UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

In the Matter of	)	
	)	
ENTERGY NUCLEAR OPERATIONS, INC.,	)	
ENTERGY NUCLEAR GENERATION	)	
COMPANY, AND HOLTEC	)	Docket Nos. 50-293 & 72-1044
DECOMMISSIONING INTERNATIONAL,	)	
LLC; CONSIDERATION OF APPROVAL OF	)	
TRANSFER OF LICENSE AND	)	
CONFORMING AMENDMENT	)	
	)	
(Pilgrim Nuclear Power Station)	)	

UNOPPOSED MOTION OF THE COMMONWEALTH OF MASSACHUSETTS TO CORRECT A PREVIOUSLY FILED DECLARATION

Petitioner, the Commonwealth of Massachusetts (Commonwealth), respectfully requests that the Nuclear Regulatory Commission (NRC or Commission) accept the attached corrected Declaration of Warren K. Brewer (First Brewer Declaration), which was submitted in support of the Commonwealth's February 20, 2019 Petition for Leave to Intervene and Hearing Request, Docket Nos. 50-293 & 72-1044 (Petition). In further support of this Motion, the Commonwealth states as follows:

1. This matter concerns the Commonwealth's Petition under 10 C.F.R. § 2.309 on, among other things, the Applicants' License Transfer Application, which the Commonwealth filed on February 20, 2019. In support of its Petition, the Commonwealth submitted the First Brewer Declaration. In that declaration, Mr. Brewer stated that "[a]fter the start of the [Humboldt Bay decommissioning] project, the estimate for expected staff costs was increased to $168 million in 2010 dollars." First Brewer Decl. ¶ 9. As explained next, the $168 million amount was the result of a slight mathematical error.

2. Mr. Brewer is also working on the pending license transfer application for the Indian Point Energy Center in Buchanan, New York. In the course of that work, Mr. Brewer revisited the basis for the statement in his declaration in this proceeding that is set out in paragraph 1 above and concerns the increase in staff costs at Humboldt Bay. In doing so, Mr. Brewer discovered a small mathematical error in his original calculation, which caused him to understate the magnitude of the cost increase at Humboldt by nine million dollars. The attached corrected declaration corrects this mathematical error by replacing the previously stated amount of $168 million with the corrected figure of $177 million. This change is shown in a red-line version of the First Brewer Declaration, which is attached at Exhibit 1. A clean, re-executed version of the First Declaration is attached at Exhibit 2.

3. The Commonwealth conferred with the Applicants regarding this Motion on March 13, 2020. Counsel for the Applicants indicated that they do not oppose this Motion. The Commonwealth also conferred with Petitioner Pilgrim Watch regarding this motion on March 13, 2020. A representative of Pilgrim Watch indicated that Pilgrim Watch consents to this Motion.

* * *

For the foregoing reasons, and for good cause shown, the Commonwealth requests that the Commission grant this Motion and replace the original First Brewer Declaration, dated February 18, 2019, with the corrected First Brewer Declaration, dated March 16, 2020 and attached as Exhibit 2 to this Motion.

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Respectfully submitted this 19th day of March, 2020,

COMMONWEALTH OF MASSACHUSETTS

By its attorneys,

MAURA HEALEY
ATTORNEY GENERAL

Signed (electronically) by
SETH SCHOFIELD
Senior Appellate Counsel
JOSEPH DORFLER
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LLC; CONSIDERATION OF APPROVAL OF	)	
TRANSFER OF LICENSE AND	)	
CONFORMING AMENDMENT	)	
	)	
(Pilgrim Nuclear Power Station)	)	

CERTIFICATION OF SERVICE

Pursuant to 10 C.F.R. § 2.305, I certify that copies of the Commonwealth of Massachusetts's Motion to Correct a Previously Filed Declaration have been served upon the Electronic Information Exchange, the NRC's e-filing system, in the above-captioned proceeding this 19th day of March 2020.

Signed (electronically) by
Seth Schofield
Senior Appellate Counsel
Energy and Environment Bureau
One Ashburton Place, 18th Floor
Boston, Massachusetts 02108
617-963-2000
Seth.Schofield@mass.gov

Dated: March 19, 2020

Exhibit 1

Red-Line of Corrected
Declaration of Warren K. Brewer

[page added for double-sided printing]

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE SECRETARY

In the Matter of	)	
ENTERGY NUCLEAR OPERATIONS, INC., ENTERGY NUCLEAR GENERATION COMPANY, AND HOLTEC DECOMMISSIONING INTERNATIONAL, LLC; CONSIDERATION OF APPROVAL OF TRANSFER OF LICENSE AND CONFORMING AMENDMENT	)	Docket Nos. 50-293 & 72-1044
(Pilgrim Nuclear Power Station)	)	

CORRECTED DECLARATION OF WARREN K. BREWER

I, Warren K. Brewer, declare and state as follows:

1. I am an Executive Consultant for Four Points Group, Incorporated, an engineering consulting firm providing services related to the nuclear industry, including decommissioning cost estimating and planning, and cost analysis with respect to spent fuel management and disposition. I have over 40 years of experience in the nuclear industry and have been involved in decommissioning cost estimating and planning since 1989. I submit this declaration in support of the Commonwealth of Massachusetts' petition for leave to intervene and hearing request in this matter.

