than assumed in Table 6-2?

c. Did PG&E perform any simulations assuming state tax benefits were applied in later years or in smaller amounts than are assumed in Table 6-2?

d. If the answer to part c above is yes, in what percent of simulations had a positive terminal balance when state tax benefits were applied later than assumed in Table 6-2?

e. What percentage of simulations had a positive terminal balance when state or federal tax benefits were applied in a later time period than assumed in Table 6-2?

ANSWER 06

PG&E objects to this request as vague, ambiguous, and unduly burdensome. PG&E further objects to this request as seeking information protected by the attorney-client privilege and/or attorney work product doctrine. PG&E's response excludes any privileged information or attorney work product. Subject to its objections, PG&E responds as follows:

As set forth in response to Question 5, all of the 2,000 simulations referenced in Mr. Allen's testimony used the same assumptions for the Additional Shareholder Contributions. Certain alternative scenarios were prepared at the request of counsel and are privileged. PG&E will meet and confer with TURN to arrange access to, or sufficient use of, the model that supports Mr. Allen's testimony to permit TURN to analyze alternative assumptions for Additional Shareholder Contributions.

PACIFIC GAS AND ELECTRIC COMPANY
Securitization 2020
Application 20-04-023
Data Response

PG&E Data Request No.:	TURN_008-Q01-08		
PG&E File Name:	Securitization2020_DR_TURN_008-Q01-08		
Request Date:	September 14, 2020	Requester DR No.:	008
Date Sent:	September 28, 2020	Requesting Party:	The Utility Reform Network
PG&E Witness:	Q1 – Q8: David Thomason	Requester:	Matthew Freedman

GENERAL OBJECTIONS

1. PG&E objects to each request to the extent it seeks information protected from disclosure by the attorney-client privilege, the attorney work-product doctrine, or any other privilege or protection from disclosure. PG&E intends to invoke all such privileges and protections, and any inadvertent disclosure of privileged or protected information shall not give rise to a waiver of any such privilege or protection.

2. These responses are made without waiving PG&E's rights to raise all issues regarding relevance, materiality, privilege, or admissibility in evidence in any proceeding. PG&E reserves the right, but does not obligate itself, to amend these responses as needed based on any changes to PG&E's Application or the proposed securitization structure.

3. PG&E incorporates each of these General Objections into each of its responses below. Each of PG&E's responses below is provided subject to and without waiver of the foregoing objections and any additional objections made below**.**

QUESTION 01

Please provide any documentation (forecasts, models, reports, analyses, spreadsheets, etc.) supporting the taxable income forecasts in Table 6-2: Forecast Utilization of Shareholder Tax Benefits (p. 6-11) through 2050:

a. Electricity deliveries to end users, energy to serve load, and net electricity peak demand
b. Capital expenditures
c. Rate base
d. Annual-average retail rates, by customer category
e. Any other factors relevant to a determination of future taxable income
f. Comparison/reconciliation of electricity deliveries, total energy to serve load, and net electricity peak demand used in the model with data included by PG&E in its 2018 and 2020 Integrated Resource Plans.

ANSWER 01

PG&E objects to this request as unduly burdensome and not relevant. Subject to its objections, PG&E responds as follows:

PG&E prepared the forecast of taxable income in Table 6-2 by taking book income and making adjustments to calculate forecasted pre-tax income and then making additional adjustments to forecast federal and state taxable income. The forecasted taxable income is reflected in Lines 3 and 12 of Table 6-2. PG&E refers TURN to 2020Securitization_DR_TURN_008-Q01_Atch01CONF.

a. PG&E refers TURN to the Electricity Demand Forecast forms issued by the California Energy Commission (CEC) for the 2019 Integrated Energy Policy Report. The link to the public version of those forms (with confidential information redacted) is https://efiling.energy.ca.gov/GetDocument.aspx?tn=227685&DocumentContentId=58956.

b. Please see the tab labeled "CapEx and Ratebase" in 2020Securitization_DR_TURN_008-Q01_Atch01CONF.

c. Please see the tab labeled "CapEx and Ratebase" in 2020Securitization_DR_TURN_008-Q01_Atch01CONF.

d. Average annual retail rates are not calculated for the taxable income forecasts.

e. Other than in its testimony and documents provided in discovery, PG&E has not identified any other factors.

f. PG&E did not prepare a reconciliation for this Application.

