BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

PREPARED TESTIMONY OF JOHN GEESMAN

ON BEHALF OF THE ALLIANCE FOR NUCLEAR RESPONSIBILITY (“A4NR”)

TABLE OF CONTENTS

I. INTRODUCTION. page 2
II. SUMMARY OF TESTIMONY. page 3
III. PRIMARY SAFETY INSIGHTS. page 4
IV. PG&E’S APPROACH TO SNF STORAGE RISKS. page 7
V. MALEVOLENT USE OF AIRCRAFT. page 9
VI. FORMAL RISK ANALYSES AND SNF. page 10
VII. OTHER ANALYTIC BLIND SPOTS. page 11
VIII. PROBABILISTIC RISK ASSESSMENT AND SNF. page 12
IX. WHAT PG&E KNEW. page 15
X. ROLE OF PLAN 36. page 21
XI. OTHER MATERIAL MISREPRESENTATIONS. page 24
XII. HOLTEC’S JUNE 2019 ASSURANCES. page 29
XIII. PG&E’S CONDUCT. page 32
I. **INTRODUCTION.**

Q01: Please state your name and business address for the record.

A01: My name is John Geesman, and my business address is: Dickson Geesman LLP, 1970 Broadway, Suite 1070, Oakland, CA 94612.

Q02: Are your professional qualifications included in your testimony?

A02: Yes, my professional qualifications are contained as Appendix A to my testimony.

Q03: Was your testimony prepared by you or under your direction?

A03: Yes, it was.

Q04: Insofar as your testimony contains material that is factual in nature, do you believe it to be correct?

A04: Yes, I do.

Q05: Insofar as your testimony contains matters of opinion or judgment, does it represent your best judgment?

A05: Yes, it does.

Q06: Does this written submittal complete your prepared testimony and professional qualifications?

A06: Yes, it does.

Q07: What is the purpose of your testimony?

A07: The purpose of my testimony is to provide evidence in support of A4NR’s recommended adjustments to portions of PG&E’s Decommissioning Cost Estimate (“DCE”) for the Diablo Canyon Nuclear Power Plant (“DCNPP”). To avoid repetitiveness, I incorporate herein by
reference the entirety of A4NR’s January 11, 2019 Protest (attached as Appendix B) as a part of
my testimony, with one correction. Based upon PG&E’s January 16, 2019 Errata to Prepared
Testimony, the savings estimates on page 12 of A4NR’s January 11, 2019 Protest should be
revised as follows:

Using PG&E’s estimate of $54.7 109.1 million in annual savings attributed to moving
spent fuel from wet storage to dry casks, the consequence of reducing the assumed wet
cooldown period from seven years to two or three is $219 436 -- $274 546 million of
ratepayer savings.

II. SUMMARY OF TESTIMONY.

Q08: How would you summarize your testimony?

A08: A4NR is preliminarily recommending a reduction of $509 – 619 million in the DCE, based
upon PG&E’s demonstrable ability to shorten the length of time spent nuclear fuel (“SNF”) is in
wet storage, and correction of PG&E’s unsupported presumption about a waiver of the state’s
once-through-cooling deadline for DCNPP Unit 2. These adjustments will have the collateral,
but important, benefit of improving public and operational safety without infringing upon the
regulatory jurisdiction of the Nuclear Regulatory Commission (“NRC”). Although there is
uncertainty about the precise magnitude of improved safety attributable to transferring SNF
from wet to dry storage, there is consensus that some enhancement of safety margin occurs.
PG&E has embraced a wet-is-safe-enough dogmatism and resisted, for the most part, efforts by
state government since 2008 to accelerate, consistent with NRC pool and cask requirements,
the SNF transfer process. PG&E appears to have assigned no weight to the likelihood that the
costs of dry storage will be reimbursed by the federal government, depriving its customers of a
virtually cost-free boost in safety margin. Despite its own awareness that the two leading cask
vendors both profess to be able to achieve SNF wet cooldown periods at DCNPP shorter than 3 years, PG&E has unreasonably and imprudently inflated its DCE by relying upon a 7-year assumption – raising cost projections for SNF management by hundreds of million dollars. In order to justify this assumption, PG&E’s filings and testimony in this proceeding contain multiple misrepresentations, including several material omissions. Apart from a somewhat shorter applicable period, PG&E’s handling of SNF recommendations from California state government since 2008 conforms to the “historic culture” described by Governor Newsom’s Strike Force: “more than two decades of mismanagement, misconduct, and failed efforts to improve its safety culture.”

III. PRIMARY SAFETY INSIGHTS.

Q09: From a safety perspective, what are the primary insights you believe the Commission should apply to the management of SNF at DCNPP?

A009: Initially, I would note that the regulation of radiological safety at commercial nuclear plants falls within the exclusive domain of the NRC under the Atomic Energy Act and my testimony should not be understood, nor should the Commission attempt, to second-guess the NRC. Nevertheless, adjusting the PG&E DCE as proposed by A4NR, a matter wholly within the jurisdiction of the California Public Utilities Commission, also carries substantial public-safety and risk-mitigation benefits that should not be ignored. In this regard, perhaps the best place to start is with a speech given May 13, 2008 to the Nuclear Energy Institute by then-NRC

1Newsom Strike Force, April 12, 2019, “Wildfires and Climate Change: California’s Energy Future,” p. 44.
Commissioner Gregory Jazcko – before he became NRC Chair, before Fukushima, and before
the adoption of the AB 1632 Report by the California Energy Commission (“CEC”):

... over the last half century licensees have demonstrated spent fuel can be safely and
securely managed onsite at nuclear power plants. That, coupled with the fact that long-
term disposition of this material remains a challenge in the United States, leads me to
believe that the focus should remain on shorter-term storage and any additional safety
and security improvements that can be made there.

The most clear-cut example of an area where additional safety margins can be
gained involves additional efforts to move spent nuclear fuel from pools to dry cask
storage...

The risk at a nuclear power plant site is centered on the operating plant, not the
spent fuel stored in massive casks and passively cooled in concrete bunkers. The threat
of terrorism is the one element which complicates the risk to stored fuel.²

A second source of valuable perspective is the 2016 National Academy of Sciences
(“NAS”) Phase 2 Report on lessons learned from the Fukushima nuclear accident. The 2016 NAS
Phase 2 Report characterized certain pertinent findings of the earlier 2006 NAS Report as
“statements of fact that require no reevaluation”:

• Finding 3D – “the vulnerabilities of spent fuel pools to terrorist attacks are plant-
design specific and can be understood only by examining the characteristics of spent
fuel storage at each plant.”³

• Finding 4D – “Dry cask storage for older, cooler spent fuel has two inherent
advantages over pool storage: (1) It is a passive system that relies on natural air
circulation for cooling, and (2) it divides the inventory of that spent fuel among a
large number of discrete, robust containers. These factors make it more difficult to

² NRC Office of Public Affairs, May 13, 2008, “Thoughts on Spent Fuel Storage” Prepared Remarks for The
³ National Academies of Sciences, Engineering, and Medicine, 2016, “Lessons Learned from the Fukushima Nuclear
Accident for Improving Safety and Security of U.S. Nuclear Plants: Phase 2” p. 95.
attack a large amount of spent fuel at one time and also reduce the consequences of such attacks.”

The 2016 NAS Phase 2 Report faulted the NRC for not performing the independent examination of surveillance and security measures recommended by the 2006 NAS Report for protecting stored spent fuel, and reevaluated the 2006 NAS Report’s reservations about applying formal risk assessment tools to SNF terrorism. The 2006 NAS Report had stated:

FINDING 2A: The probability of terrorist attacks on spent fuel storage cannot be assessed quantitatively or comparatively. Spent fuel storage facilities cannot be dismissed as targets for such attacks because it is not possible to predict the behavior and motivations of terrorists, and because of the attractiveness of spent fuel as a terrorist target given the well-known public dread of radiation.

The 2016 NAS Phase 2 Report recommended the NRC sponsor a spent fuel storage (wet and dry) risk assessment for U.S. nuclear plants, and observed,

The identification of scenarios may be incomplete, and the estimates developed through expert elicitation are subjective and can have large uncertainties. Nevertheless, risk assessment methods that focus on the risk triplet—scenarios, likelihoods, and consequences—can contribute useful security insights.

The NRC subsequently assessed the 2016 NAS recommendation and, in its words, “did not identify a need to initiate new activities or to otherwise redirect resources to revise existing programs or to accelerate initiatives to enhance the use of risk assessment techniques in the security area.”

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5 Id., pp. 102, 103.
IV. PG&E’S APPROACH TO SNF STORAGE RISKS.

Q10: Apart from the allegations in A4NR’s Protest, what are your general criticisms of PG&E’s approach to SNF storage risks at DCNPP?

A10: They are several. To the extent that the NRC is a rigorous arbiter of radiological safety, PG&E is justified in embracing a compliance-driven safety culture. But mere compliance does not necessarily provide a safe harbor from public concerns that may transcend the scope of NRC safety regulation. The NRC’s analytic prioritization of near-term fatalities over long-term increases in latent cancers; its de-emphasis of offsite property contamination outside a 50-mile radius; and its continued exclusion of a societal risk criterion from its safety goals may each have its own internal logic. They are sanctified by the preemptive authority of the Atomic Energy Act, but they likely fall short in quenching the DCNPP risk apprehension of the public. Rote compliance with NRC license requirements does not excuse PG&E’s failure to consider or adopt more aggressive approaches to risk mitigation measures related to SNF storage, particularly in light of California state government’s longstanding interest in SNF storage strategies. As the 2016 NAS Phase 2 Report observed, “Nuclear plant operators and their regulators strive to make continuous improvements to nuclear plant safety.”

Second, PG&E’s focus on Core Damage Frequency (“CDF”) as the quantitative unit of measurement of its DCNPP risk, while a logical prioritization that benefits from a maturing probabilistic assessment methodology, masks difficult-to-analyze risks from spent fuel pool...

