Invitation for Public Comment on

Dr. Robert Budnitz, Dr. Michael Quinn, and Dr. Raluca Scarlat

As Candidates for Appointment to the Diablo Canyon Independent Safety Committee
Term: July 1, 2025, through June 30, 2028

On January 14, 2025, the California Public Utilities Commission (CPUC) announced it was seeking applications from qualified persons to become nominees to fill a vacancy on the Diablo Canyon Independent Safety Committee (Committee) for a three-year term beginning July 1, 2025.

The Committee consists of three members, one each appointed by the Governor, the California Attorney General, and the Chair of the California Energy Commission (CEC). The Committee assesses the safety of the operations of Pacific Gas and Electric Company's Diablo Canyon nuclear power plant and has authority to review quarterly reports and conduct on-site inspections. The Committee reports its observations and recommendations to PG&E annually; the Committee then transmits its report, along with PG&E's response, to the Governor, Legislature, the California Attorney General, the NRC, CEC, and the CPUC.

According to the procedures adopted by the Commission in Decision 07-01-028, updated in D.23-08-004 and PG&E Advice Letter 7034-E,[1] and codified by SB 846 in Public Utilities Code § 712.1(c), the President of the CPUC selects no more than three qualified candidates responding to the request for applications, plus the incumbent member whose term is expiring if the incumbent consents to reappointment. The CPUC will issue a resolution ratifying the President's selection of candidates for appointment. The Attorney General shall appoint the Committee member for the term beginning on July 1, 2025, from the list of candidates selected by the President of the CPUC and ratified by the Commission.

Applications were received from Dr. Robert Budnitz, Dr. Michael Quinn, and Dr. Raluca Scarlat in response to the CPUC's January 14, 2025, announcement. Their qualifications are summarized below.

The CPUC welcomes public comments on the qualifications of Dr. Budnitz, Dr. Quinn, and Dr. Scarlat. Please e-mail comments to david.zizmor@cpuc.ca.gov.

Comments must be received via e-mail by March 24, 2025.

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[1] PG&E Advice Letter 7034-E approving the third restatement of the DCISC Charter as authorized in D.23-08-004 is available at https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC_7034-E.pdf.

Dr. Robert J. Budnitz (Incumbent)

Dr. Robert J. Budnitz is currently an incumbent member of the Diablo Canyon Independent Safety Committee (DCISC), serving a term that began July 1, 2022, and will end June 30, 2025, as appointed by Attorney General Rob Bonta. Dr. Budnitz was originally appointed to the DCISC by then Attorney General Edmund G. Brown Jr. in 2007 for a term that ran through mid-2010.

In addition to his role on the DCISC, Dr. Budnitz retired in 2017 from the scientific staff at the University of California's Lawrence Berkeley National Laboratory (LBNL), where he worked on nuclear power safety and security. He currently works as a consultant, advising on reactor safety both domestically and internationally. He is a member of the National Academy of Engineering. He has also been honored by being named a Fellow of the American Nuclear Society, the American Physical Society, the Society for Risk Analysis, and the American Association for the Advancement of Science. His current research is largely in the area of the seismic safety of nuclear reactors, most of which is supported by the U.S. Nuclear Regulatory Commission (NRC). From 2002 to 2007, he was employed at UC's Lawrence Livermore National Laboratory; during part of that period he also worked on a two-year special assignment in Washington D.C. assisting the Director of DOE's Office of Civilian Radioactive Waste Management to develop a new Science & Technology Program for the Yucca Mountain Project. Dr. Budnitz additionally serves on advisory and standards-development committees for organizations such as the American Nuclear Society and the American Society of Mechanical Engineers.

From 1967 to 1978, Dr. Budnitz was on the staff of the Lawrence Berkeley National Laboratory, serving in 1975-1978 as Associate Director and Head of LBNL's Energy & Environment Division. The programs under his direction included energy-efficiency, deep-geologic radioactive waste disposal, solar energy, geothermal energy, fusion energy, transportation technology, chemical-engineering for alternate fuels, environmental instrumentation, air-pollution phenomena, and energy policy analysis.

From 1978 to 1980, he was a senior officer on the staff of the NRC. In 1978-1979, he was the Deputy Director, NRC Office of Nuclear Regulatory Research, and in 1979-1980 he became the Director of that same Office. In that position, Dr. Budnitz was responsible for formulating and guiding the large NRC research program that constituted over $200 million/year at the time. His responsibilities included assuring that all major areas of reactor-safety research, waste-management research, and fuel-cycle-safety research necessary to serve the mission of the NRC were adequately supported. Additionally, following the Three Mile Island reactor accident, Dr. Budnitz served the last 7 months of 1979 as the "technical coordinator" of the important NRC internal inquiry examining the accident, known as the "Special Inquiry Group."

