From Manhattan Project to Nuclear Free

New York City's Policy and Practice on Nuclear Weapons

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Cover photo:

World's first nuclear submarine, USS *Nautilus* (SSN-571), in New York Harbor, 1958. Photo: US Navy.

Executive Summary

New York City is a Nuclear Weapons Free Zone (NWFZ), both as a normative stance and in fact; all nuclear weapons bases within its territory have been decommissioned and the Navy reportedly avoids bringing nuclear-armed and/or -powered ships into the Harbor. This is an impressive achievement, given the City's role as a key node in the Manhattan Project, as a former base for nuclear missiles and as a nuclear-capable Navy homeport. In 1983, the City Council passed a resolution establishing the City as a Nuclear Weapons Free Zone and prohibiting nuclear weapons from the City's territory. This background paper provides a historical overview of the development of New York City's NWFZ and other relevant policy protecting New Yorkers from the humanitarian and environmental consequences of ionizing radiation. It outlines practical efforts taken, including the removal and barring of nuclear weapons from the City limits and remediation of contaminated legacy sites. This is followed by consideration of several challenges facing the NWFZ, including the continued investment of the City's pension funds in nuclear weapons production, low public awareness of the NWFZ and the Trump administration's unravelling of constraints on nuclear weapons. Emerging humanitarian, human rights and environmental norms on nuclear weapons offer potential models to reaffirm and revitalize the City's nuclear-free status, notably the Treaty on the Prohibition of Nuclear Weapons (TPNW), adopted by 122 governments at the United Nations in New York in 2017. Pending New York City Council legislation (Res. 976[2019] and Int. 1621[2019]) addresses policy challenges facing the NWFZ by drawing on emerging global norms, including the TPNW.

Photo by Ari Beser

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Introduction

New York City, the US's most populous city, is a Nuclear Weapons Free Zone (NWFZ), both as a normative stance and in fact; all nuclear weapons bases within its territory have been decommissioned and the Navy reportedly avoids bringing nuclear-armed and/or -powered ships into the Harbor. This is an impressive achievement, given that New York City started the nuclear age as a key node in the Manhattan Project, which developed the atomic bombs dropped on Hiroshima and Nagasaki, killing 200,000 people in 1945.[1] The early bomb development was supervised by the US Army Manhattan Engineer District, drawing on a research program located at Columbia University and with the participation of private companies at 30 sites throughout the City.[2] At the beginning of the Cold War, the Federal government imposed on New Yorkers mandatory civil defense drills.[3] Policies of "deconcentration" of the City – through suburbanization and the development of expressways – were framed as enabling a more rapid evacuation (and lowering potential casualties) if New York came under nuclear attack.[4] Starting in 1954, nuclear missiles were stationed at 19 sites in and around the City.[5] Perhaps as a result, "nuclear New York" has become a trope, often the site of imagined nuclear attacks in pop culture.[6]

New Yorkers pushed back against the nuclearization of their City. Civil defense drills were unpopular, with activists like Dorothy Day asserting that they merely served as propaganda, getting people used to the idea of nuclear war. The only way to survive the nuclear age, they argued, was abolishing and eliminating nuclear weapons. Major nuclear disarmament marches in the 1970s led to one of the nation's largest ever demonstrations in New York City in 1982.[7] The following year, the City Council passed a resolution establishing New York as a Nuclear Weapons Free Zone (see Annex 2), prohibiting nuclear weapons in the City's territory. As a result of the 1972 Anti-Ballistic Missile Treaty, nuclear missiles were removed from the City in 1974; a Staten Island nuclear-capable Navy base was shuttered in 1994; nuclear weapons were removed from Naval Weapons Station Earle, New Jersey (with piers at the mouth of the Harbor) by 1997.

New York City's emerging framework of public policy and practice on nuclear weapons, developing from the interaction of local, national and international efforts:

1. Frames nuclear weapons as a catastrophic humanitarian and environmental risk to the people of New York City, and a diversion of public resources from health, education and economic development,
2. Asserts a categorical normative prohibition of "the production, transport, storage, placement or deployment of nuclear weapons within the territorial limits of the City",
3. Addresses the humanitarian and environmental legacies of early nuclear weapons development,

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[1] Leslie R. Groves et al. (1946/2008) "The Atomic Bombings of Hiroshima and Nagasaki: Chapter 10 - Total Casualties." *The Atomic Bombings of Hiroshima and Nagasaki*. Retrieved from avalon.law.yale.edu/20th_century/mp10.asp
[2] Atomic Heritage Foundation. (2019) "Manhattan, NY." Retrieved from atomicheritage.org/location/manhattan-ny
[3] Elizabeth Walker Mechling & Jay Mechling. (1991) "The campaign for civil defense and the struggle to naturalize the bomb." *Western Journal of Speech and Communication*. 55(2). pp. 105-133.
[4] K. Tobin. (2002) "The Reduction of Urban Vulnerability: Revisiting 1950s American Suburbanization as Civil Defence." *Cold War History*. 2(2). pp. 1-32; Michael Quinn Dudley. (2001) "Sprawl As Strategy: City Planners Face the Bomb." *Journal of Planning Education and Research*. 21. pp. 52-63.
[5] Joseph Berger. (2009) "Shadow Cast by Region's Atomic Past." *The New York Times*. Retrieved from nytimes.com/2009/08/02/nyregion/02nuke.html
[6] Robert Jacobs & Mick Broderick. (2012). Nuke York, New York: Nuclear Holocaust in the American Imagination from Hiroshima to 9/11. *The Asia-Pacific Journal*. Retrieved from apjjf.org/2012/10/11/Robert-Jacobs/3726/article.html
[7] Andy Lanset. (2015) "WNYC Covers the Great Anti-Nuclear March and Rally at Central Park, June 12, 1982." *WNYC*. bit.ly/2V2lmxA

4. Seeks to protect New Yorkers from the negative health effects of ionizing radiation, by: regulating radioactive materials; policing the threat of nuclear and radiological terrorism; and advocating for closure of the nearby Indian Point nuclear power plants, and
5. Advocates for nuclear disarmament measures at the national and international levels.

FIGURE 1: NYCAN activists demonstrating in support of nuclear divestment for New York City.

This background paper provides a historical overview of the development of New York City's NWFZ and other relevant local, national and global policy protecting New Yorkers from the humanitarian and environmental consequences of ionizing radiation. It outlines practical efforts taken, including the removal and barring of nuclear weapons from the City limits and remediation of contaminated legacy sites. This is followed by consideration of several challenges facing the NWFZ. The NWFZ is currently a normative framework, not law, which limits the City's scope of action on nuclear weapons. The City's pension funds continue to invest in companies involved in nuclear weapons production and maintenance. Education and awareness about nuclear weapons and the NWFZ are low. Activists say environmental remediation of contaminated sites is moving too slowly. Emerging humanitarian, human rights and environmental norms on nuclear weapons offer potential models to reaffirm and revitalize the City's nuclear-free status, notably the Treaty on the Prohibition of Nuclear Weapons (TPNW), adopted by 122 governments at the United Nations in New York in 2017. Pending New York City Council legislation (Res. 976[2019] and Int. 1621[2019]) addresses policy challenges facing the NWFZ and draws on emerging global norms, including the TPNW (See Annexes 3 and 4). Annexed at the end of this document are tables of relevant data, as well as a list of all resolutions on nuclear weapons adopted by New York City Council.

New York City's Nuclear Weapons Free Zone

The most comprehensive expression of New York City's policy on nuclear weapons is Resolution (364), adopted April 26, 1983, which "prohibits the production, transport, storage, placement or deployment of nuclear weapons within the territorial limits of the City of New York, and proclaims and designates the City of New York a Nuclear Weapons Free Zone." The preamble asserted that the "profundity" of the threat posed by "instruments of the most horrible death…demands the attention of every citizen of every country and every legislative body on every level of government on the planet…." It also cites as inspiration the establishment of the Latin America NFWZ, the first such Zone covering populated areas.[9] The year before, the Council decided to "refuse all federal funds for civil defense preparations for nuclear war."[10] For full text of the resolution, see Annex 2.

In other relevant legislation, the Council has recognized that reducing the risks to New Yorkers of the catastrophic humanitarian consequences of nuclear weapons cannot only be addressed at the local level. Several Council resolutions call on national and international leaders to pursue nuclear arms control, non-proliferation and disarmament measures (Res. 648 (1963), Res. 512 (1979), 1840 and 1907 (1982), Res. 549(2002); see Annex 1 for listing of all relevant resolutions adopted by the City Council). For example, a 1963 City Council resolution (648) called for "speedy Senate ratification" of the Partial Nuclear Test-Ban Treaty, saying that "Discontinuance of testing in the atmosphere will avoid adding radioactive debris to that presently being deposited in larger amounts than ever before upon the nation and the world." In 2002, the Council urged the US government to work through the UN Security Council – rather than take preemptive military action – "to ensure that Iraq does not possess biological, chemical or nuclear weapons and toward promoting human rights for all the people of Iraq" (Res. 549).

The Council has also expressed concern about the opportunity costs of the nuclear arsenal. In Resolution 512(1979), the Council stated that nuclear disarmament "could not only bring tax relief, but also release the billions of dollars now used for monstrous weapons to feed, house and educate our children" (similar language is in Resolution 1840 adopted in 1982). Council Members had raised alarm at this misdirection of resources for many years. The first record of the Council considering nuclear issues is a 1956 draft Resolution (778) criticizing the "inefficiency and waste, and lack of planning and foresight" in the City's Office of Civil Defense. Calling for a "special committee to investigate" concerns about civil defense, the resolution was considered by the Committee on Rules, Privileges and Elections, though not adopted by the full Council.[11] Similarly, responding to concerns about Nike missiles in and around the City, in 1970 the Council considered a resolution (130) in the Committee on General Welfare, which would have called on the US Congress to "refrain from appropriating any further monies for the anti-ballistic missile program." The draft resolution asserted that nuclear missiles "siphon off massive amounts" of public resources that "could be committed to domestic programs."

[9] All New York City Council Resolutions cited in this paper are available from: disarmament.blogs.pace.edu/nyc- nuclear-archive/new-york-city-council-resolutions-on-nuclear-weapons. Many thanks to Anthony Donovan for his archival research identifying, collecting and photographing New York City's Resolutions on nuclear issues, and for calling the author's attention to them.
[10] Stephanie Levin. (1992) "Grassroots Voices: Local Action and National Military Policy." *Buffalo Law Review*. 40(2). p. 326, ftn. 21.
[11] New York City Council resolutions on nuclear weapons and nuclear power, both those adopted and those considered by committee, available from: disarmament.blogs.pace.edu/nyc-nuclear-archive/new-york-city-council-resolutions-on-nuclear-weapons/

Removal of Nuclear Weapons from the City, Harbor and Surroundings

Starting in 1954, New York City was ringed by an archipelago of nuclear missile bases called the New York Defense Area, eventually armed with 180 warheads (see Annex 5). Two were within the City limits: NY-15 at Hart Island (close to City Island and Pelham Bay Park) and Fort Tilden in Rockaway, Queens. The Hart Island base was short-lived, deactivated in 1957. It is now a potter's field for the New York City Department of Corrections. However, Nike Ajax missiles were based at Fort Tilden in the 1950s, replaced in 1959 by Nike Hercules anti-ballistic missiles (see Figure 2), with warheads of 3, 20 or 30 kilotons (the yield of the Hiroshima bomb was 15 kilotons), right next to the public beaches at Jacob Riis Park. The missile bases were controlled by command center at Fort Wadsworth in Staten Island, and three other sites outside the City. The risks involved were illustrated by a Bomarc missile fire at McGuire Air Force Base, Burlington County, New Jersey, in 1960, contaminating the base with 11 ounces of plutonium; remediation was not completed until 2004. Nuclear missiles were removed from New York City following the negotiation of the 1972 SALT and Anti-Ballistic Missile treaties during the détente between the USA and Soviet Union. Three of the bases related to the Nike missile program – Fort Tilden, Fort Wadsworth and Fort Hancock (at nearby Sandy Hook, New Jersey) – have been incorporated into the Gateway National Recreation Area, a ring of sea-side parks and reserves around the mouth of the Harbor.[12] As an indication of how this has reduced risks to New Yorkers, in November 2001, American Airlines Flight 587 en route from nearby John F. Kennedy airport to Santo Domingo, Dominican Republic, crashed in Belle Harbor, Rockaway, just 2.5 miles from the former Fort Tilden missile launch site.[13] Other nearby commercial aircraft accidents occurred while the missiles may have been on site, including American Airlines 1, which crashed into Jamaica Bay in March 1962.[14] The former Nike sites at both Fort Tilden and Fort Hancock were also severely hit by Hurricane Sandy in 2012.[15]

The US Navy's first nuclear submarine, the USS *Nautilus*, visited the New York Harbor for four hours on May 13, 1956, during Armed Forces Week.[16] Three weeks earlier, the submarine had become "snared in the nets of a fishing vessel off the New Jersey coast, southeast of New York" and "nearly drag[ged] the vessel under water."[17] The *Nautilus* returned in August 1958, following its landmark voyage as the first ship to traverse the North Pole (see Figure 1).[18] In the first docking of a nuclear-powered ship in New York, the *Nautilus* was "saluted … by a noisy fleet of tugboats and fireboats"; some 20,000 people visited the Brooklyn Navy Yard to catch a glimpse of it and 250,000 people lined the route of the ticker tape parade given in the crew's honor. However, coverage in *The*

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[12] Joseph Berger. (2009) "Shadow Cast by Region's Atomic Past." *The New York Times*. Retrieved from nytimes.com/2009/08/02/nyregion/02nuke.html; National Park Service. (2015) "Nike Missiles." Retrieved from nps.gov/gate/learn/historyculture/nike-missile.htm; National Park Service. (2015) "The Cold War at Fort Tilden." Retrieved from nps.gov/gate/learn/historyculture/coldwartilden.htm; National Park Service. (2015) "The Cold War at Fort Hancock." Retrieved from nps.gov/gate/learn/historyculture/coldwarhancock.htm; Donald E. Bender. (n.d.) "Brief History of Hart Island Nike Missile Site – The Cold War in LI Sound." correctionhistory.org/html/chronicl/hart/nike/hartnike.htm

[13] National Transportation Safety Board. (2004) "Aircraft Accident Report: In-Flight Separation of Vertical Stabilizer American Airlines Flight 587 Airbus Industrie A300-605R, N14053 Belle Harbor, New York: November 12, 2001." Retrieved from ntsb.gov/investigations/AccidentReports/Reports/AAR0404.pdf

[14] Gerald Kessler & Henry Lee. (1962) "American Airlines Flight 1 Crash: 95 die after a jet plummets into Jamaica Bay in 1962." *The Daily News*. Retrieved from nydailynews.com/new-york/queens/95-die-jet-plummets-jamaica-bay-1962-article-1.2543534

[15] National Park Service. (2015) "Gateway recovers from Hurricane Sandy." Retrieved from nps.gov/gate/learn/news/sandy-recovery.htm

[16] Milton Bracker. (1956) "Nautilus Sails in on First Trip Here: Nuclear Submarine Receives Throaty Harbor Greeting in Her 4 Hour Visit." *The New York Times*. 14 May. p. 1.

[17] William M. Arkin and Joshua Handler. (1989) "Naval Accidents 1945 – 1988." Neptune Paper No. 3. p. 22. Retrieved from fas.org/wp-content/uploads/2014/05/NavalAccidents1945-1988.pdf

[18] Norman Polmar & Kenneth J. Moore. (2014) *Cold War Submarines: The Design and Construction of U.S. and Soviet Submarines*. Washington DC, Potomac Books.

New York Times hinted at simultaneous anxieties, reporting that the Danish government decided to "bar the atomic submarine Skate from the port of Copenhagen."[19] Three months earlier, the *Nautilus* had been forced to surface following a fire on board; there were many such alarming accidents over the submarine's life at sea.[20]

The only other nuclear-powered ship reported to have entered the New York Harbor was the merchant ship NS *Savannah*, "a boldly-styled passenger/cargo vessel powered by a nuclear reactor,"[21] which first visited in 1964, at the beginning of its "maiden transatlantic voyage" carrying both passengers and cargo.[22] Four years earlier, at hearings hosted by the Atomic Energy Commission (AEC), a representative of the New York City Health Department testified that they had given a "conditional safety clearance," determining that the "nuclear ship could operate in the harbor without endangering the public health and safety." The AEC hearings were organized to "place on the public record testimony regarding the nuclear-safety of the Savannah." The hearing included no critical testimony – witnesses were dismissive of any safety concerns.[23] Nonetheless, once *Savannah's* set sail, it was discovered that the ship's "output" of liquid radioactive waste "initially exceeded storage capacity": "During her first year in operation, the *Savannah* released more than 115,000 gallons of radioactive waste at sea"; this problem was apparently later fixed.[24] The *Savannah* returned to New York City in 1965 for a demonstration of its capacity to carry cargo.[25] In 1969, the *Savannah* docked in New York as the "centerpiece for a city-wide information festival called Nuclear Week In New York," 18-26 May, which sought to build support for civilian applications of nuclear power. Thousands of people toured the *Savannah* and Nuclear Week was featured on two Johnny Carson shows.[26]

Given the lack of publicly available information, it is not possible to confirm whether or not ships with nuclear warheads have ever entered the New York Harbor. A 2008 article in *Navy Times* regarding the 1954 accidental dumping of anti-aircraft munitions from the USS *Bennington* into Gravesend Bay, stated that warships were required to empty their magazines of weapons before entering the Harbor.[27] It is unclear whether this was also the policy for nuclear warheads. Given the number of US nuclear weapons afloat during the Cold War – more than 6,000 at the 1975 peak[28] – and ships stopping for emergency repairs at Brooklyn Navy Yard (until its closure in 1966) and Bayonne Dry Dock (until 1975), it is possible that at some point ships carrying nuclear weapons entered the Harbor.

