Pacific Gas and Electric Company Securitization

A. 20-04-023

TURN HEARING EXHIBIT

TURN-19

PG&E Responses to TURN Data Request 17, Questions 10-15

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

PG&E Data Request No.:	TURN_017-Q01-30		
PG&E File Name:	Securitization2020_DR_TURN_017-Q01-30		
Request Date:	November 20, 2020	Requester DR No.:	TURN-PG&E-17
Date Sent:	December 4, 2020	Requesting Party:	The Utility Reform Network
PG&E Witness:	Q1-Q7: Bradford Cornell Q7: David Thomason Q8-Q9: Bradford Cornell Q10-Q15: Greg Allen Q16: Bradford Cornell, David Thomason Q17-Q18: Jan Berman Q19: David Thomason Q20: Bradford Cornell, David Thomason Q21: David Thomason Q22-Q24: Bradford Cornell Q25: David Thomason, Bradford Cornell Q26-Q27: David Thomason Q28: Jan Berman Q29-Q30: 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.

[redacted]

QUESTION 10

The attached Excel file, “Callan returns - repeats” contains quarterly return output from Callan’s model (“2020Securitization_DR_Misc_Chapter 6_PGE SEC ModelCONF – returns”, attached). There is at least one repeated figure (to 15 decimal places) in the same time period across two or more simulation runs in 271 of the 2,000 simulation runs.

a. Explain why a Monte Carlo simulation might be expected to repeat randomly generated numbers in the same time period across more than one consecutive simulation run.

b. If this is not expected, was Callan aware of the repeats?

c. If Callan was aware, why did it not remove this apparent bug?

d. If Callan was aware, explain why users and clients were not told of this apparent bug.

e. If Callan was not aware, provide an analysis of the impact of these repetitions on the results of Callan's model.

f. How can we be confident that there are not other errors in Callan's model?

g. The Crystal Ball add-in random number generator used in Callan’s model is a “black box” from the model user’s perspective. Has Callan evaluated the reliability of

Crystal Ball? How does the observation of the repeats affect Callan's assessment of the reliability of Crystal Ball?

ANSWER 10

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

a. – f. PG&E assumes in its response that "simulation runs" means "trials" and uses trials in this response. PG&E further notes that it was unable to reproduce or match the results in "Callan returns – repeats.xlsx" using the Callan model employed by Greg Allen in Chapter 6 Opening and Rebuttal Testimony. While PG&E could not reproduce or match the data, PG&E analyzed the 271 values identified by TURN (out of 960,000 separate quarterly returns and yields (income return) or 0.028% of the total dataset) that represent duplicates across two trials for the same variable for the same time period. The duplicates are the result of a deliberate design feature of the Callan model, not an "apparent bug." All of the instances of duplicate values identified by TURN in "Callan returns – repeats.xlsx" are associated with the quarterly yield (or income return) for one of the three asset classes. Yields for all of the asset classes in the Callan model are simulated using an autoregressive model. In an autoregressive model, a variable in time period t is a function of its value in t-1 (and potential t-2, t-3, etc.) plus a random factor. This type of model creates trending behavior for these variables which is consistent with the actual historical behavior for yields on financial assets. A simple random walk model (as is used for equity total return for example) is not appropriate for trending variables. In order to ensure reasonable trending behavior, the Callan model imposes floors and dampeners on yield trends to eliminate the possibility of unrealistically high or low (negative) yield trends. All of the duplicate values identified by TURN are instances where the yield model for that asset class hit its floor in the same quarter across two separate trials. This produces a yield for that quarter in each of those two trials which is the same and rounds to three decimal places.

g. The Crystal Ball add-in random number generator is not the source of the duplicates as explained above. Furthermore, it is not a "black box." The way in which Crystal Ball generates its random numbers is well-documented and produces results that are entirely consistent with other random number generators.

QUESTION 11

TURN ran Callan's model using a different "seed" in the random number generation engine of Crystal Ball (17 instead of the 44 in the model's instructions; see accompanying output data files, "Seed=44.xlsx" and "Seed=17.xlsx"). The Trust expected value varied by 0.5%, more than the number of significant digits to which PG&E reports the model results (4).

a. Is this level of precision acceptable? If so, explain why.

b. Why does PG&E report results to a higher degree of precision than the underlying model produces?

