

PG&E HEARING EXHIBIT PGE-63

A.20-04-023

PG&E'S SECURITIZATION 2020

PG&E Response to The Utility Reform Network's  
Data Request 17, Question 10

**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

## 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.