After leaving the NRC in 1980 and until late 2002, Dr. Budnitz worked as a private consultant on reactor safety, radioactive waste, and related subjects, as president of Future Resources Associates, Inc., a small firm he founded in Berkeley in 1981. His

clients included both industrial and governmental organizations. A majority of his research support in the post-1981 period came from governmental sources, including NRC, DOE, and the U.S. Environmental Protection Agency, as well as international and intergovernmental organizations such as the International Atomic Energy Agency in Vienna, the OECD Nuclear Energy Agency in Paris, and the European Bank for Reconstruction and Development in London. After the downfall of the Soviet Union in 1991, an international program was assembled by several western nations to assist the operators of Soviet-designed reactors in Russia and several other countries to evaluate and then to upgrade their safety. Dr. Budnitz played a leading role in that multi-national effort for about 15 years. One of those projects, advising the government of Armenia on the safety of their old Soviet-designed reactor, remains an active project for Dr. Budnitz today, nearly 30 years later.

After the serious Japanese reactor accident at Fukushima in March 2011, caused by an earthquake-triggered tsunami that flooded the site and damaged 4 of the 6 reactors on-site, the U.S. Secretary of Energy and President Obama's Science Adviser appointed a special "science panel" to advise them about the best way early-on to interpret the incomplete technical information that was available from Japan, and about how best the U.S. might assist the Japanese in responding. Dr. Budnitz served on that high-level panel for the duration of 2011.

Some of Dr. Budnitz's other assignments include serving as chairman of an OECD/NEA International Specialist Meeting that evaluated the adequacy of our current understanding of possible terrorist attacks on nuclear facilities, a few months after the terrorist attacks on New York and Washington on 9/11/2001; he chaired the "Senior Seismic Hazards Analysis Committee" (the "SSHAC committee") supported by DOE, NRC, and the Electric Power Research Institute, that developed an advanced probabilistic seismic hazard methodology, published in 1997, which has now become the commonly accepted way to do this type of hazard analysis and was used recently in the most advanced studies of the seismic hazards at the Diablo Canyon site; he chaired both the NRC's "Expert Panel on Seismic Margins" that developed the widely-used seismic-margin methodology for assessing the seismic capabilities of existing nuclear facilities, and the DOE's "Senior External Events Review Group" that advised DOE on seismic and wind design criteria for their proposed new production reactor design; and he chaired the "Committee on Remediation of Buried and Tank Wastes" for several years for the National Research Council/National Academy of Sciences under the Board on Radioactive Waste Management. Dr. Budnitz has also performed research in and worked extensively in the fields of nuclear-reactor safety, high-level-waste safety, and nuclear-facility safety assessment, including probabilistic risk assessment.

Dr. Budnitz earned a Ph.D. in physics from Harvard University in 1968, an M.A. in physics from Harvard in 1962, and a B.A. in physics from Yale University in 1961.

Dr. Michael Quinn

Dr. Michael Quinn has been continuously engaged in evaluating, supporting, operating, managing, and overseeing commercial nuclear power and/or government nuclear reactor sites since 1975. His hands-on and oversight experience includes:

- 25 years on the operating and management staff of nuclear plants, including senior site management positions, earning a Senior Reactor Operator's License (SRO), and as a member of the Recovery Team, developing programs and leading teams to correct organizational issues that caused a four-year US NRC-mandated shutdown at Millstone Station, a multiple-plant site. While at Millstone, Michael was a member of a small team that developed and commissioned nuclear safety and safety conscious work environment (SCWE) programs to support Millstone restart. Two years later, the US NRC adopted SCWE into its Reactor Oversight Program.
- 24 years as an independent nuclear consultant, including on-site evaluation of nuclear organizational performance at over 40 nuclear generation units in the US and Canada as well as research reactors and US DOE nuclear facilities. He has developed and delivered courses related to nuclear performance investigations and oversight to both nuclear utilities and resident inspectors assigned to the four US NRC Regional offices. Other courses he has developed and delivered include "Nuclear Safety Culture" and "Safety Conscious Work Environment" (SCWE).
- He has just begun implementing the fourth consecutive five-year contract to teach US NRC inspectors and technical staff how to evaluate adequacy of Root Cause Analysis/Event Investigation performance prepared by nuclear plant licensees (recently expanded from 3 days to 4.5 days). Dr. Quinn and his team are the only individuals who have taught this subject as well as safety culture to US NRC inspectors.