ANSWER 11

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

As explained to TURN, the Callan model was specifically designed to employ the same seed value every time it is run. If the seed value is changed, the model would require a complete recalibration of all of the tuning parameters of the model to ensure that it generates reasonable and internally consistent capital market scenarios. PG&E therefore cannot provide an answer as to whether the results that TURN generated in Seed-17.xlsx are reasonable or reliable or a basis for comparison with the results for Seed-44.xlsx, let alone the "precision" of the Callan model. Comparing the results of the model across different seed values does not provide insight into its level of precision. The Callan model was intentionally designed to employ the same seed value every time it is run, and therefore generate the exact same underlying 2,000 trials. This allows the user to compare results for different cash-flow scenarios across runs without concern regarding model precision since the underlying trials are the same for all of the capital market variables for every run.

b. PG&E objects to this request as relying on an incorrect premise. As detailed above, PG&E disagrees that there is an inconsistency between the precision of the model and the precision of the results reported in the testimony. Furthermore, PG&E does not believe that changing the precision of the reported results in the testimony would have any impact on the conclusions of the analysis which are not dependent on the precision of the output table.

QUESTION 12

Re-run the Callan model using all of PG&E's assumptions, except change the following:

a. Adjust the standard deviation of each asset class in the Trust's investment portfolio by a factor of:
   i. 1.0
   ii. 1.5
   iii. 2.0
   iv. 2.5
b. Assume the following values for the Initial Shareholder Contribution:
   i. $1.8 billion
   ii. $3.6 billion
c. Adjust the Additional Shareholder Contributions by a factor of:
   i. 1.5
   ii. 2.0
d. For each model run, in addition to the data contained in rebuttal testimony Table 6-14, provide the following output data, by year, for all 2,000 simulation runs:

i. Trust ending market value, in $

ii. Trust after-tax returns, in $

ANSWER 12

a. PG&E objects to this request as unduly burdensome and beyond the scope of its obligation under Rule 10.4 of the Rules of Practice and Procedure of the California Public Utilities Commission. Subject to its objections, PG&E responds as follows:

PG&E provided TURN with a working Callan model that TURN may run with alternative assumptions. This is the extent of PG&E's obligation under Rule 10.4(d) and (e) of the Rules of Practice and Procedure of the California Public Utilities Commission.

PG&E further notes that the standard deviation assumptions employed in the Callan model are well above the actual volatility for each asset class observed over the last decade. The table below compares the actual historical 10-year and 30-year standard deviations to the PG&E projected standard deviations for each asset class in the Callan model.

A standard deviation of 1.0 is the base case factor.

Asset Class	Historical 10-year Annualized Standard Deviation	Historical 30-year Annualized Standard Deviation	PG&E / Callan Model Projected Annualized Standard Deviation
Broad US Equity	15.55%	16.38%	18.10%
Non-US Equity	16.00%	18.16%	20.50%
US Fixed Income	3.07%	3.83%	3.75%

b. – d. An Initial Shareholder Contribution of $1.8 billion is the base case value. As described above, PG&E objects to the remainder of this request under Rule 10.4(d) and (e) of the Rules of Practice and Procedure of the California Public Utilities Commission as beyond the scope of the obligations of PG&E.

QUESTION 13

On page 6-22 of its rebuttal testimony, PG&E states the following:

> *"It is important to understand the difference between short-term and long-term capital market assumptions, and how they are used in the industry. Short-term assumptions are generally driven primarily by current market conditions (current interest rates, current valuation metrics, short-term inflation outlook, political outlook, etc.). They are typically employed by investment firms to inform short-term tactical*

decisions to overweight (or underweight) relatively attractive (or unattractive) parts of the market. By their nature they tend to change frequently, and there is a wide distribution of assumptions across practitioners. Long-term assumptions are weighted more toward the long term average behavior of markets over full market cycles. They tend to be geared toward equilibrium relationships between asset classes, they generally assume 'mean reversion,' they are more stable over time, and there is generally a much narrower distribution across practitioners."

a. Does PG&E assert that long-term forecasts in capital market assumptions reports must "assume 'mean reversion'"? If yes, explain why by reference to textbook(s), academic research, and/or illustrative spreadsheet model(s).

b. Which of the long-term forecasts used in the Horizon and NASRA surveys cited on pages 6-23 and 6-26 through 28 assume mean reversion? Which do not?

