

HOLTEC INTERNATIONAL APPLICATION
FOR
FEDERAL AND STATE SUPPORT TO ENABLE THE RESURRECTION OF THE
PALISADES NUCLEAR GENERATION STATION
SUBMITTED JULY 5, 2022



PALISADES NUCLEAR POWER PLANT 805 MWE, IDLED MAY 20, 2022

LOCATED IN COVERT MICHIGAN

Foreword: Holtec International (Holtec) is pleased to submit this application to the DOE solicitation dated April 2022 regarding the Civil Nuclear Credit Program. On June 28, 2022, Holtec acquired ownership of the recent shutdown Palisades Nuclear Generation Station (Palisades) and offers this plant as the lead nuclear unit in the nation's quest to preserve carbon free electrical generation. This proposal if accepted, will result in the creation of over four hundred (400) additional permanent well-paying positions including represented personnel for a total of approximately 650 full time positions. Holtec is prepared to work in good faith with both federal and state agencies to achieve the goal of placing the unit back online. However, existing operations are being funded solely from the nuclear decommissioning trust fund which demands that measures continue to be taken to implement plant decommissioning. Therefore, time is of the essence in all aspects of this proposed initiative. Strictly speaking, this application is non-conforming because we acquired this plant only 5 business days ago before the due date (July 5) and much of the prior operating information on the plant is not yet available to us. However, we have made a good faith effort to provide all available information in compliance with the instructions in the DOE's website.

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SECTION A: INTRODUCTION

Holtec International acquired the Palisades Nuclear Generating Station (“Palisades”) from Entergy on June 28, 2022. Palisades had ceased operation on May 20, 2022, after operating for 50 years. The acquisition of Palisades raises the number of nuclear units in Holtec’s decommissioning fleet to six reactors on four nuclear sites which is the largest shutdown fleet in the United States. The company is proud to have established a successful decommissioning program that leads the industry in every key metric such as personnel and environmental safety, OSHA & NRC compliance, control of contamination, used fuel sequestration and the like, and expects to continue its record-setting performance in the Palisades decommissioning program. Despite the success in decommissioning, we are not loath to admit that we are unabashed promoters of nuclear energy, and our core corporate aspiration lies in providing clean nuclear energy to help decarbonize the global environment. In fact, one of the principal reasons Holtec has been acquiring aging nuclear plants is because such sites are near-perfect locations for building the SMR-160 reactors that the company has been developing for over a decade. The United States Government’s interest in resurrecting Palisades is, therefore, aligned with Holtec’s corporate mission. In light of the formidable challenges that stand in the way of the renaissance of Palisades, the enormous might and resources of the federal government and an equally committed support from the State of Michigan will be essential to achieve success in restarting Palisades. In what follows, the challenges to Palisades’ revival and the level of financial support from the DOE and the State needed to overcome them are summarized in this document to align to the requirements of the Civil Nuclear Credit Program’s Guidance Submission Checklists.

As evidence to our support for restarting Palisades, we should observe that even though Palisades is now technically in the decommissioning phase, we are deferring any activity that would make its restart irreversible or more costly. We will maintain this posture voluntarily for as long as we can hold out, perhaps for three months, because the deferral of decommissioning activities directly increases our unrecoverable project costs and after 90 days, we may lose access to the decommissioning funds to resume work.

We are motivated to make this application because it would represent our country’s first effort to stop the destruction of our nuclear generation base by a combined action of the host state and the federal government. If successful, this project will reverberate across the countries that have (imprudently) closed their nuclear generation capacity and made themselves more vulnerable to blackmail from a country bent on using its fossil fuel exports as an instrument of coercion.

As the Federal and State of Michigan authorities are aware the nuclear operators are most enthusiastic about restarting the Palisades plant but are reluctant to engage themselves to the project at this stage because of the perceived risk of disfavor from the equity markets that their involvement in a financially uncertain first-of-a-kind project may elicit. Holtec, as a privately owned company, is not beholden to the equity markets but is still subject to the goodwill of the banks, insurance companies, our customers and other counterparties whose continued confidence in our future stability undergirds their support to our operations. These counterparties expect that we do not take excessive risk and make unsustainable commitments. In this proposal request, therefore, we make a well-considered offer that we consider to be achievable, albeit with a strong corporate effort and an all-out-support from the federal and state governments, and one that our counterparties would not perceive to be reckless.

It warrants observing that DOE’s drive to revive Palisades has already had a far-reaching effect on the nuclear power industry: the baleful talk of shutting down dozens more nuclear plants has already subsided and even a plant until recently scorned by the activists, is receiving support for continued operation. Successfully reviving Palisades, however, would be an unprecedented achievement that would not only

rescue a proven clean energy generator for Michigan from demise, but it would re-energize the fledgling nuclear operators in Western Europe where the move to shutter nuclear plants has been even more pernicious than the US.

The above said, Palisades' revival is an arduous undertaking which will call upon an unprecedented resolve on the part of DOE, the State of Michigan and the USNRC that mirrors our own commitment to this cause. To fix ideas, it is worthwhile to synopsise each party's challenge in short paragraphs:

- (i) State of Michigan ("State"): The State needs to be the first mover to provide a start-up capital to get the project moving forward without further delay. The State also needs to secure a PPA for palisades to enable it to produce power reliably for 20 years without being buffeted by the vagaries of the merchant power generation.
- (ii) USDOE: Two offices of the DOE will need to help us secure uninterrupted funding for the Project, as follows:
 - (a) NE: NE's commitment to award the grant (roughly 2 billion dollars) in early 2024 is an indispensable predicate. In 2024, we expect the project to be substantially completed which means most of the required funds will have been expended. Re-start is expected to occur by mid-2024).
 - (b) LPO: We count on a bridge loan from the LPO to fund the project starting later this year when the State's funding of \$300 million will have been exhausted. The bridge loan will be paid off by the grant received from NE.
- (iii) USNRC: The UNNRC's regulatory approval to revive the license and expeditious approval of the License Amendment Application prepared by Holtec will be essential to revive the project.
- (iv) Holtec International: Designing the new equipment to replace old worn-out hardware such as the Steam Generators, updating the SAR and preparing License amendment applications, entering into a partnership with a qualified Operator, assembling the work force, conducting necessary trainings, etc. are among the responsibilities that will have to be shouldered by Holtec.

We believe that with a strong spirit of collaboration this project, with each party performing its role, can well become a shining talisman for the global nuclear industry.

SECTION B: PROJECT DESCRIPTION

B.1 Executive Summary

Over the previous several months the State of Michigan (“State”) has exhibited a strong resolve to protect the Palisades Nuclear Generating Station (Palisades) from extinction by initiating discussions with Holtec, Entergy, and other parties about the feasibility of restarting and operating the Plant which, supported by the PPA from the State’s authorities, operated until May 20, 2022. The goal of resuming power operation at Palisade to provide clean, reliable, baseload power for Michigan with support of the State we believe would continue to be a crucial adjunct to the DOE’s efforts to realize success in our mission. This presentation is intended to discuss the necessary actions by the DOE and the State required to resume at-power generation at Palisades.

The first two steps in this effort are the commitment to a Power Purchase Agreement (PPA) secured from the Michigan Public Services Commission (MPSC) followed by the DOE approval and funding of the project. We believe that a qualified Operator will come on board after the first two initial steps are met. Holtec envisions to continue to own the facility, make all required upgrades to secure a 20-year operating license extension, recruit a qualified operator and re-constitute the Plant’s work force in collaboration with the selected Operator and restart the plant. The funding of the project is a critical factor which must be achieved under the current constraints. Towards this end, we propose the following approach:

- (i) The State enters into an agreement with the Owner (Holtec) to provide a grant (starter funding) of \$300 million to enable Holtec to launch the massive work effort needed to begin the rejuvenation of the Plant and stem the continuing erosion of the work force (further discussed under paragraph b.2 below).
- (ii) The State’s MPSC provides a PPA to Palisades for the Plant’s service life (at least 20 years) to ensure long-term viability of the Plant.
- (iii) The DOE approves the loan application with appropriate provisions to protect the program from the fickleness that is known to afflict some federal programs with a shift in the calculus of power in Washington (further discussed under paragraph b.4 below). With a firm contractual commitment from USG and a prescribed date when the federal tap for funding would open, say Date X), Holtec will be sufficiently reassured to make an application to the LPO to seek a bridge loan to cover our costs till Date X to enable us to continue work at full speed. We understand Date X is December 2023.
- (iv) Holtec files a Loan Application with the LPO under the Office’s current charter. We believe, given Holtec’s financial and performance track record and other relevant metrics, the Company will qualify for the bridge loan.

It is evident that a successful execution of the above four steps will require a committed sponsorship from the leadership in the State and the federal government. However, with a unity of purpose and shared commitment, we believe a viable financial package can be achieved.

The other part of this challenge is technical, administrative and operational which must be overcome to start the Plant. We summarize them below:

Major Actions Required to Restore Palisades Operability

a. Administrative and regulatory actions

- Participation in the wholesale power supply
- Ability to send power to the grid
- Restore the Nuclear Regulatory Commission (NRC) Part 50 operating license that was downgraded to possession only after the final defueling
- Enter into an operating or agreement with an experienced nuclear plant operator
- Restore the plant operating staff, supporting programs & software, and quality assurance
- Procure new fuel to reload the reactor
- Perform deferred maintenance
- Develop the capital projects plan for an extended lifetime, nuclear safety, and generation reliability (preferred for 20 years of operation)

b. Other major activities

Major at a minimum, the following activities would need to be accomplished to restart the plant:

1. ***Preservation of the Interconnect Rights to the Switchyard:*** Modifications to the existing switchyard, which is owned by Consumers Energy, have already been performed by the Palisades staff to remove the plant from certain regulatory requirements governed by the Midcontinent Independent System Operator (MISO). Discussions with the Consumers Energy have occurred regarding preserving the rights for 1-2 years and Consumers Energy is endeavoring to accommodate this; additional assistance may be required from the governor's office. A replacement generation agreement will be required to bring the Palisades generation capacity back on the grid.
2. ***Power Purchase Agreement Including Capital Funding:*** A Power Purchase Agreement (PPA) with Michigan will be required to participate in the power generation and to sell the capacity on the grid. The Michigan Public Service Commission (MPSC) issues the PPA. In order to bridge the time until federal funding is authorized, it is estimated that this PPA needs to contain approximately \$300 million of capital funding to allow for the purchase of new nuclear fuel and critical equipment necessary for the refurbishment and startup of the plant. This funding would be used in lieu of the decommissioning trust fund (DTF) which cannot be accessed for capital improvement by regulation and explicitly allows the DTF to be used only for radiological decontamination, spent fuel management and site restoration. Additionally, certain members of Congress have expressed concern that both state and federal funding should contribute to this initiative.
3. ***Reversal of the "Permanent Cessation of Operation" and NRC License Continuance:*** Upon shut down and permanent defueling, Entergy, the previous Palisades owner and operator, submitted a letter to the NRC to certify that power operations ceased at Palisades and that the fuel was permanently removed from the reactor vessel and placed in the spent fuel pool. It is understood and acknowledged that upon the NRC's docketing of these certifications, the license for Palisades no longer authorizes operation of the reactor, nor emplacement or retention of the fuel into the reactor vessel. This certification of permanent cessation of power represents a substantial licensing action. Additionally, Holtec Decommissioning International (HDI) submitted to the NRC a request for exemptions from specific requirements of sections 10 CFR 50.82(a)(8)(i)(A) and 10 CFR

50.75(h)(1)(iv) which permit HDI to make withdrawals from the Palisades DTF for spent fuel management and site restoration activities without prior notification to the NRC. The exemption would only apply to HDI when the license transfer transaction is consummated, which is now complete.