2. I have a B.S. in electrical engineering from Louisiana Tech University and an M.S. in nuclear engineering from the Massachusetts Institute of Technology. I completed a graduate-level course of study in areas related to nuclear power and power plant design at the Bettis Reactor Engineering School. After obtaining my Master's degree, I worked for 10 years at the Division of Naval Reactors, the joint United States Department of Defense and Department of

Energy organization responsible for all aspects of design, construction, maintenance, and operation of nuclear reactors in U.S. Navy ships and training facilities. I left the Division of Naval Reactors in 1986 and accepted a position with Pickard, Lowe and Garrick, a nuclear industry engineering consulting company. In late 1986, two colleagues and I formed ABZ. I now work with both ABZ, Inc. and Four Points Group. I have previously provided expert witness testimony related to engineering and the nuclear industry before state regulatory bodies, the United States Tax Court, the United States Court of Federal Claims (numerous cases), and in an international arbitration proceeding. Additional information about my background and experience is included in my curriculum vitae, which I have attached to this declaration.

3. I have reviewed filings related to the transfer of the Pilgrim Nuclear Power Station (PNPS) from Entergy to Holtec, including the application to transfer, among other things, PNPS's Renewed Facility Operating License to Holtec and the Revised Post-Shutdown Decommissioning Activities Report (PSDAR) and Preliminary Decommissioning Cost Estimate (DCE) submitted by Holtec to the Nuclear Regulatory Commission (NRC) on November 16, 2018.[1]

4. My testimony below is based on my experience in this field, and on information that is currently publicly available.

5. Based on publicly available information, the transfer of PNPS to Holtec and Holtec's request for an exemption to use PNPS's decommissioning trust fund for site restoration and spent fuel management costs, if approved, could lead to a shortfall in the amount of funding available

[1] Throughout this affidavit, I use the term Entergy to identify any of the Entergy entities, including Entergy, Entergy Nuclear Operations, Inc., and Entergy Nuclear Generating Company. Similarly, I use the term Holtec to refer to any of the Holtec entities, including Holtec, Holtec Decommissioning International, LLC (HDI), Holtec Pilgrim, and NamCo.

to fully and safely decommission and radiologically decontaminate PNPS, restore the site, and manage PNPS's spent nuclear fuel onsite. Any such shortfall could place public health, safety, and the environment at risk. Such a shortfall would also contradict Entergy's position that Holtec is financially qualified to hold the PNPS license because the decommissioning trust fund is sufficient to pay for license termination, site restoration, and spent fuel management costs. Holtec's Site-Specific Cost Estimate does not allow for virtually any cost-overrun since it projects that only $3.615 million will remain in the fund by the year 2063. There has been no showing that the Holtec subsidiary that will be the PNPS licensee if the requested license transfer is allowed has the financial capability to handle any shortfall in decommissioning, site restoration, or spent fuel management funding. Without limitation to other statements I could attest to and affirm, I specifically attest to and affirm the following as support for this statement:

6. The amount of publicly available information is limited. This, in itself, raises a significant concern that, if approved, the transfer of PNPS to Holtec could lead to a shortfall in the funding available to fully and safely decommission and radiologically decontaminate PNPS, restore the site, and manage its spent nuclear fuel. Absent funding from some other unidentified source, this could leave PNPS in a state that puts public health, safety, and the environment at risk.

7. As explained in detail below, there are at least seven (7) ways Holtec could experience significant, unaccounted for, cost overruns that could lead to a shortfall in funding and place public health, safety, and the environment at risk:

(a) Delays in the work schedule leading to increased costs for overhead and project management;

(b) Unidentified State requirements or unanticipated site conditions could require greater expenditures for site restoration work, thus decreasing the amount of funds available for the completion of license termination work. This is true because the Holtec plan includes spending funds on site restoration activities prior to the completion of license termination activities. Further, the Holtec plan results in a balance of less than $4 million at the end of decommissioning even without unanticipated work scope changes or discovery that compliance with Massachusetts regulatory requirements result in needed actions beyond those assumed by Holtec in its cost estimate;

(c) The discovery of previously unknown radiological or non-radiological contamination;

(d) A radiological incident at the site (for instance, during the transfer of spent nuclear fuel into dry casks);

(e) Absent a change to the Standard Contract, Holtec will have to repackage spent nuclear fuel into new, DOE approved containers prior to transportation to an off-site storage facility or repository;

(f) A successful effort by DOE to recover all or some of the costs for the packaging of spent nuclear fuel into dry casks if DOE removes the spent fuel without prior-repackaging; or

(g) Holtec's obligation to maintain spent nuclear fuel onsite and to repackage the spent fuel one or more times as well as perform other NRC required maintenance activities if DOE fails to remove all spent nuclear fuel by 2062, as Holtec assumes in its Cost Estimate.