ANSWER 13

a. The testimony quoted referred to the experience and knowledge of Mr. Greg Allen. PG&E does not assert that "that long-term forecasts in capital market assumptions reports must "assume 'mean reversion.'" Nevertheless, in Mr. Allen's industry, the assumption of mean reversion is standard practice for consultants and actuaries when developing long-term capital market forecasts. To assume anything else requires conjecture regarding fundamental and enduring changes in human behavior and the behavior of financial markets relative to what has been observed empirically in the past. Mean reversion is a component of Callan's long-term capital market forecast methodology which generated the assumptions that were used as inputs in the PG&E simulation model.

b. The documentation for Horizon's approach is included in Exhibit 6.2 of Chapter 6, Customer Credit Mechanism and Investment Returns – Rebuttal (D. Thomason; G. Allen). The Horizon survey was offered as an example of work product similar in design to that undertaken by TURN, but conducted by an independent professional organization with experience preparing long-term capital market forecast surveys for 10 years and, a large pool of participants, and the time to do so carefully. The assumptions used in the Callan model in the Opening and Rebuttal testimony of PG&E were independently generated by Callan and are used consistently across all of their institutional investment clients in their long-term modelling and planning exercises. Callan did not rely in any way on the Horizon survey in generating these assumptions, and Callan's forecasts and assumptions were not developed specifically for this proceeding.

QUESTION 14

Please respond to the following questions regarding the Horizon Actuarial Services survey referenced in Chapter 6 of PG&E's rebuttal testimony.

a. Explain Horizon's twenty-year return calculation methodology. In addition, explain the following:

   i. What method does Horizon use to convert between geometric and average returns?

   ii. What specific weights does Horizon assign projections from different forecasters?

   iii. What specific data sets are used in Horizon's analysis?

b. Explain the approach used by Horizon to select reports for inclusion in its survey. Specifically:

   i. What criteria did Horizon use for selecting reports?

   ii. What processes are used by Horizon to ensure the quality, integrity and reliability of data and results?

   iii. On what basis were public reports excluded from its survey?

   iv. TURN found thirteen public reports that Horizon did not include in its survey (listed below). Why did Horizon exclude them?

      1. American Century, "Long-Term Capital Market Assumptions: Methodology and Models Underpinning Asset Allocation Solutions"

      2. AQR, "Capital Market Assumptions: Expected real returns for major asset classes"

      3. Cliffwater, "Cliffwater Q1 2020 Long Term (10 Year) Capital Market Assumptions"

      4. fi^3, "April 2020 Outlook"

      5. GMO, "7-Year Asset Class Real Return Forecasts"

      6. Morningstar, "Morningstar Markets Observer"

      7. Northern Trust, "Capital Market Assumptions: Five-Year Outlook: 2021 Edition"

      8. PIMCO, "PIMCO's Capital Market Assumptions, June 2020"

      9. PMC, "Capital Markets Assumptions 2020"

      10. QMA, "2020 Q3 Capital Market Assumptions"

      11. State Street, "Long Term Asset Class Forecast: Q2 2020"

      12. T. Rowe Price, "Capital Market Assumptions: Five-Year Perspective 2020"

      13. Wells Fargo, "2020 Capital Market Assumptions: Methodology-- the building-block approach"

   v. Did Horizon limit its analysis to reports conducted within a particular time frame? If so, please identify this time frame that served as the basis for inclusion/exclusion from the survey.

   vi. Did PG&E perform any analysis with respect to the accuracy, validity, and quality of the 31 of 39 reports used in Horizon's survey that are not public? If so, provide such analysis.

c. Has PG&E previously used the Horizon survey for purposes of calculating nuclear decommissioning trust fund returns? If not, does PG&E believe it would be appropriate to use the Horizon survey for forecasting nuclear decommissioning trust fund returns?

d. Has PG&E previously used the Horizon survey for purposes of calculating its employee pension fund returns? If not, does PG&E believe it would be appropriate to use the Horizon survey for projecting its pension fund returns?

e. PG&E refers to the "business purposes" of the report (p. 6-25).

   i. Identify all the "business purposes" for which the report is used.

   ii. Has PG&E previously relied upon the Horizon survey for projecting investment returns in any Commission proceeding? If so, please identify the proceedings in which this survey has been used.

   iii. Provide a list of any firms that, to PG&E's knowledge, use the Horizon survey to project 30-year returns.