A limited sample of his past assignments that illustrate his qualifications to serve on the Diablo Canyon Independent Safety Committee include:

- **2025**: Training US NRC inspectors. Since 2006, has taught over 600 US NRC inspectors and technical staff in 51 three-day training deliveries, and also trained US NRC Augmented 95003 Inspection Teams. The course recently expanded to 4.5 days; contract extends into 2029.
- **2024**: One of five independent, external evaluators requested by Darlington Nuclear Power and Bruce Nuclear Power (both stations in Ontario Canada) to independently evaluate a spontaneously fissioning neutron source in CANDU reactor component waste**.**
- **2024**: Key member of an independent team that conducted a several month safety culture/safety conscious work environment (SCWE) assessment at Columbia Nuclear Generating Station in Richland, WA.
- **2023**: Led an independent team that evaluated technical program performance and Safety Culture at the NIST Center for Neutron Research (NCNR) in Gaithersburg MD following a significant reactor event that resulted in nuclear fuel damage

(melted fuel); Team report is publicly available here: https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML23207A041

- **2022**: Led an independent Team in a four-month evaluation of Conduct of Operations, technical programs, and safety culture, following a series of significant events at the Department of Energy's transuranic waste repository Waste Isolation Pilot Plant (WIPP) outside Carlsbad, NM. The Team delivered a Collective Significance Report and organizational Recovery Plan.
- **2000-2022**: Led independent assessments and evaluations of: (1) significant and 'unplanned' nuclear events at more than 20 nuclear power units in the United States and Canada (responded to: reactor trips/transients, transuranic uptakes, nuclear program breakdowns); (2) Operational Reliability assessments, Technical Engineering Rigor and Conduct of Operations assessments at 15 nuclear facilities in the US and Canada; (3) Safety Culture and SCWE.
- **2002-2021**: Led Independent Spent Fuel Storage Installation [ISFSI] operational assessments and significant event evaluations at four ISFSI facilities in four states (IL, MA, ME, CT).
- **2008-2009**: Key team member on a several month Reliability Assessment of Vermont Yankee for the State of VT to determine feasibility of plant license extension beyond the 40-year license. Was lead assessor of the Root Cause process within the Corrective Action Program evaluation.
- **2017-2018**: Taught Operational and Event Causal Analysis Evaluation to the Japan Nuclear Regulation Authority (JNRA) staff and to Canada Nuclear Safety Commission (CNSC) staff.

Reports and recommendations from many of these assignments are available for viewing.

Dr. Quinn has a demonstrated history of successfully and accurately communicating his evaluations, reports, and recommendations in objective, empirically-based, plain language to a broad spectrum of stakeholders. His reports are relevant, objective and balanced, based upon established facts and empirical evidence, and focus on addressing the problems at hand rather than reporting what "someone" may have wanted to hear. His recommendations and corrective actions address the substantive problems, the causal factors that enabled the problems, and the processes that should have identified and addressed the causal factors at an earlier, safer, more risk-compliant time.

Dr. Quinn has delivered his independent assessments to federal and state agencies, state and federal regulators, utility commissions, Boards of Directors, nuclear utility executives, nuclear plant staff, external interest groups, and the public. He has presented findings in closed and open settings, as well as in public forums with regulators, town hall attendees, and public stakeholders.

What Dr. Quinn can bring to the DCISC:

Upon appointment Dr. Quinn will bring a current and comprehensive body of work experience in nuclear operations assessment to the Committee. His first-hand experience is grounded in: (1) directly operating and evaluating nuclear plants rather than studying

them without personally experiencing them, and (2) living through significant operational challenges that he investigated as a member of plant staff. This experience has provided him with in-depth, hands-on knowledge that cannot be obtained otherwise, and set the stage for his subsequent consulting work. He has been personally involved in preparing for and executing "final plant shutdowns"; this experience applies to Diablo Canyon in the context of a permanent shutdown at some future point and includes:

- Assessing factors for maintaining Operational Excellence prior to permanent shutdown
- Assessing factors that maintain (or indicate decline in) the conduct of operations focus on and fidelity to plant systems, structures, and components; as well as to procedure, program, policy, and license requirements.
- Assessing extent to which the organization maintains the expected performance level of the cross-cutting areas: Safety Culture, Human Performance, and "Problem Identification & Resolution" as the station approaches permanent shutdown.

On a personal note:

From 2002-2011 and 2012-2021, Dr. Quinn served on the Connecticut Community Care Inc. (CCC) Board of Directors, a non-profit health care service provider with 250 employees who are responsible for over 9,000 compromised individuals in need. His last CCC role was Chair of the Board. He took a mandatory year off due to a term limit requirement in the CCC Charter.