QUESTION 02

Please explain the differences between the forecasts for Federal and State "Preliminary Adjusted Utility Income Before Taxes" in the "Taxable Income Forecast" tab of the "2020Securitization_DR_Misc_Chapters 3_6_7_UPDATED08-07-2020_Securitization Application Update Model_Final" Excel spreadsheet provided with PG&E's updated testimony of August 7, 2020.

ANSWER 02

Subject to its objections, PG&E responds as follows:

PG&E directs TURN to the file produced in response to Question 1. *See* tabs labeled "Fed IS to TI Walk", "State IS to TI Walk", "Fed EBIT", and "State EBIT".

QUESTION 03

Please provide flowcharts illustrating the treatment of the different categories of shareholder tax benefits and ratepayer NOLs described in Table 6-1: Estimate of Shareholder Tax Benefits and Ratepayer NOLs (p. 6-6) and how that treatment changes by year in the forecast.

a. Shareholder
    i. Subject to 80% limitation vs. applicable up to 100% of taxable income
    ii. Federal vs. State
b. Ratepayer
    i. "At emergence, through 2018" vs. "at emergence, 2019"
    ii. Subject to 80% limitation vs. applicable up to 100% of taxable income
    iii. Federal vs. State

ANSWER 03

PG&E objects to this request as vague, ambiguous, and unduly burdensome. Subject to its objections, PG&E responds as follows:

PG&E refers TURN to Chapter 6, Customer Credit Mechanism and Investment Returns (D. Thomason; G. Allen) at pages 6-8 through 6-12 and Table 6-2 for a description of the use of Shareholder Deductions and Ratepayer NOLs in the formula for Additional Shareholder Contributions and the file referenced in Question 2 which includes the formulas used in each year to calculate the amount of Shareholder Deductions or Ratepayer NOLs used. A cap of 80% on the use of NOLs for federal tax purposes is reflected in the formula in the referenced file where applicable. PG&E also directs TURN to footnote 6 on page 6-10 of Chapter 6, Customer Credit Mechanism and Investment Returns (D. Thomason; G. Allen).

For both federal and state calculations of Additional Shareholder Contributions, starting in 2023, the model first allocates the Ratepayer NOLs to taxable income until the balance of Ratepayer NOLs is zero. Shareholder Deductions are allocated to taxable income after the Ratepayer NOLs have been exhausted.

Federal

The Federal 2017 Tax Act changed the usage of NOLs generated after 2017 to offset only 80% of taxable income, but carrying forward NOLs indefinitely. Hence in the model, there is a distinction between pre-2018 and post-2017 NOLs. Pre-2018 NOLs are not subject to the 80% limitation, but NOLs generated in 2018 and after are subject to the 80% limitation. The substantial majority of the Existing Shareholder Deductions on Line 8 of Table 6-1 are pre-2018 NOLs. The Shareholder Deductions on Line 9 of Table 6-1 are post-2017 and subject to the 80% rule.

In general, NOL utilization follows the first-in, first out rule. Pre-2018 NOLs must be utilized prior to post-2017 NOLs. In addition, the model assumes Ratepayer NOLs must be utilized prior to the Shareholder Deductions.

In year 2025 in the model, when there is remaining Pre-2018 NOL, we assumed Post-2017 NOL can be used to offset up to 80% of federal taxable income after exhausting pre-2018 NOLs, resulting in total ratepayer NOL usage that is higher than 80% but not exceeding 100% of federal taxable income.

State

California does not have the 80% taxable income limitation for NOL utilization. California Assembly Bill 85 defers the use of NOLs for 2020, 2021, and 2022. Since PG&E is projected to have negative state taxable income in each of those years in Table 6-2, the model ignores the effect of this legislation.

QUESTION 04

Please explain how any net negative consolidated taxable income 2022 would be treated for the purposes of calculating the annual shareholder contribution to the CCT.

ANSWER 04

PG&E objects to this request as vague, ambiguous, and not relevant. Subject to its objections, PG&E responds as follows:

Net operating losses incurred in 2022 are not relevant to the calculation of Additional Shareholder Contributions described in Chapter 6, Customer Credit Mechanism and Investment Returns (D. Thomason; G. Allen). No NOLs are allocated to negative taxable income, since taxes cannot be reduced below zero, and hence there can be no Additional Shareholder Contribution in any year in which the taxable income is negative. With respect to an NOL generated in 2022, such an NOL is not included in Table 6-1 and therefore cannot generate Additional Shareholder Contributions, and in any event, would not be used to reduce taxable income before Ratepayer NOLs and Shareholder Deductions are exhausted.