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[19] Jason Reagle. (2009) "A Historical Journey by USS Nautilus (SSN-571)." *Undersea Warfare*. Retrieved from web.archive.org/web/20100404075315/http://www.navy.mil/navydata/cno/n87/usw/usw_summer_09/nautilus.html; Philip Benjamin. (1958) "Ticker-Tape Parade and City Hall Ceremony Acclaim Crew of Nautilus: City Gives Officers and Men of the Nautilus a Rousing Welcome." *The New York Times*. 28 August. pp. 1, 20.

[20] William M. Arkin and Joshua Handler. (1989) "Naval Accidents 1945 – 1988." Neptune Paper No. 3. p. 24. Retrieved from fas.org/wp-content/uploads/2014/05/NavalAccidents1945-1988.pdf

[21] National Park Service. (n.d.) Maritime Heritage of the United States NHL Theme Study – Large Vessels: N.S. Savannah." p. 4. Retrieved from npgallery.nps.gov/NRHP/GetAsset/NHLS/82001518_text

[22] National Park Service. (n.d.) Maritime Heritage of the United States NHL Theme Study – Large Vessels: N.S. Savannah." p. 23. Retrieved from npgallery.nps.gov/NRHP/GetAsset/NHLS/82001518_text; "Savannah Docks in City Tomorrow; Nuclear Ship, on First Visit, Will Be Open to Public." *The New York Times*. Retrieved from nytimes.com/1964/06/01/archives/savannah-docks-in-city-tomorrow-nuclear-ship-on-first-visit-will-be.html?mtrref=undefined

[23] John W. Finney. (1961) "Atom Ship Cleared to Enter Port; Safety Hazards Termed Slight." *The New York Times*. 7 May. p. 70.

[24] National Park Service. (n.d.) Maritime Heritage of the United States NHL Theme Study – Large Vessels: N.S. Savannah." p. 8. Retrieved from npgallery.nps.gov/NRHP/GetAsset/NHLS/82001518_text

[25] National Park Service. (n.d.) Maritime Heritage of the United States NHL Theme Study – Large Vessels: N.S. Savannah." p. 23. Retrieved from npgallery.nps.gov/NRHP/GetAsset/NHLS/82001518_text

[26] Reuben Goossens. (n.d.) "N.S. Savannah." Retrieved from ssmaritime.com/NS-Savannah.htm

[27] R. Pyle. (2008) "Long-lost shells from carrier a concern in NYC." *NavyTimes*. Retrieved from navytimes.com/news/2008/01/ ap_lostshells_080114 on 15 December 2011, no longer online, paper copy in author's possession; Matthew Bolton. (2012) "Technocratic Responses to the Politicization of Risk: Underwater Munitions in New York City's Gravesend Bay and Narrows." *Marine Technology Society Journal*. 46(1). pp. 17-27.

[28] Robert S. Norris & Hans M. Kristensen. (2016) "Declassified: US nuclear weapons at sea during the Cold War." *Bulletin of the Atomic Scientists*. 72(1). p. 58; US Navy. (n.d.) "Fleet Ballistic Missile Submarines – SSBN." Retrieved from navy.mil/navydata/fact_display.asp?cid=4100&tid=200&ct=4

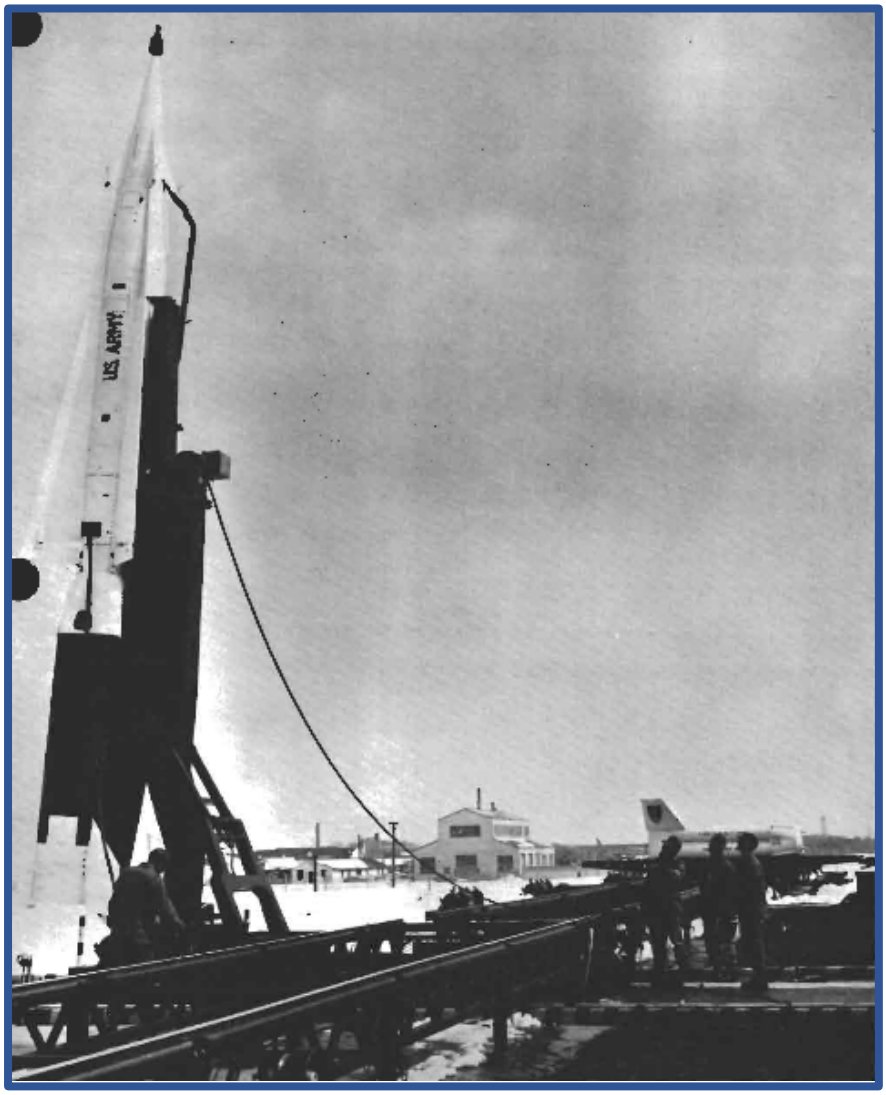

FIGURE 2: Nike missile at Fort Tilden, Rockaway, Queens, 1967. Photo: US Army via National Park Service.

At the mouth of the Harbor, ships have, since 1943, unloaded munitions at the Naval Weapons Station Earle (NWSE) piers in Sandy Hook Bay, New Jersey. According to research by the Federation of American Scientists, NWSE served as one of the primary storage sites for nuclear weapons on the East Coast, just 45 miles from New York City. Its Leonardo pier serviced nuclear-powered and nuclear-capable ships.[37] In 2014, the Board of Veterans' Appeals approved a compensation claim from a veteran who asserted that he developed non-Hodgkin's lymphoma as a result of "exposure to ionizing radiation in service, or alternately as a result of exposure to chemical

[37] Hans M. Kristensen. (2006) "Where the Bombs Are." Retrieved from fas.org/blogs/security/2006/11/new_article_where_the_bombs_ar/; Stephen I. Schwartz. (1998) "Bombs in the Backyard." Retrieved from brookings.edu/bombs-in-the-backyard/; (1987) "Nukes of Earle." *Bulletin of Atomic Scientists*. Retrieved from books.google.com/books?id=EAYAAAAAMBAJ; Leo Carney. (1984) "Nuclear Protestors to Picket at Earle." *The New York Times*. Retrieved from nytimes.com/1984/05/06/nyregion/nuclear-protesters-to-picket-at-earle.html; Weird NJ. (2014) "Don't go there! Mystery road ends badly." *Asbury Park Press*. Retrieved from app.com/story/news/local/2014/08/09/weird-nj-go-mystery-road-ends-badly/13826343/

contaminants" while stationed at NWSE from 1975 to 1978. The Board determined that his disease "was incurred in active service" on the basis of "chemical contaminate exposure." Nevertheless,

> In a January 2007 statement, the Veteran asserted that during his time at NWSE, he was informed at Marine Security orientation that he would be exposed to low yield radiation from nuclear weapons stored on base and transported to and from ships. He further stated that during the summer of 1977 there was a low yield leak during a move of a nuclear weapon. He reported that a special response team wearing wet suits came to complete the move, during which time he provided security. He estimated that he stood about 90 feet away, and that the move took hours.[38]

In a *New York Times* article about a 1986 protest at NWSE, a spokesperson for New Jersey Freeze said, "We feel there is a likelihood of increased traffic in nuclear weapons there, with a very clear possibility of an accident, a new and present danger that could cause serious health problems to large numbers of people." Similarly, Dr. Michio Kaku, a nuclear physicist at the City University of New York (CUNY), warned of the potential for mishaps, including mishandling, fire, "sabotage" or "a drunken sailor with a gun."[39]

The risks to the City increased in March 1985, when the Navy announced it would build Naval Station New York, a "nuclear weapons capable" homeport for the conventionally-powered but nuclear-armed USS *Iowa* and its associated Surface Action Group in Stapleton-Fort Wadsworth, Staten Island. For $300 million, the WWII-era *Iowa* battleship had been recommissioned and retrofitted to carry 32 Tomahawk cruise missiles in 1984 as part of a broader military build-up during increased Cold War tensions.[40] Carrying drones to help identify targets, the USS *Iowa* became "perhaps the most lethal shore-bombardment vessel in the world."[41] The *Iowa*'s Surface Action Group also included six other ships: "one Ticonderoga class cruiser, two guided missile destroyers (one Kidd class and one Farragut class), one Spruance class destroyer, and two Knox class Naval Reserve Force frigates."[42] At the time of the announcement, the following nuclear warheads may have been deployed on the types of ships in the *Iowa* Surface Action Group:

- W44 depth bombs (ASROC), yield 5 kilotons, deployed on cruisers, destroyers and frigates, 1961-1989
- W45 SAM (Terrier), yield 0.5-15 kilotons, deployed on cruisers and destroyers, 1962-1987
- W80-0 SLCM (Tomahawk), yield 5-150 kilotons, deployed on battleships, cruisers and destroyers, 1982-1992, (as well as SSN submarines until 2011)[43]

While the plan had support from then Mayor Ed Koch and some federal-level elected officials, New York City Council's Committee on Economic Development considered a draft Resolution 568(1983) which would have declared that "no ship be permitted to bring nuclear missiles into the Harbor of New York." The preamble expressed alarm at the potential for "a nuclear catastrophe by accident or by hostile military action" in an area "surrounded by a dense population of 20 million." In particular, it noted the US Department of Defense's admission of 30 nuclear weapons accidents

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[38] Board of Veterans' Appeals. (2015) Citation Nr: 1456604. Retrieved from va.gov/vetapp14/Files7/1456604.txt

[39] Leo Carney. (1984) "Nuclear Protestors to Picket at Earle." *The New York Times*. Retrieved from nytimes.com/1984/05/06/nyregion/nuclear-protesters-to-picket-at-earle.html

[40] Verne Newton. (1984) "Lessons of the U.S.S. Iowa." *The New York Times*. 6 November. p. A25; Charles Mohr. (1989) "Iowa Returned to Duty Only After Debate." *The New York Times*. 20 April. p. B11; GAO. (1985) "Report to the Honorable Theodore S. Weiss, House of Representatives: Observations on Navy Nuclear Weapons Safeguards and Nuclear Weapon Accident Emergency Planning." GAO/NSAID-85-123. Retrieved from gao.gov/assets/150/143136.pdf

[41] John Cushman. (1987) "A Warship's 'Eyes' Scan Gulf Region." *The New York Times*. 20 December. p. A1.

[42] GAO. (1985) "Report to the Honorable Theodore S. Weiss, House of Representatives: Observations on Navy Nuclear Weapons Safeguards and Nuclear Weapon Accident Emergency Planning." GAO/NSAID-85-123. Retrieved from gao.gov/assets/150/143136.pdf

[43] Robert S. Norris & Hans M. Kristensen. (2016) "Declassified: US nuclear weapons at sea during the Cold War." *Bulletin of the Atomic Scientists*. 72(1). p. 58; US Navy. (n.d.) "Fleet Ballistic Missile Submarines – SSBN." Retrieved from navy.mil/navydata/fact_display.asp?cid=4100&tid=200&ct=4

between 1950 and 1980 and the "609 large accidents [that] occurred in New York Harbor" from 1976 to 1980. Again, the Council was aware of normative innovations at the international level, citing as precedent "the U.S. Government's agreement with Japan not to bring any nuclear missiles on naval ships into their harbors…." While not adopted, it generated considerable debate and was considered again in 1986 (draft Res. 41).[44]

FIGURE 3: Heavy smoke pours from turret of USS *Iowa* following explosion on April 19, 1989. Photo: Lt. Thomas Jarrell for US Navy.

Anti-nuclear activists formed the Coalition for a Nuclear Free Harbor, spurring marches, rallies and civil disobedience (see Figure 3). When the *Iowa* visited New York City for a week in October 1984, it was met by protestors calling it a "holocaust machine" and accusing the Navy of "exposing New York to a nuclear accident"; the Navy neither confirmed nor denied to *The New York Times* whether it had a nuclear weapon on board.[45] In 1985, in response to a petition of more than 100,000 signatures, then City Clerk David Dinkins and members of New York City's Board of Elections planned a referendum to amend the City Charter "to restrict the power of the Board of Estimate to approve the use of city property or moneys for any military facility which is designed to carry or maintain nuclear weapons." However, in *Fosella vs. Dinkins* (1985), New York State's Court of

[44] See records of the committee debates here: laguardiawagnerarchive.lagcc.cuny.edu/FILES_DOC/Microfilms/05/009/0000/00026/050637/05.009.0000.00026.050637.305681983.PDF and here: laguardiawagnerarchive.lagcc.cuny.edu/FileBrowser.aspx?LinkToFile=FILES_DOC/Microfilms/05/010/0025/00047/051434/05.010.0025.00047.051434.10.PDF

[45] Verne Newton. (1984) "Lessons of the U.S.S. Iowa." *The New York Times*. 6 November. p. A25.

Appeals blocked the referendum, asserting that it "would interfere with the Federal Government's power to provide for the defense of the Nation."[46]

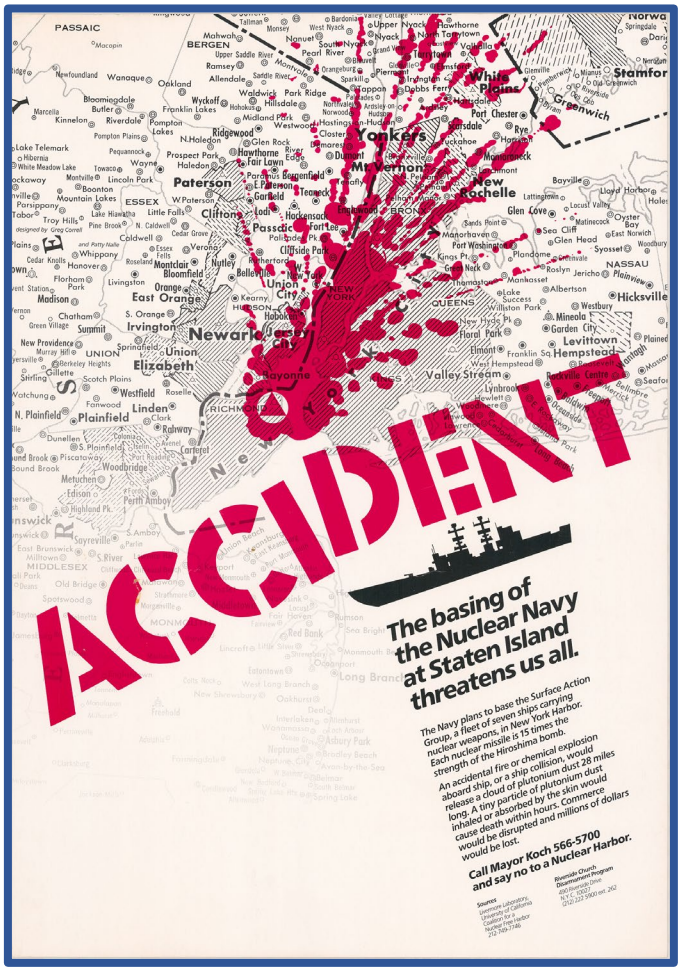

FIGURE 4: 1984 Riverside Church poster opposing the Staten Island homeport. Image: Cornell Libraries.

The Navy fought off at least "half a dozen" other unsuccessful lawsuits by opponents of the homeport. In *Hudson Sloop Clearwater vs. Navy*, environmental and disarmament groups (Sierra Club, Friends of the Earth, American Littoral Society, Physicians For Social Responsibility/NYC, New York Public Interest Research Group, Inc. and New York Lawyers Alliance For Nuclear Arms Control), as well as seven New York City Council Members and several Staten Island residents, sought to "force the Navy to disclose whether the ships based in Staten Island would carry nuclear weapons,"[47] asserting that the Navy had not properly considered the potential humanitarian and environmental dangers. In an affidavit filed with the court, retired US Navy Rear Admiral Eugene

[46] Court of Appeals of the State of New York. (1985) *In the Matter of Frank V. Fossella et al., Respondents-Appellants, v. David Dinkins et al., Respondents. Campaign for a Nuclear Navyport Referendum et al., Intervenors-Appellants-Respondents.* Judgement. 66 N.Y.2d 162 (1985). Retrieved from leagle.com/decision/198522866ny2d1621209; Charles A. Kuffner. (1985) *Matter of Fossella v. Dinkins*. Retrieved from casemine.com/judgement/us/59148e27add7b0493454f400; Alan Finder Scardino. (1985) "The Navy Wins A Skirmish On Staten Island." *The New York Times*. 27 October. p. A6.