8. *Delays in the work schedule leading to increased costs for overhead and project management.* The Holtec cost estimate includes a 17% contingency allowance. As a general practice, decommissioning cost estimates, including the Entergy estimate for PNPS, include contingency only for the types of routine events that are expected to happen in any project but cannot be attributed in advance to those events such as equipment failures or weather. As such, the contingency in the Entergy cost estimate is not intended to account for changes in scope from discrete events or project uncertainties in scope or regulations. Entergy defines these other risks under the broad label of financial risk and no allowance is included in the Entergy estimate for such risks. By way of contrast, the 17% contingency allowance included in the Holtec cost estimate is described as accounting for the traditional contingency as well as increased costs for discrete events and project uncertainties including changes in scope. Although the contingency included in the Holtec estimate is claimed to account for uncertainties and risks beyond the contingency allowance in the Entergy estimate, the total license termination costs for both estimates are essentially equal when the costs for SAFSTOR in the Entergy estimate are excluded.

9. The presently available information in Holtec's analysis does not quantify the amount included in the Holtec estimate to account for the types of risk not addressed in the Entergy estimate. Additionally, the presently available information in Holtec's analysis does not provide any basis or explanation for how the estimated cost does not increase from that of Entergy when allowance for other types of risk are included in the Holtec estimate. Further, the presently available information in Holtec's analysis does not provide detail on how the risk analysis was performed or how the confidence level was calculated. For example, unlike Entergy's PSDAR, Holtec's revised PSDAR does not describe how the 17% contingency allowance was applied in

the cost estimate (e.g., whether it was applied to some or all of the line items or to the total cost estimate) or why the same 17% allowance was deemed reasonable across all activities to which it was applied (assuming it was applied to specific line-items, something again that cannot be ascertained from Holtec's analysis). As such, the reasonableness of Holtec's analysis cannot be assessed. The analysis purported to have been performed by Holtec to arrive at the contingency amount would need to include costs for indirect work delays and added overhead costs. That is, if a specific activity takes longer than anticipated, then, even without any added direct costs for that activity, the overall decommissioning schedule would likely be delayed. Such delay would lead to increased, currently unaccounted for, costs for overhead and project staffing and management. These costs could be significant. For instance, at the Humboldt Bay facility, a 2006 TLG Report estimated the staff costs for that project at $107.6 million in 2010 dollars. After the start of the project, the estimate for expected staff costs was increased to ~~$168 million~~$177 million in 2010 dollars. A post-project-start cost increase of even half of this amount at PNPS would increase Holtec's costs well beyond the $3.615 million its site-specific cost estimate indicates will remain in the trust fund when Holtec estimates PNPS's operating and Independent Spent Fuel Storage Installation (ISFSI) licenses will be terminated and the site released. Finally, the presently available information in Holtec's analysis does not explain the basis for Holtec's decision to use an 85% confidence level or the cost-impact of basing the estimate on a higher confidence level.

10. *State-law requirements for site restoration decreasing the amount of funds available to pay for radiological decontamination.* Holtec's plan for decommissioning includes expenditures of funds for site restoration prior to the completion of license termination and thus, site restoration activities will be performed somewhat in parallel with radiological

decontamination. Massachusetts site restoration requirements resulting in higher than estimated costs, could result in a shortfall of funds for radiological decontamination. Further, state-law requirements for site restoration may impact the duration or scheduling of license termination activities given that site restoration activities are planned to be performed prior to completion of radiological decontamination. As a result, there could be increased costs for overhead and staffing. These increased costs could be in excess of the unspecified allowance Holtec states was included to satisfy an 85% confidence level. Holtec's site-specific cost estimate does not quantitatively identify any allowance to account for these costs or how it would cover cost increases consistent with risks outside the 85% confidence level.

11. *The discovery of previously unknown radiological or non-radiological contamination*. According to Holtec's PSDAR, Holtec plans to perform site characterization activities during decommissioning to identify, categorize, and quantify radiological and non-radiological contamination. Since such physical characterization has not yet been performed, including an assessment of the horizontal and vertical extent of all radiological and non-radiological contamination, the estimated cost for decommissioning and restoring PNPS is based on assumptions informed only by historical information. The actual levels and extent of contamination could be greater than assumed. Holtec appears to understand this uncertainty, as the PSDAR states that Holtec's characterization efforts will continue during decommissioning to ensure that decommissioning activities are adjusted as needed. If unknown radiological or non-radiological contamination is discovered, it could significantly increase the cost of decommissioning, including staffing, overhead, and waste disposal. These increased costs could be in excess of unspecified allowance Holtec states was included to satisfy an 85% confidence level. Holtec's site-specific cost estimate does not quantitatively identify specific allowances to

account for these costs or how it will cover cost increases consistent with risks outside the 85% confidence level.