QUESTION 05

Please explain under what circumstances, after the ratepayer NOL balance has been exhausted, shareholder deductions might not be able to be applied against future Federal or State consolidated taxable income.

ANSWER 05

PG&E objects to this request as vague and ambiguous. Subject to its objections, PG&E responds as follows:

For purposes of calculating Additional Shareholder Contributions, there are no such circumstances. For that calculation, once the Ratepayer NOLs are exhausted, if there is taxable income, the Shareholder Deductions will be used to generate Additional Shareholder Contributions absent a change in law or a change in ownership under Internal Revenue Code section 382 that would limit the use of NOLs – both Ratepayer NOLs and Shareholders' Deductions.

QUESTION 06

Please explain how Federal and State NOLs would be treated if PG&E had positive consolidated taxable income in 2022 or earlier.

ANSWER 06

Subject to its objections, PG&E responds as follows:

If PG&E had positive consolidated taxable income for 2022 or earlier, Ratepayer NOLs would be used earlier for Federal tax purposes, but Assembly Bill 85 would defer the use of Ratepayer NOLs for California state tax purposes.

QUESTION 07

Please provide an updated version of the model in the "Table 6-2" tab of the "2020Securitization_DR_Misc_Chapters 3_6_7_UPDATED08-07-2020_Securitization Application Update Model_Final" Excel spreadsheet originally submitted with PG&E's updated testimony of August 7, 2020. The updated version should produce a reasonable result under the scenarios described below:

a. Positive consolidated Federal or State taxable income in 2021, 2022, or 2023 PROBLEM WITH THE CURRENT MODEL (see TURNDR Set8_Q7attach.xlsx) - assuming Federal Consolidated Forecast Taxable Income (line 3) of +$1,000 in 2021 produces Shareholder Deductions Applied (line 8) of +$1,525 and Additional Contributions to Trust (line 20) of -$279 in 2024 (values in millions of dollars, as in the spreadsheet).
b. Negative consolidated Federal or State taxable income in 2023 or later PROBLEM WITH THE CURRENT MODEL (see TURNDR Set8_Q7attach.xlsx) - assuming Federal Consolidated Forecast Taxable Income (line 3) of -$1,000 in 2023 produces +$1,000 of Ratepayer NOLs applied (line 5), but assuming a State Consolidated Forecast Taxable Income (line 12) of -$1,000 in 2023 produces $0 of Ratepayer NOLs applied (line 14) (values in millions of dollars, as in the spreadsheet).

ANSWER 07

PG&E objects to this request as vague and ambiguous. PG&E further objects that "reasonable result" is not defined or capable of definition. PG&E also objects to this request under Rule 10.3(e) of the Rules of Practice and Procedure of the California

Public Utilities Commission as beyond the scope of the obligations of PG&E. Subject to its objections, PG&E responds as follows:

a. – b. The model assumes that taxable income is negative through 2022 and positive thereafter, and that Shareholder Deductions are not used until 2026 for Federal tax purposes. As a result, the model would have to be re-programmed to model the assumptions described in parts a. and b. of the question. If TURN wants to make different assumptions, it will need to make its own adjustments to the model. PG&E has provided a fully functioning version of the model used by PG&E in the testimony in file "2020Securitization_DR_Misc_Chapters 3_6_7_UPDATED08-07-2020_Securitization Application Update Model_Final" in satisfaction of its obligations under Rule 10.3 of the Rules.

QUESTION 08

Please explain the logic behind the different formulas across the following lines of the model in the "Table 6-2" tab of the "2020Securitization_DR_Misc_Chapters 3_6_7_UPDATED08-07-2020_Securitization Application Update Model_Final" Excel spreadsheet provided with PG&E's updated testimony of August 7, 2020:

i. Line 5 – Ratepayer NOLs applied: two formulas
    1. 2020-22
    2. 2023+

ii. Line 8 – Shareholder Deductions Applied: three formulas
    1. 2020-21 (hard-coded 0)
    2. 2022-24
    3. 2025+

ANSWER 08

Subject to its objections, PG&E responds as follows:

See the answer to Question 7. In addition, PG&E built its model for Table 6-2 around the single set of forecast results, and the model is not intended to be a fully dynamic model to accommodate any assumption or scenario, or different forecasts of taxable incomes that switch from positive to negative.