f. Does Horizon identify any recommended uses for this report? If so, provide any supporting documentation from Horizon identifying the recommended uses.

g. With respect to the Horizon survey, PG&E states that "The adjustments that they make, for example, to translate a 10- year projection into a 20-year projection for Investment Firm A are tailored to their understanding of the process employed by Investment Firm A" (Rebuttal testimony, page 6-24).

   i. Which of the projections included in the survey have a 10-year forecast?

   ii. Describe the process, data and methodology used by Horizon to "translate[s] a 10-year projection into a 20-year projection."

   iii. Provide at least two examples of how Horizon performs the adjustments referenced in (ii).

h. Does Horizon treat "long-term" forecasts differently than "secular" or "equilibrium" forecasts for the purposes of its 10- and 20-year return estimation calculations?

   i. If yes, how does the treatment differ?

   ii. If no, why would differential treatment be unreasonable?

i. PG&E states, "Horizon's survey employs a very similar methodology to the one used by TURN" (6-24).

   i. What are the key differences in Horizon's and TURN's methodologies?

   ii. How does PG&E propose to compare Horizon's twenty-year return forecasts to the thirty-year estimates provided by Callan and TURN?

   iii. What criteria did PG&E use to conclude "that the Horizon survey represents a more robust (and objective) approach" than TURN's? Provide details of how TURN and Horizon compare on those criteria.

   iv. Provide any documents or analysis used to answer subparts (ii) and (iii).

j. Is PG&E aware of any assessments regarding the accuracy of the Horizon report in predicting actual market returns over the past decade? If so, please provide any such assessments.

k. What other Capital Market Assessment surveys were reviewed but not used by PG&E for purposes of developing an investment return forecast?

ANSWER 14

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

a. – b. The documentation for Horizon's approach is included in Exhibit 6.2 of Chapter 6, Customer Credit Mechanism and Investment Returns – Rebuttal (D. Thomason; G. Allen). The Horizon survey was offered as an example of work product similar in design to that undertaken by TURN, but conducted by an independent professional organization with experience preparing long-term capital market forecast surveys for 10 years and, a large pool of participants, and the time to do so carefully. PG&E also notes that five of the 13 reports in question 14.b.iv were excluded by Mr. Mark Ellis in his testimony in this proceeding, and two more were included only for certain asset classes. PG&E also notes that in the experience of Mr. Allen, non-public reports tend to be more detailed and provide a greater level of understanding of the forecast as compared to public reports available through internet searches.

c. The Horizon survey was offered as an example of work product similar in design to that undertaken by TURN, but conducted by an independent professional organization with experience preparing long-term capital market forecast surveys for 10 years and, a large pool of participants, and the time to do so carefully. PG&E has not previously used the Horizon survey for this purpose. Historically, PG&E has used Callan's assumptions in modelling the behavior of nuclear decommissioning trusts. PG&E has used specific advisors for long-term forecasts for the NDTs. Those advisors may use surveys like Horizon's as part of their process to provide industry context for their own independently generated assumptions. *See* Chapter 6, Customer Credit Mechanism and Investment Returns – Rebuttal (D. Thomason; G. Allen), at p. 6-26.

d. PG&E has not previously used the Horizon survey for this purpose. PG&E has used specific advisors for long-term forecasts for its pension plans. Those advisors may use surveys like Horizon's as part of their process to provide industry context for their own independently generated assumptions. *See* Chapter 6, Customer Credit Mechanism and Investment Returns – Rebuttal (D. Thomason; G. Allen), at p. 6-26

e.i The reference to "business purposes" refers to Horizon developing the report as part of its business, as opposed to developing it for purposes of providing expert testimony in a contested proceeding.

e.ii PG&E has not previously used the Horizon survey for projecting investment returns in a Commission proceeding. Furthermore, as stated above, Callan and PG&E did not rely on the Horizon survey to generate the capital market assumptions used in the Callan model in this proceeding.

e.iii As the documentation for the survey makes clear, Horizon Actuarial Services uses the results of the survey to inform their own long term return projections used in their actuarial work. Callan reviews the Horizon survey, among others as well as additional sources, each year to provide industry context for their own independently generated assumptions. Other advisors such as Callan may use the Horizon survey in a similar manner. *See* Chapter 6, Customer Credit Mechanism and Investment Returns (D. Thomason; G. Allen), at p. 6-26 to 27.

f. PG&E refers TURN to the response to 14.a.-b., and e.

g. PG&E refers TURN to the response to 14.a.-b. *See also* Chapter 6, Customer Credit Mechanism and Investment Returns (D. Thomason; G. Allen), Exhibit 6.2, at 6-Exh6.2-4, & n. 1, and -10.

h. PG&E refers TURN to the response to 14.a.-b.

i.i The most significant differences are explained below. PG&E reserves the right to supplement this response.