All licensing action associated with decommissioning activities at Palisades must be evaluated for either reversing the actions or re-licensing the plant for power operations. This is a first-time evolution within the nuclear industry and would require extensive interactions with the NRC to determine the appropriate licensing path. The NRC would require thorough inspection of the plant to certify that it is safe to refueling, startup and operation. It is unknown if the NRC would require substantial modification or building code upgrades beyond that already envisioned.

4. ***Federal Funding from the Department of Energy (DOE):*** The DOE has a program, recently approved by Congress, which provides funding to extend the life of older nuclear plants. The funding available totals approximately \$6 billion. In our estimate, Palisades would require approximately \$1 billion to \$1.6 billion and one to two years to refurbish the plant to an acceptable level that the NRC would permit resumed operations. The long-term asset management and equipment reliability strategies at Palisades were suspended due to the permanent shutdown of the plant. Equipment maintenance and repairs are overdue, and upgrades are necessary. New nuclear fuel must be procured for the site, this is an activity that can take several years depending on the manufacturer commitments. The site will still be required to execute the spent fuel campaign because the spent fuel pool is near capacity, and it is necessary to off-load used fuel before new reactor operations can commence. The plant may also need steam generator repairs or replacement, which is a significant expense and commitment for the future outage of extended duration.
5. ***Repair, Refurbishment and Upgrade work Needed for Palisades:*** The Palisades plant has deferred several upgrades in anticipation of permanent shut down. Significantly to note, Palisades performed a technical specification driven shut down 10 days prematurely due to control rod drive mechanism (CRDM) leakage. Given the unknown equipment and material condition of plant, an extended maintenance and refueling outage would be needed to execute the known repairs. At a minimum, based on current material information on the plant, an extended maintenance outage would include the purchase of new nuclear fuel, relicensing of the facility, steam generator (S/G) inspection and possible tube plugging or S/G replacement. Switchyard upgrades and modifications are also necessary. Some control room indicators were removed by the former owner from the simulator to support operating plants in their southern fleet. These missing modules will need to be restored and the simulator computers validated for use. The simulator computers and associated software were not managed as part of the ownership transition as there are no requirements to use the simulator in the decommissioning phases. Finally, a number of computer systems and software packages have been turned off and will need to be recovered to restore the Engineering Department's capabilities as well as the Operations Department ability to monitor the plant process computer.
6. ***Jobs Restoration:*** Additionally, staffing requirements at the site would need to be addressed. Approximately 400 additional personnel including bargaining unit personnel are required to staff Palisades estimating 650 operating positions, including the regulatorily required positions. Most significantly, an entire complement of operational staff would need to be hired and either re-licensed or initially licensed by the NRC, which the Holtec believes could take up to 18 months to accomplish. Other notable areas of personnel gaps are the complete loss of the Training

Department that is required for maintenance of operator licenses. Similarly, the loss of INPO membership means that the Training Department requires a recertification by INPO in order for the NRC to credit the training program’s effectiveness. It is unknown at this time which INPO audits or assist visits were terminated in the last year of operations that will have to be put back in place once the requisite staff has been rehired and trained.

The tables that follow summarize the major areas of cost estimated to restart Palisades to full power operation.

Table 1: Replacement Fuel Budget Support (no new fuel currently available)

Item #	Area of Support	Estimated Cost
1	New fuel for 2/3 Reactor Core due to excessive burn on the final operating cycle. Includes core physics design.	\$240M

Table 2: Operating Budget Support (required to leave the DTF fund intact)

Item #	Area of Support	Estimated Cost
1	Labor for 2 years (Phase 1 staff retention)	\$77M
2	Additional labor to recover and restart the plant ~ 400 people	\$155M
2a	Partner utility management contract	\$28M
3	Physically restore qualify simulator	\$2M
4	Operator and Technical Training programs recovery, recertification	\$6M
4a	Licensed Operator Training Programs	\$27M
4b	Technical Training Programs	\$18M
5	Engineering system configuration restoration	\$9M
5a	Update Reactor Vessel Fluence and disposition embrittlement results	\$7M
5b	Flow Accelerated Corrosion and Alloy-600 testing	\$4M
6	Chemical cleaning for long-term ALARA	\$25M
7	Licensing Basis Recovery	\$6M
8	CRDM and Incore Detector and cable replacement	\$16M
8a	Reactor Vessel Head Penetration leak testing and repair/peening	\$90M
8b	Steam Generator 100% eddy current testing and secondary side chemical cleaning	\$12M
8c	Reactor Coolant Pumps: Motor, pump and seal maintenance and/or replacement	\$22M
9	Software License Recovery	\$3M
10	Quality Program/controls restoration and materials requalification	\$5M
10a	Reestablish Q inventory (restock quality components)	\$18M
11	NRC Costs (Two years)	\$45M
12	Real Estate Tax (One year following restart)	\$7M
	Total	\$582M

Table 3: Capital Projects		
Item #	Project Description	Estimated Cost
1	System Configuration major overhauls, equipment replacements	\$34M
2	Switchyard upgrades (Tie-in, Open Phase)	\$7M
3	S/G design, fabrication, replacement (includes reactor coolant system redesign, cold-hot-fuel testing)	\$510M
4	Spent fuel offload (dry storage) and new spent fuel racks	\$195M
5	Required Modifications; Fire Protection (NFPA-805), Cyber Security, Plant Process Computer	\$42M
	Total (w/out contingency)	\$788M
	Contingency	\$325M

Table 4: Proposed Total Investment		
Item #	Project Description	Estimated Cost
1	Total Investment (w/out contingency)	\$1.61B
1a	Total Investment (w/contingency)	\$1.935B

B.2 Project Eligibility

The Palisades Nuclear Plant was shut down on May 20, 2022, following a record-breaking period of continuous operations. The plant had been well maintained and was previously granted a life extension through the year 2030. Economic decisions caused the former owner to discontinue plant operations and to then sell the unit to Holtec for the purposes of decommissioning. This sale was consummated on June 28th, 2022. While the plant has already shut down, permanent alternations to the plant to prepare it for decommissioning have been put on hold, therefore, physical return to service is technically possible. Per the timetable of Section V of the amended criteria of the Civil Nuclear Credit Program, Palisades meets the DOE’s prioritization of funding to plants that announced closure.

B.3 Project Sponsor’s and Principal’s Capabilities

B.3.a Company Overview

Holtec International, operating continuously since 1986, is a diversified engineering technology company with its principal concentration in the nuclear power industry, joined more recently by energy storage. The Company has remained active in gas-fueled energy generation but has been rapidly disengaging in recent years from oil and coal sectors of the industry. The company is also actively exploring niche opportunities in wind power generation. A differentiating aspect of Holtec International is its broadly equipped in-house resource base which enables the Company to undertake turnkey projects wherein the Company offers soup-to-nuts goods and services ranging from design, manufacturing, securing the requisite licenses from governmental authorities, installation of the manufactured components and systems at the client’s facility and commissioning services, at the client’s option. Most clients take advantage of Holtec’s turnkey supply capability which has helped fortify Holtec’s relationship with its clients. Thanks to Holtec’s cutting-edge technology patents in the field of nuclear energy (over 180 in number), the Company has served as the pre-eminent provider of wet storage (in-pool storage) and dry storage (in-helium storage) of used nuclear fuel in the US and in 16 countries abroad garnering over 70% of the domestic and over 50% of the overseas

amenable market share. Holtec is America's largest exporter of capital nuclear equipment providing critical nuclear equipment to 63 foreign reactors. Globally, 137 nuclear plants rely on Holtec for their critical operating needs which has given the Company a diversified multinational customer base.

B.3.b Synopsis of Holtec International's Capabilities

Holtec has the technical experience, qualifications, skills and capabilities to successfully achieve the described demonstration objectives. As a fully integrated supplier, Holtec possesses in-house capabilities to design, engineer, analyze, construct, and deploy the technologies offered by Holtec. A unique aspect of Holtec's design and engineering capabilities stems from our long history of working under the general licensing process of U.S. NRC 10 Part CFR 72 and 10 Part CFR 71 for spent nuclear fuel storage and transport technologies, respectively. Holtec possesses a wide range of in-house capabilities and has developed an extensive repertoire of tools and methodologies. Holtec's generic license applications bound the fuel types and site conditions found at over 100 U.S. NPPs as well for dozens of international sites. To do so requires more skill and licensing technique than required for single site license applications. Holtec has perfected this skill and can leverage this experience to develop the materials, testing, systems development, and siting requirements solutions needed to be successful in this Project.