Line 5: The forecast taxable income is negative in years 2020-22, therefore the formula is designed to produce "0" utilization of Ratepayer NOLs for these years and for positive values of taxable income results in an error. The formula beginning in 2023 and thereafter assumes positive taxable income and is designed to allocate Ratepayer and Shareholder NOLs consistent with the logic in the response to question 3 above.

Line 8: For PG&E's forecast taxable income, the formula for 2025+ does not need to be different and can also be applied to prior years, given the assumptions in the model about taxable income and Ratepayer NOLs.

PACIFIC GAS AND ELECTRIC COMPANY
Securitization 2020
Application 20-04-023
Data Response

PG&E Data Request No.:	TURN_013-Q01-02		
PG&E File Name:	Securitization2020_DR_TURN_013-Q01-02		
Request Date:	October 2, 2020	Requester DR No.:	013
Date Sent:	October 9, 2020	Requesting Party:	The Utility Reform Network
PG&E Witness:	Q1-Q2: David Thomason	Requester:	Tom Long

GENERAL OBJECTIONS

1. PG&E objects to each request to the extent it seeks information protected from disclosure by the attorney-client privilege, the attorney work-product doctrine, or any other privilege or protection from disclosure. PG&E intends to invoke all such privileges and protections, and any inadvertent disclosure of privileged or protected information shall not give rise to a waiver of any such privilege or protection.

2. These responses are made without waiving PG&E's rights to raise all issues regarding relevance, materiality, privilege, or admissibility in evidence in any proceeding. PG&E reserves the right, but does not obligate itself, to amend these responses as needed based on any changes to PG&E's Application or the proposed securitization structure.

3. PG&E incorporates each of these General Objections into each of its responses below. Each of PG&E's responses below is provided subject to and without waiver of the foregoing objections and any additional objections made below**.**

In its response to TURN's Data Request 8, Question 3, PG&E wrote, "[i]n general, NOL utilization follows the first-in, first out rule. Pre-2018 NOLs must be utilized prior to post-2017 NOLs. In addition, the model assumes Ratepayer NOLs must be utilized prior to the Shareholder Deductions." It also said that "[t]he substantial majority of the Existing Shareholder Deductions on Line 8 of Table 6-1 are pre-2018 NOLs."

QUESTION 01

Please clarify any differences between the categories "pre-2017 NOLs" (in the DR response) and "NOL carryforward at emergence, through 2018" (in testimony), as well as "post-2018 NOLs" and "NOL carryforward at emergence, 2019".

ANSWER 01

PG&E objects to this request as vague and ambiguous. Subject to its objections, PG&E responds as follows:

The categories in Table 6-1 titled "NOL carryforward at emergence, through 2018" and "NOL carryforward at emergence, 2019" merely reflect the balance of the NOLs as of the end of each of those years. In the data response cited, “pre-2018 NOLs” refers to NOLs generated prior to the 2017 Tax Act, and corresponds to the balance on Line 18 of Table 6-1 that shows the remaining balance of Ratepayer NOLs generated prior to the 2017 Tax Act and not subject to the new rules of how NOLs can be carried over. Line 19 of Table 6-1 shows the balance of Ratepayer NOLs that arose after the effective date of the 2017 Tax Act and must follow the new rules.

QUESTION 02

There are $423 million of pre-2018 Federal Shareholder Tax Benefits, worth ~$89 million in Trust contributions. Under FIFO, these potentially could be deducted before the ~$1,900 of post-2017 Ratepayer NOLs.

a. What happens when the two utilization order criteria identified in response to TURN DR8 Q3 conflict?

b. Does PG&E assume all Ratepayer NOLs must be exhausted before Existing Shareholder Deductions can be used to fund the Trust? Or must these pre-2018 Shareholder Deductions be used to fund the Trust before the post-2018 Ratepayer NOLs are used?

ANSWER 02

PG&E objects to this request as vague and ambiguous. Subject to its objections, PG&E responds as follows:

a.-b. There is no conflict. In the formula for calculating Additional Shareholder Calculations, all Ratepayer NOLs must be utilized prior to the utilization of the Shareholder Deductions. Chapter 6, Customer Credit Mechanism and Investment Returns (D. Thomason; G. Allen) explains why Ratepayer NOLs are applied first in the formula for calculating Additional Shareholder Contributions. *See* Chapter 6, page 6-8 to 6-9.

APPENDIX E

PG&E RESPONSE TO TURN DATA REQUEST 1, QUESTION 2 (CONFIDENTIAL)

NOT INCLUDED IN PUBLIC VERSION