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incidents that pose no danger to the reactor core. Most of the radioactive material at DCNPP is concentrated in the SNF that has been removed from the reactors, and most of that is presently stored in the two spent fuel pools. The NRC staff has recognized the limitations of reactor-derived screening criteria for analyzing spent fuel pool accident scenarios:

The QHOs [quantitative health objectives] effectively establish expectations related to the frequency of severe accidents associated with nuclear reactors and the potential for release of radioactive materials from an operating reactor core. . . . Some considerations in comparing SFP [spent fuel pool] risks to the QHOs are that the potential consequences of a SFP accident can exceed those of reactor accidents in terms of the amount of long-lived radioactive material released, the land area affected, and the economic consequences.  

PG&E has acknowledged, “CDF is not used to measure, and the CDF does not include, risks associated with the spent fuel pools.”

Third, although sabotage/terrorism risks to the DCNPP pools involve “safeguards” information necessarily withheld from public review, PG&E’s decision to cancel all scheduled pre-shutdown offloads – allowing SNF inventory buildup to approach the physical capacity of each pool – suggests the company assigns a very low likelihood to this risk, if it hasn’t completely omitted serious evaluation of it altogether. The 2016 NAS Report was particularly critical of the NRC’s regulatory evaluation of expedited SNF transfer to dry storage because of its failure to consider sabotage risks, and it is unclear that PG&E approaches the question any differently. Since the September 11, 2001 attacks on the World Trade Center and the Pentagon, the potential vulnerability of spent fuel pools to similar assault has been a major

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9 NuclearDecomCostTri2018_DR_A4NR_002-Q11
source of public anxiety about nuclear power plants. Given PG&E’s widely publicized experience in 2013 with malevolent actors at its Metcalf substation (about which, the 2016 NAS Report observed, “The suspects are still at large. It is not clear whether their attack was simple vandalism or a rehearsal for a possible future attack on the U.S. power grid.”), which prompted a $100 million effort to harden company substations. A prudently managed PG&E would proactively seek out the means by which it can address public fears about the DCNPP spent fuel pools, at de minimis short-term costs and long-term cost savings, such as expedited transfer of SNF to dry storage.

V. **MALEVOLENT USE OF AIRCRAFT.**

Q11: How does the NRC address the potential terrorism/sabotage threat from malevolent use of aircraft?

A11: I accessed the NRC website, [https://www.nrc.gov/security/faq-911.html#3](https://www.nrc.gov/security/faq-911.html#3), on June 14, 2019, and downloaded the following:

What is the NRC doing to protect nuclear facilities from an aircraft attack?

The Commission believes that the best approach to dealing with threats from aircraft is through strengthening airport and airline security measures. Consequently, we continue to work closely with the appropriate Federal agencies to enhance aviation security and thereby the security of nuclear power plants and other NRC-licensed facilities. Shortly after the September 11, 2001 attacks, NRC, working with representatives of the Federal Aviation Administration (FAA) and Department of Defense (DOD), determined that a Notice to Airmen (NOTAM), issued by the FAA, was the appropriate vehicle to protect the airspace above sensitive sites. This NOTAM strongly urged pilots to not circle or loiter over the following sites: nuclear/electrical power plants, power distribution stations, dams, reservoirs, refineries, or military installations or they can expect to be interviewed by law enforcement personnel.
Why doesn't the NRC install anti-aircraft weapons at nuclear power plants to protect them against an airborne terrorist attack?

The deployment of anti-aircraft weapons would be a decision for the Secretary of Defense, not the NRC. However, NRC believes that application of anti-aircraft weapons would present significant command and control challenges, particularly relating to the time required to identify a hostile aircraft and get permission to shoot down a civilian commercial aircraft and the potential for collateral damage to the surrounding community. Additional information on this subject can be found in the testimony provided by former Chairman Meserve to the U.S. House of Representatives on April 11, 2002, and to the U.S. Senate on June 5, 2002.

VI. FORMAL RISK ANALYSES AND SNF.

Q12: Since the San Bruno accident, and the resultant orders by the CPUC that PG&E verifiably expand the use of formal risk analysis methodologies in its corporate decision-making, how has PG&E’s assessment of SNF storage risks at DCNPP changed?

A12: With the potential exception of the pending study announced by PG&E at the May 3, 2019 workshop in this proceeding, to be performed by the B. John Garrick Institute for the Risk Sciences at UCLA, it is unclear that there has been any effort to bring SNF storage risks into the formal risk analysis methodologies utilized by PG&E since San Bruno. I am uninformed of the scope of the Garrick Institute’s study, the expected review process after its completion, or the likely delivery date for its results.

As mentioned above in response to Q10, the formal DCNPP risk analyses performed by PG&E since San Bruno are all calibrated in terms of projections of CDF. PG&E’s description of core damaging events makes clear that the plant is designed “to contain the accident inside the reactor’s containment structure should it occur.”¹¹ Because the DCNPP spent fuel pools are

¹¹ GRC-2020-PhI_DR_A4NR_001-Q04Atch22.pdf, pp. 81-82.
located in the Auxiliary Building, outside the containment structure, potential releases of radiation from the pools logically fall outside PG&E’s CDF calculations. In terms of PG&E’s corporate risk assessments, as documented in the company’s RAMP filings with the Commission, the DCNPP spent fuel pools are located in an analytic blind spot.

VII. OTHER ANALYTIC BLIND SPOTS.

Q13: Are there other analytic blind spots that affect PG&E’s risk assessments of the DCNPP spent fuel pools?

A13: In my judgment, there are at least two others—one conspicuous, one potential—that appear to influence PG&E’s nonchalance about the buildup of SNF inventories in the DCNPP pools. The obvious analytic blind spot is the fact that the federal government reimburses the cost of transferring SNF to dry casks as a result of breach of contract litigation. This point is reinforced in public meetings again and again, to PG&E and to the public, by members of the Diablo Canyon Independent Safety Committee (‘‘DCISC’’)—especially by Dr. Per Peterson, who served on the Obama Blue Ribbon Commission to explore options for SNF storage. Internal 2018 PG&E emails boast of a past “successful collection track record of around 98%”\textsuperscript{12} in the company’s SNF reimbursement claims. PG&E’s willful refusal to attach value to a virtually free risk mitigation reflects the dominance of a wet-is-safe-enough dogmatism.

I would add a “potential” third analytic blind spot, the failure to continuously evaluate the qualitative risk of terrorism/sabotage to the DCNPP spent fuel pools from the malevolent

\textsuperscript{12} NDCTP2018_A4NR_001_00010001.
use of aircraft. I say “potential” because I am necessarily uninformed of PG&E’s security assessments, and how or whether they formally incorporate this risk. During the January 23, 2019 DCNPP site visit held in this proceeding, after extolling the engineered strength of the Auxiliary Building walls and the pools themselves, PG&E spokesman Eric Nelson described the roof to me as “two sheets of tin.” In response to my question about vulnerability of the roof to plane crash, he explained that the building’s steel frame would prevent collapse, but that debris would likely fall into the pools. PG&E’s unwillingness to make greater use of the virtually free risk mitigation of SNF transfer to casks suggests a confidence that any risk posed to the pools from malevolent use of aircraft can be dismissed.

VIII. PROBABLISTIC RISK ASSESSMENT AND SNF.

Q14: Can probabilistic risk assessment (“PRA”) methodology be reliably applied to evaluate spent fuel pool accident risks?

A14: That’s unclear. I posed that question to Dr. Robert Budnitz, a longtime member of the DCISC, and one of the intellectual forefathers of PRA as applied in the nuclear industry:

Bob, a few years ago there was a discussion at a DCISC meeting about applying PRA methodology to potential releases from spent fuel pools. Were any such PRAs completed and, if so, how were they regarded by the risk assessment community? Are such reports publicly accessible? I have included the following excerpt from the February 2014 DCISC minutes to jog your memory (and highlighted your comments which caught my attention). Any guidance you could provide me would be well-appreciated. Best regards/JG

Dr. Budnitz reported he was unaware of a probabilistic risk assessment (PRA) using modern analytical methods having been performed concerning the risk of a release from a SFP but he reported that two such PRAs are now being performed, one for a boiling water reactor, such as those at Fukushima, and the other for a pressurized
water reactor, such as those at DCPP. Dr. Budnitz remarked that some in the PRA community doubt there is sufficient data to support a useful PRA concerning this issue. Dr. Budnitz reported a committee of the American Nuclear Society (ANS) and the American Society of Mechanical Engineers (ASME), which Dr. Budnitz co-chairs, has developed methodology standards for PRA and a small working group of the committee is also now reviewing the development of an adequate methodology, the use of the same assumptions and data, and the acquisition of sufficient data to support a PRA concerning the issue. He remarked that if an adequately supported methodology emerges it should be employed by DCPP. Dr. Lam stated he agreed with Dr. Budnitz analysis and he remarked the fundamental safety issues that must be dealt with in the context of SFP safety are several and include the lack of a robust containment, the presence of a significant inventory of radioactive material, the need for active cooling of water, and the fact that at DCPP and other nuclear facilities the SFP rack density has been increased from its original configuration. Dr. Peterson stated he was skeptical that a PRA could provide a useful basis to predict frequency of events where SFP inventory would be reduced as it may prove impossible to identify all possible sequences and the approach that has emerged is to manage risk which cannot be quantified by a PRA within the assessment of beyond design basis damage and to consider the issues within the context of strategies to mitigate risk. Dr. Peterson remarked that SFP structures are robust and the SFPs at Fukushima remained intact and leak-tight following the accident but he stated that any type of event which could challenge SFP inventory is likely to create significant challenges for reactors and the time constraints for taking action with regard to reactors is very short compared to the SFPs because of the very high decay heat rates. Dr. Peterson stated this was a principal reason why careful review of the various capabilities and procedures being put into place to use portable equipment at nuclear power plants, in accordance with the industry’s FLEX initiative, and to protect plant personnel are important in reducing residual risk. **Dr. Budnitz commented a PRA is scenario based and requires delineation of every sequence of events and for each sequence it requires an engineering understanding and later a probabilistic understanding to quantify. He stated he was confident that the scenario development is feasible but whether there are sufficient data to support the quantification in probabilistic terms is the issue.**

Dr. Budnitz replied to me by email on January 14, 2019:

> [This is a note from me personally. Although I am a member of the Diablo Canyon Independent Safety Committee (DCISC), this note does not represent the position of the DCISC, which it could not do, because such a position can only be adopted by the Committee in a public session after having the benefit of public comment. So this is simply my own response to your inquiry. Bob]

> Your quote from the DCISC public meeting transcript in February 2014 brings back some memories. I will try to bring things up-to-date.