Holtec possesses a complete range of technical capabilities with subject matter experts for nuclear projects including, but not limited to, the following:

Nuclear Engineering: Criticality Analysis, Radiation Analysis, Shielding Requirements, Reactor Design, Nuclear Physics, Critical Heat Flux Analysis, Probabilistic Safety Analysis, Emergency Planning and Dose Assessments

Fluid Mechanics and Heat Transfer: Accident and Safety Analysis, Thermal and Fluid Transients, Computational Fluid Dynamics

Solid and Soil Mechanics: Structural Analyses, Seismic Analysis, Impact Analysis

Civil and Structural Engineering: Foundation Design, Building Design, Transfer Facility Design, Construction Design & Specification

Systems Engineering: Component Design, Mechanical System Design, Electrical and I&C System Design, Process System Design, Cable and Piping Routing, Fire Protection, 3D Modeling & Assembly Sequencing

Nuclear Fuel Storage and Transport: New and Spent Fuel Rack Design, Transfer and Transport Cask Design, Spent Fuel Transfer System Design, Interim Spent Fuel Storage Installation Design, Spent Fuel Facilities and Equipment according to U.S. 10CFR50 and other international regulations

Manufacturing and Fabrication: Process Automation and Robotics, Material Processing, Machining, Weld Engineering, Inspection, NDT/NDE, Materials Engineering, Lean Manufacturing, Logistics

Licensing: US and International Licensing Applications, Environmental Assessments, Siting Applications, Local Permitting Applications, Licensing and Project Support Services

Quality Assurance: This program complies with the ASME BPVC Section III, Divisions 1 and 3, 10CFR50 Appendix B, and is certified as follows:

- 10 CFR Part 50 Appendix B Certified QA Program
- 10 CFR Part 71 Subpart H (Approval Number 0784) Certified QA Program
- 10 CFR Part 72 Subpart G Certified QA Program

- NQA-1 Certified QA Program
- ISO 9001:2008 Certified QA Program
- ASME III
- Triennially inspected by the U.S. NRC, NUPIC, and other organizations

The Holtec QAP has been evaluated and found to be acceptable by the USNRC, NUPIC, as well as numerous foreign regulators and inspectors. The Holtec QAP meets or exceeds the requirements of the following codes and standards: Federal Regulation 10CFR50, Appendix B; Federal Regulation 10CFR21; ANSI N45.2; ASME NQA-1; ASME Section III NCA-3800; ASME Section VIII, Division 1; ISO 9001:2008.

B.3.c Financial Profile

Holtec International's financial strength and record of performance are revealed by the following metrics:

- The Company has posted an operating profit in every fiscal year (in its decades) of operation.
- The Company has no long-term debt; the Company has had no long-term debt in its entire corporate history despite making major capital investments such as building a 52-acre Technology Campus for over 310 million dollars in Camden NJ, completed in 2017.
- Holtec has earmarked significant funds each year for applied R&D which the Company expenses every year. The Consolidated Interim Storage and the new SMR-160 reactor programs, the former being entirely funded from the Company's operating budget, are current ongoing company endeavors that detract from the EBIDTA.
- Despite the Voluntary EBIDTA diminishing R&D activities, Holtec's balance sheet stands at over half a billion dollars in assets and a 9-digit annual EBIDTA.
- Thanks to its sterling financial performance, Holtec commands the highest rating and hence the lowest premiums from its counterparties such as insurance companies and banking institutions.
- To conduct overseas nuclear projects, Holtec issues (and receives) appropriate letter of credit stipulated in the respective contract: no letter of credit has ever been called by a client and no Holtec client has ever discontinued its relationship with the Company.
- Holtec has never defaulted on any company obligation in its corporate history.

B.3.d Enterprise Stability

- Because of the typically long-life cycle of its dry storage contracts, Holtec is unique in having its order book extend out for decades in the future which confers long-term financial stability on the Company.
- Holtec has a mix of mature and emerging businesses. Dry storage is a three-decade old mature business which while profitable, has a rather modest scope for additional growth. On the other hand, nuclear decommissioning is a growing business segment. Holtec has established an early lead through a cutting-edge Holtec Decommissioning Model (HDM) which has vaulted the company to industry leadership. It is expected that the decommissioning segment of Holtec's Business will continue to grow rapidly in the next decade.
- Holtec's decommissioning projects in which Holtec takes ownership of the site and accepts the decommissioning liability are very financially secure, as the source of funding for that decommissioning work is securely held in a funded decommissioning trust fund that is owned and controlled by an autonomously managed Holtec subsidiary.

- Holtec’s SMR-160 light water reactor is the technology seed corn that has been nourished by the Company with its own funds since 2010. It is expected to begin yielding a great harvest in the latter half of the 2020s. The global market size is over one trillion dollars.
- The Consolidated Interim Storage facility announced by the DOE as a national mission, is under development since 2017 as another significant Holtec Domestic seed corn investment. It is projected to produce handsome profits in the near term (this decade).
- Holtec has a large base of clients - over 100; no client accounts for more than 10% of the Company’s sales. Virtually all company clients are multi-billion dollar publicly held enterprises, and most are Fortune 500. Thanks to the elite population of Holtec’s customers, the Company has no history of having to write off bad debt.
- Holtec operates an advanced cloud-based system that provides instant on-demand information for ongoing projects which gives the Company’s project managers the needed financial feedback to correct their execution path if needed. Because of the rigorous financial controls, a Holtec project seldom experiences a loss.
- Virtually all equipment and systems provided by Holtec to its global clients are protected by an array of patents - over 180 granted by the US government and more than a hundred extended to overseas countries. The patents ensure that Holtec’s technology will not be purloined, undermining our future business.
- Virtually all equipment manufactured by Holtec’s manufacturing plants (three in the US and one in India) are based on Holtec’s patents and designs which is unique in the industry, and which ensures that the plants have a long backlog stretching out to a decade or more. As a result, Holtec engineers can continuously enhance the designs resulting in improved costs and better margins. The backlog is also protected by the undergirding patents which discourages pilfering of the Company’s IP.

In closing, a large and solid client base, a long and large backlog register (over 7 billion), no history of failing to deliver on any project out of several hundred completed, top level credit rating, zero long term debt and a stable corporate leadership; Holtec is poised to continue on its trajectory of growth marked by unfailing operational reliability and Plant Continuation Assistance financial profitability in the coming decades. Enterprise stability is undergirded by the Company’s portfolio of old and new product lines which are aligned to provide a continuous spectrum of growth and rising profitability founded on a solid bedrock of long-term stability. Furthermore, Holtec’s advanced and secured IT network systems enhances the company’s efficiency, effectiveness, quality assurance, cyber-sophistication, and accountability to our vast array of projects and clients. Last but not the least, a stable executive suite (the average length of the Executive Committee members is ~15 years) ensures experienced and knowledgeable leadership.

B.3.d.i Project Management

Holtec and HDI management personnel have extensive in-depth experience in program and project management for decommissioning nuclear power reactors, research reactors, federal weapons complex facilities, uranium fuel cycle facilities and other commercial radiological facilities in technical areas including waste management, dismantlement, project management, regulatory compliance and environmental protection.

The Holtec and HDI management approach has been developed to drive efficient and effective decontamination and decommissioning with a safety-conscious work environment; radiological protection, radioactive waste handling and strong governance; financial controls, effective corrective action program, performance reporting, monitoring, and metrics. HDI’s “fleet approach” has brought consistency and

predictability to the decommissioning of our sites. Together, we currently have three projects running concurrently and recently acquired Palisades, our 4th acquisition on June 28th, 2022. We have found increased efficiencies through process improvements and implementing lessons learned from one project to the next. For example, the steam dryer located in the upper reactor cavity at Oyster Creek was segmented in a world record 40 days. Through the sharing of best practices, the steam dryer at the Pilgrim Nuclear Power Plant was segmented in under 40 days, the current world record. Using Holtec's approach, Oyster Creek, Pilgrim and Indian Point are all currently ahead of schedule and under budget relative to the project baseline.

The Project Controls implements a detailed scoping, estimating, and planning process that has been successfully used on other large complex projects with similar scope and challenges. This capability was developed on worldwide projects including support for Ontario Power Generation, Pacific Gas & Electric at Diablo Canyon, and Magnox on behalf of the Nuclear Decommissioning Authority in the UK.

Specifically, the system enables project control personnel to perform the following:

- Establish an Earned Value Management System (EVMS) tied to the project baseline with specific managers accountable for their performance
- Establish work controls for decommissioning work that incorporate earned value reporting
- Establish Financial reporting and controls that feed the EVMS in a timely manner
- Establish a robust baseline control process for each plant
- Incorporate project controls reporting and measurement into the contracts that are issued.
- Ensure accountability and reporting is established from the plant level to the corporate leadership

This process allows for integration with the financial management reporting system allowing for variance reporting against the baseline cost and schedule which ultimately provides the data required to meet our NRC bi-annual reporting requirements for trust fund and project performance. On a given financial period, the process uses EVMS reporting at the cost account manager level which is the level where individual cost and schedule accountability is identified. Variances are addressed to ensure corrective actions are taken early for variances that result in a schedule performance index (SPI) or cost performance index (CPI) of less than 1.

B.3.e Compliance with USG's Environmental Justice Policy

B.3.e.i Introduction:

Environmental Justice owes its origin to the Civil Rights Movement of the 1960s, which brought the social inequities imbedded in the country's fabric since its founding to the fore of national discourse. It is to America's credit that its successive administrations acted to advance policies that sought to address the chronic problems of poverty, poor schools, diminished public safety, polluted water & air, and a lack of job opportunities in the nation's minority communities. Over the years, a broad consensus has emerged that the government's policies for environmental justice (EJ) must be embraced by industry to realize the kind of real advances in EJ that would move the needle on social equity. This text matter explains Holtec's commitment to EJ as an industrial company and how the Company puts its EJ precepts into practice.

The US Environmental Protection Agency defines Environmental Justice as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to

the development, implementation, and enforcement of environmental laws, regulations, and policies. “The Agency states that the goal of Environmental Justice will be achieved *when everyone enjoys the same degree of protection from environmental and health hazards, and equal access to the decision-making process to have a healthy environment in which to live, learn, and work.* Holtec International understands that it must ensure that “everyone enjoys the same degree of protection from environmental and health hazards” who might be impacted by the Company’s projects. Ensuring that everyone has “equal access to the *decision-making process* to have a healthy environment in which to live, learn, and work” is a pledge that must be fulfilled by the nation’s policy makers as well as by our company. Encouragingly, state governments and legislatures have adopted policies intended to include disadvantaged segments of the American public to bring them into the decision-making process to better serve their environmental interests.

The precepts of Environmental Justice (EJ) for the nuclear industry are articulated in the Nuclear Regulatory Commission’s (NRC) Policy Statement dated August 24, 2004, which set down the Commission’s policy on the treatment of environmental justice matters in regulatory and licensing actions under the Commission’s purview. The policy statement reaffirms the Commission’s commitment to full compliance with the requirements of the National Environmental Policy Act (NEPA) in all of its regulatory and licensing actions. The Commission’s policy statement recognizes that the impacts, for NEPA purposes, of its regulatory or licensing actions on certain populations may be different from impacts on the general population due to a community’s distinct cultural characteristics or practices. The NRC recognizes that disproportionately high and adverse impacts of a proposed action that fall heavily on a particular community call for close scrutiny – a hard look – under NEPA. This NRC commitment accords with Executive Order (E.O.) 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” which characterizes such impacts on disadvantaged populations as a matter of “environmental justice.” Accordingly, the NRC considers an analysis of disproportionately high and adverse impacts on disadvantaged communities to be necessary to fulfill the agency’s NEPA obligations which call for accurately identifying and disclosing all significant environmental impacts associated with a proposed regulatory action. Thus, the NRC’s policy on EJ is committed to the general goals of E.O. 12898 which are expected to be met under its normal and traditional NEPA review process.

