

Nuclear Weapons are a Risky Business

*Divestment as Financial Prudence
for New York City's Retirement Systems*



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Executive Summary

The majority of the world's governments – along with many faith leaders, Nobel Prize Laureates and civil society voices around the world – see nuclear weapons as morally abhorrent. On 7 July 2017, 122 states adopted the Treaty on the Prohibition of the Nuclear Weapons (TPNW), which comprehensively bans nuclear weapons, including assistance to those engaged in prohibited actions like production, manufacture and stockpiling. As a result, there is growing momentum for divestment from nuclear weapons, with some of the world's largest pension funds already disinvesting. Disinvestment is not simply a moral stand; it is a prudent and perspicacious assessment of the significant long-term downside risk and stigmatization inherent in nuclear weapon production. Nuclear weapons investments strongly conflict with fiduciary responsibility given their increasing regulatory, reputational and environmental legacy risks. Further, nuclear weapons themselves pose catastrophic risks to the global economy that have no simple technocratic fixes. Removing investments in nuclear weapons producers, which are limited to about 0.25% of New York City's pension fund assets, is a wise course of action with respect to both future returns and the progressive reputation of New York City. Divestment captures the long-term externalities created by nuclear weapons production.

Policy Recommendations

The New York City Retirement System should:

1. Pass a common resolution across all five pension funds divesting from all companies involved in nuclear weapons production and stockpiling and prohibiting future purchases in these and other companies that remain involved in such activities.
2. Inform companies subject to divestment – and the broader public – that the decision is based on concerns regarding their involvement in nuclear weapons production and stockpiling.
3. Use its existing authority under the *Corporate Governance Principles and Proxy Voting Guidelines* to pursue shareholder initiatives with firms in its investment portfolio, requesting “disclosure of ... involvement in the research, production, and distribution of nuclear weaponry and missile defense systems, including assessment of the safe handling thereof.”
4. Revise its *Corporate Governance Principles and Proxy Voting Guidelines* to authorize proposals calling on portfolio companies to:
 - a. Disclose regulatory, legal, financial, operational, and reputational risks resulting from the research, production, stockpiling or distribution of nuclear weapons, including regarding human rights, environmental sustainability, and indigenous communities,
 - b. Discontinue research, production, maintenance or distribution of nuclear weapons,
 - c. Discontinue investment in companies involved in the research, production, stockpiling or distribution of nuclear weapons, and
 - d. Strengthen policies to prevent exposure to nuclear weapons activities.

The New York City Council should:

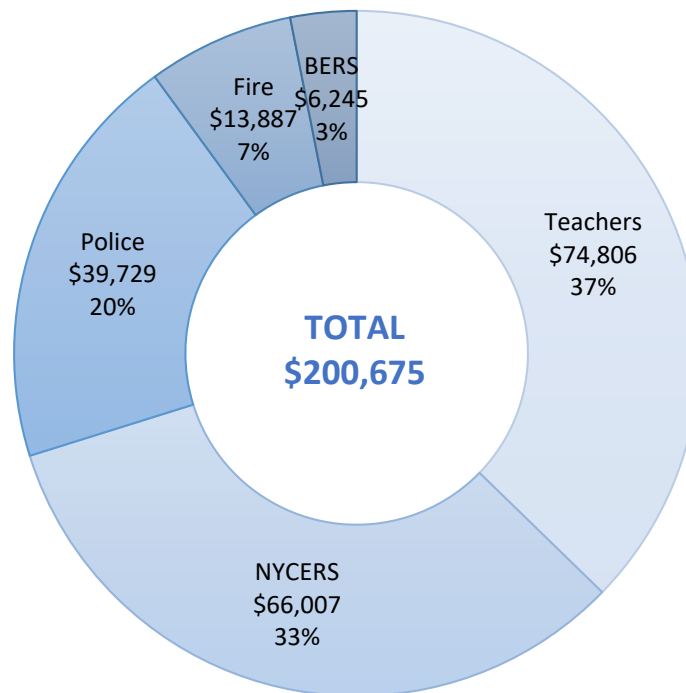
1. Pass Resolution 976 endorsing the TPNW and calling for divestment of the City's pension funds from companies involved in nuclear weapons production and maintenance.
2. Establish by local law Int. 1621 a nuclear disarmament citizen advisory committee to study the issue in more depth.

Nuclear Weapons Divestment Consonant with Longstanding Tradition of Socially Responsible Pension Investment

The retirement funds of New York City's government employees are managed through five separate funds: Teachers' Retirement System (TRS), New York City Employees' Retirement System (NYCERS), New York City Police Pension Fund, New York City Fire Pension Fund and New York City Board of Education Retirement System. Together, the funds are worth more than \$200 billion,¹ making it the fourth largest public pension scheme in the United States, according to *Pensions & Investments*.²

The five funds have separate boards of trustees. Reports on the "Systems' performance" and decisions about "investments and initiatives" are made by all of the boards at regular Common Investment Meetings, which are open to the public and can also be watched online.³ The New York City Comptroller, Scott Stringer, has a seat on each board, as does the Mayor (or appointed representative). The Comptroller's Bureau of Asset Management, along with consultants hired by each of the boards, "makes decisions on the funds' asset allocations based on factors including economic risk, return, performance, and beneficiary distributions."⁴ Other trustees include public officials, union leaders and representatives of the beneficiaries.

Figure 1: Value of New York City Retirement Systems, in Millions of US Dollars, as of March 2019.⁵



¹ New York City Comptroller. (2019) "Asset Allocation." Retrieved from comptroller.nyc.gov/services/financial-matters/pension/asset-allocation

² 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

³ New York City Comptroller. (2019) "Common Investment Meeting." Retrieved from comptroller.nyc.gov/services/financial-matters/pension/common-investment-meeting

⁴ New York City Comptroller. (2019) "Asset Allocation." Retrieved from comptroller.nyc.gov/services/financial-matters/pension/asset-allocation

⁵ New York City Comptroller. (2019) "Pension/Investment Management." Retrieved from comptroller.nyc.gov/services/financial-matters/pension/corporate-governance

While the primary factor in investment planning is generating sustainable returns, the pension fund trustees are required by statute to consider ethical factors as part of their fiduciary responsibility. 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." As a result, "the Comptroller's Office and/or the New York City Funds, individually or collectively, are affiliated with" the CERES Investor Network on Climate Risk and the UN Principles for Responsible Investment.⁶ The Retirement System has promoted the "Macbride Principles" of fair, non-sectarian, employment by US businesses operating in Northern Ireland since 1984.⁷

The retirement system has historically embraced divestment as a tool to promote sound social policy. In 1984, NYCERS became one of largest funds to divest from companies doing business with apartheid South Africa. Divestment was part of a broader effort by New York City to stigmatize South Africa's racist regime, including preventing complicit companies from bidding on City government contracts.⁸ The System's *Corporate Governance Principles and Proxy Voting Guidelines* notes with pride its "core commitment" to ensuring "apartheid-torn South Africa ... adhere to specific human rights principles" from 1984 until "the first democratic elections in South Africa in 1994."⁹

More recently, in May 2017, the boards of trustees for all five funds adopted a resolution divesting from "For-Profit Prison Companies" and prohibiting "future purchases in these companies." The preamble of the resolution cites the "reported health and safety violations at for-profit prisons and the rise in mass incarcerations targeting immigrants and the minority community." Indeed, for-profit prisons had received extensive scrutiny by the news media and condemnation by human rights groups and activists.¹⁰ In August 2016, the Obama Administration had announced that the Federal government would no longer use private prisons.¹¹ The specific rationale for divestment, according to the preamble, is not the moral and ethical objections per se, but rather the "undue legal and regulatory risks and worker safety issues that are inconsistent with the Board's risk profile and objectives." The preamble acknowledged that "changes by the U.S. Department of Justice in the current administration...indicate a continued federal use of for-profit prisons..." However, the trustees believed "that regulatory risks continue to exist as recent federal initiatives may not be permanent" and that state and local governments "may at some future point also decide against their use."¹² In other words, the trustees believed that the unethical practices by private prison operators exposed them to long-term risks that, for the pension funds, outweighed any potential short-term profits.

⁶ New York City Comptroller. (2019) "Pension/Investment Management." Retrieved from comptroller.nyc.gov/services/financial-matters/pension/corporate-governance

⁷ Kevin McNamara. (2009) *The Macbride Principles: Irish America Strikes Back*. Liverpool, Liverpool University Press, pp. 21, 24, 66 & 82; Anon. (2011) "City comptroller to enforce MacBride Principles." *The Irish Echo*. Retrieved from irishecho.com/2011/02/city-comptroller-to-enforce-macbride-principles

⁸ Janos Morton. (2015) "Today in NYC History: In 1985, NYC Battles Apartheid." *Untapped Cities*. Retrieved from untappedcities.com/2015/02/26/today-in-nyc-history-in-1985-nyc-battles-apartheid

⁹ New York City Employees' Retirement System, et al. (2019) "Corporate Governance Principles and Proxy Voting Guidelines." p. 8. Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/NYCERS-Corporate-Governance-Principles-and-Proxy-Voting-Guidelines_2019-Revised-February-2019.pdf; Teachers' Retirement System of the City of New York. (February 2019) "Corporate Governance Principles and Proxy Voting Guidelines." p. 8. Retrieved from trsnyc.org/memberportal/WebContent/publications/CorporateGovernanceandProxyVotingGuidelines_2019

¹⁰ e.g. ACLU. (2019) "Private Prisons." Retrieved from aclu.org/issues/smart-justice/mass-incarceration/private-prisons

¹¹ Eileen Sullivan. (2016) "Obama administration to end use of private prisons." *PBS News Hour*. Retrieved from pbs.org/newshour/nation/obama-administration-end-use-private-prisons

¹² New York City Employees Retirement System. (2017) "CAL. No. R – 2." Resolution in possession of author.

They are not alone. Many other investors, including JP Morgan, have divested from private prisons for similar reasons.¹³

In 2018, the Comptroller announced a five-year process of divestment of the pension funds' \$5 billion of investments in fossil fuels. Filing a lawsuit against top oil companies for their contribution to climate change at the same time, New York City's Mayor Bill de Blasio framed divestment in moral and political terms: "We're bringing the fight against climate change straight to the fossil fuel companies that knew about its effects and intentionally misled the public to protect their profits." However, Comptroller Stringer has carefully maintained that divestment was based on an economic rationale: "Safeguarding the retirement of our city's police officers, teachers and firefighters is our top priority, and we believe that their financial future is linked to the sustainability of the planet."¹⁴

Similarly, the System's *Corporate Governance Principles* states that the fund "aims to fulfill its obligations to beneficiaries by achieving a competitive risk-adjusted market rate of return, consistent with its asset allocation, while prudently mitigating downside risks to the System's investments, including those affecting the sustainability of its long-term returns."¹⁵ But the Guidelines also note that "Environmental, social, regulatory, operational, and other matters may present risks or opportunities for a firm's ability to create and sustain long-term value." In particular, "Climate change presents regulatory, financial, and operational risks to individual companies and to the broader financial markets." Therefore "The Systems support companies that proactively develop policies, initiatives, and objectives to mitigate risks related to climate change."¹⁶

As the concept of corporate social responsibility grows and the private sector places increasing importance on avoiding the support of ethically unsound platforms, the expectations placed on pension fund holdings will rise. Divesting now from nuclear weapons represents a prescient step in the right direction.

¹³ Morgan Simon. (2019) "Shareholders Take A Stand Against Private Prisons." *Forbes*. Retrieved forbes.com/sites/morgansimon/2019/03/11/shareholders-take-a-stand-against-private-prisons/#1fc931141e66

¹⁴ In: Frank Eltmann. (2018) "NYC sues, divests from oil firms over climate change." *AP*. Retrieved from apnews.com/c0e7b71262474f5bae5ae5caa0e4b7ec

¹⁵ Teachers' Retirement System of the City of New York. (February 2019) "Corporate Governance Principles and Proxy Voting Guidelines." p. 7. Retrieved from trsnyc.org/memberportal/WebContent/publications/CorporateGovernanceandProxyVotingGuidelines_2019

¹⁶ Teachers' Retirement System of the City of New York. (February 2019) "Corporate Governance Principles and Proxy Voting Guidelines." p. 30. Retrieved from trsnyc.org/memberportal/WebContent/publications/CorporateGovernanceandProxyVotingGuidelines_2019

New York City Retirement System's Current Policy Limits Its Ability to Address Risk of Nuclear Weapons

The Retirement System's policies relevant to nuclear weapons are currently out of alignment with its overall effort to safeguard the sustainability of its investments. As will be outlined below, like climate change, nuclear weapons pose catastrophic risks to the local and global economy – they are the ultimate “downside risk.” Like for-profit prisons, humanitarian and human rights concerns associated with nuclear weapons have prompted increasing reputational and regulatory risks for investments in nuclear weapons-related businesses.

The System's *Corporate Governance Principles* 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 of seeking disclosure of involvement in nuclear weapons, 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 inhumane weapons:

*The Systems generally oppose proposals calling to discontinue research, production, or distribution of military weaponry and defense systems. The Systems also generally oppose proposals requiring conversion of military production facilities to civilian use. The Systems believe that public policy on defense systems should be deliberated and determined through the government process.*¹⁷

Since 2003, the System has engaged in 17 shareholder initiatives aiming to address the financial and reputational risks arising from issue of weapons and conflict. These include seeking an investigation into Coca Cola's alleged complicity with paramilitary violence in Colombia; calling on Dick's Sporting Goods to end its gun sales; and urging Freeport McMoran mining company and ExxonMobil to suspend their relationships with the Indonesian military (see Annex 6). The System has also engaged in 31 shareholder initiatives regarding companies involved in producing nuclear weapons, including responding to “charges of illegal transfers of missile-related technology” by Boeing to China; objecting to “costly fines ... to settle allegations of deceptive or improper business practices” by Boeing, Lockheed Martin, Northrop Grumman and United Technologies; pressing General Dynamics, Honeywell and Raytheon to report on their “social, environmental and economic performance”; and repeatedly urging Raytheon to adopt the Macbride Principles for its work in Northern Ireland (see Annex 6). However, none of the System's shareholder initiatives since 2003 have specifically dealt with the issue of nuclear weapons, per se.