[47] Dennis Hevesi. (1989) "Blast Sharpens Fight Over Port Plan." *The New York Times*. 22 April. pp. 1, 8; Constance Hays. (1989) "Battleship Is the Eye of a Storm Over S.I. And New Navy Base." *The New York Times*. 20 April. p. B11.

Carroll Jr. of the Center for Defense Information stated that "Based on my experience, nuclear weapons deployed on Iowa Surface Action Group vessels will remain on board when the vessels enter New York harbor. Nuclear-armed ships must have these weapons on board at all times in order to be considered combat-ready."[48] Despite calls to do so from elected officials, neither the Navy's draft nor final Environmental Impact Statement for the homeport "discussed nuclear weapons or the environmental impact of deploying them at the Homeport, except to state that national security interests preclude the Navy from confirming or denying the presence of nuclear weapons aboard any particular U.S. Navy ship."[49] Meanwhile, US Representative Ted Weiss of Manhattan had asked the General Accounting Office (GAO) to study "cruise missile safety/security and about measures to safeguard the public against a nuclear weapon accident at the homeport site."[50] The GAO classified much of its 1985 report, to the chagrin of the Congressman, who was forbidden from discussing its contents publicly. He told *The New York Times* that the report contained nothing that "reduces my apprehension" about the homeport proposal, which he described "as nutty as having nuclear weapons in Central Park." He urged the government to provide the report to the court for consideration in *Hudson Sloop Clearwater vs. Navy,* but the Navy categorically refused to allow the full report to be released "for national security reasons."[51] Now declassified, the GAO report downplayed the risks posed by the homeport, though acknowledged that "public health and environmental safety concerns about possible hazards related to the presence of nuclear weapons have developed in the New York City area."[52] In December 1989, the United States Court of Appeals, Second Circuit determined that the Navy was under no obligation to confirm or deny the presence of nuclear weapons on its ships.[53]

The *Iowa* returned to the Harbor for the 1986 Liberty Weekend's International Naval Review in the Hudson River, celebrating the rededication of the Statue of Liberty. This time, President Reagan was on board.[61] The *Iowa* and its Surface Action Group visited the Harbor again in 1988, anchoring off Stapleton.[62] However, these efforts to build support for the homeport were undermined on April 20, 1989, when the *Iowa* suffered a massive explosion in one of its gun turrets, off the coast of Puerto Rico, killing 47 crew members (see Figure 3).[63] Since the accident was unconnected to the *Iowa*'s nuclear missiles, the Navy insisted that the accident had no bearing on the safety of New Yorkers if the ship was stationed there. However, a spokesperson did acknowledge that "It is possible that if there's a fire with a nuclear weapon, that there would be some release of radioactive material."[64] Congressman Weiss said "it is just reckless to place nuclear weapons in the most densely populated portion of the country."[65] The homeport became a citywide election issue in 1989, with Mayor Koch

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[48] Dennis Hevesi. (1989) "Blast Sharpens Fight Over Port Plan." *The New York Times*. 22 April. pp. 1, 8.
[49] United States Court of Appeals, Second Circuit. (1989) *Hudson River Sloop Clearwater Inc v. Department of Navy*. No. 188. Docket 89-6121. para. 4. Retrieved from openjurist.org/891/f2d/414/hudson-river-sloop-clearwater-inc-v-department-of-navy-l-iii-ah; See also: Department of the Navy. (1985) *Surface Action Group Homeporting, Stapelton-Fort Wadsworth Complex, Staten Island: Environmental Impact Statement*. Washington DC, Department of the Navy.
[50] GAO. (1985) "Report to the Honorable Theodore S. Weiss, House of Representatives: Observations on Navy Nuclear Weapons Safeguards and Nuclear Weapon Accident Emergency Planning." GAO/NSAID-85-123. Retrieved from gao.gov/assets/150/143136.pdf
[51] Clifford May. (1987) "U.S. Asked to Release Secret Nuclear Report." *The New York Times*. 24 November. p. B3.
[52] GAO. (1985) "Report to the Honorable Theodore S. Weiss, House of Representatives: Observations on Navy Nuclear Weapons Safeguards and Nuclear Weapon Accident Emergency Planning." GAO/NSAID-85-123. p. 3. Retrieved from gao.gov/assets/150/143136.pdf
[53] William Glaberson. (1989) "Judge Rejects Effort to Stop S.I. Navy Port." *The New York Times*. 3 May. p. B1.
[61] Pacific Battleship Center. (2018) "Battleship Iowa Museum: The Cold War." Retrieved from pacificbattleship.com/learn-the-history/the-cold-war/; "Liberty Weekend: The Big Apple hosts the 'biggest party ever.'" *All Hands*. pp. 18-30. Retrieved from web.archive.org/web/20060416132341/https://www.navy.mil/media/allhands/acrobat/AH198609.pdf
[62] (1988) "Vanguard of the Navy Fleet's Return to New York." *The New York Times*. 21 April. p. B4.
[63] Pacific Battleship Center. (2018) "Battleship Iowa Museum: The Cold War." Retrieved from pacificbattleship.com/learn-the-history/the-cold-war/
[64] Dennis Hevesi. (1989) "Blast Sharpens Fight Over Port Plan." *The New York Times*. 22 April. pp. 1, 8.
[65] Constance Hays. (1989) "Battleship Is the Eye of a Storm Over S.I. And New Navy Base." *The New York Times*. 20 April. p. B11.

defending his support of the base and his opponent, David Dinkins, promising to fight for the homeport's closure.[66]

The $300 million construction of the homeport proceeded, with the unfinished base dedicated on 4 May 1989.[67] Nevertheless, citing the explosion on the *Iowa*, newly-elected Mayor Dinkins said in 1990 "he would oppose the presence of any ships armed with nuclear weapons, because they constituted a risk to New Yorkers' health and safety."[68] He vetoed a City budget contribution to the homeport's construction.[69] Mayor Dinkins and members of New York's Congressional Delegation asked then Secretary of Defense Dick Cheney to scrap the Staten Island homeport. The *Iowa* was mothballed in October 1990. Shortly thereafter, the USS *Normandy,* a *Ticonderoga*-class cruiser, arrived, making Staten Island its homeport, along with five reservist ships, for four years.[70] However, the US offloaded nuclear weapons from all its surface ships in 1992 and since then "the only US nuclear weapons deployed at sea have been strategic warheads on [nuclear-powered] ballistic missile submarines."[71] The homeport was closed in 1994, at the recommendation of the Defense Base Closure and Realignment Commission.[72] Nuclear weapons were also removed from Naval Station Earle by 1997.[73]

The Navy has reportedly honored the City's NWFZ since then, bringing no nuclear-armed or -powered ships into the Harbor, including during Fleet Weeks.[74] The only aircraft carriers to visit the Harbor since, USS *John F. Kennedy* and the British HMS *Queen Elizabeth*, were conventionally-powered.[75] The nuclear-powered USS *George Washington* did "operate air patrols off the city's Atlantic coast following the September 11, 2001 terrorist attacks", but did not enter the Harbor.[76] There is no public record of nuclear submarines entering the Harbor following the *Nautilus* visits. The value of this arrangement was illustrated in 1998 when a US nuclear-armed submarine collided with an attack submarine off the coast of Long Island, some 230 miles from New York City.[77] Globally, "Between 1945 and 1988, there were 212 confirmed accidents involving nuclear-powered vessels, 49 involving ballistic missile submarines, 146 involving attack and cruise missile submarines, 13 involving aircraft carriers, and 6 involving other nuclear-powered surface ships."[78] Several of these incidents occurred at the Naval bases in New London and Groton, Connecticut, just 130 miles from New York City.[79] For a list of naval accidents in and around the New York Harbor between 1945

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[66] Anthony DePalma. (1990) "S.I. Port's Fate Is Muddled by the Mideast Crisis." *The New York Times*. 25 August. pp. 1, 27.
[67] (1989) "Navy Dedicates the Staten Island Homeport." *The New York Times*. 4 May. p. B2; James Barron. (1990) "S.I. Port Loses Its Linchpin, A Battleship." *The New York Times*. 18 January. p. B1.
[68] Benjamin Sarlin. (2008) "Are All Our Warships Welcome Here?" *New York Sun*. Retrieved from nysun.com/new-york/are-all-our-warships-welcome-here/76894/
[69] Anthony DePalma. (1990) "S.I. Port's Fate Is Muddled by the Mideast Crisis." *The New York Times*. 25 August. pp. 1, 27.
[70] Eric Schmitt. (1993) "Panel Votes to Close Staten Island Base; Spares New London." *The New York Times*. 26 June. p. 1; Douglas Martin. (1994) "A Final Staten Island Homecoming." *The New York Times*. 6 February. p. A43.
[71] Robert S. Norris & Hans M. Kristensen. (2016) "Declassified: US nuclear weapons at sea during the Cold War." *Bulletin of the Atomic Scientists*. 72(1). p. 58; US Navy. (n.d.) "Fleet Ballistic Missile Submarines – SSBN." Retrieved from navy.mil/navydata/fact_display.asp?cid=4100&tid=200&ct=4
[72] Global Security. (n.d.) "Naval Station New York." Retrieved from globalsecurity.org/military/facility/staten_island.htm; Lauren Young. (2016) "In 1983, Staten Island Narrowly Escaped Becoming a Nuclear Stronghold." *Atlas Obscura*. Retrieved from atlasobscura.com/articles/in-1983-staten-island-narrowly-escaped-becoming-a-nuclear-stronghold
[73] Hans M. Kristensen. (2006) "Where the Bombs Are." Retrieved from fas.org/blogs/security/2006/11/new_article_where_the_bombs_ar/
[74] Andrew Gustafson. (2018) "Aircraft Carrier Visits Now a Rare Sight in NYC." *Turnstile Tours*. Retrieved from turnstiletours.com/aircraft-carrier-visits-now-rare-sight-nyc/; Benjamin Sarlin. (2008) "Are All Our Warships Welcome Here?" *New York Sun*. Retrieved from nysun.com/new-york/are-all-our-warships-welcome-here/76894/
[75] Andrew Gustafson. (2018) "Aircraft Carrier Visits Now a Rare Sight in NYC." *Turnstile Tours*. Retrieved from turnstiletours.com/aircraft-carrier-visits-now-rare-sight-nyc/
[76] Andrew Gustafson. (2018) "Aircraft Carrier Visits Now a Rare Sight in NYC." *Turnstile Tours*. Retrieved from turnstiletours.com/aircraft-carrier-visits-now-rare-sight-nyc/
[77] Hans M. Kristensen. (2016) "Declassified: US Nuclear Weapons At Sea." Retrieved from fas.org/blogs/security/2016/02/nuclear-weapons-at-sea/
[78] William M. Arkin and Joshua Handler. (1989) "Naval Accidents 1945 – 1988." Neptune Paper No. 3. p. 7. Retrieved from fas.org/wp-content/uploads/2014/05/NavalAccidents1945-1988.pdf
[79] William M. Arkin and Joshua Handler. (1989) "Naval Accidents 1945 – 1988." Neptune Paper No. 3. p. 7. Retrieved from fas.org/wp-content/uploads/2014/05/NavalAccidents1945-1988.pdf

and 1988, including three involving nuclear-powered or nuclear weapons-capable ships, see Annex 6.

That said, the Navy is under no legal obligation to abide by the City's NWFZ resolution. The Navy maintains its policy of neither confirming nor denying whether a vessel is carrying a nuclear weapon "in response, direct or indirect, to any inquiry."[80] Moreover, there is no guarantee that an executive branch of the Federal government that is hostile to New York City might decide to disregard the Navy's traditional deference. In February 2018, General John Hyten announced that US Strategic Command was considering arming the new *Zumwalt*-class stealth destroyers with sea-launched cruise missiles (SLCM), putting nuclear weapons back on surface ships.[81] This may increase the temptation to bring a nuclear-armed ship into the New York Harbor. The July 4, 2019 commemorations in Washington DC show an unprecedented willingness to politicize the display of military equipment in a major urban center.[82]

The US Air Force stopped flying nuclear weapons on bombers in 1968. Until 1991, nuclear weapons continued to be loaded on to bombers standing on alert on runways. In rare circumstances, nuclear weapons are flown by Prime Nuclear Airlift Force (PNAF) C-17s and C-130 transport planes between Kirtland Air Force Base in New Mexico and deployments in Europe. It is thus highly unlikely that, at least since 1991, planes carrying nuclear weapons have landed in or near New York City, or even traversed its airspace.[83]

Measures Addressing Humanitarian and Environmental Legacies of Nuclear Weapons

In order to produce the first nuclear weapons, the Manhattan Project sought out the expertise and logistical capacity of the private sector, including at some 30 sites in New York City. Radioactive materials were handled at 16 of these.[84] This put New Yorkers at risk of exposure to toxic pollution and ionizing radiation, a legacy that is still being addressed to this day. The total cost so far of environmental remediation activities, compensation claims and medical bills in New York City paid by the federal government is $87.5 million (in 2018 dollars; see Annexes 7 and 8). Six sites have caused particular concern (listed below in reverse chronological order of remediation efforts):

- Between 1939 and 1946, 1,200 tons of uranium ore – two thirds of the Manhattan Project's supply – was stored at the **Archer Daniels Midland Company Warehouse** in Port Richmond, Staten Island.[85] In 1980, a Department of Energy survey found "gamma radiation levels … significantly above background" in one part of the site.[86] A 2011 NIOSH review of documentation determined "that there is little potential for significant residual

[80] Department of the Navy. (2006) "Release of Information on Nuclear Weapons and on Nuclear Capabilities of U.S. Forces." OPNAVINST 5721.lF. Retrieved from nukestrat.com/us/navy/OPNAVINST5721.pdf
[81] Franz-Stefan Gady. (2018) "Will the US Navy's High-Tech Destroyer Be Armed With Nuke Cruise Missiles?" *The Diplomat*. Retrieved from thediplomat.com/2018/03/will-the-us-navys-high-tech-destroyer-be-armed-with-nuke-cruise-missile/
[82] Jim Sciutto & Nicole Gaouette. (4 July 2019) "Military chiefs have concerns about politicization of Trump's July 4th event." CNN. Retrieved from cnn.com/2019/07/03/politics/military-concerns-trump-july-4th-event/index.html
[83] Hans M. Kristensen. (2007) "Flying Nuclear Bombs." Retrieved fas.org/blogs/security/2007/09/flying_nuclear_bombs/
[84] Matthew Bolton. (2019) "Former Sites Involved in Nuclear Weapons Development and Production in New York City." *NYC Nuclear Archive*. Retrieved from disarmament.blogs.pace.edu/nyc-nuclear-archive/nycs-nuclear-geography/nuclear-weapons-devt-sites-ny/; John Emshwiller & Jeremy Singer-Vine. (2013) "Finalist: John Emshwiller and Jeremy Singer-Vine of *The Wall Street Journal*." *The Pulitzer Prizes*. Retrieved from pulitzer.org/finalists/john-emshwiller-and-jeremy-singer-vine
[85] William J. Broad. (2007) "Why They Call It the Manhattan Project." *The New York Times*. Retrieved from nytimes.com/2007/10/30/science/30manh.html
[86] Oak Ridge National Laboratory. (1980) "Preliminary Radiological Survey Report of the Former Staten Island Warehouse Site." Retrieved from cpb-us-w2.wpmucdn.com/blogs.pace.edu/dist/0/195/files/2019/03/Staten-Island-1980-Survey-NY.22-5-2e0ih0v.pdf

contamination outside of the period in which weapons-related production occurred."[87] However, following local advocacy efforts by the North Shore Waterfront Conservancy (NSWC),[88] the site is being considered by the US Army Corps of Engineers for remediation.[89] Funded by a grant from the New York State Department of Environmental Conservation, a NSWC report *Staten Island's Gold Coast* showed how the Archer Daniels Midland site is among many contaminated by toxic chemicals on the North Shore, close to residential areas. NSWC's research prompted the EPA to designate the North Shore as one of ten Environmental Justice Showcase Communities in the USA.[90]

- Between 1948 and 1954, **Wolff-Alport Chemical Corp.** stored around 3.75 tons of thorium oxalate sludge at a site in Ridgewood, Queens (see Figure 5). According to the federal Environmental Protection Agency (EPA), the company buried radioactive waste and/or dumped it "into a sewer."[91] Buildings at the 0.75 acre site now include a "delicatessen/grocery, office space, residential apartments, several auto repair shops, and warehousing space."[92] In 2012, the federal Agency for Toxic Substances and Disease Registry determined "that as a result of the radiological contamination at the site, workers at the auto body shop and pedestrians who frequently use the sidewalks at this location on Irving Avenue may have an elevated risk of cancer from exposure to ionizing radiation."[93] The most comprehensive review of the scientific data, by National Research Council's Committee on the Biological Effects of Ionizing Radiation (BEIR), has concluded that there is no 'safe' level of human exposure to ionizing radiation – it will always increase cancer risk at the population level.[94] As a result, in 2013, the US Environmental Protection Agency (EPA) conducted limited, short-term remediation activities and "successfully reduced radiation exposure to the on-site workers and pedestrians … to within acceptable annual limitations." Nevertheless, the location is one of only three active Superfund sites in New York City. The EPA designates toxic and hazardous sites for Superfund programming based on a National Priorities List, enables the release of federal money, as well as "forces the parties responsible for the contamination to either perform cleanups or reimburse the government for EPA-led cleanup work."[95] In 2017, EPA announced that the planned, more comprehensive remediation of the site will cost $39.9 million.[96]
- Some 150 tons of uranium materials were stored at the **Baker and Williams Warehouses** on West 20th Street between 1942 and 1943, close to what is now the High Line. The building continued to be used for various business purposes, but in 1989 a survey for the Department of Energy "found radioactive contamination up to 38 times federally allowed