12. *A radiological incident at the site (for instance, during the transfer of spent nuclear fuel into dry casks).* Although the likelihood of a radiological incident decreases once fuel is removed from the reactor, there is still a risk of such an incident even at a decommissioning nuclear power plant. For instance, there is a risk of an incident during the transfer of spent fuel to the spent fuel pool and then from the spent fuel pool to dry casks. If such an incident were to occur, it would increase the costs of decommissioning and depending on the extent of such an incident it could greatly increase the costs of decommissioning. The effect on cost would be both direct and indirect by causing substantial delay in the decommissioning efforts. Although there was no radiological consequence, in August 2018 there was an incident at the Southern California Edison (SCE) San Onofre facility during the transfer of spent fuel to dry storage, which was being managed by Holtec. This incident involved a situation where a loaded spent fuel canister was nearly dropped. SCE has spent considerable time and resources evaluating this incident and taking actions to ensure that the transfer of spent fuel to dry storage can be completed safely. The San Onofre incident has yet to be fully resolved such that transfer of fuel to dry storage may be resumed. In addition, during such a similar delay, there will be delay costs for the fuel transfer personnel as well as added overhead and project management costs. It is not clear from presently available information if Holtec accounts for these risks or the costs associated with a substantial incident.

13. *Absent a change to the Standard Contract, Holtec will have to repackage spent nuclear fuel into new, DOE approved containers prior to transportation to an off-site storage facility or repository*. Holtec's cost estimate assumes that DOE will accept the canisters in the

planned 61 dry casks at PNPS as packaged for dry storage, and not require repackaging for transportation. Entergy (and many other licensees) have argued in testimony and briefs before the U.S. Court of Claims and the U.S. Court of Appeals for the Federal Circuit that DOE has the authority to mandate licensees to repackage spent fuel into DOE-approved transportation casks.[2] If Entergy is correct and DOE were to mandate fuel repacking, this could cause Holtec to incur significant unaccounted-for expenses. The cost overrun for repackaging would be exacerbated by the fact that this would occur after the PNPS spent fuel pool had been dismantled. Without a spent fuel pool onsite, repackaging spent fuel might involve first transporting the fuel to another plant site, or building an onsite Dry Transfer Station (none of which currently exist in the United States). This could lead to cost overruns on the order of hundreds of millions of dollars as indicated by the Government Accountability Office estimate of $150 to $450 million for construction of a fuel transfer station.[3] There is no indication in Holtec's currently available documentation that indicates that Holtec's site-specific cost estimate accounts for these potential costs.

14. *A successful effort by DOE to recover all or some of its past payments for the packaging of spent nuclear fuel into dry casks if DOE removes the spent fuel without prior-repackaging*. Even if DOE accepts the spent nuclear fuel for transportation without repackaging, DOE may then pursue recovery from Holtec for some or all past payments that DOE made for the original packaging of PNPS dry casks. Entergy has recovered those costs to date on the

[2] *E.g.*, *System Fuels, Inc. v. United States*, 818 F.3d 1302, 1306-07 (Fed. Cir. 2016).

[3] U.S. GOVERNMENT ACCOUNTABILITY OFFICE, GAO-10-48, NUCLEAR WASTE MANAGEMENT: KEY ATTRIBUTES, CHALLENGES, AND COSTS FOR THE YUCCA MOUNTAIN REPOSITORY AND TWO POTENTIAL ALTERNATIVES 55 (Nov. 2009), https://www.gao.gov/assets/300/298028.pdf.

theory that DOE has as of yet been unwilling to agree to acceptance of the fuel without repackaging. If DOE pursues such recovery and is successful, this could lead to significant unaccounted for costs. To date, Entergy has recovered about $6 million dollars for complete loading of three casks and initial work on loading of five more casks at PNPS. Entergy or Holtec, if the NRC approves the application, will have to load over 60 casks to accommodate all of the spent fuel at PNPS. It is unclear from Holtec's presently available information if Holtec has included any type of risk allowance to account for such cost overrun or how it otherwise would compensate for the substantial cost increase from such a recovery by DOE.

15. *Holtec's obligation to maintain spent nuclear fuel onsite and to repackage the spent fuel one or more times as well as perform other NRC required maintenance activities if DOE fails to remove all spent nuclear fuel by 2062, as Holtec assumes in its Cost Estimate.* There is no certainty in the Holtec assumption that DOE will have removed all spent nuclear fuel from PNPS by 2062 since DOE has not yet started accepting spent fuel and the latest estimated DOE start date is still more than a decade in the future and DOE's ability to meet that estimated start date depends on preliminary actions that DOE does not control. If DOE fails to pick up all of the spent fuel by the end of 2062 (as Holtec assumes), then Holtec will begin incurring significant and ongoing cost overruns for spent fuel management. Generally speaking, these annual costs would be the approximately $7 million per year that Holtec identifies for spent fuel management costs in the years 2025 through 2062 assuming those costs are accurate. In my experience, licensees have often underestimated their annual expenditures for spent fuel management. Such costs could go on for many decades if not indefinitely. This raises a significant risk of much greater cost overruns, on the order of hundreds of millions of dollars. The NRC's Continued Storage Rule (NUREG-2157), referenced in Holtec's PSDAR but then essentially ignored,

