UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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In re:

License Renewal Application Submitted by

Entergy Nuclear Indian Point 2, LLC,
Entergy Nuclear Indian Point 3, LLC, and
Entergy Nuclear Operations, Inc.

Docket Nos. 50-247-LR, 50-286-LR

ASLBP No. 07-858-03-LR-BD01

DPR-26, DPR-64

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DECLARATION OF PETER A. BRADFORD

Peter A. Bradford, hereby declares under penalty of perjury that the following is true and correct:

1. My name is Peter Amory Bradford. I live in Peru, Vermont. My resume is attached to this declaration.

2. I am President of Bradford Brook Associates, a firm advising on utility regulation and energy policy. I teach a course entitled "Nuclear Power and Public Policy" at Vermont Law School. I have been a member of the Keystone Center "Nuclear Power Joint Fact Finding" (June, 2007) and the National Research Council of the National Academy of Sciences' Committee on "Alternatives to the Indian Point Energy Center for Meeting New York Electric Power Needs" (June, 2006). I was also a member of the International Expert Panel advising the European Bank for Reconstruction and Development assessing the economic case for completing Khmelnitsky 2 and Rovno 4 (K2/R4) – two partly built, Russian designed 1,000 MW VVER nuclear units in Ukraine – to replace the two operational 1,000 MW units at Chernobyl (February, 1997).

3. I have chaired the New York Public Service Commission (1987-95). In that capacity, I was an *ex officio* member of the New York State Energy Planning Board.

4. I served on the Maine Public Utilities Commission (1971-1977 and 1982-87) and was Chairman in 1974-1975 as well as 1982-87.

5. I served as a member of the U.S. Nuclear Regulatory Commission (1977-82).

6. The Nuclear Regulatory Commission's approach to assessing alternatives to the construction and operation of nuclear power plants has been deficient since the agency was created in 1975. In particular, the NRC has been ineffective in assessing the role that energy efficiency can play (and has played) in displacing nuclear power plants.

7. Nearly half of all of the more than 200 plants licensed for construction by the NRC in its history have been cancelled, often after expenditures of millions and sometimes billions of dollars. Many others were delayed long past their scheduled completion dates, dates by which the NRC (or its predecessor, the Atomic Energy Commission) found that they would be needed to meet demand for electricity. Another dozen plants have been prematurely closed, some on short notice. In most cases, the licensee cited absence of need as a primary reason for the cancellation or deferral. In very few cases was a central generating facility of equivalent capacity constructed to replace the cancelled capacity. No significant power shortage has resulted from these cancellations, deferrals, or closings.

8. A study done for me when I was an NRC Commissioner in 1979 concluded, *inter alia:*

> The Commission has consistently failed to perform full cost-benefit analyses for reasonable alternatives as required by NEPA. Alternatives other than coal are routinely dismissed with boilerplate language in environmental impact statements. Commission estimates always favor nuclear over coal and a NFP (need for power) determination is always made affirmatively. NRC environmental statements display a clear bias in favor central station facilities, and a mix of potentially more cost-effective (and environmentally benign) technologies is never adequately assessed.

Gerald Warburg, "A Study of NRC Procedures for Assessing Need for Power and Alternative Energy Sources in Fulfillment of the NEPA Requirements for Environmental Impact Statements" (1979).

9. The Environmental Report in this proceeding reflects the flaws in the NRC's historic approach to assessing alternatives to the operation of a nuclear plant. In so doing, the applicant seems to be relying on the NRC to accept its flawed analysis despite the NRC's own GEIS requirements to analyze combinations of efficiency and renewables. Not only does the applicant confine the alternatives

analysis to central generating facilities but – by assuming the operation of the two Indian Point units – it assumes away the urgency that has demonstrably been the most effective spur to large scale energy efficiency programs. See Entergy Environmental Report, § 7.0 to 7.5, pp7-1 to 7-5.

10. The National Academy of Sciences panel on alternatives to the continued operation of one or both Indian Point units – while taking no position as to whether Indian Point should continue to operate – concluded:

> A wide and varied range of replacement options exists, and *if a decision were definitely made to close all or some part of Indian Point by a date certain,* the committee anticipates that a technically feasible replacement strategy for Indian Point would be achievable .... [F]rom the committee's analysis, no "right" or clearly preferable supply alternative to Indian Point emerged. A replacement strategy for Indian Point would most likely consist of a portfolio of the approaches discussed in this report, including investments in energy efficiency, transmission, and new generation.

"Alternatives to the Indian Point Energy Center for Meeting New York Electric Power Needs," the National Research Council, June, 2006, p. 3 (emphasis added).

11. The recent history of the electric power industry in the United States demonstrates beyond dispute the ability of a large power system such as New York effectively to create portfolios of replacement energy resources once a decision has clearly been made to close a particular unit or once unexpected circumstances produce the same result. Consider the following examples:

A. The 820MW Shoreham nuclear power plant on Long Island was – until 1988 – included in the Long Island Lighting Company's plans for meeting its load from mid-1989 onward. Late in 1988, LILCO and the State of New York agreed that the plant should not operate, and the settlement was affirmed by state regulators and the utility's board of directors by June 1989.