¹⁷ 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](https://www.comptroller.nyc.gov/wp-content/uploads/documents/NYCRS-Corporate-Governance-Principles-and-Proxy-Voting-Guidelines_2019-Revised-February-2019.pdf)

New York City Council Members and Local Activists Call for Divestment from Nuclear Weapons

The New York City Council has a long history of opposing nuclear weapons. City Council resolutions have expressed a commitment to nuclear disarmament since the 1950s, and declared the City and its Harbor as a Nuclear Weapons Free Zone in the early 1980s.¹⁸ All nuclear weapons bases within its territory have been decommissioned and the Navy reportedly avoids bringing nuclear-armed and/or -power ships into the Harbor.¹⁹

However, members of the City Council see the pension funds' continued investment in nuclear weapons production and maintenance as a weakness of the Nuclear Weapons Free Zone policy. In September 2018, 27 City Council Members signed a letter from Daniel Dromm (District 25), Chair of the Finance Committee, to Comptroller Scott Stringer. The Council Members' letter specifically noted the 2017 adoption by 122 governments of the Treaty on the Prohibition of Nuclear Weapons (TPNW) at the United Nations in New York. The TPNW explicitly frames nuclear weapons as "abhorrent to the principles of humanity." It deems nuclear weapons as contrary to "the principles and rules of international humanitarian law", as well as a threat to human rights, the environment and global economy. It notes particularly 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." As a result, the TPNW comprehensively prohibited nuclear weapons and establishes positive obligations on states parties to provide victim assistance and remediate contaminated environments. It will enter into force when it has been ratified by 50 governments.

Figure 2: May 2018 Protest by New York City Activists Calling for Divestment from Nuclear Weapons. Photo by Robert Croonquist, 2018.



¹⁸ International Disarmament Institute. (2019) "New York City Council Resolutions on Nuclear Weapons." Retrieved from disarmament.blogs.pace.edu/nyc-nuclear-archive/new-york-city-council-resolutions-on-nuclear-weapons

¹⁹ Joseph Berger. (2009) "Shadow Cast by Region's Atomic Past." *The New York Times*. Retrieved from [nytimes.com/2009/08/02/nyregion/02nuke.html](https://www.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/chronic/hart/nike/hartnike.htm; 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

The International Campaign to Abolish Nuclear Weapons (ICAN) was awarded the 2017 Nobel Peace Prize for its advocacy for the TPNW. Calling themselves the New York Campaign to Abolish Nuclear Weapons (NYCAN), local activists associated with ICAN and other nuclear disarmament groups in New York City, have supported Dromm’s letter and similarly called for the pension funds to divest from nuclear weapons. At a May 2018 sailboat action, Dr. Kathleen Sullivan of Hibakusha Stories – a New York City-based ICAN partner – said that “NYC [should] craft a public policy so that our pensions don’t profit from nuclear weapon production” (see Figure 2).²⁰ NYCAN worked to build political support for Dromm’s letter, successfully getting a majority of Council Members to sign on. In March 2019, when NYCAN’s Kathleen Sullivan was being honored by City Council for her work in nuclear disarmament, NYCAN hand-delivered letters to co-honorees Michael Mulgrew of the United Federation of Teachers and a representative of the New York Police Commissioner James O’Neill, Jr., to use their positions as pension fund trustees to refuse to “profit from radioactive instruments of genocide” by taking “our substantial pension funds out of the nuclear enterprise.”²¹ NYCAN has also had two meetings with high-ranking staff of the New York City’s Comptroller’s Office.²²

On 26 June 2019, Council Member Dromm, with co-sponsors Ben Kallos (District 5) and Helen Rosenthal (District 6), introduced a package of legislation intended to reaffirm and strengthen New York City’s Nuclear Weapons Free Zone. If passed, Resolution 976 would call 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, reaffirm New York City as a Nuclear Weapons Free Zone and support the TPNW. The accompanying bill (Int. 1621) would establish 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.” If it passes, this bill would be New York City’s first local law specifically regarding the Nuclear Weapons Free Zone. At the time of writing, a veto-proof majority of Council Members had cosponsored both bills.

Given that some may feel the case for divestment of the City’s pensions cannot be made solely upon moral, ethical and political grounds, the following makes a financial and economic argument about why it is prudent for New York City’s retirement system to divest from the nuclear weapons industry.

²⁰ Don’t Bank on the Bomb. (2018) “NYC Don’t Bank on the Bomb campaign launched.” Retrieved from dontbankonthebomb.com/dont-bank-on-the-bomb-campaign-launched-in-new-york-city

²¹ Letters in possession of the author.

²² (n.d.) “Update: New York City Nuclear Weapons Divestment team has follow-up meeting with the Office of the Comptroller.” Retrieved from dontbankonthebomb.com/nyc

Limited Exposure to Nuclear Weapons Producers Will Palliate the Divestment Process

Compared with the \$5 billion in fossil fuel-related assets it has committed to divest, the New York City Retirement System's holdings of equities in nuclear weapons-producing companies much smaller. All of the funds provide annual reports of their largest holdings; TRS provides a full listing of equities. From these reports one can get an overall sense of the magnitude of the System's exposure to investments in nuclear weapons producers (see Table 1 for a summary and Annex 2 for a more detailed examination). The System's public reports indicate holdings of about \$475 million in 19 companies, representing less than 0.25% of the System's total assets; ten times smaller than the value of the assets related to fossil fuels. Based on publicly available information, more than half of these assets are in just two companies – Boeing and Honeywell; 80% are in five companies (see Annex 2). BERS reports no equity holdings in nuclear weapons producing companies among its largest holdings; NYCERS and Fire only report equity in Boeing. If and when a full tally is made available by the Retirement Systems, these statistics will be updated in successive editions of this report.

Table 1: Summary of Reported Equity Holdings of Nuclear Weapons Producers by New York City Retirement Systems, 2018

Note: For a more comprehensive picture, see Annex 2. Only includes holdings reported in latest annual public reports by the pension funds, for financial years ending in 2018; only one of the five funds provides a full list, the others report their largest holdings. As a result, other than for the Teacher's fund, totals should be considered indicative of order of magnitude, rather than a comprehensive tally.

Fund	Number of Nuclear Weapons Producers Reported in Equity Portfolio	Fair Value of Reported Equity Holdings	Percentage of Overall 2018 Market Value of Fund
Teachers	19	\$216,284,635	0.30%
NYCERS	1	\$114,817,226	0.18%
Police	4	\$128,517,629	0.30%
Fire	1	\$14,881,546	0.10%
BERS	0	\$0	0%
Total	19	\$474,501,036	0.23%

Growing Downside Risk Inherent in Nuclear Weapons Production Further Simplifies the Divestment Decision

To invest in nuclear weapons is to bet one's pension on a product in long-term quantitative decline, with essentially only one buyer that is ambivalent about its utility and which requires access to very tightly regulated raw materials. Even the Trump administration, which is often seen as trying to revive the nuclear weapons industry, has floated the idea of getting rid of the entire arsenal.

But among investors, policymakers and activists there are pervasive assumptions that nuclear weapons make a good investment. While they have little else in common, nuclear weapons boosters and detractors commonly repeat claims that the nuclear weapons industry is a highly profitable enterprise. At a 2019 aerospace and defense investment conference, the CEO of Raytheon – a major nuclear weapons contractor – celebrated the potential US exit from the Intermediate-Range Nuclear Forces (INF) Treaty, saying “we will really get a defense budget that will really benefit Raytheon.”²³ Similarly, in anti-nuclear circles one often hears of the “absurd profitability” of nuclear weapons production and maintenance.²⁴ Certainly reports that the US government plans to spend approximately \$1.7 trillion between 2017 and 2046 to “modernize” the US nuclear arsenal suggest the possibility of opportunities to profit from nuclear weapons, particularly for some defense companies.²⁵ Indian and Chinese companies involved in their countries’ nuclear arsenal are also seeking global financing.²⁶

However, pension funds must adopt a broader and longer-term perspective than short-term profit for a single industry. A closer look at the economics of the nuclear weapons industry reveals that the profitability of such companies is probably overstated, particularly over the long-term timeframes considered by pension funds. Indeed, indexes of stocks that screen out nuclear weapons largely track the overall economy, sometimes outperforming it. The MSCI World ESG Screened Index, which “excludes companies ... that are associated with controversial, civilian and nuclear weapons and tobacco, that derive revenues from thermal coal and oil sands extraction and that are not compliant with the United Nations Global Compact principles” has largely tracked the MSCI World Index, marginally outperforming it since 2015. Data from several other investments that screen out companies with environmental, social and governance (ESG) concerns (including those associated with nuclear weapons) generally perform better in terms of risk and return, over various time periods (see Tables 2, 3 and 4).²⁷

²³ In: Jon Schwarz. (4 May 2019) “How to Dismantle the Absurd Profitability of Nuclear Weapons.” *The Intercept*. Retrieved from theintercept.com/2019/05/04/nuclear-weapons-profits

²⁴ Jon Schwarz. (4 May 2019) “How to Dismantle the Absurd Profitability of Nuclear Weapons.” *The Intercept*. Retrieved from theintercept.com/2019/05/04/nuclear-weapons-profits

²⁵ Kingston Reif. (2018) “U.S. Modernization Programs.” *Arms Control Association*. Retrieved from bit.ly/2cmL8v4

²⁶ Susi Snyder. (2019) *Producing Mass Destruction: Private Companies and the Nuclear Weapon Industry*. Utrecht, PAX. p. 4. Retrieved from dontbankonthebomb.com/wp-content/uploads/2019/05/2019_Producers-Report-FINAL.pdf

²⁷ MSCI. (June 2019) “MSCI World ESG Screened Index.” Retrieved from msci.com/documents/10199/868074a7-691a-6872-00e7-bcb33275ef7c

Table 2: Performance of MSCI World and USA Indices Compared to the Same Indices Screened for Companies with Environment, Social and Governance (ESG) Concerns (including those Associated with Nuclear Weapons).²⁸

Note: The Sharpe Ratio measures how much additional return an investor receives for taking on additional risk. In this table, it shows that while the ESG Screened Indices generally had marginally higher risk, this was generally outweighed by the higher returns.

	3 Years			5 Years			Since 31 May 2012		
	Net Annualized Return (%)	Risk		Return (%)	Risk		Return (%)	Risk	
		Annualized Standard Deviation	Sharpe Ratio		Std Dev	Sharpe Ratio		Std Dev	Sharpe Ratio
MSCI World Index, as of 31 May 2019	9.00	10.88	0.71	5.62	11.40	0.45	10.38	No data	0.90
MSCI World ESG Screened Index, as of 31 May 2019	9.03	11.10	0.70	5.84	11.53	0.47	10.67	No data	0.92
MSCI USA Index, as of 31 May 2019	11.10	11.73	0.83	8.91	11.77	0.70	12.78	No data	1.09
MSCI USA ESG Screened Index, as of 31 May 2019	11.23	11.91	0.83	9.16	11.94	0.71	13.04	No data	1.10

Table 3: Performance of S&P500 Index Compared with S&P500 ESG Index (Screening Out Companies with ESG Concerns, including Nuclear Weapons).²⁹

	1 Year		3 Years		5 Years	
	Annualized Return (%)	Annualized Risk	Annualized Return (%)	Annualized Return (%)	Annualized Risk	Annualized Return (%)
S&P500	-4.38	17.00	9.26	13.00	8.49	13.22
S&P500 ESG	-3.95	17.09	9.44	13.02	8.47	13.18

Table 4: Risk and Reward Performance of Nuclear Weapons Producers Compared with Index of 59 Peer Industrial Firms, as of 31 May 2019.³⁰

	3 Years		5 Years		10 Years	
	Risk (Standard Deviation)	Reward (Mean)	Risk (Standard Deviation)	Reward (Mean)	Risk (Standard Deviation)	Reward (Mean)
Benchmark Index of Peer Industrial Firms	16.58	13.21	15.36	10.49	17.00	20.30
Nuclear Weapons Producers	16.90	12.05	16.03	9.39	16.84	15.20

²⁸ MSCI. (June 2019) “MSCI USA ESG Screened Index (USD).” Retrieved from [msci.com/documents/10199/2ab50b69-1bd4-712e-c941-be569d26d678](https://www.msci.com/documents/10199/2ab50b69-1bd4-712e-c941-be569d26d678); MSCI. (June 2019) “MSCI World ESG Screened Index.” Retrieved from [msci.com/documents/10199/868074a7-691a-6872-00e7-bcb33275ef7c](https://www.msci.com/documents/10199/868074a7-691a-6872-00e7-bcb33275ef7c)

²⁹ 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

³⁰ Data from: Nicholas Cantrell. (2019) Personal correspondence with author.

New York City’s Teacher’s Retirement System has a specific Socially Responsive Equity Fund, which “seeks companies that show leadership in areas such as environmental concerns, diversity in the workforce, progressive employment, and workplace practices.” It also “attempts to avoid companies that derive substantial revenue from alcohol, tobacco, nuclear power, or weapons.” Over the last decade, it has consistently outperformed other equity funds (and the overall portfolio) within the Teacher’s system over the short and long-term (see Table 5).

Table 5: New York City Teachers’ Retirement System Annualized Investment Returns (Percentage) on Equity Holdings, as of 30 June 2018.³¹

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

A more specific analysis of FINRA data, by financial advisor Nicholas Cantrell, CFP®, CLU®, compared the performance of an index of 59 peer S&P Industrial firms (more than 95% of companies involved in nuclear weapons are categorized as “Industrials”) against the 22 top nuclear weapons producing firms (as defined by the 2019 Don’t Bank on the Bomb report *Producing Mass Destruction*³²). This benchmark provides an “apples to apples” comparison of performance by similar companies. Cantrell found that over three, five and 10 year return periods, the index of non-nuclear weapons producers outperformed the nuclear weapons manufacturers (See Table 4 and Figure 3). Investments in nuclear weapons producers generally had higher or similar levels of risk, and lower rates of return.