explicitly recognizes that spent fuel may be stored indefinitely at each reactor site. In that indefinite storage scenario, the NRC assumes that each reactor operator will need a Dry Fuel Transfer Station to move spent fuel into new dry casks every 100 years. This is because, at sites like PNPS, there would no longer be a spent fuel pool to effectuate the repackaging once the fuel is moved to dry storage, and the plant is decommissioned. The Holtec PSDAR and DCE do not presently account for how Holtec would address the very possible contingency of indefinite onsite storage, including all safety and environmental concerns regarding transferring fuel into new dry casks every 100 years. The PSDAR also does not identify any funding source for:

(a) Construction of a Dry Fuel Transfer Station;

(b) Purchase of 61 new casks and all the labor and material costs for transferring the fuel every 100 years; and

(c) Costs of maintaining security at the site indefinitely. These currently unaccounted for costs, could easily run hundreds of millions of dollars.

16. Each of the cost overruns listed above could lead to a significant shortfall in PNPS's decommissioning trust fund. The shortfall could be even greater if more than one of the above cost overruns occurs, or if Holtec encounters other cost overruns not listed above. The only source of funding for decommissioning (radiological decontamination, spent fuel management and site restoration) identified by Holtec is PNPS's nuclear decommissioning trust fund. Because of this and the fact that the three categories of activities will be performed, at least in part, in parallel, a cost overrun or delay in any of these three categories has the potential to jeopardize funding for the other areas.

17. I, Warren K. Brewer, have read the above statement consisting of 12 pages, and I certify under penalty of perjury that the foregoing is true and correct. Executed on March 16, 2020.

WARREN K. BREWER
Executive Consultant
Four Points Group, Inc.

Exhibit 2

Corrected Declaration of Warren K. Brewer

[page added for double-sided printing]

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE SECRETARY

In the Matter of	)	
ENTERGY NUCLEAR OPERATIONS, INC., ENTERGY NUCLEAR GENERATION COMPANY, AND HOLTEC DECOMMISSIONING INTERNATIONAL, LLC; CONSIDERATION OF APPROVAL OF TRANSFER OF LICENSE AND CONFORMING AMENDMENT	)	Docket Nos. 50-293 & 72-1044
(Pilgrim Nuclear Power Station)	)	

CORRECTED DECLARATION OF WARREN K. BREWER

I, Warren K. Brewer, declare and state as follows:

1. I am an Executive Consultant for Four Points Group, Incorporated, an engineering consulting firm providing services related to the nuclear industry, including decommissioning cost estimating and planning, and cost analysis with respect to spent fuel management and disposition. I have over 40 years of experience in the nuclear industry and have been involved in decommissioning cost estimating and planning since 1989. I submit this declaration in support of the Commonwealth of Massachusetts' petition for leave to intervene and hearing request in this matter.

2. I have a B.S. in electrical engineering from Louisiana Tech University and an M.S. in nuclear engineering from the Massachusetts Institute of Technology. I completed a graduate-level course of study in areas related to nuclear power and power plant design at the Bettis Reactor Engineering School. After obtaining my Master's degree, I worked for 10 years at the Division of Naval Reactors, the joint United States Department of Defense and Department of

Energy organization responsible for all aspects of design, construction, maintenance, and operation of nuclear reactors in U.S. Navy ships and training facilities. I left the Division of Naval Reactors in 1986 and accepted a position with Pickard, Lowe and Garrick, a nuclear industry engineering consulting company. In late 1986, two colleagues and I formed ABZ. I now work with both ABZ, Inc. and Four Points Group. I have previously provided expert witness testimony related to engineering and the nuclear industry before state regulatory bodies, the United States Tax Court, the United States Court of Federal Claims (numerous cases), and in an international arbitration proceeding. Additional information about my background and experience is included in my curriculum vitae, which I have attached to this declaration.

3. I have reviewed filings related to the transfer of the Pilgrim Nuclear Power Station (PNPS) from Entergy to Holtec, including the application to transfer, among other things, PNPS's Renewed Facility Operating License to Holtec and the Revised Post-Shutdown Decommissioning Activities Report (PSDAR) and Preliminary Decommissioning Cost Estimate (DCE) submitted by Holtec to the Nuclear Regulatory Commission (NRC) on November 16, 2018.[1]

4. My testimony below is based on my experience in this field, and on information that is currently publicly available.

5. Based on publicly available information, the transfer of PNPS to Holtec and Holtec's request for an exemption to use PNPS's decommissioning trust fund for site restoration and spent fuel management costs, if approved, could lead to a shortfall in the amount of funding available