Dr. Quinn is a four-decade American Red Cross blood donor, during this time donating 16 gallons.

LinkedIn: https://www.linkedin.com/in/quinnmd/

Google Scholar: https://scholar.google.com/citations?hl=en&user=lFjU6ncAAAAJ

Dr. Raluca Scarlat

Professor Raluca O. Scarlat is an Associate Professor in the Nuclear Engineering Department at University of California (UC) Berkeley. Prof. Scarlat's research encompasses chemistry and materials for nuclear fusion and fission energy, as well as batteries, and critical minerals. Prof. Scarlat has expertise in electrochemistry and physical chemistry, corrosion, tritium management, advanced nuclear reactors, reactor safety and thermal-hydraulics, and engineering ethics.

Prof. Scarlat's expertise in the areas of (1) Nuclear Reactor Safety and Thermal-Hydraulics, (2) Materials and corrosion, and (3) Plant Operation is of relevance to (1) understanding inspection and maintenance, sensor calibration, interfacing with Nuclear Regulatory Commission (NRC) inspections, necessary operator and staff training, human factors considerations, regulations and procedures, severe accident management guidelines, understanding application of safety principles, functioning principles of passive and active safety systems, probabilistic risk assessment for the units; (2) corrosion control, materials degradation, environmental monitoring and transport of radioisotopes in the environment; (3) adequate staffing and training, outage planning, sensors and controls, refueling operations, emergency preparedness, worker safety, and the role of the safety culture.

Prof. Scarlat has co-authored 46 journal publications, 38 refereed conference proceedings, and a book chapter. She currently serves on the Nuclear Safety Committee and the Advisory Committee for UC Davis' McClellan Nuclear Research Reactors in Sacramento, CA. Prof. Scarlat served two terms on the Nuclear Energy Advisory Committee (NEAC) for the US Department of Energy, Office of Nuclear Energy. Prof. Scarlat has been awarded the American Nuclear Society (ANS) Mary Jane Oestmann Achievement Award in 2021. She has served as a working group member for the Development of ANS 20.2 Standard, "Nuclear Safety Design Criteria and Functional Performance Requirements for Liquid-Fuel Molten Salt Reactor Nuclear Power Plants.," and on the American Society of Mechanical Engineers (ASME) standards task group on graphite issues for Molten Salt Reactors (MSRs).

Prof. Scarlat has established the SALT research group at UC Berkeley, with capabilities in high temperature experimental studies for molten salts and high temperature materials, with the unique capability of handling both beryllium, which is respiratory and dermal hazard, and radioactive materials; each semester 15 to 25 graduate students, postdoctoral scholars, and undergraduate students train and perform research in the SALT Lab. Prior students and postdoctoral scholars are now faculty, research scientists at national laboratories, and engineers in advanced reactor companies.

Prof. Scarlat completed her Ph. D. in Nuclear Engineering with Designated Emphasis in Energy Science and Technology at UC Berkeley in 2012; a Certificate in Management of Technology, Haas School of Business at UC Berkeley in 2009; and her B.S. in Chemical and Biomolecular Engineering, Cum Laude from Cornell University in 2006. Prof. Scarlat worked as a chemical engineer for ExxonMobil, developing and deploying

abnormal event detection applications for petrochemical plants, and training engineers and operators in the development and use of advanced controls applications; she received a Leadership Award from the ExxonMobil Automation & Optimization Division in Dec. 2006. In fall of 2011, after the Fukushima Dai-Ichi Nuclear Power Plant accident, Scarlat joined Hitachi GE, in Ibaraki Prefecture, Japan, for an engineering internship, to study severe accident progression at Fukushima Dai-Ichi Units 1 and 2, for the purpose of making recommendations towards improving severe accident management at the boiling water reactors (BWRs) in Japan. She was an assistant professor at University of Wisconsin Madison, in the field of thermal-hydraulics and reactor safety from 2014 to 2018. She joined as faculty of UC Berkeley Nuclear Engineering in 2019, where she performs research on chemistry and corrosion in molten-salt media; she also holds a Chemist Faculty Scientist/Engineer position at Lawrence Berkeley National Laboratory. Prof. Scarlat has taught graduate and undergraduate courses on Molten Salt Reactors and Tritium Breeding Blankets; Nuclear Fuel Cycle; Ethics, Engineering and Society; Molten Salt Chemistry and Corrosion; Engineering Thermodynamics; Nuclear Engineering Design; Economic and Environmental Aspects of Nuclear Engineering; Molten Salt Technology; and Safety Analysis and Process Safety, and she currently serves as the head undergraduate curriculum adviser for the Nuclear Engineering Department at UC Berkeley.