B.3.e.ii Definition of disadvantaged communities and affected region:

The USG position on the definition of disadvantaged (which is a synonym for “low income and minority”) communities published in the NRC’s COL/ESP-ISG-026, "Staff Guidance for the Socioeconomic and Environmental Justice Analysis for New Reactor Environmental Impact Statements" is used herein to define communities that should be considered for the EJ initiatives set forth in this document.

(i) Affected Region:

The NRC staff guidance states that the geographic scale should be commensurate with the potential impact area. To simplify the guidance to the staff, The Office of Nuclear Reactor Regulation (NRR) and Nuclear Material Safety and Safeguards (NMSS) within the NRC have adopted numeric guidelines based on activities that those offices regulate. Under current NMSS procedures, the potentially affected area is normally determined to be a radius of six tenths of a mile from the center of the proposed site in urban areas, and four miles if the facility is located in a rural area.

NRR uses a 50-mile radius defined as the ingestion pathway zone (IPZ) which has been designed to mitigate contamination of the human food chain by a radiological accident at a nuclear power plant. There is no corresponding NRR position on small modular reactors such as SMR-160, whose zone is equal to zero outside the controlled area boundary. Therefore, emulating the NMSS guidance for spent fuel storage cask

systems, a distance of four miles is proposed to define the affected area for SMR-160. The NRC guidance recognizes that the numeric distances may be modified to accord with the objective of EJ, which is to ensure that a sample of the surrounding population is included because the goal is to evaluate the communities, neighborhoods, and areas that may be disproportionately impacted.

(ii) Low income and minority communities:

Under current NRC staff guidance, a minority or low-income community is identified by comparing the percentage of the minority or low-income population in the impacted area to the percentage of the minority or low-income population in the County (or Parish) and the State. If the percentage in the impacted area *significantly* exceeds that of the State or the County percentage for either the minority or low-income population, then EJ will be considered in greater detail. “*Significantly*” is defined by staff guidance to be twenty percentage points. Alternatively, if either the minority or low-income population percentage in the impacted area exceeds 50 percent, EJ matters are considered in greater detail.

Holtec International follows the above staff guidance to define disadvantaged communities in the area impacted by a Holtec project.

B.3.e.iii Record of compliance with EJ principles:

Holtec International, as a provider of nuclear reactors, spent fuel storage systems and other safety-significant systems, structures and components (SSCs) to the nuclear industry, considers its across-the-board compliance with NEPA to be an essential fabric of the Company’s operating principles. Beyond our obligations in nuclear projects under NEPA, Holtec International views helping disadvantaged communities as a key corporate mission. Putting its social responsibility to practice, Holtec built a \$312 million technology campus in one of the poorest cities in America in 2017, Camden, New Jersey. Camden has been a quintessential disadvantaged city with over 90% of its citizens in the low income and minority category, persistently high unemployment, crumbling infrastructure, and rampant crime. A state prison, a cement plant, and a trash burning plant were all built in the past two decades, only adding to the exodus of the middle class from the city. To help reverse the city’s decline, Holtec’s technology campus (pictured below), consisting of a large technology center and a massive manufacturing plant was built by the Company, which sits on the NJ side of the Delaware river in the impoverished city of Camden.



Holtec began tapping the surrounding area to develop a local workforce in 2014 by creating hundreds of construction jobs to build the technology campus. Then Camden Mayor Dana Redd stated, “the Campus signifies a significant investment in our city, our region, and our State, [and] that investment has touched local, small businesses here in the community.” She added, “Camden residents played a huge part in the construction of this facility, and now work here at the site. I can see the Camden pride in our residents as they come to work every day, not just for a job but for a career that will help them not only lift themselves out of poverty but lift their families and neighborhoods out of poverty.”

While Holtec’s venture was hailed in the media as the largest private investment in Camden, it is not widely known that the 52-acre campus sits on land that was deeply contaminated and that the Company cleaned up the land which rid the local community of a gnawing environmental hazard. The manufacturing plant on the campus has become a magnet for residents of the city as a source of dignified jobs and job security. We expect the campus to employ over 5,000 workers in 7 years’ time as the Company’s small modular reactor (SMR) program enters the manufacturing phase. In the process, we expect to embody the egalitarian principles of EO# 12898 in full measure.

Consistent with the above ethos, Holtec International has resolved and announced on its website that the Company will not engage in any activity that runs counter to the spirit of Environmental Justice. To ensure that our policy is applied by all company departments and management cadre, an EJ questionnaire (see Table 5 at the end of this subsection) has been developed and adopted by the Company to translate the Company’s EJ mission into practice and is presented in the following section.

B.3.e.iv Holtec’s EJ mission announced in the Company’s website:

Holtec International views Environmental Justice (EJ) as an integral part of the Company’s corporate mission. The measures to consider EJ in the Company’s activities are considered to be an essential part of its corporate governance infrastructure. The principles of EJ apply to the welfare of the Company’s

workforce, its contractors and to the citizens of the communities that may be impacted by a Holtec project, as spelled out in the following seven articles of the Company's EJ-mission:

- (i) Support policies and regulatory actions that advance the use of clean, reliable, and affordable carbon-free nuclear energy to protect the health, environment, and economic well-being of disadvantaged communities.
- (ii) Integrate environmental justice considerations in the Company Project Plans so as to meet the laws, regulations, and policies that protect public health, safety, and the environment.
- (iii) Integrate environmental justice considerations into company business practices, including those related to selection of contractors and suppliers.
- (iv) Ensure that no Holtec associate is discriminated against for reason of their ethnicity, religious beliefs, or social background.
- (v) Employ the Company's Learning Management Systems and other training tools to inculcate a deep understanding of Environmental Justice considerations in the Company personnel's work practices.
- (vi) Secure input from disadvantaged communities in the affected areas around a project facility to identify and address environmental justice issues.
- (vii) Maintain an effective outreach to disadvantaged communities to enable meaningful participation by the affected citizens.

B.3.e.v Implementation of EJ

The implementation of the EJ principles at Holtec occurs in two discrete venues: the corporate level and the Project level. The former is enforced through the Company's Corporate Governance program, and the latter is applied through the Project Plan which, in Holtec's quality program, is the essential vehicle for executing all requirements and imperatives of the project. Implementation of the Company's EJ tenets, along with the commitments to QA, worker safety, cybersecurity, environmental stewardship, fiscal control, contract adherence and project controls occurs through the Project Plan. The Project Plan is a project-specific document which serves to implement all requirements and imperatives of the project, including the Company's EJ principles customized for the location where the project will be domiciled.

An Environment Justice Questionnaire (company proprietary) must be filled by the Project team at the start of every large project of value >100 million U.S. dollars or any project located in a disadvantaged area as defined in this section. To proceed forward on a project subject to EJ compliance, the responses to the queries must lead to the following conclusions:

- a. There will be no adverse impact on the health and well-being of the residents who live around the proposed enterprise (a.k.a., *the facility*).
- b. The local environment does not suffer any degradation.
- c. The Company's Project Management will make a concerted effort to seek inputs from the affected communities to ensure that their interests are factored in the execution of the project.
- d. The facility will be sensitive to and respectful of the culture, religious beliefs and customs of the host communities.
- e. The facility will offer employment opportunities to the local residents to the extent possible.
- f. The facility will contribute towards helping improve the quality of life of local residents.
- g. The facility will not create a new type of accident that would endanger the lives or property of the people who live in the local communities.

Table 5: Environmental Justice Questionnaire				
#	Question	Required Response	Actual Response	Comment
Socio-Economic Considerations				
1	Will the facility produce substantial blue-collar employment in the host communities?	Yes		
2	Will the facility generate green collar jobs?	Yes		
3	Will the facility make white collar jobs available to the local community?	Yes		
4	Will the facility attract other businesses that may produce increased employment?	Yes		
5	Is the facility likely to create disequilibrium in the housing market by driving poor families from their homes?	No		
6	Will the facility cause increased social pathology such as use of opioids, increased alcoholism etc.?	No		
7	Does the company have an equal opportunity employment program that has not been criticized by the USG which the Company will employ at the facility?	Yes		
8	Does the Company have any prior record of investing in poor communities?	Yes		
9	Will the Company establish a training program to help boost local employment and incomes?	Yes		
10	Is there any peer reviewed paper in the literature that claims that the average life span (morality) of the people living in the community will be adversely affected?	No		
11	Is the facility likely to promote the influx of indigents and other undesirable elements into the host communities?	No		
12	Would the facility force the closure of other businesses that provide local jobs?	No		
13	Would the facility detract from the local real estate prices as would a prison, a correctional institution or a distillery?	No		
14	Will the proposed facility help increase the local tax base and thus make additional funds available for the local school system?	Yes		
Regional Infrastructure, Lifestyle, and Industrial Considerations				
1	Will the facility adversely affect the state of sanitation, transport or communication infrastructure in the local communities?	No		
2	Will the local farming industry be adversely impacted (if applicable)?	No		
3	Will the local fishing industry be adversely impacted (if applicable)?	No		

Table 5: Environmental Justice Questionnaire				
#	Question	Required Response	Actual Response	Comment
4	Will the stability of the local power grid be adversely impacted?	No		
5	Will the facility adversely affect livestock in the vicinity of the site?	No		
6	Will the facility cause increased incidence of local power outages?	No		
7	May the facility cause depopulating of the host communities?	No		
8	Would the facility constitute a hazard to driving and recreational activities for local citizens?	No		
9	Would the facility aggravate social vices such as illicit gambling, moonshining, etc.	No		
10	Is there a credible scenario wherein an accident at the facility may force local people to evacuate from their homes?	No		
11	Does Holtec seek the input of affected local communities in project decisions that may bear upon their well-being?	Yes		
Chemical Pollutant Considerations				
1	Will the facility add SO _x or NO _x gases to the local environment?	No		
2	Will the facility increase particulate pollution in the local environment?	No		
3	Will the facility be used to mine polluting commodities such as oil or gas?	No		
4	Would the facility employ chemical reactions that may, if gone awry, may cause human fatalities, such as the disaster in Bhopal India in 1984?	No		
5	Is there a risk of contamination of local ground water under a credible accident scenario at the plant?	No		
6	Would the facility pollute or contaminate the soil surrounding the facility?	No		
7	Would the facility create olfactory distress (bad smell) in the air in the local communities?	No		
Radiological Considerations				
1	Will there be a significant increase in the radiation dose to the local people above that from cosmic radiation?	No		
2	Will there be a risk of radiation release to the environment from a transport accident?	No		
3	Is there a credible risk of a large radioactivity release from the facility in the case of an	No		