[87] National Institute for Occupational Safety and Health (NIOSH). (2011) "Residual Radioactivity Evaluations for Individual Facilities." p. 183. Retrieved from cpb-us-w2.wpmucdn.com/blogs.pace.edu/dist/0/195/files/2019/02/NIOSH-appx-a2-030111-1ded7yg.pdf
[88] Waterfront Alliance. (2010) "Feds Agree to Remediate Radioactive Waterfront." *WaterWire*. Retrieved from waterfrontalliance.org/2010/02/17/feds-agree-to-remediate-radioactive-waterfront/
[89] US Army Corps of Engineers. (2018) "Formerly Utilized Sites Remedial Action Program Update: Fiscal Year 2018." p. 15. Retrieved from https://usace.contentdm.oclc.org/utils/getfile/collection/p16021coll11/id/3466
[90] North Shore Waterfront Conservancy. (2017) "The North Shore Waterfront Conservancy." *SILive*. Retrieved from silive.com/sponsor-content/?scid=119242&prx_t=r5UCA-aYMAoM0LA; Jake Mooney. (2010) "The North Shore Traces A Toxic Legacy." *City Limits*. Retrieved from https://citylimits.org/2010/06/08/the-north-shore-traces-a-toxic-legacy/
[91] EPA. "Wolff Alport Radiological Site." Retrieved from response.epa.gov/site/site_profile.aspx?site_id=8030
[92] EPA. (2019) "Superfund Site: Wolff-Alport Chemical Company, Ridgewood, NY: Cleanup Activities." Retrieved from cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.cleanup&id=0206479
[93] Agency for Toxic Substances and Disease Registry. (2012) "Health Consultation: Former Wolff-Alport Chemical Corporation Site." Retrieved from atsdr.cdc.gov/hac/pha/finalwolffalportchemicalcorporation/finalwolffalportchemicalcorporationhc.pdf
[94] National Research Council. (2006) *Health Risks from Exposure to Low Levels of Ionizing Radiation: BEIR VII Phase 2*. Washington, DC: The National Academies Press. pp. 6-8, 267-312. Retrieved from doi.org/10.17226/11340
[95] EPA. (2018) "What is Superfund?" Retrieved from epa.gov/superfund/what-superfund
[96] EPA. (2017) "Record of Decision: Wolff-Alport Chemical Company Superfund Site." Retrieved from semspub.epa.gov/work/02/528285.pdf

levels in parts of the structures."[97] Approximately 50 drums of contaminated materials were removed from the site during remediation activities.[98] The Department of Energy certified that the buildings were ready for "unrestricted use" in 1995.[99]

- The **Radium Chemical Company**, Inc. supplied the Manhattan Project with radium, stored at a site in Woodside, Queens. The warehouse continued to be used until the 1980s. It became an EPA Superfund Site and remediation activities occurred between 1989 and 1994. According to the EPA, "The long-term remediation involved the complete dismantling of the contaminated building, which resulted in the off-site disposal of approximately 812 tons of radioactive soil and debris, 92 tons of radioactively-contaminated hazardous wastes."[100]
- **American Machine & Foundry Co**. machined 200 tons of uranium and thorium from 1951 to 1954 at a facility located at Second Avenue and 56th Street in Sunset Park, Brooklyn. Contemporary air monitoring data "indicat[ed] significant dispersal of radioactive material concentrations." The National Institute for Occupational Safety and Health (NIOSH) determined that "there is a high probability that residual contamination existed after the period in which weapons-related production occurred" until the facility was renovated from 1971 to 1977 and turned into the Lutheran Medical Center (now NYU-Langone Hospital Brooklyn). At the time of the renovation the "medical center was satisfied that appropriate environmental testing had been done of the site." The US Department of Energy surveyed the hospital in 1992 and found "No elevated radiation readings." Following a 2013 *Wall Street Journal* article about nuclear weapons development sites in New York, the hospital hired consultants to review the Department of Energy's survey and "is confident that the site is safe."[101]
- **Columbia University** was a site of nuclear research before and during the Manhattan Project, employing 700 people at its peak. Even the football team was recruited to move tons of uranium.[102] The university itself conducted remediation activities; the US Department of Energy determined in 1985 that "no additional Department of Energy actions are warranted."[103]

Certain employees, "vendors, contractors and subcontractors" (or their survivors) of the US Department of Energy (or its predecessors) who are diagnosed with radiation-related diseases "as a result of exposure to radiation, beryllium, or silica while employed at covered facilities" are eligible for the US Department of Labor's Energy Employees Occupational Illness Compensation (EEOIC) Program.[104] To date, the Department of Labor has approved only 54 claims and paid $7,765,739 in medical bills and compensation claims arising from five EEOIC eligible sites (four of the above,

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[97] John Emshwiller & Jeremy Singer-Vine. (2013) "A forgotten legacy of nuclear buildup." *The Pulitzer Prizes*. Retrieved from pulitzer.org/finalists/john-emshwiller-and-jeremy-singer-vine

[98] Department of Energy. (1995) "Certification Docket for the Remedial Action Performed at the Baker and Williams Warehouses Site in New York, New York, 1991- 1993." Table I-2. Retrieved from cpb-us-w2.wpmucdn.com/blogs.pace.edu/dist/0/195/files/2019/02/Baker-and-Williams-NY.61-11-1o2r5mc.pdf

[99] John Emshwiller & Jeremy Singer-Vine. (2013) "A forgotten legacy of nuclear buildup." *The Pulitzer Prizes*. Retrieved from pulitzer.org/finalists/john-emshwiller-and-jeremy-singer-vine

[100] EPA. (Superfund Site: Radium Chemical Co, Inc., Queens, NY: Cleanup Activities." Retrieved from cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.Cleanup&id=0202850#bkground

[101] National Institute for Occupational Safety and Health (NIOSH). (2011) "Residual Radioactivity Evaluations for Individual Facilities." p. 15. Retrieved from cpb-us-w2.wpmucdn.com/blogs.pace.edu/dist/0/195/files/2019/02/NIOSH-appx-a2-030111-1ded7yg.pdf; Wall Street Journal. (2014) "American Machine & Foundry Co." Wastelands. Retrieved from projects.wsj.com/waste-lands/site/26-american-machine-foundry-co/

[102] William J. Broad. (2007) "Why They Call It the Manhattan Project." *The New York Times*. Retrieved from nytimes.com/2007/10/30/science/30manh.html

[103] Department of Energy. (1985) "Elimination Report for Columbia University." Retrieved from cpb-us-w2.wpmucdn.com/blogs.pace.edu/dist/0/195/files/2019/03/Columbia-University-Elimination-Report-NY.03-3-2iq4eft.pdf

[104] Department of Labor. (n.d.) "About EEOICPA." Retrieved from dol.gov/owcp/energy/

plus New York University) related to early nuclear weapons development in New York City (See Annex 8).

The scale of New York City's population of survivors of nuclear weapons use and testing has not yet been determined. In 2014, there was an estimated 1,000 Japanese American survivors of the atomic bombings of Hiroshima and Nagasaki (*hibakusha*) living in the USA (both American nationals who were in Hiroshima and Nagasaki at the time and those who emigrated later).[105] An early initiative that highlighted for Americans the humanitarian impact of the atomic bombings was the 1955 "Hiroshima Maidens" project organized by Rev. Kiyoshi Tanimoto of Hiroshima and Norman Cousins, editor of the New York-based *The Saturday Review*. A self-organized group of twenty-five women from Hiroshima, who had been badly maimed and disfigured by the atomic bombing and faced stigma and discrimination, were provided reconstructive and plastic surgery for free at New York's Mount Sinai Hospital.[106]

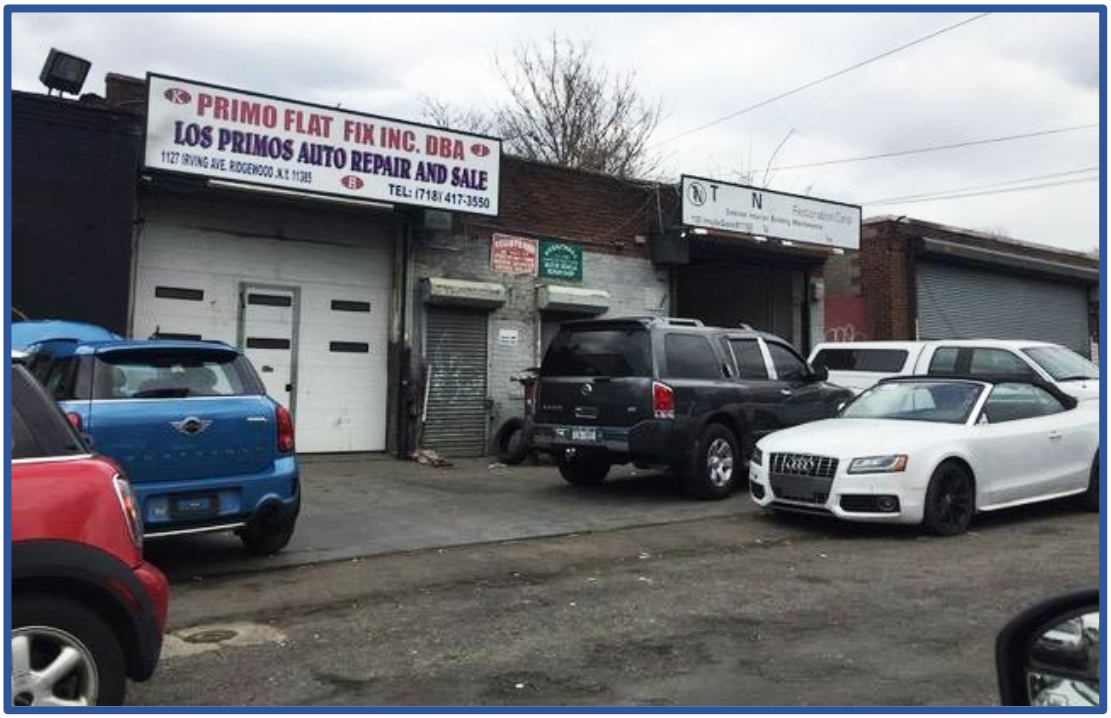

FIGURE 5: Former Wolff-Alport Chemical Corp Superfund Site, Ridgewood, Queens, New York. Photo: Matthew Bolton, 2019.

Some 195,000 American soldiers were deployed to Hiroshima and Nagasaki during the occupation of Japan, and thousands of US military and civilian personnel participated in nuclear tests, including 115,000 troops in atmospheric nuclear tests.[107] More than 35,000 Americans have been awarded a

[105] Densho. (2017) 'Japanese American Hibakusha.' *Densho Encyclopedia*. Retrieved from encyclopedia.densho.org/Japanese%20American%20Hibakusha

[106] Norman Cousins. (n.d.) "Hiroshima Maidens." Retrieved from hibakushastories.org/wp-content/uploads/2013/10/Hiroshima-Maidens.pdf; Elizabeth McCauley. (2018) "How The Disfigured 'Hiroshima Maidens' Got A New Lease On Life." *ATI*. Retrieved from allthatsinteresting.com/hiroshima-maidens; Becky Alexis-Martin. (2018) "Saving Face: Death, Necropolitics and the Hiroshima Maidens." Retrieved from deadmaidens.com/2018/03/27/saving-face-death-necropolitics-and-the-hiroshima-maidens/

[107] US Department of Veteran Affairs. (2012) "Are You an Atomic Veteran?" Retrieved from publichealth.va.gov/docs/radiation/atomic-veteran-brochure.pdf; D. Hansen & C. Schriner. (2005) "Unanswered questions: the legacy of atomic veterans." *Health Physics*. 89(2). pp. 155-163; Eiji

total of over $2.3 billion in compensation by the U.S. Department of Justice for exposure to radiation from nuclear weapons testing and supply chains.[108] Disaggregated data for how many of those compensated are New York City residents was, at the time of writing, not publicly available. Nevertheless, transcripts of decisions on claims heard by the Board of Veterans' Appeals (which hears claims for compensation initially denied by the US Department of Veterans Affairs) give an indication of the struggles faced by some atomic veterans with New York City connections.[109] Families and descendants of nuclear weapons survivors may struggle with cancers, heart disease, infertility and the multigenerational effects of radiation exposure. It is unclear how many hibakusha, "atomic veterans" or people from communities affected by nuclear testing (such as from US atmospheric test sites in the western USA, Marshall Islands and Kiribati; and other test programs in Algeria, Australia, China, French Polynesia/Maohi Nui, Kazakhstan and Russia) live in New York City. While New York City does not have specific programs for nuclear weapons survivors, it has some of the best specialized oncology care in the world.[110]

New Yorkers are likely among the 22,000 Americans (in the continental US) that the Centers for Disease Control (CDC) have estimated would contract cancers as a result of fallout from both global and US atmospheric nuclear weapons testing between 1945 and 1974. The CDC study did not provide disaggregated data for New York City.[111] Some scientists argue the CDC underestimated Americans' exposure to ionizing radiation. A recent study at the University of Arizona has suggested that between 340,000 and 690,000 Americans died as a result of atmospheric tests. This study also did not provide disaggregated data for the City.[112] Worries about the health effects of exposure to radioactive fallout from atmospheric nuclear weapons tests, particularly in supplies of milk, motivated early protests against nuclear weapons in New York City. In 1961, Women Strike for Peace – co-founded by New Yorker Bella Abzug – organized demonstrations of 50,000 women across the country against atmospheric nuclear testing.[113] Concerns about humanitarian consequences led the New York City Council to advocate for national and international measures on nuclear testing (e.g. Resolutions 648[1963], 1840[1982], 1907[1982]). Women Strike for Peace was pivotal in building support for the Partial Test Ban Treaty and Bella Abzug was elected to Congress, representing the Upper West Side from 1971 to 1977. A resolution passed by the City Council in 1979 (Res. 512) acknowledged the specific contribution of women's organization in the struggle for nuclear disarmament.

On the 1984 anniversary of the Hiroshima bombing, Greenpeace activists scaled the scaffolding surrounding the Statue of Liberty, then under renovation, and hung a banner reading "Give Me Liberty from Nuclear Weapons, Stop Testing." The four protesters sent telegrams to the five

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Takemae. (2003) *The Allied Occupation of Japan*. Robert Ricketts & Sebastian Swann (Eds). New York, Continuum, pp. 131-137; John E. Till, et al. (2014) "Military Participants at U.S. Atmospheric Nuclear Weapons Testing— Methodology for Estimating Dose and Uncertainty." *Radiation Research*. 181(5). pp. 471-484. Table 2.

[108] US Department of Justice. (2019) "Radiation Exposure Compensation System: Awards to Date." Retrieved from justice.gov/civil/awards-date-06062019; Congressional Research Service. (2019) *The Radiation Exposure Compensation Act (RECA): Compensation Related to Exposure to Radiation from Atomic Weapons Testing and Uranium Mining*. Washington DC, CRS. Retrieved from fas.org/sgp/crs/misc/R43956.pdf

[109] Board of Veterans' Appeals. (2019) "The Board of Veterans' Appeals Decision search results." Retrieved from index.va.gov

[110] American Society of Clinical Ontology. (2017) "The State of Cancer Care in America, 2017: A Report by the American Society of Clinical Ontology." *Journal of Oncology Practice*. 13(4). pp. e353-e394.

[111] CDC. (2006) *Report on the Feasibility of a Study of the Health Consequences to the American Population from Nuclear Weapons Tests Conducted by the United States and Other Nations*. Washington DC, CDC & National Cancer Institute. Chapter 4.

[112] Tim Fernholz. (2017) "US nuclear tests killed far more civilians than we knew." *Quartz*. Retrieved from qz.com/1163140/us-nuclear-tests-killed-american-civilians-on-a-scale-comparable-to-hiroshima-and-nagasaki/

[113] Catherine Falzone. (2012) "Women Strike for Peace." Retrieved from disarmament.blogs.pace.edu/nyc-nuclear-archive/antinuclear-movement-1950s-1960s/women-strike-for-peace/; Elizabeth Matlock and Wendy Chmielewski. (2018) "Women Strike for Peace, 1961-1975." Retrieved from swarthmore.edu/Library/peace/Exhibits/Dorothy%20Marder/MarderExhibit1A_files/MarderExhibit1A.html

countries that continued to engage in nuclear testing, saying "We are at a critical moment in human history… It is clear the nuclear arms race must end."[114]

FIGURE 6: Greenpeace activists at the Statue of Liberty, 1984. Photo © Greenpeace / Kurt Abrahamson.

