

**Record of Categorical Exclusion**  
for  
Nostromo Energy, Inc.'s (Nostromo) Project IceBrick®

**Description of Categorically Excluded Action:**

The US Department of Energy (DOE) Loan Programs Office (LPO) is considering whether to issue a Title XVII Innovative Clean Energy Program loan guarantee to Nostromo Energy, Inc.'s (Nostromo) Project IceBrick® for the procurement, installation, and deployment of IceBrick® systems in commercial buildings to provide cold-thermal energy storage (“CTES”) that can reduce a commercial building’s peak electricity demands by 50 percent or more. In some cases, Nostromo will also procure, install, and deploy solar photovoltaic (PV) systems for use in conjunction with the IceBrick® systems. Nostromo applied for a loan guarantee under LPO’s Title 17 Clean Energy Financing Program established pursuant to Title XVII of the Energy Policy Act of 2005, as amended, which provides for loans to projects that avoid, reduce, utilize, or sequester air pollutants or anthropogenic emissions of greenhouse gases and employ new or significantly improved technologies as compared to commercial technologies in service in the United States.

**Project Description:**

Nostromo’ Project IceBrick® (Project) consists of the procurement, installation, and deployment of up to 200 IceBrick® systems in commercial buildings (office buildings, hotels and resorts, shopping malls, hospitals, data centers, event venues, etc.) in California and potentially other states. Cold energy storage systems reduce power demands for air conditioning, which is the largest, single electricity use of such buildings during peak demand hours. At some locations, solar PV systems will also be procured, installed, and deployed to charge the storage system.

The IceBrick® system is an ice-based, CTES system that can reduce a commercial building’s peak electricity demands by 50 percent or more and is usually located inside customer buildings or on the roofs of customer properties. The IceBrick® systems are compact, high-density energy storage units that require a significantly smaller footprint than typical CTES and are modular and can be easily retrofitted to almost any building’s unused space in any required capacity (i.e., from 0.2 to 10 MWh-equivalent or more). An average system (3,000 refrigeration-ton-hours) will occupy floor space between approximately 700 sq ft (10 IceBrick layers, for a ground-level mount) to 3,500 sq ft (2 IceBrick layers on a rooftop).

The IceBrick® deployments will have a total cold energy storage capacity of 608,000 refrigeration-ton-hours – the electrical-equivalent capacity and output of approximately 170 MW and 450 MWh, respectively. Nostromo will place the systems in qualified host-buildings under an energy storage-as-a-service business model and 20-year offtake agreements with the owners or operators of these buildings.

The system components include the IceBrick® storage cells, charging chiller, insulation, coolant, heat-exchanger, controller and other ancillary equipment, and pipes and general installation components. Materials will be transported to the project site on standard air-ride trucks. The installation process involves the placement and anchoring of the IceBrick® storage cells, piping, insulation, installation of instrumentation (charging chiller, pumps, actuators, meters and sensors) and electrical board and wiring. In some cases, minor structural reinforcement work may be required, creating some noise (coring or drilling in concrete). The systems are typically installed inside or on the building's roof. In some other cases the IceBricks may be placed on the ground adjacent to the building, but no construction or expansion of the building itself is required.

The system does not consume any materials for its operation (only electricity for charging). The operation of the system involves charging the IceBrick® system by freezing water, using off-the-shelf, US marketed ice-making chillers and other equipment. There are typically no environmental permits required; however, building permits are usually needed.

Nostromo anticipates that some of the IceBrick® installations will meet the criteria for adding on-site solar, with output of 500 to 1,500 kW each. The PV output will charge the IceBrick system during solar hours, and the IceBrick® system will dispatch the energy at peak hours. PV arrays will be sized to deliver sufficient power over the day to charge the IceBrick system, without creating incremental facility loads. PV panels will be installed on-site (typically on a rooftop, parking canopies or otherwise previously-disturbed land), subject to local permitting requirements, structural engineering approvals and solar industry best-practices. System hardware will include photovoltaic panels, inverters, direct current (DC) (i.e. module, racking and wiring installation), alternating current (AC) (i.e. inverter, conduit, wiring, meter installation), and monitoring devices. Applicable feasibility reviews and studies (e.g. roof condition and structural load certifications, geotechnical survey, racking and supporting calculation, and/or canopy certifications) are completed during the site selection process (including for the IceBrick® system). All projects will have applicable professional engineer (PE) approvals (e.g., stamped letters, drawings, certifications, calculations), as well as all relevant and applicable local, county, and state approvals prior to installation. Approvals include all ministerial and non-ministerial permits which may require but are not limited to special permits for the modification of existing properties (ex. solar canopy structures and lighting integration on parking garages), addition of fences to enclose electrical equipment (e.g., ground-mounted in previously disturbed or developed areas), modification to existing infrastructure for emergency response (ex. emergency shunt-trips), and measures for stormwater drainage (if needed).