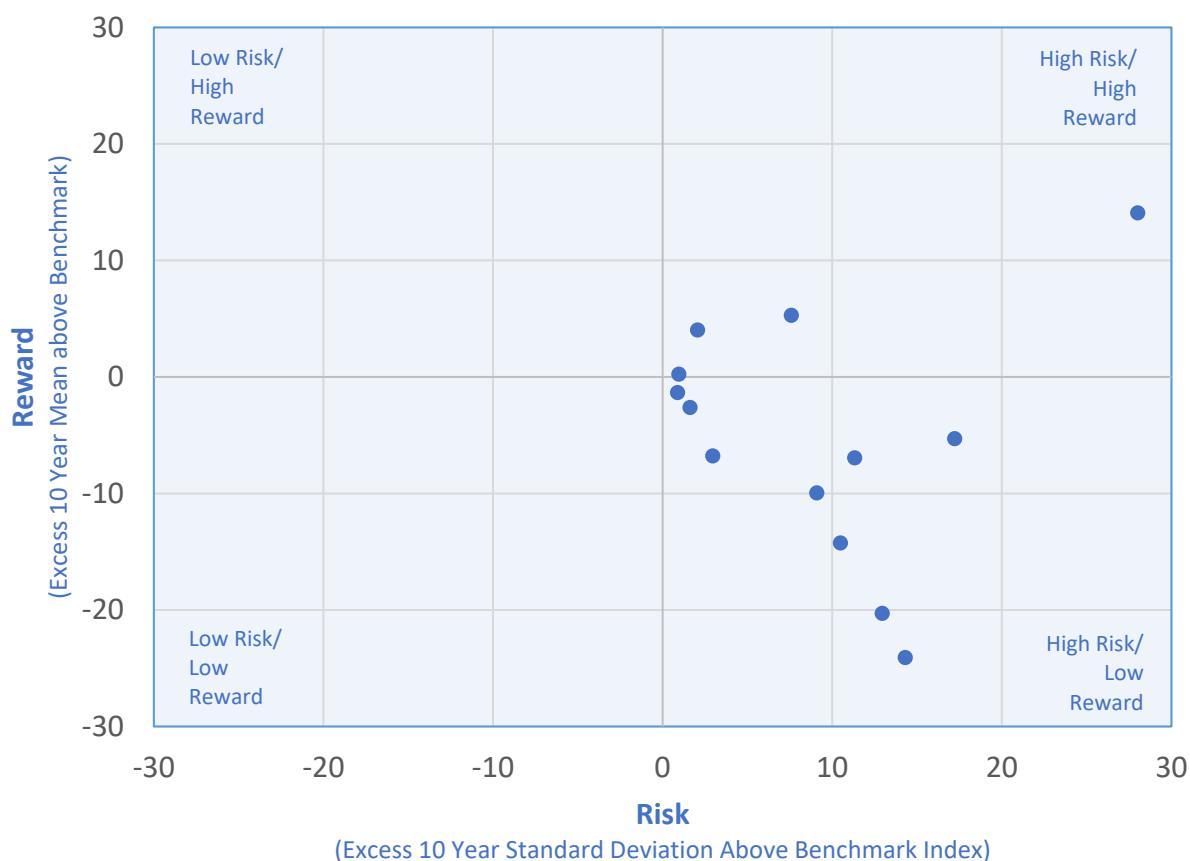
Nuclear weapons activities are also a small part of most of the firms involved. As a result, even those companies most involved in the industry hedge their bets on the ongoing profitability of nuclear weapons with diversified portfolios of other civil and/or defense goods and services. The entire earmarked cost of the French nuclear arsenal 2019-2025, €25 billion (US\$ 29 billion), is less than 6% of the annual revenue of Airbus (€64 billion (\$73.6 million), FY ending Dec. 2018), one of its largest contractors.³³ This suggests many such firms may be open to pressure from investors to concentrate on non-nuclear weapons-related business. Movement towards the entry into force of the TPNW provides an opportunity for these parts of the companies to break off, as has happened with other producers of weapons that have become prohibited by international law.

³¹ 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

³² 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

³³ Susi Snyder. (2019) *Producing Mass Destruction: Private Companies and the Nuclear Weapon Industry*. Utrecht, PAX. pp. 64-65. Retrieved from dontbankonthebomb.com/wp-content/uploads/2019/05/2019_Producers-Report-FINAL.pdf

Figure 3: Ten Year Risk and Reward Performance of Nuclear Weapons Producers Compared with Benchmark Index of 59 Peer Industrial Firms, as of 31 May 2019.³⁴



More than half of the investment in nuclear weapons activities comes from just 10 financial institutions;³⁵ this concentration may be an indicator of banks reluctance to be too exposed to the associated risks. At a recent panel at the United Nations, Maura Keaney, Vice President of 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”; divestment is “not a financial risk for the bank.”³⁶

There may be deep structural reasons for the long-term underperformance of nuclear weapons-related investments. The market for nuclear weapons is strictly limited by international and national regulation. Only five governments (USA, Russia, UK, France, China) are permitted to retain nuclear weapons under the 1968 Treaty on the Non-Proliferation of Nuclear Weapons (NPT), but only under the condition that they “pursue negotiations in good faith on effective measures relating to ... nuclear disarmament” (Article VI). The long-term trend has been a massive contraction of the stockpiles for nuclear weapons, achieved through various arms control and reduction measures, from more than 70,000 at the height of the Cold War, to estimates of 14,000 today.³⁷ Four nuclear-armed governments, with relatively smaller arsenals, remain outside the NPT

³⁴ Data from: Nicholas Cantrell. (2019) Personal correspondence with author.

³⁵ 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_HQS_web.pdf

³⁶ 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

³⁷ Hans M. Kristensen & Matt Korda. (2019) “Status of World Nuclear Forces.” *Federation of American Scientists*. Retrieved from fas.org/issues/nuclear-weapons/status-world-nuclear-forces

regime (India, Pakistan, Israel and North Korea). Nevertheless, the 1996 Advisory Opinion of the International Court of Justice determined that all states have an obligation to engage in nuclear disarmament.³⁸

Investors are blocked from providing capital to the nuclear weapons industry in most nuclear-armed states by tremendous regulatory obstacles, including in some cases international sanctions. In Russia, Pakistan, Israel and North Korea, financing comes almost entirely from state sources.³⁹ As a result, there is essentially only one major customer (the US government) and two smaller ones (the UK and France) for businesses that global investors can legally invest in.

Even the biggest customer has considerable doubts about the utility of nuclear weapons. In 2007, four former US statesmen intimately familiar with the American nuclear weapons complex called for “the goal of a world free of nuclear weapons.” Known as the “Four Horsemen”, former Secretaries of State George Shultz and Henry Kissinger, former Defense Secretary William Perry, and former Senator Sam Nunn, raised alarm in a series of editorials alarm at the “growing number of nations with nuclear arms and differing motives, aims and ambitions poses very high and unpredictable risks and increased instability”, saying that we are “lucky that nuclear weapons were never used.” They thus called for rooting US defense policy in conventional armed forces and arsenals.⁴⁰

In his 2009 speech in Prague, then US President Barack Obama asserted “clearly and with conviction America’s commitment to seek the peace and security of a world without nuclear weapons.” Obama specifically questioned the unthinking assumption that nuclear weapons are an inevitable part of the national security architecture.

Some argue that the spread of these weapons cannot be stopped, cannot be checked – that we are destined to live in a world where more nations and more people possess the ultimate tools of destruction. Such fatalism is a deadly adversary, for if we believe that the spread of nuclear weapons is inevitable, then in some way we are admitting to ourselves that the use of nuclear weapons is inevitable. ... It will take patience and persistence. But now we, too, must ignore the voices who tell us that the world cannot change. We have to insist, “Yes, we can.”⁴¹

Both Obama and the Four Horsemen raised the crucial mismatch between a doctrine of nuclear deterrence and the major security threats facing the United States, such as terrorism, organized crime and climate change. Seven federal legislators have signed the ICAN Parliamentary Pledge “to work for the signature and ratification” of the TPNW. A January 2019 article in *Foreign Affairs* pointed out that confidence in nuclear deterrence protecting US national security is “profoundly misplaced” because “detering aggression has become increasingly difficult, and it stands to become more difficult still, as a result of developments both technological and geopolitical.”⁴²

³⁸ International Court of Justice. (1996) “Legality of the Threat or Use of Nuclear Weapons.” Retrieved from [icj-cij.org/files/case-related/95/095-19960708-ADV-01-00-EN.pdf](https://www.icj-cij.org/files/case-related/95/095-19960708-ADV-01-00-EN.pdf)

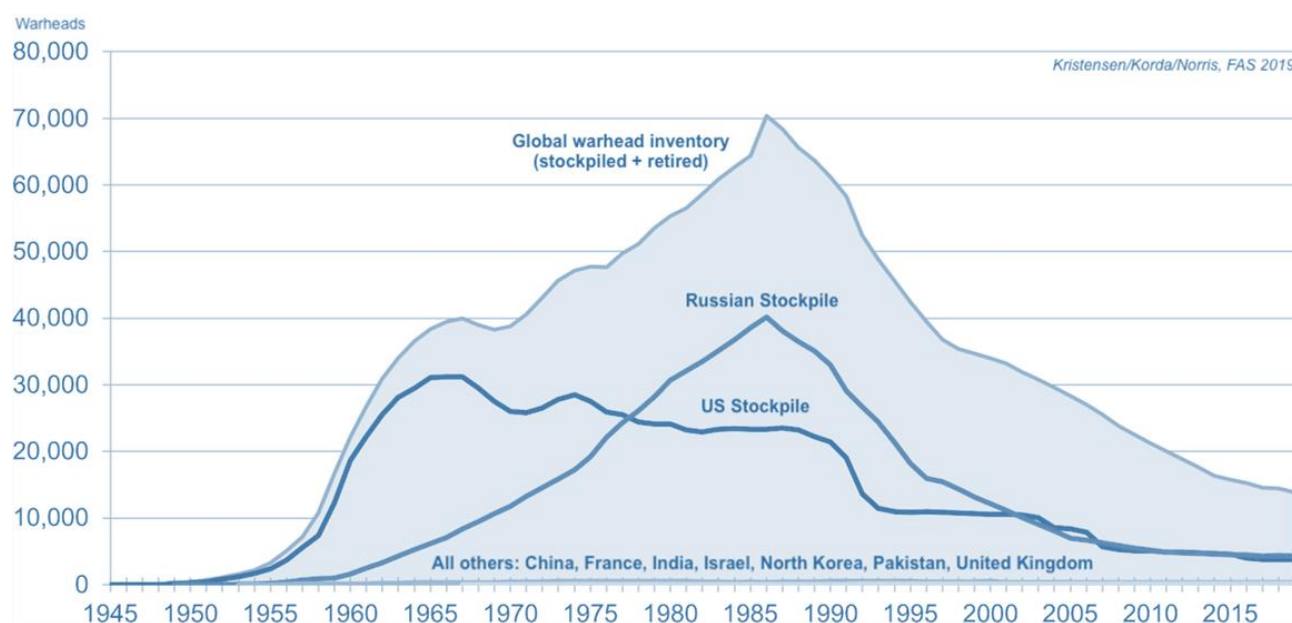
³⁹ Susi Snyder. (2019) *Producing Mass Destruction: Private Companies and the Nuclear Weapon Industry*. Utrecht, PAX. p. 4. Retrieved from dontbankonthebomb.com/wp-content/uploads/2019/05/2019_Producers-Report-FINAL.pdf

⁴⁰ Chris Schneidmiller. (2013) “Four Horsemen’ Urge New Steps Against Nuke Disaster.” NTI. Retrieved from nti.org/gsn/article/four-horsemen-call-new-steps-against-nuclear-disaster

⁴¹ Barack Obama. (2009) “Remarks By President Barack Obama In Prague As Delivered.” Retrieved from obamawhitehouse.archives.gov/the-press-office/remarks-president-barack-obama-prague-delivered

⁴² Andrew Krepinovich. (2019) “The Eroding Balance of Terror: The Decline of Deterrence.” *Foreign Affairs*. January/February. pp. 63-64.

Figure 4: Estimated Global Nuclear Stockpiles, 1945-2019.⁴³



Given this lack of confidence in the utility of the nuclear arsenal, it should come as no surprise that in the US, the proportion of spending on nuclear weapons has, over the long-term, reduced significantly in proportion to the overall Defense budget, from 16% in 1962 to 2.5% in 2016. Even with the sharp increase in budget for “modernization” of the US nuclear arsenal, the proportion remains less than half of what it was under the Reagan administration.⁴⁴ The profitability of the nuclear weapons industry is thus entirely dependent on government budgeting processes, which can quickly change with the shifting political climate. For instance, spending on US nuclear weapons as a proportion of the overall Defense budget fell by half between 1989 and 1994, at a time that overall defense spending also dropped dramatically.⁴⁵

The long-term trends will likely outlast any short-term defense industry excitement about the potential for large increases in nuclear spending from the Trump administration.⁴⁶ Indeed, an analysis of the nuclear budget by the Arms Control Association showed that there were long-term political pressures on Congress to prevent large-scale budgetary increases. Even though the Trump Administration has spoken about expanding costly modernization programs, “there is no room in the budget to ‘expand’ the scope and the cost of the upgrade plans.” As a result, “Though defense spending might see a boost during the Trump administration, it’s unlikely to be as high as many people think. ... Pressure on the defense budget, and the trade-offs such pressure will require, is likely to persist.”⁴⁷ Indeed, the recent US government shutdowns in recent years should give investors pause as to their confidence in business so dependent on Congressional appropriations.

Elements of the Trump administration have displayed an unusual enthusiasm for reversing the long-term course of the drawdown of the US nuclear arsenal. It has authorized contracts for new short-range nuclear

⁴³ Hans M. Kristensen & Matt Korda. (2019) “Status of World Nuclear Forces.” *Federation of American Scientists*. Retrieved from fas.org/issues/nuclear-weapons/status-world-nuclear-forces

⁴⁴ Nuclear Threat Initiative. (n.d.) “U.S. Nuclear Budget.” Retrieved from tutorials.nti.org/us-nuclear-budget/introduction

⁴⁵ Nuclear Threat Initiative. (n.d.) “U.S. Nuclear Budget.” Retrieved from tutorials.nti.org/us-nuclear-budget/introduction

⁴⁶ Marcus Weisgerber. (30 March 2017) “Defense stocks slide; A few surprises in Heritage’s budget recommendations; Boeing bomb production soars; and more.” *DefenseOne*. Retrieved from defenseone.com/business/2017/03/defense-stocks-slide-few-surprises-heritages-budget-recommendations-boeing-bomb-production-soars-and-more/136590

⁴⁷ Kingston Reif. (2017) “The Trillion (and a Half) Dollar Triad?” *Arms Control Association Issue Briefs*. 9(6). Retrieved from armscontrol.org/issue-briefs/2017-08/trillion-half-dollar-triad

missiles and expressed intent to withdraw from the INF Treaty; there are worries that Trump will fail to renew the New START Treaty.⁴⁸ However, this attempted change in course has a high probability of being temporary as it runs counter to what most defense and security professionals actually want (including in the Republican Party): a stable and controlled international environment free from nuclear provocations.⁴⁹ While prompted by other concerns, the resignation of Defense Secretary James Mattis shows that there are significant differences between the political side of the Trump administration and prominent defense officials on a range of issues.⁵⁰ Patrick Shanahan, his replacement, only served for six months. He had come from a 30-year career at Boeing. Shanahan's short tenure as Acting Secretary may suggest that the links between industry and decision makers at the Pentagon are not as solid as those in the nuclear weapons industry may be think.