Measures Protecting New Yorkers from Radiation

In addition to dealing with nuclear weapons, City authorities have taken several other measures seeking to protect New Yorkers from the negative health effects of ionizing radiation and radiological security threats. For example, New York City's Health Commissioner in 1977, Dr. Pascal J. Imperato, denied Columbia University a permit to activate a teaching and research nuclear reactor it had built underground on the Morningside Heights campus, at 120th Street and

[114] Susan Heller Anderson and David Bird. (1984) "Protest on Liberty Island." The New York Times. Retrieved from nytimes.com/1984/08/07/nyregion/new-york-day-by-day-protest-on-liberty-island.html; Greenpeace USA. (2018) Tweet retrieved from twitter.com/greenpeaceusa/status/995046167238103041; UPI. (1984) "Four Protestors Climbed the Scaffolding Surrounding the Statue of Liberty." Retrieved from upi.com/Archives/1984/08/06/Four-protesters-climbed-the-scaffolding-surrounding-the-Statue-of/6796460612800/

Amsterdam Avenue, citing the "great risk of human and environmental cost." The university, joined by the federal Department of Justice, filed suit, "challenging New York City's jurisdiction over nuclear reactors and radioactive materials."[115] The court initially sided with the university, but during the appeal process, the 1979 Three Mile Island nuclear power plant accident in Pennsylvania prompted Columbia's president to cancel the project and withdraw their suit. The university administration had faced considerable pressure, including demonstrations, from the student body and neighborhood community associations.[116]

City authorities were also concerned about the risks posed by Brookhaven National Laboratories, a Department of Energy nuclear research facility on Long Island. In 1976, the City Council "amended its health code to prohibit the transportation of spent nuclear fuel and other large quantities of radioactive material through the City without a Certificate of Emergency Transport from the Commissioner of Health." The local law "effectively banned the use of motor vehicles to ship spent fuel" from Brookhaven "because all roads from Long Island pass through New York City." Brookhaven, located about 60 miles from the City in Upton, New York, was forced to ship "spent nuclear fuel … by barge across the Long Island Sound to New London, Connecticut."[117] Brookhaven filed a complaint with the US Department of Transportation (DOT), which in 1978 ruled that its regulations did not preclude municipalities making such rules. However, this and similar cases prompted the DOT to revise its regulations in February 1982, establishing "a system of preferred" Interstates and other roads that would be open to "vehicles carrying large-quantity shipments of radioactive materials." The new rules – HM-164 – would "preempt local regulations such as the New York City Health Code."[118] The DOT conceded that trucking radioactive materials "through densely populated urban centers … creates an estimatable risk of serious consequences that would occur in the unlikely event of an accident with substantial leakage of radioactive gases." However, it determined that the risk of such accidents was "discounted by the improbability of their occurrence."[119] The City filed suit to block the DOT regulations and was initially successful, when the court blocked the DOT's implementation of HM-164 in the city limits in May 1982. However, the decision was overturned by the US Court of Appeals, Second District in 1983, which judged that the DOT jurisdiction preempted the City's.[120]

Concerns about Brookhaven National Laboratory have persisted. There was a fire in its high flux beam nuclear reactor in 1994; three years later reports emerged of radioactive contamination of the groundwater and surrounding areas. In 2002, a deer apparently killed by a car on William Floyd Parkway was discovered to be contaminated with Caesium-137, having grazed on the Brookhaven campus.[121] Due to public pressure, the nuclear reactors have now been decommissioned and Brookhaven is now an EPA Superfund Site.[122] "Some 55,000 cubic yards of contaminated soil,"

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[115] "Columbia University Ends Court Challenge Over Nuclear Reactor." *The New York Times*. Retrieved from nytimes.com/1979/05/20/archives/columbia-university-ends-court-challenge-over-nuclear-reactor.html

[116] "Columbia University Ends Court Challenge Over Nuclear Reactor." *The New York Times*. Retrieved from nytimes.com/1979/05/20/archives/columbia-university-ends-court-challenge-over-nuclear-reactor.html; Jonathan Black. (1969) "Columbia May Explode Even If Reactor Won't." *The Village Voice*. Retrieved from villagevoice.com/2010/08/05/columbias-nuclear-reactor-the-triga-mark-ii/

[117] United States Court of Appeals, Second Circuit. (1983) City of New York vs. United States Department of Transportation. Nos. 415, 451. Dockets 82-6094, 82-6200. Paras. 2-3. Retrieved from openjurist.org/715/f2d/732/city-of-new-york-v-united-states-department-of-transportation; Matthew Wald. (1984) "Silence Masks Shipment of Brookhaven's Nuclear Wastes." *The New York Times*. Retrieved from nytimes.com/1984/05/13/nyregion/silence-masks-shipment-of-brookhaven-s-nuclear-wastes.html

[118] United States Court of Appeals, Second Circuit. (1983) City of New York vs. United States Department of Transportation. Nos. 415, 451. Dockets 82-6094, 82-6200. Paras. 6-7. Retrieved from openjurist.org/715/f2d/732/city-of-new-york-v-united-states-department-of-transportation

[119] United States Court of Appeals, Second Circuit. (1983) City of New York vs. United States Department of Transportation. Nos. 415, 451. Dockets 82-6094, 82-6200. para. 9. Retrieved from openjurist.org/715/f2d/732/city-of-new-york-v-united-states-department-of-transportation

[120] United States Court of Appeals, Second Circuit. (1983) City of New York vs. United States Department of Transportation. Nos. 415, 451. Dockets 82-6094, 82-6200. Retrieved from openjurist.org/715/f2d/732/city-of-new-york-v-united-states-department-of-transportation

[121] Valerie Cotsalas. (2002) "Brookhaven Deer Shows High Radiation." *The New York Times*. 24 February. p. 18.

[122] EPA. (2019) "Superfund Site: Brookhaven National Laboratory (USDOE), Upton, New York." Retrieved from cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.cleanup&id=0202841; Brookhaven National Laboratory. (n.d.) "Reactor

including radioactive waste, was transported by rail through New York City to storage sites in Utah.[123]

As 200,000 people in demonstrated in New York to express their alarm at the Three Mile Island accident,[124] in September 1979 the City Council's Committee on Environmental Protection considered a draft resolution (743) calling for the "phase out" of the Indian Point Power Plants just 24 miles outside the City. Three years later, the Council's Committee on Finance considered a draft resolution (51[1982]) on the City's pension funds to vote in favor of shareholder initiatives opposing "the development of nuclear power" and supporting "alternative technologies" (Res. 51(1982). On 15 February 2000, leakage of radioactive water from Indian Point 2 Nuclear Facility prompted the Council to call on the State to prohibit the power company Con Edison recovering costs associated with the accident from its ratepayers (Res. 1286). Following a lengthy campaign by environmental groups, another draft resolution calling for the shuttering of Indian Point was filed in 2015 (Res. 694(2015)). The draft resolution noted that *The 9/11 Commission Report* suggested that one of the World Trade Center terrorists had considered targeting Indian Point.[125] Two years later, New York State Governor Andrew Cuomo announced that the "ticking time bomb" of Indian Point would close in 2020. Doing so, he said, "eliminates a major risk, provides welcome relief, and New Yorkers can sleep a little better."[126] Nevertheless, nuclear power still provides more than 30% of New York City's electricity.[127]

The City Council has passed several local laws dealing with private actors' handling of radioactive materials (e.g. Int. No. 478-A (2005), Para. 609.6; Int. No. 1174-A (2013), Paras. 404.3.2, 401.4.1; Int. No. 126-A(2015)). The New York Police Department (NYPD) has in place a system for detecting radiation in the city, to identify potential threats from nuclear weapons, improvised nuclear devices or radiological "dirty bombs" (which disperse radioactive material through a conventional explosion). The New York City Department of Health and Mental Hygiene's Office of Radiological Health (ORH) also regulates radioactive material in the City, inhibiting its diversion to illicit uses. ORH's website outlines the City's emergency strategies for dealing with dirty bombs and improvised nuclear devices, as "serious threat[s] to life, health and safety."[128] In 2017, NYC Emergency Management began removing the old yellow and black Civil Defense "Fallout Shelter" signs from public buildings. Federal and City authorities have determined that they are misleading and would not help people in the event of a nuclear detonation.[129]

Decommissioning Projects." Retrieved from bnl.gov/erd/; Kelly McMasters. (2006) "The Nuclear Neighborhood." *The New York Times*. 2 November. p. 15; Valerie Cotsalas. (2005) "Brookhaven Lab's $97 Million Cleanup." *The New York Times*. 24 April. p. 1.

[123] UPI. (2005) "Brookhaven radioactive shipments to resume." Retrieved from phys.org/news/2005-07-brookhaven-radioactive-shipments-resume.html; Bruce Lambert. (2005) "Brookhaven: Shipments To Resume." *The New York Times*. 28 July. p. 5; John Rather. (2005) "The $353 Million Cleanup." *The New York Times*. 13 November. p. 3.

[124] Robin Herman. (1979). "Nearly 200,000 Rally to Protest Nuclear Energy." *The New York Times*. Retrieved from nytimes.com/1979/09/24/archives/nearly-200000-rally-to-protest-nuclear-energy-gathering-at-the.html

[125] The 9/11 Commission. (2004) *The 9/11 Commission Report*. Washington DC, Government Printing Office. p. 245. Retrieved from govinfo.library.unt.edu/911/report/911Report.pdf

[126] Patrick McGeehan. (2017) "Cuomo Confirms Deal to Close Indian Point Nuclear Plant." *The New York Times*. Retrieved nytimes.com/2017/01/09/nyregion/cuomo-indian-point-nuclear-plant.html

[127] Emily Rueb. (2017) "How New York City Gets Its Electricity." *The New York Times*. Retrived from nytimes.com/interactive/2017/02/10/nyregion/how-new-york-city-gets-its-electricity-power-grid.html

[128] ORH. (2018) "Radiological Incident." Retrieved www1.nyc.gov/site/doh/health/emergency-preparedness/emergencies-radiological-nuclear-radiological-incident.page ; ORH. (2018) "Nuclear Incident: Improvised Nuclear Device (IND)." Retrieved from www1.nyc.gov/site/doh/health/emergency-preparedness/emergencies-radiological-nuclear-incident.page CBS. (2013) "NYC's Ring Of Protection — Tools In The Fight Against Dirty Bombs." *CBS New York*. Retrieved from newyork.cbslocal.com/2013/02/05/seen-at-11-nycs-ring-of-protection-tools-in-the-fight-against-dirty-bombs/

[129] Jonathan Allen. (2017) "New York removes misleading nuclear fallout shelter signs." *Reuters*. Retrieved from reuters.com/article/us-new-york-nuclear/new-york-removes-misleading-nuclear-fallout-shelter-signs-idUSKBN1EL0SF

Challenges Facing New York City's Nuclear Weapons Policy Framework

There has been little action by the City Council specifically on nuclear weapons since the end of the Cold War. However, as a potential target city, New York City faces new challenges to its NWFZ. In 2019, the *Bulletin of Atomic Scientists* maintained their "Doomsday Clock" at two minutes to midnight, "the closest it's ever been to apocalypse." Humanity's "two simultaneous existential threats" of "nuclear weapons and climate change" were, they said, "exacerbated this past year by the increased use of information warfare to undermine democracy around the world, amplifying risk from these and other threats and putting the future of civilization in extraordinary danger."[130] Similarly, a 2019 assessment by the United Nations Institute for Disarmament Research (UNIDIR) found that

> The multipolar nature of today's international system, alongside changes in political leadership in some States, has further contributed to perceptions of increased uncertainty concerning the conditions under which nuclear weapons may be used. This is occurring against a backdrop in which the international arms control and disarmament architecture is under serious strain and progress in terms of nuclear reductions has faltered.[131]

In the last few years, leaders of nuclear-armed states, including the USA, have issued cavalier nuclear threats.[132] The Trump Administration has embraced a more aggressive approach to the nuclear arsenal, signaling a move from a doctrine of deterrence to one of nuclear warfighting.[133] In June 2019, the Pentagon released a document, *Nuclear Operations*, suggesting that "Using nuclear weapons could create conditions for decisive results and the restoration of strategic stability." It even claims "willingness to employ nuclear weapons" could "limit damage, and/or terminate the conflict on the best achievable terms for the US, its allies, and partners."[134]

The capacity of the NWFZ to respond to the newly threatening context is constrained by the fact that normative City Council resolutions are not legally binding. There is no structure within the City government that oversees or even issues recommendations on how to better realize the NWFZ's promise or urge the federal government to speed remediation of sites contaminated by early nuclear weapons development. There is no body that could monitor compliance with the NWFZ by ships in the Harbor.

New Yorkers also have little awareness of the NWFZ and its history. For example, a recent *New York* magazine article on the threat of nuclear weapons to the City failed to mention the Nuclear Weapons Free Zone.[135] Outside the New York Buddhist Church on Riverside Drive, the Shinran Shonin statue, which survived the atomic bombing of Hiroshima stands as "a testimonial to the atomic bomb devastation and a symbol of lasting hope for world peace."[136] Hibakusha Stories, a project of Youth Arts New York, has brought atomic bomb survivors from Hiroshima and Nagasaki to more than 45,000 New York City high school students to hear their first-hand witness of nuclear war.[137] Pace University's International Disarmament Institute hosts an online "NYC

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[130] Bulletin of Atomic Scientists. (2019) "A new abnormal: It is *still* 2 minutes to midnight." Retrieved from thebulletin.org/doomsday-clock/
[131] Wilfred Wan. (2019) *Nuclear Risk Reduction: A Framework for Analysis*. Geneva, UNIDIR. p. i. Retrieved from unidir.org/files/publications/pdfs/nuclear-risk-reduction-a-framework-for-analysis-en-809.pdf
[132] Nina Tannenwald. (2018) "How Strong Is the Nuclear Taboo Today?" *The Washington Quarterly*. 41(3). pp. 89-109.
[133] Julian Borger. (2019) "Nuclear weapons: experts alarmed by new Pentagon 'war-fighting' doctrine." *The Guardian*. Retrieved from theguardian.com/world/2019/jun/19/nuclear-weapons-pentagon-us-military-doctrine
[134] US Department of Defense. (2019) *Nuclear Operations*. Joint Publication 3-72. Retrieved from fas.org/irp/doddir/dod/jp3_72.pdf
[135] Intelligencer. (2018) "This Is What a Nuclear Bomb Looks Like." *New York Magazine*. Retrieved from nymag.com/intelligencer/2018/06/what-a-nuclear-attack-in-new-york-would-look-like.html
[136] Atlas Obscura. (2019) "Shinran Statue." Retrieved from atlasobscura.com/places/shinran-statue
[137] See: hibakushastories.org

Nuclear Archive", which tells the history of nuclear issues in the City, including the development of the NWFZ.[138] However, these are initiatives of private institutions, not City authorities.

Unlike other local and municipal NWFZs around the world, there are no official signs, memorials, events raising awareness of nuclear weapons issues, or public acknowledgement of the suffering of nuclear weapons survivors. Historical interpretation provided by the National Park Service for Fort Tilden asserts that the missiles based there "protected the New York City area", neglecting to mention the risk such nuclear warheads posed to the City.[139] Columbia University's Pupin Hall – where the Manhattan Project's research began – was designated a National Historic Landmark by the National Park Service in 1966, but the plaque in its foyer does not say why.[140] John Hersey's classic account *Hiroshima* (1946), first published in *The New Yorker*, is on a New York State Education Department list of recommended reading for grades 6-8. But assignment is at the discretion of teachers.[141] An encouraging recent exception to the lack of official acknowledgement of the City's nuclear story was the City Council's recognition of New York Campaign to Abolish Nuclear Weapons (NYCAN) activist Kathleen Sullivan during Irish Heritage Month 2019.[142] A 2006 resolution (39) in memoriam of Coretta Scott King is the only such City Council action highlighting an activist's contributions to nuclear disarmament (at least since 1994, for which online records are available).

FIGURE 7: May 2018 Protest by New York City Activists Calling for Divestment from Nuclear Weapons. Photo: Ari Beser.

A significant weakness of the NWFZ is that New York is a center for global finance, including that of nuclear weapons production and maintenance (see list of top banks investing in nuclear weapons

[138] See: disarmament.blogs.pace.edu/nyc-nuclear-archive/
[139] National Park Service. (2017) "Fort Tilden." Retrieved from nps.gov/gate/learn/historyculture/fort-tilden.htm
[140] Can be viewed here: commons.wikimedia.org/wiki/File:NHL_Plaque_Pupin_Hall.jpg
[141] New York State Education Department. (n.d.) "English Language Arts: Resource Guide." Retrieved from p12.nysed.gov/guides/ela/part1b.pdf
[142] Brad Balfour. (2019) "A Celebration of Irish Heritage And Culture Was Held In City Hall." *The Irish Examiner*. Retrieved from irishexaminerusa.com/wp/?p=6343

activities in Annex 9). The City government's five pension funds remain invested in nuclear weapons producers. The New York City Retirement Systems' public reports indicate holdings in the order of $475 million in 19 companies (See Annex 10). This represents around 0.25% of the Systems' total assets; together, New York City's pension funds are worth more than $200 billion,[143] making them the fourth largest public pension scheme in the United States.[144] The System's reported holdings in nuclear weapons producers are ten times smaller than the $5 billion in fossil fuel-related assets which the City has committed to divest.[145] Based on publicly available information, more than half of the pension funds' reported investments in nuclear weapons producers are in just two companies – Boeing and Honeywell; 80% are in five companies (See Annex 10). The Board of Education pension fund (BERS) reports no equity holdings in nuclear weapons producing companies among its largest holdings; the New York City Employees' Retirement System (NYCERS) and the firefighters' fund only report equity in Boeing (see Annex 10).