[1] Throughout this affidavit, I use the term Entergy to identify any of the Entergy entities, including Entergy, Entergy Nuclear Operations, Inc., and Entergy Nuclear Generating Company. Similarly, I use the term Holtec to refer to any of the Holtec entities, including Holtec, Holtec Decommissioning International, LLC (HDI), Holtec Pilgrim, and NamCo.

to fully and safely decommission and radiologically decontaminate PNPS, restore the site, and manage PNPS's spent nuclear fuel onsite. Any such shortfall could place public health, safety, and the environment at risk. Such a shortfall would also contradict Entergy's position that Holtec is financially qualified to hold the PNPS license because the decommissioning trust fund is sufficient to pay for license termination, site restoration, and spent fuel management costs. Holtec's Site-Specific Cost Estimate does not allow for virtually any cost-overrun since it projects that only $3.615 million will remain in the fund by the year 2063. There has been no showing that the Holtec subsidiary that will be the PNPS licensee if the requested license transfer is allowed has the financial capability to handle any shortfall in decommissioning, site restoration, or spent fuel management funding. Without limitation to other statements I could attest to and affirm, I specifically attest to and affirm the following as support for this statement:

6. The amount of publicly available information is limited. This, in itself, raises a significant concern that, if approved, the transfer of PNPS to Holtec could lead to a shortfall in the funding available to fully and safely decommission and radiologically decontaminate PNPS, restore the site, and manage its spent nuclear fuel. Absent funding from some other unidentified source, this could leave PNPS in a state that puts public health, safety, and the environment at risk.

7. As explained in detail below, there are at least seven (7) ways Holtec could experience significant, unaccounted for, cost overruns that could lead to a shortfall in funding and place public health, safety, and the environment at risk:

(a) Delays in the work schedule leading to increased costs for overhead and project management;

(b) Unidentified State requirements or unanticipated site conditions could require greater expenditures for site restoration work, thus decreasing the amount of funds available for the completion of license termination work. This is true because the Holtec plan includes spending funds on site restoration activities prior to the completion of license termination activities. Further, the Holtec plan results in a balance of less than $4 million at the end of decommissioning even without unanticipated work scope changes or discovery that compliance with Massachusetts regulatory requirements result in needed actions beyond those assumed by Holtec in its cost estimate;

(c) The discovery of previously unknown radiological or non-radiological contamination;

(d) A radiological incident at the site (for instance, during the transfer of spent nuclear fuel into dry casks);

(e) Absent a change to the Standard Contract, Holtec will have to repackage spent nuclear fuel into new, DOE approved containers prior to transportation to an off-site storage facility or repository;

(f) A successful effort by DOE to recover all or some of the costs for the packaging of spent nuclear fuel into dry casks if DOE removes the spent fuel without prior-repackaging; or

(g) Holtec's obligation to maintain spent nuclear fuel onsite and to repackage the spent fuel one or more times as well as perform other NRC required maintenance activities if DOE fails to remove all spent nuclear fuel by 2062, as Holtec assumes in its Cost Estimate.

8. *Delays in the work schedule leading to increased costs for overhead and project management.* The Holtec cost estimate includes a 17% contingency allowance. As a general practice, decommissioning cost estimates, including the Entergy estimate for PNPS, include contingency only for the types of routine events that are expected to happen in any project but cannot be attributed in advance to those events such as equipment failures or weather. As such, the contingency in the Entergy cost estimate is not intended to account for changes in scope from discrete events or project uncertainties in scope or regulations. Entergy defines these other risks under the broad label of financial risk and no allowance is included in the Entergy estimate for such risks. By way of contrast, the 17% contingency allowance included in the Holtec cost estimate is described as accounting for the traditional contingency as well as increased costs for discrete events and project uncertainties including changes in scope. Although the contingency included in the Holtec estimate is claimed to account for uncertainties and risks beyond the contingency allowance in the Entergy estimate, the total license termination costs for both estimates are essentially equal when the costs for SAFSTOR in the Entergy estimate are excluded.

9. The presently available information in Holtec's analysis does not quantify the amount included in the Holtec estimate to account for the types of risk not addressed in the Entergy estimate. Additionally, the presently available information in Holtec's analysis does not provide any basis or explanation for how the estimated cost does not increase from that of Entergy when allowance for other types of risk are included in the Holtec estimate. Further, the presently available information in Holtec's analysis does not provide detail on how the risk analysis was performed or how the confidence level was calculated. For example, unlike Entergy's PSDAR, Holtec's revised PSDAR does not describe how the 17% contingency allowance was applied in