Nostromo will act as the developer and contract commercial solar contractors for turnkey project execution and post-installation maintenance. The system will be financed and owned as part of the Project portfolio. The Project entity will own the solar output and benefits, to be shared with the host-building (customer) under the same service agreement (Energy Storage as-a-Service) as the storage.

All IceBrick® systems are managed centrally, regardless of location, through Nostromo’s central, cloud-based management system, which communicates to an onsite programmable hardware controller in each individual system. The systems’ aggregated storage capacity will enable them to participate in demand-management and wholesale markets, while lowering retail bill costs by reducing peak-time demand. The IceBrick® systems will be operating as one or more Virtual Power Plants, providing capacity to load serving entities and wholesale energy to the market operated by the local balancing authority. The system will also reduce the host buildings’ energy costs by shifting power consumption from peak to off-peak hours, provide operational benefits (such as backup to cooling systems, or free-up capacity for EV charging), and reducing their power-related greenhouse gas (GHG) emissions.

For all the systems deployed (IceBrick® standalone and IceBrick® plus solar), Nostromo creates maintenance plans based on the manufacturer’s recommendations and industry standards. For Nostromo’s proprietary, manufactured components (IceBrick storage cells and control system), Nostromo relies on standards developed based on its internal quality system and records. For off-the-shelf equipment, Nostromo relies on the recommendation of their respective third-party manufacturers. In general, Nostromo will conduct ongoing remote performance monitoring, including abnormalities detection, and on-site preventive maintenance at least once a year.

IceBrick® systems and solar systems are typically installed and deployed in existing commercial buildings. If an IceBrick® system and/or solar system needs to be installed on the ground adjacent to a building, installation will avoid areas that require ground disturbance or vegetation removal (i.e., the installations will utilize areas that are highly disturbed/active areas of the existing commercial space).

**Number and Title of Categorical Exclusion:**

The actions being proposed under this Title XVII loan guarantee for Nostromo’ IceBrick Project are consistent with and are covered by DOE categorical exclusions in 10 Code of Federal Regulations (CFR) 1021, Appendix B (B4.14, B5.1, and B5.16) because the project involves procurement, installation, and deployment of IceBrick® systems and new solar generation systems on existing structures or in previously disturbed areas that have been subject to screening reviews as well as certifications and approvals. The following categorical exclusions pursuant to NEPA apply:

*B4.14 “Construction and operation of electrochemical-battery or flywheel energy storage Systems”*

Construction, operation, upgrade, or decommissioning of an electrochemical-battery or flywheel energy storage system within a previously disturbed or developed area or within a small (as discussed at 10 CFR 1021.410(g)(2)) area contiguous to a previously disturbed or developed area. Covered actions would be in accordance with applicable requirements (such as land use and zoning

requirements) in the proposed project area and the integral elements listed at the start of appendix B of this part, and would incorporate appropriate safety standards (including the current National Fire Protection Association 855, Standard for the Installation of Stationary Energy Storage Systems), design and construction standards, control technologies, and best management practices.

**Note:** The IceBrick® systems can be classified as cold thermal energy storage systems, but not directly as electrochemical or flywheel. However, there are similarities between the flywheel energy storage systems and the cold thermal energy storage systems because both store energy in non-electrochemical formats, both involve physical processes to store energy, both have lower environmental impacts as they involve common materials like water, simple composites, and metal housing, both have simpler end-of-life disposal with low environmental impacts (compared to electrochemical-battery), and both have low operational waste and minimal emissions during operations.