While the primary factor in investment planning is generating sustainable returns, the pension fund trustees also incorporate ethical factors as part of their stewardship responsibilities. For example, the Comptroller's Corporate Governance and Responsible Investment team interprets promoting "sound corporate governance at portfolio companies – including accountability in the boardroom, responsible executive compensation, and sustainable business practices" – including "responsible labor, human rights and environmental practices" – as "Consistent with the fiduciary obligations of the New York City Pension Funds' Boards of Trustees." The Comptroller's office asserts that doing so "works to safeguard the retirement savings of the employees and retirees of the City of New York and deliver sustainable investment results over the long-term."[146]

The City Retirement System's collective *Corporate Governance Principles and Proxy Voting Guidelines* acknowledge that "A portfolio company's involvement in the research, production, and distribution of military weaponry and defense systems may create certain reputational, regulatory, and operational risks related to the products' safety and end-use." As a result, the pension funds "generally support reasonable proposals requesting disclosure of a firm's involvement in the research, production, and distribution of military weaponry, such as nuclear weaponry and missile defense systems, including assessment of the safe handling thereof." However, even this weak provision has a major loophole: "In assessing the reasonableness of a proposal, the Systems take into account whether the request would place the company at a competitive disadvantage or violate the terms of a company's defense contracts." Indeed, the *Corporate Governance Principles* currently discourage efforts to end portfolio companies' involvement in controversial and/or inhumane weapons, saying the System "generally oppose[s] proposals calling to discontinue research, production, or distribution of military weaponry and defense systems."[147] None of the System's reported shareholder initiatives since 2003 have specifically dealt with the issue of nuclear weapons.[148]

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[143] New York City Comptroller. (2019) "Asset Allocation." Retrieved from comptroller.nyc.gov/services/financial-matters/pension/asset-allocation/
[144] Pensions & Investments. (2018) "Funded status of the largest U.S. public pension funds." Retrieved from pionline.com/article/20180205/INTERACTIVE/180209925/funded-status-of-the-largest-us-public-pension-funds
[145] Frank Eltman. (2018) "NYC sues, divests from oil firms over climate change." *AP*. Retrieved from apnews.com/c0e7b71262474f5bae5ae5caa0e4b7ec
[146] New York City Comptroller. (2019) "Pension/Investment Management." Retrieved from comptroller.nyc.gov/services/financial-matters/pension/corporate-governance/
[147] New York City Employees' Retirement System, et al. (2019) "Corporate Governance Principles and Proxy Voting Guidelines." p. 39. Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/NYCRS-Corporate-Governance-Principles-and-Proxy-Voting-Guidelines_2019-Revised-February-2019.pdf
[148] For reports on the Retirement System's shareholder initiatives since 2003, see: comptroller.nyc.gov/reports/shareowner-initiatives-postseason-report/

New York City's Teacher's Retirement System's (TRS) socially responsible pension fund (which tries to exclude weapons investments) has already outperformed other investments in the TRS portfolio over the short and long term (see Annex 11). This is consistent with broader research on corporate social responsibility, which has found that capital markets trust companies that have high ethical standards.[149] At a recent panel at the United Nations, Maura Keaney, Vice President of the New York City-based Amalgamated Bank explained that they will not invest in nuclear weapons, not only for ethical reasons, but also because "It's actually just good business," as divestment is "not a financial risk for the bank."[150] Investment professionals are recognizing the growing trend towards avoiding significant controversial investments – including tobacco and controversial weapons. In April 2019, the S&P Dow Jones Index launched the S&P 500 ESG Index, meant to be a simple fund, "with straightforward exclusions and a selection process meant to keep the index's industry weights in line with those of the S&P 500." Efforts such as these make it easier for asset managers and pension scheme directors to choose investments that better align with their client's values. Since these controversial weapons-producing companies are only a small part of the overall investment landscape, such funds are shown to outperform or at least match their peers.[151]

In September 2018, 27 City Council Members signed a letter from Council Member Daniel Dromm (District 25), Chair of the Finance Committee, to Comptroller Scott Stringer requesting that he "align our city's financial power with our progressive values" and direct New York City's pension funds to divest from investments in companies profiting from nuclear weapons. The letter expressed alarm that "Trump's nuclear posture dangerously lowers the threshold for nuclear weapons use while increasing the likelihood of an accidental launch", saying that "Our divestment would send a clear signal to financial institutions and corporations around the world that hard-working New Yorkers refuse to derive monetary benefit from this sordid and arguably illegal industry."

Potential Policy Models in Emerging Global Norms on Nuclear Weapons

Since New York City Council's declaration of the Nuclear Weapons Free Zone in 1983, there have been normative and policy innovations, both in the USA and at the global level that could provide models for strengthening the City's policy framework on nuclear weapons. The NWFZ treaties for Latin America (1967), the South Pacific (1985), Southeast Asia (1995), Africa (1996) and Central Asia (2006) all include provisions prohibiting assistance with prohibited acts. Many governments interpret this to include prohibiting financing of nuclear weapons activities. Some of them ban nuclear weapons research (while not banning underlying basic scientific research).[152] Within the USA, towns and cities have passed local NWFZ laws that are compliant relevant legal judgements.[153]

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[149] Robert G. Eccles, Ioannis Ioannou & George Serafeim. (2014) "The Impact of Corporate Sustainability on Organizational Processes and Performance." *Management Science*. 60(11). pp. iv-vi; Beiting Cheng, Ioannis Ioannou, & George Serafeim. (2013) "Corporate social responsibility and access to finance." *Strategic Management Journal*. 35(1). pp. 1-23.

[150] In: Tim Wallis. (2019) "Our House Is on Fire and We are Called to Respond!" *NuclearBan.US*. Retrieved from nuclearban.us/our-house-is-on-fire-and-we-are-called-to-respond/

[151] Reid Steadman & Daniel Perrone. (2019) "The S&P 500® ESG Index: Integrating Environmental, Social, and Governance Values into the Core." Retrieved from spglobal.com/_media/documents/the-sp-500-esg-index-integrating-esg-values-into-the-core.pdf

[152] Article 36 & Reaching Critical Will. (2015) "Filling the Legal Gap: The Prohibition of Nuclear Weapons." Retrieved from reachingcriticalwill.org/images/documents/Publications/filling-the-legal-gap.pdf

[153] For legal commentary, see: William Weaver, et al. (1986) "The Legality of the Chicago Nuclear Weapon Free Zone Ordinance." *Loyola University Law Journal*. 17. pp. 553-583; Tom Christoffel. (1987) "Nuclear Free Zones." *Public Health and the Law*. 77(7). pp. 869-873; Lori Martin. (1988) "The Legality of Nuclear Free Zones." The University of Chicago Law Review. 55. Pp. 965-1009; Stephanie Levin. (1992) "Grassroots Voices: Local Action and National Military Policy." *Buffalo Law Review*. 40(2). pp. 321-371; Hope Babcock. (2012) "Can Vermont Put the Nuclear Genie Back in the Bottle?: A Test of Congressional Preemptive Power." *Ecology Law Quarterly*. 39. pp. 691-772.

Example provisions include: establishing local NWFZ citizen advisory committees; educational and awareness raising efforts; and restrictions on investments with companies engaged in nuclear weapons activities.[154]

FIGURE 8: New York City Activists Calling for the USA to join the Treaty on the Prohibition of Nuclear Weapons, May 2018. Photo: Ari Beser.

The most groundbreaking recent normative development is the 2017 adoption by 122 governments of the Treaty on the Prohibition of Nuclear Weapons (TPNW) at the United Nations in New York.[155] Council Member Dromm specifically noted the TPNW in his 2018 sign-on letter calling for divestment of the City's pensions. With the goal of the total elimination of nuclear weapons, the TPNW prohibits the development, testing, production, manufacture, acquisition, possession, stockpiling, stationing, transfer, use and threat of use of nuclear weapons by State Parties, as well as assisting, encouraging or inducing, in any way, anyone to engage in any such activity. It also established "positive obligations" on states parties to provide assistance to victims of nuclear weapons use and testing, remediate contaminated environments and engage in international cooperation and assistance to help affected countries. Its preamble notes the importance of peace and disarmament education. The Treaty will enter into force when it has been ratified by 50 governments. It is being ratified at a rate faster than many other weapons of mass destruction (WMD)-related treaties.[156]

Besides its legal provisions, the TPNW's preamble offers an important normative reframing of nuclear weapons as "abhorrent to the principles of humanity." The Treaty deems nuclear weapons

[154] Oakland City Council. (1992) "An Ordinance Declaring the City of Oakland a Nuclear Free Zone and Regulating Nuclear Weapons Work and City Contracts with and Investment in Nuclear Weapon Makers." Retrieved from www2.oaklandnet.com/oakca1/groups/contracting/documents/webcontent/oak042285.pdf; City of Takoma Park. (n.d.) "Nuclear-Free Zone." Retrieved from codepublishing.com/MD/TakomaPark/#!/TakomaPark14/TakomaPark1404.html; City of Jersey City. (1985) "Nuclear-Free Zone." Retrieved from library.municode.com/nj/jersey_city/codes/code_of_ordinances?nodeId=CH225NUEEZO

[155] To download the TPNW text, see: icanw.org/the-treaty/

[156] Norwegian People's Aid. (2018) "Executive Summary." *Nuclear Weapons Ban Monitor.* Retrieved from icanw.org/wp-content/uploads/2018/10/ExecutiveSummaryNuclearWeaponsBanMonitor.pdf

as contrary to "the principles and rules of international humanitarian law", as well as a threat to human rights, the environment and the global economy. The Treaty acknowledges the "unacceptable suffering of and harm caused to the victims of the use of nuclear weapons (hibakusha), as well as of those affected by the testing of nuclear weapons." It also recognizes the disproportionate impact of nuclear weapon use and testing on women and girls, and indigenous peoples. Nuclear disarmament, the Treaty asserts, is an "ethical imperative", "a global public good of the highest order, serving both national and collective security interests." A year later, the UN Human Rights Committee issued a General Comment on the International Covenant on Civil and Political Rights (to which the USA and all nuclear-armed states but China are party) declaring the threat or use of nuclear weapons as "incompatible with respect for the right to life" because they "are indiscriminate in effect and are of a nature to cause destruction of human life on a catastrophic scale."[157]

The International Campaign to Abolish Nuclear Weapons (ICAN) was awarded the 2017 Nobel Peace Prize for its advocacy for the TPNW. ICAN revitalized global nuclear diplomacy by pushing for an expansion of the conversation to include survivors, indigenous peoples, women, people of color, LGBTQA people and activists and official from the Global South. Municipalities around the world, including in nuclear-armed and -allied countries, are expressing support for the TPNW through ICAN's Cities Appeal. Washington DC, Los Angeles, Salt Lake City, Baltimore, Paris, Hiroshima, Nagasaki, Geneva, Toronto, Berlin, Sydney and Oslo are just a few of the cities that have so far endorsed the Appeal. Calling themselves NYCAN, local activists associated with ICAN and other nuclear disarmament groups in New York City, supported Dromm's letter on divestment and are campaigning for New York City to join the Cities Appeal (see Figures 6 and 7).[158] They lift up the TPNW's normative innovations – in its preamble, provisions and inclusive process of negotiation – as inspiration to reaffirm and revitalize New York City's NWFZ.

Coordinated by the Office of the Mayor for International Affairs, New York has recently pioneered innovative approaches of aligning the City's public policy with international treaties and norms that advance the rights and well-being of its residents, even when US commitment at the federal level is lacking. In July 2018, in a project called "Global Vision, Urban Action," New York City "became the first city in the world to report to the UN on local progress toward the …. Sustainable Development Goals."[159] The year before, Mayor Bill de Blasio issued an executive order "to adopt and commit the City to the principles" of the Paris Climate Agreement; the City became the first to release a plan to meet the Agreement's goals. Daniel Zarrilli, the Mayor's Senior Director for Climate Policy and Programs, said "In the face of federal inaction on climate change, it is now more important than ever for cities like New York to step up to fulfill the Paris Agreement."[160] This model may be relevant for any efforts to align New York City with the TPNW.

[157] LCNP. (2018) "The UN Human Rights Committee on the Right to Life and Nuclear Weapons." Retrieved from lcnp.org/UN%20Human%20Rights%20Committee%20Right%20Life%20Nuclear%20Weapons.pdf
[158] ICAN. (n.d.) "#ICANSave My City." Retrieved from nuclearban.org/cities/getinvolved#cities-list
[159] Nicole Javorsky. (2018) "Why New York City Is Reporting Its Sustainability Progress to the UN." *CityLab*. Retrieved from citylab.com/environment/2018/07/why-new-york-city-is-reporting-its-sustainability-progress-to-the-un/564953/
[160] NYC. (2017) "NYC Delivers First-Ever City Plan to Meet the Goals of the Paris Climate Agreement." Retrieved from www1.nyc.gov/office-of-the-mayor/news/634-17/nyc-delivers-first-ever-city-plan-meet-goals-the-paris-climate-agreement

Relevant Pending Legislation in the New York City Council

On 26 June 2019, Council Member Dromm introduced a package of legislation intended to reaffirm and strengthen New York City's Nuclear Weapons Free Zone (see Figure 8):

Resolution 976(2019): Calls upon the New York City Comptroller to instruct the pension funds of public employees in New York City to divest from and avoid any financial exposure to companies involved in the production and maintenance of nuclear weapons, reaffirming New York City as a Nuclear Weapons Free Zone and supporting the Treaty on the Prohibition of Nuclear Weapons by endorsing the ICAN Cities Appeal. The preamble asserts that "Catastrophic humanitarian and environmental consequences would result from any nuclear detonation in New York City and could not be adequately addressed; eliminating nuclear weapons remains the only way to guarantee that nuclear weapons are never used again under any circumstances." It asserts that the "suffering of and harm caused to the victims of the use of nuclear weapons (*hibakusha*), as well as of those affected by the testing of nuclear weapons, is unacceptable", acknowledging that "New York City has a special responsibility, as a site of Manhattan Project activities and a nexus for financing of nuclear weapons, to express solidarity with all victims and communities harmed by nuclear weapons use, testing and related activities." The Resolution pays tribute to the City's "demonstrated history of opposing nuclear weapons", citing the 1982 demonstrations "on the streets and in Central Park" and the 1983 NWFZ Resolution. It notes ICAN's Nobel Peace Prize and enumerates the specific provisions of the TPNW, both its prohibitions and its positive obligations of "assistance to victims of nuclear weapons use and testing, remediation of contaminated environments and international cooperation and assistance to affected nations."[161] If it passes, this bill would be New York City's first resolution specifically address nuclear weapons since 1983. Lead co-sponsors: Daniel Dromm, Ben Kallos (District 5), Helen Rosenthal (District 6). See Annex 3 for the full text.

- **"Bill to create a nuclear disarmament and nuclear weapons-free zone advisory committee" (Int. 1621[2019])**: Local law establishing a New York City Nuclear Disarmament and Nuclear Weapons Free Zone Advisory Committee to "examine nuclear disarmament and issues related to recognizing and reaffirming New York City as a nuclear weapons-free zone." The Committee "would be chaired by the Commissioner of the Mayor's Office on International Affairs. The remaining six members of the committee would be representatives with a demonstrated knowledge or experience of nuclear policy, advocacy or activism." The Committee will "conduct a comprehensive review of New York City's current stance on nuclear weapons," submitting an annual report for five years, including "findings and conclusions and any recommendations for policy or legislation." The Committee can also "host discussions, public programs and other educational initiatives related to nuclear disarmament and the catastrophic humanitarian and environmental

[161] New York City Council. (2019) "Divest the pension funds of public employees in NYC from financial institutions that invest in the production of nuclear weapons." Res. 976-2019. Retrieved from legistar.council.nyc.gov/LegislationDetail.aspx?ID=3996240&GUID=4AF9FC30-DFB8-45BC-B03F-2A6B534FC349&Options=ID|Text|&Search=976

consequences of nuclear weapons production, testing, use and deployment."[162] If it passes, this bill would be New York City's first local law specifically regarding the Nuclear Weapons Free Zone. Lead co-sponsors: Daniel Dromm, Ben Kallos. See Annex 4 for the full text.

FIGURE 9: New York City Council Member Daniel Dromm holds Nobel Peace Prize of the International Campaign to Abolish Nuclear Weapons (ICAN), with his legislative director, Sebastian Maguire, and activists from NYCAN, 26 June 2019. Photo: NYCAN.

Dromm's two bills were drafted to address NWFZ policy challenges and draw on emerging norms on nuclear weapons, notably the TPNW's humanitarian, human rights and environmental framing. At the time of writing, a veto-proof majority of Council Members had co-sponsored both bills. Activists from NYCAN are working to build support for the legislation among both elected officials and the public.

Another piece of relevant pending legislation is **Resolution 747A(2019)**, introduced in February 2019 by Council Member Ydanis Rodriguez (District 10) and co-sponsored, at the time of writing, by 14 other Council Members. While it does not specifically address the issue of nuclear weapons, it calls on "the federal government and its legislators to move significant funds away from the military

[162] New York City Council. (2019) "Create a nuclear disarmament and nuclear weapons-free zone advisory committee." Int 1621-2019. Retrieved from legistar.council.nyc.gov/LegislationDetail.aspx?ID=3996241&GUID=1B009655-14E1-487F-956A-3B3CBF64451E&Options=ID|Text|&Search=1621

budget to fund human needs and services." It also calls for "in-depth public hearings are conducted on the dollar amounts that the City needs but that get diverted to the Pentagon." The preamble asserts that American cities, including New York, "could be much more fair and stronger if the federal government spent less on the military and instead utilized the money to improve transportation, education, housing, healthcare, environmental protection, and public goods and services."[163]

Thanks to John Burroughs, Robert Croonquist, Bonnie Docherty, Anthony Donovan, Daniel Högsta, Sebastian Maguire, Stuart Maslen, Susi Snyder, Seth Shelden, Kathleen Sullivan and NYCAN for critical comments on early drafts of this paper. All opinions and responsibility for any errors or inaccuracies are mine alone.

[163] New York City Council. (2019) "Federal government and its legislators to move significant funds away from the military budget to fund human needs and services." Res. 747A-2019. Retrieved from legistar.council.nyc.gov/LegislationDetail.aspx?ID=3860392&GUID=210A250D-8EA9-4EB8-A88E-0CA5BF28FDB7&Options=ID|Text|&Search=747

Annex 1: Full List of Resolutions on Nuclear Weapons Adopted by the New York City Council[164]

1963 – Resolution 648: "Requesting Speedy Senate Ratification of the Atmospheric Nuclear Test Ban Treaty." Adopted by unanimous vote.

1979 – Resolution 512: "Calling Upon the President of the United States to Issue a Call for an Emergency Meeting of All Nuclear Nations to Plan an End to the Escalating Arms Race."

1982 – Resolution 1840: "Calling Upon the Government of the United States and the Soviet Union to Negotiate a Mutual Freeze on the Testing and Production of Nuclear Weapons and Calling Upon the New York City Council to Declare June 12, 1982 to Be Peace Day."