the cost estimate (e.g., whether it was applied to some or all of the line items or to the total cost estimate) or why the same 17% allowance was deemed reasonable across all activities to which it was applied (assuming it was applied to specific line-items, something again that cannot be ascertained from Holtec's analysis). As such, the reasonableness of Holtec's analysis cannot be assessed. The analysis purported to have been performed by Holtec to arrive at the contingency amount would need to include costs for indirect work delays and added overhead costs. That is, if a specific activity takes longer than anticipated, then, even without any added direct costs for that activity, the overall decommissioning schedule would likely be delayed. Such delay would lead to increased, currently unaccounted for, costs for overhead and project staffing and management. These costs could be significant. For instance, at the Humboldt Bay facility, a 2006 TLG Report estimated the staff costs for that project at $107.6 million in 2010 dollars. After the start of the project, the estimate for expected staff costs was increased to $177 million in 2010 dollars. A post-project-start cost increase of even half of this amount at PNPS would increase Holtec's costs well beyond the $3.615 million its site-specific cost estimate indicates will remain in the trust fund when Holtec estimates PNPS's operating and Independent Spent Fuel Storage Installation (ISFSI) licenses will be terminated and the site released. Finally, the presently available information in Holtec's analysis does not explain the basis for Holtec's decision to use an 85% confidence level or the cost-impact of basing the estimate on a higher confidence level.

10. *State-law requirements for site restoration decreasing the amount of funds available to pay for radiological decontamination.* Holtec's plan for decommissioning includes expenditures of funds for site restoration prior to the completion of license termination and thus, site restoration activities will be performed somewhat in parallel with radiological

decontamination. Massachusetts site restoration requirements resulting in higher than estimated costs, could result in a shortfall of funds for radiological decontamination. Further, state-law requirements for site restoration may impact the duration or scheduling of license termination activities given that site restoration activities are planned to be performed prior to completion of radiological decontamination. As a result, there could be increased costs for overhead and staffing. These increased costs could be in excess of the unspecified allowance Holtec states was included to satisfy an 85% confidence level. Holtec's site-specific cost estimate does not quantitatively identify any allowance to account for these costs or how it would cover cost increases consistent with risks outside the 85% confidence level.

11. *The discovery of previously unknown radiological or non-radiological contamination*. According to Holtec's PSDAR, Holtec plans to perform site characterization activities during decommissioning to identify, categorize, and quantify radiological and non-radiological contamination. Since such physical characterization has not yet been performed, including an assessment of the horizontal and vertical extent of all radiological and non-radiological contamination, the estimated cost for decommissioning and restoring PNPS is based on assumptions informed only by historical information. The actual levels and extent of contamination could be greater than assumed. Holtec appears to understand this uncertainty, as the PSDAR states that Holtec's characterization efforts will continue during decommissioning to ensure that decommissioning activities are adjusted as needed. If unknown radiological or non-radiological contamination is discovered, it could significantly increase the cost of decommissioning, including staffing, overhead, and waste disposal. These increased costs could be in excess of unspecified allowance Holtec states was included to satisfy an 85% confidence level. Holtec's site-specific cost estimate does not quantitatively identify specific allowances to

account for these costs or how it will cover cost increases consistent with risks outside the 85% confidence level.

12. *A radiological incident at the site (for instance, during the transfer of spent nuclear fuel into dry casks).* Although the likelihood of a radiological incident decreases once fuel is removed from the reactor, there is still a risk of such an incident even at a decommissioning nuclear power plant. For instance, there is a risk of an incident during the transfer of spent fuel to the spent fuel pool and then from the spent fuel pool to dry casks. If such an incident were to occur, it would increase the costs of decommissioning and depending on the extent of such an incident it could greatly increase the costs of decommissioning. The effect on cost would be both direct and indirect by causing substantial delay in the decommissioning efforts. Although there was no radiological consequence, in August 2018 there was an incident at the Southern California Edison (SCE) San Onofre facility during the transfer of spent fuel to dry storage, which was being managed by Holtec. This incident involved a situation where a loaded spent fuel canister was nearly dropped. SCE has spent considerable time and resources evaluating this incident and taking actions to ensure that the transfer of spent fuel to dry storage can be completed safely. The San Onofre incident has yet to be fully resolved such that transfer of fuel to dry storage may be resumed. In addition, during such a similar delay, there will be delay costs for the fuel transfer personnel as well as added overhead and project management costs. It is not clear from presently available information if Holtec accounts for these risks or the costs associated with a substantial incident.

13. *Absent a change to the Standard Contract, Holtec will have to repackage spent nuclear fuel into new, DOE approved containers prior to transportation to an off-site storage facility or repository*. Holtec's cost estimate assumes that DOE will accept the canisters in the

planned 61 dry casks at PNPS as packaged for dry storage, and not require repackaging for transportation. Entergy (and many other licensees) have argued in testimony and briefs before the U.S. Court of Claims and the U.S. Court of Appeals for the Federal Circuit that DOE has the authority to mandate licensees to repackage spent fuel into DOE-approved transportation casks.[2] If Entergy is correct and DOE were to mandate fuel repacking, this could cause Holtec to incur significant unaccounted-for expenses. The cost overrun for repackaging would be exacerbated by the fact that this would occur after the PNPS spent fuel pool had been dismantled. Without a spent fuel pool onsite, repackaging spent fuel might involve first transporting the fuel to another plant site, or building an onsite Dry Transfer Station (none of which currently exist in the United States). This could lead to cost overruns on the order of hundreds of millions of dollars as indicated by the Government Accountability Office estimate of $150 to $450 million for construction of a fuel transfer station.[3] There is no indication in Holtec's currently available documentation that indicates that Holtec's site-specific cost estimate accounts for these potential costs.