Table 5: Environmental Justice Questionnaire				
#	Question	Required Response	Actual Response	Comment
	accident that would make the local communities uninhabitable?			
Site Recyclability Considerations				
1	Will the facility be amenable to efficient dismantling and decommissioning?	Yes		
Emissions, Water Usage, and Ecological Considerations				
1	Will there be a risk of increased green-house gases such as methane and carbon dioxide released in the atmosphere?	No		
2	Will the facility consume large amounts of potable water?	No		
3	Would the facility affect local wetlands or cause expansion of arid lands (as applicable)?	No		
Natural Disaster Considerations				
1	Will the facility cause increased risk of natural disasters such as tremors, hurricanes, and tornadoes?	No		
2	Will the incidence of lightning frequency increase?	No		
3	Will there be the incidence of increased or reduced rainfall?	No		
Hazardous Waste Considerations				
1	Will the facility become a permanent repository of any type of waste?	No		
2	Will waste generated at the site be protected by continuous security oversight during its temporary storage there?	Yes		
Cultural Considerations				
1	Will the installation of the facility lead to desecration of an Indian burial ground or an archeologically important site?	No		
2	Will the installation of the site affect any person's ability to practice their religion or participate in traditional cultural practices?	No		
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B.3.1: Conclusionary Summary of Capabilities, Resources and Track Record:

In this subsection, Holtec’s unique resources and capabilities are summarized succinctly in numbered topical areas:

1. In-house manufacturing of all major capital equipment:

With three large manufacturing plants in the US with full pedigree of nuclear certifications, Holtec stands out as the industry's only OEM with turnkey supply capability. With over 1.5 million square feet of fabrication floor under the hook, and lifting capacity in some bays reaching 400 tons, Holtec's manufacturing plants possess the physical resources and complimentary skilled craft to build the entire range of components used in the power generation industry.

To ensure competitiveness with our rivals who use inexpensive foreign labor, Holtec has been buying and building special-purpose robots to automate repetitive shop operations. Bristling with latest stationary and portable robots and enriched with cutting-edge manufacturing processes, Holtec's plants are realizing at least 10% productivity gains each year. This in-house manufacturing capability with the whole gamut of large and small weldments is a unique aspect of Holtec's capabilities.

2. Continuous R&D campaign to improve product quality and productivity:

To maintain cost competitiveness with overseas rivals, notably in China, Holtec has been investing in developing advanced manufacturing processes to level the playing field despite the significantly larger cost of American labor. Among the many achievements of this campaign are an innovative submerged arc welding system that has eliminated rework and cut welding time by an order of magnitude for long weld seams. The Hybrid Laser Arc Welding (HyLAW) process that has increased the speed of welding of thick sections by a factor of 10 or more and friction stir welding to weld heretofore un-weldable alloys such as copper to copper and copper to stainless steel. These manufacturing innovations lie at the heart of Holtec's designs that leverage them to provide SSCs with performance capabilities that lead the industry. This continuous program of manufacturing innovations has given us a competitive edge in the global marketplace assuring the long-term success of our programs.

3. Integrated design, manufacturing and Quality Assurance infrastructure that is completely paperless:

From the design office work products to the Electronic Shop Traveler (EST) to quality control processes and nuclear quality assurance protocols and commitments, Holtec's product delivery program is entirely paperless and digitally controlled. The logistics and communication snafu that have dogged others' design and manufacturing operations have been eradicated from our program as evidenced by the continuing stream of nuclear hardware being produced in our facilities. This integrated digital control program is our key guarantor of error-free product output which, to our knowledge, no SMR supplier possesses.

4. A long track record of successful Turnkey supply:

Holtec is the industry's only turnkey provider of goods and services in the clean energy industry with a large corporate engineering division and three large manufacturing plants capable of producing equipment of virtually size and weight required by the industry and in-house construction and site services organizations with a deep bench of field engineers. Turnkey supply means conceptualizing to finalizing a design embodiment, performing all required safety analyses in-house, securing regulatory approvals culminating in its manufacturing it in its own shop. Holtec is the only company with a long track record of turnkey supply in the clean energy sector of the industry.

5. Proven and actively engaged supply chain:

Holtec's supplier base of over 300 companies provide the second tier of supplies such as raw materials, and pre-processed parts. What is unique about our program is our practice of leveraging the know-how of our suppliers. A number of Holtec suppliers routinely participate in our product development programs providing valuable input to our designs to ensure optimal cost and fabricability. Combined with Holtec's manufacturing capabilities, this existing supply chain represents more than 80% of the required components for construction of typical large projects such as SMR-160 nuclear plants.

6. Self-sufficiency in critical materials:

Holtec has endeavored to eliminate reliance on suppliers for critical materials with some notable successes. For example, to achieve self-sufficiency in neutron attenuation materials Holtec developed the Metamic™ metal matrix composite needed for reactivity control and the nano-technology-based Metamic HT which is both a structural material and a neutron attenuator. Today, Holtec produces all of Metamic it needs for its nuclear components. Likewise, Holtec invented the Holtite™ shielding material needed in a variety of dose control applications in nuclear plants. The company has perfected the manufacturing process for Holtite™ and self-produces it to meet its supply needs. Holtec's self-sufficiency in critically important materials is a unique aspect of our corporate approach to manufacturing management.

7. Nuclear industry's best record of supply of error-free systems and components:

Holtec delivers hundreds of custom-engineered systems, structures and components to the operating nuclear plants every year. That every one of them has performed its intended function without a single incidence of failure is an unheard-of record of flaw-free supply that stands unblemished since the company's founding in the 1980s. Despite the vast quantity of equipment delivered to the industry, there has not been a single instance of a defective or non-conforming SSC delivery resulting in 10 CFR filing to the NRC.

8. Team Holtec's Fixed price contracting capability:

Unique among prime contractors, Holtec maintains profitability while routinely quoting fixed price proposals subject to adjustment only for escalation. Even hideously complex projects such as Chernobyl's used fuel dismemberment and storage were quoted on fixed price basis and successfully completed.

9. First in class in project management

Holtec is running at least 50 large and complex nuclear projects at any given time delivering hundreds of drawings, reports, procedures, position papers and the like, along with nearly a thousand items of fabricated nuclear hardware to its global clients each year. The on-time delivery record is nearly 99% despite the recent disruptions from Covid-19.

Holtec has a peerless record of completion of complex projects having completed every project undertaking in its corporate history without fail. Projects have included the infamous Chernobyl three-reactor defueling project which languished unfinished by a leading European multi-national until Holtec took over in 2011. No world supplier comes close to matching this performance record.

10. Unparalleled Licensing experience

Holtec has secured NRC approval of over 30 major license applications in the past 20 years which is the longest ledger of NRC certifications. The Company maintains 16 dockets with the USNRC for securing its licenses (see Table A below). This licensing record is a testimony to Holtec's peerless regulatory

expertise. As listed in the Table B below, the Company has garnered a similar licensing record in over a dozen foreign countries' regulatory regimes.

Table A	
List of NRC Dockets for Part 71/72 *Does not include decommissioning docket*	
Docket	System
71-0784	Holtec Quality Assurance Program
71-9375	HI-STAR ATB 1T (Transportation)
71-9261	HI-STAR 100 (Transportation)
71-9325	HI-STAR 180 (Transportation)
71-9367	HI-STAR 180D (Transportation)
71-9381	HI-STAR 180 L (Transportation)
71-9373	HI-STAR 190 (Transportation)
71-9336	HI-STAR 60 (Transportation)
71-9374	HI-STAR 80 (Transportation)
71-9378	HI-STAR 100MB (Transportation)
71-9397	HI-STAR 330 (Transportation)
72-1008	HI-STAR 100 (Storage)
72-1014	HI-STORM 100 (Storage)
72-1032	HI-STORM FW (Storage)
72-1040	HI-STORM UMAX (Storage)
72-1051	HI-STORE Consolidated Interim Storage

Table B	
List of All Regulators Holtec Works With	
Country	Regulator
USA	US NRC
Spain	CSN
Brazil	CNEN
Slovenia	SNSA
United Kingdom	ONR
Ukraine	SNRCU
Switzerland	ENSI
China	NNSA
Korea	KINS
Belgium	FANC/BEL-V
Sweden	SSM
South Africa	NNR
Mexico	CNSNS

11. An unblemished record of nuclear quality assurance:

Holtec's nuclear quality assurance, approved by the US NRC and in continuous service since 1986, has undergirded the Company's design, manufacturing and supply of thousands of pieces of capital hardware delivered to the company's global customers. In this long record of supply of nuclear grade equipment and systems, there has been not a single instance a defective or non-compliant delivery subject to 10CFR21. It is fair to assert that no nuclear reactor supplier has even a fraction of range and depth of Holtec's track record of QA compliance.

12. Strong balance sheet:

Unique among reactor developers, Holtec has had no debt on its balance sheet except for stockholder equity. The company has posted a profit in every fiscal year since its inception in 1986. A solid balance sheet, of course, begets a strong creditworthiness and easy access to capital markets. The following additional facts help define the company's financial profile:

- No letter-of-credit or performance bond called by any counter party;
- No history of defaulting on any project;
- Built a 300,000 sq. ft. metal manufacturing plant from ground up in Orrville, Ohio, at the cost of 120 million dollars (2007-2009) – self financed;
- Financed the construction of \$312 million technology campus in Camden (2014-2017) that is the nation's most modern without any long-term debt;
- The SMR-160 reactor development program funded entirely from the Company's own profits for 10 years (2011-2021). The USDOE provided the ARDP grant to help accelerate our SMR-160 program in 2021.

13. Industry leader in worker safety:

Over the past four decades, Holtec's manufacturing plants and site services business unit (which is typically deployed at a dozen or more nuclear units at all times), have logged an enviable safety record that is without any serious worker injury or, heaven forbid, any fatality. The Company ISO-45001 program and implementing procedures are credited with underpinning the excellent year-on-year safety performance exhibited by its operating divisions that are continuously involved in exacting activities such as heavy load handling, welding, rolling, braking and machining operations.

14. Industry-leading cybersecurity program:

Holtec's state-of-the-art cybersecurity program, critical to our services to the DOE and DOD, has protected the Company's multi-nation operations from breach despite a continuous onslaught on our digital infrastructure by malevolent state and non-state actors, mostly overseas based.

