

**PACIFIC GAS AND ELECTRIC COMPANY
Wildfire Mitigations Plans Discovery 2023-2025
Data Response**

PG&E Data Request No.:	CalAdvocates_054-Q002
PG&E File Name:	WMP-Discovery2023-2025_DR_CalAdvocates_054-Q002
Request Date:	October 29, 2024
Requester DR No.:	CalAdvocates-PGE-2025WMP-17
Requesting Party:	Public Advocates Office
Requester:	Tyler Holzschuh
Date Sent:	November 13, 2024

QUESTION 002

- a) Has PG&E done any research into semiconductor assisted circuit breakers¹ for wildfire mitigation?²
- b) If yes, please provide a brief description of the research PG&E has done, including at least the minimum following information:

Research Study Name	Description of Research	Objectives	Results	Start Date	End Date

¹ A semiconductor assisted circuit breaker works by using a semiconductor device with or in place of a mechanical circuit breaker to: a) generate a zero crossing of electrical current; b) commute the fault current to path where it is then severed; c) directly sever the current path; or d) otherwise sever the fault current path.

² See, e.g., SciBreak’s VARC Circuit Breaker. <https://scibreak.com/technology/vsc-varc/>.

- c) Has PG&E evaluated the potential use of semiconductor assisted circuit breakers in PG&E's system for wildfire mitigation purposes?
- d) If the answer to part (c) is yes, please provide a brief description of all potential use case(s) PG&E has evaluated for semiconductor assisted circuit breakers.
- e) If the answer to part (c) is yes, state the time frame during which this evaluation took place.
- f) If the answer to part (c) is yes, list all benefits that PG&E has identified regarding the use of semiconductor assisted circuit breakers in PG&E's system.
- g) If the answer to part (c) is yes, list all downsides that PG&E has identified regarding the use of semiconductor assisted circuit breakers in PG&E's system.
- h) If the answer to part (c) is yes, state the estimated cost (may be a range) regarding the use of semiconductor assisted circuit breakers in PG&E's system.
- i) Please provide all research documents and reports that PG&E has written, commissioned, or funded on this topic.
- j) Does PG&E plan to perform evaluation in the future regarding the use of semiconductor assisted circuit breakers in PG&E's system for wildfire mitigation purposes? State approximately when, if yes.

ANSWER 002

- a) No, we have not done research into semiconductor assisted circuit breakers for wildfire mitigation.
- b) Not applicable, please see the response to subpart (a) above.
- c) Yes, we have evaluated the potential use of semiconductor assisted circuit breakers limiters in our system for wildfire mitigation purposes.
- d) In approximately 2019-2020, we evaluated a proposal from SciBreak to develop a distribution class circuit breaker that could interrupt fault current in about three milliseconds using power electronics.
- e) This evaluation took place in approximately 2019-2020.
- f) The primary benefit identified was the potential to reduce fault energy by reducing fault clearing times.
- g) We determined that the proposed technology was novel and largely unproven. SciBreak did not offer a finished product and was not proposing circuit breakers that would meet many of the ANSI/IEEE standards for medium voltage circuit breakers that are industry standard.
- h) We do not have an estimated cost regarding the use of semiconductor assisted circuit breakers in our system.
- i) We are not aware of any research documents or reports that we have written, commissioned, or funded on this topic.
- j) No, we do not plan to perform evaluation in the future regarding the use of semiconductor assisted circuit breakers limiters in our system for wildfire mitigation purposes.