Nevertheless, even the Trump administration itself offers a mixed message on nuclear weapons. In an October 2018 statement to the UN General Assembly committee on international security, US Under Secretary for Arms Control and International Security Andrea Thompson declared that "the United States has long been a global leader in efforts to ... advance nuclear disarmament", noting that "the total U.S. nuclear stockpile is down by approximately 88% since its Cold War peak." She reaffirmed that "the United States shares the long-term goal of the peace and security of a world without nuclear weapons."⁵¹ Similarly, in talks with North Korea, Donald Trump has offered a complete denuclearization of the Korean Peninsula, which may include the withdrawal of US nuclear armed submarines and vessels and thus a reduction of their operational prominence.⁵² The White House has been floating the idea of a US, Russia and China nuclear arms control agreement and in an interview with Fox News, Trump said that "we all have to get...rid of them", a comment that was welcomed by the Russian Foreign Ministry.⁵³

⁴⁸ Lara Seligman. (2019) "Will Congress Let Trump Build More Nuclear Weapons?" *Foreign Policy*. Retrieved from foreignpolicy.com/2019/04/11/will-congress-let-trump-expand-americas-nuclear-arsenal

⁴⁹ e.g. David E. Sanger & Maggie Haberman. (2016) "50 GOP Officials Warn that Donald Trump Would Put Nation's Security at Risk." *The New York Times*. Retrieved from nytimes.com/2016/08/09/us/politics/national-security-gop-donald-trump.html

⁵⁰ Helene Cooper. (2018) "Jim Mattis, Defense Secretary, Resigns in Rebuke of Trump's Worldview." *The New York Times*. Retrieved from nytimes.com/2018/12/20/us/politics/jim-mattis-defense-secretary-trump.html

⁵¹ Andrea Thompson. (2018) "General Debate Statement by the United States of America: General Assembly Seventy-Third Session First Committee." Retrieved from reachingcriticalwill.org/images/documents/Disarmament-fora/1com/1com18/statements/10Oct_US.pdf

⁵² Michael Gordon, Vivian Salama & Jonathan Cheng. (2019) "Trump, North Korea's Kim Seek Path to Denuclearization." *The Wall Street Journal*. Retrieved from wsj.com/articles/president-trump-meets-north-korean-leader-a-second-time-11551267951

⁵³ Tom O'Connor. (2019) "Donald Trump Says 'We All Have to Get Rid of Nuclear Weapons; Russia Responds: let's Make a Plan.'" *Newsweek*. Retrieved from newsweek.com/trump-rid-nuclear-weapons-russia-plan-1407113

Nuclear Weapons Producers Face Regulatory and Reputational Risks Incompatible with Fiduciary Duty

Nuclear weapons-associated companies are facing regulatory risks as a result of the stigmatizing effects of the TPNW and resultant withdrawal of financial investment in the industry. The TPNW comprehensively and categorically prohibits nuclear weapons and associated activities, including assistance to “anyone to engage in any activity prohibited to a State Party under this Treaty” (Article 1[f]). As one commentary on the treaty put it, while the TPNW “does not explicitly prohibit financing of nuclear-weapon programmes... the prohibition on assistance clearly rules out direct funding of any of the activities” that are prohibited by the Treaty, including development, production, manufacture and stockpiling.⁵⁴ Several supportive states have explained that they interpret this provision to include prohibiting companies under their jurisdiction from financing nuclear weapons production and maintenance.⁵⁵ The TPNW’s Article 5 obligates state parties to “take all appropriate legal, administrative and other measures, including the imposition of penal sanctions, to prevent and suppress any activity prohibited to a State Party under this Treaty undertaken by persons or on territory under its jurisdiction or control.” As a result, the global regulatory climate is becoming much less welcoming for nuclear weapons-related companies.

Figure 5: New York City Activists Calling for USA to Join the Treaty on the Prohibition of Nuclear Weapons, May 2018. Photo courtesy of NYCAN.



⁵⁴ Norwegian People's Aid. (2018) *Nuclear Weapons Ban Monitor*. p. 32. Retrieved from icanw.org/wp-content/uploads/2018/10/Nuclear-Weapons-Ban-Monitor_WEB_NEW.pdf

⁵⁵ e.g. Ecuador, in: Allison Pytlak. (2017) “News in Brief.” *Nuclear Ban Daily*. 2(15). p. 3. Retrieved from reachingcriticalwill.org/images/documents/Disarmament-fora/nuclear-weapon-ban/reports/NBD2.15.pdf

While TPNW has not yet entered into force but it is being ratified at a rate faster than many other weapons of mass destruction (WMD)-related treaties.⁵⁶ Municipalities around the world, including in nuclear-armed and -allied states, are expressing support for the TPNW through the ICAN 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. In June 2019, the city Charlottesville, Virginia voted to divest all operating budget investments from weapons.⁵⁷ Council Member Dromm's proposed legislation (Res. 976) would have New York City join the ICAN Cities Appeal; local activists building political support for the resolution (see Figure 5).⁵⁸ In a statement at the UN in May 2019, 57 faith institutions declared their support for the TPNW, including the World Council of Churches, World Evangelical Alliance, Buddhist Council of New York and Islamic Society of North America.⁵⁹ The Pope and Dalai Lama have also expressed their support.⁶⁰

The TPNW emerged out of an international process called the "Humanitarian Initiative on Nuclear Weapons." The 2010 consensus outcome document of Review Conference of the Nuclear Non-Proliferation Treaty (NPT) – of which the United States is a member – expressed "deep concern at the continued risk for humanity represented by the possibility that these weapons could be used and the catastrophic humanitarian consequences that would result from the use of nuclear weapons."⁶¹ At a series of international conferences in Oslo, Norway; Nayarit, Mexico; and Vienna, Austria from 2013 to 2014, governments examined the scientific evidence of the humanitarian consequences of nuclear weapons. The discussions turned away from the security framing that has dominated international diplomacy on weapons of mass destruction, to consider nuclear weapons as a health, human rights, environmental and economic development challenge. This process culminated in the "Humanitarian Pledge", formally endorsed by 127 governments, which summarized the findings of the conferences:⁶²

the immediate, mid- and long-term consequences of a nuclear weapon explosion are significantly graver than it was understood in the past and will not be constrained by national borders but have regional or even global effects, potentially threatening the survival of humanity [T]he complexity of and interrelationship between these consequences on health, environment, infrastructure, food security, climate, development, social cohesion and the global economy that are systemic and potentially irreversible....

Demonstrating renewed political will, the 127 government that formally endorsed the Pledge promised to "fill the legal gap" in which nuclear weapons were the only weapon of mass destruction not prohibited by international law. It also called on

all nuclear weapons possessor states to take concrete interim measures to reduce the risk of nuclear weapon detonations, including reducing the operational status of nuclear weapons and moving nuclear weapons away from deployment into

⁵⁶ Norwegian People's Aid. (2018) "Executive Summary." *Nuclear Weapons Ban Monitor*. Retrieved from icanw.org/wp-content/uploads/2018/10/ExecutiveSummaryNuclearWeaponsBanMonitor.pdf

⁵⁷ NBC 29. (2019) "Charlottesville City Council Votes to Divest From Fossil Fuels, Weapons." Retrieved from nbc29.com/story/40586350/charlottesville-city-council-votes-to-divest-from-fossil-fuels-weapons

⁵⁸ ICAN. (n.d.) "#ICANSave My City." Retrieved from nuclearban.org/cities/getinvolved#cities-list

⁵⁹ Faith Communities Concerned about Nuclear Weapons. (2019) "Public Statement to the Third Session of the Preparatory Committee for the 2020 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT)." Retrieved from reachingcriticalwill.org/images/documents/Disarmament-fora/npt/prepcom19/statements/1May_FaithCommunities.pdf

⁶⁰ Dalai Lama. (2017) "His Holiness the Dalai Lama Congratulates ICAN For Winning The Nobel Peace Prize." Retrieved from dalailama.com/news/2017/his-holiness-the-dalai-lama-congratulates-ican-for-winning-the-nobel-peace-prize; World Council of Churches. (2017) "Pope Francis strengthens condemnation of nuclear weapons." Retrieved from oikoumene.org/en/press-centre/news/pope-francis-strengthens-condemnation-of-nuclear-weapons

⁶¹ United Nations. (2010) "2010 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons: Final Document: Volume I." NPT/CONF.2010/50 (Vol. I). p. 12, para. 80. Retrieved from [undocs.org/NPT/CONF.2010/50%20\(VOL.I\)](https://undocs.org/NPT/CONF.2010/50%20(VOL.I))

⁶² Austrian Ministry of Foreign Affairs. (2015) "Humanitarian Pledge." Retrieved from icanw.org/wp-content/uploads/2015/03/HINW14vienna_Pledge_Document.pdf

storage, diminishing the role of nuclear weapons in military doctrines and rapid reductions of all types of nuclear weapons....

Given the growing reputational and regulatory risk, important investors are already trying to limit their exposure to nuclear weapons activities. Two of the top five pension funds in the world, the Norwegian Government Pension Fund and ABP, as well as major institutions like Deutsche Bank and KBC, are disinvesting from nuclear weapons.⁶³ Local activism on divestment in New York City is part of a global civil society effort, evidenced by the Don't Bank on the Bomb project, which is publishing annual reports of companies involved in the nuclear weapons industry and highlight financial institutions that refuse to invest (see Annexes 3 and 4). In September 2018, ICAN and Don't Bank on the Bomb called for a global day of action against BNP Paribas for having invested \$8 billion in nuclear weapons. There were protests in over a dozen countries, culminating in activists hanging a banner from the top of the bank's building in Berlin (Figure 6).

Figure 6: Activists Hang Banner on BNP Paribas Building in Berlin to Protest Investments in Nuclear Weapons. Photo courtesy of Don't Bank on the Bomb.



There is a broader trend of large financial institutions being reluctant to invest in “controversial weapons” once they have been prohibited by international treaties. For example, the market for industrial production of landmines and cluster munitions has largely collapsed, with banks and institutional investors refusing to invest in them, even if they are based in countries that have not signed the respective ban treaties. The last cluster munition manufacturer in the US halted production in 2016, despite the US opposing the 2008 Convention on Cluster Munitions (CCM) that has prohibited them.⁶⁴ Compliance with the MBT and CCM are now used

⁶³ Maaïke Beenes & Susi Snyder. (2018) *Don't Bank on the Bomb*. Utrecht, PAX. p. 4. Retrieved from dontbankonthebomb.com/wp-content/uploads/2018/10/2018_Report_web.pdf

⁶⁴ Thomas Gibbons-Neff. (2016) “Why the last U.S. company making cluster bombs won’t produce them anymore.” *The Washington Post*. Retrieved from [washingtonpost.com/news/checkpoint/wp/2016/09/02/why-the-last-u-s-company-making-cluster-bombs-wont-produce-them-anymore/](https://www.washingtonpost.com/news/checkpoint/wp/2016/09/02/why-the-last-u-s-company-making-cluster-bombs-wont-produce-them-anymore/)

as screens by firms that score companies on ESG performance.⁶⁵ This year, Israeli arms manufacturer IMI Systems announced it would stop production of cluster munitions by a recently acquired subsidiary. Israel is not party to the CCM, but HSBC and other financial institutions threatened to disinvest from IMI if it did not comply with the CCM's provisions.

The prudence of divestment from controversial weapons is demonstrated by the MSCI USA Ex Tobacco Ex Controversial Weapons Index, which excludes companies “with significant business activities involving tobacco and those engaged in the production of cluster bombs, landmines, chemical and biological weapons and depleted uranium weapons.” Over the last three years (the years for which there is data), returns on this index has marginally outperformed the MSCI USA Index.⁶⁶ This is consistent with broader research on Corporate Social Responsibility. For example, a 2014 study in *Management Science* found that companies with a high commitment to sustainability, “significantly outperform their counterparts over the long term, both in terms of stock market and accounting performance.”⁶⁷ Similarly, a *Strategic Management Journal* study discovered that “superior performance on corporate social responsibility (CSR) strategies leads to better access to finance.” Unsurprisingly, capital markets trust companies that have high ethical standards.⁶⁸

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.⁶⁹

Conversely, among the companies that make and maintain nuclear weapons and associated activities there are some that have engaged in less than ethical practices that carry reputational risks and potentially other liabilities. It is worth noting that there are global norms emerging against corruption, notably within the UN PRI, of which the New York City Retirement Systems are a member. In 2014, the US Department of Defense Office of General Counsel released a landmark *Encyclopedia of Ethical Failure* report cataloguing the extensive ethical problems in military contracting.⁷⁰ Similarly, a peer-reviewed study by Major General (Rtd) Robert Latiff, PhD, found that

*Cases of illegal or unethical behavior directly involving the production and sale of arms are numerous. ... Where weapons are developed and sold, money – and lots of it – becomes a driving force behind unethical behavior. It was so in the past, and it continues to be so in the present.*⁷¹

A 2017 investigation by the Center for Public Integrity found that: “Much of what the nation’s nuclear weapons contractors do, how they do it, and whether their achievements are clouded by mishaps is shrouded in secrecy.” Their review of internal Department of Energy documents

make[s] clear that the nation’s eight nuclear weapons labs and plants and the sites that support them remain dangerous places to work, even after more than a half-century of concerted efforts to make them safer. ... The litany of mishaps

⁶⁵ e.g. Sustainalytics. (2018) “Controversial Weapons Radar.” Retrieved from sustainalytics.com/controversial-weapons-radar

⁶⁶ MSCI. (May 2019) “MSCI USA Ex Controversial Weapons Index (AUD).” Retrieved from msci.com/documents/10199/bc7c430a-4fc6-451b-b97a-717da7cbe4a5

⁶⁷ 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.

⁶⁸ Beiting Cheng, Ioannis Ioannou, & George Serafeim. (2013) “Corporate social responsibility and access to finance.” *Strategic Management Journal*. 35(1). pp. 1-23.

⁶⁹ 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

⁷⁰ Department of Defense Office of General Counsel. (2014) *Encyclopedia of Ethical Failure*. Retrieved from ogc.osd.mil/defense_ethics/resource_library/cef_complete.docx

⁷¹ Robert Latiff. (2015) “Ethical Issues in Defense Systems Acquisitions.” In: *Routledge Handbook of Military Ethics*, George Lucas (Ed.). Oxford, Routledge. pp. 209-219.

discovered by the Center is more than a little unsettling. Workers involved in complex experiments have inhaled radioactive particles that pose lifetime cancer threats. Those involved in everyday tasks get electrical shocks, fall off ladders, and are hurt moving heavy objects. They get knocked over when tests go awry. And they are burned by acid or in fires, splashed with toxic chemicals, and cut by debris from exploding metal drums.⁷²

In 2019 the US Department of Energy has found “significant weaknesses” in regard to “nuclear safety issues” among the private contractors that have operated Los Alamos National Laboratories. The report warned that if uncorrected, such problems could lead to a shutdown in production of fissile materials for US nuclear weapons.⁷³ There have been warning signs about management problems by contractors at Los Alamos for some time, including years of performance review failures, including the misuse of funds to lobby for retention of the contracts for which they were failing to perform.⁷⁴ This has resulted in slashed performance fees and, recently, retendering of contracts. Security is also a major concern, highlighted by Plowshares anti-nuclear activists’ ability to break into numerous nuclear weapons facilities, notably at the Y-12 Nuclear Security Complex in 2012.⁷⁵

Regulatory and reputational risks are not limited to the US nuclear weapons program. In May 2019, the French government officially recognized the health consequences of its nuclear test program in Maohi Nui/French Polynesia for the first time.⁷⁶ This follows filing of a 2018 complaint at the International Criminal Court alleging the test program amounted to “crimes against humanity.”⁷⁷ This may result in increased scrutiny of the companies involved in France’s nuclear weapons program.