14. *A successful effort by DOE to recover all or some of its past payments for the packaging of spent nuclear fuel into dry casks if DOE removes the spent fuel without prior-repackaging*. Even if DOE accepts the spent nuclear fuel for transportation without repackaging, DOE may then pursue recovery from Holtec for some or all past payments that DOE made for the original packaging of PNPS dry casks. Entergy has recovered those costs to date on the

[2] *E.g.*, *System Fuels, Inc. v. United States*, 818 F.3d 1302, 1306-07 (Fed. Cir. 2016).

[3] U.S. GOVERNMENT ACCOUNTABILITY OFFICE, GAO-10-48, NUCLEAR WASTE MANAGEMENT: KEY ATTRIBUTES, CHALLENGES, AND COSTS FOR THE YUCCA MOUNTAIN REPOSITORY AND TWO POTENTIAL ALTERNATIVES 55 (Nov. 2009), https://www.gao.gov/assets/300/298028.pdf.

theory that DOE has as of yet been unwilling to agree to acceptance of the fuel without repackaging. If DOE pursues such recovery and is successful, this could lead to significant unaccounted for costs. To date, Entergy has recovered about $6 million dollars for complete loading of three casks and initial work on loading of five more casks at PNPS. Entergy or Holtec, if the NRC approves the application, will have to load over 60 casks to accommodate all of the spent fuel at PNPS. It is unclear from Holtec's presently available information if Holtec has included any type of risk allowance to account for such cost overrun or how it otherwise would compensate for the substantial cost increase from such a recovery by DOE.

15. *Holtec's obligation to maintain spent nuclear fuel onsite and to repackage the spent fuel one or more times as well as perform other NRC required maintenance activities if DOE fails to remove all spent nuclear fuel by 2062, as Holtec assumes in its Cost Estimate.* There is no certainty in the Holtec assumption that DOE will have removed all spent nuclear fuel from PNPS by 2062 since DOE has not yet started accepting spent fuel and the latest estimated DOE start date is still more than a decade in the future and DOE's ability to meet that estimated start date depends on preliminary actions that DOE does not control. If DOE fails to pick up all of the spent fuel by the end of 2062 (as Holtec assumes), then Holtec will begin incurring significant and ongoing cost overruns for spent fuel management. Generally speaking, these annual costs would be the approximately $7 million per year that Holtec identifies for spent fuel management costs in the years 2025 through 2062 assuming those costs are accurate. In my experience, licensees have often underestimated their annual expenditures for spent fuel management. Such costs could go on for many decades if not indefinitely. This raises a significant risk of much greater cost overruns, on the order of hundreds of millions of dollars. The NRC's Continued Storage Rule (NUREG-2157), referenced in Holtec's PSDAR but then essentially ignored,

explicitly recognizes that spent fuel may be stored indefinitely at each reactor site. In that indefinite storage scenario, the NRC assumes that each reactor operator will need a Dry Fuel Transfer Station to move spent fuel into new dry casks every 100 years. This is because, at sites like PNPS, there would no longer be a spent fuel pool to effectuate the repackaging once the fuel is moved to dry storage, and the plant is decommissioned. The Holtec PSDAR and DCE do not presently account for how Holtec would address the very possible contingency of indefinite onsite storage, including all safety and environmental concerns regarding transferring fuel into new dry casks every 100 years. The PSDAR also does not identify any funding source for:

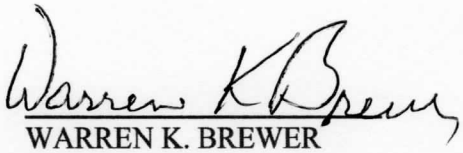
(a) Construction of a Dry Fuel Transfer Station;

(b) Purchase of 61 new casks and all the labor and material costs for transferring the fuel every 100 years; and

(c) Costs of maintaining security at the site indefinitely. These currently unaccounted for costs, could easily run hundreds of millions of dollars.

16. Each of the cost overruns listed above could lead to a significant shortfall in PNPS's decommissioning trust fund. The shortfall could be even greater if more than one of the above cost overruns occurs, or if Holtec encounters other cost overruns not listed above. The only source of funding for decommissioning (radiological decontamination, spent fuel management and site restoration) identified by Holtec is PNPS's nuclear decommissioning trust fund. Because of this and the fact that the three categories of activities will be performed, at least in part, in parallel, a cost overrun or delay in any of these three categories has the potential to jeopardize funding for the other areas.

17. I, Warren K. Brewer, have read the above statement consisting of 12 pages, and I certify under penalty of perjury that the foregoing is true and correct. Executed on March 16, 2020.



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