B5.1 “*Actions to conserve energy or water*”

(a) Actions to conserve energy or water, demonstrate potential energy or water conservation, and promote energy efficiency that would not have the potential to cause significant changes in the indoor or outdoor concentrations of potentially harmful substances. These actions may involve financial and technical assistance to individuals (such as builders, owners, consultants, manufacturers, and designers), organizations (such as utilities), and governments (such as state, local, and tribal). Covered actions include, but are not limited to weatherization (such as insulation and replacing windows and doors); programmed lowering of thermostat settings; placement of timers on hot water heaters; installation or replacement of energy efficient lighting, low-flow plumbing fixtures (such as faucets, toilets, and showerheads), heating, ventilation, and air conditioning systems, and appliances; installation of drip-irrigation systems; improvements in generator efficiency and appliance efficiency ratings; efficiency improvements for vehicles and transportation (such as fleet changeout); transportation management systems (such as traffic signal control systems, car navigation, speed cameras, and automatic plate number recognition); development of energy-efficient manufacturing, industrial, or building practices; and small-scale energy efficiency and conservation research and development and small-scale pilot projects. Covered actions include building renovations or new structures, provided that they occur in a previously disturbed or developed area. Covered actions could involve commercial, residential, agricultural, academic, institutional, or industrial sectors. Covered actions do not include rulemakings, standard-settings, or proposed DOE legislation, except for those actions listed in B5.1(b) of this appendix.

B5.16 “*Solar photovoltaic systems*”

(a) The installation, modification, operation, or decommissioning of commercially available solar photovoltaic systems:

(1) located on a building or other structure (such as rooftop, parking lot or facility, or mounted to signage, lighting, gates, or fences); or

(2) located within a previously disturbed or developed area  
(b) Covered actions would be in accordance with applicable requirements (such as land use and zoning requirements) in the proposed project area and the integral elements listed at the start of appendix B of this part, and would incorporate appropriate control technologies and best management practices.

*10 CFR 1021.410 Application of categorical exclusions (classes of actions that normally do not require EAs or EISs).*

(g) The following clarifications are provided to assist in the appropriate application of categorical exclusions that employ the terms or phrases: (1) “Previously disturbed or developed” refers to land that has been changed such that its functioning ecological processes have been and remain altered by human activity. The phrase encompasses areas that have been transformed from natural cover to nonnative species or a managed state, including, but not limited to, utility and electric power transmission corridors and rights-of-way, and other areas where active utilities and currently used roads are readily available.

**Regulatory Requirements defined in 10 CFR § 1021.410 (b):**

The proposed loan guarantee and related actions described above were subjected to an environmental due diligence review by DOE LPO staff to ensure they are consistent with the specific category of actions (categorical exclusion) contained in Appendix B of 10 CFR Part 1021 and the conditions for applying categorical exclusions specified in Section 410 of Part 1021. To ensure that the requirements of Appendix B were met, LPO Environmental Compliance staff reviewed numerous project-related documents obtained between June 2023 and June 2024 and participated in several conference calls with Nostromo staff to ensure a complete understanding of the activities associated with the project.


The environmental due diligence review determined that there is no controversy regarding the potential environmental impacts of the proposed Nostromo project, and that the actions associated with the loan guarantee would not adversely affect any physical, biological, or socio-cultural resources at the facility or surrounding environment.

The Comment section below is provided for any necessary clarifications concerning the findings listed above. Signature by Nostromo’s designated representative in the Corporate Validation section is an indication of Nostromo’s concurrence with the findings and determinations presented above.

**Comment:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Corporate Validation:**

Name and Title (Print): Yoram Ashery, CEO

Signature:  Date: August 1, 2024

**Determination:**

Based on my review of information conveyed to me and in my possession concerning the actions associated with the proposed Title XVII loan guarantee described above, as NEPA Compliance Officer (as prescribed by DOE Policy Directive 451.1), I have determined that the actions involve no extraordinary circumstances and fit within the specified category of actions in Appendix B of 10 CFR 1021 described above, and are hereby categorically excluded from further review under the National Environmental Policy Act (42 USC 4321, as amended).

\_\_\_\_\_  
Signature and Date

Anna Eskridge, Ph.D.  
NEPA Compliance Officer  
Loan Programs Office