The UK’s nuclear arsenal is based at Faslane, Scotland. However, the majority of Members of the Scottish Parliament (MSPs) have signed ICAN’s Parliamentary Pledge “to work for the signature and ratification” of the TPNW.⁷⁸ If Brexit results in a successful push for Scottish independence, it is likely that the new Scottish government would join the TPNW, forcing the UK to find another base for its Trident submarines. In the last referendum, the Scottish government stated that it would even put a ban on nuclear weapons in its new constitution. However, a 2012 inquiry by UK parliamentarians found that finding an alternative location would be “highly problematic, very expensive, and fraught with political difficulties.” Authorities have even considered relocating the UK arsenal to bases in France or the USA.⁷⁹ This poses risks for those companies involved with the Trident program.

⁷² Center for Public Integrity. (2017) “Light penalties and lax oversight encourage weak safety culture at nuclear weapons labs.” Retrieved from [apps.publicintegrity.org/nuclear-negligence/light-penalties](https://publicintegrity.org/nuclear-negligence/light-penalties)

⁷³ US Department of Energy, Office of Enterprise Assessments. (April 2019) “Assessment of the Management of Nuclear Safety Issues at the Los Alamos National Laboratory – April 2019.” Retrieved from energy.gov/ea/downloads/assessment-management-nuclear-safety-issues-los-alamos-national-laboratory-april-2019

⁷⁴ Lydia Dennett. (2015) “Nuclear Contractor’s Award Fee Slashed by 90 Percent.” *Project on Government Oversight*. Retrieved from pogo.org/analysis/2015/01/nuclear-contractors-award-fee-slashed-by-90-percent

⁷⁵ Eric Schlosser. (2015) “Break-In at Y-12: How a handful of pacifists and nuns exposed the vulnerability of America’s nuclear-weapons sites.” *The New Yorker*. Retrieved from [newyorker.com/magazine/2015/03/09/break-in-at-y-12](https://www.newyorker.com/magazine/2015/03/09/break-in-at-y-12)

⁷⁶ Le Monde/AFP. (2019) “La France reconnaît les conséquences sanitaires de ses essais nucléaires en Polynésie.” *Le Monde*. Retrieved from [lemonde.fr/planete/article/2019/05/23/la-france-reconnait-le-role-de-la-polynesie-dans-sa-capacite-de-dissuasion-nucleaire_5466122_3244.html](https://www.lemonde.fr/planete/article/2019/05/23/la-france-reconnait-le-role-de-la-polynesie-dans-sa-capacite-de-dissuasion-nucleaire_5466122_3244.html)

⁷⁷ Anon. (2018) “France faces Hague complaint over Polynesia nuclear tests.” *France24*. Retrieved from [france24.com/en/20181010-france-faces-hague-complaint-french-polynesia-nuclear-tests-international-criminal-court](https://www.france24.com/en/20181010-france-faces-hague-complaint-french-polynesia-nuclear-tests-international-criminal-court)

⁷⁸ Scottish Campaign for Nuclear Disarmament. (2017) “Majority of Scottish Parliamentarians formally back new UN nuke ban treaty.” Retrieved from banthebomb.org/index.php/news/1965-majority-of-scottish-parliamentarians-formally-back-new-un-uke-ban-treaty

⁷⁹ Vanessa Barford. (2014) “Scottish independence: Where might Trident go?” *BBC News*. Retrieved from [bbc.com/news/magazine-28009977](https://www.bbc.com/news/magazine-28009977)

Nuclear Weapons Companies Face Environmental Legacy Risks

Nuclear weapons production leaves behind environmental legacies that they may require expensive remediation. A 2009 study by the Carnegie Endowment for International Peace estimated that the “deferred environmental and health costs” of the US nuclear weapons program were \$8.3 billion in the previous fiscal year. These environmental legacies have actually created tremendous challenges for the nuclear weapons industry and for taxpayers who have often borne the brunt of the financial burden:

Deferred environmental and health costs are a direct consequence of the government ignoring the dangers associated with the atmospheric testing and mass production of nuclear weapons during the Cold War. Had these known problems and risks been addressed at the time they were created, less land and water would have been contaminated and fewer people, including most notably the employees of the weapons factories, would have been injured or killed. ... Unfortunately, official acknowledgment of the problems as well as efforts to address them in a systematic and significant way were delayed until the late 1980s and early 1990s, when the weapons complex largely ground to a halt under the weight of decades of neglected health, safety, and environmental problems.⁸⁰

More than 35,000 Americans have been awarded a total of over \$2.3 billion in compensation by the U.S. Department of Justice for exposure to radiation from nuclear weapons activities.⁸¹ The shuttered and relocated Kansas City nuclear weapons production complex is facing numerous lawsuits and compensation claims over environmental problems.⁸² The Carnegie Endowment study predicted that such “costs will rise in future years as hundreds of older, disused facilities are decontaminated and demolished.”⁸³

The TPNW includes provisions on victim assistance and environmental remediation that are already drawing increasing policy attention to the humanitarian, human rights and environmental legacies of nuclear weapons.⁸⁴ This may increase scrutiny of the nuclear weapons industry and their obligations to put right any harm they have caused to affected communities. As the environmental movement becomes increasingly mobilized and savvy about divestment strategies, such as with fossil fuels, it is likely that there will be increased political mobilization for divestment from the nuclear industry.

⁸⁰ Stephen Schwartz with Deepti Choubey. (2009) *Nuclear Security Spending: Assessing Costs, Examining Priorities*. Washington DC, Carnegie Endowment for International Peace. p. 24. Retrieved from carnegieendowment.org/files/nuclear_security_spending.pdf

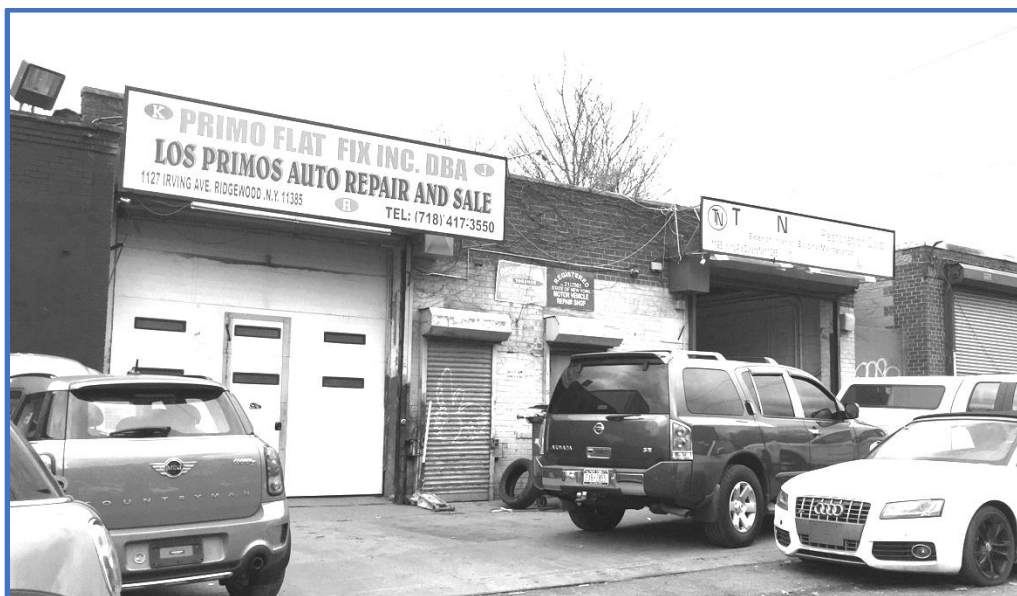
⁸¹ US Department of Justice. (2019) “Radiation Exposure Compensation System: Awards to Date.” Retrieved from justice.gov/civil/awards-date-06062019; Congressional Research Service. (2019) *The Radiation Exposure Compensation Act (RECA): Compensation Related to Exposure to Radiation from Atomic Weapons Testing and Uranium Mining*. Washington DC, CRS. Retrieved from fas.org/sgp/crs/misc/R43956.pdf

⁸² Lindsay Wise & Scott Canon. (2015) “Kansas City’s nuclear legacy trails weapon makers and their families.” *The Kansas City Star*. Retrieved from kansascity.com/news/politics-government/article49473260.html

⁸³ Stephen Schwartz with Deepti Choubey. (2009) *Nuclear Security Spending: Assessing Costs, Examining Priorities*. Washington DC, Carnegie Endowment for International Peace. p. 25. Retrieved from carnegieendowment.org/files/nuclear_security_spending.pdf

⁸⁴ Matthew Bolton. (2017) *Humanitarian and Environmental Action to Address Nuclear Harm: The Treaty for the Prohibition of Nuclear Weapons as a Normative Framework for Assisting Victims of Nuclear Weapons Use and Testing and Remediating Contaminated Environments*. New York, International Disarmament Institute. Retrieved from disarmament.blogs.pace.edu/2017/10/08/humanitarian-and-environmental-action-to-address-nuclear-harm

Figure 7: Former Wolff-Alport Chemical Corp Superfund Site, Ridgewood, Queens, New York. Photo by Matthew Bolton, 2019.



A brief look at environmental legacies of the Manhattan Project and early nuclear weapons program in New York City demonstrates the environmental problems raised by the nuclear weapons industry.⁸⁵ In order to produce the first nuclear weapons, the US government sought out the expertise and logistical capacity of the private sector, including at some 30 sites in New York City.⁸⁶ While the costs have been borne primarily by the victims themselves and the taxpayers, they illustrate the scale of humanitarian and environmental harm that can result from the nuclear weapons industry. The total cost so far of environmental remediation activities, compensation claims and medical bills paid by the federal government is \$87.5 million (in 2018 dollars, see Tables 6 and 7).

Six sites associated with this effort are slated for or have undergone environmental remediation activities:

- 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 7 for photo of location). According to the federal Environmental Protection Agency (EPA), the company buried radioactive waste and/or dumped it “into a sewer.”⁸⁷ Buildings at the 0.75 acre site now include a “delicatessen/grocery, office space, residential apartments, several auto repair shops, and warehousing space.”⁸⁸ 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.”⁸⁹ As a result, in 2013, the US Environmental Protection Agency (EPA)

⁸⁵ International Disarmament Institute. (2019) “Former Sites Involved in Nuclear Weapons Development and Production in New York City.” Retrieved from disarmament.blogs.pace.edu/nyc-nuclear-archive/nycs-nuclear-geography/nuclear-weapons-devt-sites-ny

⁸⁶ 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

⁸⁷ EPA. “Wolff Alport Radiological Site.” Retrieved from response.epa.gov/site/site_profile.aspx?site_id=8030

⁸⁸ 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

⁸⁹ 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

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. In 2017, EPA announced that the planned, more comprehensive remediation of the site will cost \$39.9 million.⁹⁰

- 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 levels in parts of the structures.”⁹¹ Some 50 drums of contaminated materials were removed from the site during remediation activities.⁹² The Department of Energy certified that the buildings were ready for “unrestricted use” in 1995.⁹³ Remediation cost \$18.7 million.⁹⁴
- **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 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.”⁹⁵
- **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.⁹⁶ The university itself conducted remediation activities; the US Department of Energy determined in 1985 that “no additional Department of Energy actions are warranted.”⁹⁷
- 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.⁹⁸ In 1980, a Department of Energy survey found “gamma radiation levels ... significantly above background” in one part of the site.⁹⁹ A 2011 NIOSH review of documentation determined “that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.”¹⁰⁰ However, following local advocacy efforts by the North

⁹⁰ EPA. (2017) “Record of Decision: Wolff-Alport Chemical Company Superfund Site.” Retrieved from semspub.epa.gov/work/02/528285.pdf

⁹¹ 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

⁹² 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

⁹³ 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

⁹⁴ EPA. (1990) “Superfund Record of Decision: Radium Chemical, NY.” Retrieved from cpb-us-w2.wpmucdn.com/blogs.pace.edu/dist/0/195/files/2019/06/9100SKT2.pdf

⁹⁵ 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-a2-030111-1ded7vg.pdf; Wall Street Journal.

(2014) “American Machine & Foundry Co.” Wastelands. Retrieved from projects.wsj.com/waste-lands/site/26-american-machine-foundry-co

⁹⁶ 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

⁹⁷ 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

⁹⁸ 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

⁹⁹ 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

¹⁰⁰ 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-a2-030111-1ded7vg.pdf

Shore Waterfront Conservancy (NSWC),¹⁰¹ the site is being considered by the US Army Corps of Engineers for remediation.¹⁰² 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.¹⁰³

Table 6: 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	Cost at the Time	Cost in 2018 Dollars
Wolff-Alport Chemical Corp	Queens	Ongoing	\$39,900,000 (budgeted in 2017)	\$40,874,521
Radium Chemical Company	Queens	1989-1994	\$18,699,000 (1990)	\$35,925,376
Baker and Williams Warehouses	Manhattan	1989-1995	\$1,754,562 (1995)	\$2,890,961
Columbia University	Manhattan	Before 1978	Unknown	Unknown
American Machine & Foundry Co.	Brooklyn	Between 1971-1977	Lutheran Medical Center	Unknown
Archer Daniels Midland Company Warehouse	Staten Island	Site is under consideration	TBD	TBD
			Total Cost So Far (in 2018 US\$)	\$79,690,858

Certain employees, “vendors, contractors and subcontractors” (or their survivors) of the US Department of Energy (or its predecessors) who are diagnosed with “a radiogenic cancer, chronic beryllium disease, beryllium sensitivity, or chronic silicosis, 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 The Wolff-Alport and Radium Chemical sites and one of the laboratories at Columbia University sites are EEOIC eligible, as are two other sites related to early nuclear weapons development in New York City. To date, the Department of Labor has approved only 54 claims and paid \$7,765,739 in medical bills and compensation claims arising from these sites (See Table 7).