15. Industry leader in Social and Environmental justice:

The most enduring evidence of Holtec's unflagging commitment to social and environmental justice is the Company's 52-acre 312-million-dollar technology campus built on heavily contaminated land in 2017 in Camden, NJ, which is one of America's poorest cities. Through a relentless continuous campaign of recruitment and training, Holtec's workforce at the Camden Campus is the most diverse of any major nuclear company in America. A parallel initiative to promote diversity in the supply chain has yielded similar outcomes.

16. Industry’s largest nuclear client base with assured backlog stretching for decades in the future:

Holtec currently serves 138 active nuclear customers on five continents and has numerous contracts that are long-term giving the company a stable customer and revenue base. Such a deep and long-term array of contracts held by Holtec is without parallel in the industry.

17. Industry leading cloud-based operations management:

A highly consequential but little noticed aspect of Holtec’s operations is the industry-leading information management infrastructure that supports all of the company’s business and technical operations entirely on the cloud which enables the Company’s personnel separated by multiple time zones to access and collaborate seamlessly on common tasks. An all-encompassing configuration management software (called HI-DOC) ensures that every byte of information is rigorously controlled on the cloud eliminating the likelihood of bad data from affecting the ongoing work at any location. No other SMR developer is known to possess a functioning information management system of HI-DOC’s reach, caliber and efficacy.

18. Demonstrated corporate passion for delivering clean energy solution to a carbon-menaced world:

Developing an unconditionally safe reactor in the wake of Fukushima in 2011 became the singular goal of Holtec International. Decades of in-depth immersion in the operating nuclear units and contribution to their continued operation in the form of hundreds of capital equipment and systems provided to them, formed the foundation on which the new SMR reactor was conceived and developed. As a result, Holtec ran its SMR-160 program without any federal help for well over ten years setting an industry record for externally unfunded reactor development that has not been matched anywhere in the world. By striving for over a decade without any external help, Holtec has demonstrated its corporate passion for bringing a “walk away safe” reactor to the world to roll back the continuing degradation of our environment. Over half a billion dollars of self-funded R&D to develop SMR-160 will forever stand as a material proof of our commitment to our cause and the purely of our purpose.

19. Industry’s Foremost Innovator:

Primarily focused on nuclear power but also active in solar energy, Holtec is clean energy industry’s foremost innovator. The company has secured over 180 patents on clean energy technologies over the past 25 years which is the largest of any company in the industry.

20. On-time delivery record:

Holtec’s delivery record of technical work products and hardware over the past three decades is without equal in the industry with over 99% on-time deliveries. The company’s delivery performance hardly slipped even during the massive disruption wrought by Covid-19.

21. Deep institutional knowledge of PWR Light Water Reactors:

Holtec is among the small group of companies that have served operating nuclear plants solving operational problems with effective and inexpensive solutions. Holtec’s reverse engineering of discontinued parts and devices has helped many a nuclear plant avert a long outage. The long history of solving operating problems has wized Holtec to avoiding performance frailties when developing systems.

22. Site services and construction-informed designs:

Because a great many of Holtec's projects are turnkey, ensuring that the SSC developed by the company are amenable to efficient site construction, commissioning and follow-on site services is an essential imperative in the design development phase. Developing construction and site services-informed designs is ensured by including the Site Services and Construction organizations inputs through the "red team" reviews organized by the project team. These reviews have yielded handsome dividends in the form of installation-friendly and maintenance-friendly SSCs and have become a differentiating feature of Holtec's project development.

B.4 Holtec's Wholly Owned Nuclear Businesses and Technical Support

1. Advanced Manufacturing Division (AMD)

Holtec Advanced Manufacturing Division (AMD) is the brand-new state-of-the-art manufacturing facility located on the waterfront in Camden, N.J. Holtec has been fully operating since mid-2017 with the number of employees potentially reaching as high as 3,000. The facility features the test loop for Holtec's Small Modular Reactor (SMR-160) and is equipped to handle the production of heavy-duty components, with the capability of transporting from the seaport directly to clients overseas.

- 342,500 square foot Fabrication Area
- Highly Automated and Streamlined Layout
- Manufacturing Capability to 400T (lifting) and 100ft (equipment size)
- Ship large parts via Delaware River
- Highly automated manufacturing processes that will compete worldwide
- New fabrication technologies developed in the U.S. (hybrid laser welding, friction stir welding)
- Six Sigma based quality systems, and lean manufacturing techniques assure highly competitive manufacturing environment
- Co-locating Engineering staff with Manufacturing Facility

AMD will play a major role in this project as the manufacturer of the capital equipment needed to rehab Palisades.

2. Holtec Government Services (HGS)

Holtec Government Services, LLC is a wholly owned subsidiary of Holtec International with its headquarters located in Camden, New Jersey. Holtec Government Services was established in 2012 with the assigned mission to provide services to federal, state and municipal governments in the fields of national defense and carbon-free energy technologies including nuclear, solar, geothermal and wind power.

Like all Holtec subsidiary companies, Holtec Government Services operates under Holtec International's Corporate Quality Assurance, Safety and Corporate Governance programs. In addition to these programs, Holtec Government Services also follows specific procedures developed to ensure that Holtec Government Services complies with the orders and directives of US government entities, such as the US DOE and US DOD.

HGS will be the holder of the Palisades re-start project designated contract

SECTION C: TECHNICAL INFORMATION

The full calculation using eGRID is not available at this time, but in comparison to typical CO2 emission avoidance, it is estimated that continued operation of the Palisades plant would avoid over 3 million tons of carbon emissions per year equating to almost 700,000 cars off the road.

C.1. Attachment C: Greenhouse Gas Emissions Data Worksheet

Since Palisades plant is currently shutdown, the analysis presented below assumes that the plant will operate once again with its net rated output of 805 Mwe and have an eighteen-month operating cycle with an approximate 25 to 30 day refueling period every other year. The net benefit for CO2 mitigation over a three-year period is over 9 million tons of CO2 avoided. Other gaseous pollutants are detailed in the following discussion.

Using the guidance of the EPA eGRID information for the currently available 2020 tables for the state of Michigan, we have calculated the following for avoidance of the various pollutants as shown below. This assumes that the EPA table of values that have a per Megawatt hour basis. This calculation is based on the average benefit which assumes Michigan’s mix of various generating sources and not just relatively clean natural gas.

Avoided Emissions if Palisades is Running					
Pollutant	Year 1	Year 2	Year 3	Three Year Totals	Units
CO2	3,209,873	2,703,051	3,209,873	9,122,797	tons
CH4	281	237	281	799	tons
N2O	39	33	39	111	tons
Annual Nox	1,670	1,406	1,670	4,747	tons
SO2	1,949	1,641	1,949	5,538	tons

Assumed Year 1 at 95% capacity, Year 2 at 80% due to the refuel and Year 3 back to 95% and so on for calculating the total megawatt hrs.

SECTION D: LEGAL AND REGULATORY APPROVAL

D.1 Timelines for Regulatory Approval

Regulatory approval will be needed in 12 months after submission of the LAR to support restart in July 2024.

D.2 Estimate of the Number of Construction/Permanent Jobs

Resurrection of Palisades will increase plant staff by approximately 400 persons from current shutdown levels. Total operating staff is approximately 650 individuals. Additional approximately 500 construction and support jobs will also be required over the two years estimated to prepare for the restart. A number of the jobs will be filled by bargaining unit personnel.

SECTION E: APPLICATION CHECKLIST SUBMISSION

As stated earlier, Palisades shut down operation on May 20, 2022. The ownership transfer to Holtec was completed on June 28, 2022, and this application deadline is July 5, 2022. We have endeavored to provide as complete of an application as possible, however much of the data requested in the application tables which applies to an operating plant is not currently available. The Application Checklist tables from the DOE website for this program were copied into this document to be able to constitute an application with known omissions clearly made visible to the staff. Also, certain specific financial historical information is unavailable and was not provided as part of the ownership transfer process.

The form content of Appendices C, D and E are included at the end of this section.

Holtec International Palisades Resurrection Grant Request to the U.S. Civilian Nuclear Credit Program

General Application Information	File Name
Nuclear Reactor name or designation.	Palisades Nuclear Generating Station
Nuclear Reactor location.	Covert, MI
Organization(s) that own(s) the Nuclear Reactor. If the Nuclear Reactor is owned by multiple organizations, please provide all relevant information including ownership percentages.	Holtec International
NRC License number	DPR-20
Unique Entity Identifier (UEI) number.	
Year Nuclear Reactor was commissioned and the commercial operation date of each unit.	1971
Total number of reactor units located at the Nuclear Reactor site.	One (1)
Total Nuclear Reactor nameplate capacity (MW).	2566 MW thermal
Applicant's Primary Contact Name, Title, Address, Email, and Telephone Number.	<p>Dr. Kris Singh President and CEO</p> <p>Kelly D. Trice President HDI LLC</p>
A copy of the Nuclear Reactor's federal license.	A copy of DPR-20 will be provided at a later date.
A signed copy of the application certification included in Appendix E. (Note: This will be uploaded as the last part of the application process).	Enclosed with this application
Projected to Cease Operations Due to Economic Factors	May 20, 2022
Copies of public filings that satisfy the requirements set out in Section V of the Guidance.	The Palisades reactor has already been shut down on May 20, 2022.
A narrative description specifying how requirements in Section V of the Guidance have been met by the supplied documentation.	The Palisades reactor has already been shut down on May 20, 2022.
Competes in a Competitive Electricity Market	
Most recent completed year's revenue sources and amounts, percentage of total revenue represented by each source, and identification of which sources are derived from competitive electricity markets as described in Section V.2.	\$412,552,188 (2021 Full calendar year; Power Purchase Agreement with prior owner)

<p>Identification and description of what, if any, changes to existing commercial arrangements affecting sources of revenue the Applicant anticipates will occur between the most recent completed year and the conclusion of the Award Period.</p>	<p>The project award is contingent upon applicant negotiating a suitable PPA with MSPC.</p>
<p>Economic Factors</p>	
<p>Narrative description with references to supporting documentation and economic calculations that clearly and in detail identifies the basis for the projection that the Nuclear Reactor is projected to cease operations due to economic reasons as described in Section VII.B.</p>	<p>The Palisades reactor has already been shut down on May 20, 2022.</p>
<p>Historical Annual Costs for Previous Five (5) Years</p>	<p>The financial information requested was held by the previous owner and is not currently available. We will endeavor to acquire this information from the previous owner if requested. Where possible estimated were made using the existing plant staff who ran the facility.</p> <p>Estimated Year 1 (2021) \$119M Estimated Year 2 (2020) \$TBD Estimated Year 3 (2019) \$TBD Estimated Year 4 (2018) \$TBD Estimated Year 5 (2017) \$TBD</p>
<p>(a.) A table of historical annual expenditures and revenues for the Nuclear Reactor for the previous five (5) years, with line items for categories as described in Section VII.B(i)</p>	<p>\$412,552,188 (2021 Full calendar year; Power Purchase Agreement with prior owner) Prior years are expected to be similar, but specific information is not available to new owner at this time.</p>
<p>(b.) Annual electricity generation for the previous five (5) years, in units of MWh, as reported to the EIA on Form 923.</p>	<p>Specific information not available at this time. Plant generating capacity is approximately 810MWh with assumed capacity factor of 85% and 95% depending on outage schedule.</p>
<p>(c.) Number of planned and unplanned outages over the previous five (5) years along with duration of each outage.</p>	<p>Estimated Year 1 (2021): 0 day Planned and 0 day Unplanned Estimated Year 2 (2020) 0 day Planned and 0 day Unplanned Estimated Year 3 (2019) 0 day Planned and 0 day Unplanned</p>