> The American Nuclear Society and the American Society of Mechanical Engineers jointly support a standards-development committee, the ANS-ASME "Joint Committee on Nuclear Risk Management," that is charged with developing consensus standards for the methodology of
PRA (Probabilistic Risk Assessment), and with maintaining those standards once developed. I have been a member of that committee and its predecessor committees since 1998, and since 2012 I have been one of the committee's two co-chairs. The parent (voting) committee consists of 35 PRA experts and has three subcommittees and ten subsidiary working groups on specialized fields of PRA (like fire-PRA and seismic-PRA), with an active roster of about 150 PRA experts in total.

The JCNRM has devoted most of its efforts to developing PRA methodology standards for operating LWR power reactors, for LWR power reactors in the design and construction stage, and for advanced power reactor designs including some non-LWR design types that have not yet been built. Each standard developed by the JCNRM consists of a series of detailed technical requirements as to what the analyst must do, and in what order, to carry out a technically sound PRA analysis. If all of the requirements are accomplished, and an independent peer review is performed that gives the analysis high marks, then one can say that the PRA analysis "meets the standard."

Spent fuel pool risk and dry cask storage risk: Back in 2014 when I said those remarks that you have quoted, the JCNRM was contemplating whether the technology was sufficiently mature to support a PRA methodology standard for analyzing the risk from spent fuel pools and/or from dry cask storage installations. To understand the issues, the JCNRM put together a small group of experts to consider the technical issues and to recommend a course of action. The outcome of that evaluation was a recommendation, from that small working group of experts, that there was not enough experience with the PRA methodology for those types of facilities to support a methodology standard. There were three issues. First, to structure such a PRA analysis, one needs to identify every important accident scenario, and have confidence that this has been done successfully. Second, one needs to analyze each such scenario, one by one, to understand the various possible initiating events for each scenario, the likelihoods of various subsequent equipment failures and human errors, the detailed sequence of events in the scenario, and the physical-chemical-radiological evolution in time of the system (containing dangerous amounts of radioactivity) that could lead to a potential release of that dangerous radioactivity. Third, one needs data -- mostly failure-rate data and human-error data but important other data too -- to support a quantification of the likelihood (frequency per year) of each scenario and also a quantification of the consequences, if any.

The working group concluded that while it was feasible (at that time) to structure the analysis, thereby identifying each important accident scenario, there had not been enough research work or engineering practice to enable analysts to analyze each such scenario one-by-one. Further, there was not thought to be enough data about many of the various failure-rate issues to support a numerical analysis. The working group wrote down a very useful compilation and discussion of those technical areas where shortcomings were thought to exist. The overall conclusion was that there had not (at that time) been adequate experience with performing such an analysis: nobody had done such an analysis (for either a spent-fuel-pool installation or a dry cask installation), and until that had occurred the time was not ripe to develop a methodology standard, which consists of a series of requirements as to what one must do, in what order, to carry out the analysis.

Since that time, things have advanced, at least for using PRA methods for understanding the risks from spent-fuel pools. (For dry-cask storage risks, there has not yet been any PRA analysis
anywhere in the world, as best I know.) For spent-fuel pools, there have been at least 4 analyses performed, and I have learned (informally, but from experts whom I trust) that each of them was successful, in that the PRA analysts succeeded in identifying the important scenarios, did the analysis of each of them, identified enough data to support a quantification of likelihoods and consequences, and felt that overall the PRA was a success. (There might have been more than 4, but I know of 4 on good authority.) All of this work has been accomplished in the past couple of years, and some of it only in the past half year or so, according to the experts with whom I've spoken. A majority of the work performed was studying power-reactor spent fuel pools in reactors located abroad, but the configurations are very similar to those for pools in the US, I believe.

However, none of these analyses has yet been published or released publicly. My information (above) is informal and verbal, albeit reliable in my view. The publication of these studies, expected soon I hope, will be important so that the broader community of PRA experts (including me) can review them, pick them apart, confirm (or not) the quality of the work, understand the safety insights, and build on these studies to do more of them at other nuclear plants.

Only after the work in the above short paragraph has been accomplished by the broader community of PRA experts (world-wide) will the ANS-ASME JCNRM standards committee (that I co-chair) revisit whether the time would be ripe to develop a methodology standard for doing that type of PRA analysis. The advantage of developing such a methodology standard would be that analysts world-wide could use it to structure their individual plant-specific analysis, with the confidence that following the standard methodology would produce a good-quality analysis -- always with the proviso that an outside expert peer review has been done. (Such a peer review is required by each of our PRA standards as a matter of course, and guidance on how to do one, included in each of our standards, is part of the way our industry works to assure that our PRAs are technically adequate.) And with a standard in place, there is a stronger encouragement for plants to undertake these types of analyses. That is why the PRA technical community develops and supports standards like this.

Dry cast storage risk: Concerning a PRA risk assessment for dry-cask-storage installations, I know of no such analyses as of now, nor do I know of anything underway or being planned.

I hope that this note responds to your inquiry.

Sincerely, Bob Budnitz

IX. WHAT PG&E KNEW.

Q15: In the aftermath of the June 2016 Joint Proposal by PG&E, A4NR, and other parties for
the retirement of DCNPP, what do you think PG&E knew about the potential to greatly reduce
the cooldown time for SNF in the DCNPP pools?

A15: Based upon data responses provided by PG&E to A4NR in this proceeding, I believe
PG&E knew a lot. Two weeks after PG&E filed A.16-08-006 with the CPUC, Jearl Strickland, a
longtime PG&E staff member responsible for DCNPP SNF management issues (who, after
retirement, now represents Holtec International’s (“Holtec”) interests at both DCNPP and
SONGS as an executive consultant) emailed his DCNPP colleagues on August 25, 2016:

All ..

I’ve had good productive meetings with Holtec over the last two days. They were well prepared
to address the questions that I sent them prior to the trip.

Expedited spent fuel storage:

We reviewed in detail the work that they have done to shorten the period of time that spent
fuel is required to remain in the SFP. They have developed a basket for the MPCs constructed
out of the neutron attenuating material Matemic.

For the BWR plants they have a revision to their general license under review with the NRC that
will reduce the storage time down to 2 years. They are in the process of developing a similar
submittal for the PWR MPC 32m for another utility. They shared the results of the analysis
performed to date and went as far as to take the data that they have on our fuel and run a
preliminary assessment. The preliminary assessment is that there is a potential to get our times
down to 2 to 2-1/2 years. Under this case, we could start offloading the pools after being down
for about a year. It would take 14 months loading one cask a week to empty both pools. They
are addressing how we deal with RCCAs and will gather specific information from Mark Mayer.

We talked about the constraints of the cask transfer facility and they believe they have a way to
address this.

They will develop a proposal to add the scope of our shortened DCPP MPC to the license
amendment they are currently working on. This would revise their general license and allow us
to make the decision in the future to either revise our site specific license or change to the
general license.

Proposal expected in the next two weeks.13

13 NDCTP2018 -A4NR -001 -0001122
On October 31, 2016 – apparently not having yet received the anticipated proposal, Mr. Strickland corresponded with Holtec:

Subject: Proposal for expedited fuel movement

Joy ...

When I was last out at Holtec, a proposal was going to be developed for your team to perform the evaluation associated with reducing the required time in our pools down to the 2-1/2 year range. I would still like to see that ASAP so that I can get it started this year.

Thanks ... Jearl

After a call with DCNPP’s Terence Grebel, Holtec suggested a path forward:

Good morning, Jearl,

Terry and I just had a good conversation. Perhaps the first step is for PG&E and Holtec to have a WebEx to discuss PG&E’s immediate and long term needs. On this same WebEx, Holtec can provide an update on the general license of HI-STORM 100 (including GTCC), HI-STAR 100, and the concept of minimum of 2 year cooling. I will obtain dates from Stefan Anton and Kim Manzione to support the WebEx.

Regards,

Joy

A meeting was held on the morning of November 7, 2016 – led by Mr. Grebel and facilitated by Loren Sharp, PG&E’s Senior Director of Nuclear Decommissioning – with Holtec linked by WebEx for the stated purpose to “Initiate discussions on Holtec performing an expedited fuel offload study.” Identified as desired outcomes in the agenda prepared by PG&E were:

- Gain understanding of DCPP decommissioning planning and commitment to perform an expedited fuel offload study
- Gain understanding of current Holtec efforts related to casks design and GTCC waste capabilities

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14 NDCTP2018 -A4NR -001 -0000962
15 NDCTP2018 -A4NR -001 -0000961
16 NDCTP2018 -A4NR -001 -0000434.
By mid-afternoon that same day, Mr. Sharp and Mr. Strickland had received from their staff a
draft of a Request for Proposal to be sent to Holtec the following morning.

On January 26, 2017, with the subject line “HOLTEC UNVEILS FUEL BASKET FOR FAST-
TRACK DECOMMISSIONING”, Mr. Grebel circulated to his PG&E colleagues, including current
PG&E witnesses Thomas Jones and Philipe Soenen, by email a news report from
worldnuclearnews.org describing Holtec’s expectation that SNF cooling times could be reduced
“from about seven years to two-and-a-half years:”

Holtec said it was prompted to develop the strategy to address concerns about the risk of
accidental pool drainage, with the associated risks of a zirconium fire. The company said such a
scenario, while ‘non-credibly improbable, stalks the decision-making process of every nuclear
plant owner preparing to draw down its workforce after ceasing operations’.

When a reactor is shut down, its used nuclear fuel is usually stored in an at-reactor pool for
several years to allow it to cool sufficiently to be transferred to another suitable long-term
storage facility or for disposal.

Holtec's strategy relies on the use of its friction-stir welded fuel basket made of Metamic HT, an
aluminium boron carbide metal matrix composite. The welds do not suffer from distortion
typically seen with conventional welding process.