1982 – Resolution 1907: "Supporting Passage of House Joint Resolution 434 and Senate Joint Resolution 163 Calling for a Mutual and Verifiable Freeze and Reduction in Nuclear Weapons by the United States and Soviet Union."

1983 – Resolution 364: "Calling upon the Council of the City of New York to Prohibit the Production, Transport, Storage or Deployment of Nuclear Weapons within the City and Proclaiming the City a Nuclear Weapons Free Zone."

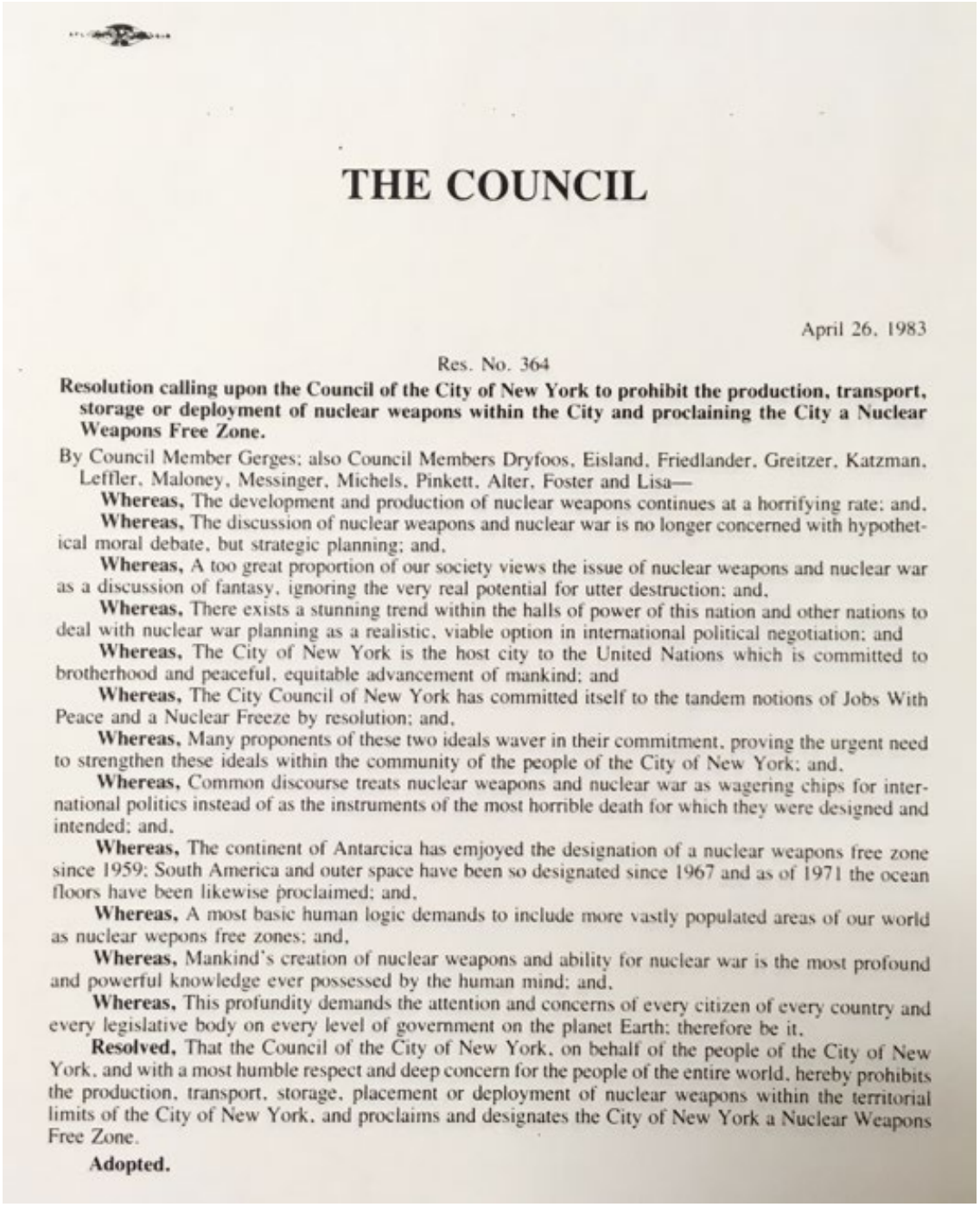
2002 – Resolution 549: "Oppose the Congressional Resolution allowing President George W. Bush to unilaterally declare war against Iraq." (Supports UN weapons of mass destruction inspections in Iraq).

2006 – Resolution 39: "In Memoriam – Coretta Scott King." (Brief mention of her activism on nuclear disarmament).

[164] All New York City Council Resolutions cited in this paper are available from: disarmament.blogs.pace.edu/nyc- nuclear-archive/new-york-city-council-resolutions-on-nuclear-weapons/. Many thanks to Anthony Donovan for his archival research identifying, collecting and photographing New York City's Resolutions on nuclear issues, and for calling the author's attention to them.

Annex 2: Resolution 364(1983) Establishing New York City's Nuclear Weapons Free Zone

(Photo: Anthony Donovan)



THE COUNCIL

April 26, 1983

Res. No. 364

Resolution calling upon the Council of the City of New York to prohibit the production, transport, storage or deployment of nuclear weapons within the City and proclaining the City a Nuclear Weapons Free Zone.

By Council Member Gerges; also Council Members Dryfoos, Eisland, Friedlander, Greitzer, Katzman, Leffler, Maloney, Messinger, Michels, Pinkett, Alter, Foster and Lisa—

Whereas, The development and production of nuclear weapons continues at a horrifying rate; and,

Whereas, The discussion of nuclear weapons and nuclear war is no longer concerned with hypothetical moral debate, but strategic planning; and,

Whereas, A too great proportion of our society views the issue of nuclear weapons and nuclear war as a discussion of fantasy, ignoring the very real potential for utter destruction; and,

Whereas, There exists a stunning trend within the halls of power of this nation and other nations to deal with nuclear war planning as a realistic, viable option in international political negotiation; and

Whereas, The City of New York is the host city to the United Nations which is committed to brotherhood and peaceful, equitable advancement of mankind; and

Whereas, The City Council of New York has committed itself to the tandem notions of Jobs With Peace and a Nuclear Freeze by resolution; and,

Whereas, Many proponents of these two ideals waver in their commitment, proving the urgent need to strengthen these ideals within the community of the people of the City of New York; and,

Whereas, Common discourse treats nuclear weapons and nuclear war as wagering chips for international politics instead of as the instruments of the most horrible death for which they were designed and intended; and,

Whereas, The continent of Antarcica has emjoyed the designation of a nuclear weapons free zone since 1959; South America and outer space have been so designated since 1967 and as of 1971 the ocean floors have been likewise proclaimed; and,

Whereas, A most basic human logic demands to include more vastly populated areas of our world as nuclear wepons free zones; and,

Whereas, Mankind's creation of nuclear weapons and ability for nuclear war is the most profound and powerful knowledge ever possessed by the human mind; and,

Whereas, This profundity demands the attention and concerns of every citizen of every country and every legislative body on every level of government on the planet Earth; therefore be it,

Resolved, That the Council of the City of New York, on behalf of the people of the City of New York, and with a most humble respect and deep concern for the people of the entire world, hereby prohibits the production, transport, storage, placement or deployment of nuclear weapons within the territorial limits of the City of New York, and proclaims and designates the City of New York a Nuclear Weapons Free Zone.

Adopted.

Annex 3: Proposed Resolution 976(2019) Reaffirming New York City's Nuclear Weapons Free Zone

This resolution was introduced by Council Member Daniel Dromm at the June 26, 2019 Stated Meeting of the New York City Council. A latest list of cosponsors is available here:
legistar.council.nyc.gov/LegislationDetail.aspx?ID=3996240&GUID=4AF9FC30-DFB8-45BC-B03F-2A6B534FC349&Options=ID%7cText%7c&Search=976

Whereas, Catastrophic humanitarian and environmental consequences would result from any nuclear detonation in New York City and could not be adequately addressed; eliminating nuclear weapons remains the only way to guarantee that nuclear weapons are never used again under any circumstances; and

Whereas, The suffering of and harm caused to the victims of the use of nuclear weapons (*hibakusha*), as well as of those affected by the testing of nuclear weapons, is unacceptable; and

Whereas, New York City has a special responsibility, as a site of Manhattan Project activities and a nexus for financing of nuclear weapons, to express solidarity with all victims and communities harmed by nuclear weapons use, testing and related activities; and

Whereas, On July 7, 2017, 122 countries voted in favor of adopting the United Nations Treaty on the Prohibition of Nuclear Weapons, which is a legally binding multilateral Treaty among the States Parties to the document, advanced by the International Campaign to Abolish Nuclear Weapons (ICAN), which was subsequently awarded the Nobel Peace Prize in December 2017 for this work; and

Whereas, The Treaty will enter into force once it has been ratified by 50 countries, and ICAN has established the Cities Appeal commitment to mobilize local governments to support the Treaty and to call on their national government to join and support the Treaty, with Washington, DC, Los Angeles, Berlin, Sydney, Paris, and Toronto among the major cities who have joined; and

Whereas, The Treaty prohibits the development, testing, production, manufacture, acquisition, possession, stockpiling, stationing, transfer, use and threat of use of nuclear weapons among the member nations of the Treaty, as well as assisting, encouraging or inducing, in any way, anyone to engage in any such activity, with the eventual goal of total elimination of nuclear weapons; further, the Treaty obligates assistance to victims of nuclear weapons use and testing, remediation of contaminated environments and international cooperation and assistance to affected nations; and

Whereas, According to the 2018 report compiled by Don't Bank on the Bomb, 329 financial institutions around the world including Goldman Sachs, Bank of America, and JP Morgan Chase among others have invested through financing, manufacturing or production of nuclear weapons with BlackRock and Capital Group, the highest contributors among United States based financial institutions, with their investments totaling $38 billion and $36 billion respectively; and

Whereas, The pension system for the City of New York retirees has significant investments in these financial institutions and other companies involved in producing key components for and maintaining nuclear weapons through equity holdings, bond holdings, and other assets, according to the annual report issued by the New York City Employees' Retirement System; and

Whereas, New York City has a demonstrated history of opposing nuclear weapons, including when one million people demonstrated on the streets and in Central Park for nuclear disarmament and an end to the Cold War arms race on June 12, 1982; and

Whereas, On April 26, 1983, the New York City Council adopted Resolution 364 declaring the City a Nuclear Weapons Free Zone; and

Whereas, Seventy-four years after the nuclear bombings of Nagasaki and Hiroshima, which killed more than 200,000 people in 1945, and exposed hundreds of thousands of people in subsequent decades to radiation exposure resulting from nuclear weapons tests and related activities, the United States continues to have policies and procedures in place to facilitate the manufacturing, possession and use of nuclear weapons; and

Whereas, Despite efforts towards disarmament in the last several decades, the global nuclear stockpile consists of approximately 14,000 warheads, more than 13,000 of which are owned by the United States and Russia; and

Whereas, On April 16, 2018, Council Member Daniel Dromm and 27 co-signers in the New York City Council sent a letter to New York City Comptroller Scott Stringer requesting that pension funds and finances be divested from banks, corporations and financial institutions that profit from the production of nuclear weapons in similar fashion to the City's divestment from coal and oil investments; now, therefore, be it

***Resolved*, The Council of the City of New York calls upon the New York City Comptroller to instruct the pension funds of public employees in New York City to divest from and avoid any financial exposure to companies involved in the production and maintenance of nuclear weapons, reaffirms New York City as a Nuclear Weapons Free Zone and joins the ICAN Cities Appeal, which welcomes the adoption of and calls on the United States to support and join the Treaty on the Prohibition of Nuclear Weapons.**

Annex 4: Proposed Local Law 1621(2019) Establishing Nuclear Weapons-Free Zone Advisory Committee

This resolution was introduced by Council Member Daniel Dromm at the June 26, 2019 Stated Meeting of the New York City Council. A latest list of cosponsors is available here:
legistar.council.nyc.gov/LegislationDetail.aspx?ID=3996241&GUID=1B009655-14E1-487F-956A-3B3CBF64451E&Options=ID%7cText%7c&Search=1621

A Local Law in relation to create a nuclear disarmament and nuclear weapons-free zone advisory committee

Be it enacted by the Council as follows:

Section 1. Advisory committee on nuclear disarmament and a nuclear weapons-free zone.

a. There shall be an advisory committee to examine nuclear disarmament and issues related to recognizing and reaffirming New York city as a nuclear weapons-free zone.

b. The advisory committee shall consist of the following members:

1. The commissioner of the mayor's office on international affairs or such commissioner's designee, who shall serve as chair of the advisory committee; and
2. Six members, of which 3 such members shall be appointed by the speaker of the council and 3 such members shall be appointed by the mayor, provided that each member shall have demonstrated understanding and experience of nuclear disarmament policy, advocacy or activism.

c. The advisory committee shall conduct a comprehensive review of New York city's current stance on nuclear weapons and the process for recognizing and reaffirming the city as a nuclear weapons free zone, in consultation with a diverse group of individuals, including but not limited to victims of nuclear weapons and academic institutions. The advisory committee shall also:

1. Establish a working definition for how a nuclear weapons-free zone might be defined in New York city;
2. Recommend mechanisms for encouraging and increasing community input with regard to education related to the nuclear weapons-free zone;
3. Recommend or host discussions, public programs and other educational initiatives related to nuclear disarmament and the catastrophic humanitarian and environmental consequences of nuclear weapons production, testing, use and deployment; and
4. Where applicable, provide a summary of all related activities and any relevant updates for the previous 12 months of advisory committee activities.

d. The advisory committee shall meet no less than 4 times per year.

e. No later than 1 year after the effective date of this local law, and annually thereafter, the advisory committee shall submit to the mayor and the speaker of the council and post online a report that contains its findings and conclusions and any recommendations for policy or legislation.

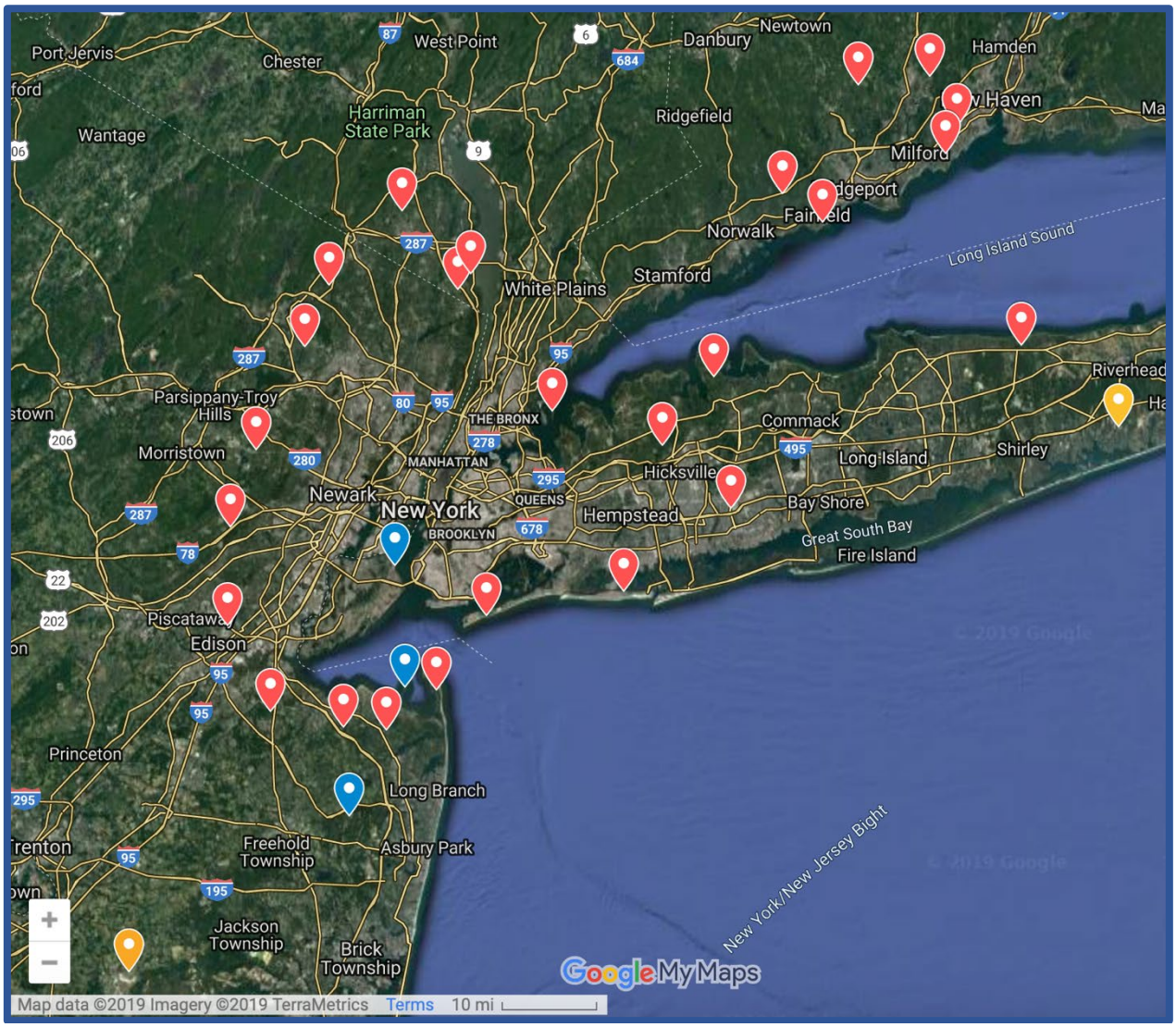
f. The advisory committee shall dissolve upon submission of the fifth report required by subdivision e of this section.