	<p>Estimated Year 4 (2018) 58 day Planned and 1 (3 day), 1 (4 day) Unplanned</p> <p>Estimated Year 5 (2017) 27 day Planned and 0 day Unplanned</p>
<p>(d.) A calculation of historical annual net operating gain or loss over the previous five (5) years in \$/MWh, using the revenue and cost data provided in point (a) and the generation from point (b).</p>	<p>The financial information requested was held by the previous owner and is not currently available. We will endeavor to acquire this information from the previous owner if requested. Where possible estimated were made using the existing plant staff who ran the facility.</p>
<p>Projected Annual Operating Loss Over the Award Period</p>	<p>Under the previous owners PPA, annual revenues were \$412,552,188 in 2021. Under the terms of the same agreement, with an identical capacity factor, a two-year period (with no revenue) to resurrect the plant would generate a loss of double this amount, or approximately \$825M.</p>
<p>Projected annual generation in MWh for the Award Period.</p>	<p>Following resurrection and NRC relicensing, it is assumed that plant will operate in similar manner to that of previous owner.</p>
<p>Projected planned and unplanned outages assumptions.</p>	<p>The plant will effectively be in a 2-year outage as the relicensing and capital improvement processes are undertaken.</p>
<p>Projected annual revenues in total dollars for the Award Period.</p>	<p>Specific details are not available as a new PPA has not been negotiated. Assume that the agreement will be at a minimum, similar to previous PPA, therefore assume a minimum of \$412.5M</p>
<p>Projected annual costs in total dollars for the Award Period.</p>	<p>Following the 2-year period of investment detailed in Section 2, it is assumed that annual cost will be no more than \$119M incurred in 2021 by previous owner</p>
<p>Projected annual going-forward capital costs, depreciated consistent with GAAP.</p>	<p>Information not available at this time</p>
<p>Identification and estimates of the portion of projected costs that are avoidable by retirement.</p>	<p>Not applicable as plant has been shut down</p>
<p>Projected monetized annual operating and market risk in dollars.</p>	<p>Information not available at this time</p>

<p>A detailed narrative explanation, including supporting workbooks and calculations, of how the costs of operational and market risks were calculated for each Award Year of the Award Period.</p>	<p>Information not available at this time</p>
<p>Supporting workbooks and calculations for above narrative.</p>	<p>Information not available at this time</p>
<p>Projected average annual operating loss over the Award Period.</p>	<p>\$825M</p>
<p>Supporting Documentation and Descriptions</p>	
<p>Signed attestation that submitted forecasts are consistent with Applicant’s standard business practices. In the case of a joint Certification Application, attestation should be signed by each of the joint Applicants.</p>	<p>Enclosed with this application.</p>
<p>Copies of any analysis, presentations, or assessments of past or projected financial performance of the Nuclear Reactor from the previous five (5) years.</p>	<p>The financial information requested was held by the previous owner and is not currently available. We will endeavor to acquire this information from the previous owner if requested. Where possible estimated were made using the existing plant staff who ran the facility.</p>
<p>Identification and description of any obligations or commitments the Nuclear Reactor has operated in the past five (5) years and/or currently operates in any relevant RTO/ISO markets.</p>	<p>The financial information requested was held by the previous owner and is not currently available. We will endeavor to acquire this information from the previous owner if requested. Where possible estimated were made using the existing plant staff who ran the facility.</p>
<p>A list of all active and anticipated contracts for capacity, energy, ancillary services, or environmental attributes and/or energy supply by the Nuclear Reactor.</p>	<p>The financial information requested was held by the previous owner and is not currently available. We will endeavor to acquire this information from the previous owner if requested. Where possible estimated were made using the existing plant staff who ran the facility.</p>
<p>Annual average Nuclear Reactor bid price in the annual capacity auctions over the previous five</p>	<p>The financial information requested was held by the previous owner and is not</p>

<p>(5) years in \$/MW, including all capacity auction bids by year and any cost data submitted to the relevant RTO/ISO and relevant RTO/ISO Independent Market Monitor as part of a unit-specific review process.</p>	<p>currently available. We will endeavor to acquire this information from the previous owner if requested. Where possible estimated were made using the existing plant staff who ran the facility.</p>
<p>Supporting cost data for above.</p>	<p>The financial information requested was held by the previous owner and is not currently available. We will endeavor to acquire this information from the previous owner if requested. Where possible estimated were made using the existing plant staff who ran the facility.</p>
<p>A list of all data provided by the Applicant and related to the Nuclear Reactor to the FERC and NRC over the past five (5) years.</p>	<p>Information not available as information would be held by prior owner</p>
<p>A list of all audits performed on the Nuclear Reactor by internal employees, commissioned or performed by any governmental agency in the previous five (5) years.</p>	<p>Information not available as information would be held by prior owner</p>
<p>A statement of all assumptions used in the revenue and cost projections for the Nuclear Reactor, including projected electricity market prices, forward and futures market prices, and a description of any differences.</p>	<p>The financial information requested was held by the previous owner and is not currently available. We will endeavor to acquire this information from the previous owner if requested. Where possible estimated were made using the existing plant staff who ran the facility.</p>
<p>Additional Calculations and Documentation for State-Supported Reactors</p>	<p>Information not available as information would be held by prior owner</p>
<p>A description of and citation to the state statute, regulation, or public contract that describes how payments from state programs would be reduced or replaced entirely if the Nuclear Reactor is allocated Credits.</p>	<p>The financial information requested was held by the previous owner and is not currently available. We will endeavor to acquire this information from the previous owner if requested. Where possible estimated were made using the existing plant staff who ran the facility.</p>

<p>A recalculation of the Nuclear Reactor’s projected average annual operating loss as described above, with the payments from state programs appropriately reduced or removed as defined by the applicable state statute, regulation, or public contract.</p>	<p>This information cannot be calculated at this time</p>
<p>Other Economic Factors Relevant to Reactor Retirement</p>	<p>The plant has already been shutdown</p>
<p>The remaining useful life of the generating Nuclear Reactor.</p>	<p>In 2007 the NRC granted a license extension to the plant operate until 2031.</p>
<p>Supporting financial modeling for above.</p>	
<p>Information on any planned license extension requests for the Nuclear Reactor, including any financial modeling done in association with such planning.</p>	<p>In 2007 the NRC granted a license extension to the plant operate until 2031. New owner assumes that prior owner did not plan to apply to extend license an additional 20 years (until 2051) based upon 2018 decision to shutdown</p>
<p>Estimates of the costs that would be incurred by the Applicant to shut down the Nuclear Reactor, including identifying the portion of those costs that would be funded by the Nuclear Reactor’s nuclear decommissioning trust funds and those that would be funded by the Applicant.</p>	<p>The reactor has already been shut down and funds have been used from the NDT consistent with regulatory requirement which limit spending for decommissioning planning and shutdown to no more that 3%.</p>
<p>Demonstrate the impact on ownership and Applicant’s earnings during each of the next four (4) years, assuming the Nuclear Reactor shuts down. Include any financial impact(s) to the parent organization. A description demonstrating the impact on ownership and Applicant’s earnings during each Award Year during the Award Period, assuming the Nuclear Reactor ceases operations. Include any financial impact(s) to the parent organization.</p>	<p>The reactor has already been shutdown</p>
<p>A description of the current status of the nuclear decommissioning trust fund for the Nuclear Reactor, including any shortfall of decommissioning funds resulting from the Nuclear Reactor’s early retirement.</p>	<p>The current value of the nuclear decommissioning trust fund is approximately \$552M on June 28, 2022, the date of ownership transfer. This amount is deemed sufficient to decommissioning the plant according to Holtec’s published decommissioning plan.</p>

<p>Copies of any decommissioning activity reports filed with the NRC.</p>	<p>Both the prior owner and current owner have filed Post shutdown Decommissioning Activities Reports (PSDAR's) with the NRC. Prior owner filed numerous exemption requests consistent with standard nuclear industry shutdown planning. Copies of these documents are not included with this submission but can be provided at a later date if desired.</p>
<p>Identify and describe all of the Applicant's commitments and obligations to the NRC that would be required in advance of a unit shutdown.</p>	<p>All NRC commitments and requirements have been made by previous owner to shut down the plant.</p>
<p>Indicate the earliest date the Applicant could access decommissioning trust funds in excess of 3 percent for the Nuclear Reactor.</p>	<p>The decommissioning trust can be accessed for amount greater than 3% of the DTF 90 days after permanent cessation of operations which is August 20, 2022. The DTF is currently being used to fund staff since the plant has ceased operations and is now in a decommissioning status.</p>
<p>Indicate the earliest date the Applicant could realistically shut down the Nuclear Reactor per NRC, relevant RTO/ISO, or other commitments and obligations.</p>	<p>Palisades was shutdown permanently on May 20, 2022</p>
<p>Emissions Impact</p>	
<p>Emissions Spreadsheet, Including:</p>	
<p>(a.) A quantitative estimate using EPA's eGRID of total emissions (in tons) of each Air Pollutant in the eGRID subregion where the Nuclear Reactor is located. Three (3) years of annual estimates must be provided for the years 2018–2020 for CO₂, NO_x (annual), NO_x (ozone season), SO₂, CH₄, and N₂O and one (1) year of annual estimates for the year 2018 must be provided for PM_{2.5} as described in Section VII.C.</p>	<p>Specific calculations using eGRID are not available, however, a rough estimate of avoided gaseous pollution using eGRID has been calculated and is shown in a table in section C.1. The table portrays a mitigation of 9 million tons of CO₂ avoided. The other pollutants are addressed as well.</p>
<p>(b.) A quantitative estimate using EPA's eGRID of total emissions (in tons) of each Air Pollutant at the plant level for the Nuclear Reactor.</p>	<p>This estimate not available at this time</p>
<p>(c.) A quantitative estimate using EPA's eGRID of output emission rates (in lb/MWh) for CO₂, NO_x (annual), NO_x (ozone season), SO₂, CH₄, and N₂O for all fuels for the eGRID subregion where the Nuclear Reactor is located for the years 2018, 2019, and 2020.</p>	<p>This estimate not available at this time</p>