The basket has over ten times the thermal conductivity of conventional stainless steel fuel
baskets, which shortens the required cooling period of used fuel, prior to transfer to dry storage,
from about seven years to two-and-a-half years. This would enable a shuttered plant site to be
returned to its pre-plant state within about 66 months after the reactor's shutdown, the
company said.

The strategy will eliminate the fuel and high-level waste "as the obstacle to demolishing the
plant" and allow a site to be restored more quickly, it added.

Holtec first announced development of its latest used fuel storage baskets in January 2014.  

17 Id.
18 NDCTP2018 -A4NR -001 -0000943
A preliminary report from Holtec to PG&E was received in late January, 2017 for review, with final submittal in March 2017.

Q16: How did the Holtec study factor into PG&E’s 2018 filing of a site-specific Decommissioning Cost Estimate (“DCE”) for DCNPP?

A16: That is extremely unclear.

The Holtec study results, along with the results of a parallel analysis by a competing dry cask storage system vendor, TransNuclear Americas (“TN Americas”), an AREVA subsidiary, were primary inputs to PG&E’s October 2017 “Expedited Spent Fuel Offload Study, Document Number DCPP-TS-36” (“Plan 36”). Plan 36 is a 65-page document which compared alternate storage system and loading options determined by an expert panel comprised of PG&E and vendor personnel, and evaluated licensing options from PG&E’s perspective for SNF at DCNPP. According to Plan 36, “(w)hile no study was specifically completed, NAC International [a third competing vendor] information was also evaluated by PG&E.”

Plan 36 summarized the results of this evaluation as indicating a 4.5- to 5.5-year period for completion of post-shutdown transfer, depending upon the vendor selected, with both estimates subject to potential refinement once DCNPP-specific fuel assumptions were used:

The Holtec dry cask storage systems considered for use at DCPP would allow for final spent fuel offload 5.5 years after DCPP shutdown. The 5.5-year offload estimate may potentially be refined by a detailed analysis of DCPP-specific fuel data. The Holtec system supporting offload in 5.5 years is not yet licensed with the NRC, but the design and thermal heat model have been previously licensed by Holtec for use in another system. The Holtec system is the current dry cask storage system licensed for the DC ISFSI, including site-specific seismic analyses, but with different internals with higher thermal transfer capability that allow for faster offload. Use of the Holtec system would require no changes to the existing DC ISFSI pad or related transfer SSCs. Due to the design and spacing requirements, the storage of spent fuel using the Holtec system

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19 Plan 36, p. 11.
would utilize all existing cask space on the ISFSI pad. However, GTCC waste storage
casks could be stored in the existing ISFSI pad security enclosure footprint with either a
new partial anchored pad or base isolation design.

The TN Americas dry cask storage systems considered for use at DCPP would allow for
final spent fuel offload 4.5 years after DCPP shutdown. The 4.5-year offload estimate
may potentially be refined by a detailed analysis of DCPP-specific fuel data. The TN
Americas system supporting offload in 4.5 years is not yet licensed with the NRC, but is
anticipated to be licensed generically by 2021. Use of the TN Americas system would
require minor changes to the existing DC ISFSI pad and related transfer SSCs. Due to the
larger spent fuel capacity and compact, stacked design of the dry cask storage system, it
would also allow for storage of decommissioning-related waste (GTCC waste) on the
existing DC ISFSI pad.20

The potential for refinement, after “a detailed analysis of DCPP-specific fuel data”,
remains unquantified for the Holtec portion of Plan 36. The TN Americas discussion is more
specific:

TN Americas states that a more detailed depletion analysis based on actual SFA data,
including the initial uranium loading of 0.430 MTU, and irradiation history is expected to
result in a reduction in the actual calculated decay heat, leading to qualification of the
SFAs sooner than 2030. This is estimated to result in a reduction in the required cooling
time by approximately 6 months…. TN Americas anticipates that the offload can be
completed in the second half of 2029, roughly four years after shutdown of Unit 2.21

Plan 36 made no attempt to reconcile the 5.5 years attributed to Holtec “for final spent
fuel offload” and the earlier “preliminary assessment” of a 2 – 2.5 years provided to Mr.
Strickland in August 2016 (“Under this case, we could start offloading the pools after being
down for about a year. It would take 14 months loading one cask a week to empty both
pools.”), or the 2.5-year news report circulated by Mr. Grebel in January 2017. As discussed
further in response to Q21, Mr. Strickland, in his current capacity as executive consultant to

20 Id., p. 50.
21 Id., pp. 57 – 58.
Holtec, reaffirmed at the DCISC’s June 4, 2019 public meeting that Holtec’s response to PG&E’s upcoming vendor solicitation will propose cooldown times of 1 – 2 years.

X. ROLE OF PLAN 36.

Q17: How did Plan 36 factor into PG&E’s 2018 filing of a site-specific DCE for DCNPP?

A17: It is unclear that Plan 36 factored into the 2018 DCE at all, other than as a source of comfort for PG&E’s regulatory stratagem to eschew the shorter SNF offloading schedules corroborated by Plan 36 in favor of a “conservative” DCE assumption of a 7-year offload schedule purportedly “recommended” by the CPUC. This would enable “updates” in future NDCTPs, including “new information” derived from choosing a vendor in 2019. As described in the Conclusions and Recommendations section of Plan 36:

In accordance with the JPA and 2015 NDCTP CPUC Decision, this Plan demonstrates that is feasible to transfer spent fuel from the SFPs to the DC ISFSI in 4.5-5.5 years after DCPP shutdown, which is less than the seven years recommended by the 2015 NDCTP CPUC Decision. These offload estimates may potentially be refined by a detailed analysis of DCPP-specific fuel data.

It is recommended that the 2018 NDCTP cost estimate use Plan 24, Fuel Transfer to the ISFSI, results in the 2018 NDCTP, which uses the CPUC-recommended 7-year SFPs offload schedule. Further, the results of this Plan will be shown in the 2018 NDCTP as an option for potential cost savings. Although vendors have indicated that the offload time estimates may potentially be reduced by further detailed DCPP-specific fuel analysis, it is conservative to use the 7 years for cost estimating purposes. It is also conservative to use the Holtec cask design that is already employed at the DC ISFSI and is known to be NRC-approved for the DC ISFSI. Completing only the 2018 loading campaign prior to the end of the operating licenses will allow for greater flexibility in choosing spent fuel for casks, and thus allowing overall earlier final fuel offload. This recommendation is consistent with the NDCTP process, which allows for updates to account for new
information in the later NDCTPs, such as information resulting from choosing a vendor in 2019.

In properly evaluating these two remarkable paragraphs, it is important to point out that (1) the potentially redemptive assurance that “the results of this Plan will be shown in the 2018 NDCTP as an option for potential cost savings” remains unfulfilled to date; and (2) since Plan 36 was originally fortified by a “Privileged and Confidential” designation on every page – such protection was waived in response to an A4NR data request, although PG&E subsequently retracted the waiver – dissemination of its contents outside PG&E was not originally intended.

PG&E did not provide Plan 36 to High Bridge Associates for its independent review of the DCE. Upon learning that the CEC had never seen Plan 36, A4NR provided it on March 27, 2019 based upon this then-effective waiver:

This document was prepared at the request of counsel and, therefore, is marked “Privileged and Confidential.” For purposes of this proceeding and consideration of spent fuel management plans related to DCPP decommissioning, PG&E hereby waives the Attorney-Client Privilege for Plan 36 – Expedited Spent Fuel Offload Study.

Q18: Do you have any other major concerns about Plan 36?

A18: I have two, both of which relate to the outsized role of semantic framing in the planning process inside large institutions. How an issue is phrased often has a determinative role in how it is evaluated, especially with the passage of time as more individuals become engaged in the tasks at hand. Because of Plan 36’s “Privileged and Confidential” pedigree, I believe it reflects a particularly candid response by its author(s) to the challenges presented. There are two core issues that I believe were either misframed from the outset or mutated during the process.

22 Id., pp. 62 – 63.
23 NuclearDecomCostTri2018_DR_A4NR_001-Q11, p. 2.
First, I question how (and why) the primary objective became “to optimize the date that the last spent fuel is removed from the SFPs” in the context of the CEC’s AB 1632 Report in 2008, embraced by several CPUC decisions, which focuses on the pre-shutdown density of SNF inventories in the pools. Plan 36 is blunt: “The comparison between the options principally focuses on the earliest date that the spent fuel pool can be completely emptied,” with no apparent recognition of the arbitrary narrowing of objectives this singularized criterion represents. To the extent that the CEC, the DCISC, and the CPUC have attempted for years to nudge PG&E toward greater SNF risk mitigation, the motivation has unmistakably been broader than a desire for post-shutdown cost savings. In my judgment, the collaboration and coordination with the CEC required by D.17-05-013 and D.17-05-020 were designed to force timely discussion of potential tradeoffs between objectives into a transparent public forum before PG&E made its 2018 NDCTP filing.

Second, Plan 36 inexplicably converts an obligation to “plan for expedited post-shutdown transfer of spent fuel to Dry Cask Storage as promptly as is technically feasible (emphasis added) using the transfer schedules implemented at the San Onofre Nuclear Generating Station as a benchmark for comparison” into a 7-year safe harbor “recommended by” D.17-05-020. Here is what D.17-05-020 actually said: “We find there is sufficient evidence to reduce the time period for transferring SNF from wet pools to dry casks no later than 7 years (emphasis added) after shut-down.” And: “The record supports no longer than a 7-year (emphasis added) wet

24 Id., pp. 7, 11.
25 Id., p. 19.
26 A.16-08-006, Attachment A to Application of PG&E, Section 5.4.1., approved by D.17-05-013.
cooking period for nuclear decommissioning cost triennial proceedings consistent with industry practice.”

In its filed 2018 DCE, PG&E characterized this misbegotten 7-year safe harbor as a “CPUC request” attributable to the “ALJ decision on 2015 NDCTP application.” PG&E’s presentation materials for both the December 7, 2018 and January 16, 2019 briefings of the CEC, included as attachments to its March 15, 2019 Supplemental Testimony, semantically engineer this 7-year offload into “CPUC direction.”