Horizon has been conducting their survey for over a decade with a repeating set of participants and prepares it each year in a methodical way. Horizon's actuarial practice requires them to have expertise in the specific area of capital market projections, which has been built through experience doing the survey. Horizon conducts their survey in support of their actuarial practice which serves over 100 multi-employer defined benefit plan clients with competing objectives. TURN relied entirely on an inconsistent set of reports pulled from publicly available websites of varying types of financial institutions (mostly asset managers) whereas Horizon relies on a survey that they send directly to consultants and those asset managers that specifically make longer-term capital market projections, which yields a more robust and consistent dataset to support their analysis. TURN was only able to obtain complete data (returns for all three asset classes used in the analysis) from seven firms, and only two of those specifically made long-term projections (Callan and Blackrock). Horizon's survey collected data from all 39 different firms, with 18 of those firms making specific long-term (20+ year) projections.

i.ii PG&E does not propose a methodology of comparison as it would not make sense to try to use one blanket approach for converting 20-year projections to 30-year projections. Generally speaking, a 30-year forecast for equities will be the same or slightly higher than a 20 year forecast. But it depends on the assumptions underlying the 20-year forecast. The fact that the Horizon survey projections are very similar to those employed by PG&E and are premised on a *shorter* time horizon, indicates that the Callan return forecasts are reasonable and conservative. No conversion methodology is necessary for this observation. PG&E further notes that Table 6-11 of Chapter 6, Customer Credit Mechanism and Investment Returns – Rebuttal (D. Thomason; G. Allen), compared the Horizon survey to the Callan return forecast. The Callan return forecast was below the 50th percentile in the Horizon survey, indicating that it is reasonable and conservative. The TURN forecast, on the other hand, is barely above the minimum return in the Horizon survey, indicating that it is an outlier and not a reasonable forecast of investment returns for a long-term (20- or 30-year) investment horizon. *See* Chapter 6 – Rebuttal, at p. 6-28.

i.iii PG&E refers TURN to the answer to Question 14 subpart i.

i.iv PG&E refers TURN to the response to 14.a.-b and to Chapter 6, Customer Credit Mechanism and Investment Returns (D. Thomason; G. Allen), and Chapter 6, Customer Credit Mechanism and Investment Returns – Rebuttal (D. Thomason; G. Allen)..

j. No. Horizon makes 20-year projections and the first survey was conducted in 2010.

k. PG&E did not use Horizon or any other Capital Market Assessment surveys to develop the capital market assumptions used in their simulation model. The assumptions were developed independently by Callan and are employed consistently across their entire client base. *See* Chapter 6, Customer Credit Mechanism and Investment Returns (D. Thomason; G. Allen), at p. 6-20 to 21, 22, 26-27, and 2020Securitization_DR_Misc_Chapter 6_Capital Markets Assumptions 2020-FullDeck_master_021220.pdf and 2020Securitization_DR_Misc_Chapter 6_Callan-Capital-Market-Assumptions-2020-2029.pdf, which were previously provided in response to TURN Set 1, for further information.

QUESTION 15

On pages 6-26 through 6-28 of its rebuttal testimony, PG&E references the National Association of State Retirement Administrators (NASRA) Survey of Public Pension Plans (NASRA).

a. What processes are used by the NASRA survey to ensure the quality, integrity, and reliability of its data and results?
b. Over what time period are the returns forecast in the NASRA survey?
    i. If there is no single forecast time period, what is the range of time periods of the forecast?
    ii. Given the dispersion of time periods in the NASRA survey data, how should the NASRA return forecasts be compared or adjusted to be comparable to the thirty-year estimates provided by Callan and TURN? Provide any supporting analysis, data, and documentation.
c. Did PG&E review or assess how well the NASRA report predicted actual pension fund performance or asset class performance since it was first produced in 2001? If so, provide any materials used in such a review or assessment.
d. Does PG&E have any basis to assert that public pension fund return forecasts have proven to be reliable indicators of actual recorded returns? If so, please provide any materials relied upon as the basis for such an assertion.
e. Did PG&E rely on the NASRA survey for purposes of forecasting its pension fund returns? If not, please explain why PG&E did not use this survey for that purpose.
f. Provide the most recent capital market assumptions used to forecast PG&E pension fund returns and identify the data relied upon to develop the forecast.