Table 7: 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 2019.¹⁰⁵

¹⁰¹ Waterfront Alliance. (2010) “Feds Agree to Remediate Radioactive Waterfront.” *WaterWire*. Retrieved from waterfrontalliance.org/2010/02/17/feds-agree-to-remediate-radioactive-waterfront

¹⁰² US Army Corps of Engineers. (2018) “Formerly Utilized Sites Remedial Action Program Update: Fiscal Year 2018.” p. 15. Retrieved from usace.contentdm.oclc.org/utils/getfile/collection/p16021coll11/id/3466

¹⁰³ North Shore Waterfront Conservancy. (2017) “The North Shore Waterfront Conservancy.” *SII live*. Retrieved from silive.com/sponsor-content/?scid=119242&prx_r=r5UCA-aYMAoM0LA; Jake Mooney. (2010) “The North Shore Traces A Toxic Legacy.” *City Limits*. Retrieved from citylimits.org/2010/06/08/the-north-shore-traces-a-toxic-legacy

¹⁰⁴ Department of Labor. (n.d.) “About EEOICPA.” Retrieved from dol.gov/owcp/energy

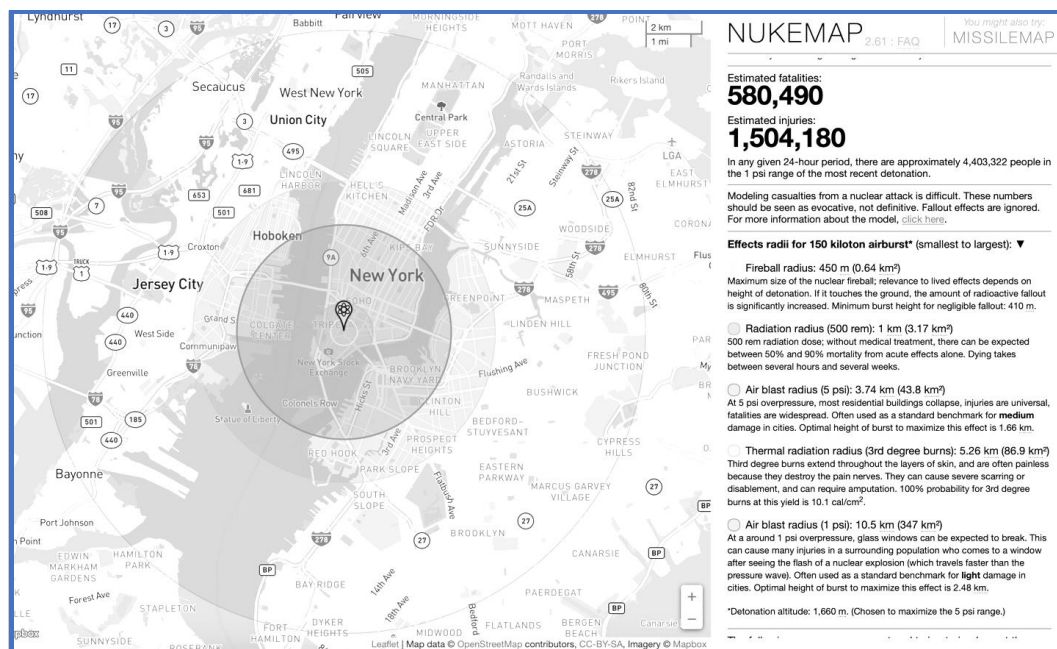
¹⁰⁵ Department of Labor. (2019) “EEOICP Program Statistics by State and Worksite: New York.” Retrieved from dol.gov/owcp/energy/regs/compliance/statistics/NY.htm

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

Nuclear Weapons Pose Catastrophic Risks to the Local and Global Economy

The New York City Council warned in 1983 of the “horrific” risks of the City’s “utter destruction” posed by nuclear weapons (Res. 364). Nuclear weapons pose catastrophic risks to the financial services sector and the economy as a whole. For New York City to invest in nuclear weapons also involves potentially investing in technologies that could contribute to the City’s own destruction, including its financial services sector, with potentially devastating reverberations throughout the global economy (see Figure 8). Given the interconnectedness of the global economy a detonation in any other major economic hub would similarly have reverberating impacts on New York City’s pension funds and economy.

Figure 8: NukeMap’s Projected Impact of a 150 kiloton Nuclear Detonation in Lower Manhattan (Yield of Latest North Korean Warhead, or Upper Limit of Nuclear-Armed US Tomahawk Missile).¹⁰⁶



In his expose of the history of nuclear weapon-related accidents and incidents, journalist Eric Schlosser showed that Americans may be as (or more) at risk from their country’s own arsenal.¹⁰⁷ A 1981 declassified US Department of Defense review lists 32 officially-recognized “broken arrows” – accidents involving US nuclear weapons – between 1950 and 1980.¹⁰⁸ For example, in 1968, a B-52 crashed at Thule Air Force Base in Greenland. The high explosives in its four bombs detonated but did not initiate a nuclear reaction. Nevertheless, during the clean-up “more than 500,000 gallons of contaminated water” had to be removed.

¹⁰⁶ Alex Wellerstein. (2019) “Nukemap.” Retrieved from nuclearsecrecy.com/nukemap

¹⁰⁷ Eric Schlosser. (2013) *Command and Control: Nuclear Weapons, the Damascus Accident, and the Illusion of Safety*. New York, Penguin.

¹⁰⁸ US Department of Defense. (1981) “Narrative Summaries of Accidents involving US Nuclear Weapons, 1950-1980.” Retrieved from www-rc.pbs.org/wgbh/americanexperience/media/filer_public/67/d8/67d8e5ce-78fe-4b95-922a-bb669d0947d7/cc_broken_arrows.pdf

One of the bombs, probably hidden under ice, has never been recovered.¹⁰⁹ 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.”¹¹⁰ Several of these incidents occurred at the Naval bases in New London and Groton, Connecticut, just 130 miles from New York City.¹¹¹ In 1998, a US nuclear-armed submarine collided with an attack submarine off the coast of Long Island, around 230 miles from New York City.¹¹² The TPNW’s preamble cites “the risks posed by the continued existence of nuclear weapons, including from any nuclear-weapon detonation by accident, miscalculation or design” and emphasizes that “these risks concern the security of all humanity, and that all States share the responsibility to prevent any use of nuclear weapons.”

New York City Council has attempted to mitigate such risks, by passing a 1983 resolution prohibiting nuclear weapons from the City.¹¹³ Similarly, in 1990 Mayor David Dinkins said “he would oppose the presence of any ships armed with nuclear weapons, because they constituted a risk to New Yorkers’ health and safety.”¹¹⁴ He was influenced by an explosion on board the USS *Iowa* in 1989, off the coast of Puerto Rico; at the time, the Navy was interested in making Brooklyn the homeport for the vessel.¹¹⁵ The Navy appears to have honored the City’s Nuclear Weapons Free Zone, including during Fleet Weeks, and reports suggest that it continues to do so.¹¹⁶

However, the Navy is under no legal obligation to abide by the City’s Nuclear Weapons Free Zone resolution. Indeed, the Navy has a policy of neither confirming nor denying whether a vessel is carrying a nuclear weapon “in response, direct or indirect, to any inquiry.”¹¹⁷ 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 to the City’s requests. 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.¹¹⁸ This may increase the temptation to bring a nuclear-armed ship into the New York Harbor. The 4 July 2019 commemorations in Washington DC show an unprecedented willingness to politicize the display of military equipment in a major urban center.¹¹⁹

Some aspects of modernization of the US nuclear arsenal may improve the safety and security of nuclear weapons, but others changes may introduce new causes of risk.¹²⁰ Modernization as a whole is not about safety and security, but rather intended to ensuring the “credibility” of nuclear weapons, threatening to provoke a renewed arms race between the US, Russia and China.¹²¹ New hypersonic missiles reduce the lag

¹⁰⁹ Gordon Corera. (10 November 2008) “Mystery of lost US nuclear bomb.” *BBC News*. Retrieved from [news.bbc.co.uk/2/hi/europe/7720049.stm](https://www.bbc.com/news/europe-7720049); Matthew Gault. (15 December 2016) “In 1968, a B-52 Bomber Crashed (With 4 Super Lethal Nuclear Weapons Onboard That ‘Exploded’).” *The National Interest*. Retrieved from nationalinterest.org/blog/the-buzz/1968-b-52-bomber-crashed-4-super-lethal-nuclear-weapons-18746?page=2

¹¹⁰ 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

¹¹¹ 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

¹¹² Hans M. Kristensen. (2016) “Declassified: US Nuclear Weapons At Sea.” Retrieved from fas.org/blogs/security/2016/02/nuclear-weapons-at-sea

¹¹³ International Disarmament Institute. (2019) “New York City Council Resolutions on Nuclear Weapons.” Retrieved from disarmament.blogs.pace.edu/nyc-nuclear-archive/new-york-city-council-resolutions-on-nuclear-weapons

¹¹⁴ 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

¹¹⁵ 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

¹¹⁶ 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

¹¹⁷ Department of the Navy. (2006) “Release of Information on Nuclear Weapons and on Nuclear Capabilities of U.S. Forces.” OPNAVINST 5721.1F. Retrieved from [nukestrat.com/us/navy/OPNAVINST5721.pdf](https://www.nukestrat.com/us/navy/OPNAVINST5721.pdf)

¹¹⁸ 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-uke-cruise-missile

¹¹⁹ 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](https://www.cnn.com/2019/07/03/politics/military-concerns-trump-july-4th-event/index.html)

¹²⁰ Edward Geist & Andrew Lohn. (2018) *How Might Artificial Intelligence affect the Risks of Nuclear War?* Santa Monica, RAND Corporation. Retrieved from rand.org/content/dam/rand/pubs/perspectives/PE200/PE296/RAND_PE296.pdf

¹²¹ Homa Khaleeli. (2014) “Hypersonic weapons and the new global arms race.” *The Guardian*. Retrieved from theguardian.com/world/shortcuts/2014/aug/26/hypersonic-weapons-global-arms-race-us-tested-prototype

time between a missile's launch and its detonation and do not follow ballistic trajectories, making it difficult to predict where they will strike.¹²² Increasing digitization of nuclear weapons command and control renders it more vulnerable to software error and hacking. Those who assert that nuclear deterrence works nonetheless acknowledge that predictability is a crucial. A 2019 SIPRI report raised particular concern about the implications of integration of artificial intelligence into the nuclear weapons complex:

*Machine learning powered AI applications and autonomous systems ... may fail spectacularly when confronted with tasks or environments that differ slightly to those they were trained for. Their behaviour is also unpredictable as they use algorithms that are opaque. It is difficult for humans to explain how they work and whether they include bias that could lead to problematic—if not dangerous—behaviours. They could also be defeated by an intelligent adversary through a cyberattack or even a simple sensor spoofing trick.*¹²³

By maintaining and upgrading its nuclear arsenal, and claiming that it provides security benefits, the US is contributing to the global political climate in which nuclear-armed countries consider it acceptable to threaten the destruction of each other's populated areas. This fosters the environment in which New York City may become a target city. As the "Four Horsemen" put it in their 2007 *Wall Street Journal* editorial:

*continued [US] reliance on nuclear weapons as the principal element for deterrence is encouraging, or at least excusing, the spread of these weapons, and will inevitably erode the essential cooperation necessary to avoid proliferation, protect nuclear materials and deal effectively with new threats.*¹²⁴

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.*¹²⁵

As was featured recently in *New York* magazine, scientific modelling suggests a 10-kiloton nuclear detonation (of similar power to the Hiroshima and Nagasaki atomic bombings) over Times Square would cause an estimated 500,000 casualties. A 5 megaton nuclear detonation, like a Chinese DF-5 missile, would result in 7.9 million casualties and "incinerate midtown Manhattan." This poses obvious catastrophic risks to the City's financial services sector, including the City pension fund investments.¹²⁶ Many of the City's pension fund beneficiaries, police and firefighters, could be particularly threatened as they would be placed in further harm's way in responding to the disaster. The TPNW's preamble notes that the "catastrophic consequences of nuclear weapons cannot be adequately addressed, transcend national borders, pose grave implications for human survival, the environment, socioeconomic development, the global economy, food security and the health of current and future generations...."

A 2006 RAND Corporation study modeled the economic damage of a nuclear attack on "a 10-kiloton nuclear bomb in a shipping container and ship it to the Port of Long Beach" in Los Angeles.¹²⁷ It found that:

¹²² UNODA/UNIDIR. (2019) *Hypersonic Weapons: A Challenge and Opportunity for Strategic Arms Control: A Study Prepared on the Recommendation of the Secretary-General's Advisory Board on Disarmament Matters*. New York, UNODA. Retrieved from unidir.org/files/publications/pdfs/hypersonic-weapons-a-challenge-and-opportunity-for-strategic-arms-control-en-744.pdf

¹²³ Vincent Boulanin. (2019) *The Impact of Artificial Intelligence on Strategy Stability and Nuclear Risk: Volume I Euro-Atlantic Perspectives*. Stockholm, SIPRI. Retrieved from sipri.org/sites/default/files/2019-05/sipri1905-ai-strategic-stability-nuclear-risk.pdf

¹²⁴ NTI. (2011) "U.S. Statesmen Urge Global Change in Deterrence Thinking." Retrieved from nti.org/gsn/article/us-statesmen-urge-global-change-in-deterrence-thinking

¹²⁵ 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

¹²⁶ 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

¹²⁷ Charles Meade & Roger C. Molander. (2006) *Considering the Effects of a Catastrophic Terrorist Attack*. Santa Monica, RAND Corporation. p. xv. Retrieved from rand.org/content/dam/rand/pubs/technical_reports/2006/RAND_TR391.pdf

The early costs of the Long Beach scenario could exceed \$1 trillion, driven by outlay for medical care, insurance claims, workers' compensation, evacuation, and construction. The \$50 billion to \$100 billion for 9/11 puts this figure into perspective.¹²⁸

The report suggested long-term costs could be even more “overwhelming” and “likely to spread far beyond the initial attack, reaching a national and even international scale”, given the potential disruption to global shipping supply chains.¹²⁹ The RAND study may actually underestimate the potential costs, as it did not include an estimate of the reputational costs to a City of a nuclear weapons detonation, which would undoubtedly discourage investment in the City’s private sector.