PG&E’s repeated mischaracterizations of D.17-05-020 (as well as the commitment it made in the Joint Proposal) is misleading, at best.

XI. OTHER MATERIAL MISREPRESENTATIONS.

Q19: Are there other material misrepresentations related to SNF that you believe PG&E has made in its filings or testimony in this proceeding?

A19: Yes. The DCE claims that it “meets PG&E’s commitment in the Commission-approved Joint Proposal” despite PG&E’s failure to observe the requirements of Section 5.4.1. of the Joint Proposal to incorporate the costs of a plan for expedited post-shut-down transfer of spent fuel to Dry Cask Storage as promptly as is technically feasible using the transfer schedules implemented at the San Onofre Nuclear Generating Station as a benchmark for comparison and provided PG&E

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28 Id., Finding of Fact 6, p. 74.
29 A.18-12-008, PG&E Prepared Testimony, Attachments Supporting Chapter 4, Volume 3, Attachment A, pp. 103 – 104.
30 A.18-12-008, PG&E Supplemental Testimony, March 15, 2019, pp. 6-AtchA-5, 6-AtchA-14, 6-AtchB-15.
31 A.18-12-008, PG&E Prepared Testimony, Attachments Supporting Chapter 4, Volume 3, Attachment A, p. 3.
will also provide the plan to the CEC, collaborate with the CEC, and evaluate the CEC’s comments and input.\textsuperscript{32}

As made clear beyond any doubt by the presentation from CEC Executive Director Drew Bohan to the February 22, 2019 public meeting of PG&E’s Diablo Canyon Decommissioning Engagement Panel (“DCDEP”), “PG&E did not consult with the Energy Commission on any of the topics outlined in the filing documents ... during plan development”.\textsuperscript{33} Mr. Bohan’s statement to the DCDEP also exposes the falsity of the Application’s claim to have complied with prior Commission decisions,\textsuperscript{34} in light of D.17-05-013’s adoption of a joint settlement agreement requiring PG&E to conduct a study, as part of its detailed Diablo Canyon site specific decommissioning study specified in Section 5.4.1 of the Joint Proposal, of the options for post shut-down expedited transfer of spent nuclear fuel to dry cask storage, coordinates such studies with the California Energy Commission (CEC), and evaluates the CEC’s recommendations and input in good faith.\textsuperscript{35}

Because D.17-05-020 required this study to also include an evaluation of the costs, benefits, and feasibility of a pre-shutdown acceleration of DCNPP dry cask loading,\textsuperscript{36} PG&E’s compliance claim should be seen as doubly false.

The Application further asserts, “PG&E has considered safety in connection with developing each element of the decommissioning cost estimate,”\textsuperscript{37} but as indicated in my testimony in response to Q09 thru Q13, PG&E’s wet-is-safe-enough dogma appears to have

\textsuperscript{32}A.16-08-006, Attachment A to Application of PG&E, Section 5.4.1.
\textsuperscript{33}A.18-12-008, PG&E Supplemental Testimony, March 15, 2019, p. 6-AtchC-9.
\textsuperscript{34}A.18-12-008, PG&E Application, pp. 16 -- 17.
\textsuperscript{35}A.15-09-001 Settlement Agreement, Section 3.2.3.1.3. A4NR was one of 15 settling parties.
\textsuperscript{36}D.17-05-020, OP 5, pp. 51 – 52.
\textsuperscript{37}A.18-12-008, PG&E Application, p. 14.
curtailed a thorough assessment of the potential enhancement of safety margin stemming from expedited transfer of SNF to dry casks.

The demonstrable inaccuracy of PG&E’s compliance and safety consideration claims is sufficiently egregious to challenge the verification of the Application as true and correct by Generation and Decommissioning Vice President Jon Franke. Mr. Franke’s verification was made under penalty of perjury, and its untruthfulness exposes the SNF portions of the Application to a motion to strike.

Q20: Are there significant omissions in PG&E’s SNF-related filings or testimony in this proceeding that you believe rise to the level of a material misrepresentation?

A20: Yes, material omissions in PG&E’s March 15, 2019 Supplemental Testimony render misleading its discussion of the NRC’s conclusion, “expedited transfer would provide only a minor or limited safety benefit, and the expected implementation costs would not be warranted.”

PG&E neglects to disclose that the question the NRC addressed was whether a fleet-wide requirement for expedited transfer of SNF at every licensed site nationwide could satisfy the cost-benefit requirements of the NRC backfit rule. DCNPP and the other western plants were specifically excluded from the analysis. Because the DCNPP ISFSI had already been expanded to accommodate all SNF to be generated through 2025, it would be considered a sunk cost and not included in a prospective cost-benefit evaluation. The NRC’s generic analysis was in no way determinative of how a comparison of future costs with future benefits would be answered on a site-specific basis at DCNPP.

38 A.18-12-008, PG&E Supplemental Testimony, March 15, 2019, p. 6-13.
PG&E’s March 15, 2019 Supplemental Testimony compounds this misrepresentation by noting “the NRC presented the results of its studies to the National Academy of Science” but omitting any discussion of the NAS response. Surely the utility is aware of the 2016 NAS Phase 2 Report discussed in my testimony in response to Q09 and Q10. Simple principles of accuracy and objectivity should have compelled PG&E to at least mention primary points raised in the 2016 NAS Phase 2 Report, including the comparison between the estimated radioactive material releases, land interdiction, and displaced persons for the reference plant in the NRC studies and the consequences of the Fukushima Daiichi accident. The 2016 NAS Phase 2 Report observed that important conclusions “are not obvious when consequence estimates are presented only after being weighted by release frequencies. The committee judges that it is important to present the full risk triplet (scenarios, frequencies, and consequences) separately, as well as their product, in cost-benefit analyses.”

Reinforcing the importance it attached to disaggregating “the full risk triplet” separately, the 2016 NAS Phase 2 Report examined the unweighted results calculated by an NRC sensitivity case that removes the 50-mile limit for land interdiction and population displacements and raises the value of the averted dose conversion factor from $2,000 per person-rem to $4,000 per person-rem. This scenario postulates the evacuation of 3.46 million people from an area of 11,920 mi², larger than the area of New Jersey ...

In fact removing the 50-mile limit and raising the value of the averted dose conversion factor to $4,000 per person-rem increased the base-case average estimated benefits of expedited transfer by a factor of 5.9, that is, from about 13 percent of the estimated costs of expedited transfer to about 80 percent.

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39 Id., p. 6-12.
41 Id., p. 181.
The NRC’s generic assessment placed the cost of a low-density storage scenario at $51.4 – 53.8 million for each of two pools, but did not disaggregate these costs between fabrication/loading of additional casks and construction of sufficient ISFSI capacity. Since full build-out of the DCNPP ISFSI was already a sunk cost at the time of the NRC study, the sensitivity case highlighted by the 2016 NAS Phase 2 Report would obviously hold considerable relevance to PG&E ratepayers.

And I would add, in terms of financial significance to the 2018 DCE, one of the larger material omissions from PG&E’s filings and testimony is the absolute silence over the legal prerequisite to DCNPP Unit 2 operating past December 31, 2024. To do that, PG&E will have to obtain a waiver from the State Water Resources Control Board’s once-through-cooling (“OTC”) deadline. Section 6.2 of the aforementioned Joint Proposal provides, in pertinent part:

... In order to clarify the authority of Diablo Canyon Unit 2 to operate beyond December 31, 2024 under the OTC policy, PG&E will ask the State Water Board for an amendment to the OTC policy to conform the compliance timeline table to the date of actual expiration of the Unit 1 and Unit 2 NRC operating licenses. The amendment, if approved, would confirm that Unit 2 is authorized to operate through August 26, 2025, subject to continued payment of the interim mitigation during Diablo Canyon Unit 2’s 2025 operations. PG&E will implement the Joint Proposal regardless of the State Water Board’s decision on the amendment request. The Parties will review the amendment request and reserve the right to oppose it or seek additional conditions... 

Three years after the Joint Proposal was executed, I don’t believe PG&E has made any progress on this front. Certainly, A4NR has yet to receive a draft of any amendment request for review. Given PG&E’s lowly standing in Sacramento, it’s difficult to envision DCNPP receiving a waiver from California’s OTC policy in the foreseeable future just to run Unit 2 for an additional

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43 A.16-08-006, Attachment A to Application of PG&E, Section 6.2.
8 months. To presume success, in the absence of any other facts, would be imprudent.

Significantly, the California Independent System Operator’s 2019 Transmission Plan assumes both DCNPP units cease operating in 2024. For PG&E, after three years of inaction, to assume an OTC waiver and to embed such optimistic speculation as a core undisclosed premise of the 2018 DCE strikes me as unreasonable.

The independent review commissioned by PG&E of the 2018 DCE by High Bridge Associates zeroed in on the lost opportunity period between the assumed November 2, 2024 shutdown of Unit 1 and August 26, 2025 shutdown of Unit 2. Using PG&E’s estimate of $109.1 million in annual savings from moving SNF out of wet storage and into dry casks, use of a non-conservative assumption for Unit 2’s anticipated shutdown date appears to have contributed approximately $73 million in speculative costs to the 2018 DCE. That would modify the estimated ratepayer savings from reducing the assumed wet cooldown period from seven years to two or three to $509 – 619 million.

XII. HOLTEC’S JUNE 2019 ASSURANCES.

Q21: You mentioned, in response to Q16, Jearl Strickland’s statement at the DCISC’s June 4, 2019 public meeting that Holtec’s response to PG&E’s upcoming vendor solicitation will propose cooldown times of 1 – 2 years. What exactly did he say?

A21: The official video of the DCISC meeting, accessible at https://cal-span.org/unipage/index.php?site=slo-span&owner=DCISC&date=2019-06-04, records the following statements:
JEARL STRICKLAND, Consultant, Holtec International: It used to be in the past that the fuel was required to be in the spent fuel pools for five to seven years before it became a candidate for being moved into dry storage. A lot of the licensing that has taken place over the last couple years has continued to shorten that duration down to where there are license amendments in place that are being processed for Holtec products today that have that time frame down to one to two years out of the reactor. So what it’s doing is it’s enabling Holtec to be able to advance that period of time when a plant ceases operation and be able to have the fuel move from wet storage to dry storage much sooner so that you can then proceed with decommissioning of power plants. (ends: 07:38:05)

DCISC CONSULTANT RICHARD D. McWHORTER: For the multi-purpose cask currently in use here—as you know there is a RFP that’s gone out for proposals to use different casks—of which I presume Holtec would propose some kind of modification to the current casks that could be used here...