<p>(d.) A quantitative estimate using EPA’s eGRID of output emission rates (in lb/MWh) in eGRID for PM2.5 for all fuels for the eGRID subregion where the Nuclear Reactor is located for the year 2018.</p>	<p>This estimate not available at this time</p>
<p>(e.) The Facility ID, Plant State, eGRID subregion, and Total Generation (in MWh) at the plant level for the Nuclear Reactor for the years 2018, 2019, and 2020.</p>	<p>This information not available at this time</p>
<p>(f.) A quantitative estimate of historical annual emissions of each Air Pollutant should the Nuclear Reactor have ceased operation, calculated by multiplying the output emission rates in (c.) or (d.) by total generation in (e.) for the Nuclear Reactor for each year of requested data in (a.) – (e.) for the specific Air Pollutant.</p>	<p>This estimate not available at this time</p>
<p>(g.) A quantitative estimate for each Air Pollutant of future emissions should the Nuclear Reactor cease operation defined as the product of the annual emission rate for each Air Pollutant averaged across three (3) years from (c.) or the 2018 annual emission rate for PM2.5 from (d.) multiplied by annual projected generation for the next four (4) years (i.e., four annual estimates for each Air Pollutant) of the Nuclear Reactor as requested in Section VII.C.</p>	<p>This estimate not available at this time</p>
<p>Replacement Generation</p>	
<p>Provide a narrative, with supporting data if available, discussing which generation assets would be likely to fulfill the capacity and energy requirements currently served by the Nuclear Reactor if the Nuclear Reactor were to shut down. Compare and describe any differences between the expected replacement generation emissions rates with the historical emissions rates reported in 1c above. Include consideration of known or</p>	<p>Prior to the Palisades shutdown, the MPSC approved an integrated resource plan to ensure ongoing electrical generation in the State of Michigan. This plan also included assumption that clean energy projects would be initiated and brought to the grid in the future. As the Palisades shutdown had been factored into this Integrated Plan, resumption of operations would fulfill the plans vision to add additional clean energy to the grid at points in the future.</p>
<p>expected future capacity additions in the relevant eGRID region, Federal and applicable regional, state, and local energy policies, as well as anticipated market trends, which may result in increased clean energy supply, energy efficiency, and electrification. Include assumptions, supporting data, and source information</p>	

Other Supporting Data	
Provide a list of submissions of data and documentation provided by the Applicant and related to the Nuclear Reactor and its surrounding property to state and Federal regulators, including permits, permit violations, enforcement actions, outstanding environmental compliance requirements, and remedial actions planned, ongoing, and completed over the past five (5) years to demonstrate that all standards and requirements are being met. DOE may require additional documentation of the Applicant.	Specific details are not available at this time
Uranium and Fuel Source	
Information and supporting documentation on the known source of the fuel to be used in the Nuclear Reactor during the Award Period.	Specific details are not available at this time.
Supporting documentation for information reported above.	Specific details are not available at this time.
Calculation of percent domestic content for produced uranium, conversion, enrichment, and fabrication as described in Section VII.E.	Specific details are not available at this time.
Calculation of Average Domestic Fuel Content as described in Section VII.E.	Specific details are not available at this time.
Post-Award Period Operations Plan	
A narrative description of the Applicant’s plan to sustain operations in the Post-Award Period (I) without receiving additional Credits; or (II) with the receipt of additional Credits of a lower amount than the Credits allocated during the Award Period. Applicant’s analysis should be consistent with the economic factor calculations submitted in accordance with Section VII.B.	It is assumed that following the investment required to relicense the plant, that the PPA with the MPSC would be sufficient to operate the plant economically without additional credits.
Estimate of revenue in \$/MWh that the Nuclear Reactor must achieve to sustain operations in the Post-Award Period given forecasts of future market conditions in the absence of additional Credits.	Information not available at this time
Any existing policy barriers that prevent the Applicant from making changes to its business model or operations that would otherwise contribute to the Nuclear Reactor’s ability to sustain operations after the Award Period.	Provided the investment is sufficient to complete the operational and capital program, the owner is not aware of any existing policy barriers that would prevent sustained operation post award.

Holtec International Palisades Resurrection Grant Request to the U.S. Civilian Nuclear Credit Program

Workforce and Labor Considerations	
A written narrative describing workforce development and retainment efforts, as well as labor engagement, as described in Section VII.G.	Palisades has existing collective bargaining agreements with the USGOS, Utility Workers of America and the building trades.
A Diversity, Equity, Inclusion, and Accessibility plan with clear milestones that align to the Award Period.	This will be provided if needed at a later date.
Community Engagement and Impact	
A written narrative describing community engagement efforts and impact, as described in Section VII.H.	Palisades maintains contact with the established citizens boards already established in the area and attends or hold meetings quarterly.
Worker and community transition plans to prepare for the eventual closure of the plant.	Palisades is now shut down and the transition has been completed. This proposal contemplates resurrection of the plant to extended 20-year operation at full power.
Credit Redemption Agreement	
Submit annotated red line of Credit Redemption Agreement or include a statement that the Credit Redemption Agreement in the form attached to the Guidance is acceptable to the Applicant.	This will be provided if needed at a later date.
Bid Submission	
A completed copy of the Bid Sheet included in Appendix C.	See following Section F
A signed copy of the bid certification included in Appendix D.	See following Section G
A signed copy of the application certification included in Appendix E.	See following Section H

SECTION F: BID SHEET

General Instructions:

Represent all costs in nominal dollars. Fill out a copy of the tables provided below · For Nuclear Reactors with multiple units being considered at a single site, the Applicant may submit either individual bids for each reactor unit, or one combined bid covering both reactor units. Note that if submitting individual bids for each reactor unit, the auction may result in only some units being allocated credits.

Table 1 in DOE’s Bid Instructions						
Item	Units	Award Year 1	Award Year 2	Award Year 3	Award Year 4	Totals
Desired Credits	Dollars	~\$800M	~\$800M	0	0	
Committed Generation	Megawatt-hours	0	0	~810	~810	
Projected Revenue	Dollars	0	0	> \$412M	> \$412M	
Projected Major Capital Costs	Dollars	\$278	\$510	\$0	\$0	

Table 1 Instructions:

- Desired Credits. Input total desired credits for each award year. These may vary year to year. Sum all four award years to calculate the total.
- Committed Generation. Input total committed generation for each award year. These may vary year to year but cannot exceed the projected future generation as directed to report in the Section VII.B. Sum all four award years to calculate the total.
- Projected Revenue. Copy the annual projected revenue for each Award Year as directed to reported in Section VII.B. This will be used in determining payment adjustment as described in Section XI.
- Projected Major Capital Costs. Copy the sum of the annually projected amounts of capital expenditures depreciated according to GAAP, only for the Enhancements and Sustaining subcategories, reported as directed in Section VII.B(i). This will be used in determining payment adjustment as described in Section XI.

Table 2: Average bid price and estimated operating loss (From DOE's Website)

Item	Units	Value
Average Desired Credit Price	<i>Dollars per Megawatt-hour</i>	The information requested is currently unavailable. This proposal contemplates a grant to resurrect Palisades which is a recently shut down nuclear plant.
Estimated Average Operating Loss	<i>Dollars per Megawatt-hour</i>	The information requested is currently unavailable. This proposal contemplates a grant to resurrect Palisades which is a recently shut down nuclear plant.
Average Domestic Fuel Content	<i>Unitless</i>	Unknown, this information will be available once the fuel is purchased.
Adjustment Factor	<i>Unitless</i>	
Adjusted Bid Credit Price	<i>Dollar per Megawatt-hour</i>	

Instructions:

- Average Desired Credit Price: Calculate by dividing the total Desired Credits by the total Committed Generation reported in Table 1, and round to the nearest hundredths decimal place.
- Estimated Average Operating Loss. Copy the calculated average operating loss as directed to calculate and report in the Section VII.B. This is the Bid Cap and the Average Desired Credit Price cannot exceed this amount.
- Average Domestic Fuel Content. Copy the percentage calculated as directed by Section VII.E, expressed as a decimal fraction rounded to the nearest hundredths decimal place.
- Adjustment Factor. Calculate according to the following formula, with the result rounded to the nearest hundredths decimal place.
- Adjustment Factor = $1 - (\text{Average Domestic Fuel Content} \times 0.05)$
- Adjusted Bid Credit Price. Calculate by multiplying the Average Desired Credit Price by the Adjustment Factor. This metric will be used to rank bids during the auction as described in Section X.

SECTION G: BID CERTIFICATION

(i) (I/We), _____, certify that the amounts submitted on the enclosed bid sheet have been arrived at independently, without, for the purpose of restricting competition, any consultation, communication, or agreement with any other Applicant or competitor relating to (i) those amounts, (ii) the intention to submit a bid sheet, or (iii) the methods or factors used to calculate the amounts submitted; (ii) The amounts submitted in the enclosed bid sheet have not been and will not be knowingly disclosed by the Applicant(s), directly or indirectly, to any other Applicant or competitor before bid opening unless otherwise required by law; and (iii) No attempt has been made or will be made by the Applicant(s) to induce any other entity to submit or not to submit a bid for the purpose of restricting competition. As the authorized representative(s) of the Applicant(s), (I/we) hereby certify, to the best of (our/my) knowledge and belief, the truth and accuracy of these statements and information provided above.

_____ (Signature of Authorized Officer for Applicant Company)

_____ (Name)

_____ (Title)

_____ (Date)

SECTION H: APPLICATION CERTIFICATION

By signing this Certification Application, (I/We), _____ certify the statements contained in the Certification Application and any attachments herein are true, complete, and accurate to the best of (my/our) knowledge. (I/We) further certify that the submitted forecasts are consistent with market analysis, operations cost assessments, risk monetization and analyses, and other standards used in the standard business processes associated with the Nuclear Reactor. (I/We) (am/are) aware that any false, fictitious, or fraudulent statements or claims may subject the signatories of this document to criminal, civil, or administrative penalties per 18 U.S.C. § 1001. As the duly authorized representative(s) of the Applicant(s), (I/we) hereby certify, to the best of (our/my) knowledge and belief, the truth and accuracy of the statements provided above.

_____ (Signature of Authorized Officer for Applicant Company)

_____ (Name)

_____ (Title)

_____ (Date)