A 2014 study by UNIDIR on the challenges of responding to nuclear detonations found that a 1 kiloton nuclear detonation in an urban area would overwhelm emergency management responses:

The scale of physical destruction, casualties, and disruption to services, as well as delayed effects such as radioactive fallout, would create extreme stress on and damage to critical societal infrastructure. Local emergency response assets and medical facilities, if not destroyed or rendered non-functional by the detonation, would be inadequate to the scale of the task of assisting all of the victims.¹³⁰

A 2015 study by Article 36 on the specific “Economic impacts of a nuclear weapon detonation”, reviewed the literature on the potential effects on urban areas and found that:

Even a comparatively low-yield nuclear weapon explosion in or near a city of an open economy would have massive economic consequences. In many situations such consequences would extend beyond national borders. The effects of a high-yield explosion or of multiple nuclear explosions could set back hard-won development gains and significantly worsen poverty and hunger on a global scale.¹³¹

An understudied impact of a nuclear detonation is the disruption to electrical and electronic systems. The electro-magnetic pulse (EMP) from the 1962 US atmospheric nuclear weapons test in the Pacific, *Starfish Prime*, caused power outages in Oahu, Hawaii, and damaged eight satellites, including TELSTAR, the first ever communications satellite.¹³² Four years later, the *Hardtack I Orange* test detonation disrupted “commercial, aircraft, and broadcasting” radio signals.¹³³

The increasing reliance of the global economy on information and communication technology, as well as satellites, has made it more vulnerable to a nuclear detonation. The US Defense Threat Reduction Agency found that a single high-altitude detonation of 10-20 kilotons “could disable – in weeks to months – all LEO [low earth orbit] satellites not specifically hardened to withstand radiation.” The agency found that this could “knock out military and civilian communications, imaging, and meteorological/earth/ocean surveillance.” The socio-economic implications would include “Potential shock to the global financial and economic system”, a “spike [in the] global price of bandwidth” and in some places “lengthy broadband disconnect/brownout.”¹³⁴

¹²⁸ Charles Meade & Roger C. Molander. (2006) *Considering the Effects of a Catastrophic Terrorist Attack*. Santa Monica, RAND Corporation. p. xvi. Retrieved from rand.org/content/dam/rand/pubs/technical_reports/2006/RAND_TR391.pdf

¹²⁹ Charles Meade & Roger C. Molander. (2006) *Considering the Effects of a Catastrophic Terrorist Attack*. Santa Monica, RAND Corporation. p. xvi. Retrieved from rand.org/content/dam/rand/pubs/technical_reports/2006/RAND_TR391.pdf

¹³⁰ John Borrie and Tim Caughley. (2014) *An Illusion of Safety: Challenges of Nuclear Weapon Detonations for United Nations Humanitarian Coordination and Response*. Geneva, UNIDIR. p. 35. Retrieved from unidir.org/files/publications/pdfs/an-illusion-of-safety-en-611.pdf

¹³¹ Article 36. (2015) “Economic impacts of a nuclear weapon detonation.” Briefing Paper. p. 6. Retrieved from article36.org/wp-content/uploads/2015/08/Economic-impact.pdf

¹³² Austin D. McGuire & Roger Allen Meade. (2016, August). *The last big bang*. Los Alamos National Laboratory, LA-UR-16-26996; C.N. Vittitoe. (1989, April). *Did high-altitude EMP (electromagnetic pulse) cause the Hawaiian streetlight incident?* Sandia National Laboratories. SAND-88-3341. Retrieved from osti.gov/servlets/purl/6151435; Edward E. Conrad, et al. (2010) “Collateral Damage to Satellites from an EMP Attack.” Retrieved from dtic.mil/cgi-bin/GetTRDoc?AD=ADA531197&Location=U2&doc=GetTRDoc.pdf

¹³³ G.C. Andrew. (1962). “Some observations of MF and HF radio signals after mid-Pacific high altitude nuclear explosions.” *New Zealand Journal of Geology and Geophysics*, 5(6), p. 988-993.

¹³⁴ Defense Threat Reduction Agency. (2001) “High Altitude Nuclear Detonations (HAND) Against Low Earth Orbit Satellites (‘HALEOS’).” Retrieved from fas.org/spp/military/program/asat/haleos.pdf

Financial Risk Reduction Requires Comprehensive Stigmatization of Nuclear Weapons

Given the size of the New York City Retirement System, it has an interest and responsibility in creating a sustainable future, including reducing systemic risks to the market, including the catastrophic impacts of an accidental or intentional nuclear detonation. However, financial managers often do not take into account the risks of a nuclear detonation. In an article in the peer-reviewed journal *Global Policy*, Oxford University professor Nick Bostrom observed that the public sector often underperforms at taking preventative action to mitigate “low-probability, high consequence risks”, including nuclear detonations. He argued that “These considerations suggest that the loss in expected value resulting from an existential catastrophe is so enormous that the objective of reducing existential risks should be a dominant consideration” in public decisionmaking.¹³⁵

There are methodologies for assessing such risks. Thomas Rowe and Simon Beard, academics with positions at Virginia Tech, University of Cambridge and London School of Economics, have published a critical assessment of models that have been used in various settings.¹³⁶ The *Bulletin of Atomic Scientists’* Doomsday Clock assesses how “close we are to destroying our world with dangerous technologies of our own making”, including nuclear weapons. A panel of “scientists and other experts with deep knowledge of nuclear technology and climate science” make an annual review of the evidence. In January 2019, the *Bulletin* determined we were “2 minutes from midnight” because “Humanity now faces two simultaneous existential threats”, nuclear weapons and climate change, both “of which would be cause for extreme concern and immediate attention.”¹³⁷

There is some debate about the appropriateness of quantitative and actuarial approaches to assessing the risks of nuclear detonations and/or war.¹³⁸ Beyond the ethical concerns, a 2014 UNIDIR study found that, in part, difficulty in “assessing risk of detonation of nuclear weapons is due to lack of transparency on the part of possessors about their safety records.”¹³⁹ However, the study stressed that the high levels of uncertainty and secrecy should not lead policymakers to be complacent. Even if the risk of nuclear detonation – whether accidental or intentional – is very low, it is greater than zero and would have catastrophic consequences. Like a city located over an earthquake fault line, the non-occurrence of such a “Black Swan” event should not be taken to be evidence that it will not happen.¹⁴⁰

Prudent management of the City’s finances thus requires a precautionary approach to nuclear risk. UNESCO’s World Commission on the Ethics of Scientific Knowledge and Technology defined the precautionary principle as:

*When human activities may lead to morally unacceptable harm that is scientifically plausible but uncertain, actions shall be taken to avoid or diminish that harm.*¹⁴¹

¹³⁵ Nick Bostrom. (2013) “Existential Risk Prevention as Global Priority.” *Global Policy* 4(1). pp. 15-31.

¹³⁶ Thomas Rowe and Simon Beard. (2018) “Probabilities, methodologies and the evidence base in existential risk assessments.” Working paper, Centre for the Study of Existential Risk. Retrieved from eprints.lse.ac.uk/89506/1/Beard_Existential-Risk-Assessments_Accepted.pdf

¹³⁷ Bulletin of Atomic Scientists. (2019) “A new abnormal: It is still 2 minutes to midnight.” Retrieved from thebulletin.org/doomsday-clock

¹³⁸ Seth Baum. (2018) “Reflections on the Risk Analysis of Nuclear War.” In *Proceedings of the Workshop on Quantifying Global Catastrophic Risks*, Garrick Institute for the Risk Sciences. B. John Garrick (Ed.). Los Angeles, University of California, Los Angeles. pp. 19-50.

¹³⁹ John Borrie. (2014) “A Limit to Safety: Risk, ‘Normal Accidents’ and Nuclear Weapons.” ILPI-UNIDIR Vienna Conference Series, 3. p. 1. Retrieved from researchgate.net/publication/269110360_Risk_'normal_accidents'_and_nuclear_weapons

¹⁴⁰ John Borrie, Tim Caughley and Wilfred Wan (Eds.) (2017) *Understanding Nuclear Weapon Risks*. Geneva, UNIDIR. Retrieved from unidir.org/files/publications/pdfs/understanding-nuclear-weapon-risks-en-676.pdf

¹⁴¹ UNESCO World Commission on the Ethics of Scientific Knowledge and Technology. (2005) *The Precautionary Principle*. Paris, UNESCO. p. 14. Retrieved from unesdoc.unesco.org/images/0013/001395/139578e.pdf

The UNIDIR study notes that small improvements to the “safety” of nuclear arsenal, or a technocratic risk management approach could have tangible utility, but this will be limited: “evidence from catastrophic accidents involving hazardous technologies of various kinds indicates that significant risk is endemic in complex and tightly coupled systems, as nuclear weapon control systems must be if nuclear deterrence is to function.” In other words, the very nature of the nuclear weapons complex – which maintains devastating weapons on hair trigger alert – generates catastrophic risks. Efforts to manage the risk of a nuclear arsenal cannot eliminate “factors like competing organizational agendas, biases, human frailty and the incomprehensibility of systems failures.”¹⁴² The UNIDIR study draws on Charles Perrow’s 1984 analysis of “normal accidents,” showing that complex, tightly-coupled technological systems are prone to errors that cascade, in which small faults snowball into catastrophic failures.¹⁴³ In his book, *The Limits of Safety*, Scott Sagan specifically applied Perrow’s theory to nuclear weapons, arguing that “In the large and very complex organizations that control hazardous technologies in our society, one should expect the unexpected will occur, that unimaginable interactions will occur, that accidents will happen.”¹⁴⁴ He feared that

*there is a serious problem of overconfidence here in the United States. ... Some day, when we expect it least – during a military exercise, while transporting nuclear weapons to storage sites, during a missile flight test, or even a routine missile maintenance operation, the unexpected will occur.*¹⁴⁵

A 2018 review of the risks of nuclear war by the Global Catastrophic Risk Institute found that the “norm against nuclear weapons use... appears to have played a role in the avoidance of nuclear war since WWII.” It suggested that “Efforts that strengthen the norm against nuclear weapons use, such as the recent humanitarian initiative to stigmatize nuclear weapons ... could be another effective means of reducing the probability of nuclear war” and the consequent humanitarian impact on cities like New York.¹⁴⁶ Indeed, in expressing concern “about the catastrophic humanitarian consequences” of nuclear weapons, TPNW’s preamble asserts that “the only way to guarantee that nuclear weapons are never used again under any circumstances” is to “completely eliminate” them. When the norm against threatening to use nuclear weapons is under strain – challenged by irresponsible rhetoric by leaders of nuclear-armed states¹⁴⁷ – the TPNW and efforts to stigmatize nuclear weapons offer the most prudent path forward for safeguarding the world’s economy. As the New York City Council put it in their 1983 Nuclear Weapons Free Zone Resolution (364) 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....”¹⁴⁸

¹⁴² John Borrie. (2014) “A Limit to Safety: Risk, ‘Normal Accidents’ and Nuclear Weapons.” ILPI-UNIDIR Vienna Conference Series, 3. p. 1. Retrieved from researchgate.net/publication/269110360_Risk_'normal_accidents'_and_nuclear_weapons

¹⁴³ Charles Perrow. (1984) *Normal Accidents: Living with High Risk Technologies*. New York, Basic Books.

¹⁴⁴ Scott Sagan. (1995) *The Limits of Safety: Organizations, Accidents, and Nuclear Weapons*. Princeton, Princeton University Press. p. 3.

¹⁴⁵ Scott Sagan. (1995) *The Limits of Safety: Organizations, Accidents, and Nuclear Weapons*. Princeton, Princeton University Press. p. 10.

¹⁴⁶ Seth Baum, Robert de Neufville and Anthony Barrett. (2018) “A Model for the Probability of Nuclear War.” Global Catastrophic Risk Institute Working Paper 18-1. p. 33. Retrieved from ssrn.com/abstract=3137081

¹⁴⁷ Nina Tannenwald. (2018) “How Strong Is the Nuclear Taboo Today?” *The Washington Quarterly*. 41(3). pp. 89-109.

¹⁴⁸ 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

Conclusion

A precautionary approach to the catastrophic risks of nuclear weapons to New York City requires a comprehensive effort to support the prohibition, stigmatization and delegitimization of nuclear weapons, including divestment of the pension funds from companies engaged in their production and stockpiling. Divestment from nuclear weapons is not only morally and ethically necessary, it is also financially prudent.

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Major Nuclear Weapons Producing Companies¹⁴⁹

Company	Sources of Nuclear Weapons-Related Contracts
Aecom (USA)	USA
Aerojet Rocketdyne (USA)	USA
Airbus Group (Netherlands)	France
BAE Systems (UK)	USA, UK and France
Bechtel (USA)	USA
Bharat Dynamics Ltd. (India)	India
Boeing (USA)	USA and UK
BWX Technologies (USA)	USA
Constructions Industrielles de la Méditerranée (CNIM) (France)	France
Fluor (USA)	USA
General Dynamics (USA)	USA and UK
Honeywell International (USA)	USA
Huntington Ingalls Industries (USA)	USA
Jacobs Engineering (USA)	USA and UK
Larsen & Toubro (India)	India
Leidos (USA)	USA
Leonardo (Italy)	France
Lockheed Martin (USA)	USA and UK
Moog (USA)	USA
Northrop Grumman (USA)	USA and UK
Raytheon (USA)	USA
Safran (France)	France
Serco (UK)	UK
Textron (USA)	USA
Thales	France
United Technologies Corporation (USA)	USA
Walchandnagar Industries (India)	India

¹⁴⁹ 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

ANNEX 2

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

Note: 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.¹⁵⁰ NYCERS: largest 40 equity and largest 40 bond holdings.¹⁵¹ Police: largest 100 equity holdings.¹⁵² Fire: largest 37 stock holdings.¹⁵³ 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.¹⁵⁴ As a result, other than for the Teacher's fund, totals should be considered indicative of order of magnitude, rather than a comprehensive tally. If and when a full tally is made available by the Retirement Systems, this table will be updated in successive editions of this report.

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
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
Number of Nuclear Weapons Producers Reported in Portfolio	19	1	4	1	0	19

¹⁵⁰ 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

¹⁵¹ NYCERS. "2018 Comprehensive Annual Financial Report." p. 141. Retrieved from nycers.org/sites/main/files/file-attachments/cafr2018.pdf

¹⁵² 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

¹⁵³ 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

¹⁵⁴ 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

Top 25 Financial Institutions Investing in Nuclear Weapons Producers¹⁵⁵

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

¹⁵⁵ 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

Don't Bank on the Bomb's Hall of Fame

Note: "These financial institutions all have publicly available policies – or summaries thereof – excluding investments in nuclear weapons producing companies. They actively withdraw from past investments and avoid future investments and their exclusion policies have an 'all-in' comprehensive scope applied at the highest (group) level." This is the list known to the Don't Bank on the Bomb authors as of March 2018; an updated list is forthcoming later in 2019.¹⁵⁶

- ASR (Netherlands)
- Australian Ethical (Australia)
- Banca Etica (Italy)
- The Co-operative Bank (United Kingdom)
- Fonds de Compensation (Luxembourg)
- Future Super (Australia)
- Government Pension Fund – Norway (Norway)
- Green Century (United States)
- Menzis (The Netherlands)
- MP Pension (Denmark)
- NIBC (The Netherlands)
- Pensioenfond Horeca & Catering (The Netherlands)
- PenSam (Denmark)
- Philips Pension Fund (The Netherlands)
- PFA (Denmark)
- Pensioenfond Zorg en Welzijn (The Netherlands)
- PNO Media (The Netherlands)
- Spoorwegpensioenfond (The Netherlands)
- Stichting Pensioenfond Openbaar Vervoer (The Netherlands)
- Storebrand Group (Norway)
- Swedish Pension fund AP7 (Sweden)
- Triodos Bank (The Netherlands)
- De Volksbank (the Netherlands)

¹⁵⁶ Don't Bank on the Bomb. (2018) "Hall of Fame." Retrieved from dontbankonthebomb.com/2018-hof

Shareholder Initiatives by the New York City Retirement System, Related to Nuclear Weapons Producers

Note: Includes all initiatives found in annual shareholder initiative reports, 2003-2018, for nuclear weapons producing companies.