MR. STRICKLAND: What I understand is that the RFP is not for proposing to use different casks, it’s to provide PG&E with the options to be able to look at what all are available and that it may be a decision by P&GE to continue with the same system. I think what you’ll see from the Holtec side that the proposal that will be presented will provide a number of options for PG&E that could move from the thirty-two assembly multi-purpose canister to the thirty-seven assembly which would involve a new transfer casks that still fits within the seismic restraints. Also the licensing changes that would be performed as part of that shorten the duration of fuel in the spent fuel pools from the current five to seven years down to a two-year period of time. It’ll be a solid proposal Holtec puts together. (ends: 08:03:57)

DCISC CONSULTANT McWHORTER: And these are options that Holtec already has on the shelf so to speak, and at a reasonably short time to licensing that would be expected?

MR. STRICKLAND: Yes, there actually, there’s a number of the theses that are going through the licensing with the Nuclear Regulatory Commission right now. (08:04:16)

MR. STRICKLAND: What you’re gonna see is that the proposal that PG&E will get for the future storage of fuel would be that you would move to up to thirty-seven fuel assemblies that were high-burnup fuel, and that the new thermal analysis that is performed today allows for higher heat loads in each of the multi-purpose canisters...
while at the same time—being able to with that higher heat load—reduce the amount of time that spent fuel is in the storage pools. And so, as part of this proposal, what you’ll end up seeing is that uh, it will be recommended that Diablo not wait until they cease operation to start moving spent nuclear fuel; that in a matter of three, four years from now that you start the transition of moving fuel from wet to dry storage. That way you also limit the build-up of fuel that uh, fuel inventory in the pools. But that way it also then helps shorten the overall duration for how long it takes to go from a plant that no longer operates to a plant that’s got all the spent fuel out of the wet storage and can move into a smooth transition into full decommissioning. That help? (ends 08:15:58)

(08:25:11)

MR. STRICKLAND: I know that, um, that one of the current license submittals that Holtec has before the NRC today actually brings that duration in the pool down to just over a year and so that...and Holtec is not the only company...you look at Orano, that they’re doing something similar with being able to reduce the durations of time in the pool. To me, it’s good progress. (ends 08:25:38)

Q 22: Do you recommend that the CPUC add another $109 million to your estimated ratepayer savings from reducing cooldown times, in order to reflect Mr. Strickland’s mention of “license amendments in place that are being processed for Holtec products today that have that time frame down to one to two years out of the reactor” and his suggestion that Orano (previously called TN Americas) is “doing something similar”?

A22: No. That seems premature, even though it appears consistent with the “preliminary assessment” Mr. Strickland was given in his August 2016 visit to Holtec while still a PG&E employee. It would be prudent to wait to see what the different vendors propose to PG&E, and what selection PG&E makes. On June 19, 2019 the NRC staff held a public pre-submittal meeting to discuss PG&E’s plan to submit a post-shutdown decommissioning activities report, an irradiated fuel management plan, and a site-specific decommissioning cost estimate. PG&E mentioned its upcoming vendor RFP, and described its ultimate objective once again as the shortest SNF wet cooling times “technically feasible.”

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XIII. PG&E’S CONDUCT.

Q23: What is your reaction to the way in which PG&E has conducted itself in managing its SNF responsibilities at DCNPP, including preparation of the 2018 DCE?

A23: I share the assessment attributed to Governor Newsom in the March 18, 2019 edition of the New York Times: “They have simply been caught red-handed over and over again, lying, manipulating or misleading the public ... They cannot be trusted.” In the case of SNF, it should be remembered, PG&E is steward to some of the most lethal substances known to humanity—and the DCNPP spent fuel pools represent one of the largest concentrations of radioactive source term found in the United States. PG&E is the only convicted felon in the U.S. legally empowered with such responsibility, an unnerving circumstance whose safety implications should compel intense regulatory oversight.

PG&E’s application in this proceeding acknowledges that the California Nuclear Facility Decommissioning Act of 1985 requires that the 2018 DCE “take account of changes in technology and regulation of nuclear decommissioning.”44 Yet there is no discussion of PG&E’s knowledge about new cask designs, as reflected in Plan 36, or about the NRC approvals of radically reduced wet cooling times, as emphasized by the NRC’s Decommissioning Branch Chief at the DCDEP’s October 24, 2018 public meeting. I consider this deception by concealment.

PG&E’s unilateral decision to cancel all further pre-shutdown transfers of SNF to dry storage—announced publicly in its December 13, 2018 filing in this proceeding, but

communicated to its Westinghouse contractor in early July 2018, before PG&E’s CPUC-required coordination/collaboration with the CEC could even muster its first meeting – is an affront to state government. By its own tally, PG&E’s cancellations will increase the number of DCNPP casks still to be loaded at shutdown by 25%, from 64 to 80. No defensible interpretation of the Atomic Energy Act can excuse PG&E’s decade-long defiance of guidance from both state commissions to reduce the SNF density of the pools “while maintaining compliance with NRC cask and pool spent fuel storage requirements.” But PG&E has behaved as if perfunctory compliance with federal requirements is sufficient and state direction can be ignored with impunity. As a result, the state’s cautious attempt to achieve some unknowable increment of improved safety margin – with costs likely reimbursed by the federal government – has been successfully thwarted.

PG&E’s maneuvers may well have checkmated state government’s pre-shutdown SNF transfer policy, but DCNPP’s post-shutdown SNF challenges could abruptly begin much sooner than contemplated by the DCE. Although the timing of DCNPP’s retirement is not presently an issue in this proceeding, the CPUC’s D.19-02-023 and data responses received by A4NR from PG&E severely undermine the credibility (and prudence) of PG&E’s representation, cited by the February 14, 2019 Assigned Commissioner’s Scoping Memo and Ruling, that the company “has no plans to ... modify the retirement path agreed to in the Joint Proposal and approved by the Commission in D.18-01-022.”

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45 NuclearDecomCostTri2018_DR_A4NR_001-Q14_Attch_7-CONF, p. 4.
47 A.18-12-008, Assigned Commissioner’s Scoping Memo and Ruling, February 14, 2019, pp. 6 – 7.
According to PG&E’s data responses, DCNPP will experience above-market costs of $523 million in 2019 (up from $410 million in 2018) and Community Choice Aggregation (“CCA”) and Direct Access (“DA”) will supply 53% of the load in its service territory (up from 41% in 2018) and pay a proportionate share of such above-market costs. The implications of these admissions are stark: (1) DCNPP represents a substantial portion of PG&E’s above-market generation costs; (2) while the Joint Proposal cited uncertainty about bundled customer load as a principal reason for DCNPP’s retirement, the 2019 magnitude exceeds the Joint Proposal’s projection of bundled load decay in 2025; (3) none of the CCAs serving departed PG&E load include nuclear-generated electricity in their portfolios, and most are legally prevented from doing so; (4) a plant in a highly politicized environment that is dependent upon surcharges on non-customers for the majority of its very substantial above-market costs is a stranded asset of doubtful viability; and (5) these facts will not go unnoticed in PG&E’s bankruptcy proceeding.

A4NR will explore the reasonableness of DCNPP’s 2020-22 revenue requirement in the PG&E general rate case, A.18-12-009.

Q24: Does this conclude your testimony?

A24: Yes, it does. A4NR will make a formal recommendation to the Commission in its Opening Brief.
QUALIFICATIONS OF JOHN L. GEESMAN

John L. Geesman is an attorney with the Oakland law firm, Dickson Geesman LLP, and a member in good standing of the California State Bar.

Mr. Geesman served as a member of the California Energy Commission from 2002 to 2008, and was the agency’s Executive Director from 1979 to 1983. Between his two tours at the Energy Commission, Mr. Geesman spent nineteen years as an investment banker focused on the U.S. bond markets and served as a financial advisor to municipal electric utilities throughout the West.

Mr. Geesman has a long history of providing leadership on issues related to resource planning, environmental policy, financial management, and risk practices. This is demonstrated by his service in numerous executive capacities, including stints as:

- Co-Chair of the American Council on Renewable Energy;
- Chairman of the California Power Exchange;
- President of the Board of Directors of The Utility Reform Network (nee Toward Utility Rate Normalization);
- Member of the Governing Board of the California Independent System Operator; and,
- Chairman of the California Managed Risk Medical Insurance Board.

Mr. Geesman has previously testified as an expert witness before the California Public Utilities Commission.

Mr. Geesman is a graduate of Yale College and the University of California Berkeley School of Law.
Appendix B
BEFORE THE
PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Application of Pacific Gas and Electric Company )
In the 2018 Nuclear Decommissioning Cost ) Application 18-12-008
Triennial Proceeding. ) (Filed December 13, 2018)

____________________________(U 39 E) )

ALLIANCE FOR NUCLEAR RESPONSIBILITY’S
PROTEST

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ALLIANCE FOR NUCLEAR RESPONSIBILITY
I. INTRODUCTION.

Pursuant to Rule 2.6 of the California Public Utilities Commission ("Commission" or "CPUC") Rules of Practice and Procedure, the Alliance for Nuclear Responsibility ("A4NR") respectfully submits its Protest of the Application of Pacific Gas and Electric Company ("PG&E") in the 2018 Nuclear Decommissioning Triennial Cost Proceeding ("NDCTP"). A4NR represents ratepayer interests on nuclear energy issues before California and Federal regulatory agencies, the Legislature, and Congress, and has intervened frequently in Commission proceedings involving the Diablo Canyon Nuclear Power Plant ("DCNPP").