   Like the downstate New York region today, Long Island's ability to import power faced substantial transmission constraints. Shoreham's percentage of the LILCO system peak was greater than that of the two Indian Point units in the Lower Hudson River Valley, New York City and Long Island. Many in the electric industry, in the federal government, and in the media forecast serious power shortages on

Long Island in the years following the agreement not to operate the plant.

Once the question of Shoreham's future was clear, LILCO and the State moved rapidly to put together a replacement power program consisting of demand side management, load management, targeted maintenance to assure high availability of other plants at peak times, transmission upgrades, peaking units, and independent power production, some of it renewable.

Though LILCO operated below its reserve requirement for two or three summers after the Shoreham settlement, power supply was at all times adequate.

Through load management programs alone, LILCO gained control of 130MW of its potential load before the 1989 summer peak.

B. In 1986, the State of Maine and its utilities reached an agreement to end Maine's involvement in the Seabrook nuclear power plant. At the time of this agreement, Seabrook was expected online within two years, which would have meant about 110 megawatts for the three Maine companies. In the years preceding the agreement, Maine had pioneered in the use of competitive bidding for new power resources and had come to realize that the amount of renewable resources – specifically biomass – to be had was far greater than had been forecast in the early 1980s.

The Seabrook power was replaced almost entirely by biomass energy from Maine's forests, with substantial economic advantages to Maine electric customers, taxpayers, wood owners, and workers. These biomass plants would not have been built had Maine remained in Seabrook. They were built to meet the market opportunity created by Maine's decision to get out of Seabrook. A subsequent study showed substantial economic benefit to Maine from the decision to disengage from Seabrook.[1]

C. In June 1989, the voters of Sacramento, California voted to close the Rancho Seco nuclear power plant, which supplied 913 of the Sacramento Municipal Utility District' s (SMUD) 2,100 MW load. Using purchased power to bridge the gap, SMUD embarked on a

[1] "Energy Choices Revisited: An Examination of the Costs and Benefits of Maine's Energy Policy", a study for Mainewatch Institute by Economic Research Associates, the American Council for an Energy Efficient Economy and the Tellus Institute, 1994.

program of extensive energy efficiency coupled with cogeneration, renewable energy and purchased power. In hindsight, this program – which clearly would not have happened had the nuclear plant remained in operation – has worked out to the advantage of the Sacramento community.[2]

D. Between mid-2000 and mid-2001, the state of California was repeatedly threatened with power shortages and did indeed experience blackouts. However, by the summer of 2001, load management and demand side management programs of various sorts had produced several thousand megawatts in savings above and beyond what had been expected from the California efficiency programs that had been in place a year earlier.[3] These rapidly assembled efficiency resources, many of which remain in place, were largely responsible for bringing the California energy crisis to an end and for keeping the lights on until power purchases, new power plant construction and an end to market manipulation restored the state to a more lasting equilibrium.

12. In each of the foregoing cases, the amount of energy efficiency and other resources put into place vastly exceeded the forecasted availability of a few years earlier. It is the realization that generating capacity will not be available that creates the climate in which alternative resources will be developed and put into place. For sound economic and political reasons, the planning and investment necessary to add large blocks of replacement energy efficiency, purchased power, transmission or new generation to a system will not occur without a clear indication that the investments are needed and have a reasonable likelihood of earning a competitive return.

13. Any claim that a decision to extend the license of the two Indian Point units is merely a decision to keep the Indian Point option and need therefore not be regarded as an either/or decision between the nuclear plants and a decision to

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[2] SMUD's history states, "To replace nuclear power, the SMUD Board moved away from the concept of a large central plant toward diverse power sources, such as cogeneration plants, wind power, low-cost purchased power from the Pacific Northwest and Canada, and research and development of renewable resources and advanced technologies like solar, fuel cells, gas turbines and biomass." SMUD's history: 1990s: Moving Into Leadership on Green Energy, Conservation, *available at* http://www.smud.org/about/history-1990s.html (last visited Nov. 27, 2007).

[3] "In the summer of 2001, California's energy efficiency programs and energy conservation–related efforts saved between 3,200 and 5,600 MW and reduced peak demand by an average of 8 percent, which helped the state avert 50 to 160 hours of rolling black outs." Goldman, C., J. Eto, and G. Barbose, "California customer load reductions during the electricity crisis: did they help to keep the lights on?" LBNL-49733. (2002) (available at http://eetd.lbl.gov/ea/EMS/reports/49733.pdf), cited in "Energy Efficiency: California's Highest Priority Resource", California Public Utilities Commission and California Energy Commission, June 2006, at 4).

replace them with other resources ignores the realities of power supply planning and procurement. In order to comply with its NEPA obligations the NRC needs an analysis that reveals whether other options are environmentally preferable to extending the Indian Point license. The agency and the licensee cannot discharge this responsibility just by putting the Indian Point units forth as options and trusting to other jurisdictions that the optimal course will be chosen. As the above examples show, it is the realization that the expected generation source will not be available or ought not to be used that brings about the conditions under which the demand side management and renewable alternatives are able to replace them. Only an analysis fully consistent with power supply procurement realities – including the abundance of available energy efficiency and the conditions necessary to bring it into being – will enable the NRC to assess the environmental impacts of its decision on relicensing the Indian Point units.

14. Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Dated: November 28, 2007
Peru, Vermont

Peter A. Bradford