Companies of Concern	Issue	Year	Action Taken by NYC Retirement System	Outcome
Aecom	Gender pay gap	2018	Proxy access proposal	Settled ¹⁵⁷
Boeing	Missile technology transfers to China	2004	Proposal asking the company to “report on its payments of penalties to the United States government related to charges of illegal transfers of missile-related technology, and exports of rockets and satellite data to the Peoples Republic of China.”	Boeing provided documentation of “actions taken by the board and management to address the issue of illegal transfers and exports of technology.” ¹⁵⁸
	Environmental sustainability	2009	Proposal requesting Board to issue report on “sustainability policies and performance”	“Withdrawn (based on company’s commitment to engage in dialogue).” ¹⁵⁹
	Executive Compensation	2015	Proposal “requesting policies that (a) authorize the board to recover compensation from executives whose improper conduct causes financial or reputational harm to the company and (b) require disclosure of the circumstances of any recoupment under the policy.”	Vote of 22.4% ¹⁶⁰
	Proxy Access	2016	Proposal regarding proxy access, due to the company being one of the largest of the system’s holdings.	Settled. ¹⁶¹
Boeing, Lockheed Martin, Northrop Grumman and United	“[C]ostly fines in recent years to settle allegations of deceptive or	2014	Proposals “to both increase financial accountability for senior executives and encourage more effective legal and regulatory	Halliburton, Lockheed Martin, Northrop Grumman and United Technologies “adopted strong policy language regarding disclosure of clawback actions

¹⁵⁷ Scott Stringer. (2019) “2018 Shareowner Initiatives: Postseason Report.” p. 7. Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2018_Shareowner_Initiatives_Postseason_Report.pdf

¹⁵⁸ New York City Comptroller. (2004) “A Report on the 2004 Shareholder Proposals and Other Shareholder Initiatives of the New York City Pension Funds & Retirement Systems.” Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2004-shareholder-report.pdf

¹⁵⁹ New York City Comptroller. (2009) “The 2009 Shareholder Proposal Programs Of the New York City Pension Funds & Retirement Systems.” p. 15 Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2009-Shareholder-report.pdf

¹⁶⁰ Scott Stringer. (2015) “2015 Shareowner Initiatives: Postseason Report.” p. 16. Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2015_Shareowner_Initiatives_Postseason_Report.pdf

¹⁶¹ Scott Stringer. (2016) “Shareowner Initiatives: Postseason Report.” Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2016_Shareowner_Initiatives_Postseason_Report.pdf

Companies of Concern	Issue	Year	Action Taken by NYC Retirement System	Outcome
Technologies (and several other companies)	improper business practices.”		compliance”, including strengthening “compensation ‘clawback’ policies.”	taken.” Northrup Grumman and United Technologies “also empowered their boards to claw back incentive pay from executives responsible for misconduct that causes significant financial or reputational harm to the company....” ¹⁶²
Fluor (and several other companies)	Labor rights	2005	Proposal “asking companies to commit to full implementation of the International Labor Organization human rights standards in their international production facilities, and to independently monitor compliance with the standards.”	For Fluor: “withdrawn, company agreed to begin a process toward implementation, compliance and monitoring.” ¹⁶³
General Dynamics	Discrimination based on sexual orientation	2006	Proposal “for explicit prohibition against discrimination based on sexual orientation.”	Adopted. ¹⁶⁴
	Supplier diversity	2016 & 2017	Letter calling on company “to disclose quantitative performance metrics on their supplier diversity programs ... including proactive efforts by companies to use minority, women, LGBTQ, and veteran-owned businesses, among other defined groups, as suppliers.”	Unresponsive. ¹⁶⁵
General Dynamics, Honeywell, Raytheon	Sustainability	2006, 2007, 2008	Proposal to “Disclose social, environmental and economic performance by issuing an annual sustainability report.”	General Dynamics: 21.2 % vote in 2006; 2007: Adopted. Honeywell: 2006 “Omitted—SEC response to company’s no-action request.”; 2007 “Omitted—SEC concurred with company’s ‘no-action’ request.” Raytheon: 2006 “Omitted—SEC response to company’s no-action request.”; 2008 “Withdrawn-

¹⁶² New York City Comptroller. (2014) “2014 Shareowner Initiatives: Postseason Report.” Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2014_Shareowner_Initiatives_Postseason_Report.pdf

¹⁶³ New York City Comptroller. (2005) “2005 Proxy Initiatives of the New York City Pension Funds.” pp. 3, 9. Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2005-shareholder-report.pdf

¹⁶⁴ New York City Comptroller. (2006) “The New York City Pension Funds’ 2006 Shareholder Proposals.” p. 3. Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2006-shareholder-report.pdf

¹⁶⁵ Scott Stringer. (2016) “Shareowner Initiatives: Postseason Report.” p. 14. Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2016_Shareowner_Initiatives_Postseason_Report.pdf; Scott Stringer. (2017) “2017 Shareowner Initiatives: Postseason Report.” p. 16. Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2017_Shareowner_Initiatives_Postseason_Report.pdf

Companies of Concern	Issue	Year	Action Taken by NYC Retirement System	Outcome
				company filed a no-action request with the SEC.” ¹⁶⁶
Honeywell	Engagement with shareholder proposals	2005	Proposal “to establish an engagement process between the boards of directors and proponents of shareholders’ proposals that win majority votes.”	“withdrawn--proposal was pre-empted by another proposal on the same subject matter.” ¹⁶⁷
	Proxy access	2016	Proxy access proposal	Settled. ¹⁶⁸
	Gender pay gap	2016	Proxy access proposal	Settled. ¹⁶⁹
Jacobs Engineering	Sexual orientation and gender identity discrimination	2009	Proposal calling for “explicit prohibition of work-place discrimination based on sexual orientation and gender identity”	Adopted. ¹⁷⁰
Lockheed Martin	Sexual orientation discrimination	2003	Proposal for “explicit prohibition of discrimination based on sexual orientation”	“proposal was not filed because the company satisfied its provisions.” ¹⁷¹
	Political contributions	2007	Proposal asking company “to disclose their political contributions.”	Adopted. ¹⁷²
Raytheon	Macbride Principles	2003, 2004, 2005, 2010	Proposal to adopt the Macbride Principles	2003: 10.3% votes 2004: 10.1% 2005: 9.8% 2010: “withdrawn ... because the Company shut down its operation in Northern Ireland.” ¹⁷³

¹⁶⁶ New York City Comptroller. (2006) “The New York City Pension Funds’ 2006 Shareholder Proposals.” p. 11-12. Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2006-shareholder-report.pdf; New York City Comptroller. (2007) “Postseason Report: 2007 Shareholder Proposal Programs & Other Shareownership Initiatives of The New York City Pension Funds & Retirement Systems.” pp. 11-12. Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2007-Shareholder-report.pdf; New York City Comptroller. (2006) “The New York City Pension Funds’ 2006 Shareholder Proposals.” p. 11-12. Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2006-shareholder-report.pdf; New York City Comptroller. (2008) “The 2008 Shareholder Proposal Programs of the New York City Pension Funds & Retirement Systems.” p. 7. Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2008-Shareholder-report.pdf

¹⁶⁷ New York City Comptroller. (2005) “2005 Proxy Initiatives of the New York City Pension Funds.” pp. 2, 16. Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2005-shareholder-report.pdf

¹⁶⁸ Scott Stringer. (2016) “Shareowner Initiatives: Postseason Report.” pp. 9, 19. Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2016-Shareowner-Initiatives-Postseason-Report.pdf

¹⁶⁹ Scott Stringer. (2016) “Shareowner Initiatives: Postseason Report.” pp. 9, 19. Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2016-Shareowner-Initiatives-Postseason-Report.pdf

¹⁷⁰ New York City Comptroller. (2009) “The 2009 Shareholder Proposal Programs Of the New York City Pension Funds & Retirement Systems.” pp. 4, 13 Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2009-Shareholder-report.pdf

¹⁷¹ New York City Comptroller. (2003) “A Report on the 2003 Shareholder Proposals and Other Shareowner Initiatives of the New York City Pension Funds & Retirement Systems.” Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2003-shareholder-report.pdf

¹⁷² New York City Comptroller. (2007) “Postseason Report: 2007 Shareholder Proposal Programs & Other Shareownership Initiatives of The New York City Pension Funds & Retirement Systems.” p. 4. Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2007-Shareholder-report.pdf

¹⁷³ New York City Comptroller. (2003) “A Report on the 2003 Shareholder Proposals and Other Shareowner Initiatives of the New York City Pension Funds & Retirement Systems.” Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2003-shareholder-report.pdf; New York City Comptroller. (2004) “A Report on the 2004 Shareholder Proposals and Other Shareownership Initiatives of the New York City Pension Funds & Retirement Systems.” Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2004-shareholder-report.pdf; New York City Comptroller. (2005) “2005 Proxy Initiatives of the New York City Pension Funds.” pp. 3, 8. Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2005-shareholder-report.pdf; New York City Comptroller. (2010) “The 2010 Shareholder Proposal Programs of the New York City Pension Funds & Retirement Systems.” pp. 6, 19. Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2010-Shareholder-report.pdf

Companies of Concern	Issue	Year	Action Taken by NYC Retirement System	Outcome
Textron	Inadequate board diversity	2017	Proxy access proposal “due to inadequate board diversity”	Settled: “subsequently named at least one woman and/or minority director.” ¹⁷⁴
United Technologies	Political contributions	2008	Proposal asking company to “disclose their political contributions.”	Adopted. ¹⁷⁵

¹⁷⁴ Scott Stringer. (2017) “2017 Shareowner Initiatives: Postseason Report.” pp. 8, 25. Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2017_Shareowner_Initiatives_Postseason_Report.pdf

¹⁷⁵ New York City Comptroller. (2008) “The 2008 Shareholder Proposal Programs of the New York City Pension Funds & Retirement Systems.” pp. 4, 10. Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2008-Shareholder-report.pdf

Shareholder Initiatives by the New York City Retirement System, Related to Weapons and War

Note: Includes all initiatives found in annual shareholder initiative reports, 2003-2018, using search terms “nuclear”, “weapon”, “missile”, “gun”, “defense”, “military”, “war”, “violence,” as well as all of the nuclear weapons producing companies.

Companies of Concern	Issue	Year	Action Taken by NYC Retirement System	Outcome
Boeing	Missile technology transfers to China	2004	Proposal asking the company to “report on its payments of penalties to the United States government related to charges of illegal transfers of missile-related technology, and exports of rockets and satellite data to the Peoples Republic of China.”	Boeing provided documentation of “actions taken by the board and management to address the issue of illegal transfers and exports of technology.” ¹⁷⁶
Boeing, Halliburton, Lockheed Martin, Northrop Grumman and United Technologies (and several other companies)	“[C]ostly fines in recent years to settle allegations of deceptive or improper business practices.”	2014	Proposals “to both increase financial accountability for senior executives and encourage more effective legal and regulatory compliance”, including strengthening “compensation ‘clawback’ policies.”	Halliburton, Lockheed Martin, Northrop Grumman and United Technologies “adopted strong policy language regarding disclosure of clawback actions taken.” Northrup Grumman and United Technologies “also empowered their boards to claw back incentive pay from executives responsible for misconduct that causes significant financial or reputational harm to the company...” ¹⁷⁷
Coca Cola	Paramilitary anti-union violence in Colombia	2005	Proposal to “sponsor the sending of an independent delegation of inquiry to Colombia to examine the charges of collusion in anti-union violence.”	Proposal “supported by 5.4% of the shares voted at the company’s annual meeting.” Coca Cola claimed “the charges are unfounded.” ¹⁷⁸
		2006	Similar proposal to 2005	Proposal supported by 5.7% votes ¹⁷⁹
Dick’s Sporting Goods	Gun sales	2018	Letter to Board urging them to “lead in eliminating entirely firearm sales...given that investors are being asked to take	Company’s response “highlighted its commitment to firearm safety and detailed its firearms compliance and safety policies.” ¹⁸⁰

¹⁷⁶ New York City Comptroller. (2004) “A Report on the 2004 Shareholder Proposals and Other Shareholder Initiatives of the New York City Pension Funds & Retirement Systems.” Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2004-shareholder-report.pdf

¹⁷⁷ New York City Comptroller. (2014) “2014 Shareowner Initiatives: Postseason Report.” Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2014_Shareowner_Initiatives_Postseason_Report.pdf

¹⁷⁸ New York City Comptroller. (2005) “2005 Proxy Initiatives of the New York City Pension Funds.” Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2005-shareholder-report.pdf

¹⁷⁹ New York City Comptroller. (2006) “The New York City Pension Funds’ 2006 Shareholder Proposals.” Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2006-shareholder-report.pdf

¹⁸⁰ Scott Stringer. (2019) “2018 Shareowner Initiatives: Postseason Report.” p. 20. Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2018_Shareowner_Initiatives_Postseason_Report.pdf

Companies of Concern	Issue	Year	Action Taken by NYC Retirement System	Outcome
			undisclosed and substantial financial risks, with virtually no material upside to long-term shareowner value.”	
Freeport McMoran Copper & Gold Corporation and Exxon Mobil	Human rights abuses by Indonesian military	2004	Proposal to Freeport to “halt all payments to the Indonesian military and security forces....”	Freeport sought to block the proposal from its proxy statement but the SEC “allowed the proposal to be included.” The proposal was “supported by 7.9% of the shares voted at the company’s annual meeting.” ¹⁸¹
		2005	Proposal to Exxon Mobil and Freeport “review their business ties to the Indonesian military and security forces and to issue a report on their findings to their shareholders.”	Proposal supported by shareholder votes of 7.6% for ExxonMobil and 6.7%, for Freeport ¹⁸²
		2006	Proposal to Freeport to “Suspend Ties to Indonesian Military.”	Proposal supported by 6.2% votes. ¹⁸³
Raytheon	Macbride Principles	2003, 2004, 2005, 2010	Proposal to adopt the Macbride Principles	2003: 10.3% votes 2004: 10.1% 2005: 9.8% 2010: “withdrawn ... because the Company shut down its operation in Northern Ireland.” ¹⁸⁴

¹⁸¹ New York City Comptroller. (2004) “A Report on the 2004 Shareholder Proposals and Other Shareholder Initiatives of the New York City Pension Funds & Retirement Systems.” Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2004-shareholder-report.pdf

¹⁸² New York City Comptroller. (2005) “2005 Proxy Initiatives of the New York City Pension Funds.” Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2005-shareholder-report.pdf

¹⁸³ New York City Comptroller. (2006) “The New York City Pension Funds’ 2006 Shareholder Proposals.” Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2006-shareholder-report.pdf

¹⁸⁴ New York City Comptroller. (2003) “A Report on the 2003 Shareholder Proposals and Other Shareowner Initiatives of the New York City Pension Funds & Retirement Systems.” Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2003-shareholder-report.pdf; New York City Comptroller. (2004) “A Report on the 2004 Shareholder Proposals and Other Shareholder Initiatives of the New York City Pension Funds & Retirement Systems.” Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2004-shareholder-report.pdf; New York City Comptroller. (2005) “2005 Proxy Initiatives of the New York City Pension Funds.” pp. 3, 8. Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2005-shareholder-report.pdf; New York City Comptroller. (2010) “The 2010 Shareholder Proposal Programs of the New York City Pension Funds & Retirement Systems.” pp. 6, 19. Retrieved from comptroller.nyc.gov/wp-content/uploads/documents/2010-Shareholder-report.pdf