§ 2. This local law takes effect immediately.

Annex 5: Former Nuclear Weapons Sites in the New York City Area

Note that none of these sites now host nuclear weapons. Red tabs indicate former Nike missile sites. Blue tabs indicate formerly nuclear-capable US Navy bases. The yellow tabs indicate Air Force bases that hosted Bomarc missiles.

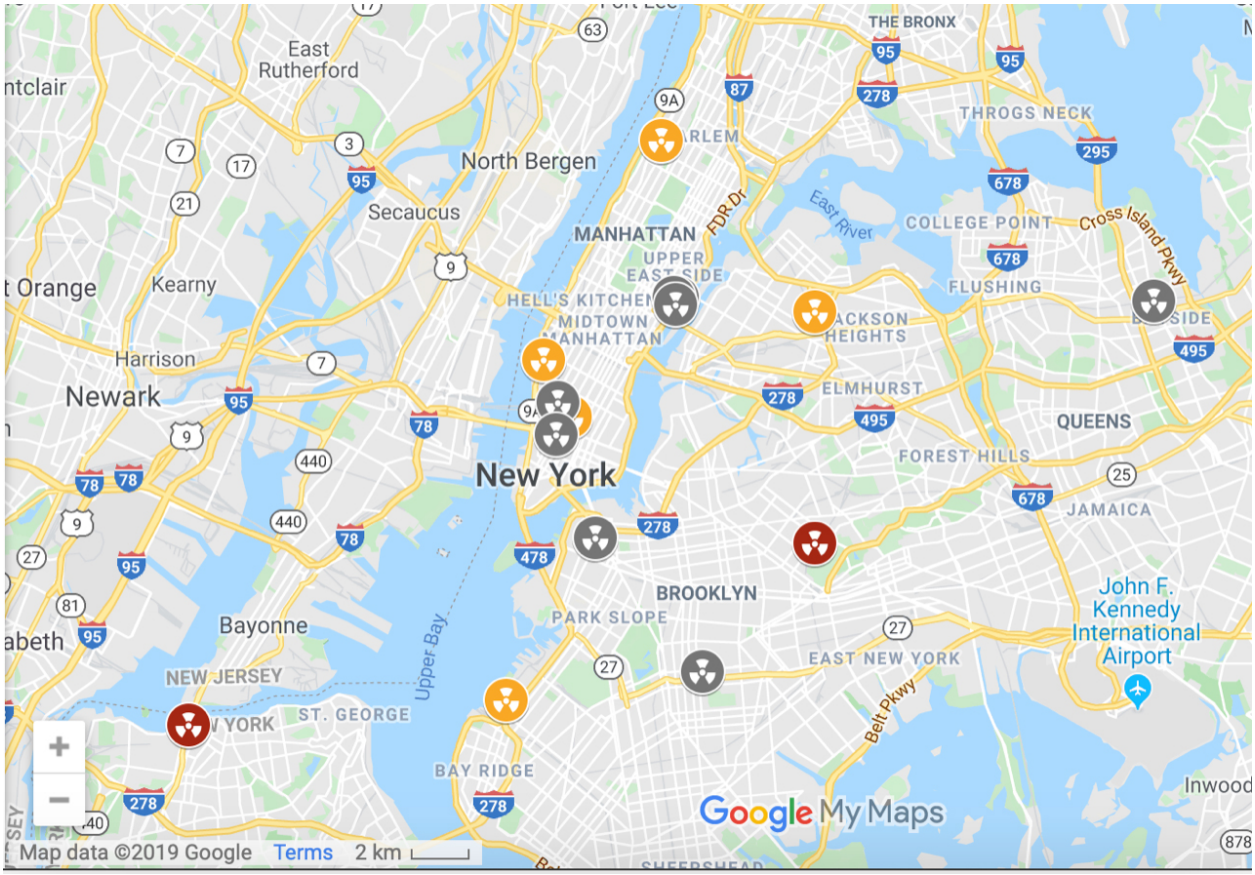
View the full map here:
drive.google.com/open?id=171z1HmIWTON2vRk3_g_oEwQMtTnKUW9m&usp=sharing



Annex 6: Former Sites of Early Nuclear Weapons Development in New York City, Where Radioactive Materials Were Likely Handled, 1942-1954

Some 30 sites in New York City were associated with early US nuclear weapons development. Radioactive materials were or may have been handled at 16 of these. Red radioactive symbols represent sites where remediation is ongoing or being considered. Yellow markers are for sites where there have been remediation efforts that the federal governments deems adequate and/or persons who worked there have received compensation or medical assistance from the federal government. Dark grey markers represent sites where radioactive material was, or may have been, handled but the federal government deemed remediation was unnecessary and no one has received compensation or medical assistance from the federal government.

View the full map here:
drive.google.com/open?id=1_pOdbZxAyeFHV0UDKUWmIMATvsp54AKW&usp=sharing



Annex 7: Naval Accidents in and around New York Harbor, 1945-1988[165]

Date	Ship	Ship Type	Nuclear Capabilities?	Details
22 May 1945	"U.S. Navy attack boat"		No	"Acetylene torch fumes ignite in the hold" while at Todd Shipyards, Brooklyn, "killing two."
21 June 1945	USS *Franklin* (CV-13)	Multi-Purpose Aircraft Carrier	No	"a boiler room fire at New York Harbor during decoration ceremonies; damage is slight."
1 May 1946	USS *Solar* (DE-221)	Destroyer Escort (reclassified to Frigates (FF) in 1975)	No	"destroyed by an explosion while unloading ammunition at Earle, New Jersey."
14 May 1946	USS *Franklin* (CV-13)	Multi-Purpose Aircraft Carrier	No	"leaks carbon dioxide fumes while at the Brooklyn Naval Shipyard… killing two."
23 August 1951	USS *Wisconsin* (BB-64)	Battleship	No	"freed after grounding on mud flats in New York Harbor"
18 March 1955	USS *General R.E. Callan* (AP-139)	Transport	No	"runs aground at Red Hook Flats, New York Harbor. News reports are censored for 24 hours."
27 July 1957	USS *Mauna Loa* (AE-8)	Ammunition Ship	No	"suffers a fire off New York. The fire is extinguished before it reaches the ship's 3,500-ton cargo of explosives."
31 July 1959	USS *Upshur* (AP-198)	Transport	No	"heavily damaged by fire at the Brooklyn Army Terminal"
19 December 1960	USS *Constitution* (CVA-64)	Attack Aircraft Carrier	Was under construction, so very unlikely	"Fire breaks out on the hangar deck… in the last stages of construction at the New York Naval Shipyard. Reports list 50 dead and an estimated damage of $45 million. A Navy court of inquiry investigation later finds there were 42 small fires earlier in the year. The fire delays the ship's commissioning by several months to 27 October 1961."
5 April 1963	USS *Great Sitkin* (AE-17)	Ammunition Ship	No	"suffers slight damage during a fire of unknown origin while tied up at the Main Ship Repair Corporation in Brooklyn, New York."

[165] William M. Arkin and Joshua Handler. (1989) "Naval Accidents 1945 – 1988." Neptune Paper No. 3. pp. 16-73. Retrieved from https://fas.org/wp-content/uploads/2014/05/NavalAccidents1945-1988.pdf

Date	Ship	Ship Type	Nuclear Capabilities?	Details
4 April 1964	USS *General Simon B. Buckner* (AP-123)	Transport	No	"collides with a Liberian freighter in high winds in the harbor at Upper Bay, New York."
19 August 1966	USS *Raleigh* (LPD-1)	Amphibious transport dock	No	"bumps the cruise liner France at the Hudson River pier in New York City, none are hurt."
24 November 1967	N.S. *Savannah*	Merchant ship	Nuclear-powered	"springs a leak in its reactor auxiliary cooling system off New Jersey. The Atomic Energy Commission and the Maritime Administration say no radioactive materials escaped as a result of the leak. The ship returned to Hoboken, New Jersey, for repairs."
16 July 1971	"unidentified U.S. Navy ship"	Unknown	Unknown	"spills 40,000 gallons of oil off New York, subsequently contaminating the waterfronts of Coney Island and Staten Island, New York."
4 April 1981	USS *Aylwin* (FF-1081)	Frigate	W44 depth (ASROC) bombs were deployed on frigates from 1961-1989	"Workers at Coastal Drydock in New York (formerly Brooklyn Navy Yard) inadvertently cause a fire … while welding. The frigate's Combat Information Center is damaged."
19 December 1983	USS *Florida* (SSBN-728)	Nuclear-Powered Ballistic Missile Submarine	Nuclear-powered. W68 SLBM warheads deployed on SSBNs 1970-1991; W76 SLBMs from 1979	"The Trident submarine … is slightly damaged when it hits an unidentified object while submerged during sea trials in Long Island Sound. No one is injured and a Navy spokesman says he has no cost estimate on the damage."

Annex 8: Costs to Date of Remediating Environmental Contamination at Private Sector Sites of Early Nuclear Weapons Development in New York City

Site	Borough	Dates of Remediation	Organization Responsible for Remediation	Cost at the Time	Cost in 2018 Dollars
Columbia University	Manhattan	Before 1978	Columbia University	Unknown	Unknown
American Machine & Foundry Co.	Brooklyn	Between 1971-1977	Lutheran Medical Center	Unknown	Unknown
Radium Chemical Company	Queens	1989-1994	EPA	$18,699,000 (1990)	$35,925,376
Baker and Williams Warehouses	Manhattan	1989-1995	Dept of Energy	$1,754,562 (1995)	$2,890,961
Wolff-Alport Chemical Corp	Queens	Ongoing	EPA	$39,900,000 (budgeted in 2017)	$40,874,521
Archer Daniels Midland Company Warehouse	Staten Island	Site is under consideration	US Army Corps of Engineers	TBD	TBD
				Total Cost So Far (in 2018 US$)	**$79,690,858**

Annex 9: Energy Employees Occupational Illness Compensation (EEOIC) Cases at Eligible Private Sector Sites of Early Nuclear Weapons Development in New York City, as of 17 June 2019.[166]

Site	Borough	Cases			Compensation		Medical Bills	Total Payments
		Filed	Approved	Denied	Cases Paid	Amount		
American Machine and Foundry	Brooklyn	8	3	5	3	$450,000	$75	$450,075
New York University	Manhattan	2	1	1	1	$150,000	$0	$150,000
Radium Chemical Company	Queens	0	0	0	0	$0	$0	$0
Special Alloy Materials (SAM) Laboratories Columbia University	Manhattan	81 (47 unique individuals)	55	24	50	$6,727,500	$438,164	$7,165,664
Wolff-Alport Chemical Corp	Queens	1	0	1	0	$0	$0	$0
	TOTALS	**92**	**59**	**31**	**54**	**$7,327,500**	**$438,239**	**$7,765,739**

[166] Department of Labor. (2019) "EEOICP Program Statistics by State and Worksite: New York." Retrieved from dol.gov/owcp/energy/regs/compliance/statistics/NY.htm

Annex 10: Top 25 Financial Institutions Investing in Nuclear Weapons Production[167]

Rank	Financial Institution	Country	Total Investments in Nuclear Weapons Producers (US$ millions)
1	Vanguard	USA	66,048.0
2	BlackRock	USA	61,200.1
3	Capital Group	USA	59,096.3
4	State Street	USA	52,834.9
5	Verisight (now known as Newport Group, formerly Evercore)	USA	31,508.7
6	T. Rowe Price	USA	31,234.5
7	Bank of America	USA	29,032.9
8	JPMorgan Chase	USA	23,962.1
9	Wells Fargo	USA	20,260.8
10	Citigroup	USA	17,016.7
11	Fidelity Investments	USA	15,700.1
12	Wellington Management	USA	12,849.7
13	Northern Trust	USA	10,828.3
14	TIAA	USA	10,789.2
15	Mitsubishi UFJ Financial	USA	10,668.6
16	BNP Paribas	France	9,967.3
17	Morgan Stanley	USA	9,325.4
18	Bank of New York Mellon	USA	9,028.8
19	Geode Capital Management	USA	8,742.2
20	Goldman Sachs	USA	8,595.0
21	Société Générale	France	8,201.5
22	Crédit Agricole	USA	7,788.4
23	Prudential Financial (US)	USA	7,762.3
24	Ameriprise Financial	USA	6,904.8
25	Mizuho Financial	Japan	6,833.5

[167] Susi Snyder. (2019) *Shorting our security: Financing the companies that make nuclear weapons*. Utrecht, PAX. Retrieved from dontbankonthebomb.com/wp-content/uploads/2019/06/2019_HOS_web.pdf

Annex 11: Reported Equity Holdings of Nuclear Weapons Producers by New York City Retirement Systems

Note: List of major companies involved in nuclear weapons production and maintenances from Don't Bank on the Bomb.[168] *The pension funds differ in the comprehensiveness of the public reporting of their holdings. The figures for the Teachers fund represent all of their holdings.*[169] *NYCERS: largest 40 equity and largest 40 bond holdings.*[170] *Police: largest 100 equity holdings.*[171] *Fire: largest 37 stock holdings.*[172] *BERS: largest 50 equity holdings, large 50 international equity holdings, largest 50 Europe, Australasia and Far East (EAFE) Investment Holdings and largest 50 emerging market holdings.*[173] *As a result, other than for the teacher's fund, totals should be considered indicative of order of magnitude, rather than a comprehensive tally.*

Security	Fair Value of Equity Holdings (US$)					Total Fair Value (US$)
	Teachers	NYCERS	Police	Fire	BERS	
Aecom	1,698,694					**1,698,694**
Aerojet Rocketdyne	657,805					**657,805**
Airbus Group	9,489,380					**9,489,380**
BAE Systems	5,004,890					**5,004,890**
Bechtel	0					**0**
Bharat Dynamics Ltd.	0					**0**
Boeing	0	114,817,226	51,633,311	14,881,546		**181,332,083**
BWX Technologies	11,046,684					**11,046,684**
Constructions Industrielles de la Méditerranée (CNIM)	0					**0**
Fluor	12,631,956					**12,631,956**
General Dynamics	15,212,676					**15,212,676**
Honeywell International	37,411,682		30,038,458			**67,450,140**
Huntington Ingalls Industries	3,133,365					**3,133,365**
Jacobs Engineering	2,489,995					**2,489,995**
Larsen & Toubro	0					**0**
Leidos	2,754,295					**2,754,295**
Leonardo	467,301					**467,301**
Lockheed Martin	26,272,120		20,558,678			**46,830,798**
Moog	1,368,467					**1,368,467**
Northrop Grumman	15,597,822					**15,597,822**
Raytheon	21,974,322					**21,974,322**
Safran	6,723,416					**6,723,416**
Serco	0					**0**
Textron	5,352,026					**5,352,026**
Thales	0					**0**

[168] Susi Snyder. (2019) *Producing Mass Destruction: Private Companies and the Nuclear Weapon Industry*. Utrecht, PAX. Retrieved from dontbankonthebomb.com/wp-content/uploads/2019/05/2019_Producers-Report-FINAL.pdf

[169] Teachers' Retirement System of the City of New York. (2018) "Investment Portfolios: June 30, 2018." p. 99. Retrieved from trsnyc.org/memberportal/WebContent/publications/financialReports/investmentPortfolio2018

[170] NYCERS. "2018 Comprehensive Annual Financial Report." p. 141. Retrieved from nycers.org/sites/main/files/file-attachments/cafr2018.pdf

[171] New York City Police Pension Fund. (2018) "Comprehensive Annual Financial Report for the fiscal years ended June 30, 2018 and June 30, 2017." pp. 185-186. Retrieved from www1.nyc.gov/assets/actuary/downloads/pdf/POLICE_2018_CAFR.pdf

[172] New York City Fire Pension Funds. (2018) "Comprehensive Annual Financial Report: For the Fiscal Years Ended June 30, 2018 and June 30, 2017." Retrieved from www1.nyc.gov/assets/fdny/downloads/pdf/about/fire-pension-fund-cafr.pdf

[173] Board of Education Retirement System of the City of New York. (2018) "Comprehensive Annual Financial Report of the Qualified Pension Plan and the Tax Deferred Annuity Program: For the Years Ended June 30, 2017 and June 30, 2016." pp. 77-81. Retrieved from bers.nyc.gov/assets/bers/downloads/pdf/publications/bers-cafr-web-2017.pdf

Security	Fair Value of Equity Holdings (US$)					Total Fair Value (US$)
	Teachers	NYCERS	Police	Fire	BERS	
United Technologies Corporation	36,997,739		26,287,182			**63,284,921**
Walchandnagar Industries	0					**0**
Total Fair Value	**216,284,635**	**114,817,226**	**128,517,629**	**14,881,546**	**0**	**474,501,036**
Percentage of Overall 2018 Market Value of Fund	**0.30%**	**0.18%**	**0.30%**	**0.10%**	**0%**	**0.23%**
Number of Nuclear Weapons Producers Reported in Portfolio	**19**	**1**	**4**	**1**	**0**	**19**

Annex 12: New York City Teachers' Retirement System Annualized Investment Returns (Percentage) on Equity Holdings, as of 30 June 2018.[174]

Fund	1 Year	3 Year	5 Year	10 Year
Socially Responsive Equity Fund	**12.96**	**10.53**	**12.01**	**10.13**
Diversified Equity Fund	12.12	9.58	11.26	8.45
International Equity Fund	7.13	6.53	7.18	4.93
Total Portfolio	**8.33**	**7.60**	**8.58**	**7.11**

Photo by Ari Beser

[174] Teachers' Retirement System of the City of New York. (2018) "Comprehensive Annual Financial Report: Fiscal Years Ended June, 30, 2018 and June 30, 2017." p. 92. Retrieved from trsnyc.org/memberportal/WebContent/publications/financialReports/cafr