Based on its initial review of PG&E’s Application, A4NR objects to the Commission granting a portion of the authority sought by PG&E regarding the projected costs of DCNPP spent nuclear fuel storage because of PG&E’s failure to comply with D.17-05-013 (approving PG&E’s 2017 general rate case) and D.17-05-020. D.17-05-013 adopted a joint settlement agreement requiring PG&E to conduct a study, as part of its detailed Diablo Canyon site specific decommissioning study specified in Section 5.4.1 of the Joint Proposal, of the options for post shut-down expedited transfer of spent nuclear fuel to dry cask storage, coordinates such studies with the California Energy Commission (CEC), and evaluates the CEC’s recommendations and input in good faith.¹

The fore-mentioned “Joint Proposal” (for the retirement of Diablo Canyon), of which A4NR was a signatory, specified that this site-specific decommissioning study would update PG&E’s 2015 NDCTP forecast and incorporate the costs of

¹ A.15-09-001 Settlement Agreement, Section 3.2.3.1.3. A4NR was one of 15 settling parties.
a plan for expedited post-shut-down transfer of spent fuel to Dry Cask Storage as promptly as is technically feasible using the transfer schedules implemented at the San Onofre Nuclear Generating Station as a benchmark for comparison and provided PG&E will also provide the plan to the CEC, collaborate with the CEC, and evaluate the CEC’s comments and input.\(^2\)

D.17-05-020, at A4NR’s urging in PG&E’s 2015 NDCTP, broadened the scope of this contemplated review to include an evaluation of the costs, benefits, and feasibility of a pre-shutdown acceleration of dry cask loading of spent nuclear fuel at DCNPP.\(^3\)

This long-awaited “study” or “plan” is described in testimony filed simultaneously with this Application, but there is no mention of any PG&E coordination or collaboration with the CEC, nor any comments or input received by PG&E from the CEC, nor any evaluation by PG&E of such comments or input from the CEC.

II. A DECADE OF FOOTDRAGGING.

PG&E’s apparent choice to disregard the CEC collaboration/coordination requirements of D.17-05-013 and D.17-05-020 is the latest episode in a ten-year history of PG&E non-responsiveness to direction by this Commission and the CEC to accelerate the transfer of spent nuclear fuel to dry casks. D.14-08-032, approving PG&E’s 2014 general rate case, had previously directed PG&E to file with its 2017 general rate case “a satisfactory plan to comply with California Energy Commission recommendations regarding the transfer of spent fuel to dry cask storage in its Assembly Bill 1632 Report” and conditioned approval of PG&E’s capital

\(^2\) A.16-08-006, Attachment A to Application of PG&E, Section 5.4.1.
\(^3\) D.17-05-020, OP 5, pp. 51 – 52.
investment in completing the DCNPP storage pads on meeting this requirement.\textsuperscript{4} The recommendation in the CEC’s Assembly Bill 1632 Report, originally made in 2008 to both PG&E and Southern California Edison, was unequivocal: “PG&E and SCE should return their spent fuel pools to open racking arrangements as soon as feasible, while maintaining compliance with NRC cask and pool spent fuel storage requirements, and report to the Energy Commission on their progress in doing so.”\textsuperscript{5} In the wake of seven years of PG&E resistance, the CEC’s 2015 Integrated Energy Policy Report observed:

According to PG&E, it plans to complete the construction of eight dry casks in 2015 and 12 casks in 2016, allowing PG&E to approach the high density 1 x 4 loading pattern. Beginning in 2018, PG&E plans to move spent fuel from the pools to dry casks at a rate that will maintain this loading pattern. The CPUC should not allow PG&E to recover from ratepayers the additional costs associated with its failure to expedite the movement of spent fuel from the pool to dry casks. In addition, PG&E should file annual reports with the CPUC and the Energy Commission on its efforts to comply with California regulators’ directives in this area, and its estimate of the costs implications.\textsuperscript{6} (emphasis added)

Because PG&E and other nuclear power plant owners have been successful in recovering most of their spent fuel management costs from the federal government through breach-of-contract litigation (or threat thereof), the CEC’s recommendation regarding ratepayer exposure is probably best understood as focused on liability for any unreimbursed costs.

In addition to CPUC and CEC direction to expedite the transfer of spent nuclear fuel to

\begin{itemize}
\item \textsuperscript{4} D.14-08-032, OP 29.b.
\item \textsuperscript{6} CEC 2015 Integrated Energy Policy Report, p. 186.
\end{itemize}
dry casks, PG&E received similar advice from U.S. Senator Dianne Feinstein in the aftermath of the Fukushima Daiichi catastrophe. As reported March 30, 2011 in the *San Francisco Chronicle*:

> Fresh from a tour of California's two active nuclear power plants at Diablo Canyon and San Onofre, Sen. Dianne Feinstein said Wednesday that ‘what jumps out at you’ is that some spent nuclear fuel rods are stored in pools similar to the ones leaking radiation at a crippled Japanese reactor. Feinstein, at a Senate subcommittee meeting in Washington, called for a ‘rethinking’ of how spent fuel is managed at the two California plants and at other nuclear plants in the United States ... ‘I have a hard time understanding why the Nuclear Regulatory Commission has not mandated more rapid transfer of spent fuel to dry casks,’ Feinstein said. ‘There were no problems with dry cask storage at Dai-ichi. To me, that suggests we should at least consider a policy that would encourage quicker movement of spent fuel to dry cask storage.’

The response of local community leaders to Fukushima Daiichi also focused on PG&E’s management of spent fuel at DCNPP. As former San Luis Obispo County Supervisor Frank Mecham recently reminded PG&E executive Tom Jones at the October 24, 2018 public meeting of the DCNPP Decommissioning Engagement Panel (of which Mecham is a member):

MR. MECHAM: Just quickly, and, Tom, this may be more for you, I'm not sure, but I remember when I was on the board and we had a presentation by PG&E, I think that there was a strong emphasis to get as much as you can in the dry cask as soon as possible. Is that not true?

MR. JONES: Correct. So, specifically, the San Luis Obispo County Board of Supervisors had asked Pacific Gas & Electric Company to expedite fuel loading as quickly as possible, and this was post Fukushima. So we had planned for modest loading campaigns of about four casks a year and we accelerated that to get to the minimum levels of fuel allowed in the spent fuel pool. There's a regulation called B5 Bravo. Basically, you have four old fuel assemblies for every one new one. They help absorb heat that way. So we got down to those minimum levels where we are today. So we did much larger loading campaigns. We loaded 10 casks for each evolution. Keep in mind the casks take about

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two years from the date you sign the contract to where one shows up that's manufactured at your site.\textsuperscript{8}

As Mecham added, “Yucca Mountain's been kicked around forever, but if, in fact, that were to happen, why would anyone want to leave things in spent fuel pools as opposed to dry cask if they'd have to get it into dry cask to move it?”\textsuperscript{9} On July 16, 2011, the San Luis Obispo Tribune had editorially urged the NRC to require “an acceleration of the transfer of waste out of pools and into dry casks” and commended PG&E for “expediting the transfer of some of its spent fuel. In fact, it’s renegotiating a contract with its supplier to speed up delivery of some dry casks.”\textsuperscript{10} By May 19, 2013 however, the Tribune’s praise of PG&E had been replaced by editorial disappointment:

In March 2011, Tribune environmental reporter David Sneed asked plant manager Jim Becker whether PG&E would consider accelerating transfer of spent fuel from storage pools to dry casks.

‘It’s a great question,’ he said then. ‘We’ll need to study it.’

A few months later, we reported that PG&E did indeed plan to reduce density inside the pools by about 45 percent over the next five years to about 600 assemblies per pool. We commended the utility for taking that step.

But when we recently asked for an update, we found there’s been no accelerated effort to move spent fuel into dry casks.

In 2011, there were about 2,170 spent fuel assemblies in the two pools — 1,072 fuel assemblies in one pool, and 1,104 in the other.

Today, there’s a combined total of 2,116 assemblies in the pools, though that will drop to 1,924 following a transfer scheduled for this summer.\textsuperscript{11}

\textsuperscript{8} PG&E transcript of October 24, 2018 meeting of the DCNPP Decommissioning Engagement Panel, p. 50, lines 4 – 24.
\textsuperscript{9} Id., p. 51, lines 3 – 7.
\textsuperscript{10} https://www.sanluisobispo.com/opinion/editorials/article39157806.html
\textsuperscript{11} https://www.sanluisobispo.com/opinion/editorials/article39444711.html
III. PG&E’s SPENT FUEL PLAN CHOSE TO GO ROGUE.  

Notwithstanding the unmistakable specificity of D.17-05-013 and D.17-05-020, or the legally binding agreements it entered to settle A.15-09-001 and formulate the A.16-08-006 Joint Proposal, PG&E elected to avoid engagement with the CEC in crafting the expedited spent fuel transfer plan it filed December 13, 2018. PG&E’s testimony submitted in the 2018 NDCTP to explain its “study” simply declares: “In 2017, PG&E evaluated options for expedited transfer of SNF and assessed the cost-effectiveness and regulatory and operational risks and benefits associated with these options.” Having unilaterally severed the Commission-ordered tether of collaboration with the CEC, PG&E has steered its new spent fuel plan in a direction 180° opposite from the Assembly Bill 1632 Report recommendations and the utility’s subsequent public assurances. Rather than reducing the number of spent fuel assemblies stored in the DCNPP pools, PG&E now intends a substantial increase:

PG&E’s assessment of the feasibility, duration and cost of accelerating SNF loading to dry cask storage pre- and post-shutdown reveals that the most cost-effective strategy is to eliminate SNF loading campaigns between now and permanent cessation of operations and to implement one loading campaign starting in 2030 and ending within seven years after Unit 2 shutdown. (emphasis added)

PG&E’s 2018 NDCTP testimony provides the following graphic illustration of the impact on the number of spent fuel assemblies in the Unit 2 pool under what PG&E labels a “Pre-Shutdown Offload” versus a “Post-Shutdown Offload”:

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12 “To cease to follow orders; to act on one’s own, usually against expectation or instruction. To pursue one’s own interests.” https://www.urbandictionary.com/define.php?term=go%20rogue
13 A.18-12-008, PG&E Prepared Testimony, Volume 1, p. 6 -- 8, lines 4 – 6.
14 Id., p. 6 – 1, lines 18 – 22.
While the variance between the two lines on PG&E’s graph is stark, even greater perspective on the significance of PG&E’s new strategy can be gained from past reference points:

- CEC 2008 target (original design capacity before re-racking): 270\(^{16}\)
- October 2011 inventory reported by PG&E to DCISC: 1,096\(^{17}\)
- DCISC 2013 then-current estimate: \(~1,024\)\(^{18}\)

\(^{15}\)Id., p. 6 – 9.
\(^{17}\)DCISC 22\(^{nd}\) Annual Report, p. 370 of pdf. This was the Unit 2 inventory level at the time of Senator Feinstein’s comments, the San Luis Obispo County Board of Supervisors recommendation, and the San Luis Obispo Register’s initial editorial.
\(^{18}\)DCISC 24\(^{th}\) Annual Report, pp.243 and 735 of pdf. The DCISC’s 24\(^{th}\) Annual Report stated “The Independent Spent Fuel Storage Installation (ISFSI) provides a safer method for storage of used nuclear fuel assemblies than do the Spent Fuel Pools” (at pp. 244, 626, and 632); commended PG&E for having “reached the decision to
• PG&E’s 2014 announced target to achieve in 2016: 736\textsuperscript{19}

• June 2016 inventory on day Joint Proposal announced: 1,032\textsuperscript{20}

• January 2017 CEC understanding of PG&E’s then-current “plan”: 772\textsuperscript{21}

PG&E was ordered by this Commission to file with its 2017 general rate case a satisfactory plan to implement the CEC’s Assembly Bill 1632 Report recommendation (“return ... to open racking arrangements as soon as feasible, while maintaining compliance with NRC cask and pool spent fuel storage requirements”). Instead of complying, PG&E entered into a settlement agreement (and a Joint Proposal) which obligated it to “collaborate” and “coordinate” with the CEC. PG&E chose to ignore that obligation and instead has embarked upon a course to increase its dependence on wet storage far beyond the levels that triggered the CEC recommendation in 2008; the post-Fukushima concerns of Senator Feinstein, the Board of Supervisors, and the local newspaper in 2011; and even the utility’s modest targets of 2014 and 2016. And the company intends to maintain these elevated levels until 2032.

IV. EVEN PG&E’s CONSULTANT BALKED AT WET COOLING ASSUMPTION.

In September 2018, PG&E retained High Bridge Associates (“HBA”) to “perform an independent review” of the DCNPP site-specific decommissioning plan’s “execution schedule

procure a significant number of dry casks and to offload fuel as rapidly as possible so it could reach the minimum fuel inventory allowed by current regulations” (at p. 246); and observed “The State of California is interested in reducing the density of fuel bundles in the Spent Fuel Pool” (at p. 629). (emphases added)

\textsuperscript{19}Id., p. 396.

\textsuperscript{20} DCISC 26\textsuperscript{th} Annual Report, p. 457 of pdf.

\textsuperscript{21} CEC 2016 Integrated Energy Policy Report Update, p. C-6, footnote 427: “The current dry fuel storage plan is based upon maintaining about 772 assemblies in the spent fuel pool to accommodate core offloads.”
and selected portions of the project cost estimate.” The HBA Report was included as an attachment to PG&E’s 2018 NDCTP filing, and it characterized PG&E’s site-specific plan as “atypically long compared to other recently completed or currently planned nuclear plant decommissioning projects resulting in higher total project costs than expected.” As HBA summarized its findings,

The most significant finding is the overall fourteen (14) year schedule duration for the decommissioning work from shutdown of Unit 1 to the end of site restoration is longer than the current industry norm. This duration is primarily due to a longer than expected period for fuel cool down and other activities that could be managed so they are off the schedule critical path. (emphasis added)

Noting that—compared to nuclear industry practice—the elapsed time assumed by PG&E before all spent fuel is in dry casks “is near the high end of all planned and executed decommissioning schedules,” HBA recommended “PG&E should challenge their (sic) assumptions about the duration after reactor shutdown and defueling until ... start of fuel movement to the onsite ISFSI ...” HBA provided a “much more aggressive plan yielding an overall duration of ten (10) years, based on recent experience with much shorter periods for spent fuel cooling and transfer to the onsite ISFSI,” and characterized such a revised schedule as “achievable.” (emphasis added)

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23 Id., p. 3.
24 Id., p. 9.
25 Id., p. 12.
26 Id., p. 15.
27 Id., p. 17.
The HBA Report accepted PG&E’s explanation that its present license restricts it to “using site-specific licensed casks with a limited thermal capacity” and that DCNPP “cannot utilize the general license casks utilized by most nuclear stations,” but with a notable (and CEC-review relevant) caveat:

While HBA accepts this difference, no calculation-based model of cask loading has been presented for HBA to review and therefore HBA cannot establish the validity of this assertion. The PG&E assumed duration for the Spent Fuel Cooling and Transfer to Dry Storage window of seven (7) years in the DCPP DSS is longer than comparative averages as shown in Figure IV.1.1. HBA experience with other decommissioning plans would indicate that this period could be reduced substantially … Because HBA was unable to validate the seven (7) year duration through technical review or benchmarking, it is recommended that PG&E pursue further analysis of the required duration for the spent fuel cooling window. In addition, as PG&E states in its analysis, significant cost savings may be possible to achieve if future dry cask technology results in a dry cask design that is capable of supporting a greater heat load than current cask technology allows… It is recommended that PG&E engage in conversations with nuclear fuel cask vendors on this topic and remain engaged throughout the entire pre-shutdown period with the goal of further reducing duration for the fuel cooldown period.28 (emphass added)

The HBA Report estimated an $8.89 million/month savings from reducing the duration of the spent fuel cooling and transfer period, attributing approximately $2.4 million/month to “security costs alone.”29

V. NRC DECOMMISSIONING BRANCH CHIEF POINTS TO 3 YEARS.

PG&E invited Bruce Watson, the Decommissioning Branch Chief at the NRC, to make a presentation to the October 24, 2018 public meeting of the DCNPP Decommissioning

28 Id., pp. 20 – 21.
29 Id., p. 32.
Engagement Panel. His presentation provided some quantification of the wet spent fuel cooldown period associated with current cask technology and regulation, which he elaborated on in response to a question from panel member Linda Seeley:

MS. SEELEY: Okay. And then to my understanding, it was that they had to keep this spent fuel, especially high burn-up fuel, in the pools for, like, five to seven years.

MR. WATSON: That was what the casks were licensed for. The actual cask that the fuel gets transferred into, the fuel had to be cooled to a certain point to meet that criteria. Okay. Since then, at one point, it used to take about five to seven years to get there. Right now it's three because there's some upgraded casks, licensed casks that will allow you to move the fuel at a certain higher -- slightly higher heat load. Doesn't have to be high burn-up fuel, but the heat load allowed in these casks is a little higher and so they can move it over in three years. So it's a function of the container it's going in and the actual heat load or heat disbursion (sic) from the fuel bundle.30

In fact, in early 2018 the NRC staff recommended approval of a 2-year wet cooldown period to accommodate the accelerated transfer of high burn-up fuel assemblies from Vermont Yankee's final core offload.31

VI. THE EFFECT OF PG&E’s APPLICATION ON A4NR.

As a party to the A.15-09-001 settlement and a signatory of the A.16-08-006 Joint Proposal, A4NR is directly impacted by the breaches of these agreements made clear by PG&E’s application in this proceeding. A4NR is hardly alone in experiencing first-hand PG&E’s scofflaw culture, however, and the larger effect of PG&E’s refusal to evaluate expedited transfer of spent fuel to casks as directed by D.17-05-013 and D.17-05-020 is to A4NR as a representative

of ratepayer interests. Using PG&E’s estimate of $54.7 million in annual savings attributed to moving spent fuel from wet storage to dry casks, the consequence of reducing the assumed wet cooldown period from seven years to two or three is $219 -- $274 million of ratepayer savings. Using HBA’s estimated annual savings of $106.68 million, the difference is $427 -- $533 million. PG&E’s refusal to engage with the CEC to conduct a properly robust, calculation-based assessment of accelerated fuel transfer has significant implications for ratepayers. These implications are only aggravated by PG&E’s resort to licensure-based excuses, which ignore the frequency of its own self-initiated DCNPP license amendment requests and the fact that its current cask vendor began the (successful) licensing process for a 3-year cask as far back as 2011.32

And while A4NR recognizes the federal preemption of radiological safety issues at DCNPP, it goes without saying that this Commission has a considerable jurisdictional interest in the economic consequences to PG&E and its ratepayers from any large-scale radiation releases (e.g., land contamination, population dislocation, etc.) stemming from adverse incidents at the DCNPP spent fuel pools.

A4NR anticipates raising other DCNPP-related issues after it has completed discovery, and envisions presenting testimony supporting this Protest in the evidentiary hearings

32 “This LAR proposes heat load patterns for the HI-STORM FW to accommodate plants that have loaded canisters with predominantly low decay heat fuel assemblies over the years, and have thus substantially depleted the number of cold fuel assemblies remaining in their pool inventory. This LAR has also been prompted by the cataclysmic events at Fukushima Daiichi which indicates that a more rapid movement of used fuel in wet storage to dry storage may be the preferred approach.” [https://holtecinternational.com/2011/06/24/three-years/#more-1916](https://holtecinternational.com/2011/06/24/three-years/#more-1916)
anticipated in PG&E’s application. A4NR does not object to PG&E’s statement on the proposed
category, need for hearing, issues to be considered, or proposed schedule. A4NR specifically
requests that the Scoping Memorandum in this proceeding contain an Order to Show Cause
why PG&E and its Senior Vice President of Energy Supply and Policy, Steven E. Malnight (who
signed the A.15-09-001 settlement agreement on behalf of PG&E), should not be found in
contempt of this Commission for their seemingly willful refusal to comply with D.17-05-013 and
D.17-05-020.

The undersigned will be A4NR’s principal contact in this proceeding, but A4NR also asks
that the following individuals be placed in the “information only” category of the Service List:

Rochelle Becker
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Respectfully submitted,

By: /s/ John L. Geesman

JOHN L. GEESMAN
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Date: January 11, 2019
Attorney for
ALLIANCE FOR NUCLEAR RESPONSIBILITY