ANSWER 15

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

a. The documentation for NASRA's approach is included in Exhibit 6.3 of Chapter 6, Customer Credit Mechanism and Investment Returns – Rebuttal (D. Thomason; G. Allen). Neither Callan nor PG&E is affiliated with NASRA and have no further insight into their methodology than what is presented in that documentation. The NASRA survey was offered to support the fact that long-term projections across actuarial firms (like Horizon) are fairly standard across the industry and are consistent with those in the Horizon survey and those employed in the Callan model.

All of the data in the NASRA survey represents publicly available data from government sponsored pension plans. In addition to the documentation provided in the rebuttal, further documentation is available at https://www.nasra.org/publicfundsurvey.

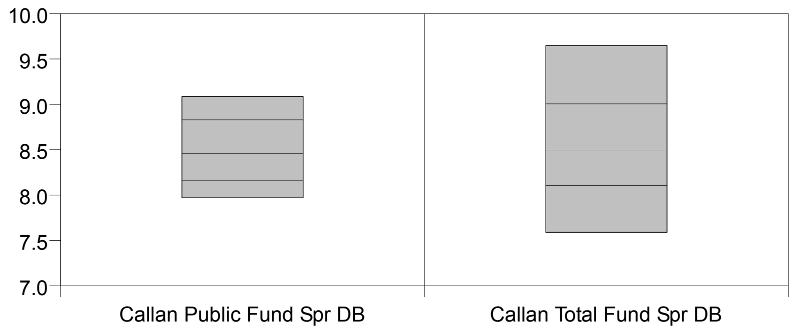
b.i PG&E does not have specific knowledge, but generally assumed rates of return employed by actuaries are for 20-year periods or longer. *See also* Exhibit 6.3 at 6-Exh6.3-3 (referencing 20- to 30-year long term return assumptions).

b.ii The long-term return forecasts for the public pension plan portfolios in the NASRA study are generally above the 6.93% median return for the 80/20 mix assumed in the PG&E simulation analysis, indicating the Callan return forecasts are reasonable and conservative for a portfolio with a 30-year investment horizon. *See* Table 6-12 in Chapter 6, Customer Credit Mechanism and Investment Returns – Rebuttal (D. Thomason; G. Allen), at p. 6-29-30.

c. No specific review or assessment was conducted but see PG&E response to 15.d below.

d. PG&E does not have any analysis specifically comparing public fund pension fund return forecasts and actual performance. However, the chart below shows the realized 30-year returns for Callan's Public Fund database and Callan's Total Plan database for the period ended September 30, 2020. As the chart indicates, even the 90th percentile worst-performing fund in each group generated returns that were well in excess of the 6.93% median pre-tax return from the PG&E simulation analysis.

Annualized Returns for 30 Years Ended September 30, 2020
Callan Public Fund and Total Fund Sponsor Databases



	Callan Public Fund Spr DB	Callan Total Fund Spr DB
10th Percentile	9 09	9.65
25th Percentile	8 83	9.01
Median	8.46	8.50
75th Percentile	8.17	8.11
90th Percentile	7 97	7.59
Member Count	62	193

The Callan Public Fund Database includes portfolios for pension plans sponsored by U.S. state, county, and city sponsored pension plans. The Callan Total Fund Database includes portfolios for U.S. public pension plans, corporate pension plans, foundations, endowments, and eleemosynary funds. The chart shows the range of returns across all plans in each group for which Callan has a 30-year history ended September 30, 2020. As of that date, there were 232 total funds in Callan's Public Fund Database and 1,136 funds in Callan's Total Fund Database.

e. – f. PG&E publishes its expected return on plan assets in its annual report. *See* 2020Securitization_DR_TURN_017-Q15_Atch01.pdf (excerpted). PG&E also includes 2020Securitization_DR_TURN_017-Q15_Atch02.pdf for a summary of the return forecasts used for that annual report.

[redacted]

[redacted]

[redacted]

[redacted].